Pregnancy-related Pelvic Girdle Pain in Nulliparous Women in Ireland: a Longitudinal Mixed Methods Study

Appendices

PhD Thesis

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Appendices

Prevalence of PPGP, PLBP and PLPP during pregnancy and postpartum

- The definitions for PPGP, PLBP and PLPP that are described in this chapter are used for this table, regardless of the terminology used in the study. For example, if a study refers to 'low back pain', but upon reading the methods they define this as any pain between the costal margin and the inferior gluteal folds, this then is described as PLPP (pregnancy-related lumbopelvic pain) in this table.
- In the 'Prevalence – postpartum' column, if the study reports the prevalence of women with Pelvic Girdle Pain postpartum that may include women for whom symptoms started after the birth the abbreviations PGP (Pelvic Girdle Pain), LBP (Low Back Pain) and LPP (LumboPelvic Pain) are used, as this does not fit this study's definition of 'persistent PPGP, PLBP or PLPP'.
- Data on the prevalence of PPGP and persistent PPGP is highlighted in yellow, as this provides important comparative data for this study.

Study	Country	Design	Recruitment	Methods of measurement	No. of participants & parity	Times of follow – up	Prevalence – during pregnancy	Prevalence - postpartum
Berg *et al.* 1988	Sweden	Prospective cohort	All pregnant women attending antenatal clinics	Questionnaire (exact questions not specified) + physical examination (only postpartum)	n=862, Mixed parity	20, 30, 35 weeks pregnancy; follow up 6-12 months pp only of women who had severe pain (n=79) during pregnancy	49% (422) PLPP at least once	65% of women who had severe PLPP (n=79) had persistent PLPP 6-12 months pp;

Ostgaard *et al.* 1991a	Sweden	Prospective Cohort	All pregnant women attending antenatal clinics	Questionnaire (pain drawing, pain VAS)	n=855, Mixed parity	From week 12 to birth (at 2 week intervals).	49% 9-month PLPP period prevalence, 22-28% PLPP point prevalence during pregnancy	
Ostgaard *et al.* 1992 (follow-up of Ostgaard *et al.* 1991a)					n=817 (38 lost to follow up), Mixed parity	Average 18 months postpartum (SD=5.28)		37% LPP & 7% severe LPP at 18 months pp
Ostgaard *et al.* 1994	Sweden	RCT (Preventative intervention: controls, class exercises, individual lessons)	All pregnant women attending antenatal clinics	Questionnaire (pain drawing, pain VAS) + physical examination	n=362, Mixed parity	12 weeks & 36 weeks pregnant	47% serious PLPP, 8% combined PLBP & PPGP during pregnancy (no statistical differences existed between the 3 groups)	
Ostgaard *et al*. 1997 (follow-up of				Questionnaire (pain drawing, pain VAS)	n=351 (3 months postpartum), n=303 (72 months	3 months & 6 years postpartum	71% PLPP during pregnancy	16% of all women 6 years pp had LPP (pre-pregancy level), 3

Ostgaard *et al*. 1994)					postpartum), Mixed parity			months postpartum data cannot be accurately extracted from graph.
Ostgaard *et al*. 1996	Sweden	Prospective Cohort	All pregnant women attending antenatal clinics	Questionnaire (pain drawing, pain VAS) + physical examination (only during pregnancy)	n=363, Mixed parity	25 (20-29) weeks pregnancy, 11 weeks postpartum, 23 weeks postpartum	45% (164) PLPP (34% posterior PPGP, 11% PLBP)	45% of 152 (12 drop-outs) persistent PPGP 11 weeks posptartum, 31% of 134 (18 drop-outs) 23 weeks postpartum
Endresen 1995	Norway	Retrospective cohort	All women on postnatal ward haven given birth in Norway	Questionnaire (Direct questions whether woman experienced	n=5438 (87.2% of women haven given birth in	Completed immediately after birth; questions	42.4% PPGP that started at any point	

				PPGP or PLBP during pregnancy?)	Norway during study period), Mixed parity	related to whole pregnancy period	during pregnancy	
Kihlstrand *et al.* 1999	Sweden	RCT (Preventative intervention)	All pregnant women attending antenatal clinics, registering before 19 weeks gestation	Daily questionnaire (pain VAS) (PLBP not clearly defined)	n=258, Mixed parity	Daily from 18 weeks gestation to delivery	70.5% of intervention, 74% in control group had some PLBP at some point during pregnancy (no significant difference)	
Noren *et al.* 2002	Sweden	Prospective Cohort	All pregnant women attending antenatal clinics	Spontaneously reported PLPP (during pregnancy), physical examination & questionnaire (pain drawing,	n=799, Mixed parity	3 yrs postpartum	29% (231) spontaneously reported PLPP during pregnancy	3yrs postpartum (n=203; 30 lost to follow up): 5% of all women, 20% (41) persistent PLPP (6%

				pain scale, disability scale) (3 yrs postpartum)				persistent PLBP, 8% persistent posterior PPGP, 5% combined)
Kristians-son *et al.* 1996	Sweden	Prospective Cohort	All pregnant women attending antenatal clinics	Questionnaire (pain drawing, pain VAS, disability) + physical examination	n=200, Mixed parity	12, 24, 36 weeks pregnant, 'immediately postpartum' (not defined)	76% (149) PLPP at some point during pregnancy; 61% (119) PLPP onset during pregnancy (incidence)	9.4% (16) persistent PLPP of women with onset during pregnancy
Larsen *et al.* 1999	Denmark	Prospective Cohort	All pregnant women attending antenatal clinics	Questionnaire (pain drawing, VAS, disability), + physical examination if disabling pain that started during present pregnancy and occurring during 2/5 daily activities	n=1600, Mixed parity	2, 6, 12 months postpartum	14% (277) PPGP (according to set criteria; onset during present pregnancy, pain on ≥2 daily activities + clinical tests)	5% (87) persistent PPGP 2 months postpartum (=31% of women with PPGP), 4% 6 months postpartum and 2% 12 months postpartum

Hansen *et al*. 1999 (same cohort as Larsen *et al.* 1999)							27% of women with PPGP had had LBP episodes before pregnancy	
Turgut *et al.* 1998	Turkey	Prospective Cohort	Women who had back pain during pregnancy	Questionnaire (pain drawing, pain VAS)	n=88 (who had pain during pregnancy), Mixed parity	At time of delivery and 1, 3, 6 months postpartum		59% back pain (11% mid/upper back, 46.2% LBP & 42.3% posterior PGP at time of delivery; 54.5%, 45.5%, 43.2% back pain 1, 3, 6 months postpartum (at these time points no differentiation made between PGP & LBP)
Brynhildsen *et al.* 1998	Sweden	Prospective Cohort	Women with PLPP (lumbar or sacroiliac areas) during	Questionnaire (Pain drawing)	n=62 who had had PLPP leading to sick leave	12yrs postpartum		85% had persistent recurrent PLPP during the 12

			pregnancy requiring sick leave		during pregnancy + 84 controls (no PLBP), Mixed parity			yrs postpartum, (versus 64% of controls who had recurrent LPP)
Bjorklund *et al.* 2000	4 countries; Sweden, Tanzania, Finland, Zanzibar	Observational	In Sweden (1) and Tanzania Mainland (2) women were interviewed in late pregnancy at the antenatal clinic. In Finland (3) and in Zanzibar (4) information was obtained postpartum at the maternity ward.	Interview (1) (2) (4) + physical examination including ultrasound assessment for symphyseal distention (1), or questionnaire after delivery (pain location, pain VAS) (3)	n=752 (total for all four sites), Mixed parity	Asked if they had pain during pregnancy retrospectively at 35-37 weeks gestation, or postpartum.	41% (1), 52% (2), 54% (3), 60% (4) had had PLBP (likely to also include posterior pelvis i.e. PLPP, but not clearly specified). 39% (1), 37% (2), 36% (3), 23% (4) had symphyseal pain during pregnancy.	
To *et al.* 2003	Hong Kong	Prospective Cohort	Consecutive patients in a low-risk obstetric population with	Questionnaire (pain drawing, pain VAS)	n=326, Mixed parity	During pregnancy (between 28 weeks & delivery), 2yrs postpartum	76.6% ≥1 episodes of significant back pain during pregnancy	21.1% incidence of persistent back pain 2yrs postpartum

			singleton pregnancies				(56.4% in low back but this is not clearly defined)	
Lindal *et al.* 2000	Iceland	Prospective cohort	Consecutive women admitted to the maternity ward	Questionnaire (pain VAS) filled in after delivery & 3 months postpartum (low back pain defined as pain in lumbosacral area i.e. PLPP)	n=111, Mixed parity	4days pp, 3 months pp	58.5% PLPP (pain in lumbo-sacral region) during pregnancy	44% 4 days postpartum and 31.5% 3 months postpartum point prevalence of LPP in all participants. 75% of women with pain during pregnancy had persistent PLPP 4 days postpartum and 54% had persistent

								PLPP 3 months postpartum
Albert *et al.* 2002	Denmark	Prospective cohort	Consecutive women presenting at maternity hospital. Women with pain from pelvic joints objectively confirmed were allocated to the PPGP group.	Questionnaire (pain location, pain VAS) + physical examination	n=1789; Mixed parity	33 weeks pregnant, and 1, 3, 6, 12, 18, 24 months pp	23% (405) had PPGP	63% of women with PPGP were pain free within 1 month postpartum; 8.6% (29 of 405) persistent daily PPGP 2 years postpartum
Stapleton *et al.* 2002	Australia	Observational (crossectional)	South Australian Health Omnibus Population Surveys; only women who were/had been pregnant were included in the analysis.	Structured telephone interview (4-point severity scale for PLBP, but PLBP not clearly defined)	n=1120 (women of the cohort who had been/were pregnant ≥20weeks)		35.5% (397) reported PLBP during 1 or more pregnancies of which 61.8% had had at least moderately severe PLBP	

Wang *et al.* 2004	USA	Observational (crossectional)	All pregnant women participating in prenatal care clinics and educational classes	Questionnaire (pain location, severity, disability)	n=950, Mixed parity	61.9% completed the questionnaire in their 1st trimester, 23.9% in 2nd trimester, 0.4% in 3rd trimester of pregnancy	68.5% (645) had PLBP (but PLBP not clearly defined in terms of location). Of the women with PLBP 37% reported LBP before pregnancy.	
Nilsson-Wikmar *et al.* 2005	Sweden	Randomised assessor-blinded trial: 3 intervention arms: (1) information, (2) information + home exercises, (3) information+ in clinic exercises)	All women ≥35 weeks pregnant with back pain (≥ 3 +ve pelvic provocation tests & -ve lumbar findings were considered to have PPGP)	Questionnaire (pain location, pain VAS, DRI) + physical examination	n=118 (women with PPGP in trial), Mixed parity	3, 6, 12 months postpartum		43% (1), 65% (2), 66% (3) had persistent PPGP 3 months postpartum (pp); 25% (1), 29% (2), 68% (3) 6 month pp; and 52% (1), 58% (2), 57% (3) 12 months postpartum
Padua *et al.* 2005	Italy	Prospective cohort	Women in 8th or 9th month pregnant	Roland questionnaire (back pain location not	n=76 (at follow up n=57), Mixed parity	1 yr postpartum	68% had back pain during pregnancy	51.2% (21 of 41 who had back pain during

				specified in paper)				pregnancy) had persistent back pain 1 yr postpartum
Van de Pol *et al.* 2007	Netherlands	Prospective cohort	Nulliparous pregnant women attending antenatal clinics	Questionnaire (pain drawing, Pelvic Mobility Index); examined for Pelvic Instability (PI) but no clear definition outlined	n=672, nulliparous	12 weeks & 36 weeks pregnant, 3 months & 1 yr postpartum	0.5% at 12 weeks & 7.3% at 36 weeks had PI	4.4% & 2.4% had persistent PI 3months & 12 months postpartum
Gutke *et al.* 2006, Gutke *et al.* 2008, Gutke *et al.* 2011	Sweden	Prospective cohort	All pregnant women attending antenatal clinics	Questionnaire (pain drawing, pain VAS) + physical examination	n=308, Mixed parity	12-18 weeks pregnant, 3 months postpartum	62% had PLPP (33%, 11% & 17% had PPGP, PLBP & combined pain respectively) (n=308)	33% had persistent PLPP (17%, 11% & 5% had persistent PPGP, PLBP & combined pain respectively) (n=272)
Rost *et al.* 2004	Netherlands	Prospective cohort	All pregnant women consulting the physiotherapist because they had pelvic pain	Questionnaire (pain location) + physical examination	n=870, Mixed parity	Between 6-41 weeks pregnant (mean 26.3)	76.6% had pain in SI joint area, and 57.2% had pain around pubic	

							symphysis area	
Rost *et al.* 2006 (Follow-up study of Rost *et al.* 2004)				Follow-up questionnaire (pain location, severity)	n=430, Mixed parity	18 months postpartum		10% had moderate to severe persistent PPGP
Bastiaenen *et al.* 2006	Netherlands	RCT within a longitudinal cohort study (only baseline considered for this purpose)	Women who wanted treatment for back/pelvic girdle pain 2 weeks after delivery	Questionnaire (pain, activity limitations) + physical examination	n=896, Mixed parity	3 weeks postpartum		14.5% (126/869) had persistent PLPP 3 weeks postpartum. Of the 126, 39% had lumbar, 54% SI joints, 67% pubic symphysis pain 3 weeks postpartum.
Mogren 2005	Sweden	Prospective cohort	All pregnant women attending antenatal clinics	Questionnaire (pain drawing, pain VAS) completed within 2 days of delivery. PLPP defined as: recurrent or	n=891, Mixed parity	Within 2 days of delivery (data collected retrospectively) .	71.7% (639) had PLPP; 12.1% only anterior PPGP; 28% only posterior PLPP; 59.8% combined	

				continuous pain for more than 1 week from the lumbar spine or pelvis.			anterior & posterior pain.	
Mogren 2006, Mogren 2007a, Mogren 2007b, Mogren 2008 (Follow-up of Mogren 2005)					n=464 (77% response rate of 639 who had PLPP)	6 months postpartum		43.1% had persistent PLPP 6 months postpartum (6.9% continuous, 36.2% recurrent)
Bergstrom *et al*. 2014 (Follow-up of Mogren 2005 & Mogren 2006)					n=176 (of 200 who still had PLPP at 6 months postpartum, 24 lost to follow up; Mogren et al 2006)	14 months postpartum		65.3% (115) & 15.3% (27) had persistent recurrent or continuous PLPP

Morkved *et al.* 2007	Norway	RCT (prevention study)	Nulliparous pregnant women attending antenatal clinic (recruited at 12 weeks gestation)	Questionnaire: lumbopelvic pain (pain drawing) once a week or more	n=301, Nulliparous	36 weeks pregnant, 3 months pp	44% of intervention group & 56% of controls had PLPP at 36 weeks gestation.	26% of intervention & 37% of control group had LPP 3 months postpartum
Granath *et al*. 2006	Sweden	RCT (prevention study)	Consecutive pregnant women registering for antenatal care	Self-reported pain + physical examination	n=390, Mixed parity	Average of 19 weeks gestation at study enrolment, but unclear when follow up was.	42% had PLBP or PPGP or both. 25 % had PPGP. (For PLBP there was a significant difference between intervention arms; 25% versus 14% had PLBP in the 2 interventions)	
Robinson *et al.* 2006	Norway	Retrospective cohort	all women 18-40 years old	Questionnaire: ‘‘Did you have	n=1817, Mixed parity	Collected retrospectively.	46% (843/1817)	

			with a prior delivery	pain in the pelvic girdle during your last pregnancy?'' (yes/no), and ''If you had pain in the pelvic girdle during your last pregnancy, where was the pain located?''			had PPGP (19% had anterior PPGP, 14% posterior PPGP, 4% anterior and unilateral posterior PPGP, and 5% PGS)	
Mousavi *et al*. 2007	Iran	Observational (crossectional)	All pregnant women between 12 and 36 weeks, who attended 2 large women's hospitals	Questionnaire including pain VAS (interviewed) + physical examination	n=325, Mixed parity	No follow up.	49.5% (161) reported PLPP (28% (91) PPGP, 13.2% (43) PLBP, 8.3% (27) both, based on clinical tests)	
Smith *et al.* 2008	Australia	Observational (crossectional)	Participants of the Australian Longitudinal Study on Women's Health (ALSWH)	Questionnaire (4-point frequency scale of back pain). Back pain could include posterior PPGP according	n=541 (pregnant women of the cohort), Mixed parity	Questionnaire completed during pregnancy, but no exact timing given.	24% of pregnant women reported having back pain 'rarely,' 36%	

				to authors depending on the women's interpretation.			'sometimes' and 19% 'often (in the 12 month before completing the questionnaire)	
Olsson *et al.* 2009	Sweden	Prospective cohort	All pregnant women attending antenatal clinics	Questionnaire (Pain location, pain VAS, disability)	n=324, Mixed parity	Between 19-21 weeks. No follow up	44% (141) PLPP of which 20% started before 12 weeks, 69% between 12-20 weeks & 10% after 20 weeks.	
Olsson *et al.* 2012 (Follow-up of Olsson *et al.* 2009)					n=273 (84% retention of 324)	6 months postpartum		15.8% of all women had persistent PLPP 6 months postpartum (=38.4% of women with PLPP). 13% of all women had new onset LPP postpartum.

Robinson *et al*. 2010a, b and c	Norway	Prospective cohort	All women attending antenatal clinic	Questionnaire (pain drawing, pain VAS, disability) + physical examination	n=283, Mixed parity	At 30 weeks gestation. (No follow up)	5% PLBP, 52% PPGP and 25% had both. Of those with PPGP or combined PPGP/PLBP, 7% had only PS pain, 45% posterior pain, 8% PS and unilateral posterior pain, 17% PS and bilateral posterior pain.	
Robinson *et al.* 2014 (Follow-up of Robinson *et al*. 2010				Questionnaire (pain drawing, pain VAS, disability)	n=216	12 weeks pp, 1 yr postpartum		31% PGP 12 weeks pp. 30% PGP 1 yr postpartum. 69% of women reporting PGP 12 weeks postpartum also reported PGP 1 yr postpartum. Only 3% of

								women reporting PGP 1 yr postpartum had not had PPGP.
Chang *et al*. 2011	Taiwan	Observational (crossectional)	Consecutive pregnant women were recruited through OBS-GYN outpatient clinics between 35 & 41 weeks gestation	Questionnaire (Brief Pain Inventory)	n=187, Mixed parity	Between 35 & 41 weeks gestation (no follow up)	74.9% (140) PLPP, (72.9% had no history of LPP before pregnancy)	
Bjelland *et al*. 2013a	Norway	Prospective cohort	All pregnant women scheduled to give birth at 50 hospitals were targeted for recruitment into the Norwegian Mother & Child Cohort Study	Questionnaire with questions: 'Do you have pain in the pelvic girdle?' and 'If you have pain in the pelvic girdle, where is the pain located?'	n=91721, Mixed parity (43593 primiparous, 48128 multiparous)	Questionnaire competed 3rd trimester.	14.8% reported PGS during 3rd trimester	
Bjelland *et al*. 2013b (same cohort as					n=73418, Mixed parity	17 weeks, 30 weeks, 6 months postpartum	21.1% had PPGP at 17 weeks, 58% (41241)	22% (9909/ 41241) persistent PPGP, 3% had persistent PGS,

Bjelland *et al.* 2013a)							PPGP at 30 weeks	(1252/41421), 0.5% (196/41 421) severe persistent PGS 6 months postpartum
Gjestland *et al*. 2013	Norway	Observational (crossectional)	Women were recruited at the routine foetal ultrasound examination in pregnancy week 17	Questionnaire (yes/no question for PLBP & PPGP)	n=2753, Mixed parity	32 weeks gestation	51.2% had PLBP, 51.7% PPGP	
Al-Sayegh *et al.* 2012	Kuwait	Observational (crossectional)	Pregnant women visiting women's health clinics, as well as the Maternity Hospital of Kuwait, and public venues	Questionnaire (Pain diagram, pain VAS)	n=280, Mixed parity	13.2% in 1st trimester, 43.9% in 2nd trimester, 42.9% in 3rd trimester when completing questionnaire	81% PLPP of which 36.2% PLBP, 15.8% PPGP and 29% both.	

Pierce *et al.* 2012	Australia	Observational (crossectional)	Women with a singleton pregnancy attending their antenatal appointment	Questionnaire (pain diagram, pain VAS, disability)	n=96, Mixed parity	Completed in their third trimester (from 28 weeks gestation). No follow up.	71% (68/96) PLPP period prevalence current pregnancy & 34% (33/96) point prevalence. Of the 68 with PLPP 17% (11/68) had PLBP, 33% (21) PPGP, 50% (32/68) both.	
Stafne *et al*. 2012	Norway	RCT (prevention study)	All pregnant women attending antenatal clinics; recruited around 18 weeks	Question: Do you have pain in the pelvic and/or lumbar area?" (Yes=PLPP), pain VAS, disability	n=761 (396 intervention, 365 control), Mixed parity	After a 12 week intervention	74% (564/761) reported PLPP (No difference in PLPP prevalence after intervention in the 2 groups)	

Thorell *et al.* 2012	Sweden	Prospective cohort	All pregnant women attending antenatal clinics	Questionnaire (pain drawing, pain VAS)	n=520, Mixed parity	24, 30, 36 weeks gestation, and 22 weeks postpartum	6% lumbar, 32 % lumbosacral, 30% sacral pain, 14% ≥1 area at 24 weeks. 7% lumbar, 37 % lumbosacral, 32% sacral pain, 17% ≥1 area at 30 weeks. 6% lumbar, 35 % lumbosacral, 31% sacral pain, 17% ≥1 area at 36 weeks.	7% lumbar, 24 % lumbosacral, 11% sacral pain, 11% ≥1 area 22 weeks postpartum
Kovacs *et al*. 2012	Spain	Observational (crossectional)	pregnant women (28 weeks or more) attending a primary care or hospital centre	Questionnaire (pain drawing, pain VAS)	n=1158, Mixed parity	31-38 weeks pregnant; median 35 weeks. (No follow up)	71.3% PLBP, 64.7% PPGP (4 week prevalence)	
Eggen *et al.* 2012	Norway	RCT (prevention study)	All pregnant women before	Questionnaire (yes/no question for PLBP &	n=257, Mixed parity	20, 24, 28, 32, 36 weeks gestation	18% had PPGP & 29% PLBP at 20	

			20 weeks gestation	PPGP, pain NRS, Roland Morris disability questionnaire)			weeks. 31% PPGP & 31% PLBP at 24 weeks. 37% PPGP & 38% PLBP at 28 weeks. 45% PPGP & 40% PLBP at 32 weeks. 51% PPGP & 44% PLBP at 36 weeks gestation (there was no difference between intervention & control hence the prevalence is presented together)	
Malmqvist *et al.* 2012	Norway	Retrospective cohort	All term singleton pregnancies of at least 36 weeks, recruited within	Questionnaire (pain location, pain NRS, disability)	n=1204, Mixed parity	Questionnaire completed retrospectively 24h after delivery. (No follow up)	13% mild PLPP, 57.4% moderate-severe PLPP (10% PLBP, 26% PPGP,	

			hours after delivery				21.6% both). Of all women with PPGP 32.5% pain all pelvic joints, 19.3% pubic symphysis, 23.9% 1 SI joint, 17.2% both SI joints, 2% other, 5.2% missing.	
Mens *et al*. 2012	Netherlands	Observational (crossectional)	All pregnant women between 20 and 30 weeks of pregnancy visiting the participating practices	Question 'D0 you experience low back and/or pelvic pain at this moment or during the previous seven days?' (yes=LPP), questionnaire (pain location, pain NRS, disability)	n=182, Mixed parity	Questionnaire completed between 20-30 weeks pregnant. (No follow up)	60.4% (110/182) PLPP (Of these 110 women; 5.1% pubic symphysis only, 24.2% unilateral PPGP, 36.4% bilateral PPGP, 3% unilateral and pubic symphysis PPGP, 13.1% bilateral and	

							pubic symphysis PPGP, 7.1% PLBP only). In 65.5% the pain was pregnancy-related (current or previous pregnancy.	
Stomp-van den berg *et al.* 2012	Nether-lands	Prospective cohort	Dutch pregnant employees	Questionnaire (pain location, pain NRS)	n=548, Mixed parity	12 weeks gestation, 6 & 12 weeks postpartum	73% PPGP at 30 weeks gestation	48% had PGP between 0-6 week postpartum, 43% PGP between 6-12 week postpartum. 25% of women who had PGP 12 weeks postpartum did not have PGP 0-6 weeks postpartum.
Brown *et al.* 2013	UK	Retrospective cohort	Mothers with an infant aged zero to six	Questionnaire (pain location, pain VAS)	n= 580, Mixed parity	0-6 months postpartum	12.4% PLBP, 12% PPGP in 1st trimester;	

			months through mother & baby groups and online forums			(data collected retrospectively)	21.5% PLBP, 34.5% PPGP in 2nd trimester; 68.2% PLBP, 79.9% PPGP in 3rd trimester	
Filipec *et al.* 2013	Croatia	Observational (crossectional)	Women attending antenatal clinics	Questionnaire (pain location) + physical examination	n=600 (200 in each trimester), Mixed parity	1st, 2nd or 3rd trimester of pregnancy	38.8% sacroiliac dysfunction incidence in pregnancy (6.5% in the 1st, at 32% in the 2nd, and 78% in the 3rd trimester.)	
Mukkan-navar *et al*. 2013 & 2014	India	Observational (crossectional)	Pelvic girdle pain after childbirth: the impact of mode of delivery	Questionnaire (pain location) + physical examination	n=284, Mixed parity	Postpartum within 1 year of giving birth (no data was collected from during pregnancy)		42.3% had PGP (10.6% single SI joint, 13% both SI joints, 9.5% both SI joints & PS, 9.2% PS)
Lindgren *et al.* 2014	Sweden	Prospective cohort	All pregnant women attending	Questionnaire (pain drawing, pain VAS)	n=200, Mixed parity	11, 24, 36 weeks gestation & 13 weeks pp	19%, 47%, 49% back pain at 11, 24, 36 weeks	9% back pain 13 weeks postpartum (of which 88%

			antenatal clinics				gestation (back pain included cervical, thoracic, lumbar and sacral pain).	sacral & 12% lumbar)

Studies excluded from table (and reason why):

- Intervention studies were excluded from the table except if they examined preventative intervention and thus followed a whole cohort regardless of whether they had symptoms or not.
- Cohort studies examining the characteristics of women with PPGP/PLBP/PLPP and hence only include these women in their study, not providing details of the prevalence

Appendix 2: Systematic review search strategy

Database (Date searched)	Filters	Search	Nb of citations Search 4/12/2014
PubMed (04/12/2014)	None	(“low back pain”[Mesh] OR “pelvic pain”[Mesh] OR “sacroiliac joint”[Mesh] OR “pelvis”[Mesh] OR “pubic symphysis”[Mesh] OR “sacrum”[Mesh] OR pelvic OR pelvis OR sacroiliac OR “sacro iliac” OR sacral OR sacrum OR “pubic symphysis” OR “symphysis pubis” OR symphyseal OR lumbopelvic OR lumbar OR back) AND (“pain”[Mesh] OR pain OR instability OR insufficiency OR subluxation) AND (“pregnancy”[Mesh] OR “pregnancy complications”[Mesh] OR “postpartum period”[Mesh] OR “parturition”[Mesh] OR pregnancy OR “ante natal*” OR prenatal* OR antenatal* OR “pre natal*” OR “prenatal*” OR birth* OR childbirth OR perinatal* OR “peri natal*” OR postpartum OR “post partum” OR postnatal* OR “post natal*”) AND (“prognosis”[Mesh] OR “risk factors”[Mesh] OR prognos* OR risk* OR predict* OR persist*)	1738
CINAHL (04/12/2014)	None	((MH "Pelvis") OR (MH "Pelvic Pain") OR (MH "Sacroiliac Joint") OR (MH "Sacroiliac Joint Dysfunction") OR (MH "Pubic Symphysis") OR (MH "Low Back Pain") OR (MH "Sacrum") OR pelvic OR pelvis OR sacroiliac OR “sacro iliac” OR sacral OR sacrum OR “pubic symphysis” OR “symphysis pubis” OR symphyseal OR lumbopelvic OR lumbar OR back) AND ((MH "Pain") OR pain OR instability OR insufficiency OR subluxation) AND ((MH "Pregnancy") OR (MH "Childbirth") OR (MH "Vaginal Birth") OR (MH "Term Birth") OR (MH "Postnatal Period") OR pregnancy OR “ante natal*” OR antenatal* OR prenatal* OR “pre natal*” OR birth OR childbirth OR perinatal* OR “peri natal*” OR postpartum OR “post partum” OR postnatal* OR “post natal*”) AND ((MH "Prognosis") OR (MH "Risk Assessment") OR prognos* OR risk* OR predict* OR persist*)	278

Maternity and Infant Care-MIDIRS online (04/12/2014)	None	(“low back pain”.de. or “low back pain”.mp. or “pelvic pain”.de. or “sacroiliac joint”.de. or “pubic symphysis”.de. or pelvic.mp. or pelvis.mp. or sacroiliac.mp. or “sacro iliac”.mp. or “pubic symphysis”.mp. or “symphysis pubis”.mp. or sacrum.mp. or sacral.mp. or symphyseal.mp. or lumbopelvic.mp. or back.mp.) and (pain.de. or pain.mp. or instability.mp. or insufficiency.mp. or subluxation.mp.) and ((pregnancy or “postnatal period”).de. or pregnancy.mp. or antenatal*.mp. or “ante natal*”.mp. or prenatal*.mp. or “pre natal*”.mp. or postnatal*.mp. or “post natal*”.mp. or birth.mp. or childbirth.mp. or postpartum.mp. or “post partum”.mp. or perinatal*.mp. or “peri natal*”.mp.) and (prognos* or risk* or predict* or persist*).mp PS: For some reason you have to retype the quotation marks in the database, because when you copy and paste them it does not except them	184
PsycINFO (04/12/2014)	None	(DE "Back (Anatomy)" OR DE "Back Pain" OR pelvic OR pelvis OR sacroiliac OR “sacro iliac” OR sacral OR sacrum OR pubic symphysis OR symphysis pubis OR symphyseal OR lumbopelvic OR lumbar OR back) AND (DE "Pain" OR DE "Chronic Pain" OR DE "Myofascial Pain" OR DE "Pain Perception" OR pain OR instability OR insufficiency OR subluxation) AND (DE "Pregnancy" OR DE "Prenatal Exposure" OR DE "Prenatal Care" OR DE "Perinatal Period" OR DE "Labor (Childbirth)" OR DE "Birth" OR DE "Postnatal Period" OR DE "Pregnancy Outcomes" OR DE "Birth Injuries" OR DE "Birth Trauma" OR DE "Obstetrical Complications" OR pregnancy OR “ante natal*” OR antenatal* OR prenatal OR “pre natal*” OR birth OR childbirth OR perinatal* OR “peri natal*” OR postpartum OR “post partum” OR postnatal* OR “post natal*”) AND (DE "Prognosis" OR DE "Disease Course" OR DE "Prediction" OR DE "Protective Factors" OR DE "Risk Assessment" OR DE "At Risk Populations" OR DE "Risk Factors" OR DE "Persistence" OR prognos* OR risk* OR predict* OR persist*)	62
EMBASE (04/12/2014)	(without MEDLINE)	(('low back' OR 'pelvic girdle' OR 'sacroiliac joint' OR 'sacroiliac joints' OR pelvis OR pelvic OR lumbar OR pelvic OR sacroiliac OR 'sacro iliac' OR sacral OR sacrum OR coccyx OR coccygeal OR 'symphysis pubis' OR 'pubic symphysis' OR symphyseal OR lumbopelvic OR back) AND (pain OR instability OR insufficiency OR subluxation) AND (pregnancy OR parturition OR 'ante natal' OR 'ante natally' OR prenatal* OR ‘pre natal’ OR ‘pre natally’ OR antenatal* OR birth OR childbirth OR perinatal* OR ‘peri natal’ OR ‘peri natally’ OR postpartum OR 'post partum' OR postnatal* OR ‘post natal’ OR ‘post natally’) AND (risk* OR predict* OR prognos* OR persist*) NOT (fibroid* OR endometriosis OR cyst* OR haemorrhage OR neoplasm OR cancer OR malignant OR 'pelvic inflammatory disease' OR salpingitis OR osteoporosis OR placenta OR placental OR ultrasound))	830

Initial searches	Number of citations
PubMed	1738
CINAHL	278
MIDIRS	184
PsycINFO	62
Embase	830
Following initial duplicate detection in Endnote (order of importing: Pubmed, CINAHL, MIDIRS, PsycINFO, EMBASE)	
PubMed	1730
CINAHL	98
MIDIRS	39
PsycINFO	21
Embase	495
TOTAL	2383

Appendix 3: Modified QUIPS tool to assess Risk of bias (ROB) in studies examining risk factors (RF) for PPGP/PLBP/PLPP

Modified QUIPS tool to assess Risk of bias (ROB) in studies examining risk factors (RF) for PPGP/PLBP/PLPP

Reference:

Date of ROB assessment:

Reviewer:

BIAS DOMAINS	(There are 6 domains to assess)	**Study method & comments**	**Rating of reporting**
1. Study Participation	(To judge the risk of selection bias)		(Yes, partial, no or unsure)
Optimal study or characteristics of unbiased study:	The study sample adequately represents the population of interest.		
Issues to consider:	***a. Description of the source population or population of interest***		
	The source population or population of interest is adequately described, including who the target population is (pregnant women), when (time period of study), where (location), and how (description of recruitment strategy). *Comprehensive description would include characteristics of: the individual (e.g., age, parity, weeks of gestation, marital status, work status), history of (P)LBP/(P)PGP/(P)LPP).*		
	b. Methods used to identify population		
	The sampling frame and recruitment (e.g. presentation to maternity hospital) are adequately described, including methods to identify the sample is sufficient to limit potential bias.		
	c. Recruitment period		
	Period of recruitment is adequately described.		
	d. Place of recruitment		
	Place of recruitment (setting and geographic location) are adequately described.		

	e. Description of inclusion & exclusion criteria		
	Inclusion and exclusion criteria are adequately described and should define a group pregnant women.		
	f. Adequate participation in the study by eligible persons		
	There is adequate participation in the study by eligible individuals.		
	g. Baseline characteristics		
	The baseline study sample (i.e., individuals entering the study) is adequately described. Comprehensive description would include characteristics of: individual (e.g., age, parity, weeks of gestation, marital status, work status), history of (P)LBP/(P)PGP/(P)LPP.		
		Rating:High risk of bias:The relationship between the RF and outcome is very likely to be different for participants and eligible non-participants.**Moderate** risk of bias:The relationship between the RF and outcome may be different for participants and eligible non-participants.**Low** risk of bias:The relationship between the RF and outcome is unlikely to be different for participants and eligible non-participants.	

2. Study Attrition	(To judge the risk of attrition bias)		
Optimal study or characteristics of unbiased study:	The study data available (i.e. participants not lost to follow-up) adequately represent the study sample.		
Issues to consider:	***a. Proportion of baseline sample available for analysis***		
	Response rate (i.e., proportion of study sample completing the study and providing outcome data) is adequate (>70%)		
	b. Attempts to collect information on participants who dropped out		
	Attempts to collect information on participants who dropped out of the study are described.		
	c. Reasons and potential impact of subjects lost to follow-up		
	Reasons for loss to follow-up are provided.		
	d. Outcome and risk factor information on those lost to follow-up		
	Participants lost to follow-up are adequately described for characteristics of: individual (e.g., weeks of gestation, age, parity, marital status, work status), history of (P)LBP/(P)PGP/(P)LPP.		
		Rating: **High** risk of bias: The relationship between the RF and outcome is very likely to be different for completing and non-completing participants. **Moderate** risk of bias: The relationship between the RF and outcome may be different for completing and non-completing participants. **Low** risk of bias: The relationship between the RF and outcome is unlikely to be different for completing and non-completing participants.	

3. Risk Factor Measurement	(To judge the risk of measurement bias related to how the risk factor(s) of interest were measured)		
Optimal study or characteristics of unbiased study:	The RF is measured in a similar way for all similar way for all participants.		
Issues to consider:	***a. Definition of RF***		
	A clear definition or description of the RF(s) is provided.		
	b. Valid and reliable measurement of RF		
	Method of RF(s) measurement is adequately valid and reliable to limit misclassification bias (e.g. may include relevant outside sources of information on measurement properties and characteristics). Continuous variables are reported where appropriate, or appropriate cut-points (i.e., not data-dependent) are used.		
	c. Method and setting of RF measurement		
	The method and setting of measurement of RF(s) of interest is the same for all study participants.		
	d. Proportion of data on RF available for analysis		
	Adequate proportion of the study sample has complete data for the RF(s) variable(s).		
	e. Methods for missing data		
	Appropriate methods of imputation are used for missing RF data.		

		Rating: **High** risk of bias: The measurement of the RF is very likely to be different for different levels of the outcome of interest. **Moderate** risk of bias: The measurement of the RF may be different for different levels of the outcome of interest. **Low** risk of bias: The measurement of the RF is unlikely to be different for different levels of the outcome of interest.	

4. Outcome Measurement	(To judge the risk of measurement bias related how PPGP, PLBP or PLPP were measured)		
Optimal study or characteristics of unbiased study:	The outcome of interest is measure in a similar way for all participants.		
Issues to consider:	***a. Definition of outcome***		
	A clear definition of the PPGP/PLBP/PLPP outcome is provided (e.g. self-reported or physician examination, timing, dichotomous or continuous)		
	b. Valid and reliable measurement of outcome		
	The method of outcome measurement used is adequately valid and reliable to limit misclassification bias (e.g., may include relevant outside sources of information on measurement properties and characteristics, such as blind measurement and confirmation of outcome with valid and reliable test). Valid and reliable PPGP/PLBP/PLPP outcome measures include: pain location measured by pain diagram, pain intensity measured by a visual analogue scale (VAS) or other pain scale (for example, numeric rating scale, or McGill pain score), functional status measured by a PGP- or LBP-specific scale (e.g., Pelvic Girdle Questionnaire, the Roland-Morris Disability Questionnaire, the Oswestry Disability Index). Current recommendations for the diagnosis of PPGP include a physical examination that includes specific clinical tests to rule out serious pathology and differentiate PPGP from PLBP (Vleeming et al. 2008).		
	c. Method and setting of outcome measurement		
	The method and setting of outcome measurement is the same for all study participants.		

		<u>Rating:</u> **High** risk of bias: The measurement of the outcome ¡s very likely to be different related to the baseline level of the RF. **Moderate** risk of bias: The measurement of the outcome may be different related to the baseline level of the RF. **Low** risk of bias: The measurement of the outcome ¡s unlikely to be different related to the baseline level of the RF.	

5. Study Confounding	(To judge the risk of bias due to confounding)		
Optimal study or characteristics of unbiased study:	Important potential confounding factors are appropriately accounted for.		
Issues to consider:	***a. Important confounders measured***		
	All important potential confounders are measured, including appropriate factors of the domains: individual (general demographic), physical (e.g. history of (P)PGP/(P)LBP/(P)LPP), psychological, work environment, and social support factors.		
	b. Definition of confounding factor(s)		
	Clear definitions of the important confounders measured are provided (e.g., including dose, level, and duration of exposures).		
	c. Valid and reliable measurement of confounders		
	Measurement of all important confounders is adequately valid and reliable (e.g., may include relevant outside sources of information on measurement properties, also characteristics, such as blind measurement and limited reliance on recall).		
	d. Method and setting of confounder measurement		
	The method and setting of confounding measurement are the same for all study participants.		
	e. Method used for missing data		
	Appropriate methods are used if imputation is used for missing confounder data.		
	f. Appropriate accounting for confounding		
	Important potential confounders are accounted for in the study design (e.g. matching for key variables, stratification, or initial assembly of comparable groups). Important potential confounders are accounted for in the analysis (i.e., appropriate adjustment).		

		<u>Rating:</u> **High** risk of bias: The observed effect of the RF on the outcome is very likely to be distorted by another factor related to RF and outcome. **Moderate** risk of bias: The observed effect of the RF on the outcome may be distorted by another factor related to RF and outcome. **Low** risk of bias: The observed effect of the RF on the outcome unlikely to be distorted by another factor related to RF and outcome.	

6. Statistical Analysis and Reporting	(To judge the risk of bias related to the statistical analysis and presentation of results)		
Optimal study or characteristics of unbiased study:	The statistical analysis is appropriate, and all primary outcomes are reported		
Issues to consider:	***a. Presentation of analytical strategy***		
	There is sufficient presentation of data to assess the adequacy of the analysis.		
	b. Model development strategy		
	If statistical modelling is done, the strategy for model building (i.e., inclusion of variables in the statistical model) is appropriate and is based on a conceptual framework or model. The selected statistical model is adequate for the design of the study.		
	c. Reporting of results		
	There is no selective reporting of results.		
		<u>Rating:</u> **High** risk of bias: The reported results are very likely to be spurious or biased related to analysis or reporting. **Moderate** risk of bias: The reported results are very likely to be spurious or biased related to analysis or reporting. **Low** risk of bias: The reported results are very likely to be spurious or biased related to analysis or reporting.	

Appendix 4: Modified QUIPS tool to assess Risk of bias (ROB) in studies examining prognostic factors (PF) for PPGP/PLBP/PLPP

Modified QUIPS tool to assess Risk of bias (ROB) in studies examining prognostic factors (PF) for PPGP/PLBP/PLPP			
Reference:			
Date of ROB assessment:			
Reviewer:			
BIAS DOMAINS		**Study method & comments**	**Rating of reporting**
1. Study Participation	(To judge the risk of selection bias)		(Yes, partial, no or unsure)
Optimal study or characteristics of unbiased study:	The study sample adequately represents the population of interest.		
Issues to consider:	***a. Description of the source population or population of interest***		
	The source population or population of interest is adequately described, including who the target population is (women with PPGP), when (time period of study), where (location), and how (description of recruitment strategy). *Comprehensive description would include characteristics of: individual (e.g., age, parity, weeks of gestation, marital status, work status), PPGP/PLBP/PLPP (e.g. history of (P)LBP/(P)PGP/(P)LPP, pain location/intensity, functioning, any treatment received).*		
	b. Methods used to identify population		
	The sampling frame and recruitment (e.g. presentation to maternity hospital) are adequately described, including methods to identify the sample is sufficient to limit potential bias. This should include how PPGP/PLPB/PLPP was determined.		
	c. Recruitment period		
	Period of recruitment is adequately described.		

	d. Place of recruitment		
	Place of recruitment (setting and geographic location) are adequately described.		
	e. Description of inclusion & exclusion criteria		
	Inclusion and exclusion criteria are adequately described and should define a group with PPGP/PLBP/PLPP (e.g. the study may include questions asked in survey to determine PPGP/PLBP/PLPP, physician diagnosis or explicit diagnostic codes)		
	f. Adequate participation in the study by eligible persons		
	There is adequate participation in the study by eligible individuals.		
	g. Baseline characteristics		
	The baseline study sample (i.e., individuals entering the study) is adequately described. *Comprehensive description would include characteristics of: individual (e.g., age, parity, weeks of gestation, marital status, work status), PPGP/PLBP/PLPP (e.g. history of (P)LBP/(P)PGP/(P)LPP, pain location/intensity, functioning, any treatment received).*		
		Rating: **High** risk of bias: The relationship between the PF and outcome is very likely to be different for participants and eligible non-participants. **Moderate** risk of bias: The relationship between the PF and outcome may be different for participants and eligible non-participants. **Low** risk of bias: The relationship between the PF and outcome is unlikely to be different for participants and eligible non-participants.	

2. Study Attrition	(To judge the risk of attrition bias)		
Optimal study or characteristics of unbiased study:	The study data available (i.e. participants not lost to follow-up) adequately represent the study sample.		
Issues to consider:	***a. Proportion of baseline sample available for analysis***		
	Response rate (i.e., proportion of study sample completing the study and providing outcome data) is adequate (>70%)		
	b. Attempts to collect information on participants who dropped out		
	Attempts to collect information on participants who dropped out of the study are described.		
	c. Reasons and potential impact of subjects lost to follow-up		
	Reasons for loss to follow-up are provided.		
	d. Outcome and prognostic factor information on those lost to follow-up		
	Participants lost to follow-up are adequately described for characteristics of: individual (e.g., weeks of gestation, age, parity, marital status, work status), PPGP/PLBP/PLPP (e.g. history of (P)LBP/(P)PGP/(P)LPP, pain location/intensity, functioning, any treatment received).		

		<u>Rating:</u> **High** risk of bias: The relationship between the PF and outcome is very likely to be different for completing and non-completing participants. **Moderate** risk of bias: The relationship between the PF and outcome may be different for completing and non-completing participants. **Low** risk of bias: The relationship between the PF and outcome is unlikely to be different for completing and non-completing participants.	

3. Prognostic Factor Measurement	(To judge the risk of measurement bias related to how the prognostic factor(s) of interest were measured)		
Optimal study or characteristics of unbiased study:	The PF is measured in a similar way for all similar way for all participants.		
Issues to consider:	***a. Definition of PF***		
	A clear definition or description of the PF(s) is provided.		
	b. Valid and reliable measurement of PF		
	Method of PF(s) measurement is adequately valid and reliable to limit misclassification bias (e.g. may include relevant outside sources of information on measurement properties and characteristics). Continuous variables are reported where appropriate, or appropriate cut-points (i.e., not data-dependent) are used.		
	c. Method and setting of PF measurement		
	The method and setting of measurement of PF(s) of interest is the same for all study participants.		
	d. Proportion of data on PF available for analysis		
	Adequate proportion of the study sample has complete data for the PF(s) variable(s).		
	e. Methods for missing data		
	Appropriate methods of imputation are used for missing PF data.		

		<u>Rating:</u> **High** risk of bias: The measurement of the PF is very likely to be different for different levels of the outcome of interest. **Moderate** risk of bias: The measurement of the PF may be different for different levels of the outcome of interest. **Low** risk of bias: The measurement of the PF is unlikely to be different for different levels of the outcome of interest.	

4. Outcome Measurement	(To judge the risk of measurement bias related how persistent PPGP, PLBP or PLPP were measured)		
Optimal study or characteristics of unbiased study:	The outcome of interest is measure in a similar way for all participants.		
Issues to consider:	***a. Definition of outcome***		
	A clear definition of the persistent PPGP/PLBP/PLPP outcome is provided (e.g. self-reported or physician examination, timing, dichotomous or continuous)		
	b. Valid and reliable measurement of outcome		
	The method of outcome measurement used is adequately valid and reliable to limit misclassification bias (e.g., may include relevant outside sources of information on measurement properties and characteristics, such as blind measurement and confirmation of outcome with valid and reliable test). Valid and reliable persistent PPGP/PLBP/PLPP outcome measures include: pain location measured by pain diagram, pain intensity measured by a visual analogue scale (VAS) or other pain scale (for example, numeric rating scale, or McGill pain score), functional status measured by a PGP- or LBP-specific scale (e.g., Pelvic Girdle Questionnaire, the Roland-Morris Disability Questionnaire, the Oswestry Disability Index).		
	c. Method and setting of outcome measurement		
	The method and setting of outcome measurement is the same for all study participants.		

		Rating: **High** risk of bias: The measurement of the outcome ¡s very likely to be different related to the baseline level of the PF. **Moderate** risk of bias: The measurement of the outcome may be different related to the baseline level of the PF. **Low** risk of bias: The measurement of the outcome ¡s unlikely to be different related to the baseline level of the PF.	

5. Study Confounding	(To judge the risk of bias due to confounding)		
Optimal study or characteristics of unbiased study:	Important potential confounding factors are appropriately accounted for.		
Issues to consider:	***a. Important confounders measured***		
	All important potential confounders are measured, including appropriate factors of the domains: individual (general demographic), PPGP/PLBP/PPGP complaint related factors, other physical, psychological, treatment received, work environment, and social support factors.		
	b. Definition of confounding factor(s)		
	Clear definitions of the important confounders measured are provided (e.g., including dose, level, and duration of exposures).		
	c. Valid and reliable measurement of confounders		
	Measurement of all important confounders is adequately valid and reliable (e.g., may include relevant outside sources of information on measurement properties, also characteristics, such as blind measurement and limited reliance on recall).		
	d. Method and setting of confounder measurement		
	The method and setting of confounding measurement are the same for all study participants.		
	e. Method used for missing data		
	Appropriate methods are used if imputation is used for missing confounder data.		
	f. Appropriate accounting for confounding		
	Important potential confounders are accounted for in the study design (e.g. matching for key variables, stratification, or initial assembly of comparable groups). Important potential confounders are accounted for in the analysis (i.e., appropriate adjustment).		

		<u>Rating:</u> **High** risk of bias: The observed effect of the PF on the outcome is very likely to be distorted by another factor related to PF and outcome. **Moderate** risk of bias: The observed effect of the PF on the outcome may be distorted by another factor related to PF and outcome. **Low** risk of bias: The observed effect of the PF on the outcome unlikely to be distorted by another factor related to PF and outcome.	

6. Statistical Analysis and Reporting	(To judge the risk of bias related to the statistical analysis and presentation of results)		
Optimal study or characteristics of unbiased study:	The statistical analysis is appropriate, and all primary outcomes are reported		
Issues to consider:	***a. Presentation of analytical strategy***		
	There is sufficient presentation of data to assess the adequacy of the analysis.		
	b. Model development strategy		
	If statistical modelling is done, the strategy for model building (i.e., inclusion of variables in the statistical model) is appropriate and is based on a conceptual framework or model. The selected statistical model is adequate for the design of the study.		
	c. Reporting of results		
	There is no selective reporting of results.		
		Rating: **High** risk of bias: The reported results are very likely to be spurious or biased related to analysis or reporting. **Moderate** risk of bias: The reported results are very likely to be spurious or biased related to analysis or reporting. **Low** risk of bias: The reported results are very likely to be spurious or biased related to analysis or reporting.	

Appendix 5: Data extraction form for risk factor studies

Risk factors for PPGP, PLBP or PLPP													
Authors	**Year**	**Country**	**Time study was conducted**	**Study design**	**Setting**	**Data collection**	**Participants inclusion & exclusion criteria**	**Number of participants**	**Characteristics of cohort**	**Exposure factor(s)**	**Method of exposure measurement**	**Time of exposure measurement**	**Outcome(s) PPGP (1), PLBP (2) or PLPP (3)**
Study 1													
Study 2													
etc.													

Was the pain location defined?	**Definition/ measurement of outcome**	**No of participants included in analysis**	**No. participants with Exposure + and outcome -**	**No. participants with Exposure + and outcome +**	**No. participants with Exposure - and outcome -**	**No. participants with Exposure - and outcome +**	**Type of Risk estimate used (e.g. Odd ratio)**	**Risk estimate**	**Standard error of estimate**	**Adjusted risk estimate**	**Standard error of adjusted estimate**	**Confounders adjusted for**	**Method of analysis**	**Authors' conclusion**

Appendix 6: Data extraction form for prognostic factor studies

Prognostic factors for PPGP, PLPB or PLPP														
Authors	**Year**	**Country**	**Time study was conducted**	**Study design**	**Setting**	**Data Collection**	**Participants inclusion & exclusion criteria**	**Definition of PPGP (1), PLBP (2), or PLPP (3)**	**Number of participants**	**Characteristics of the cohort**	**Exposure (prognostic factors)**	**Method of exposure measurement**	**Time of exposure measurement**	**Outcomes persistent PPGP (1), PLBP (2) or PLPP (3)**
Study 1														
Study 2														
etc.														

Was the pain location defined?	**Definition/ measure-ment of outcome**	**Time of follow-up**	**No of participants included in analysis**	**No. participants with Exposure + and outcome -**	**No. participants with Exposure + and outcome +**	**No. participants with Exposure - and outcome -**	**No. participants with Exposure - and outcome +**	**Effect estimate used (e.g. odds ratio)**	**effect estimate**	**Standard error of estimate**	**Adjusted effect estimate**	**Standard error of adjusted estimate**	**Confounders adjusted for**	**Method of analysis**	**Author's conclusion**	**Additional comments**

Appendix 7: GRADE assessment template

GRADE assessment RISK and PROGNOSTIC factors

For uni-and multivariate analysis: +, number of significant effects with a positive association; 0, number of non-significant effects; -, number of significant effects with a negative association. For GRADE factors: v, no serious limitations; x serious limitations (or not present for moderate/large effect size, dose effect); unclear, unable to rate item based on available information. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high (if rated even lower than 'very low' then mark in red). Follow Huguet el al. (2013) guidance for rating each domain and Hayden et al. (2008) for deciding the Phase of investigation.

					Univariate			Multivariate		
Potential risk factor identified	**No. of participants**	**No. of papers**	**Reference(s)**	**No. of studies**	**+**	**0**	**-**	**+**	**0**	**-**

GRADE factors										
Phase	**Justification for Phase**	**Dominant Phase****	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**

Appendix 8: Characteristics of included studies (Risk factors)

Explanation of abbreviations: P = Prospective cohort; C = Cross-sectional; R = Retrospective cohort. Records marked in the same colour involved the same cohort/study. '?' = definition not clearly defined												
Reference	**Country**	**Year of study**	**Study design**	**Risk factors reported**	**Outcome(s)**	**Outcome assessment included physical examination**	**Participants with pre-pregnancy history of PGP and/or LBP**	**Participants with pre-pregnancy history of PGP and/or LBP reported separately**	**No primiparous women**	**No of multiparous women**	**Primiparous/multiparous reported separately**	**Comments**
Chang et al 2014	Taiwan	Feb-June 2010; follow-up March-Oct 2010	P	Average pain intensity at GA24 week, LBP history, physical workload, social support, depression, pain catastrophizing, time of gestation	PLPP (excluding anterior PPGP) (Pain interference, pain intensity)	No	Incl.	No	130	81	No	
Bjelland et al 2013a	Norway	1999-2008	P	Combined oral contraceptive pills, Progestin-only contraceptive pills, Progestin injections, Progestin intrauterine devices (in last year before pregnancy); Combined oral contraceptive pills, Progestin-only contraceptive pills, Cessation of oral contraceptives (in 4 months before pregnancy and at time of being pregnant); Life-time duration of oral combined contraceptive pills, Life-time duration of progestin-only contraceptive pills,	PGS[?]	No	Incl.	No	43593	48128	Yes, for some factors	

Explanation of abbreviations: P = Prospective cohort; C = Cross-sectional; R = Retrospective cohort. Records marked in the same colour involved the same cohort/study.												
Reference	**Country**	**Year of study**	**Study design**	**Risk factors reported**	**Outcome(s)**	**Outcome assessment included physical examination**	**Participants with pre-pregnancy history of PGP and/or LBP**	**Participants with pre-pregnancy history of PGP and/or LBP reported separately**	**No primiparous women**	**No of multiparous women**	**Primiparous/multiparous reported separately**	**Comments**
Bakker et al 2013	Nether-lands	Not stated	P	Perceived stress, Pregnancy-related anxiety, Physical and psychological distress, Coping styles	PLPP[?] Operationalized by 2 scales (Pregnancy -Mobility Index & the Overall Complaints Index)	No	Incl.	No	115	107	No	? location not clearly defined
Gjestland et al 2013	Norway	Nov 2008-April 2010	P	Exercise frequency	PLPP[?], PPGP[?]	No	Incl.	No	1700	1782	No	? unclear how might have inter-preted question (no pain diagram)
Al-Sayegh et al 2012	Kuweit	Not stated	C	Maternal age, self-reported height, self-reported weight, Number of previous pregnancies, education, ethnicity, medical conditions, history of PLPP in past pregnancies, history of LPP during menstruation, history of LPP before pregnancy, location of pain, gestational age, BMI, smoking, OCP, spinal epidural anaesthesia, multiple gestations	PLPP	No	Incl.	No	Not stated (280 total)	Not stated (280 total)	No	

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Malmqvist et al 2012	Norway	March-June 2009	R	LBP in previous pregnancies, PGP in previous pregnancies, LBP in the year before pregnancy, PGP in the year before pregnancy, Exercised at least 2-3 times a week before pregnancy, Physically heavy work, primiparous, BMI before pregnancy, physical activity before pregnancy	Moderate to Severe PLBP, Moderate to Severe PPGP, Moderate to Severe PLPP	No	Incl.	No	219	350	No	
Kovacs et al 2012	Spain	Not stated	C	Smoking quantity, education level, work status, physical activity level, Number of previous pregnancies, ≥ 1 previous instrumented delivery, ≥ 1 previous cesarian, ≥ 1 previous epidural anaesthesia, history of LBP during previous pregnancy, history of LBP not related to pregnancy, history of postpartum LBP, Experiencing LBP around the time when getting pregnant, anxiety, depression, BMI, Stage of pregnancy, Depression (BDI-II score), Anxiety (STAI score)	PLBP, PPGP	No	Incl.	No	Not stated (1153 total)	Not stated (1153 total)	No	

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Chang et al 2012	Taiwan	Jan-June 2008	C	Maternal Age, Lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, Monthly income, pain catastrophizing, Average pain intensity this pregnancy,	PLPP[?] (Pain intensity, pain interference)	No	Incl.	No	About 2/3 of pregnant women were primipara. (183 total)	About 1/3 of pregnant women were multipara (186 total)	No	not clear how this pain location was obtained from partici-pants
Bjelland et al 2011	Norway	1999-2009	P	Age of menarche	PGS[?]	No	Incl.	No	34676	42297	No	
Klemetti et al 2011	UK	2006	C	Maternal age, parity	Symphysis pubis dysfunction	No	Incl.	No	Not stated (2825 total)	Not stated (2825 total)	Yes	
Bjelland et al 2010	Norway	1999-2008	P	Parity, Maternal age, BMI, educational level, previous LBP, emotional distress, physically demanding work, smoking, Pre-pregnancy physical activity weekly	PGS[?] Severe PGS[?]	No	Incl.	No	35084	40871	No	

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Robinson et al 2010c	Norway	Jan 2006-June 2007	P	Pain location, DRI in early pregnancy, pain intensity in early pregnancy	PPGP (Disability and pain intensity)	Yes	Incl.	No	157	111	No	
Lebel et al 2010	Israel	2000-2007	R	Previous cesarian section, recurrent abortion, Mild pre-eclampsia, Severe pre-eclampsia, chronic hypertension, Diabetes mellitus (total), Gestational Diabetes mellitus, Pregestational diabetes mellitus, Premature rupture of membranes (PROM)	Symphysiolysis	No	Incl.	No	Not stated (total 80898)	Not stated (total 80898)	No	
Ansari et al 2010	Iran	Not stated	C	Workload, Number of previous pregnancies, Number of prior deliveries, number of abortions, Previous LBP, Trauma during pregnancy, LBP during menstruation,	PLPP[?]	No	Incl.	No	Not stated (103 total)	Not stated (103 total)	No	?Seems that if pain in 'buttock' area this is also included in their group with LBP

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Mohseni-Bandpei et al 2009	Iran	April 2003-July 2005	C	Age, previous LBP, LBP in previous pregnancies, parity, occupation, BMI, living area, General health, educational level, Assistant for housework	PLPP[?]	No	Incl.	No	667	395	No	? Not clear what question was asked to ascertain location
Eberhard-Gran et al 2008	Norway	1998-1999	C	Diabetes, BMI, time since last delivery, age at last delivery, parity,	PGS[?]	No	Incl.	No	533	1283	No	? question open to interpretation (no diagram used)
Albert et al 2006	Denmark	inclusion period of 1 year	P	History of LBP, Trauma to the back, Salpingitis previous year, multipara, OCP, Hormone induced pregnancy, years since last pregnancy, Weight before pregnancy, smoking, height, BMI, Social group 5 (no education), daily stress level, Work satisfaction,	PPGP, PGS, symphysio-lysis, one-sided sacroiliac syndrome, double-sided sacroiliac syndrome	Yes	Incl.	No	1103	1121	No	

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Mogren et al 2005	Sweden	1 January 2002-30 April 2002	C	Occupation, characteristics of occupation, Regular leisure physical activity (RLPA) during some period in life, No. of years of Regular physical leisure activity,	PLPP, High pain score PLPP	No	Incl.	No	Not stated (total 891)	Not stated (total 891)	Yes (only for number of years of regular physical activity)	
Mogren & Pohjanen 2005	Sweden	1 January 2002-30 April 2002	C	Menstruation history, parity, maternal age, educational level, BMI, birthweight, Diagnosed with hypermobility, Diagnosed with hypermobility and/or with a history of hypermobility in the family, History of PLPP in mother, At least 1 sister with history of PLPP, Combined OCP, mini-pills, one or more periods of amenorrhea (irrespective of regular or irregular)	PLPP, High pain score PLPP	No	Incl.	No	375	516	No	

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Wang et al 2004	USA	May 2002-Oct 2003	C	LBP in previous pregnancies, history of non-pregnancy-related LBP, LBP during menstruation, age, African-american women, birth control pill, history of infertility with hormone therapy, Caffeine usage during pregnancy, smoking during pregnancy, Physical exercise before pregnancy, Previous spinal or epidural anaesthesia, Repetitive daily activities, Prepregnancy body weight, Number of pregnancies	PLBP[?]	No	Incl.	No	Not stated (950 in total)	Not stated (950 in total)	No	

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Kumle et al 2004	Norway	1991-1992	C	Hormonal contraceptive use before first birth, age of menarche, Age at first birth, Time elapsed since first birth (per 3 years) (and enrolment in the cohort study), Weight of newborn, years of education, Smoking during first pregnancy, PPGP? in first pregnancy, PPGP? in at least one of the first 2 pregnancies, Did not suffer from PPGP? In the previous 2 pregnancies, PPGP? In first but not in second pregnancy, PPGP? Not in first but in second pregnancy, PPGP? Both in first and in second pregnancy, hormonal contraceptives before first pregnancy, length of hormonal contraceptives before first pregnancy, Progestin-only contraceptives, Combined estrogen-progestin contraceptives	PPGP? PPGP in 1st pregnancy? PPGP in 2nd pregnancy? PPGP in 3rd pregnancy?	No	Incl.	No	307	1587	No	? Question open to interpret-tation
Vangen et al 1999	Norway	1 Oct-31Dec 1991	C	Pakistani, Norwegian	PPGP?	No	Incl.	No	42	95	No	? No definition reported

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Larsen et al 1999	Denmark	12 month period	P	in work, Heavy workloads to carry (>10kg), Uncomfortable working positions, Monotonous work, Long walking distance at work, Working in draft and cold, Working with chemicals, Job satisfaction (positiviely speaking), working parttime, Shiftwork, Fixed salary, living in a house, more than three rooms in the house, lift at home, stairs more than 10 steps at home, living with or married to partner, children at home, doing more than 50% of the housework, Symptom-giving PGR in mother or sister, Exercising regularly (once a week), Smoking, primiparous, multiparous, Pelvic pain in previous pregnancy, Treatment for LBP by doctor, Treatment for LBP by chiropractor, Treatment for LBP by physiotherapist, Untreated low back pain, Diseases in the back, bones, or joints, Suffering from lower abdominal pain, Other diseases, Previous low back pain (while not pregnant), Previous lower abdominal pain (while not pregnant), parity, weight, age	PPGP	Yes	Incl.	No	618	898	No	

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Wergeland & Strand 1998	Norway	1989 (16 Oct - 26 Nov)	C	Influence on breaks at work, Influence on work pace, Externally paced work, Manual work, Lifting heavy loads (10-20kg), Influence on work content, Work with video display terminals, Weekly hours of paid work ≥35, Weekly hours of paid work >40, age, parity, education, partner education, Daily smoking, Coffee ≤4 cups,	Disabling posterior pelvic pain (Posterior PPGP[?]), PLBP[?]	No	Incl.	No	1615	1706	No	? Question open to interpret-tation

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Endresen 1995	Norway	Fall of 1989	C	Age, number of previous children, LBP, parity, smoking, Weight of newborn, work bending forward, Woman's year of birth, BMI, Strain at work, economic independence, Twisting and bending, pelvic pain, education, Work above shoulder, Sex, colleagues (F/M), Frequent lifts 10-20kg, Permanently employed	PPGP[?], PPGP[?] That did NOT cause difficulties with housework, PPGP[?] That caused difficulties with housework to SOME degree, PPGP[?] That caused difficulties with housework to LARGE/HIGH degree, PLBP[?], PPGP? + Often PLBP[?], PPGP? + Rarely/Never PLBP[?], PLBP? + "yes" to PPGP[?], PLBP[?] + "No" to PPGP[?]	No	Incl.	No	2419	2746	No	? Question open to interpretation
Hakansson et al 1994	Sweden	1986	P	Manual work	Symphysiolysis	No	Incl.	No	163	246	No	

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Orvieto et al 1994	Israel	Not stated	C	Age, number of prior pregnancies, gestational age, maternal height, maternal weight, BMI, Sephardic origin, Existence of LBP before the first pregnancy, LBP in previous pregnancy, LBP before previous pregnancies, posterior/fundal location of the placenta,	PLBP?	No	Chronic LBP excluded	N/A	107	342	No	
Ostgaard et al 1991a	Sweden	during a 1 year period	P	Number of previous pregnancies, age , educational level, Sick listed for back pain before pregnancy, OCP, heavy work, twisting when working, ability to change work posture, Standing work posture, lifting, Ability to take rest breaks, monotonous work, work satisfaction	PLBP?	No	Incl.	No	Not stated (total 855)	Not stated (total 855)	No	? unclear which back pain location is included in analysis
Ostgaard et al 1991b	Sweden	during a 1 year period	P	History of back pain, Number of earlier pregnancies: multigravida, age	PLBP?	No	Incl.	No	Not stated (total 855)	Not stated (total 855)	No	? unclear which back pain location is included in the analysis

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Ostgaard et al 1991c	Sweden	during a 1 year period	P	Age	PLBP?	No	Incl.	No	Not stated (total 855)	Not stated (total 855)	No	? unclear which back pain location is included in the analysis
Melzack & Belanger 1989	Canada	Not stated	C	History of acute LBP, Menstrual pain front (abdomen), Menstrual pain back (LBP)	PLPP?	No	Incl.	No	62	52	No	
Berg et al 1988	Sweden	September 1983-April 1984	P	Parity, occuption	PLBP? Any week, PLBP? All weeks (3 data collection points), PLBP? Sick leave, symphysiolysis 20th week, symphysiolysis 30th week, symphysiolysis 35th week	No	Incl.	No	353	509	No	No clear definition provided

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Mazicioglu et al 2006	Turkey	2 month period (until minimum required sampling figure)	C	Birth place, age, occupation, education, income, Previous pain before pregnancy, Number of pregnancies, weight, smoking, maternal age, Zung depression scale, Oswestry back pain scale, assistance in daily activities	PLBP?	No	Incl.	No	No stated (total 1357)	No stated (total 1357)	No	
Morino et al 2014	Japan	2009-2013	P	BMI	PLBP? 2nd trimester, Hip joint or pubis pain in 2nd trimester, PLBP? 3rd trimester, Hip joint or pubis pain in 3rd trimester	No	Incl.	No	Not stated (total 355)	Not stated (total 355)	No	

Reference	Country	Year of study	Study design	Risk factors reported	Outcome(s)	Outcome assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primiparous/multiparous reported separately	Comments
Denison et al 2009	UK	4 periods during 2007-2008 (11-18 July, 13-20 Augus 2007, and 10-20 March and 21April-3May 2008)	R	BMI	Symphysis pubis dysfunction	No	Incl.	No	Not stated (total 651)	Not stated (total 651)	No	
Ostgaard et al 1993	Sweden	1 July 1984-?July 1985	P	Weight gain, oral contraception	PLBP[?]	No	Incl.	No	Not stated (total 855)	Not stated (total 855)	No	? unclear which back pain location is included in the analysis

Appendix 9: Outcomes and subgroups in included studies (Risk factors)

Reference	Method of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Chang et al 2014	Self-reported questionnaire at 28, 32 and 36 weeks gestation	Yes	Pain drawing was used to measure pain location if the participants reported that they had pain during the past week. Pain between 12th rib and the gluteal fold were considered to have the outcome. Pain intensity: The Brief Pain Inventory-Taiwanese version (BPI-T) was used to measure pregnant women's PR-LBP intensity and pain interference (Ger et al. 1999). Four items assess current pain intensity, worst, least and average PR-LBP intensity over the past week using 0–10 numerical rating scales from 0 (no pain at all)–10 (worst possible pain I can image). Pain interference: The BPI-T also includes seven items that ask respondents to rate the extent to which pain interfered during the past week with seven domains of daily activities (general activity, mood, walking ability, normal work, relationship, sleep and enjoyment of life) on 0–10 numerical rating scales from 0 (does not interfere)–10 (completely interferes). The responses to the BPI-T interference items were averaged to create a composite score for PR-LBP interference	x
Bjelland et al 2013a	Self-reported questionnaire (one in 2nd and 3rd trimester)	Yes	The location of pelvic girdle pain was classified on the basis of answers to the following questions: 'Do you have pain in the pelvic girdle?' and 'If you have pain in the pelvic girdle, where is the pain located?' One or more locations could be specified: the frontal part of the pelvis, one side of the rear part of the pelvis and both sides of the rear part of the pelvis. Pelvic girdle pain was defined as combined anterior pelvic pain and bilateral posterior pelvic pain. (In other publications on this cohort this is referred to as PGS.)	Primiparous, multiparous (for some of the outcomes)

Reference	Method of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Bakker et al 2013	Self-reported questionnaires (12, 24, 36 weeks gestation)	No	Continuous outcome: self-report on the Pregnancy-Mobility Index and the Overall Complaints Index measuring pain and mobility	x
Gjestland et al 2013	Self-reported questionnaire (17–21 and 32 gestation, and 8 weeks and 2 years postpartum)	Yes, but unclear how participant might have interpreted the question (no pain diagram used)	Low-back pain has been defined as pain between the 12th rib and the gluteal fold, with or without leg pain and the question asked was: 'At present, do you experience any low-back pain?' (yes versus no). Measured at 32 weeks gestation (Q2). Pelvic girdle pain has been defined as pain experienced between the posterior iliac crest and the gluteal fold, particularly in the vicinity of the sacroiliac joints. The pain may radiate in the posterior thigh and can also occur in conjunction with/or separately in the symphysis. The question asked was: 'At present, do you experience pelvic girdle pain (in Norwegian: 'Bekkenløsning')?' (yes versus no). Measured at 32 weeks gestation (Q2)	x
Al-Sayegh et al 2012	Self-reported questionnaire (23.6% 1st, 19.6% 2nd, and 15.4% 3rd trimester of pregnancy)	Yes	Measured on pain diagram. Reference Mogren 2005 for location.	x
Malmqvist et al 2012	Self-reported questionnaire; retrospectively completed after birth	Yes	Reports on pain distribution were obtained by asking for drawings on figures of the lower back and pelvic areas. There were 3 figures: 1 low back and 2 pelvic (front and back) all with explanation of the regions involved. Moderate to severe pain defined as NRS > 35.	x
Kovacs et al 2012	Self-reported questionnaire (28 weeks gestation or more) + clinical records	Yes	The questionnaire gathered data on pain endured during the preceding 4 weeks in the low back area, down the leg, or in the pelvic area (as shown on a drawing representing a human body)	x

Reference	Method of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Chang et al 2012	Self-reported questionnaire (completed between 35-41 gestational week)	Yes	Pain intensity was assessed using Brief Pain Inventory-short Form Taiwanese version; 4 items rated on 0-10 NRS). PLPP defined as current pain in the area ranging from the 12th rib to gluteal fold and/or the pubic symphysis (but not clear how this information was obtained from participants)	x
Bjelland et al 2011	Self-reported questionnaires (2nd trimester (mean 17.4 weeks, SD 2.8), 3rd trimester (mean 30.6 weeks SD 2))	Yes	Pelvic girdle syndrome (PGS) was defined on the basis of the following questions in week 30 of gestation. Do you have pain in the pelvis (yes/no)? If you have pain in the pelvis, where is the pain located: in the frontal part of the pelvis, on one side of the rear part of the pelvis, or on both sides of the rear part of the pelvis? We defined PGS as present if the women reported pain in the anterior pelvis and on both sides in the posterior pelvis.	x
Klemetti et al 2011	Self-reported questionnaire (completed postpartum)	Yes	no definition given	primiparous, multiparous
Bjelland et al 2010	Self-reported questionnaires (2nd trimester (mean 17.4 weeks, SD 2.8), 3rd trimester (mean 30.6 weeks SD 2))	Yes	Pelvic girdle syndrome (PGS) was defined on the basis of the following questions in week 30 of gestation. Do you have pain in the pelvis (yes/no)? If you have pain in the pelvis, where is the pain located: in the frontal part of the pelvis, on one side of the rear part of the pelvis, or on both sides of the rear part of the pelvis? We defined PGS as present if the women reported pain in the anterior pelvis and on both sides in the posterior pelvis. Presence of severe pain in all 3 locations was considered severe PGS.	PGS? Severe PGS?

Reference	Method of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Robinson et al 2010c	Self-reported questionnaires and clinical examination (blind to the questionnaire data) at time. Follow up in late pregnancy (30 weeks +) with questionnaire.	Yes	Pain diagram completed before clinical exam. After the exam the women were to point to the pain site and if necessary the examiners corrected the pain drawing. Disability Rating index (12 VAS measuring the ability to perform activities of daily living; 0-100 range) at 30 weeks. Response to question: 'How strong is your worst evening pain before going to bed?' 0-100 VAS (no pain-unbearable pain).	x
Lebel et al 2010	Reported by the women on admission or retrieved from her medical care files. Data were extracted from the computerized perinatal database of the hospital.	Yes	Symphysiolysis was defined as pain over the symphysis pubis, which was reported by the women on admission or retrieved from her medical care files	x
Ansari et al 2010	Interviewed questionnaire within 48 hours after the birth	Yes	Interview questions: Did you experience low back pain during your present pregnancy? Yes No, When was the time of onset of low back pain? First trimester Second trimester Third trimester, Where is the site of pain? Low back Buttocks, Did your pain radiate? Yes No, Please indicate the site of radiating pain. Buttocks Above knees Feet, Was your pain on one side or both sides? One side Both sides	x
Mohseni-Bandpei et al 2009	Structured self-reported questionnaire (mean 22.98 (SD9.31) weeks gestation, range 5-41)	Yes	LBP was defined as any pain in the low back between L1 and L5 and the sacroiliac joint; but NOT CLEAR what question was asked to ascertain this	x

Reference	Method of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Eberhard-Gran et al 2008	Self-reported questionnaire (send to women with at least 1 prior delivery; any time after delivery)	yes, but possible question open to interpretation (no diagram used)	Pelvic girdle pain was classified on the basis of the following questions: 'Did you have pain in the pelvic girdle during your last pregnancy?' (Coded: yes/no), and 'If you had pain in the pelvic girdle during your last pregnancy, where was the pain located?' ('Frontal part of the pelvis'/'left side of the rear part of the pelvis'/'right side of the rear part of the pelvis'). Pelvic girdle syndrome was defined as pain both in the anterior pelvis and in the bilateral posterior pelvis, and coded yes/no.	x
Albert et al 2006	Self-reported questionnaire, and physical examination of 'diseased group' (=with PGP)	Yes	PPGP: daily pain in any pelvic joints confirmed by objective findings. PGS: daily pain in all three pelvic joints confirmed by objective findings. Symphysiolysis: daily pain in the pubic symphysis alone, confirmed by objective findings. One-sided sacroiliac syndrome: daily pain from one sacroiliac joint alone, confirmed by objective findings. Double-sided sacroiliac syndrome: daily pain from both sacroiliac joints, confirmed by objective findings.	PPGP, PGS, symphysiolysis, one-sided SI syndrome, double-sided SI syndrome
Mogren et al 2005	Self-reported questionnaire; given to the women approximately 24 hours after the birth. Retrospective questions	Yes	Low back pain or pelvic pain during pregnancy (LBPP) was defined as ''recurrent or continuous pain for more than 1 week from the lumbar spine or pelvis'' during actual pregnancy. A woman was considered to have had LBPP during pregnancy if she answered positively a specific question about LBPP with patient-drawn markings of localization of pain on a schematic diagram in the questionnaire (Figure 1). Women with LBPP were requested to report their highest pain score due to LBPP during their pregnancy before delivery on a visual analogue scale (VAS), where 0 denoted ''no pain'' and 10 denoted ''worst imaginable pain''. Patients with a maximum of 7 or higher on a self-rated pain score (VAS) were considered to have high pain score LBPP (hps-LBPP).	PLPP, High pain score PLPP

Reference	Method of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Mogren & Pohjanen 2005	self-reported questionnaire, given to the women within approximately 24hrs after the birth	Yes	Low back pain or pelvic pain during pregnancy (LBPP) was defined as ‘‘recurrent or continuous pain for more than 1 week from the lumbar spine or pelvis’’ during actual pregnancy. A woman was considered to have had LBPP during pregnancy if she answered positively a specific question about LBPP with patient-drawn markings of localization of pain on a schematic diagram in the questionnaire (Figure 1). Women with LBPP were requested to report their highest pain score due to LBPP during their pregnancy before delivery on a visual analogue scale (VAS), where 0 denoted ‘‘no pain’’ and 10 denoted ‘‘worst imaginable pain’’. Patients with a maximum of 7 or higher on a self-rated pain score (VAS) were considered to have high pain score LBPP (hps-LBPP).	PLPP, High pain score PLPP
Wang et al 2004	Self-reported questionnaire during pregnancy any time (most were in 3rd trimester)	No	no definition reported	x
Kumle et al 2004	Self-reported questionnaire; retrospective questions	No	Question: 'Did you suffer from pelvic pain in any of your pregnancies?' and severity of symptoms during each of the first 3 pregnancies (severe disabililty, problems walking, painful walking, problems in doing housework, normal physical function level)	PPGP, PPGP in 1st pregnancy, PPGP in 2nd pregnancy, PPGP in 3rd pregnancy
Vangen et al 1999	hospital records	No	no definition reported	x

Reference	Method of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Larsen et al 1999	Questionnaire at the routine prenatal examinations in week 16, 20, 30, 33, 38, and 40 (obstetrician or midwife) the women were asked specifically about pelvic pain. Plus, by a rheumatologist; interview, clinical and neurological examination performed to exclude any other cause of pelvic pain. Then interview by an occupational therapist and examination by a physiotherapist.	No	The women were referred for further examination by a rheumatologist if they fulfilled our inclusion criteria for PGR, which were disabling pelvic pain arising during the present pregnancy and occurring repeatedly in at least two of the following five situations: 1) turning in a bed, 2) walking, 3) lifting a light load (a few kilograms), 4) getting up from a chair, and 5) climbing stairs. The women were interviewed by the rheumatologist about previous back pain, obstetrical complications, and rheumatic diseases. Futhermore, they had a thorough clinical and neurological examination performed to reveal any other cause of pelvic pain, in which case the women were excluded from the study. The remainder were diagnosed to have PGR.	x
Wergeland & Strand 1998	Self-reported questionnaire after delivery while still in hospital.	Unclear pain location	Disabling posterior pelvic pain was defined by the first response alternative to the following 2 questions: "Did you suffer from pelvic girdle loosening in this preg- nancy?" (yes; no); "Did pelvic girdle loosening make it difficult for you to manage housework?" (yes, to a large extent; yes, to some extent; no). The time of first occur- rence was recorded by month of pregnancy. Low-back pain was defined by the first response alternative to the question: "Did you during this pregnancy suffer from pain in the lumbar region (lower part of back)?'(yes, frequently; yes, a few times; no, never).	x

Reference	Method of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Endresen 1995	Self-administered questionnaire, completed postpartum while on the maternity ward.	No	Did you suffer from pelvic pain during this pregnancy? RESPONSE: YES	PPGP[?], PPGP[?] That did NOT cause difficulties with housework, PPGP[?] That caused difficulties with housework to SOME degree, PPGP[?] That caused difficulties with housework to LARGE/HIGH degree
Hakansson et al 1994	structured interview	No	no definition reported	x
Orvieto et al 1994	self-reported questionnaire (Mean 27.4 (SD6.6) weeks of gestation (range 15-41 weeks))	Unclear. No pain diagram; what is considered 'low back'.	LBP was defined as all conditions of pain, ache, stiffness, or fatigue localized to the lower back.	Parous/nulliparous (only for outcome: posterior/fundal location of the placenta)
Ostgaard et al 1991a	a self-reported questionnaire about back pain was completed at 12th week and on each subsequent visit (16, 20, 24, 26, 28, 30, 32, 34 and 36 weeks)	yes but unclear which back pain location is included in the analysis	No definition reported	x
Ostgaard et al 1991b	a self-reported questionnaire about back pain was completed at 12th week and on each subsequent visit (12, 16, 24, 26, 28, 30, 32, 34 and 36 weeks)	yes but unclear which back pain location is included in the analysis	No definition reported	x

Reference	Method of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Ostgaard et al 1991c	a self-reported questionnaire about back pain was completed at 12th week and on each subsequent visit the subjects were questioned about back pain	yes but unclear which back pain location is included in the analysis	No definition reported	x
Melzack & Belanger 1989	structured interview the day after the birth	No	not reported: "women were asked if they had experienced episodes of acute LBP before or during pregnancy	x
Berg et al 1988	self-reported questionnaires in 20, 30 and 35th week gestation	No	No definition reported	PLBP? Any week, PLBP? All weeks (3 data collection points)
Mazicioglu et al 2006	questionnaire given to women by an interviewer who assisted if the women required any help (trimester: first 17.2%, second 39.2%, third 40.3%)	No	No definition reported	x
Morino et al 2014	Self-reported questionnaires; during 2nd (mean 22.4, SD 2.1 weeks) and 3rd trimester (mean 33.7 weeks, SD 2.1 weeks)	No	No definition reported	PLBP? 2nd trimester, Hip joint or pubis pain in 2nd trimester, PLBP? 3rd trimester, Hip joint or pubis pain in 3rd trimester,

Reference	Method of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Denison et al 2009	Retrospective analysis of antenatal notes and labour ward records in UK.	no but term suggests clear location	No definition reported	x
Ostgaard et al 1993	Self-reported questionnaire at 12 weeks gestation. At each of the nine subsequent visits they were asked if they had experienced pain in the previous period and if so they completed another questionnaire, a pain drawing and VAS. Biomechanical parameters were recorded in weeks 12, 20, 24, 30, 36.	No	No definition reported	x

[?] = Definition not clearly defined

Appendix 10: Characteristics of included studies (Prognostic factors)

Explanation of abbreviations: P = Prospective cohort; C = Cross-sectional; R = Retrospective cohort. Records marked in the same colour involved the same cohort/study. '?' = definition not clearly defined											
Reference	**Country**	**Year of study**	**Study design**	**Prognostic factors reported**	**Definition of PPGP/PLBP or PLPP**	**PPGP/PLBP/PLPP assessment included physical examination**	**Participants with pre-pregnancy history of PGP and/or LBP**	**Participants with pre-pregnancy history of PGP and/or LBP reported separately**	**No of primiparous women**	**No of multiparous women**	**Primi-/multiparous reported separately**	**Comments**
Bjelland et al 2013c	Norway	1999–2008	P	Mode of delivery, Obstetric complications, other pain conditions, birthweight, Emotional distress, Use of crutches week 30	Pelvic Girdle Syndrome: "Do you have pain in the pelvic girdle, where is it located?" One or more locations could be specified: the frontal part of the pelvic, one side of the rear part of the pelvis, and both sides of the rear part of the pelvis. Pain intensity was scored as mild or severe at each location. PGS was defined as combined anterior pelvic pain and bilateral posterior pelvic pain. PGS was subdivided according to reported pain intensity; the presence of severe pain in all 3 locations was designated as severe PGS. Functional disability during pregnancy week 30 was addressed by the following question "Do you use crutches because of pelvic girdle pain?"	No	Incl.	No	3187 (total 10400)	7213 (total 10400)	No	

Reference	Country	Year of study	Study design	Prognostic factors reported	Definition of PPGP/PLBP or PLPP	PPGP/PLBP/PLPP assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primi-/multiparous reported separately	Comments
Bjelland et al 2013b	Norway	1999 – 2008	P	Emotional distress, Level of severity in pregnancy (number of pain locations), Co-morbidity index, BMI, Age at menarche, previous LBP, Smoking during pregnancy	We used a wide definition of pelvic girdle pain, and included the 58% (42 289/73 418) who reported pain in at least one pelvic location at 30 weeks of gestation in our study sample. Pelvic girdle pain was classified on the basis of answers to the following questions at 30 weeks of gestation and at 6 months after delivery: do you have pain in the pelvic girdle; if you have pain in the pelvic girdle, where is the pain located? One or more locations could be specified: in the frontal part of the pelvis; on one side of the rear part of the pelvis; on both sides of the rear part of the pelvis. Pain intensity was scored as mild or severe at each location. Pelvic girdle syndrome (PGS) was defined as combined pain in the anterior pelvis and on both sides in the posterior pelvis.3 PGS was subdivided according to reported pain intensity: the presence of severe pain in all three locations was designated as severe PGS.7 Pelvic girdle pain at 30 weeks of gestation was classified into three mutually exclusive subgroups to grade the level of severity during pregnancy: pain in one or two pelvic locations; pain in three pelvic locations (PGS); and severe pain in all three pelvic locations (severe PGS).	No	Incl.	No	Not stated (total 41421)	Not stated (total 41421)	No	

Reference	Country	Year of study	Study design	Prognostic factors reported	Definition of PPGP/PLBP or PLPP	PPGP/PLBP/PLPP assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primi-/multiparous reported separately	Comments
Olson et al 2012	Sweden	Not stated	P	Married/cohabiting, occupation, Exercise before pregnancy, number of previous pregnancies, sick leave, Reporting pain daily or constant pain, Caesarian section at delivery, PCS-total score, FABQ-activity, Pain at present, Pain at worst, DRI-total index, NHP-total score, Exercise at present, Onset of lumbopelvic pain	PLPP?: Lumbopelvic pain in this study is defined as self-reported pain in the region of the lower back and/or anterior and/or posterior region of the pelvis. The main outcome was selfreported lumbopelvic pain at present, using a yes/no question. (UNCLEAR HOW pain location was assessed.)	No	Incl.	No	Not stated (total 470)	Not stated (total 470)	No	? Unclear how pain location was assessed
Robinson et al 2010b	Norway	Not stated	P	Pre-pregnancy BMI, number of pain sites,	The women were defined as afflicted if: (1) they reported to have PGP (yes,no) and/or had marked in the pelvic area on the pain drawing, and (2) they had a DRI score above the 25 percentile for the 283 women being examined in gestation week 30 (DRI >22). Both criteria were required (and resulted in 179 women included in the analysis).	Yes	Incl.	No	98 (total 179)	81 (total 179)	No	

Reference	Country	Year of study	Study design	Prognostic factors reported	Definition of PPGP/PLBP or PLPP	PPGP/PLBP/PLPP assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primi-/multiparous reported separately	Comments
Mogren 2008	Swe-den	1 Jan 2002-30 April 2002	P	Current physical activity, Pre-pregnancy physical activity, Number of years of physical activity	Low back pain or pelvic pain during pregnancy (PLPP) in the Q1 was defined as 'recurrent or continuous pain for more than 1 week from the lumbar spine or pelvis' during recent pregnancy. A women was considered to have PLPP if she gave a positive answer to the specific question on localisation of pain which included marking the affected area on drawing.	No	Incl.	No	Not stated (total 464)	Not stated (total 464)	No	
Mogren 2007b	Swe-den	1 Jan 2002-30 April 2002	P	Family situation, Relationship before pregnancy (satisfaction) Q1, Relationship before pregnancy Q2, Change of relationship during pregnancy (Q1), Change of relationship after pregnancy (Q2), Satisfying sexual life before pregnancy (Q1), Satisfying sexual life during pregnancy (Q1), Satisfying sexual life after pregnancy (Q2), Perceived health before pregnancy (Q1), Perceived health during pregnancy (Q1), Perceived health after pregnancy (Q2)	Low back pain or pelvic pain during pregnancy (PLPP) in the Q1 was defined as 'recurrent or continuous pain for more than 1 week from the lumbar spine or pelvis' during recent pregnancy. A women was considered to have PLPP if she gave a positive answer to the specific question on localisation of pain which included marking the affected area on a drawing.	No	Incl.	No	Not stated (total 464)	Not stated (total 464)	No	

Reference	Country	Year of study	Study design	Prognostic factors reported	Definition of PPGP/PLBP or PLPP	PPGP/PLBP/PLPP assessment included physical examination	Participants with pre-pregnancy history of PGP and/or LBP	Participants with pre-pregnancy history of PGP and/or LBP reported separately	No of primiparous women	No of multiparous women	Primi-/multiparous reported separately	Comments
Mogren 2007a	Sweden	1 Jan 2002-30 April 2002	P	Epidural or spinal anaesthesia during delivery, Epidural or spinal anaesthesia during CS, Emergency Caesarian, Elective caesarian,	Low back pain or pelvic pain during pregnancy (PLPP) in the Q1 was defined as 'recurrent or continuous pain for more than 1 week from the lumbar spine or pelvis' during recent pregnancy. A women was considered to have PLPP during if she gave a positive answer to the specific question on localisation of pain which included marking the affected area on a drawing.	No	Incl.	No	Not stated (total 464)	Not stated (total 464)	No	
Mogren 2006	Sweden	1 Jan 2002-30 April 2002	P	Educational level, mode of delivery, Hypermobility (women reported diagnosed as having hypermobility), Hypermobility (women reported diagnosed as having hypermobility and/or perception of hypermobility, Satisfaction with pre-pregnancy weight, Perceived problems with actual or previous overweight, Maximum level of pain during pregnancy,	Low back pain or pelvic pain during pregnancy (PLPP) in the Q1 was defined as 'recurrent or continuous pain for more than 1 week from the lumbar spine or pelvis' during recent pregnancy. A women was considered to have PLPP during if she gave a positive answer to the specific question on localisation of pain which included marking the affected area on a drawing.	No	Incl.	No	Not stated (total 464)	Not stated (total 464)	No	

Appendix 11: Outcomes and subgroups in included studies (Prognostic factors)

Reference	Outcome	Method of outcome assessment	Time of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Bjelland et al 2013c	Persistent PGS, persistent severe PGS	Data were obtained through 3 self-administered questionnaires that were sent and returned by mail. The first (Q1) questionnaire was completed during the second trimester [mean 17.2 weeks of gestation, standard deviation (SD) 2.2], 2nd questionnaire in 3rd trimester [mean 30.5 weeks; SD 1.4 weeks], 3rd questionnaire at 6 months postpartum]mean 28 weeks SD 6 weeks postpartum]	6 months postpartum	Unclear; no pain diagram, questions open to interpretation	Pelvic Girdle Syndrome: "Do you have pain in the pelvic girdle, where is it located?" One or more locations could be specified: the frontal part of the pelvic, one side of the rear part of the pelvis, and both sides of the rear part of the pelvis. Pain intensity was scored as mild or severe at each location. PGS was defined as combined anterior pelvic pain and bilateral posterior pelvic pain. PGS was subdivided according to reported pain intensity; the presence of severe pain in all 3 locations was designated as severe PGS.	persistent PGS, persistent severe PGS; And all women, women who did not use crutches

Reference	Outcome	Method of outcome assessment	Time of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Bjelland et al 2013b	Persistent PGS, persistent severe PGS	Data were obtained through 3 self-administered questionnaires that were sent and returned by mail. The first (Q1) questionnaire was completed during the second trimester [mean 17.2 weeks of gestation, standard deviation (SD) 2.2], 2nd questionnaire in 3rd trimester [mean 30.5 weeks; SD 1.4 weeks], 3rd questionnaire at 6 months postpartum [mean 28 weeks SD 6 weeks postpartum]	6 months postpartum	Unclear; no pain diagram, questions open to interpretation	Pelvic Girdle Syndrome: "Do you have pain in the pelvic girdle, where is it located?" One ore more locations could be specified: the frontal part of the pelvic, one side of the rear part of the pelvis, and both sides of the rear part of the pelvis. Pain intesity was scored as mild or severe at each location. PGS was defined as combined anterior pelvic pain and bilateral posterior pelvic pain. PGS was subdivided according to reported pain intensity; the presence of severe pain in all 3 locations was designated as severe PGS.	persistent PGS, persistent severe PGS; And all women, women with onset of PPGP after 17 weeks gestation (only for emotional distress factor).

Reference	Outcome	Method of outcome assessment	Time of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Olson et al 2012	Persistent PLPP?	Self-reported questionnaires in weeks 19-21 or pregnancy and 6 months postpartum.	6 months postpartum	? Unclear how pain location was assessed; questions asked not stated	Lumbopelvic pain in this study is defined as self-reported pain in the region of the lower back and/or anterior and/or posterior region of the pelvis.	x
Robinson et al 2010b	persistent PPGP (Disability Rating Index Score, pain intensity), persistent PPGP: non-recovery 12 weeks postpartum	self-reported questionnaires (at inclusion and in gestation week 30) and clinical examination in gestation week 30 (the women were selected for an examination based on a short questionnaire including 3 questions about low back and pelvic pain distributed by the midwives and answered by the women in gestation week 28)	12 weeks postpartum	Yes	The women were defined as afflicted if: (1) they reported to have PGP (yes,no) and/or had marked in the pelvic area on the pain drawing, and (2) they had a DRI score above the 25 percentile for the 283 women being examined in gestation week 30 (DRI >22). Both criteria were required (and resulted in 179 women included in the analysis). At 12 weeks postpartum, data was derived from questionnaires (not reported what the questions were but likely to be the same at at 30 weeks pregnancy)	persistent PPGP (Disability Rating Index Score, pain intensity), persistent PPGP: non-recovery 12 weeks postpartum Ors

Reference	Outcome	Method of outcome assessment	Time of outcome assessment	Location defined	Definition of outcome	Sub-groups reported
Mogren 2008	any PLPP, recurrent PLPP, continuous PLPP	Self-reported questionnaires: Q1 within 24 hours after delivery, Q2 approximately 6 months after delivery	6 months postpartum	Yes	Persistent PLPP after pregnancy included women with both 'recurrent' and 'continuous pain' defined as LPP persisting after pregnancy	any PLPP, recurrent PLPP, continuous PLPP
Mogren 2007b	any PLPP, recurrent PLPP, continuous PLPP	Self-reported questionnaires: Q1 within 24 hours after delivery, Q2 approximately 6 months after delivery	6 months postpartum	Yes	Persistent PLPP after pregnancy included women with both 'recurrent' and 'continuous pain' defined as LPP persisting after pregnancy	any PLPP, recurrent PLPP, continuous PLPP
Mogren 2007a	any PLPP, recurrent PLPP, continuous PLPP	Self-reported questionnaires: Q1 within 24 hours after delivery, Q2 approximately 6 months after delivery	6 months postpartum	Yes	Persistent PLPP after pregnancy included women with both 'recurrent' and 'continuous pain' defined as LPP persisting after pregnancy	any PLPP, recurrent PLPP, continuous PLPP
Mogren 2006	any PLPP, recurrent PLPP, continuous PLPP	Self-reported questionnaires: Q1 within 24 hours after delivery, Q2 approximately 6 months after delivery	6 months postpartum	Yes	Persistent PLPP after pregnancy included women with both 'recurrent' and 'continuous pain' defined as LPP persisting after pregnancy	any PLPP, recurrent PLPP, continuous PLPP

Appendix 12: Characteristics of excluded studies

Number	Reference	Reason for exclusion
1	Bjelland et al 2014	Follow up 18 months postpartum only.
2	Mota et al 2014	The focus is on Diastasis Rectus Abdominis. Lumbo-pelvic pain was assessed 6 months postpartum, but the symptom did not have to have started during pregnancy (i.e. not 'persistent').
3	Glowacka et al 2014	No clear definition of 'pelvic pain' is provided in the article and the data on predictive factors only examines 'genito-pelvic pain'.
4	Pettigrew 2014	Not original research. This is a commentary.
5	Sabuncuoglu et al 2014	The study includes any back pain (not specifically low back pain and/or pelvic girdle pain).
6	Fagevik Olsen et al 2014	This study looks at agreement between two methods of testing for pelvic girdle pain. (Evaluation of self-administered test)
7	Peterson et al 2014	All participants underwent chiropractic treatment.
8	Yoo et al 2014	The outcome of interest was peripartum diastasis of symphysis pubis as diagnosed on radiograph. Only 2 of the 21 patients had had pubic pain during gestation, for the others it had started after the birth (not 'persistent').
9	Lindgren et al 2014	Focus on finger joint laxity. This study looks at any back pain (not specifically low back pain and/or pelvic girdle pain).
10	Blomquist et al 2014	This study examines pelvic pain that started postpartum. Also, their definition of pelvic pain does not refer to pelvic girdle pain.
11	Bergstrom et al 2014	Follow up 14 months postpartum on average.
12	Pettit et al 2014	Not original research. This article discusses the effectiveness of certain interventions.

Number	Reference	Reason for exclusion
13	Li et al 2014	This study looks at perceived risks of mode of delivery. The 12 outcomes of interest do not include persistent PPGP/PLBP.
14	Li et al 2014b	Focus on perceived risk after vaginal delivery and caesarean section. The study's definition of chronic pelvic pain does not fit with the definition of PPGP and/or PLBP in this review.
15	Gaudet et al 2013	This study examines perineal pain, not (persistent) PPGP and/or PLBP.
16	Mukkannavar et al 2014	The study participants consisted of women with pelvic girdle pain postpartum, which may have started after the birth.
17	Mukkannavar et al 2013	The study participants consisted of women with pelvic girdle pain postpartum, which may have started after the birth.
18	Kirkeby et al 2013	This study's definition of PPGP was 'yes' to the question "Did you feel pelvic pain to an extent that affected your ability to walk, during pregnancy or shortly after delivery?"; this could include a postpartum onset.
19	Wolf et al 2013	This study examines the relation between serum relaxin and joint laxity, not PPGP and/or PLBP. Pregnant and lactating women were excluded.
20	Brown et al 2013	Birth outcomes are the outcomes of interest, not (persistent) PPGP and/or PLBP.
21	Sjodahl et al 2013	Women were recruited 3 months postpartum with persistent PPGP but follow up is only 15 months postpartum (This is beyond the 12 months postpartum period included in this review.)
22	Woolhouse et al 2012	This study does examine mode of delivery as a potential predictor for back pain postpartum, but this pain might not have been present during pregnancy (not 'persistent'), and not differentiation is made between upper/mid/low back pain.
23	Hooker et al 2013	This paper is not about (persistent) PPGP and/or PLBP. This study does not examine Chronic Pelvic Pain which according to their definition does not include pelvic girdle pain.
24	Stomp-van den Berg et al 2012	The outcome of interest is pelvic girdle pain 12 weeks postpartum, which may have started after the birth.

Number	Reference	Reason for exclusion
25	Dorheim et al 2013	Sick leave during pregnancy was the outcome of interest. Risk factors for sick leave as opposed to risk factors for PPGP and/or PLBP.
26	Knoepp et al 2013	This study examines pelvic floor disorders, not PPGP and/or PLBP. Focus on joint hypermobility and nirth outcomes. Backpain etc not included.
27	Beaucage-Gauvreau et al 2012	Descriptive study. This study looked at trunk posture demands. Although this study provides descriptive data on back pain according to specific location, it does not carry out analysis with PPGP and/or PLBP as outcome.
28	Maigne et al 2012	This is a case series. Also, the coccydynia started postpartum for the participants.
29	Dorheim et al 2012	Insomnia and depressive symptoms were the outcomes of interest.
30	Young et al 2012	Not original research. This is a review.
31	Larsen et al 2013	This study's definition of PPGP was 'yes' to the question “During your pregnancy or shortly after birth, did you suffer from pelvic pain that was so strong it affected your ability to walk?”; this could include a postpartum onset.
32	Perlen et al 2013	Maternal depression was the outcome of interest.
33	Beaucage-Gauvreau et al 2011	This study compares trunk position and head load carriage in pregnant and non-pregnant women, but does not examine PPGP/PLBP.
34	Chang et al 2011	Descriptive study examining coping strategies used by pregnant women with PLPP. Looks at experiences rather than risk factors.
35	Driul et al 2011	This study examines Chronic Pelvic Pain, which according to their definition including pain of visceral origin. Focus is on autoimmune diseases, not PGP or back pain
36	Biering et al 2011	This study's definition of PPGP was 'yes' to the question "Did you feel pelvic pain to an extent that affected your ability to walk, during pregnancy or shortly after delivery?"; this could include a postpartum onset.

Number	Reference	Reason for exclusion
37	Bigelow et al 2011	Not original research. This is a review.
38	To et al 2011	Follow up at 24 to 28 months postpartum.
39	Al-Sayegh et al 2010	This study concerned with spinal mobilization (an intervention).
40	Gutke et al 2011	This study defines PPGP as "Pelvic girdle pain symptoms onset during a pregnancy or within 3 weeks of delivery". This does not fit the criteria for this review as symptoms may have started after the birth.
41	Biering et al 2010	This study's definition of PPGP was 'yes' to the question "Did you feel pelvic pain to an extent that affected your ability to walk, during pregnancy or shortly after delivery?"; this could include a postpartum onset.
42	Dumas et al 2010	The question asked to participants was whether they had any 'back pain'. It is not clear this refers to the low back from this paper, even though the authors state in their title and aim their focus is on low back pain. Women were asked 'Since you became pregnant, have you had any back ache?'
43	Murphy et al 2009	This study examines an intervention.
44	Haakstad et al 2009	Exercise is the outcome of interest.
45	Bewyer et al 2009	This is a pilot study.
46	Kainu et al 2010	This study examines any persistent pain (not just persistent PPGP and/ or PLBP). There is no reference to pain in pregnancy.
47	van Vugt 2009	Article not in English. Also, it concern an intervention (surgical treatment).
48	Fagevik Olsen et al 2009	This study compares different tests to assess for PPGP. Assessment of sensitivity and specificity of self-administered tests.

Number	Reference	Reason for exclusion
49	Ando et al 2009	This study examines a diagnostic test.
50	Vollestad et al 2009	This study defined PPGP as "pain onset during pregnancy or within 3 weeks after delivery". Pain may have started after delivery, which does not fit the criteria for this review.
51	Weil et al 2008	This study examines interventions. Women more than one year postpartum
52	Paterson et al 2009	This study's definition of pelvic pain does not refer to PPGP; women located the pain as “ovary”, “cervix”, and “caesarean cut”. Also, pain started postpartum. Women are on average, 14 months postpartum. Pelvic pain refers to genital-related pain
53	Cheng et al 2009	This study examines any 'back pain', (not specifically low back pain and/or pelvic girdle pain).
54	Bailey 2009	Not original research. This is an editorial.
55	Gutke et al 2008	This study defines PPGP as "Pelvic girdle pain onset was during pregnancy or within 3 weeks after delivery"; symptoms might have started postpartum; this does not fit the criteria of this review.
56	Zasloff et al 2007	Descriptive study; describes pregnancy and birth experiences by age. This study does not examine (persistent) PPGP and/or PLBP.
57	Stuge 2007	Not original research. This is a commentary, and comments on a study that examined an intervention.
58	Patel et al 2007	This study examines back pain postpartum; symptoms may have started after the birth.
59	Granath et al 2007	This is a pilot study. Also, symptoms might have started postpartum. They looked at risk factors for developing pelvic girdle pain postpartum as opposed to persistent pelvic girdle pain postpartum.
60	Smith et al 2008	This study examines any back pain (not specifically PLBP/PPGP).

Number	Reference	Reason for exclusion
61	Van De Pol et al 2007	The analysis for factors affecting PGP 3 months postpartum includes all 18 participants with PGP at that stage (whether or not the pain had started during or after pregnancy), hence we can't use that data.
62	Stomp-van den Berg et al 2007	This is a study protocol. Looking at return to work and not persistent PGP
63	Lotfi et al 2007	This study examines back pain, not necessarily pregnancy-related. Women not pregnant or postpartum.
64	Bo et al 2007	Descriptive study. This is a prevalence study and does not examine risk/prognostic factors.
65	Orlikowski et al 2006	In this study 'back pain' may not have been present during pregnancy and may have started postpartum (not persistent). The exact pain location of back pain is also not specified. Focus is on epidural.
66	van de Pol et al 2006	This study concerns the development of a measurement instrument.
67	Rost et al 2006	Follow up is at 18 months (mean) postpartum.
68	Mogren 2006	This paper is about perceived health in women with low back pain rather than risk/prognostic factors for PLBP and/or PPGP.
69	Wijnhoven et al 2006	Low back pain in this study is not necessarily pregnancy-related. Participants were not pregnant.
70	Lochmuller et al 2005	Article not in English. Also, this looks like a review or commentary.
71	Juhl et al 2005	This study defines PPGP as 'yes' to the question "Did you feel pelvic pain to an extent that affected your ability to walk, during pregnancy or shortly after delivery"; symptoms may have started after the birth.
72	Padua et al 2005	Participants included some women with no back pain during pregnancy (not 'persistent'). Six of the final sample had no back pain at the initial assessment. Also, some assessments were performed between 12-15 months postpartum.

Number	Reference	Reason for exclusion
73	Hansen et al 2005	Examines diagnostic tests as potential prognostic factors.
74	Schytt et al 2005	In this study 'postpartum low back pain' may have started after the birth (not persistent), which does not fit the criteria of this review.
75	Bastiaanssen et al 2005	This is a study protocol.
76	To et al 2003	Risk factors are examined for 'back pain' which includes pain in areas of the back other than the low back.
77	Raheem 2003	Not original research.
78	Nilsson-Wikmar et al 2003	Descriptive study. They did not examine risk or prognostic factors for (persistent) PPGP/PLBP.
79	Stapleton et al 2002	The definition of postpartum PLBP includes low back pain that started postpartum and not only persistent PLBP.
80	Damen et al 2002	This study examines the prognostic value of a specific diagnostic test (doppler imaging of vibrations).
81	Wu et al 2002	Descriptive study of the gait of women with PPGP, but does not examine risk factors.
82	Padua et al 2002	This study examines 'back pain' during pregnancy, but unclear whether this only includes low back pain.
83	Thompson et al 2002	This study asked women about 'backache' but it is not clear whether this only includes low back pain. Prevalence and persistence of health problems reported but not risk or predictive factors.
84	Mens et al 2002	This study examines the responsiveness of outcome measures, not risk/prognostic factors. This study defined PPGP as "starting during pregnancy or in the first 3 weeks postpartum"; symptoms may have started after the birth.

Number	Reference	Reason for exclusion
85	Sydsjo et al 2002	Sick leave during pregnancy was the outcome of interest.
86	Alanen 1999	Article not in English. Also, this seems a commentary/review.
87	Schoellner et al 2001	Article is not in English. Also, this study examines the prognostic value of a specific diagnostic test (sonographic measurement of the symphysis pubis).
88	Albert et al 2001	Follow up is at 24 months postpartum.
89	Cook et al 2001	Not original research. This is a letter to the editor.
90	Lampe et al 2000	Low back pain and pelvic girdle pain in this study was not pregnancy-related. Participants were not pregnant.
91	Bjorklund et al 2000	Analysis on risk and prognostic factors was conducted on "high back pain (HBP), low back pain (LBP) and symphyseal pain (SYP)" in one group. Since this includes high back pain, this does not fit the criteria of this review.
92	Larsen et al 2000	Article is not in English. This study is reported in English in Larsen et al 1999.
93	Nilsson-Wikmar et al 1999	Back pain' during pregnancy (; not specifically low back pain and/or pelvic girdle pain).
94	Levangie et al 1999	Low back pain in this study was not pregnancy-related. Participants were not pregnant.
95	Bjorklund et al 1999	This study involve a specific sonographic test/measurement. This study examines symphysis pubis distension (sonographic assessment) and PPGP, but does not assess risk/prognostic factors.
96	Hansen et al 1999	Descriptive study. Focus on symptoms rather than risk.

Number	Reference	Reason for exclusion
97	Sihvonen et al 1998	The study groups had low back pain before the start of pregnancy.
98	Turgut et al 1998	Definition included 'high' back pain. Data for higher back pain (above lumbar area) and low back pain are not reported separately.
99	Rozenberg et al 1998	Not original research and not related to pregnancy.
100	Brynhildsen et al 1998	Follow up is 12 years postpartum.
101	MacLennan et al 1997	Examines developmental dysplasia of the hip as an outcome.
102	Gurel et al 1997	Pelvic girdle pain may have started postpartum. Focus on sexual health issues.
103	Ostgaard et al 1996	Descriptive study. Risk or predictive factors not stated.
104	Kristiansson et al 1996	This study examines certain diagnostic tests, and includes any back pain.
105	McIntyre et al 1996	Intervention study. Determination of source of pain and assess outcome of mobilisation programme.
106	Vullo et al 1996	This study does not examine (persistent) PPGP and/or PLBP.
107	Paarlberg et al 1996	The variable 'back pain' may include pain in any area of the back, not just PPGP and/or PLBP. Back pain not defined.
108	Mens et al 1996	Descriptive study. This study does not examine risk/prognostic factors for (persistent) PPGP and/or PLBP. Focus on activities that provoke pain rather than risk factors.

Number	Reference	Reason for exclusion
109	Ostgaard et al 1996b	Not original research.
110	Palot et al 1995	Article not in English. Also, the low back pain might have started after the birth.
111	Breen et al 1994	This study examines back pain that started postpartum. Refers to postpartum pain but not persistent pain.
112	Paul et al 1994	Not original research. Literature review.
113	Ostgaard et al 1994	This study examines the effectiveness of interventions.
114	Ostgaard et al 1994b	This study examines a diagnostic test.
115	Russell et al 1993	This study examines back pain that started after the birth. And postpartum surveys sent 12-15 months postpartum.
116	Kierkegaard et al 1992	Article not in English.
117	Ostgaard et al 1992	Follow up at minimum 12 months postpartum. Women were, on average, 18 months postpartum.
118	Saugstad 1991	Examines oral contraceptive (OC) users versus non-OC users in women with persistent PPGP, as opposes to women who did or did not recover.
119	Saugstad 1991b	Descriptive study. Only included participants with persistent pelvic pain and pelvic joint instability that were affiliated to the National Association for the Crippled (Norway).
120	Hakansson et al 1991	Descriptive study. 'Back pain' not necessarily only the low back. Antenatal care attendance.

Number	Reference	Reason for exclusion
121	MacArthur et al 1990	Outcome of interest was back pain that started postpartum.
122	Kogstad et al 1990	Article not in English. Also, this seems a review study.
123	Kogstad 1988	Article not in English.
124	Krsnjavi et al 1988	Article not in English.
125	Betz et al 1987	Degree of scoliosis progression is the outcome of interest. This is about the effect of pregnancy on scoliosis.
126	Saraste 1986	Degree of spondylysis is the outcome of interest. This is about pregnancy as a risk factor for spondylolysis.
127	Ziesat 1978	This study examines back pain that is not pregnancy-related. Participants were not pregnant.
128	Bret et al 1959	Article not in English.
129	Hassan 2007	This is a PhD thesis that examines low back pain/pelvic girdle pain that may have started postpartum. Also, it examines response to an intervention to develop a clinical prediction rule.
130	ABSTRACTS. Pediatrics. 2014.	Abstracts - not relevant. None of the abstracts relate to PPGP/PLBP.
131	Abstracts. Occupational Health Review. 2006.	Abstracts - not relevant. The full text of this reference could not be identified. The keywords in Embase to not suggest relevance to this review.
132	BIRCWH and SCOR presentation abstracts. Journal of Women's Health (15409996). 2007.	Abstracts - not relevant. None of the abstracts relate to PPGP/PLBP.

Number	Reference	Reason for exclusion
133	Taylor 2008	Not original research. This is a review article.
134	Clinical digest. Nursing Standard. 2005.	Not original research.
135	Brown et al 2004	Experimental study. Compares methods of baby car seat lifting in postnatal women with back pain.
136	Nikodem 2001	Not original research. This is a commentary. This study examines back pain that may have started postpartum and focusses on epidural analgesia.
137	Joy 2010	Not original research. This is an abstract of a review study.
138	Devine et al 1999	Not an original study.
139	Mann et al 2008	Article not in English.
140	Young 2002	Not original research. This is a commentary.
141	Levangie 1998	This study examines LBP not related to pregnancy. Participants not pregnant.
142	Woolhouse et al 2014	Maternal depression is the outcome of interest.
143	Sneag et al 2007	Not original research. This is a review.
144	Kusumi et al 2007	Article not in English.

Number	Reference	Reason for exclusion
145	Monier et al 2014	Not original research. Commentary. Same as Bjelland et al 2014.
146	Bick et al 1995	Descriptive study. Reports prevalence but not on persistent back pain.
147	Rodriguez et al 2001	Back pain' may not only include low back pain.
148	Abitbol et al 1996	Backache' may not only include low back pain, and pain might have started postpartum. Reports on data at 18 months postpartum.
149	McEvoy et al 2001	Back pain' may not only include low back pain. Reports incidence of back pain in pregnancy but not risk factors.
150	de Oliveira Angelo et al 2014	Back pain may have started postpartum.
151	Baron et al 2014	This is an abstract of a conference presentation. Back pain may not only included low back pain.
152	Guzelkucnulluk et al 2014	Descriptive study. This is a conference abstract (poster).
153	Dorheim et al 2013	This is a conference abstract. See Dorheim et al 2012 for full report.
154	Ghaderi et al 2013	Article not in English (in Persian).
155	Hamid et al 2012	This is a conference abstract. This study examines back pain that started postpartum.
156	Oates et al 2011	Not original research. Report on confidential enquiry into maternal deaths.

Number	Reference	Reason for exclusion
157	Gartland et al 2009	This is a conference abstract. 'Back pain' may not only include low back pain.
158	Cubukcnullu et al 2009	Descriptive study. This is a conference abstract (poster).
159	Nacir et al 2008	Article not in English (in Turkish).
160	Brown et al 2006	This is a study protocol.
161	Robinson et al 2006	Descriptive study. Looks at functional issues in women with pelvic girdle pain.
162	Rost et al 2004	Descriptive study. All participants had Pelvic pain at time of recruitment. Looks at signs and symptoms but not risk factors.
163	Khorshid et al 2004	This is a case study.
164	Albert et al 2002	Descriptive study. Focuses on location of pain and not risk factors.
165	Gynakologie fur Hausarzte 1998	Article not in English (in German).
166	Macarthur et al 1996	This study does not examine risk/prognostic factors for (persistent) PPGP and/or PLBP. Accuracy of recall of backache after epidural.
167	Palot et al 1995	Article not in English (in French). Also, this study examines low back pain that started postpartum.

Appendix 13: Risk of bias (ROB) of risk factor studies

Reference	QUIPS Risk of bias assessment Domains: low (-), moderate (+/-), or high (+) risk of bias					
	Study participation	**Study attrition**	**Factor measurement**	**Outcome measurement**	**Study confounding**	**Statistical Analysis and Reporting**
Chang et al 2014	-	-	-	+/-	-	-
	Adequate sample and recruitment clearly described. Response rate 86%.	Retention of 72%. Non-responders not described	Risk factors adequately measured and described.	PLBP was examined using a administered and self-administered (where possible) questionnaire.	The multivariate model used to assess the significance of the factors included all factors that showed significant association in the univariate analysis.	Analysis adequate and clearly presented and reported.
Bjelland et al 2013a	-	-	-	+/-	-	-
	38.5% participation rate of national sample. Very large sample size. Characteristics described in detail.	94% and 91% response at follow ups.	Risk factors adequately measured and described.	Questions to ascertain outcome possibly open to interpretation.	Adjustment for confounders in mutivariate analysis.	Analysis adequate and clearly presented and reported.
Bakker et al 2013	+/-	-	-	-	-	-
	80 % participation rate, but no clear statement of time period of study.	78% response rate at Trimester 3. (For Trimester 2 only 45% response and some differences in psychological measurement scores; hence moderate bias for Trimester 2; but Trimester 3 data used as outcome).	Risk factors adequately measured and described.	PLPP measured using Pelvic mobility index.	Adjustment for confounders in mutivariate analysis.	Analysis adequate and clearly presented and reported.

Reference	Study participation	Study attrition	Factor measurement	Outcome measurement	Study confounding	Statistical Analysis and Reporting
Gjestland et al 2013	-	-	-	+/-	-	-
	75% participation rate.	There is adequate follow-up response rate (80%).	Risk factors adequately measured and described.	Questions to ascertain outcome possibly open to interpretation.	Adjustment for confounders in mutivariate analysis.	Analysis adequate and clearly presented and reported.
Al-Sayegh et al 2012	+	-	+/-	-	+	+/-
	70% of recruited women completed the survey, but setting and participants' characteristics not described adequately. Convenient sample and no comparison made to population of interest characteristics. 'Public venues' were some participants were recruited are not described.	Cross-sectional study.	No clear statement of what questions were asked to ascertain the risk factors.	Outcome measure adequately measured. Pain diagram used.	No adjustment for potential confounders.	Only conducted Chi-square test; no modelling.
Malmqvist et al 2012	-	-	-	+	-	-
	58% participation rate. Large sample.	Cross-sectional study.	Risk factors adequately measured and described.	Retrospective data collection for all previous pregnancies- risk of recall bias.	Adjustment for confounders in mutivariate analysis.	Adequate analysis and presentation of results.

Reference	Study participation	Study attrition	Factor measurement	Outcome measurement	Study confounding	Statistical Analysis and Reporting
Kovacs et al 2012	-	-	-	-	-	-
	99.1% participation rate. Characteristics - apart from study period - described.	Cross-sectional study.	Risk factors adequately measured and described.	Outcome measure adequately measured. Pain diagram used and categories stated.	Adjustment for confounders in mutivariate analysis.	Adequate analysis and presentation of results.
Chang et al 2012	+	-	-	+	-	+
	No clear description of target population and non-participants.	Cross-sectional study.	Risk factors adequately measured and described.	No clear definition of 'lumbopelvic pain'.	Adjustment for confounders in mutivariate analysis.	Not possible to assess adequacy of analysis due to poor reporting.
Bjelland et al 2011	-	-	-	+/-	-	-
	41% participation rate of national sample. Very large sample size. Characteristics described in detail.	95% response rate at follow-up.	Risk factor adequately measured and described.	Questions to ascertain outcome possibly open to interpretation.	Adjustment for confounders in mutivariate analysis.	Analysis adequate and clearly presented and reported.
Klemetti et al 2011	-	-	-	+	-	-
	63% response rate. Large sample size.	Cross-sectional study.	Risk factor adequately measured and described.	Questions to ascertain outcome highly open to interpretation.	Adjustment for confounders in mutivariate analysis.	Analysis adequate and clearly presented and reported.
Bjelland et al 2010	-	-	-	+/-	-	-
	41% participation rate of national sample. Very large sample size. Characteristics described in detail.	95% response rate at follow-up.	Risk factors adequately measured and described.	Questions to ascertain outcome possibly open to interpretation.	Adjustment for confounders in mutivariate analysis.	Analysis adequate and clearly presented and reported.

Reference	Study participation	Study attrition	Factor measurement	Outcome measurement	Study confounding	Statistical Analysis and Reporting
Robinson et al 2010c	-	-	-	-	-	-
	85% participation rate. Characteristics described in detail.	96% response rate at follow-up.	Risk factors adequately measured and described.	Outcome adequately measured and described. Pain diagram used.	Adjustment for confounders in mutivariate analysis.	Analysis adequate and clearly presented and reported.
Lebel et al 2010	-	-	-	+	+/-	+/-
	Data collected from computerised medical records retrospectively. Characteristics described in detail.	Retrospective study.	Risk factors adequately measured and described.	Extracted from notes entered by midwife or doctor. Subject to interpretation by clinician reporting the information.	No clear statement of how and which confounders were accounted for.	Analysis seems adequate but adjustment for confounders not fully reported.
Ansari et al 2010	+	-	+/-	+/-	-	-
	No details on how the 103 women were recruited.	Cross-sectional study.	Questions asked in an interview.	Questions to ascertain outcome possibly open to interpretation.	Adequate adjustment for confounders.	Adequate analysis and reporting.
Mohseni-Bandpei et al 2009	-	-	-	+/-	-	-
	96.5% response rate. Setting and characteristics described	Cross-sectional study.	Risk factors adequately measured and described.	The specific question in the questionnaire to determine LBP is not provided.	Adjustment for potential confounders.	Adequate analysis and reporting.

Reference	Study participation	Study attrition	Factor measurement	Outcome measurement	Study confounding	Statistical Analysis and Reporting
Eberhard-Gran et al 2008	-	-	+	+	-	-
	2,729 of 4303 (66%) returned the questionnaire. Setting and most characteristics provided	Cross-sectional study.	The examined risk factor diabetes may or may not have preceded pregnancy. This makes assessing associations highly questionable.	Questions to ascertain outcome possibly open to interpretation. Some women had their last pregnancy before 1999; risk of recall bias is high.	Adjustment for confounders in multivariate analysis.	Analysis adequate and clearly presented and reported.
Albert et al 2006	+/-	-	-	-	-	-
	Parity and age demographics not described.	No loss to follow-up since only the information of the first questionnaire was used in this paper.	Risk factors adequately measured and described.	Outcome adequately measured and described.	Adjustment for confounders in mutivariate analysis.	Analysis adequate and clearly presented and reported.
Mogren 2005	-	-	+/-	-	-	-
	Setting and participants described. (Participation rate stated in other publication.)	Cross-sectional study (for data used in this paper)	No clear definition of 'regular physical activity'.	Outcome adequately measured and described.	Adjustment for confounders in mutivariate analysis.	Analysis adequate and clearly presented and reported.
Mogren & Pohjanen 2005	-	-	-	-	-	-
	83.2% participation rate. Setting and characteristics described in detail.	Cross-sectional study (for data used in this paper)	Risk factors adequately measured and described.	Outcome adequately measured and described.	Adjustment for confounders in mutivariate analysis.	Analysis adequate and clearly presented and reported.

Reference	Study participation	Study attrition	Factor measurement	Outcome measurement	Study confounding	Statistical Analysis and Reporting
Wang et al 2004	-	-	+/-	+	-	-
	84% participation rate. Setting and characteristics described in detail.	Cross-sectional study.	Some of the risk factors not clearly defined and not clearly described how measured.	No clear definition of LBP.	Adjustment for confounders in mutivariate analysis.	Analysis adequate and clearly presented and reported.
Kumle et al 2004	-	-	-	+	-	-
	60.8% participation rate. Large sample (2078). Setting and characteristics described in detail.	Cross-sectional study.	Risk factors adequately measured and described.	Question possibly open to interpretation. It can be several years since last pregnancy; risk of recall bias.	Adjustment for confounders in mutivariate analysis.	Analysis adequate and clearly presented and reported.
Vangen et al 1999	+	-	-	+	+	-
	Selected sample.	Case-control study.	Risk factors adequately measured and described.	No clear definition of PPGP and data was obtained from health record (had to have been reported).	No adjustment for confounders. Only crude odd ratios presented.	Analysis adequate and clearly presented and reported.
Larsen et al 1999	-	-	+/-	-	+/-	-
	72% participation rate of cases. Large sample (1600). Setting and characteristics described.	Only initial questionnaire data relevant to this review.	Most risk factors adequately measured. Unclear definition of the risk factors 'uncomfortable working positions' and 'working in cold or draft'.	Outcome adequately measured and described.	Adjustment for potential confounders through multivariate analysis. Confounders listed but not adequately described.	Analysis adequate and clearly presented and reported.

Reference	Study participation	Study attrition	Factor measurement	Outcome measurement	Study confounding	Statistical Analysis and Reporting
Wergeland & Strand 1998	-	-	-	+/-	-	-
	87.2% participation rate of cases. Large sample (5438). Setting and participants described.	Cross-sectional (only 1 questionnaire).	Risk factors adequately measured and described.	Questions possibly open to interpretation.	Adjustment for potential confounders through multivariate analysis.	Analysis adequate and clearly presented and reported.
Endresen 1995	-	-	-	+/-	-	-
	87.2% participation rate of cases. Large sample (5438). Population not described in text but sufficient details included in the tables.	Cross-sectional (only 1 questionnaire); 95.6% completed the relevant questions.	Risk factors adequately measured and described (categories listed in statistics section and in the results).	Questions possibly open to interpretation.	Adjustment for potential confounders through multivariate analysis.	Analysis adequate and clearly presented and reported.
Hakansson et al 1994	-	-	-	+	+	+/-
	92% participation rate of cases. Setting and characteristics described.	403 of 419 (96%) response rate.	Manual and non-manual employment described	No clear definition of 'symphysiolysis' and how it was diagnosed by the midwife or doctor.	No adjustment for potential confounders.	All variables reported but no adjustment for confounders.
Orvieto et al 1994	-	-	+/-	+	+/-	+/-
	90% (449 of 500) participation rate. Setting and characteristics described.	Cross-sectional (only 1 questionnaire)	Interview questionnaire.	Interview questionnaire and question possibly open to interpretation.	Only confounder gestational weeks taken into account.	All variables reported but no data modelling.

Reference	Study participation	Study attrition	Factor measurement	Outcome measurement	Study confounding	Statistical Analysis and Reporting
Ostgaard et al 1991	+/-	-	+/-	-	+	+/-
	Setting described but participants baseline characteristics not clearly described.	No further loss to follow up	Risk factors identified but not all clearly defined (meaning of sick lists unclear- could mean 1 day or 1 year).	Outcome adequately measured and described.	No adjustment for confounders.	All variables reported but no adjustment for confounders.
Ostgaard et al 1991	+/-	-	+/-	-	+	+/-
	88% (803 of 915) participation rate. Described settings but not participant characteristics.	All 804 participants included.	No clear statement of the question asked to identify 'previous back pain'.	Outcome adequately measured and described.	No adjustment for confounders.	All variables reported but no adjustment for confounders.
Ostgaard et al 1991	+/-	-	+/-	-	+	+/-
	90% (855 of 950) participation rate. Setting described but characteristics not described.	96% completed the follow up questionnaire.	Previous back not clearly defined.	Outcome adequately measured and described (back pain in defined in previous paper).	No adjustment for confounders.	All variables reported but no adjustment for confounders.
Melzack & Belanger 1989	+	-	+	+	+	+
	Setting described but sampling and participants characteristics not described.	All participants completed the second interview.	Interviewed 1 day after the birth; asked retrospectively. No definition of episodes or acute pain.	Interviewed 1 day after the birth; asked retrospectively. Low back pain in labour not defined.	No adjustment for confounders.	No adjustment for confounders and no confounders described either.

Reference	Study participation	Study attrition	Factor measurement	Outcome measurement	Study confounding	Statistical Analysis and Reporting
Berg et al 1988	+/-	-	+	+	+	+/-
	88% participation rate. Setting described but participants characteristics incomplete; age omitted.	All 862 women included - no loss of follow up.	Risk factors identified but not defined. Many of them seems to be open to interpretation.	No clear statement of the questions asked in the questionnaire. LPB and symphysiolysis not described.	No adjustment for confounders.	No adjustment for confounders; no modelling.
Mazicioglu et al 2006	-	-	+/-	+	-	-
	Large sample 1225 (sample size calculation provided). 84% response rate. Setting and participants described.	Cross-sectional study.	Interview questionnaire. Occupation and income not clearly defined.	Interview questionnaire and no clear definition of low back pain. Some women completed the survey themselves and others were assisted.	Adjustment for potential confounders through multivariate analysis.	Analysis adequate and clearly presented and reported.
Morino et al 2014	+	+	-	+	-	-
	No clear statement of participation rate. No description of setting and sampling.	No clear statement of attrition rate.	Risk factors adequately measured and described.	No clear definition and no clear statement of the questions asked.	Adjustment for potential confounders through multivariate analysis.	Analysis adequate and clearly presented and reported.

Reference	Study participation	Study attrition	Factor measurement	Outcome measurement	Study confounding	Statistical Analysis and Reporting
Denison et al 2009	+/-	-	-	+	+	-
	96% of case-notes had required information. Baseline characteristics not provided.	Retrospective study.	Risk factors adequately measured and described.	Extracted from notes entered by midwife or doctor. No clear definition of pubic symphysis dysfunction.	Adjustment for potential confounders through multivariate analysis. Extracted from notes entered by midwife or doctor.	Analysis adequate and clearly presented and reported.
Ostgaard et al 1993	+/-	-	+/-	-	+	+/-
	93% (855 of 917) participation rate of cases. Setting described but participants not described.	All 855 participants included.	Risk factors adequately measured and described. But we don't know whether the examination was done by the same clinician.	Outcome adequately measured and described. Women with back pain filled out diagram and VAS.	No adjustment for confounders	All variables reported but no adjustment for confounders.

Appendix 14: Risk of bias (ROB) of prognostic factor studies

Study	QUIPS Risk of bias assessment Domains: low (-), moderate (+/-), or high (+) risk of bias					
	Study participation	**Study attrition**	**Factor measurement**	**Outcome measurement**	**Study confouding**	**Statistical Analysis and Reporting**
Bjelland et al 2013c	+/-	-	-	+/-	-	-
	Questions to identify source population of women with PPGP possibly open to interpretation.	> 70% response to follow-up. Information on participants lost to follow-up provided. Very large sample.	Prognostic factor adequately measured in full sample.	Questions possible open to interpretation.	Confounders described. Adjustment for potential confounders in analysis.	Analysis clearly presented and reported.
Bjelland et al 2013b	+/-	-	-	+/-	-	-
	Questions to identify source population of women with PPGP possibly open to interpretation.	> 70% response to follow-up. Information on participants lost to follow-up provided. Very large sample.	Prognostic factor adequately measured in full sample.	Questions possible open to interpretation.	Confounders described. Adjustment for potential confounders in analysis.	Analysis clearly presented and reported.
Olsson et al 2012	-	-	-	-	-	-
	69% participation rate. Characteristics described.	84% response to follow-up.	Prognostic factor adequately measured. All scales described.	No clear statement of the question asked in the questionnaire to determine the presence/absence of lumbopelvic pain, but reference to previous paper cited (reference checked by FW).	Confounders described in detail. Adjustment for potential confounders in analysis.	Analysis clearly presented and reported.
Robinson et al 2010b	-	-	-	-	-	-
	85% participation rate.	Attrition <70%. There seems no loss to follow-up.	Prognostic factors adequately measured in full sample.	Outcome adequately measured and described.	Adjustment for potential confounders in analysis.	Analysis clearly presented and reported.

Reference	Study participation	Study attrition	Factor measurement	Outcome measurement	Study confouding	Statistical Analysis and Reporting
Mogren 2008	-	-	+/-	-	-	-
	83.2% participation rate. Setting and characteristics described (reference to a previous paper for participants' characteristics).	72.6% response rate at follow-up. Characteristics of those lost to follow up described.	No clear statement of what was considered physical activity.	Outcome adequately measured and described.	Adjustment for potential confounders in multivariate analysis.	Analysis clearly presented and reported.
Mogren 2007b	-	-	-	-	+/-	-
	83.2% participation rate. Setting and characteristics described (reference to a previous paper for participants' characteristics).	72.6% response rate at follow-up. Characteristics of those lost to follow up described.	Risk factors adequately measured and described.	Outcome adequately measured and described.	No adjustment for potential confounders in analysis.	Analysis clearly presented and reported.
Mogren 2007a	-	-	-	-	-	-
	83.2% response rate. Setting and characteristics described (reference to a previous paper for participants' characteristics).	72.6% response rate at follow-up. Characteristics of those lost to follow up described.	Risk factors adequately measured and described.	Outcome adequately measured and described.	Adjustment for potential confounders in multivariate analysis.	Analysis clearly presented and reported.
Mogren 2006	-	-	-	-	-	-
	83.2% response rate. Setting and characteristics described in detail.	72.6% response rate at follow-up. Characteristics of those lost to follow up described.	Risk factors adequately measured and described.	Outcome adequately measured and described.	Adjustment for potential confounders in multivariate analysis.	Analysis clearly presented and reported.

Appendix 15: Full data - Risk factors for PPGP examined in >1 study

Physical factors

History of low back pain

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR	Raw data
Low back pain history	Bjelland et al 2010	All	30 weeks pregnancy	3rd	Pelvic Girdle Syndrome?	75939	1.6* [1.6-1.7] p<0.0001	1.7 [1.6-1.8][a] p<0.001	Available
			30 weeks pregnancy	3rd	Severe Pelvic Girdle Syndrome?	75939	1.9* [1.7-2.1] p<0.0001	2.0 [1.8-2.2][a]; p<0.001	Available
	Albert at al 2006	All	33 weeks gestation	3rd	PPGP	2224	2.5* [2-3.1]; p<0.0001	2.2[b]; p<0.001	Available
			33 weeks gestation	3rd	Pelvic Girdle Syndrome	1880	3.1* [2.1-4.4] p<0.0001	2.3[b] p<0.001	Available
			33 weeks gestation	3rd	Symphy-siolysis	1771	1.9* [1.1-3.6] p=0.03	1.8[b] p=0.07	Available
			33 weeks gestation	3rd	One-sided sacroiliac syndrome	1961	2.2* [1.5-3.2] p<0.0001	2.0[b] p<0.01	Available
			33 weeks gestation	3rd	Double-sided sacroiliac syndrome	1914	1.7* [1.3-2.3] p=0.0003	2.3[b] p<0.001	Available
Meta-analysis	Bjelland et al 2010 and Albert et al 2006: pooled raw data for Pelvic Girdle Syndrome (random effects). Unable to pool adjusted OR because no exact measure of variance reported in Albert et al 2006.								

[a] Adjusted for Maternal age, Parity, BMI, educational level, emotinal distress, physical demanding work, smoking in pregnancy, pre-pregnancy physical activity weekly; [b] Adjusted for Trauma to the back, Salpingitis previous year, Multiparae, Weight before pregnancy, weight increase in pregnancy, smoking, height, social group 5, daily stress level, work satisfaction

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

? For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

History of low back pain not related to pregnancy

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR	Raw data
History of LBP not related to pregnancy	Kovacs et al 2012	All	31-38 weeks gestation (asked concerning PPGP in prior 4 weeks)	3rd	PPGP	1153	1.5* [1.2-2.0]; p=0.0005	/	Available
	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	Any	PPGP	1516	/	1.8 [1.2-2.6][a]; p<0.01	Not available
Meta-analysis	Kovacs et al 2012 and Larsen et al 1999: Decision not to pool the data because of significant heterogeneity including different times of follow up, adjusted and unadjusted effect measures, and differences in definition.								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

[a] Adjusted for Uncomfortable working position, working in draft and cold, exercising regularly (once a week), pelvic pain in a previous pregnancy, previous lower abdominal pain while not pregnant, parity, weight, heavy workloads, age, smoking.

Low back pain in previous pregnancies

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR	Raw data
Low back pain in previous pregnancies	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Any	Moderate to severe PPGP	306	2.6* [1.2-5.5]; p=0.01	/	Available
	Kovacs et al 2012	All	31-38 weeks gestation (asked concerning PPGP in prior 4 weeks)	3rd	PPGP	1164	1.8* [1.3-2.5]; p=0.0003	/	Available
Meta-analysis	Data not pooled because of significant heterogeneity including different times of follow up and differences in definition.								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991).
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Pelvic girdle pain in previous pregnancies

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR	Raw data
Pelvic girdle pain in previous pregnancies	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Any	Moderate to severe PPGP	306	9.3* [4.7-18.2]; p<0.0001	/	Available
	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	Any	PPGP	1516	13.0 [7.9-21.6]; p<0.0001	9.2 [4.6-18.1][a]; p<0.01	Available
Meta-analysis	Malmqvist et al 2012 and Larsen et al 1999: raw data pooled (random effect).								

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)
Statistically significant (p≤0.05) results are marked in yellow.

[a] Adjusted for Uncomfortable working position, working in draft and cold, exercising regularly (once a week), previous low back pain while not pregnant, previous lower abdominal pain while not pregnant, parity, weight, heavy workloads, age, smoking

Age of menarche

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR	Raw data
Age of menarche <11 years (vs ≥14 years)	Bjelland et al 2011	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome?	74973	1.8 [1.6-2.0]	1.5 [1.3-1.7][a]; 1.4 [1.2-1.6][b]	Available
Age of menarche 11 years (vs ≥14 years)	Bjelland et al 2011	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome?	74973	1.5 [1.4-1.7]	1.3 [1.2-1.5][a]; 1.3 [1.2-1.4][b]	Available
Age of menarche 12 years (vs ≥14 years)	Bjelland et al 2011	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome?	74973	1.3 [1.2-1.4]	1.2 [1.1-1.3][a]; 1.2 [1.1-1.3][b]	Available
Age of menarche 13 years (vs ≥14 years)	Bjelland et al 2011	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome?	74973	1.2 [1.1-1.3]	1.1 [1-1.2][a]; 1.1 [1-1.2][b]	Available

Age of menarche 14 years (vs ≥14 years)	Bjelland et al 2011	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome?	74973	1.8 [1.6-2]	1.5 [1.3-1.7][a]; 1.4 [1.2-1.6][b]	Available
Age of menarche 13 years (vs ≤12 years)	Kumle et al 2004	All	Postpartum (retro-spective questions)	Any	PPGP?	1861	/	0.9 [0.7-1.2][c]	Not available
Age of menarche ≥14 years (vs ≤12 years)	Kumle et al 2004	All	Postpartum (retro-spective questions)	Any	PPGP?	1861	/	0.8 [0.6-1.1][c]	Not available
Meta-analysis	Unable to pool data due to different comparators. Also, the outcome Pelvic Girdle Syndrome is a sub-type of PPGP.								

[a] Adjusted for BMI; [b] Adjusted for BMI, maternal age, parity, educational level, previous low back pain, physically demanding work and emotional distress; [c] Adjusted for Use of hormonal contraceptives before first birth, age at first birth, time elapsed since first birth, weight newborn, years of education, smoking during first pregnancy

? For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Parity

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise	Raw data
Parity 1 vs 0	Bjelland et al 2010	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome?	62189	1.9* [1.8-1.9]; p<0.0001	2.0 [1.9-2.1][a]; p<0.001	Available
			3rd trimester (mean 30.6 weeks SD 2)	3rd	Severe Pelvic Girdle Syndrome?	62189	2.3* [2.1-2.6]; p<0.0001	2.6 [2.3-2.9][a]; p<0.001	Available
	Endre-sen 1995	All	Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP?	4055	1.9* [1.6-2]; p<0.0001	/	Available
			Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP? that did not cause difficulties with housework	2780	1.6* [1.3-2]; p=0.0001	/	Available

			Postpartum while on maternity ward (retrospect-ive questions)	Any	PPGP? that caused difficulties with housework to some degree	3443	2.3* [2.1-2.6]; p<0.0001	/	Available
			Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP? that caused difficulties with housework to a large/high degree	2786	2.7* [2.1-3.5]; p<0.0001	/	Available
	Berg et al 1988	All	During pregnancy (at 20 weeks)	2nd	Symphysio-lysis at 20th week?	660	2.4* [1.3-4.7]; p=0.008	/	Available
			During pregnancy (at 30 weeks)	3rd	Symphysio-lysis 30th week?	660	2.0* [1.2-3.3]; p=0.01	/	Available
			During pregnancy (at 35 weeks)	3rd	Symphysio-lysis 35th week?	660	1.7* [1.1-2.7]; p=0.02	/	Available
Parity 2 vs 0	Bjelland et al 2010	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome?	46296	2.3* [2.2-2.4]; p<0.0001	2.6 [2.4-2.7][a]; p<0.001	Available
			3rd trimester (mean 30.6 weeks SD 2)	3rd	Severe Pelvic Girdle Syndrome?	46296	3.2* [2.9-3.7]; p<0.0001	3.8 [3.3-4.3][a]; p<0.001	Available
	Endre-sen 1995	All	Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP?	3264	2.4* [2.1-2.9]; p<0.0001	/	Available
			Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP? that did not cause difficulties with housework	2257	2.2* [1.6-2.9]; p<0.0001	/	Available
			Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP? that caused difficulties with housework to some degree	2758	2.3* [2.1-2.6]; p<0.0001	/	Available

			Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP? that caused difficulties with housework to a large/high degree	2263	4.3* [3.3-5.6]; p<0.0001	/	Available
Parity ≥3 vs 0	Bjelland et al 2010	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome?	37684	2.3* [2.1-2.6]; p<0.0001	2.6 [2.3-2.9][a]; p<0.001	Available
			3rd trimester (mean 30.6 weeks SD 2)	3rd	Severe Pelvic Girdle Syndrome?	37206	3.3* [2.7-4]; p<0.0001	3.6 [2.9-4.5][a]; p<0.001	Available
	Endre-sen 1995	All	Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP?	2684	2.6* [2.0-3.3]; p<0.0001	/	Available
			Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP? That did not cause difficulties with housework	1937	2.7* [1.8-4.2]; p<0.0001	/	Available
			Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP? That caused difficulties with housework to some degree	2321	2.3* [2.1-2.6]; p<0.0001	/	Available
			Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP? That caused difficulties with housework to a large/high degree	1964	2.7* [1.8-4.1]; p<0.0001	/	Available
Parity >1 vs 1	Berg et al 1988	All	During pregnancy (at 20 weeks)	2nd	Symphysio-lysis?	469	1.5* [0.9-2.9]; p=0.15	/	Available
			During pregnancy (at 30 weeks)	3rd	Symphysio-lysis?	469	1.1* [0.6-1.8]; p=0.8	/	Available
			During pregnancy (at 35 weeks)	3rd	Symphysio-lysis?	469	0.8* [0.5-1.3]; p=0.4	/	Available
Parity ≥1 vs 0	Eberha rd-Gran & Eskild 2008	All	Postpartum (retrospecti ve questions)	Any	Pelvic Girdle Syndrome?	1816	1.2 [0.7-1.8]	1.1 [0.7-1.8][b]	Available

	Werge-land & Strand 1998	All	After delivery while still in hostpital (retrospecti ve questions)	Any	Disabling posterior pelvic pain (Posterior PPGP?)	3321	2.6* [2-3.3]; p<0.0001	/	Available
	Albert et al 2006	All	33 weeks gestation	3rd	PPGP	2224	2.3* [1.8-2.8]; p<0.0001	2.2c; p<0.001	Available
			33 weeks gestation	3rd	Pelvic Girdle Syndrome	1880	3.7* [2.4-5.5]; p<0.0001	3.5c; p<0.001	Available
			33 weeks gestation	3rd	Symphysioly sis	1771	2.3* [1.2-4.2]; p=0.008	2.7c; p<0.01	Available
			33 weeks gestation	3rd	One-sided sacroiliac syndrome	1961	1.4* [1-2]; p=0.07	ORc NS	Available
			33 weeks gestation	3rd	Double-sided sacroiliac syndrome	1914	2.5* [1.8-3.4]; p<0.0001	2.4c; p<0.001	Available
	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	Any	PPGP	1516	1.9* [1.4-2.6]; p<0.0001	/	Available
	Klemetti et al 2011	All	Postpartum (retrospecti ve questions)	Any	Symphysis pubis dysfunction	2825	1.3* [1.1-1.5]; p=0.007	/	Available
	Malm-qvist et al 2012	All	Postpartum (retrospecti ve questions)	Any	Moderate to severe PPGP	306	2.0* [1.2-3.2]; p=0.004	/	Available
Parity >1 vs 0	Berg et al 1988	All	During pregnancy (at 20 weeks)	2nd	Symphysio-lysis?	542	5.2* [2.7-9.9]; p<0.0001	/	Available
			During pregnancy (at 30 weeks)	3rd	Symphysio-lysis?	542	2.1* [1.2-3.7]; p=0.01	/	Available
			During pregnancy (at 35 weeks)	3rd	Symphysio-lysis?	542	1.7* [1.0-2.9]; p=0.04	/	Available
Parity	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	Any	PPGP	1516	/	OR NS	Not available
	Endre-sen 1995	All	Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP?	2853	/	β coefficient c 0.2 (T-value 7.6); p<0.001	Not available

	Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP[?]	3062	/	β coefficient [d] 0.3 (T-value 9.8); p<0.001	Not available
	Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP[?] + Often PLBP[?]	1116	/	β coefficient [e] 0.1 (T-value 3.0); p<0.01	Not available
	Postpartum while on maternity ward (retrospec-tive questions)	Any	PPGP Rarely/ never PLBP[?]	1737	/	β coefficient [f] 0.3 (T-value 8.2); p<0.001	Not available
Meta-analy-sis	Malmqvist et al 2012 and Larsen et al 1999: pooled raw data (random effect) for parity ≥1 versus 0 comparison. Other data was not pooled due to significant heterogeneity including different comparisons, different time of follow up, and different sub-outcomes.						

[a] Adjusted for Maternal age, BMI, educational level, previous LBP, emotinal distress, physical demanding work, smoking in pregnancy, pre-pregnancy physical activity weekly; [b] Adjusted for Diabetes, BMI, time since last delivery, age at last delivery; [c] Adjusted for History of LBP, Trauma to the back, Salpingitis previous year, Weight before pregnancy, weight increase in pregnancy, smoking, height, social group 5, daily stress level, work satisfaction; [d] Adjusted for LBP, moking, weight of newborn, work bending forward, woman's year of birth, BMI; [e] Adjusted for smoking, weight of newborn, work bending forward, woman's year of birth, BMI, strain at work, economic independence twisting and bending ; [f] Adjusted for frequent lifts 10-20kg, twisting and bending, strain at work; g Adjusted for woman's year of birth, weight of newborn, smoking, permanently employed

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Smoking

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise	Raw data
Smoking during pregnancy: occasional smoker (vs non-smoker)	Bjelland et al 2010	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome[?]	71035	1.1* [1.0-1.2]; p=0.1	1.0 [0.9-1.1][a]	Available
			3rd trimester (mean 30.6 weeks SD 2)	3rd	Severe Pelvic Girdle Syndrome[?]	71035	1.5* [1.2-1.9]; p=0.0007	1.2 [1.0-1.6][a]	Available

Smoking during pregnancy: daily smoker (vs non-smoker)	Bjelland et al 2010	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome?	73164	1.6* [1.4-1.7]; p<0.0001	1.2 [1.1-1.3][a]; p<0.001	Available
			3rd trimester (mean 30.6 weeks SD 2)	3rd	Severe Pelvic Girdle Syndrome?	73164	1.7* [1.4-2.0]; p<0.0001	1.1 [0.9-1.3][a]	Available
Daily smoking (yes vs no)	Werge-land & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Any	Disabling posterior pelvic pain (Posterior PPGP?)	3311	1.7* [1.3-2.1]; p<0.0001	/	Available
Smoking (yes vs no; unclear when)	Albert at al 2006	All	33 weeks gestation	3rd	PPGP	2224	1.3* [1-1.6]; p=0.03	OR[b] NS	Available
			33 weeks gestation	3rd	Pelvic Girdle Syndrome	1880	1.4* [1.0-2.1]; p=0.05	OR[b] NS	Available
			33 weeks gestation	3rd	Symphy-siolysis	1771	1.9* [1.1-3.4]; p=0.03	OR[b] 2.2; p=0.05	Available
			33 weeks gestation	3rd	One-sided sacroiliac syndrome	1961	1.4* [0.9-2]; p=0.1	OR[b] NS	Available
			33 weeks gestation	3rd	Double-sided sacroiliac syndrome	1914	1.0* [0.7-1.4]; p=0.8	OR[b] NS	Available
	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	Any	PPGP	1516	1.4* [1.0-1.8]; p=0.04; Chi-squared test NS	/	Available
	Endre-sen 1995	All	Post-partum while on maternity ward (retro-spective questions)	Any	PPGP?	2853	/	β coefficient[c] 0.07 (T-value 3.93); p<0.001	Not available
			Post-partum while on maternity ward (retro-spective questions)	Any	PPGP?	3062	/	β coefficient[d] 0.081 (T-value 4.41); p<0.001	Not available

			Post-partum while on maternity ward (retro-spective questions)	Any	PPGP? Rarely/ never PLBP?	1737	/	β coefficient[f] 0.09 (T-value 4.34); p<0.001	Not available
Smoking during first pregnancy (yes vs no)	Kumle et al 2004	All	Post-partum (retro-spective questions)	Any	PPGP?	1861	/	0.9 [0.7-1.1][g]	Not available
Smoking quantity: 1-10 cigarettes/day (vs non-smoker)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PPGP	1124	1.4* [0.9-2.1]; p=0.2	/	Available
Smoking quantity: 11-20 cigarettes/day (vs non-smoker)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PPGP	1017	2.0* [0.4-9.5]; p=0.4	/	Available
Smoking quantity: >20 cigarettes/day (vs non-smoker)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PPGP	1011	0.3*[0.03-3.1]; p=0.3	/	Available
Meta-analysis	No data was pooled due to significant heterogeneity including different times of follow up, different definitions and different sub-outcomes.								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)

? For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

[a] Adjusted for Maternal age, Parity, BMI, educational level, previous LBP, emotional distress, physically demanding work, pre-pregnancy physical activity weekly; [b] Adjusted for History of LBP, Trauma to the back, Salpingitis previous year, Multiparae, Weight before pregnancy, weight increase in pregnancy, height, social group 5, daily stress level, work satisfaction; [c] Adjusted for LBP, Parity, weight of newborn, work bending forward, woman's year of birth, BMI; [d] Adjusted for parity, weight of newborn, work bending forward, woman's year of birth, BMI, strain at work, economic independence twisting and bending; [f] Adjusted for parity, woman's year of birth, weight of newborn, permanently employed; [g] Adjusted for Use of hormonal contraceptives before first birth, age at menarche, age at first birth, time elapsed since first birth, weight newborn, years of education

Body Mass Index (BMI)

Factor	Study	Participants (all or	Time of follow up	Trimester	Outcome	No of participants	Unadjusted effect measure	Adjusted effect measure	Raw data
Pre-pregnancy Body Mass Index (BMI)	Malm-qvist et al 2012	All	Postpartum (retro-spective questions)	Any	Moderate to severe PPGP	569	1.1 [1.0-1.1]; p=0.01	/	Not available
			Postpartum (retro-spective questions)	Any	Moderate to severe PPGP	306	2.1** [1.4-3.1] (SMD 0.4 [0.2-0.6])	/	Not available
	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PPGP	1149	Student t-test or Mann Whitney U test: p<0.01	/	Not available
BMI at delivery	Malm-qvist et al 2012	All	Postpartum (retro-spective questions)	Any	Moderate to severe PPGP	306	2.1** [1.4-3.3] (SMD 0.4 [0.2-0.7])	/	Not available
BMI (at 17 weeks gestation) 25-29 (vs <25)	Bjel-land et al 2010	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome?	63391	1.5* [1.4-1.6]; p<0.0001	1.4 [1.3-1.5][a]; p<0.001	Available
			3rd trimester (mean 30.6 weeks SD 2)	3rd	Severe Pelvic Girdle Syndrome?	63391	1.8* [1.6-2.0]; p<0.0001	1.6 [1.4-1.8][a]; p<0.001	Available
BMI (at 10-12 weeks gestation) 25-29 (vs <25)	De-nison et al 2009	All	Postpartum (retro-spective questions)	Any	Symphysis pubis dysfunction	651	/	1.2 [0.6-2.3][g];	Not available
BMI (at 17 weeks gestation) ≥30 (vs <25)	Bjel-land et al 2010	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome?	50419	2.0* [1.9-2.2]; p<0.0001	1.8 [1.7-1.9][a]; p<0.001	Available
			3rd trimester (mean 30.6 weeks SD 2)	3rd	Severe Pelvic Girdle Syndrome?	50419	2.5* [2.2-2.2]; p<0.0001	2.0 [1.7-2.3][a]; p<0.001	Available
BMI (at 10-12 weeks gestation) ≥30 (vs <25)	De-nison et al 2009	All	Postpartum (retro-spective questions)	Any	Symphysis pubis dysfunction	651	/	4.0 [2.2-7.2][g]; p<0.0001	Not available
BMI (postpartum; time varied) 20-35 (vs <20)	Eber-hard-Gran & Eskild 2008	All	Postpartum (retro-spective questions)	Any	Pelvic Girdle Syndrome?	1686	1.5 [0.7-3.6]	1.4 [0.6-3.3][b]	Available

BMI (postpartum; time varied) ≥30 (vs <20)	Eber-hard-Gran & Eskild 2008	All	Postpartum (retro-spective questions)	Any	Pelvic Girdle Syndrome[?]	202	4.9 [1.4-17]; p<0.05	5.5 [1.5-19.6][b]; p<0.01	Available
BMI >30 (yes vs no) (not stated when measured)	Albert at al 2006	All	33 weeks gestation	3rd	PPGP	2224	1.3* [0.8-2.1]; p=0.3	Not included in multi-variate analysis because NS in uni-variate analysis	Available
			33 weeks gestation	3rd	Pelvic Girdle Syndrome	1880	2.3* [1.2-4.4]; p=0.009	/	Available
			33 weeks gestation	3rd	Symphysiolysis	1771	0.5* [0.07-3.9]; p=0.5	Not included in multi-variate analysis because NS in uni-variate analysis	Available
			33 weeks gestation	3rd	One-sided sacroiliac syndrome	1961	1.0* [0.4-2.5]; p=1.0	Not included in multi-variate analysis because NS in uni-variate analysis	Available
			33 weeks gestation	3rd	Double-sided sacroiliac syndrome	1914	1.0* [0.4-2.2]; p=1.0	Not included in multi-variate analysis because NS in uni-variate analysis	Available
BMI (not stated when measured)	Endres en 1995	All	Postpartum while on maternity ward (retro-spective questions)	Any	PPGP?	2853	/	β coefficient[c] 0.1 (T-value 2.2); p<0.05	Not available
			Postpartum while on maternity ward (retro-spective questions)	Any	PPGP?	3062	/	β coefficient[d] 0.2 (T-value 2.5); p<0.05	Not available

	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PPGP	1158	/	β coefficient 0.05 [0.01-0.09][e]; p=0.01	Not available
Pre-pregnancy BMI <18 (vs ≥18 and <22)	Morino et al 2014	All	during 2nd (mean 22.4, SD 2.1 weeks)	2nd	Hip joint or pubis pain in 2nd trimester	355	/	1.3 [0.4-3.9][f]	Not available
		All	3rd trimester (mean 33.7 weeks, SD 2.1 weeks)	3rd	Hip joint or pubis pain in 3rd trimester	355	/	2.0 [0.9-4.0][f]	Not available
Pre-pregnancy BMI ≥22 (vs ≥18 and <22)	Morino et al 2014	All	during 2nd (mean 22.4, SD 2.1 weeks)	2nd	Hip joint or pubis pain in 2nd trimester	355	/	2.4 [1.1-5.0][f] p<0.05	Not available
		All	3rd trimester (mean 33.7 weeks, SD 2.1 weeks)	3rd	Hip joint or pubis pain in 3rd trimester	355	/	2.1 [1.2-3.7][f] p<0.05	Not available
Meta-analysis	No data was pooled due to significant heterogeneity including different times of follow up, different definitions and different sub-outcomes.								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

** OR calculated from Standardised Mean Difference using formula: SMD=V3/π x ln OR (Chin 2000). (Significant results means that higher BMI means more likely PPGP.)

[a] Adjusted for Maternal age, Parity, educational level, previous LBP, emotinal distress, physical demanding work, smoking in pregnancy, pre-pregnancy physical activity weekly; [b] Adjusted for Diabetes, Time since delivery, Age at last delivery, parity; [c] Adjusted for LBP, Parity, smoking, weight of newborn, work bending forward, woman's year of birth; [d] Adjusted for parity, smoking, weight of newborn, work bending forward, woman's year of birth, strain at work, economic independence twisting and bending; [e] Adjusted for stage of pregnancy, depression (BDI-II score); [f] Adjusted for age; [g] Adjusted for parity, age, smoking status and DEPCAT status.

Maternal weight before pregnancy

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR	Raw data
Weight before pregancy	Albert et al 2006	All	33 weeks gestation	3rd	PPGP	2224	/	OR[a] NS	Not available
			33 weeks gestation	3rd	Pelvic Girdle Syndrome	1880	/	1.03[a]; p<0.05	Not available
			33 weeks gestation	3rd	Symphysio-lysis	1771	/	1.04[a]; p<0.05	Not available
			33 weeks gestation	3rd	One-sided sacroiliac syndrome	1961	/	OR[a] NS	Not available
			33 weeks gestation	3rd	Double-sided sacroiliac syndrome	1914	/	OR[a] NS	Not available
	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	Any	PPGP	1516	OR NS	/	Not available
	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PPGP	1149	Student t-test or Mann Whitney U test: p<0.01	/	Not available
Meta-analysis	Insufficient data reported to pool data in meta-analysis.								

[a] Adjusted for History of LBP, Trauma to the back, Salpingitis previous year, Multiparae, weight increase in pregnancy, smoking, height, social group 5, daily stress level, work satisfaction

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Weight of newborn

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise	Raw data
Weight of newborn (per 500g)	Kumle et al 2004	All	Postpartum (retrospective questions)	Any	PPGP[?]	1861	/	1.0 [1.0-1.1][a]	Not available
Weight of newborn (in g)	Endre-sen 1995	All	Postpartum while on maternity ward (retrospective questions)	Any	PPGP[?]	2853	/	β coefficient[b] 1.2E-0.4 (T-value 3.47); p<0.001	Not available
			Postpartum while on maternity ward (retrospective questions)	Any	PPGP[?]	3062	/	β coefficient[c] 1.33E-0.4 (T-value 3.72); p<0.001	Not available
			Postpartum while on maternity ward (retrospective questions)	Any	PPGP[?] + Rarely / never PLBP[?]	1737	/	β coefficient[d] 1.72E-04 (T-value 4.32); p<0.001	Not available
Meta-analysis	Insufficient data reported to pool data in meta-analysis.								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

[a] Adjusted for Use of hormonal contraceptives before first birth, age at menarche, age at first birth, time elapsed since first birth, years of education, smoking during first pregnancy; [b] Adjusted for LBP, Parity, smoking, work bending forward, woman's year of birth, BMI; [c] Adjusted for parity, smoking, work bending forward, woman's year of birth, BMI, strain at work, economic independence twisting and bending; [d] Adjusted for parity, woman's year of birth, smoking, permanently employed.

Maternal height

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR	Raw data
Height	Albert et al 2006	All	33 weeks gestation	3rd	PPGP	2224	/	OR[a] NS	Not available
			33 weeks gestation	3rd	Pelvic Girdle Syndrome	1880	/	OR[a] NS	Not available
			33 weeks gestation	3rd	Symphy-siolysis	1771	/	OR[a] NS	Not available
			33 weeks gestation	3rd	One-sided sacroiliac syndrome	1961	/	OR[a] 1.05 p<0.05	Not available
			33 weeks gestation	3rd	Double-sided sacroiliac syndrome	1914	/	OR[a] NS	Not available
	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PPGP	1149	Student t-test or Mann Whitney U test: p=0.64	/	Not available
Meta-analysis	Insufficient data reported to pool data in meta-analysis.								

[a] Adjusted for History of LBP, Trauma to the back, Salpingitis previous year, Multiparae, Weight before pregnancy, weight increase in pregnancy, smoking, social group 5, daily stress level, work satisfaction

Statistically significant (p≤0.05) results are marked in yellow.

Socio-demographic factors

Age

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR	Raw data
Age 25-34 years (vs <25)	Klemetti et al 2011	All	Postpartum (retro-spective questions)	Any	Symphysis pubis dysfunction	2133	1.0* [0.8-1.3]; p=0.7	/	Available
		Primi-parous	Postpartum (retro-spective questions)	Any	Symphysis pubis dysfunction	973	1.1* [0.8-1.6]; p=0.4	/	Available
		Multi-parous	Postpartum (retro-spective questions)	Any	Symphysis pubis dysfunction	1160	0.8* [0.6-1.1]; p=0.2	/	Available
Age ≥35 years (vs <25)	Klemetti et al 2011	All	Postpartum (retro-spective questions)	Any	Symphysis pubis dysfunction	1198	0.7* [0.5-1.0]; p=0.02	0.8 [0.6-1.1][a]	Available
		Primi-parous	Postpartum (retro-spective questions)	Any	Symphysis pubis dysfunction	511	1.0* [0.6-1.6]; p=1.0	0.8 [0.5-1.3][a]	Available
		Multi-parous	Postpartum (retro-spective questions)	Any	Symphysis pubis dysfunction	717	0.7* [0.5-1.0]; p=0.03	0.6 [0.4-0.9][a]	Available
Age ≥35 years (vs 25-34)	Klemetti et al 2011	All	Postpartum (retro-spective questions)	Any	Symphysis pubis dysfunction	2259	0.9* [0.7-1.1]; p=0.3	0.8 [0.7-1.0][a]	Available
		Primiparous	Postpartum (retro-spective questions)	Any	Symphysis pubis dysfunction	824	0.9* [0.6-1.3]; p=0.6	0.9 [0.6-1.3][a]	Available
		Multiparous	Postpartum (retro-spective questions)	Any	Symphysis pubis dysfunction	1465	0.8* [0.6-1.1]; p=0.1	0.8 [0.6-1.0][a]	Available
Age <25 years (vs ≥35)	Bjelland et al 2010	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome?	27056	1.1* [1.02-1.2]; p=0.009	1.6 [1.4-1.7][b]; p<0.001	Available
			3rd trimester (mean 30.6 weeks SD 2)	3rd	Severe Pelvic Girdle Syndrome?	20767	1.2* [1-1.4]; p=0.03	1.7 [1.4-2.1][b]; p<0.001	Available

Age 25-34 years (vs ≥35)	Bjelland et al 2010	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome[?]	58917	1.8* [1.7-1.9]; p<0.0001	1.3 [1.2-1.4][b]; p<0.001	Available
			3rd trimester (mean 30.6 weeks SD 2)	3rd	Severe Pelvic Girdle Syndrome[?]	66214	1.1* [0.9-1.2]; p=0.3	1.4 [1.2-1.6][b]; p<0.001	Available
Age	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	Any	PPGP	1516	OR NS	/	Not available
	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PPGP	1149	Student t-test or Mann Whitney U test: p=0.7	/	Not available
	Lebel et al 2010	All	Pregnancy mean gestational age 39.2 (SD2.2)	Any	Symphysiolysis	81142	1.7** [1.3-2.3] (SMD 0.3 [0.1-0.5]) (older women were more likely to have symphysiolysis)	/	Not available
Age at delivery	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Any	Moderate to severe PPGP	306	1.2** [0.8-1.9] (SMD 0.1 [-0.1-0.3])	/	Not available
Age <25 years (vs ≥30)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Any	Disabling posterior pelvic pain (Posterior PPGP[?])	2038	0.7* [0.5-1.0]; p=0.04	/	Available
Age 25-29 years (vs ≥30)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Any	Disabling posterior pelvic pain (Posterior PPGP[?])	2511	0.9* [0.7-1.2]; p=0.6	/	Available
Age ≤19 years (vs 20-24)	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	Any	PPGP[?]	1813	0.8* [0.6-1]; p=0.04	/	Available

			Postpartum while on maternity ward (retro-spective questions)	Any	PPGP? That did not cause difficulties with housework	1203	0.9* [0.6-1.4]; p=0.7	/	Available
			Postpartum while on maternity ward (retro-spective questions)	Any	PPGP? That caused difficulties with housework to some degree	1496	0.9* [0.6-1.1]; p=0.3	/	Available
			Postpartum while on maternity ward (retro-spective questions)	Any	PPGP? That caused difficulties with housework to large/high degree	1194	0.5* [0.3-0.8]; p=0.006	/	Available
Age 25-29 years (vs 20-24)	Endre-sen 1995	All	Postpartum while on maternity ward (retro-spective questions)	Any	PPGP?	3354	1.0* [0.9-1.1]; p=0.9	/	Available
			Postpartum while on maternity ward (retrospecti ve questions)	Any	PPGP? That did not cause difficulties with housework	2174	0.9* [0.7-1.1]; p=0.3	/	Available
			Postpartum while on maternity ward (retrospecti ve questions)	Any	PPGP? That caused difficulties with housework to some degree	2775	1.1* [0.9-1.2]; p=0.5	/	Available
			Postpartum while on maternity ward (retro-spective questions)	Any	PPGP? That caused difficulties with housework to large/high degree	2193	0.9* [0.7-1.2]; p=0.5	/	Available
Age 30-34 years (vs 20-24)	Endre-sen 1995	All	Postpartum while on maternity ward (retro-spective questions)	Any	PPGP?	2629	0.9* [0.8-1.1]; p=0.2	/	Available

			Postpartum while on maternity ward (retrospecti ve questions)	Any	PPGP? That did not cause difficulties with housework	1725	0.8* [0.6-1]; p=0.07	/	Available
			Postpartum while on maternity ward (retro-spective questions)	Any	PPGP? That caused difficulties with housework to some degree	2242	0.8* [0.6-0.9]; p=0.005	/	Available
			Postpartum while on maternity ward (retro-spective questions)	Any	PPGP? That caused difficulties with housework to large/high degree	1772	1.1* [0.9-1.4]; p=0.4	/	Available
Age 35-39 years (vs 20-24)	Endre-sen 1995	All	Postpartum while on maternity ward (retro-spective questions)	Any	PPGP?	1831	0.9* [0.7-1.1]; p=0.3	/	Available
			Postpartum while on maternity ward (retro-spective questions)	Any	PPGP? That did not cause difficulties with housework	1206	1.0* [0.6-1.5]; p=0.9	/	Available
			Postpartum while on maternity ward (retro-spective questions)	Any	PPGP? That caused difficulties with housework to some degree	1492	0.8* [0.6-1.1]; p=0.1	/	Available
			Postpartum while on maternity ward (retro-spective questions)	Any	PPGP? That caused difficulties with housework to large/high degree	1215	1.1* [0.7-1.6]; p=0.8	/	Available
Age ≥40 years (vs 20-24)	Endre-sen 1995	All	Postpartum while on maternity ward (retro-spective questions)	Any	PPGP?	1520	0.8* [0.4-1.5]; p=0.5	/	Available
			Postpartum while on maternity ward (retro-spective questions)	Any	PPGP? That did not cause difficulties with housework	992	0.3* [0.04-2.0]; p=0.2	/	Available

		Postpartum while on maternity ward (retro-spective questions)	Any	PPGP[?] That caused difficulties with housework to some degree	1243	0.8* [0.3-1.7]; p=0.5	/	Available
		Postpartum while on maternity ward (retro-spective questions)	Any	PPGP? That caused difficulties with housework to large/high degree	1001	1.3* [0.5-3.5]; p=0.6	/	Available
Meta-analysis	Data was not pooled due to significant heterogeneity including different comparisons, different time of follow up, and different sub-outcomes.							
* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991) [?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation. Statistically significant (p≤0.05) results are marked in yellow.								
** OR calculated from Standardised Mean Difference using formula: SMD=V3/π x ln OR (Chin 2000)								

Educational level

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR	Raw data
Educational level: less than high school/ primary or secondary 1 (vs university level)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PPGP	706	1.6* [1.1-2.2]; p=0.02	/	Available
	Werge-land & Strand 1998	All	After delivery while still in hospital (retro-spective questions)	Any	Disabling posterior pelvic pain (posterior PPGP[?])	1966	1.2* [0.9-1.7]; p=0.2	/	Available
Educational level: high school/ secondary 2 (vs university level)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PPGP	946	1.3* [1.0-1.8]; p=0.03	/	Available
	Werge-land & Strand 1998	All	After delivery while still in hospital (retro-spective questions)	Any	Disabling posterior pelvic pain (posterior PPGP[?])	2439	1.3* [1.0-1.8]; p=0.04	/	Available

Educational level <12 years (vs ≥17)	Bjelland et al 2010	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome[?]	39397	4.5* [4.2-4.9]; p<0.0001	1.3 [1.1-1.4][a]; p<0.001	Available
			3rd trimester (mean 30.6 weeks SD 2)	3rd	Severe Pelvic Girdle Syndrome[?]	21397	3.3* [2.7-3.9]; p<0.0001	1.8 [1.4-2.2][a]; p<0.001	Available
Educational level 12 years (vs ≥17)	Bjelland et al 2010	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome[?]	54351	3.8* [3.6-4.1]; p<0.0001	1.2 [1.1-1.3][a]; p<0.001	Available
			3rd trimester (mean 30.6 weeks SD 2)	3rd	Severe Pelvic Girdle Syndrome[?]	36351	2.5* [2.2-3]; p<0.0001	1.7 [1.4-2][a]; p<0.001	Available
Educational level 13-16 years (vs ≥17)	Bjelland et al 2010	All	3rd trimester (mean 30.6 weeks SD 2)	3rd	Pelvic Girdle Syndrome[?]	63379	3.1* [2.9-3.3]; p<0.0001	1.1 [1.1-1.2][a]; p<0.001	Available
			3rd trimester (mean 30.6 weeks SD 2)	3rd	Severe Pelvic Girdle Syndrome[?]	45379	1.7* [1.5-2]; p<0.0001	1.4 [1.2-1.6][a]; p<0.001	Available
Education years	Malmqvist et al 2012	All	Postpartum (retro-spective questions)	Any	Moderate to severe PPGP	306	1.1** [0.7-0.7] (SMD 0.03 [-0.2-0.3])	/	Not available
Meta-analysis	Data was not pooled due to significant heterogeneity including different comparisons, different time of follow up, and different sub-outcomes.								

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

** OR calculated from Standardised Mean Difference using formula: SMD=V3/π x ln OR (Chin 2000)

[a] Adjusted for Maternal age, Parity, BMI, previous LBP, emotinal distress, physical demanding work, smoking in pregnancy, pre-pregnancy physical activity weekly.

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Work satisfaction

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR	Raw data
Work satisfaction	Albert at al 2006	All	33 weeks gestation	3rd	PPGP	2224	/	0.9[a]; p<0.01	Not available
			33 weeks gestation	3rd	Pelvic Girdle Syndrome	1880	/	0.9[a]; p<0.05	Not available
			33 weeks gestation	3rd	Symphysiolysis	1771	/	OR[a] NS	Not available
			33 weeks gestation	3rd	One-sided sacroiliac syndrome	1961	/	OR[a] NS	Not available
			33 weeks gestation	3rd	Double-sided sacroiliac syndrome	1914	/	0.9[a]; p<0.01	Not available
	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	Any	PPGP	1516	0.6* [0.3-1.2]; p=0.1	/	Available
Meta-analysis	Data was not pooled due to significant heterogeneity including different time of follow up, adjusted and unadjusted effect measures.								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

[a] Adjusted for History of LBP, Trauma to the back, Salpingitis previous year, Multiparae, Weight before pregnancy, weight increase in pregnancy, smoking, height, social group 5, daily stress level.

Appendix 16: Full GRADE table – Physical Risk factors for PPGP (examined in more than 1 study)

			Univariate			Multivariate											
Potential risk factor identified	**References [Phase] (No. of participants)**	**No. of papers (no. of studies)**	**+**	**0**	**-**	**+**	**0**	**-**	**Dominant Phase****	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
History of low back pain*	Bjelland et al 2010 [2][i] (75939); Albert et al 2006 [1][j] (2224)	2 (2)	2	0	0	2	0	0	2	x[a]	v	v	v	x[b]	x	x	++
History of low back pain not related to pregnancy	Kovacs et al 2012 [1][k] (1153); Larsen et al 1999 [1][j] (1516)	2 (2)	1	0	0	1	0	0	1	v	v	v	v	x[b]	x	x	++
Low back pain in previous pregnancies	Malmqvist et al 2012 [1][k] (306); Kovacs et al 2012 [1][k] (1164)	2 (2)	2	0	0	x	x	x	1	x[c]	v	v	v	x[b]	x	x	+
Pelvic girdle pain in previous pregnancies	Malmqvist et al 2012 [1][k] (306); Larsen et al 1999 [1][j] (1516)	2 (2)	2	0	0	1	0	0	1	x[c]	v	v	v	x[b]	v[d]	x	++
Age of menarche (younger)	Bjelland et al 2011 [2][i] (74973); Kumle et al 2004 [2][i] (1861)	2 (2)	1	0	0	1	1	0	2	x[a]	x[e]	v	v	x[b]	x	x	+
Parity≥1^	Bjelland et al 2010 [2][i] (62189); Endresen 1995 [1][jk] (4055); Berg et al 1988 [1][k] (660); Eberhard-Gran & Eskild 2008 [2][i] (1816); Wergeland et al 1999 [1][k] (3321); Albert et al 2006 [1][j] (2224); Larsen et al 1999 [1][j] (1516); Klemetti et al 2011 [1][k] (2825); Malmqvist et al 2012 [1][k] (306)	9 (9)	9	0	0	3	2	0	1	x[f]	v	v	v	v	x	x	++

			Univariate			Multivariate											
Potential risk factor identified	**References [Phase] (No. of participants)**	**No. of papers (no. of studies)**	**+**	**0**	**-**	**+**	**0**	**-**	**Dominant Phase****	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Smoking (vs not smoking) *	Bjelland et al 2010 [2][i] (73164); Wergeland et al 1998 [1][k] (3311); Albert et al 2006 [1][j] (2224); Larsen et al 1999 [1][k] (1516); Endresen 1995 [1][j] (3062); Kumle et al 2004 [2][i] (1861); Kovacs et al 2012 [1][k] (1124)	7 (7)	4	1	0	3	1	0	1	x[g]	v	v	v	v	x	x	++
Body Mass Index (BMI) (higher BMI or ≥30)*	Malmqvist et al 2012 [1][k] (569); Kovacs et al 2012 [1][j] (1149); Bjelland et al 2010 [2][i] (63339); Denison et al 2009 [2][i] (651); Eberhard-Gran & Eskild [2][i] (1686); Albert et al 2006 [1][j] (2224); Endresen 1995 [1][j] (2853); Morino et al 2014 [1][l] (355)	8 (8)	4	2	0	6	0	0	1	x[h]	v	v	v	v	x	x	++
Weight before pregnancy*	Albert et al 2006 [1][j] (2224); Larsen et al 1999 [1][j] (1516); Kovacs et al 2012 [1][m](1149)	3 (3)	1	1	0	0	1	0	1	v	x[e]	v	v	x[b]	x	x	+
Weight of newborn^	Kumle et al 2004 [2][i] (1861); Endresen 1995 [1][j] (3062)	2 (2)	x	x	x	1	1	0	1	x[a]	x[e]	v	v	x[b]	x	x	+
Maternal height*	Albert et al 2006 [1][j](2224); Kovacs et al 2012 [1][m] (1149)	2 (2)	0	1	0	0	1	0	1	v	x[e]	v	v	x[b]	x	x	+

** If equal number of studies in different phases, then this was based on number of participants; Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Questions to determine outcome open to interpretation (high/moderate ROB of outcome measurement domain); [b] Limited number studies explored this factor; [c] High ROB for outcome measurement (Malmqvist et al 2012); [d] Large effect (>4.5 OR) for both studies; [e] Conflicting results between studies; [f] Question open to interpretation and/or recall bias in 7 of 9 studies; [g] Question open to interpretation and/or recall bias in 5 of 7 studies; [h] Question open to interpretation or not stated and/or recall bias in 6 of 8 studies; [i] Phase 2: Tested specific hypothesis, used multivariate logistic regression. [j] Phase 1: Identified potential risk factors, used multivariate regression. [k] Phase 1: Descriptive statistics extracted and unadjusted OR calculated. [l] Phase 1: Multiple outcomes assessed. Adjustments for age only. [m] Phase 1: simple comparative test (t-test/Mann Whitney U test).

Appendix 17: Full GRADE table – Socio-demographic Risk factors for PPGP (examined in more than 1 study)

			Univariate			Multivariate											
Potential risk factor identified	**References [Phase] (No. of participants)**	**No. of papers (no. of studies)**	**+**	**0**	**-**	**+**	**0**	**-**	**Dominant Phase****	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Age (older)*	Klemetti et al 2011 [1][ef] (2825); Bjelland et al 2010 [2][d] (75939); Larsen et al 1999 [1][e] (1516); Kovacs et al 2012 [1][g] (1149); Lebel et al 2010 [1][f] (81142); Malmqvist et al 2012 [1][f] (306); Wergeland et al1998 [1][f] (3321); Endresen 1995 [1][e] (5438)	8 (8)	0	4	4	0	1	1	1	x[a]	v	v	v	v	x	x	++
Educational level (lower level)^	Kovacs et al 2012 [1][f] (706); Wergeland et al1998 [1][f] (2439); Bjelland et al 2010 [2][d] (63379); Malmqvist et al 2012 [1][f] (306)	4 (4)	3	1	0	1	0	0	1	x[b]	v	v	v	v	x	x	++
Work satisfaction (higher)*	Albert et al 2006 [1][e] (2224), Larsen et al 1999 [1][f] (1516)	2 (2)	0	1	0	0	0	1	1	x[b]	x[e]	v	v	x[c]	x	x	+

** If equal number of studies in different phases, then this was based on number of participants; Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Question open to interpretation or not stated and/or recall bias in 6 of 8 studies; [b] Questions to ascertain outcome open to interpretation or recall bias for 3 of 4 studies; [c] Limited number studies explored this factor. [d] Phase 2: Tested specific hypothesis, used multivariate logistic regression. [e] Phase 1: Identified potential risk factors, used multivariate regression. [f] Phase 1: Descriptive statistics extracted and unadjusted OR calculated. [g] Phase 1: simple comparative test (t-test/Mann Whitney U test).

Appendix 18: Full data - Risk factors for PPGP in the 2nd trimester of pregnancy (examined in only 1 study)

Physical factors

Factor (Berg et al 1988)	**Participants (all or subgroup)**	**Time of follow up**	**Outcome**	**No of participants**	**Unadjusted OR**	**Adjusted OR**
Physical workload: heavy or very heavy (vs light)	All	During pregnancy (at 20 weeks)	Symphysiolysis at week 20?	513	1.1* [0.6-2.1]; p=0.7; Chi-squared: NS	/
Physical workload: heavy or very heavy including lifting movements (vs light)	All	During pregnancy (at 20 weeks)	Symphysiolysis at week 20?	451	1.3* [0.6-2.5]; p=0.5	/

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)

Appendix 19: Full GRADE table – Physical Risk factors for PPGP in the 2nd trimester of pregnancy (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Physical workload: heavy or very heavy (vs light)	513	Berg et al 1988	0	1	0	x	x	x	1	x[a]	x[b]	v	v	x[b]	x	x	+
Physical workload: heavy or very heavy including lifting movements (vs light)	451	Berg et al 1988	0	1	0	x	x	x	1	x[a]	x[b]	v	v	x[b]	x	x	+
Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.																	
[a] Five domains high/moderate ROB; [b] Only a single study examined this factor. [c] Phase 1: Descriptive statistics extracted and unadjusted OR calculated.																	

Appendix 20: Full data - Risk factors for PPGP in the 3rd trimester of pregnancy (examined in only 1 study)

Physical factors

Factors	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise
History of postpartum low back pain	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1164	2.0* [1.4-2.8]; p=0.0002	/
Experiencing low back pain around the time when getting pregnant	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1164	1.3* [0.9-1.8]; p=0.11	/
Physical workload: heavy or very heavy vs light	Berg et al 1988	All	During pregnancy (at 30 weeks)	Symphysiolysis at week 30[?]	513	1.9* [1.1-3.3]; p=0.02; Chi-squared: p<0.05	/
			During pregnancy (at 30 weeks)	Symphysiolysis at week 35[?]	513	1.9* [1.2-3.0]; p=0.01; Chi-squared: p<0.05	/
Physical workload: heavy or very heavy including lifting movements vs light	Berg et al 1988	All	During pregnancy (at 35 weeks)	Symphysiolysis at week 30[?]	451	1.7* [0.9-3.0]; p=0.09	
			During pregnancy (at 35 weeks)	Symphysiolysis at week 35[?]	451	1.8* [1.1-3.0]; p=0.03; Chi-squared: p<0.05	/
Physically demanding work (yes vs no)	Bjelland et al 2010	All	30 weeks pregnancy	Pelvic Girdle Syndrome[?]	68872	1.6* [1.6-1.7]; p<0.0001	1.4 [1.4-1.5][i]
			30 weeks pregnancy	Severe Pelvic Girdle Syndrome[?]	68872	1.9* [1.8-2.1]; p<0.0001	1.5 [1.4-1.7][i;] p<0.001
Exercise frequency 1-2 per week during pregnancy vs <1 per week	Gjestland et al 2013	All	32 weeks	PPGP[?]	2013	0.8* [0.6-0.9]	0.9 [0.7-1.1][a]
Exercise frequency ≥3 per week during pregnancy vs <1 per week	Gjestland et al 2013	All	32 weeks	PPGP[?]	1575	0.8 [0.7-1.01]	0.8 [0.6-1.0][a]

Hours of exercise per week before pregnancy	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1149	Student t-test or Mann Whitney U test: p=0.3	/
Hours of exercise per week during pregnancy	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1149	Student t-test or Mann Whitney U test: p=0.2	/
Physical activity level: minimally active vs sedentary	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	379	1.1* [0.7-1.8]; p=0.6	/
Physical activity level: moderately active vs sedentary	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	582	0.7* [0.5-0.9]; p=0.02	/
Physical activity level: active vs sedentary	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	492	0.7* [0.5-1.1]; p=0.1	/
Physical activity level: very active vs sedentary	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	452	0.9* [0.6-1.3]; p=0.5	/
Pre-pregnancy physical activity: < 1 per week vs ≥3 per week	Bjelland et al 2010	All	30 weeks pregnancy	Pelvic Girdle Syndrome?	41070	1.1* [1.0-1.1]; p=0.01	1.0 [0.9-1][b]
			30 weeks pregnancy	Severe Pelvic Girdle Syndrome?	41070	1.1* [1.0-1.1]; p=0.01	0.9 [0.8-1.0][b]
Pre-pregnancy physical activity: 1-2 per week vs ≥3 per week	Bjelland et al 2010	All	30 weeks pregnancy	Pelvic Girdle Syndrome?	53827	1.0* [1.0-1.1]; p=0.7	1.0 [0.9-1.0][b]
			30 weeks pregnancy	Severe Pelvic Girdle Syndrome?	53827	0.9* [0.8-1.0]; p=0.1	0.9* [0.8-1.0][b]
Stage of pregnancy (weeks)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1158 (1149)	β coefficient 0.07 [0.03-0.1]; p=0.001; student t-test or Mann Whitney U test: p<0.01	/

		Have been pregnant before	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	394	β coefficient 0.1 [0.04-0.2]; p=0.002	/
Lifetime duration of oral contraceptive pills: Combined oral contraceptive pills < 1 year vs never	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	28480	1.0 [1.0-1.1]	1.0 [1.0-1.1][c]
Lifetime duration of oral contraceptive pills: Combined oral contraceptive pills 1-3 year vs never	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	38195	1.0 [0.9-1.0]; p<0.05	1.0 [0.9-1.1][c]
Lifetime duration of oral contraceptive pills: Combined oral contraceptive pills 4-6 year vs never	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	40770	0.9 [0.8-0.9]; p<0.001	1.0 [1.0-1.1][c]
Lifetime duration of oral contraceptive pills: Combined oral contraceptive pills 7-9 year vs never	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	38418	0.8 [0.7-0.8]; p<0.001	1.0 [0.9-1.00][c] p<0.05
Lifetime duration of oral contraceptive pills: Combined oral contraceptive pills ≥ 10 years (vs never)	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	35606	0.8 [0.8-0.9]; p<0.001	1.0 [1.0-1.1][c]

Lifetime duration of oral contraceptive pills: progestin-only contraceptive pills < 1 year vs never	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	87236	1.3 [1.2-1.4]; p<0.001	1.1 [1.0-1.1][c]
Lifetime duration of oral contraceptive pills: progestin-only contraceptive pills 1-3 year vs never	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	84257	1.1 [1.0-1.2]; p<0.05	1.0 [0.9-1.1][c]
Lifetime duration of oral contraceptive pills: progestin-only contraceptive pills 4-6 year vs never	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	81352	1.1 [0.8-1.3]	1.1 [0.8-1.4][c]
Lifetime duration of oral contraceptive pills: progestin-only contraceptive pills 7-9 year vs never	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	81044	1.2 [0.9-1.7]	1.1 [0.8-1.6][c]
Lifetime duration of oral contraceptive pills: progestin-only contraceptive pills ≥ 10 years vs never	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	80984	1.3 [1.0-2.0]	1.5 [1.0-2.2][c] p<0.05
Combined OCP in last year before pregnancy vs no hormonal contraception	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	82042	0.8 [0.8-0.9]; p<0.001	1.0 [0.9-1.0][c]
		Primi-parous	3rd trimester	Pelvic Girdle Syndrome?	42486	0.9 [0.8-0.9]; p<0.001	0.9 [0.8-0.9][d] p<0.001
		Multi-parous	3rd trimester	Pelvic Girdle Syndrome?	39556	1.1 [1.1-1.2]; p<0.001	1.1 [1.0-1.2][d] p<0.01

Progestin-only contraceptive pills in last year before pregnancy vs no hormonal contraception	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	57282	1.1 [1.0-1.2]; p<0.05	1.0 [0.9-1.1][c]
		Primi-parous	3rd trimester	Pelvic Girdle Syndrome?	22604	1.1 [1.0-1.4]	1.2 [0.9-1.5][d]
		Multi-parous	3rd trimester	Pelvic Girdle Syndrome?	34678	0.9 [0.8-1.0]; p<0.05	1.0 [0.9-1.1][d]
Progestin injection in last year before pregnancy vs no hormonal contraception	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	52724	1.1 [0.9-1.4]	1.0 [0.8-1.3][c]
		Primi-parous	3rd trimester	Pelvic Girdle Syndrome?	22057	1.5 [0.9-2.3]	1.3 [0.8-2.0][d]
		Multi-parous	3rd trimester	Pelvic Girdle Syndrome?	30667	0.9 [0.7-1.3]	0.9 [0.6-1.2][d]
Progestin intrauterine devices in last year before pregnancy vs no hormonal contraception	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	56603	1.5 [1.3-1.6]; p<0.001	1.2 [1.1-1.3][c] p<0.001
		Primi-parous	3rd trimester	Pelvic Girdle Syndrome?	24146	1.3 [0.9-1.8]	1.3 [0.9-1.9][d]
		Multi-parous	3rd trimester	Pelvic Girdle Syndrome?	34457	1.2 [1.1-1.3]; p<0.001	1.2 [1.1-1.3][d] p<0.001
Combined oral contraceptive pill 4 months before pregnancy vs no hormonal contraception in last year	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	68120	0.9 [0.8-0.9]; p<0.001	1.0 [0.9-1.1][d]
Progestin-only contraceptive pill 4 months before pregnancy vs no hormonal contraception in last year	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	54886	1.1 [1.0-1.2]	1.0 [0.9-1.1][d]
Cessation of oral contraceptives 4 months before pregnancy vs no hormonal contraception in last year	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	68628	0.8 [0.8-0.9]; p<0.001	0.9 [0.9-1.0][d]
Combined oral contraceptive pill at the time of being pregnant vs no hormonal contraception in last year	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome?	53682	1.1 [1.0-1.3]	1.2 [0.9-1.4][d]

Progestin-only contraceptive pill at the time of being pregnant vs no hormonal contraception in last year	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome[?]	52688	1.2 [1.0-1.6]	1.0 [0.8-1.3][d]
Cessation of oral contraceptives at the time of being pregnant vs no hormonal contraception in last year	Bjelland et al 2013a	All	3rd trimester	Pelvic Girdle Syndrome[?]	85264	0.9 [0.8-0.9]; p<0.001	1.0 [0.9-1.0][d]
Weight increase during pregnancy	Albert et al 2006	All	33 weeks gestation	PPGP	2224	/	OR[e] NS
			33 weeks gestation	Pelvic Girdle Syndrome	1880	/	OR[e] NS
			33 weeks gestation	Symphy-siolysis	1771	/	OR[e] NS
			33 weeks gestation	One-sided sacroiliac syndrome	1961	/	OR[e] NS
			33 weeks gestation	Double-sided sacroiliac syndrome	1914	/	OR[e] 1.1; p<0.05
Pain location: pubic symphysis vs no pain	Robin-son et al 2010c	All	30 weeks pregnancy	PPGP; Disability	268	17.7 [6.8-28.6]	14.0 [3.7-24.1][f]; 11.8 [2.3-21.2][f]
			30 weeks pregnancy	PPGP; Pain intensity	268	42.2 [27.7-60.6]	40.4 [24.4-56.5][f]; 35.5 [19.7-51.1][f]
Pain location: posterior pain only vs no pain	Robin-son et al 2010c	All	30 weeks pregnancy	PPGP; Disability	268	10.7 [6.2-15.3]	4.8 [-0.2-9.6][f]; 3.4 [-1.0-7.8][f]
			30 weeks pregnancy	PPGP; Pain intensity	268	23.5 [16.6-30.3]	15.3 [7.8-22.8][f]; 11.8 [4.3-19.2][f]
Pain location: posterior and pubic symphysis pain vs no pain	Robin-son et al 2010c	All	30 weeks pregnancy	PPGP; Disability	268	24.5 [15.6-33.5]	11.8 [2.6-21.0][f]; 8.4 [-0.07-17.0][f]
			30 weeks pregnancy	PPGP; Pain intensity	268	40.5 [26.9-54]	26.0 [11.6-44.0][f]; 16.5 [1.8-31.1][f]
≥1 previous instrumented delivery	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1164	1.9* [1.4-2.6]; p<0.0001	/
≥1 previous caesarean	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1164	1.0* [0.6-1.5]; p=0.8	/

≥1 previous epidural anaesthesia	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1164	1.5* [1.2-2]; p=0.004	/
Disability rating index in early pregnancy	Robin-son et al 2010c	All	30 weeks pregnancy	PPGP; Disability	268	0.6* [0.5-0.7]; p<0.001	0.5 [0.3-0.6]; p<0.001
Trauma to the back	Albert et al 2006	All	33 weeks gestation	PPGP	2224	/	OR[g] 2.8; p<0.001
			33 weeks gestation	Pelvic Girdle Syndrome	1880	3.4* [2.1-5.4]; p<0.0001	OR[g] 3.5; p<0.001
			33 weeks gestation	Symphy-siolysis	1771	0.7* [0.3-1.9]; p=0.5	OR[g] NS
			33 weeks gestation	One-sided sacroiliac syndrome	1961	2.4* [1.4-4.2]; p=0.002	OR[g] 2.3; p<0.01
			33 weeks gestation	Double-sided sacroiliac syndrome	1914	2.5* [1.4-3.7]; p<0.001	OR[g] 2.5; p<0.001
Years since last pregnancy	Albert et al 2006	All	33 weeks gestation	PPGP	2224	/	Excluded from multivariate model as NS in univariate analysis
			33 weeks gestation	Pelvic Girdle Syndrome	1880	/	Excluded from multivariate model as NS in univariate analysis
			33 weeks gestation	Symphy-siolysis	1771	/	Excluded from multivariate model as NS in univariate analysis
			33 weeks gestation	One-sided sacroiliac syndrome	1961	/	Excluded from multivariate model as NS in univariate analysis
			33 weeks gestation	Double-sided sacroiliac syndrome	1914	/	Excluded from multivariate model as NS in univariate analysis
Salpingitis previous year	Albert et al 2006	All	33 weeks gestation	PPGP	2224	1.5* [0.97-2.4]; p=0.07	OR[h] NS
			33 weeks gestation	Pelvic Girdle Syndrome	1880	1.5* [0.7-3.2]; p=0.3	OR[h] NS
			33 weeks gestation	Symphy-siolysis	1771	1.1* [0.3-4.5]; p=0.9	OR[h] NS
			33 weeks gestation	One-sided sacroiliac syndrome	1961	2.3* [1.2-4.4]; p=0.01	OR[h] 2; p=0.06
			33 weeks gestation	Double-sided sacroiliac syndrome	1914	1.3* [0.6-2.6]; p=0.5	OR[h] NS

Hormone induced pregnancy	Albert et al 2006	All	33 weeks gestation	PPGP	2224	0.6* [0.3-1.04]; p=0.07	Excluded from multivariate model as NS in univariate analysis
			33 weeks gestation	Pelvic Girdle Syndrome	1880	1.0* [0.5-2.3]; p=0.9	Excluded from multivariate model as NS in univariate analysis
			33 weeks gestation	Symphy-siolysis	1771	0.4* [0.06-3]; p=0.4	Excluded from multivariate model as NS in univariate analysis
			33 weeks gestation	One-sided sacroiliac syndrome	1961	0.5* [0.1-1.5]; p=0.2	Excluded from multivariate model as NS in univariate analysis
			33 weeks gestation	Double-sided sacroiliac syndrome	1914	0.4* [0.2-1.2]; p=0.1	Excluded from multivariate model as NS in univariate analysis
Oral Contraceptive Pill	Albert et al 2006	All	33 weeks gestation	PPGP	2224	0.9* [0.7-1.1]; p=0.4	Excluded from multivariate model as NS in univariate analysis
			33 weeks gestation	Pelvic Girdle Syndrome	1880	0.7* [0.4-1.1]; p=0.09	Excluded from multivariate model as NS in univariate analysis
			33 weeks gestation	Symphy-siolysis	1771	1.0* [0.5-1.9]; p=0.9	Excluded from multivariate model as NS in univariate analysis
			33 weeks gestation	One-sided sacroiliac syndrome	1961	1.3* [0.9-1.9]; p=0.2	Excluded from multivariate model as NS in univariate analysis
			33 weeks gestation	Double-sided sacroiliac syndrome	1914	0.7* [0.5-1.1]; p=0.1	Excluded from multivariate model as NS in univariate analysis
Number of previous pregnancies: 2 vs 1	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1081	1.3* [1.0-1.7]; p=0.08	/
Number of previous pregnancies: 3 vs 1	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	804	2.0* [1.0-3.9]; p=0.05	/

Number of previous pregnancies: 4 vs 1	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	770	2.0* [0.5-7.4]; p=0.3	/
Number of previous pregnancies: 5 vs 1	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	761	1.8* [0.2-17.5]; p=0.6	/
Current weight (3rd trimester of pregnancy)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1149	Student t-test or Mann Whitney U test: p<0.01	/

[a] Adjusted for maternal age, parity, education, marital status, smoking and pre-pregnancy body mass index; [b] Adjusted for Maternal age, Parity, BMI, educational level, previous LBP, emotional distress, physically demanding work, smoking in pregnancy; [c] Adjusted for maternal age, parity, educational level, BMI, age at menarche, other pain conditions and premenstrual depressive symptoms; [d] Adjusted for maternal age, parity, educational level, BMI, age at menarche, other pain conditions and premenstrual depressive symptoms; [e] Adjusted for History of LBP, Trauma to the back, Salpingitis previous year, Multiparae, Weight before pregnancy, smoking, height, social group 5, daily stress level, work satisfaction; [f] Several variables included in the model e.g. age, pre-pregnancy LBP, gestation week, work condition etc. NO CLEAR description of all variables entered; [g] Adjusted for history of LBP, Salpingitis previous year, Multiparae, Weight before pregnancy, weight increase in pregnancy, smoking, height, social group 5, daily stress level, work satisfaction; [h] Adjusted for History of LBP, Trauma to the back, Multiparae, Weight before pregnancy, weight increase in pregnancy, smoking, height, social group 5, daily stress level, work satisfaction; [i] Adjusted for Maternal age, Parity, BMI, educational level, previous LBP, emotional distress, smoking in pregnancy, pre-pregnancy physical activity weekly.

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Psychological factors

Factors	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR
Depression: slightly (vs not)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1030	2.0* [1.5-2.6]; p<0.0001	/
Depression: moderately (vs not)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	749	2.0* [1.3-3.5]; p=0.009	/
Depression: seriously (vs not)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	681	4.3* [1.0-20.0]; p=0.06	/
Depression (BDI=II score)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1158	β coefficient 0.07 [0.04-0.1]; p<0.001	/
		Have been pregnant before	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	394	β coefficient 0.09 [0.04-0.14]; p=0.001	/
Daily stress levels	Albert et al 2006	All	33 weeks gestation	PPGP	2224	/	OR[a] 1.1; p<0.01
			33 weeks gestation	Pelvic Girdle Syndrome	1880	/	OR[a] 1.2; p<0.001
			33 weeks gestation	Symphysiolysis	1771	/	OR[a] NS
			33 weeks gestation	One-sided sacroiliac syndrome	1961	/	OR[a] 1.1; p<0.05
			33 weeks gestation	Double-sided sacroiliac syndrome	1914	/	OR[a] NS
Anxiety: Traces of anxiety (vs normal)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1019	2.0* [1.4-3]; p=0.0003	/

Anxiety: Pathological anxiety (vs normal)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	907	2.4* [1.2-4.5]; p=0.01	/
State Anxiety (STAI-S)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1149	Student t-test or Mann Whitney U test: p<0.01	/
Trait Anxiety (STAI-T)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1149	Student t-test or Mann Whitney U test: p<0.01	/
Anxiety (STAI score)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1149	Student t-test or Mann Whitney U test: p<0.01	/
Emotional distress: yes (≥2) (vs no (<2))	Bjelland et al 2010	All	30 weeks pregnancy	Pelvic Girdle Syndrome?	74710	1.8* [1.7-1.9]; p<0.0001	1.6 [1.5-1.8][b]
			30 weeks pregnancy	Severe Pelvic Girdle Syndrome?	41070	2.4* [2.1-2.7]; p<0.0001	2.0 [1.8-2.3][b]

[a] Adjusted for History of LBP, Trauma to the back, Salpingitis previous year, Multiparae, Weight before pregnancy, weight increase in pregnancy, smoking, height, social group 5, work satisfaction; [b] Adjusted for Maternal age, Parity, BMI, educational level, previous LBP, physical demanding work, smoking in pregnancy, pre-pregnancy physical activity weekly

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)

? For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Socio-demographic factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR
Social group 5 (no education)	Albert et al 2006	All	33 weeks gestation	PPGP	2224	1.1* [0.9-1.4]; p=0.3	OR[a] NS
			33 weeks gestation	Pelvic Girdle Syndrome	1880	1.9* [1.3-2.8]; p=0.0004	OR[a] NS
			33 weeks gestation	Symphysiolysis	1771	0.9* [0.4-1.8]; p=0.8	OR[a] NS
			33 weeks gestation	One-sided sacroiliac syndrome	1961	0.8* [0.5-1.2]; p=0.3	OR[a] 0.5; p<0.05
			33 weeks gestation	Double-sided sacroiliac syndrome	1914	1.0* [0.7-1.4]; p=0.8	OR[a] NS
Work status: currently working vs not working	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PPGP	1139	0.8* [0.6-1.0]; p=0.03	/

[a] Adjusted for History of LBP, Trauma to the back, Salpingitis previous year, Multiparae, Weight before pregnancy, weight increase in pregnancy, smoking, height, daily stress level, work satisfaction.

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Appendix 21: Full GRADE table – Physical Risk factors for PPGP in the 3rd trimester of pregnancy (examined in only 1 study)

			Univariate			Multivariate			GRADE factors									
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
History of postpartum low back pain	1164	Kovacs et al 2012	1	0	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
Experiencing low back pain around the time when getting pregnant	1164	Kovacs et al 2012	0	1	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
Physical workload: heavy or very heavy vs light^	513	Berg et al 1988	1	0	0	x	x	x	1[f]	x[b]	x[a]	v	v	x[a]	x	x	+
Physical workload: heavy or very heavy including lifting movements vs light*	451	Berg et al 1988	0	1	0	x	x	x	1[f]	x[b]	x[a]	v	v	x[a]	x	x	+
Physically demanding work (yes vs no)^	68872	Bjelland et al 2010	1	0	0	1	0	0	2[d]	x[c]	x[a]	v	v	x[k]	x	x	+
Exercise frequency 1-2 per week during pregnancy vs <1 per week	2013	Gesteland et al 2013	0	1	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Exercise frequency ≥3 per week during pregnancy vs <1 per week	1575	Gesteland et al 2013	0	1	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Hours of exercise per week before pregnancy	1149	Kovacs et al 2012	0	1	0	x	x	x	1[g]	v	x[a]	v	v	x[a]	x	x	+
Hours of exercise per week during pregnancy	1149	Kovacs et al 2012	0	1	0	x	x	x	1[g]	v	x[a]	v	v	x[a]	x	x	+
Physical activity level: minimally active vs sedentary	379	Kovacs et al 2012	0	1	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
Physical activity level: moderately active vs sedentary	582	Kovacs et al 2012	0	0	1	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/ large effect size**	**Dose effect**	**Overall quality**
Physical activity level: active vs sedentary	492	Kovacs et al 2012	0	1	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
Physical activity level: very active vs sedentary	452	Kovacs et al 2012	0	1	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
Pre-pregnancy physical activity: < 1 per week vs ≥3 per week^	41070	Bjelland et al 2010	1	0	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Pre-pregnancy physical activity: 1-2 per week vs ≥3 per week^	53827	Bjelland et al 2010	0	1	0	0	1	0	2[d]	x[a]	x[a]	v	v	x[a]	x	x	+
Stage of pregnancy (weeks)^	1158	Kovacs et al 2012	1	0	0	x	x	x	1[g]	v	x[a]	v	v	x[a]	x	x	+
Lifetime duration of oral contraceptive pills: Combined oral contraceptive pills < 1 year vs never	28480	Bjelland et al 2013a	0	1	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Lifetime duration of oral contraceptive pills: Combined oral contraceptive pills 1-3 year vs never	38195	Bjelland et al 2013a	1	0	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Lifetime duration of oral contraceptive pills: Combined oral contraceptive pills 4-6 year vs never	40770	Bjelland et al 2013a	1	0	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Lifetime duration of oral contraceptive pills: Combined oral contraceptive pills 7-9 year vs never	38418	Bjelland et al 2013a	1	0	0	1	0	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Lifetime duration of oral contraceptive pills: Combined oral contraceptive pills ≥ 10 years (vs never)	35606	Bjelland et al 2013a	1	0	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Lifetime duration of oral contraceptive pills: progestin-only contraceptive pills < 1 year vs never	87236	Bjelland et al 2013a	1	0	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Lifetime duration of oral contraceptive pills: progestin-only contraceptive pills 1-3 year vs never	84257	Bjelland et al 2013a	1	0	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Lifetime duration of oral contraceptive pills: progestin-only contraceptive pills 4-6 year vs never	81352	Bjelland et al 2013a	0	1	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Lifetime duration of oral contraceptive pills: progestin-only contraceptive pills 7-9 year vs never	81044	Bjelland et al 2013a	0	1	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Lifetime duration of oral contraceptive pills: progestin-only contraceptive pills ≥ 10 years vs never	80984	Bjelland et al 2013a	0	1	0	1	0	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Combined OCP in last year before pregnancy vs no hormonal contraception^	82042	Bjelland et al 2013a	1	0	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of partici-pants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Progestin-only contraceptive pills in last year before pregnancy vs no hormonal contraception*	57282	Bjelland et al 2013a	1	0	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Progestin injection in last year before pregnancy vs no hormonal contraception^	52724	Bjelland et al 2013a	0	1	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Progestin intrauterine devices in last year before pregnancy vs no hormonal contraception*	56603	Bjelland et al 2013a	1	0	0	1	0	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Combined oral contraceptive pill 4 months before pregnancy vs no hormonal contraception in last year	68120	Bjelland et al 2013a	0	0	1	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Progestin-only contraceptive pill 4 months before pregnancy vs no hormonal contraception in last year	54886	Bjelland et al 2013a	0	1	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Cessation of oral contraceptives 4 months before pregnancy vs no hormonal contraception in last year	68628	Bjelland et al 2013a	0	0	1	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Combined oral contraceptive pill at the time of being pregnant vs no hormonal contraception in last year	53682	Bjelland et al 2013a	0	1	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Progestin-only contraceptive pill at the time of being pregnant vs no hormonal contraception in last year	52688	Bjelland et al 2013a	0	1	0	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of partici-pants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsis-tency**	**Indirect-ness**	**Imprecision**	**Publication bias**	**Moderate/ large effect size**	**Dose effect**	**Overall quality**
Cessation of oral contraceptives at the time of being pregnant vs no hormonal contraception in last year	85264	Bjelland et al 2013a	0	0	1	0	1	0	2[d]	x[c]	x[a]	v	v	x[a]	x	x	+
Weight increase during pregnancy^	2224	Albert et al 2006	x	x	x	0	1	0	1[e]	v	x[a]	v	v	x[a]	x	x	+
Pain location: pubic symphysis vs no pain^	268	Robinson et al 2010c	1	0	0	1	0	0	1[e]	v	x[a]	v	v	x[a]	v	x	++
Pain location: posterior pain only vs no pain*	268	Robinson et al 2010c	1	0	0	0	1	0	1[e]	v	x[a]	v	v	x[a]	x	x	+
Pain location: posterior and pubic symphysis pain vs no pain^	268	Robinson et al 2010c	1	0	0	1	0	0	1[e]	v	x[a]	v	v	x[a]	v	x	++
≥1 previous instrumented delivery	1164	Kovacs et al 2012	1	0	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
≥1 previous caesarean	1184	Kovacs et al 2012	0	1	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
≥1 previous epidural anaesthesia	1164	Kovacs et al 2012	1	0	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
Disability rating index in early pregnancy	268	Robinson et al 2010c	0	0	1	0	0	1	1[e]	v	x[a]	v	v	x[a]	x	x	+
Trauma to the back*	2224	Albert et al 2006	x	x	x	1	0	0	1[e]	v	x[a]	v	v	x[a]	v	x	++
Years since last pregnancy^	2224	Albert et al 2006	0	1	0	x	x	x	1[e]	v	x[a]	v	v	x[a]	x	x	+
Salpingitis previous year*	2224	Albert et al 2006	0	1	0	0	1	0	1[e]	v	x[a]	v	v	x[a]	x	x	+
Hormone induced pregnancy^	2224	Albert et al 2006	0	1	0	x	x	x	1[e]	v	x[a]	v	v	x[a]	x	x	+

			Univariate			Multivariate			GRADE factors									
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Oral Contraceptive Pill^	2224	Albert et al 2006	0	1	0	x	x	x	1[e]	v	x[a]	v	v	x[a]	x	x	+
Number of previous pregnancies: 2 vs 1	1081	Kovacs et al 2012	0	1	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
Number of previous pregnancies: 3 vs 1	804	Kovacs et al 2012	1	0	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
Number of previous pregnancies: 4 vs 1	770	Kovacs et al 2012	0	1	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
Number of previous pregnancies: 5 vs 1	761	Kovacs et al 2012	0	1	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
Current weight (3rd trimester of pregnancy)	1149	Kovacs et al 2012	1	0	0	x	x	x	1[g]	v	x[a]	v	v	x[a]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor. [b] Five domains high or moderate ROB. [c] Questions to determine outcome open to interpretation (high/moderate ROB of outcome measurement domain); [d] Phase 2: Tested specific hypothesis, used multivariate logistic regression. [e] Phase 1: Identified potential risk factors, used multivariate regression. [f] Phase 1: Descriptive statistics extracted and unadjusted OR calculated. [g] Phase 1: simple comparative test (t-test/Mann Whitney U test).

Appendix 22: Full GRADE table – Psychological Risk factors for PPGP in the 3rd trimester of pregnancy (examined in only 1 study)

			Univariate			Multivariate			GRADE factors									
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/ large effect size**	**Dose effect**	**Overall quality**
Depression: slightly (vs not)	1030	Kovacs et al 2012	1	0	0	x	x	x	1[e]	v	x[a]	v	v	x[a]	x	x	+
Depression: moderately (vs not)	749	Kovacs et al 2012	1	0	0	x	x	x	1[e]	v	x[a]	v	v	x[a]	x	x	+
Depression: seriously (vs not)	681	Kovacs et al 2012	0	1	0	x	x	x	1[e]	v	x[a]	v	v	x[a]	x	x	+
Depression (BDI=II score)^	1158	Kovacs et al 2012	1	0	0	x	x	x	1[g]	v	x[a]	v	v	x[a]	x	x	+
Daily stress levels*	2224	Albert et al 2006	x	x	x	1	0	0	1[d]	v	x[a]	v	v	x[a]	x	x	+
Anxiety: Traces of anxiety (vs normal)	1019	Kovacs et al 2012	1	0	0	x	x	x	1[e]	v	x[a]	v	v	x[a]	x	x	+
Anxiety: Pathological anxiety (vs normal)	907	Kovacs et al 2012	1	0	0	x	x	x	1[e]	v	x[a]	v	v	x[a]	x	x	+
State Anxiety (STAI-S)	1149	Kovacs et al 2012	1	0	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
Trait Anxiety (STAI-T)	1149	Kovacs et al 2012	1	0	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+

			Univariate	Multivariate	GRADE factors												
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/ large effect size**	**Dose effect**	**Overall quality**
Anxiety (STAI score)	1149	Kovacs et al 2012	1	0	0	x	x	x	1[f]	v	x[a]	v	v	x[a]	x	x	+
Emotional distress: yes (≥2) (vs no (<2))^	74710	Bjelland et al 2010	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor. [b] Questions to determine outcome open to interpretation (high/moderate ROB of outcome measurement domain); [c] Phase 2: Tested specific hypothesis, used multivariate logistic regression. [d] Phase 1: Identified potential risk factors, used multivariate regression. [e] Phase 1: Descriptive statistics extracted and unadjusted OR calculated. [f] Phase 1: simple comparative test (t-test/Mann Whitney U test). [g] Phase 1: Univariate analysis.

Appendix 23: Full GRADE table – Socio-demographic Risk factors for PPGP in the 3rd trimester of pregnancy (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Social group 5 (no education)*	2224	Albert et al 2006	0	1	0	0	1	0	1[b]	v	x[a]	v	v	x[a]	x	x	+
Work status: currently working vs not working	1139	Kovacs et al 2012	0	0	1	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.																	
[a] Only a single study examined this factor. [b] Phase 1: Identified potential risk factors, used multivariate regression. [c] Phase 1: Descriptive statistics extracted and unadjusted OR calculated.																	

Appendix 24: Full data - Risk factors for PPGP (any trimester/trimester not stated) (examined in only 1 study)

Physical factors

Factors	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise
Low back pain during pregnancy	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PPGP?	2853	/	β coefficient[a] 0.514 (T-value 19.6); p<0.001
Low back pain in the year before pregnancy	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PPGP	306	3.5* [1.7-6.8]; p=0.0004	/
Pelvic girdle pain in the year before pregnancy	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PPGP	306	4.7* [1.8-11.8]; p=0.001	/
PPGP? In first pregnancy (Yes vs no)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP? In second pregnancy	1688	/	RR 57.3 [14.5-81.2][b]
PPGP? In at least 1 of the 2 first pregnancy (Yes vs no)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP? In second pregnancy	682	/	RR 31.2 [19.7-49.4][b]
PPGP? In the first 2 pregnancies (vs no PPGP? In previous 2 pregnancies)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP? In second pregnancy	682	/	RR 232.0 [82-659.0][b]
PPGP? In the first but not the second pregnancy (vs no PPGP? In previous 2 pregnancies)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP? In second pregnancy	682	/	RR 1.4 [0.5-4.0][b]
PPGP? Not in the first but in the second pregnancy (vs no PPGP? In previous 2 pregnancies)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP? In second pregnancy	682	/	RR 18.0 [8.2-39.6][b]
Symptom-giving pelvic girdle relaxation in mother or sister	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	2.1* [1.2-3.6]; p=0.01	/
Exercised at least 2-3 times a week before pregnancy	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PPGP	306	0.6* [0.3-0.9]; p=0.02	/

Regular exercise (once a week)	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	0.6* [0.5-0.8]; p=0.0019	0.6 [0.4-0.9][c]; p<0.01
Pre-pregnancy physical activity	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PPGP	306	1.8 [1.1-3.0]; p=0.02	/
Combined OCP	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP? In first pregnancy	1684	/	1.7 [1.2-2.3][d]
Hormonal contraceptive use before first birth (yes vs no)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP?	1861	/	1.6 [1.2-2.1][d]
Length of hormonal contraceptive use before birth: 1-29 months (vs no)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP? In first pregnancy	1805	/	1.8 [1.3-2.5][d]
Length of hormonal contraceptive use before birth: 30-59 months (vs no)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP? In first pregnancy	1805	/	1.2 [0.8-1.9][d]
Length of hormonal contraceptive use before birth: 60 or more months (vs no)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP? In first pregnancy	1805	/	1.6 [1.0-2.5][d]
Progestin-only contraceptives	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP? In first pregnancy	1684	/	1.7 [0.97-2.8][d]
Diseases in the back, bones, or joints	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	2.4* [1.6-3.5]; p<0.0001	/
Suffering from lower abdominal pain	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	3.1* [2.1-4.5]; p<0.0001	/
Other diseases (Other than diseases in the back, bones, or joints)	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.6* [1.0-2.8]; p=0.07	/
Previous lower abdominal pain (while not pregnant)	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	/	3.1 [1.9-5.15][e]; p<0.01
Lifting heavy loads at work (10-20kg)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP?)	3284	1.3* [1.0-1.7]; p=0.04	/

Heavy loads to carry (>10kg)	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.9* [1.4-2.6]; p<0.0001; Chi-squared p<0.01	/
Physically heavy work	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PPGP	306	1.6* [1.0-2.8]; p=0.07	/
Strain at work	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PPGP[?]	3062	/	β coefficient[f] 0.045 (T-value 1.87); NS
Work bending forward	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PPGP[?]	3062	/	β coefficient[g] 0.05 (T-value 2.68); p<0.05
Twisting and bending	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PPGP[?]	3062	/	β coefficient[h] 0.039 (T-value 2.02); p<0.05
Uncomfortable working positions	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	2.7* [2.0-3.7]; p<0.0001	1.7 [1.1-2.5][i]; p<0.05
Long walking distance at work	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	2.0* [1.5-2.7]; p<0.0001	/
Stairs more than 10 steps at work	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.1* [0.8-1.4]; p=0.6	/
Working in draft and cold	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.5* [1.2-2.0]; p=0.003	2.1 [1.4-3.1][j]; p=0.01
Working with chemicals	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.1* [0.7-1.6]; p=0.7	/
Previous caesarian section	Lebel et al 2010	All	Pregnancy mean gestational age 39.2 (SD2.2)	Symphy-siolysis	81142	0.8 [0.5-1.3]; p=0.4	/
Recurrent abortion	Lebel et al 2010	All	Pregnancy mean gestational age 39.2 (SD2.2)	Symphy-siolysis	81142	1.4 [0.8-2.5]; p=0.3	/
Mild pre-eclampsia	Lebel et al 2010	All	Pregnancy mean gestational age 39.2 (SD2.2)	Symphy-siolysis	81142	2.2 [1.2-4.0]; p=0.01	/

Severe pre-eclampsia	Lebel et al 2010	All	Pregnancy mean gestational age 39.2 (SD2.2)	Symphy-siolysis	81142	0.5 [0.07-3.9]; p=0.5	/
Chronic hypertension	Lebel et al 2010	All	Pregnancy mean gestational age 39.2 (SD2.2)	Symphy-siolysis	81142	1.1 [0.4-3.6]; p=0.8	/
Diabetes mellitus	Lebel et al 2010	All	Pregnancy mean gestational age 39.2 (SD2.2)	Symphysiolysis	81142	1.8 [1.1-3.0]; p=0.02	/
	Eberhard-Gran & Eskild 2008	All	Postpartum (retrospective questions)	Pelvic Girdle Syndrome[?]	1816	6.8 [1.8-25.9]; p<0.01	7.3 [1.8-28.5][k]; p<0.01
Gestational diabetes mellitus	Lebel et al 2010	All	Pregnancy mean gestational age 39.2 (SD2.2)	Symphy-siolysis	81142	1.8 [1.0-3.2]; p=0.03	/
Pregestational diabetes mellitus	Lebel et al 2010	All	Pregnancy mean gestational age 39.2 (SD2.2)	Symphy-siolysis	81142	1.6 [0.5-5.15]; p=0.4	/
Premature rupture of membranes	Lebel et al 2010	All	Pregnancy mean gestational age 39.2 (SD2.2)	Symphy-siolysis	81142	1.0 [0.6-1.8]; p=0.9	/
Time since last delivery: <5 years (vs ≥5 years)	Eberhard-Gran & Eskild 2008	All	Postpartum (retrospective questions)	Pelvic Girdle Syndrome[?]	1816	1.7 [1.1-2.7]; p<0.05	1.6 [1.0-2.5][l]
Time since first birth	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP[?]	1861	/	0.9 [0.8-1.0][m]
≥ 4 cups of coffee	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP[?])	3286	1.8* [1.3-2.4]; p=0.0001	/
Treatment of low back pain by doctor (vs untreated)	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	869	1.6* [1.0-2.8]; p=0.07	/
Treatment of low back pain by chiropractor (vs untreated)	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1009	0.8* [0.6-1.1]; p=0.2	/
Treatment of low back pain by physiotherapist (vs untreated)	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1163	0.8* [0.6-1.1]; p=0.2	/

Untreated low back pain	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.5* [1.1-2.0]; p=0.01	/

[a] Adjusted for Parity, smoking, weight of newborn, work bending forward, woman's year of birth, BMI; [b] Adjusted for hormonal contraceptives, age at second birth, weight newborn and time since second birth; [c] Adjusted for Uncomfortable working position, working in draft and cold, pelvic pain during previous pregnancy, previous low back pain while not pregnant, previous lower abdominal pain while not pregnant, parity, weight, heavy workloads, age, smoking; [d] Adjusted for age of menarche, year of education, smoking during first pregnancy, age at first birth, weight of newborn and time since first birth; [e] Adjusted for Uncomfortable working position, working in draft and cold, regular exercise (once a week), pelvic pain during previous pregnancy, previous low back pain while not pregnant, parity, weight, heavy workloads, age, smoking; [f] Adjusted for parity, smoking, weight of newborn, work bending forward, woman's year of birth, BMI, economic independence twisting and bending; [g] Adjusted for parity, smoking, weight of newborn, woman's year of birth, BMI, strain at work, economic independence twisting and bending; [h] Adjusted for parity, smoking, weight of newborn, work bending forward, woman's year of birth, BMI, strain at work, economic independence; [i] Adjusted for working in draft and cold, regular exercise (once a week), pelvic pain during previous pregnancy, previous low back pain while not pregnant, previous lower abdominal pain while not pregnant, parity, weight, heavy workloads, age, smoking; [j] Adjusted for uncomfortable working positions, regular exercise (once a week), pelvic pain during previous pregnancy, previous low back pain while not pregnant, previous lower abdominal pain while not pregnant, parity, weight, heavy workloads, age, smoking. [k] Adjusted for BMI, Time since delivery, Age at last delivery, parity; [l] Adjusted for Diabetes, BMI, Age at last delivery, parity; [m] Adjusted for Use of hormonal contraceptives before first birth, age at menarche, age at first birth, weight newborn, years of education, smoking during first pregnancy.

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Socio-demographic factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise
Woman's year of birth	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PPGP[?]	2853	/	β coefficient[a] 0.012 (T-value 2.52); p<0.05
			Postpartum while on maternity ward (retrospective questions)	PPGP[?]	3062	/	β coefficient[b] 0.024 (T-value 5.08); p<0.001
			Postpartum while on maternity ward (retrospective questions)	PPGP[?] + Rarely/ never PLBP[?]	1737	/	β coefficient[c] 0.017 (T-value 3.37); p<0.01

Age at last delivery: ≥25 (vs <25)	Eberhard-Gran & Eskild 2008	All	Postpartum (retrospective questions)	Pelvic Girdle Syndrome?	1791	3.2 [1.5-7.1] p<0.01	2.9 [1.3-6.6][d]; p<0.01
Age at first birth 21-25 (vs ≤20)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP?	1861	/	1.2 [0.9-1.5][e]
Age at first birth ≥26 (vs ≤20)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP?	1861	/	0.8 [0.5-1.1][e]
Partner's education level: primary or secondary 9-10 years (vs university/ college)	Wergeland & Strand 1998	All	After delivery while still in hostpital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP?)	1822	1.4* [1.1-1.9] p=0.02	/
Partner's education level: secondary 11-12 years (vs university/ college)	Wergeland & Strand 1998	All	After delivery while still in hostpital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP?)	2275	1.1* [0.9-1.5] p=0.4	/
Years of education 10-12 (vs 7-9 years)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP?	1861	/	1.0 [0.7-1.3][f]
Years of education 13-15 (vs 7-9 years)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP?	1861	/	0.9 [0.7-1.3][f]
Years of education 16+ (vs 7-9 years)	Kumle et al 2004	All	Postpartum (retrospective questions)	PPGP?	1861	/	1.1 [0.7-1.7][f]
Pakistani (vs Norwegian)	Vangen et al 1999	All	Hospital records; retrospective	PPGP?	137	0.4 [0.2-0.8]	/
Being in work	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.5* [1-2.3] p=0.06	/
Monotonous work	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.2* [0.8-1.8] p=0.4	/
Working part-time	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.0* [0.7-1.4] p=1.0	/
Shiftwork	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	0.8* [0.5-1.2] p=0.2	/
Fixed salary	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.1* [0.3-5.1] p=0.9	/
Living in a house (yes vs no)	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.0* [0.7-1.3] p=1	/

Having more than 3 rooms at home	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.4* [1.0-2.2] p=0.08	/
Having a lift at home	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	0.6* [0.3-1.3] p=0.2	/
Having stairs with more than 10 steps at home	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	0.9* [0.6-1.1] p=0.2	/
Living with or married to partner	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	0.6* [0.4-1] p=0.07	/
Children at home	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	2.2* [1.6-3.1] p<0.0001	/
Doing more than 50% of the housework	Larsen et al 1999	All	During pregnancy (16-40 weeks range)	PPGP	1516	1.2* [0.9-1.6] p=0.3	/
Influence on breaks at work (yes vs no)	Werge-land & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP?)	3272	0.7* [0.5-0.9] p=0.002	/
Influence on work pace (yes vs no)	Werge-land & Strand 1998	All	After delivery while still in hostpital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP?)	3272	0.9* [0.7-1.2] p=0.6	/
Level of work pace control: No (vs high)	Werge-land & Strand 1998	All	After delivery while still in hostpital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP?)	3321	/	1.6 [1.0-2.4][g]
Level of work pace control: low (vs high)	Werge-land & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP?)	3321	/	1.0 [0.7-1.4][g]
Level of work pace control: medium (vs high)	Werge-land & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP?)	3321	/	1.1 [0.8-1.5][g]
Externally paced work (yes vs no)	Werge-land & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP?)	3280	1.1* [0.9-1.4] p=0.4	/
Manual work (yes vs no)	Werge-land & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP?)	3273	1.1* [0.9-1.4] p=0.3	/
Manual work (yes vs no)	Hakans-son et al 1994	All	Throughout pregnancy	Symphy-siolysis	360	RR 1.1 [0.4-1.5]	/

Influence on work content (yes vs no)	Werge-land & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP[?])	3262	1.0* [0.8-1.3] p=0.8	/
Work with video display terminals (yes vs no)	Werge-land & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP[?])	3187	0.8* [0.6-1.1] p=0.1	/
Weekly hours of paid work ≥35 (yes vs no)	Werge-land & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP[?])	3168	0.8* [0.6-1] p=0.1	/
Weekly hours of pain work >40 (yes vs no)	Werge-land & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Disabling posterior pelvic pain (Posterior PPGP[?])	3168	0.7* [0.4-1] p=0.08	/
Economic dependence	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PPGP[?]	3062	/	β coefficient[h] 0.052 (T-value 2.1); p<0.05
Permanently employed	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PPGP[?] + Rarely/ Never PLBP[?]	1737	/	β coefficient[i] 0.102 (T-value 2.05); p<0.05

[a] Adjusted for LBP, Parity, smoking, weight of newborn, work bending forward, BMI; [b] Adjusted for parity, smoking, weight of newborn, work bending forward, BMI, strain at work, economic independence twisting and bending; [c] Adjusted for parity, weight of newborn, smoking, permanently employed; [d] Diabetes, BMI, time since last delivery, parity; [e] Adjusted for Use of hormonal contraceptives before first birth, age at menarche, time elapsed since first birth, weight newborn, years of education, smoking during first pregnancy; [f] Adjusted for Use of hormonal contraceptives before first birth, age at menarche, age at first birth, time elapsed since first birth, weight newborn, smoking during first pregnancy; [g] Adjusted for age, parity, education, smoking, and manual work, low-back pain; [h] Adjusted for parity, smoking, weight of newborn, work bending forward, woman's year of birth, BMI, strain at work, twisting and bending; [i] Adjusted for parity, woman's year of birth, weight of newborn, smoking .

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Appendix 25: Full GRADE table – Physical Risk factors for PPGP in the any trimester of pregnancy or trimester not stated (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsis-tency**	**Indirect-ness**	**Impreci-sion**	**Publication bias**	**Moderate/ large effect**	**Dose effect**	**Overall quality**
Low back pain during pregnancy	2853	Endresen 1995	x	x	x	1	0	0	1g	xa	xb	v	v	xb	x	x	+
Low back pain in the year before pregnancy	306	Malmqvist et al 2012	1	0	0	x	x	x	1h	xc	xb	v	v	xb	x	x	+
Pelvic girdle pain in the year before pregnancy	306	Malmqvist et al 2012	1	0	0	x	x	x	1h	xc	xb	v	v	xb	x	x	+
PPGP? In first pregnancy (Yes vs no)	1688	Kumle et al 2004	x	x	x	1	0	0	2f	xa	xb	v	v	xb	v	x	++
PPGP? In at least 1 of the 2 first pregnancy (Yes vs no)	682	Kumle et al 2004	x	x	x	1	0	0	2f	xa	xb	v	v	xb	v	x	++
PPGP? In the first 2 pregnancies (vs no PPGP In previous 2 pregnancies)	682	Kumle et al 2004	x	x	x	1	0	0	2f	xa	xb	v	v	xb	v	x	++
PPGP? In the first but not the second pregnancy (vs no PPGP? In previous 2 pregnancies)	682	Kumle et al 2004	x	x	x	1	0	0	2f	xa	xb	v	v	xb	x	x	+
PPGP? Not in the first but in the second pregnancy (vs no PPGP In previous 2 pregnancies)	682	Kumle et al 2004	x	x	x	1	0	0	2f	xa	xb	v	v	xb	v	x	++
Symptom-giving pelvic girdle relaxation in mother or sister	1516	Larsen et al 1999	1	0	0	x	x	x	1h	v	xb	v	v	xb	x	x	+
Exercised at least 2-3 times a week before pregnancy	306	Malmqvist et al 2012	0	0	1	x	x	x	1h	xc	xb	v	v	xb	x	x	+
Regular exercise (once a week)	1516	Larsen et al 1999	0	0	1	0	0	1	1g	v	xb	v	v	xb	x	x	+
Pre-pregnancy physical activity	306	Malmqvist et al 2012	1	0	0	x	x	x	1h	xc	xb	v	v	xb	x	x	+
Combined OCP	1684	Kumle et al 2004	x	x	x	1	0	0	2f	xa	xb	v	v	xb	x	x	+
Hormonal contraceptive use before first birth (yes vs no)	1861	Kumle et al 2004	x	x	x	1	0	0	2f	xa	xb	v	v	xb	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsis-tency**	**Indirect-ness**	**Impreci-sion**	**Publication bias**	**Moderate/ large effect**	**Dose effect**	**Overall quality**
Length of hormonal contraceptive use before birth: 1-29 months (vs no)	1805	Kumle et al 2004	x	x	x	1	0	0	2f	xa	xb	v	v	xb	x	x	+
Length of hormonal contraceptive use before birth: 30-59 months (vs no)	1805	Kumle et al 2004	x	x	x	0	1	0	2f	xa	xb	v	v	xb	x	x	+
Length of hormonal contraceptive use before birth: ≥60 months (vs no)	1805	Kumle et al 2004	x	x	x	0	1	0	2f	xa	xb	v	v	xb	x	x	+
Progestin-only contraceptives	1684	Kumle et al 2004	x	x	x	0	1	0	2f	xa	xb	v	v	xb	x	x	+
Diseases in the back, bones, or joints	1516	Larsen et al 1999	1	0	0	x	x	x	1h	v	xb	v	v	xb	x	x	+
Suffering from lower abdominal pain	1516	Larsen et al 1999	1	0	0	x	x	x	1h	v	xb	v	v	xb	x	x	+
Other diseases (Other than diseases in the back, bones, or joints)	1516	Larsen et al 1999	0	1	0	x	x	x	1h	v	xb	v	v	xb	x	x	+
Previous lower abdominal pain (while not pregnant)	1516	Larsen et al 1999	x	x	x	1	0	0	1g	v	xb	v	v	xb	x	x	+
Lifting heavy loads at work (10-20kg) (outcome Disabling posterior PPGP)	3284	Wergeland et al 1998	1	0	0	x	x	x	1h	xa	xb	v	v	xb	x	x	+
Heavy loads to carry (>10kg)	1516	Larsen et al 1999	1	0	0	x	x	x	1h	v	xb	v	v	xb	x	x	+
Physically heavy work	306	Malmqvist et al 2012	0	1	0	x	x	x	1h	xc	xb	v	v	xb	x	x	+
Strain at work	3062	Endresen 1995	x	x	x	0	1	0	1g	xa	xb	v	v	xb	x	x	+
Work bending forward	3062	Endresen 1995	x	x	x	1	0	0	1g	xa	xb	v	v	xb	x	x	+
Twisting and bending	3062	Endresen 1995	x	x	x	1	0	0	1g	xa	xb	v	v	xb	x	x	+
Uncomfortable working positions	1516	Larsen et al 1999	1	0	0	1	0	0	1g	xd	xb	v	v	xb	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/ large effect**	**Dose effect**	**Overall quality**
Long walking distance at work	1516	Larsen et al 1999	1	0	0	x	x	x	1[h]	v	x[b]	v	v	x[b]	x	x	+
Stairs more than 10 steps at work	1516	Larsen et al 1999	0	1	0	x	x	x	1[h]	v	x[b]	v	v	x[b]	x	x	+
Working in draft and cold	1516	Larsen et al 1999	1	0	0	1	0	0	1[h]	x[d]	x[b]	v	v	x[b]	x	x	+
Working with chemicals	1516	Larsen et al 1999	0	1	0	x	x	x	1[h]	v	x[b]	v	v	x[b]	x	x	+
Previous caesarian section	81142	Lebel et al 2010	0	1	0	x	x	x	1[i]	x[e]	x[b]	v	v	x[b]	x	x	+
Recurrent abortion	81142	Lebel et al 2010	0	1	0	x	x	x	1[i]	x[e]	x[b]	v	v	x[b]	x	x	+
Mild pre-eclampsia	81142	Lebel et al 2010	1	0	0	x	x	x	1[i]	x[e]	x[b]	v	v	x[b]	x	x	+
Severe pre-eclampsia	81142	Lebel et al 2010	0	1	0	x	x	x	1[i]	x[e]	x[b]	v	v	x[b]	x	x	+
Chronic hypertension	81142	Lebel et al 2010	0	1	0	x	x	x	1[i]	x[e]	x[b]	v	v	x[b]	x	x	+
Diabetes mellitus (outcome symphysiolysis)	81142	Lebel et al 2010	1	0	0	x	x	x	1[i]	x[e]	x[b]	v	v	x[b]	x	x	+
Diabetes mellitus (outcome pelvic girdle syndrome)	1816	Eberhard-Gran & Eskild 2008	1	0	0	1	0	0	2[f]	x[a]	x[b]	v	v	x[b]	v	x	++
Gestational diabetes mellitus	81142	Lebel et al 2010	1	0	0	x	x	x	1[i]	x[e]	x[b]	v	v	x[b]	x	x	+
Pregestational diabetes mellitus	81142	Lebel et al 2010	0	1	0	x	x	x	1[i]	x[e]	x[b]	v	v	x[b]	x	x	+
Premature rupture of membranes	81142	Lebel et al 2010	0	1	0	x	x	x	1[i]	x[e]	x[b]	v	v	x[b]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/ large effect**	**Dose effect**	**Overall quality**
Time since last delivery: <5 years (vs ≥5 years)	1816	Eberhard-Gran & Eskild 2008	1	0	0	0	1	0	2[f]	x[a]	x[b]	v	v	x[b]	x	x	+
Time since first birth	1861	Kumle et al 2004	x	x	x	0	1	0	2[f]	x[a]	x[b]	v	v	x[b]	x	x	+
≥ 4 cups of coffee	3286	Wergeland et al 1998	1	0	0	x	x	x	1[h]	x[a]	x[b]	v	v	x[b]	x	x	+
Treatment of low back pain by doctor (vs untreated)	869	Larsen et al 1999	0	1	0	x	x	x	1[h]	v	x[b]	v	v	x[b]	x	x	+
Treatment of low back pain by chiropractor (vs untreated)	1009	Larsen et al 1999	0	1	0	x	x	x	1[h]	v	x[b]	v	v	x[b]	x	x	+
Treatment of low back pain by physiotherapist (vs untreated)	1163	Larsen et al 1999	0	1	0	x	x	x	1[h]	v	x[b]	v	v	x[b]	x	x	+
Untreated low back pain	1516	Larsen et al 1999	1	0	0	x	x	x	1[h]	v	x[b]	v	v	x[b]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Questions to determine outcome open to interpretation (high/moderate ROB of outcome measurement domain). [b] Only a single study examined this factor.[c] Retrospective outcome collection for all pregnancies. [d] Uncomfortable working positions, and working in draft or cold not clearly defined. [e] Outcome extracted from notes, interpretation/reporting by clinician. [f] Phase 2: Tested specific hypothesis, used multivariate logistic regression. [g] Phase 1: Identified potential risk factors, used multivariate regression. [h] Phase 1: Descriptive statistics extracted and unadjusted OR calculated. [i] Phase 1: No adjustment for confounders.

Appendix 26: Full GRADE table – Socio-demographic Risk factors for PPGP in the any trimester of pregnancy or trimester not stated (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Woman's year of birth^	3062	Endresen 1995	x	x	x	1	0	0	1e	xa	xb	v	v	xb	x	x	+
Age at last delivery: ≥25 (vs <25)	1791	Eberhard-Gran & Eskild 2008	1	0	0	1	0	0	2d	xa	xb	v	v	xb	v	x	++
Age at first birth 21-25 (vs ≤20)	1861	Kumle et al 2004	x	x	x	0	1	0	2d	xa	xb	v	v	xb	x	x	+
Age at first birth ≥26 (vs ≤20)	1861	Kumle et al 2004	x	x	x	0	1	0	2d	xa	xb	v	v	xb	x	x	+
Partner's education level: primary or secondary 9-10 years (vs university/ college)	1822	Wergeland et al 1998	1	0	0	x	x	x	1f	xa	xb	v	v	xb	x	x	+
Partner's education level: secondary 11-12 years (vs university/ college)	2275	Wergeland et al 1998	0	1	0	x	x	x	1f	xa	xb	v	v	xb	x	x	+
Years of education 10-12 (vs 7-9 years)	1861	Kumle et al 2004	x	x	x	0	1	0	2d	xa	xb	v	v	xb	x	x	+
Years of education 13-15 (vs 7-9 years)	1861	Kumle et al 2004	x	x	x	0	1	0	2d	xa	xb	v	v	xb	x	x	+
Years of education 16+ (vs 7-9 years)	1861	Kumle et al 2004	x	x	x	0	1	0	2d	xa	xb	v	v	xb	x	x	+
Pakistani (vs Norwegian)	137	Vangen et al 1999	0	0	1	x	x	x	1e	xc	xb	v	v	xb	x	x	+
Being in work	1516	Larsen et al 1999	0	1	0	x	x	x	1f	v	xb	v	v	xb	x	x	+
Monotonous work	1516	Larsen et al 1999	0	1	0	x	x	x	1f	v	xb	v	v	xb	x	x	+
Working part-time	1516	Larsen et al 1999	0	1	0	x	x	x	1f	v	xb	v	v	xb	x	x	+
Shiftwork	1516	Larsen et al 1999	0	1	0	x	x	x	1f	v	xb	v	v	xb	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/ large effect**	**Dose effect**	**Overall quality**
Fixed salary	1516	Larsen et al 1999	0	1	0	x	x	x	1[f]	v	x[b]	v	v	x[b]	x	x	+
Living in a house (yes vs no)	1516	Larsen et al 1999	0	1	0	x	x	x	1[f]	v	x[b]	v	v	x[b]	x	x	+
Having more than 3 rooms at home	1516	Larsen et al 1999	0	1	0	x	x	x	1[f]	v	x[b]	v	v	x[b]	x	x	+
Having a lift at home	1516	Larsen et al 1999	0	1	0	x	x	x	1[f]	v	x[b]	v	v	x[b]	x	x	+
Having stairs with more than 10 steps at home	1516	Larsen et al 1999	0	1	0	x	x	x	1[f]	v	x[b]	v	v	x[b]	x	x	+
Living with or married to partner	1516	Larsen et al 1999	0	1	0	x	x	x	1[f]	v	x[b]	v	v	x[b]	x	x	+
Children at home	1516	Larsen et al 1999	1	0	0	x	x	x	1[f]	v	x[b]	v	v	x[b]	x	x	+
Doing more than 50% of the housework	1516	Larsen et al 1999	0	1	0	x	x	x	1[f]	v	x[b]	v	v	x[b]	x	x	+
Influence on breaks at work (yes vs no)	3272	Wergeland et al 1998	0	0	1	x	x	x	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+
Influence on work pace (yes vs no)	3272	Wergeland et al 1998	0	1	0	x	x	x	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+
Level of work pace control: No (vs high)	3321	Wergeland et al 1998	x	x	x	1	0	0	1[e]	x[a]	x[b]	v	v	x[b]	x	x	+
Level of work pace control: low (vs high)	3321	Wergeland et al 1998	x	x	x	0	1	0	1[e]	x[a]	x[b]	v	v	x[b]	x	x	+
Level of work pace control: medium (vs high)	3321	Wergeland et al 1998	x	x	x	0	1	0	1[e]	x[a]	x[b]	v	v	x[b]	x	x	+
Externally paced work (yes vs no)	3280	Wergeland et al 1998	0	1	0	x	x	x	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+
Manual work (yes vs no) (Outcome Disabling posterior PPGP)	3280	Wergeland et al 1998	0	1	0	x	x	x	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Manual work (yes vs no) (outcome symphysiolysis)	360	Hakansson et al 1994	0	1	0	x	x	x	1[e]	x[c]	x[b]	v	v	x[b]	x	x	+
Influence on work content (yes vs no)	3262	Wergeland et al 1998	0	1	0	x	x	x	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+
Work with video display terminals (yes vs no)	3187	Wergeland et al 1998	0	1	0	x	x	x	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+
Weekly hours of paid work ≥35 (yes vs no)	3168	Wergeland et al 1998	0	1	0	x	x	x	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+
Weekly hours of pain work >40 (yes vs no)	3168	Wergeland et al 1998	0	1	0	x	x	x	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+
Economic dependence	3062	Endresen 1995	x	x	x	0	1	0	1[e]	x[a]	x[b]	v	v	x[b]	x	x	+
Permanently employed	1737	Endresen 1995	x	x	x	0	1	0	1[e]	x[a]	x[b]	v	v	x[b]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Questions to determine outcome open to interpretation (high/moderate ROB of outcome measurement domain). [b] Only a single study examined this factor.[c] High/moderate ROB for 3 domains. [d] Phase 2: Tested specific hypothesis, used multivariate logistic regression. [e] Phase 1: Identified potential risk factors, used multivariate regression. [f] Phase 1: Descriptive statistics extracted and unadjusted OR calculated.

Appendix 27: Full data - Risk factors for PLBP examined in >1 study

Physical factors

Low back pain history

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted effect measure	Adjusted OR	Raw data
Low back pain history	Orvieto et al 1994	All	During pregnancy 15-41 weeks (cross-sectional)	Any	PLBP[?]	449	ANCOVA p<0.003	/	Not available
	Ostgaard et al 1991b	All	During pregnancy (any)	Any	PLBP[?]	804	RR 2.09 of period prevalence; 3.08 of point prevalence	/	Available
Meta-analysis	Unable to perform meta-analysis due to lack of data reported.								

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

History of low back pain not related to pregnancy

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR unless stated otherwise	Raw data
History of LBP not related to pregnancy	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	1153	2.7* [2-3.5]; p<0.0001	β coefficient 0.57 [0.22-0.92][a]; p=0.002	Available
	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	Any	PLBP[?]	950	4.0* [1.7-9.4]; Chi-squared p=0.002	/	Not available
Meta-analysis	Data not pooled because of significant heterogeneity including time of follow up (4 week prevalence vs cross-sectional).								

[a] Adjusted for history of low back pain during previous pregnancy, history of low back pain postpartum, previous caesarean or instrumented delivery, previous epidural anaesthesia during previous delivery, previous lumbar surgery, pain augmentation with time spent in bed, anxiety (STAI score).

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Low back pain in previous pregnancies

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR	Raw data
Low back pain in previous pregnancies	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Any	Moderate to severe PLBP	214	7.4* [3.3-16.9]; p<0.0001	/	Available
	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	1153	3.5* [2.3-5.3]; p<0.0001	/	Available
		Women who had been pregnant before	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	394	β coefficient 1.21 [0.55-1.87]; p<0.001	/	
	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	Any	PLBP[?]	950	5.7 [2.9-11.2]; Chi-squared p=0.002	/	Not available
	Orvieto et al 1994	All	During pregnancy 15-41 weeks (cross-sectional)	Any	PLBP[?]	449	ANCOVA p<0.005	/	Not available
Meta-analysis	Data not pooled because of significant heterogeneity including time of follow up (4 week prevalence vs pregnancy period prevalence vs cross-sectional).								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Oral contraceptive pill

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR	Raw data
OCP	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	Any	PLBP[?]	950	Chi-squared p=0.3	/	Not available
	Ostgaard et al 1991a	All	During pregnancy (any)	Any	PLBP[?]	855	Pitman's correlation (+ve) p=0.07	/	Not available
	Ostgaard et al 1993	All	During pregnancy (any)	Any	PLBP[?]	855	Pitman's correlation -0.05; NS	/	Not available
Meta-analysis	Unable to perform meta-analysis due to lack of data reported. Ostgaard et al 1991a and Ostgaard et al 1993 report on same cohort, yet given different results.								

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Parity

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise	Raw data
Parity ≥1 (vs 0)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Any	PLBP[?]	3321	1.6* [1.4-1.9]; p<0.0001	/	Available
Parity 1 (vs 0)	Berg et al 1988	All	During pregnancy (at 20th, 30th and 35th week gestation)	Any	PLBP[?] Any week	660	1.2* [0.9-1.6]; p=0.3	/	Available
			During pregnancy (at 20th, 30th and 35th week gestation)	Any	PLBP[?] All weeks	660	1.1* [0.7-1.9]; p=0.06	/	Available
			During pregnancy (at 20th, 30th and 35th week gestation)	Any	PLBP[?] Sick leave	660	0.9* [0.5-1.5]; p=0.7	/	Available
Parity >1 (vs 0)	Berg et al 1988	All	During pregnancy (at 20th, 30th and 35th week gestation)	Any	PLBP[?] Any week	542	1.1* [0.7-1.5]; p=0.8	/	Available

			During pregnancy (at 20th, 30th and 35th week gestation)	Any	PLBP[?] All weeks	542	0.9* [0.5-1.7]; p=0.7	/	Available
			During pregnancy (at 20th, 30th and 35th week gestation)	Any	PLBP[?] Sick leave	542	1.0* [0.5-1.8]; p=1.0	/	Available
Parity >1 (vs 1)	Berg et al 1988	All	During pregnancy (at 20th, 30th and 35th week gestation)	Any	PLBP[?] Any week	496	0.9* [0.6-1.3]; p=0.5	/	Available
			During pregnancy (at 20th, 30th and 35th week gestation)	Any	PLBP[?] All weeks	496	0.8* [0.4-1.5]; p=0.5	/	Available
			During pregnancy (at 20th, 30th and 35th week gestation)	Any	PLBP[?] Sick leave	496	0.9* [0.5-1.6]; p=0.7	/	Available
Parity	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	Any	PLBP[?]	2853	/	β coefficient[a] 0.07 (T-value 3.6); p<0.001	Not available
			Postpartum while on maternity ward (retrospective questions)	Any	PLBP[?]	2911	/	β coefficient[b] 0.1 (T-value 7.1); p<0.001	Not available
			Postpartum while on maternity ward (retrospective questions)	Any	PLBP[?] + "No" to PPGP[?]	1625	/	β coefficient[c] 0.1 (T-value 4.5); p<0.001	Not available
Meta-analysis	Data not pooled because of significant heterogeneity including time of follow up and outcome measurement.								

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

[a] Adjusted for pelvic pain,woman year of birth, economic dependence, twisting and bending, education, work above shoulders, sex colleagues; [b] Adjusted for work bending forward, woman year of birth, strain at work, economic dependence, twisting and bending, education, work above shoulder; [c] Adjusted for woman's year of birth, education, economic dependence, work bending forward.

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Number of previous pregnancies

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise	Raw data
Number of previous pregnancies: 2 (vs 1)	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	1087	1.3* [0.9-1.7]; p=0.1	/	Available
Number of previous pregnancies: 3 (vs 1)	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	810	1.9* [0.9-4]; p=0.08	/	Available
Number of previous pregnancies: 4 (vs 1)	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	775	5.3* [0.7-41.1]; p=0.1	/	Available
Number of previous pregnancies: 5 (vs 1)	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	766	0.4* [0.06-3.2]; p=0.4	/	Available
Number of previous pregnancies	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	Any	PLBP?	950	Chi-squared p=0.2	/	Not available
	Orvieto et al 1994	All	During pregnancy 15-41 weeks (cross-sectional)	Any	PLBP?	449	ANCOVA NS	/	Not available
	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	Any	PLBP?	1357	1.0 [0.9-1.2]	/	Not available
	Ostgaard et al 1991a	All	During pregnancy (any)	Any	PLBP?	855	Pitman's correlation (-ve); p=0.001	/	Not available
Number of previous pregnancies: multigravida	Ostgaard et al 1991b	All	During pregnancy (any)	Any	PLBP?	804	RR 1.1 of period prevalence; 1.3 of point prevalence	/	Available

Meta-analysis	Ostgaard et al 1991a and b are the same cohort. Insufficient data reported to conduct meta-analysis.

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Smoking

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR	Raw data
Smoking (no vs yes; unclear when)	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	Any	PLBP[?]	1357	OR (enter) 0.8 [0.4-1.6]; OR (backward Wald) 0.8 [0.4-1.7]	/	Not available
Ex-smoker (vs smoker; unclear when)	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	Any	PLBP[?]	1357	OR (enter) 0.4 [0.2-1.0]; OR (backward Wald) 0.5 [0.2-1.0]	/	Not available
Smoking during pregnancy	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	Any	PLBP[?]	950	Chi-squared p=0.1	/	Not available
Daily smoking (yes vs no)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Any	PLBP[?]	3311	1.5* [1.3-1.7]; p<0.0001	/	Available
Smoking quantity: 1-10 cigarettes/day (vs non-smoker)	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	1131	1.7* [1.0-2.6]; p=0.03	/	Available
Smoking quantity: 11-20 cigarettes/day (vs non-smoker)	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	1022	1.5* [0.3-7.2]; p=0.6	/	Available
Smoking quantity: >20 cigarettes/day (vs non-smoker)	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	1016	0.3* [0.02-3.1]; p=0.3	/	Available
Meta-analysis	Data not pooled because of significant heterogeneity including different comparisons and different times of follow up.								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Body Mass Index (BMI)

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR	Raw data
Body Mass Index (BMI) (Not clearly stated when measured)	Orvieto et al 1994	All	During pregnancy 15-41 weeks (cross-sectional)	Any	PLBP?	449	ANCOVA NS	/	Not available
	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	1153	Student t-test or Mann Whitney U test: p=0.2	/	Not available
Pre-pregnancy BMI	Malmqvist et al 2012	All		Any	Moderate to severe PLBP	214	1.2** [0.7-2.0] (SMD 0.08 [-0.2-0.4])	/	Not available
BMI at delivery	Malmqvist et al 2012	All		Any	Moderate to severe PLBP	214	1.3** [0.7-2.2] (SMD 0.1 [-0.2-0.4])	/	Not available
Pre-pregnancy BMI <18 (vs ≥18 and <22)	Morino et al 2014	All	during 2nd (mean 22.4, SD 2.1 weeks)	2nd	PLBP? in 2nd trimester	355	/	1.2 [0.5-2.5][a]	Unavailable
		All	3rd trimester (mean 33.7 weeks, SD 2.1 weeks)	3rd	PLBP? in 3rd trimester	355	/	2.0 [1.0-4.0][a]	Unavailable
Pre-pregnancy BMI ≥22 (vs ≥18 and <22)	Morino et al 2014	All	during 2nd (mean 22.4, SD 2.1 weeks)	2nd	PLBP? in 2nd trimester	355	/	1.7 [1.0-3.0][a]	Unavailable
		All	3rd trimester (mean 33.7 weeks, SD 2.1 weeks)	3rd	PLBP? in 3rd trimester	355	/	2.2 [1.3-3.8][a; p<0.05	Unavailable

Meta-analysis	Insufficient data reported to pool data in meta-analysis.

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

** OR calculated from Standardised Mean Difference using formula: SMD=V3/π x ln OR (Chin 2000)

[a] Adjusted for age

Weight before pregnancy

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR	Raw data
Weight before pregnancy	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	Any	PLBP[?]	950	Chi-squared p=0.8 NS	/	Not available
	Orvieto et al 1994	All	During pregnancy 15-41 weeks (cross-sectional)	Any	PLBP[?]	449	ANCOVA NS	/	Not available
	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	Any	PLBP[?]	1357	OR (enter) 1.02 [1.0-1.04]; OR (backward Wald) 1.02 [1.0-1.04]	/	Not available
	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	1153	Student t-test or Mann Whitney U test: p=1.0	/	Not available
Meta-analysis	Insufficient data reported to pool data in meta-analysis.								

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Physically heavy work

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR	Raw data
Physically heavy work	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Any	Moderate to severe PLBP	214	1.9* [1.0-3.8]; p=0.06	/	Available
	Ostgaard et al 1991a	All	During pregnancy (any)	Any	PLBP[?]	855	Pitman's correlation (+ve); p=0.000	/	Not available
Meta-analysis	Insufficient data reported to pool data in meta-analysis.								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Work bending forward

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted effect measure	Adjusted effect measure	Raw data
Work bending forward	Ostgaard et al 1991a	All	During pregnancy (any)	Any	PLBP[?]	855	Pitman's correlation (+ve); p=0.000	/	Not available
	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	Any	PLBP[?]	2911	/	β coefficient[d] 0.03 (T-value 2.4); p<0.05	Not available
			Postpartum while on maternity ward (retrospective questions)	Any	PLBP[?] + "No" to PPGP[?]	1625	/	β coefficient[e] 0.05 (T-value 3.1); p<0.01	Not available
Meta-analysis	Insufficient data reported to pool data in meta-analysis.								

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Height

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted effect measure	Adjusted effect measure	Raw data
Height	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	1153	Student t-test or Mann Whitney U test: p=0.8	/	Not available
	Orvieto et al 1994	All	During pregnancy 15-41 weeks (cross-sectional)	Any	PLBP[?]	449	ANCOVA NS	/	Not available
Meta-analysis	Insufficient data reported to pool data in meta-analysis.								

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Gestational age

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted effect measure	Adjusted effect measure	Raw data
Time of gestation/ gestational age	Orvieto et al 1994	All	During pregnancy 15-41 weeks (cross-sectional)	Any	PLBP[?]	449	ANCOVA NS	/	Not available
	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	1153	Student t-test or Mann Whitney U test: p=0.34	/	Not available
Meta-analysis	Insufficient data reported to pool data in meta-analysis.								

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Socio-demographic factors

Age

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR	Raw data
Age	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	Any	PLBP?	950	Chi-squared p=0.004 (higher prevalence in younger women)	/	Not available
	Orvieto et al 1994	All	During pregnancy 15-41 weeks (cross-sectional)	Any	PLBP?	449	ANCOVA NS	/	Not available
	Ostgaard et al 1991a	All	During pregnancy (any)	Any	PLBP?	855	Pitman's correlation (+ve) p=0.004 (younger: higher risk)	/	Not available
	Ostgaard et al 1991b	All	During pregnancy (any)	Any	PLBP?	804	Pitman's correlation P<0.001 (point prevalence negatively correlated with age)	/	Not available
	Ostgaard et al 1991c	All	During pregnancy (any)	Any	PLBP?	855	0.7** [0.5-0.9]; (SMD -0.2 [-0.4 to -0.08]); Comparison of means p<0.05	/	Not available
	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	Any	PLBP?	1357	OR 1.0 [0.98-1.01]	/	Not available
	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	1153	Student t-test or Mann Whitney U test: p=0.09	/	Not available
Age at delivery	Malmqvist et al 2012	All		Any	Moderate to severe PLBP	214	0.8** [0.5-1.4] (SMD -0.1 [-0.4-0.2])	/	Not available

Age <25 years (vs ≥30)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Any	PLBP[?]	2038	1.7* [1.4-2.0]; p<0.0001	/	Available
Age 25-29 years (vs ≥30)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Any	PLBP?	2511	1.3* [1.1-1.5]; p=0.003	/	Available
Meta-analysis	Insufficient data reported to pool data in meta-analysis.								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

** OR calculated from Standardised Mean Difference using formula: SMD=V3/π x ln OR (Chin 2000)

Educational level

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR unless stated otherwise	Raw data
Educational level: less than high school/ primary or secondary 1 (vs university level)	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	711	1.4* [1.0-2.1]; p=0.07	/	Available
	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Any	PLBP[?]	1965	2.0* [1.7-2.5]; p<0.0001	/	Available
Educational level: high school/ secondary 2 (vs university level)	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	951	1.2* [0.9-1.6]; p=0.2	/	Available
	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	Any	PLBP[?]	2438	1.6* [1.4-1.9]; p<0.0001	/	Available
Educational level: high school (vs primary school)	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	Any	PLBP[?]	1357	1.1 [0.7-1.6]	/	Not available

Educational level: university (vs primary school)	Mazi-cioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	Any	PLBP[?]	1357	1.8 [0.8-4.0]	/	Not available
Educational level	Ost-gaard et al 1991a	All	During pregnancy (any)	Any	PLBP[?]	855	Pitman's correlation (+ve) p=0.04	/	Not available
Education	Endre-sen 1995	All	Postpartum while on maternity ward (retro-spective questions)	Any	PLBP[?]	2853	/	β coefficient [a] -0.03(T-value -3.1); p<0.01	Not available
			Postpartum while on maternity ward (retro-spective questions)	Any	PLBP[?]	2911	/	β coefficient [b] -0.4 (T-value -3.6); p<0.001	Not available
			Postpartum while on maternity ward (retro-spective questions)	Any	PLBP[?] + "No" to PPGP[?]	1625	/	β coefficient [c] -0.5 (T-value -3.3); p<0.01	Not available
Education years	Malm-qvist et al 2012	All		Any	Mode-rate to severe PLBP	214	0.9** [0.5-1.5] (SMD -0.08 [-0.4-0.2])	/	Not available
Meta-analysis	Data not pooled because of significant heterogeneity including different times of follow up (4 week prevalence in Kovacs et al 2012 vs pregnancy period prevalence in Wergeland et al 1998).								

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

** OR calculated from Standardised Mean Difference using formula: SMD=V3/π x ln OR (Chin 2000)

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

[a] Adjusted for pelvic pain, parity, woman year of birth, economic dependence, twisting and bending, work above shoulders, sex colleagues; [b] Adjusted for parity, work bending forward, woman year of birth, strain at work, economic dependence, twisting and bending, work above shoulder; [c] Adjusted for parity, woman's year of birth, economic dependence, work bending forward

Work/occupation

Factor	Study	Participants (all or subgroup)	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR	Raw data
Work status: currently working (vs not working)	Kovacs et al 2012	All	31-38 weeks gestation (PLBP in prior 4 weeks)	3rd	PLBP	1144	0.7* [0.6-0.9]; p=0.02	/	Available
Occupation: clerk (vs housewife)	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	Any	PLBP?	1357	0.7 [0.3-1.5]	/	Not available
Occupation: technical (vs housewife)	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	Any	PLBP?	1357	1.3 [0.3-15.9]	/	Not available
Meta-analysis	Insufficient data and different comparisons: unable to pool data in meta-analysis.								

***** Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)
? For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Appendix 28: Full GRADE table – Physical Risk factors for PLBP (examined in more than 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**References [Phase] (No. of participants)**	**No. of papers (no. of studies)**	**+**	**0**	**-**	**+**	**0**	**-**	**Dominant phase****	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/ large effect**	**Dose effect**	**Overall quality**
History of low back pain	Orvieta et al 1994 [1][r] (449); Ostgaard 1991b [1][r] (804)	2 (2)	2	0	0	x	x	x	1	x[a]	v	v	v	x[b]	x	x	++
History of low back pain not related to pregnancy	Kovacs et al 2012 [1][o] (1153); Wang et al 2004 [1][pt] (950)	2 (2)	2	0	0	1	0	0	1	x[c]	v	v	v	x[b]	x	x	++
Low back pain in previous pregnancies^	Malmqvist et al 2012 [1][p] (214), Kovacs et al 2012 [1][p] (1153), Wang et al 2004 [1][t] (950), Orvieto et al 1994 [1][r] (449)	4 (4)	4	0	0	x	x	x	1	x[d]	v	v	v	v	x	x	+
Oral contraceptive pill	Wang et al 2004 [1][t] (950); Ostgaard et al 1991a [1][s] (895)	3 (2)	0	2	0	x	x	x	1	x[e]	v	v	v	x[b]	x	x	++
Parity*	Wergeland et al 1998 [1][p] (3321); Berg et al 1988 [1][p] (660); Endresen 1995 [1][o] (2853)	3 (3)	1	1	0	1	0	0	1	x[f]	x[g]	v	v	x[b]	x	x	++
Number of previous pregnancies^	Kovacs et al 2012 [1][p] (1087); Wang et al 2004 [1][t] (950); Orvieto et al 1994 [1][r] (449); Mazicioglu et al 2006 [1][r] (1357); Ostgaard et al 1991a [1][s] (855)	6 (5)	0	5	0	x	x	x	1	x[h]	v	v	v	v	x	x	+
Smoking	Mazicioglu et al 2006 [1][r] (1357); Wang et al 2004 [1][t] (950); Wergeland et al [1][p] 1998 (3311); Kovacs et al 2012 [1][p] (1022)	4 (4)	1	3	0	x	x	x	1	x[i]	v	v	v	v	x	x	+
Body Mass Index (BMI)*	Orvieto et al 1994 [1][r] (449); Kovacs et al 2012 [1][q] (1153); Malmqvist et al 2012 [1][p] (214); Morino et al 2014 [1][u] (355)	4 (4)	0	3	0	1[j]	1[j]	0	1	x[k]	v	v	v	v	x	x	+
Weight before pregnancy	Wang et al 2004 [1][t] (950); Orvieto et al 1994 [1][r] (449); Mazicioglu et al 2006 [1][r] (1357); Kovacs et al 2012 [1][q] (1153)	4 (4)	0	4	0	x	x	x	1	x[l]	v	v	v	v	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**References [Phase] (No. of participants)**	**No. of papers (no. of studies)**	**+**	**0**	**-**	**+**	**0**	**-**	**Dominant phase****	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Physically heavy work	Malmqvist et al 2012 [1][r] (214),Ostgaard et al 1991a [1][s] (855)	2 (2)	0	2	0	x	x	x	1	x[m]	v	v	v	x[b]	x	x	++
Work bending forward^	Ostgaard et al 1991a [1][s] (855); Endresen 1995 [1][o] (2911)	2 (2)	0	1	0	0	1	0	1	x[m]	v	v	v	x[b]	x	x	++
Height	Kovacs et al 2012 [1][q] (1153); Orvieto et al 1994 [1][r] (449)	2 (2)	0	2	0	x	x	x	1	x[n]	v	v	v	x[b]	x	x	++
Gestational age	Orvieto et al 1994 [1][r] (449); Kovacs et al 2012 [1][q] (1153)	2 (2)	0	2	0	x	x	x	1	x[n]	v	v	v	x[b]	x	x	++

** If equal number of studies in different phases, then this was based on number of participants; Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Both studies have 4 domains with moderate or high risk of bias; [b] Limited number of studies explored this factor; [c] On study (Wang et al) high/moderate ROB for 2 domains; no clear definition of low back pain. [d] Three out of four studies have at least 1 domain with high ROB; [e] Studies have 2-4 domains with moderate/high ROB. f Two studies have 1 moderate ROB domain (questions for outcome assessment open to interpretation, and one study have 5 domains high/moderate ROB. [g] Conflicting results between studies; [h] Four of the 5 studies has 2-4 domains with moderate/high ROB. [i] Three of four studies have 2-3 domains moderate/high ROB. [j] For 2nd trimester (no association, 3rd trimester (positive association); [k] Three of the 4 studies had 1-4 domains high/moderate ROB; [l] Three of the 4 studies had 2-4 domains high/moderate ROB; [m] Studies 1 and 4 domains with high/moderate ROB; [n] One of the 2 studies has 4 domains with high/moderate ROB. [o] Phase 1: Identified potential risk factors, used multivariate regression. [p] Phase 1: Descriptive statistics extracted and unadjusted OR calculated. [q] Phase 1: simple comparative test (t-test/Mann Whitney U test). [r] Phase 1: No adjustment for confounders. [s] Phase 1: No adjustment for confounders; Pittman's correlation analysis. [t] Phase 1: No adjustment for confounders; Chi-squared analysis. [u] Phase 1: Examined multiple outcomes. Only adjusted for age.

Appendix 29: Full GRADE table – Socio-demographic Risk factors for PLBP (examined in more than 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**References [Phase] (No. of participants)**	**No. of papers (no. of studies)**	**+**	**0**	**-**	**+**	**0**	**-**	**Dominant phase****	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Age	Wang et al 2004 [1][j] (950); Orvieto et al 1994 [1][h] (449); Ostgaard et al 1991a [1][i] (855); Mazicioglu et al 2006 [1][h] (1357); Kovacs et al 2012 [1][g] (1153); Malmqvist et al 2012 [1][f] (214); Wergeland et al 1998 [1][f] (2038)	9 (7)	2	4	1	x	x	x	1	x[a]	x[b]	v	v	v	x	x	+
Educational level*	Kovacs et al 2012 [1][f] (711); Wergeland et al 1998 [1][f] (1965); Mazicioglu et al 2006 [1][h] (1357); Ostgaard et al 1991a [1][i] (855); Endresen 1995 [1][e] (2853); Malmqvist et al 2012 [1][f] (214)	6 (6)	1	3	1	0	0	1	1	x[a]	x[b]	v	v	v	x	x	+
Work/occupation (in work)	Kovacs et al 2012 [1][f] (1144); Mazicioglu et al 2006 [1][h] (1357)	2 (2)	0	1	1	x	x	x	1	x[c]	x[b]	v	v	x[d]	x	x	+

** If equal number of studies in different phases, then this was based on number of participants; Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Studies had 1 to 4 domains with high/moderate ROB; [b] Conflicting results between studies; [c] One of 2 studies has 2 domains with mod/high ROB; [d] Limited number of studies explored this factor; [e] Phase 1: Identified potential risk factors, used multivariate regression. [f] Phase 1: Descriptive statistics extracted and unadjusted OR calculated. [g] Phase 1: simple comparative test (t-test/Mann Whitney U test). [h] Phase 1: No adjustment for confounders. [i] Phase 1: No adjustement for confounders; Pittman's correlation analysis. [j] Phase 1: No adjustment for confounders; Chi-squared analysis.

Appendix 30: Full data - Risk factors for PLBP in the 3rd trimester of pregnancy (examined in only 1 study)

Physical factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR
History of postpartum low back pain	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	1153	2.4* [1.5-3.8] p=0.0001	/
		Women who had been pregnant before	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	394	/	β coefficient 0.8 [0.1-1.6]; p=0.03
Experiencing low back pain around the time when getting pregnant	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	1153	3.0* [2-4.7.0] p=0.0001	/
Physical activy level: minimally active (vs sedentary)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	383	1.3* [0.8-2.1] p=0.3	/
Physical activy level: moderately active (vs sedentary)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	584	0.9* [0.6-1.3] p=0.5	/
Physical activy level: active (vs sedentary)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	495	1.2* [0.8-1.8] p=0.3	/
Physical activy level: very active (vs sedentary)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	456	1.0* [0.6-1.5] p=0.9	/
≥1 previous instrumented delivery	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	1153	1.6* [0.9-2.8] p=0.08	/

≥1 previous caesarian	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	1153	0.8* [0.5-1.4] p=0.5	/
≥1 previous epidural anaesthesia	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	1153	1.5* [1.1-2.0] p=0.009	/
Previous lumbar surgery	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	1158	/	β coefficient -1.62 [-3.16,-0.09]; p=0.04
		Women who had been pregnant before	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	394	/	β coefficient -3.05 [-5.52,-0.57]; p=0.02
Current weight (3rd trimester of pregnancy)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PLBP	1153	Student t-test or Mann Whitney U test: p=0.3
Hours of exercise per week before pregnancy	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PLBP	1153	Student t-test or Mann Whitney U test: p=0.5
Hours of exercise per week during pregnancy	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	3rd	PLBP	1153	Student t-test or Mann Whitney U test: p=0.6

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
Statistically significant (p≤0.05) results are marked in yellow.

Psychological factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR
Depression: slightly (vs not)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	1036	1.5* [1.1-2] p=0.004	/
Depression: moderately (vs not)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	752	4.0* [1.9-8.1] p=0.009	/
Depression: seriously (vs not)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	685	6.4* [0.8-49.0] p=0.07	/
Anxiety: Traces of anxiety (vs normal)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	1024	2.0* [1.3-3.0] p=0.001	/
Anxiety: Pathological anxiety (vs normal)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	910	8.1* [2.5-26.0] p=0.0005	/
Anxiety (STAI score)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	1158 (1153)	β coefficient 0.02 [0.01-0.03] p<0.001; Student t-test or Mann Whitney U test: p<0.01	/
		Women who had been pregnant before	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	394	β coefficient 0.02 [0.01-0.04] p=0.01	/
State Anxiety (STAI-S)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	1153	Student t-test or Mann Whitney U test: p<0.01	/

Trait Anxiety (STAI-T)	Kovacs et al 2012	All	31-38 weeks gestation (PPGP in prior 4 weeks)	PLBP	1153	Student t-test or Mann Whitney U test: p<0.01	/

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
Statistically significant (p≤0.05) results are marked in yellow.

Appendix 31: Full GRADE table – Physical Risk factors for PLBP in the 3rd trimester of pregnancy (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of partici-pants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/ large effect**	**Dose effect**	**Overall quality**
History of postpartum low back pain^	394	Kovacs et al 2012	1	0	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Experiencing low back pain around the time when getting pregnant	1153	Kovacs et al 2012	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Physical activity level: minimally active (vs sedentary)	383	Kovacs et al 2012	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Physical activity level: moderately active (vs sedentary)	584	Kovacs et al 2012	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Physical activity level: active (vs sedentary)	495	Kovacs et al 2012	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Physical activity level: very active (vs sedentary)	456	Kovacs et al 2012	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
≥1 previous instrumented delivery	1153	Kovacs et al 2012	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
≥1 previous caesarian	1153	Kovacs et al 2012	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
≥1 previous epidural anaesthesia	1153	Kovacs et al 2012	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Previous lumbar surgery^	1158	Kovacs et al 2012	x	x	x	0	0	1	1[b]	v	x[a]	v	v	x[a]	x	x	+
Current weight (3rd trimester of pregnancy)	1153	Kovacs et al 2012	x	x	x	0	1	0	1[b]	v	x[a]	v	v	x[a]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of partici-pants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/ large effect size**	**Dose effect**	**Overall quality**
Hours of exercise per week before pregnancy	1153	Kovacs et al 2012	x	x	x	0	1	0	1[b]	v	x[a]	v	v	x[a]	x	x	+
Hours of exercise per week during pregnancy	1153	Kovacs et al 2012	x	x	x	0	1	0	1[b]	v	x[a]	v	v	x[a]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor. [b] Phase 1: Identified potential risk factors, used multivariate regression. [c] Phase 1: Descriptive statistics extracted and unadjusted OR calculated.

Appendix 32: Full GRADE table – Psychological Risk factors for PLBP in the 3rd trimester of pregnancy (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Depression: slightly (vs not)	1036	Kovacs et al 2012	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Depression: moderately (vs not)	752	Kovacs et al 2012	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Depression: seriously (vs not)	685	Kovacs et al 2012	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Anxiety: Traces of anxiety (vs normal)	1024	Kovacs et al 2012	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Anxiety: Pathological anxiety (vs normal)	910	Kovacs et al 2012	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Anxiety (STAI score)^	1158	Kovacs et al 2012	x	x	x	1	0	0	1[b]	v	x[a]	v	v	x[a]	x	x	+
State Anxiety (STAI-S)	1153	Kovacs et al 2012	x	x	x	1	0	0	1[b]	v	x[a]	v	v	x[a]	x	x	+
Trait Anxiety (STAI-T)	1153	Kovacs et al 2012	x	x	x	1	0	0	1[b]	v	x[a]	v	v	x[a]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor. [b] Phase 1: Identified potential risk factors, used multivariate regression. [c] Phase 1: Descriptive statistics extracted and unadjusted OR calculated.

Appendix 33: Full data - Risk factors for PLBP (any trimester/trimester not stated) (examined in only 1 study)

Physical factors

Factors	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR unless stated otherwise
Pelvic pain during pregnancy	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PLBP?	2853	/	β coefficient[a] 0.2 (T-value 19.6); p<0.001
Low back pain in the year before pregnancy	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PLBP	214	5.7* [2.6-12.7]; p<0.0001	/
Pelvic girdle pain in the year before pregnancy	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PLBP	214	0.9* [0.2-4.8]; p=0.9	/
Experience of low back pain before first pregnancy	Orvieto et al 1994	All	During pregnancy 15-41 weeks (cross-sectional)	PLBP?	449	ANCOVA p<0.003	/
Previous pain before pregnancy	Mazi-cioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	PLBP?	1357	OR (enter) 5.4 [3.9-7.6]; OR (backward Wald) 5.3 [3.9-7.4]	/
Physical workload: heavy or very heavy (vs light)	Berg et al 1988	All	During pregnancy (at 20, 30, 35 weeks)	PLBP? (At any of week 20, 30, 35 gestation)	513	1.8* [1.2-2.5]; p=0.002; Chi-squared; p<0.01	/
			During pregnancy (at 20, 30, 35 weeks)	PLBP? (At all of week 20, 30, 35 gestation)	513	1.5* [0.8-2.6]; p=0.2; Chi-squared; NS	/
			During pregnancy (at 20, 30, 35 weeks)	PLBP? (with sick leave)	513	3.7* [1.9-7.4]; p=0.0002;Chi-squared; p<0.001	/
Physical workload: heavy or very heavy including lifting movements (vs light)	Berg et al 1988	All	During pregnancy (at 20, 30, 35 weeks)	PLBP? (At any of week 20, 30, 35 gestation)	451	2.2* [1.5-3.2]; p=0.0001;Chi-squared; p<0.01	/
			During pregnancy (at 20, 30, 35 weeks)	PLBP? (At all of week 20, 30, 35 gestation)	451	2.1* [1.1-3.7]; p=0.02; Chi-squared; p<0.01	/

			During pregnancy (at 20, 30, 35 weeks)	PLBP? (with sick leave)	451	4.0* [1.9-8.3]; p=0.0002; Chi-squared; p<0.001	/
Exercised at least 2-3 times a week before pregnancy	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PLBP	214	1.1* [0.6-2.0]; p=0.8	/
Pre-pregnancy physical activity	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	PLBP?	950	Chi-squared; p=0.2	/
Repetitive daily activities	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	PLBP?	950	Chi-squared; p=0.4	/
Weight gain during pregnancy	Ostgaard et al 1993	All	During pregnancy (any)	PLBP?	855	Pitman's correlation R=0.05; NS	/
Spinal or epidural anaesthesia	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	PLBP?	950	Chi-squared; p=0.5	/
Lifting heavy loads at work (10-20kg)	Werge-land & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3284	1.8* [1.5-2.1]; p<0.0001	/
Lifting at work	Ostgaard et al 1991a	All	During pregnancy (any)	PLBP?	855	Pitman's correlation (+ve) p= 0.02	/
Strain at work	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PLBP?	2911	/	β coefficient[b] 0.04 (T-value 2.2); p<0.05
Twisting and bending	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PLBP?	2911	/	β coefficient[c] 0.04 (T-value 3.2); p<0.01
			Postpartum while on maternity ward (retrospective questions)	PLBP?	2853	/	β coefficient[d] 0.04 (T-value 3.7); p<0.001
Twisting when working	Ostgaard et al 1991a	All	During pregnancy (any)	PLBP?	855	Pitman's correlation (+ve) p=0.000	/
Ability to change work posture	Ostgaard et al 1991a	All	During pregnancy (any)	PLBP?	855	Pitman's correlation (-ve) p=0.001	/

Standing work posture	Ostgaard et al 1991a	All	During pregnancy (any)	PLBP?	855	Pitman's correlation (-ve) p=0.005	/
Work above shoulder	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PLBP?	2853	/	β coefficient[e] 0.04 (T-value 2.9); p<0.01
			Postpartum while on maternity ward (retrospective questions)	PLBP?	2911	/	β coefficient[f] 0.04 (T-value 2.3); p<0.05
Oswestry back pain scale	Mazi-cioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	PLBP?	1357	OR (enter) 1.1 [1.05-1.07; OR (backward Wald) 1.06 [1.05-1.07]	/
Hormone induced pregnancy	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	PLBP?	950	Chi-squared; p=0.63; NS	/
Caffeine use during pregnancy	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	PLBP?	950	Chi-squared; p=0.57; NS	/
≥ 4 cups of coffee per day	Werge-land & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3286	1.4* [1.1-1.7]; p=0.002	/
Posterior/ fundal location of the placenta	Orvieto et al 1994	All	During pregnancy 15-41 weeks (cross-sectional)	PLBP?	449	ANCOVA p<0.09	/
		Parous	During pregnancy 15-41 weeks (cross-sectional)	PLBP?	342	ANCOVA p<0.1	/
		Nulli-parous	During pregnancy 15-41 weeks (cross-sectional)	PLBP?	107	ANCOVA p<0.6	/
PPGP in previous pregnancies	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PLBP	214	2.6* [1.1-6.5]; p=0.03	/
History of low back pain during menstrua-tion	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	PLBP?	950	2.5 [1.1-6.4]; Chi-squared p=0.01	/
Nulliparous	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PLBP	214	1.0* [0.5-1.8]; p=1.0	/

Birthweight baby	Ostgaard et al 1991c	All	During pregnancy (any)	PLBP?	855	0.9** [0.8-1.2]; (SMD -0.04 [-0.2-0.1]); Comparison of means NS	/

[a] Adjusted for parity, woman year of birth, economic dependence, twisting and bending, education, work above shoulders, sex colleagues; [b] Adjusted for parity, work bending forward, woman year of birth, economic dependence, twisting and bending, education, work above shoulder; [c] Adjusted for parity, work bending forward, woman year of birth, strain at work, economic dependence, education, work above shoulder; [d] Adjusted for pelvic pain, parity, woman year of birth, economic dependence, education, work above shoulders, sex colleagues; [e] Adjusted for pelvic pain, parity, woman year of birth, economic dependence, twisting and bending, education, sex colleagues; [f] Adjusted for parity, work bending forward, woman year of birth, strain at work, economic dependence, twisting and bending, education

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)

** OR calculated from Standardised Mean Difference using formula: SMD=V3/π x ln OR (Chin 2000)

? For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Psychological factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR
Zung depression scale	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	PLBP?	1357	1.0 [1.0-1.2]	/

Socio-demographic factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR unless stated otherwise
Woman's year of birth	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PLBP?	2853	/	β coefficient[a] 0.02 (T-value 4.7); p<0.001
			Postpartum while on maternity ward (retrospective questions)	PLBP?	2911	/	β coefficient[b] 0.02 (T-value 6.1); p<0.001

			Postpartum while on maternity ward (retrospective questions)	PLBP? + "no" to PPGP?	1625	/	β coefficient[c] 0.02 (T-value 4.6); p<0.001
African-American (compared to other women)	Wang et al 2004	All	During pregnancy (any trimester, but most in 3rd)	PLBP?	950	Chi-squared; p=0.04	/
Sephardic origin	Orvieto et al 1994	All	During pregnancy 15-41 weeks (cross-sectional)	PLBP?	449	ANCOVA p<0.04	/
Monotonous work	Ostgaard et al 1991a	All	During pregnancy (any)	PLBP?	855	Pitman's correlation (+ve) p=0.02	/
Self-rated income: fair (vs good)	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	PLBP?	1357	0.9 [0.6 -1.4]	/
Self-rated income: bad (vs good)	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	PLBP?	1357	1.2 [0.7-2.0]	/
Birth place: suburban (vs urban)	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	PLBP?	1357	0.8 [0.6-1.2]	/
Birth place: rural (vs urban)	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	PLBP?	1357	1.3 [0.7-2.0]	/
Assistant for housework (no vs yes)	Mazicioglu et al 2006	All	During pregnancy (cross-sectional); not stated when	PLBP?	1357	OR (enter) 0.6 [0.4-0.9]; OR (backward Wald) 0.6 [0.4-0.9]	/
Influence on breaks at work (yes vs no)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3272	0.8* [0.7-0.9]; p=0.001	/
Ability to take breaks at work	Ostgaard et al 1991a	All	During pregnancy (any)	PLBP?	855	Pitman's correlation (-ve) p=0.005	/
Influence on work pace (yes vs no)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3272	0.8* [0.7-0.9]; p=0.002	/

Level of work pace control: No (vs high)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3321	/	1.3 [1.0-1.8][d]
Level of work pace control: low (vs high)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3321	/	1.1 [0.9-1.3][d]
Level of work pace control: medium (vs high)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3321	/	1.0 [0.8-1.2][d]
Externally paced work (yes vs no)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3280	1.4* [1.2-1.6]; p=0.0002	/
Manual work (yes vs no)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3273	1.8* [1.6-2.1]; p<0.0001	/
Influence on work content (yes vs no)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3262	0.7* [0.6-0.8]; p<0.0001	/
Work with video display terminals (yes vs no)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3187	0.8* [0.7-1.0]; p=0.02	/
Weekly hours of paid work ≥35 (yes vs no)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3186	0.8* [0.7-1.0]; p=0.02	/
Weekly hours of pain work >40 (yes vs no)	Wergeland & Strand 1998	All	After delivery while still in hospital (retrospective questions)	PLBP?	3186	0.7* [0.6-0.9]; p=0.02	/
Sick listed for back pain before pregnancy	Ostgaard et al 1991a	All	During pregnancy (any)	PLBP?	855	Pitman's correlation (+ve) p=0.05	/
Economic dependence	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PLBP?	2853	/	β coefficient[e] 0.072 (T-value 4.41); p<0.001
			Postpartum while on maternity ward (retrospective questions)	PLBP?	2911	/	β coefficient[f] 0.086 (T-value 4.41): p<0.001

			Postpartum while on maternity ward (retrospective questions)	PLBP[?] + "no" to PPGP[?]	1625	/	β coefficient[g] 0.09 (T-value 1.08); NS
Sex of colleagues (F/M; 0,1)	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PLBP[?]	2853	/	β coefficient[h] -0.055 (T-value -2.11); p<0.05
Work satisfaction	Ostgaard et al 1991a	All	During pregnancy (any)	PLBP[?]	855	Pitman's correlation (-ve) p=0.03	/

[a] Adjusted for pelvic pain, parity, economic dependence, twisting and bending, education, work above shoulders, sex colleagues; [b] Adjusted for parity, woman year of birth, strain at work, economic dependence, twisting and bending, education, work above shoulder; [c] Adjusted for parity, education, economic dependence, work bending forward; [d] Adjusted for age, parity, education, smoking, and manual work; [e] Adjusted for pelvic pain, parity, woman year of birth, twisting and bending, education, work above shoulders, sex colleagues; [f] Adjusted for parity, work bending forward, woman year of birth, strain at work twisting and bending, education, work above shoulder; [g] Adjusted for parity, woman's year of birth, education, work bending forward; [h] Adjusted for pelvic pain, parity, woman year of birth, economic dependence, twisting and bending, education, work above shoulders

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Appendix 34: Full GRADE table – Physical Risk factors for PLBP in any trimester of pregnancy or trimester not stated (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of partici-pants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/ large effect**	**Dose effect**	**Overall quality**
Pelvic pain during pregnancy	2853	Endresen 1995	x	x	x	1	0	0	1	x[a]	x[b]	v	v	x[b]	x	x	+
Low back pain in the year before pregnancy	214	Malmqvist et al 2012	1	0	0	x	x	x	1	x[c]	x[b]	v	v	x[b]	x	x	+
Pelvic girdle pain in the year before pregnancy	214	Malmqvist et al 2012	0	1	0	x	x	x	1	x[c]	x[b]	v	v	x[b]	x	x	+
Experience of low back pain before first pregnancy	449	Orvieto et al 1994	1	0	0	x	x	x	1	x[d]	x[b]	v	v	x[b]	x	x	+
Previous pain before pregnancy	1357	Mazicioglu et al 2006	1	0	0	x	x	x	1	x[e]	x[b]	v	v	x[b]	x	x	+
Physical workload: heavy or very heavy (vs light)*	513	Berg et al 1988	1	0	0	x	x	x	1	x[f]	x[b]	v	v	x[b]	x	x	+
Physical workload: heavy or very heavy including lifting movements (vs light)^	451	Berg et al 1988	1	0	0	x	x	x	1	x[f]	x[b]	v	v	x[b]	x	x	+
Exercised at least 2-3 times a week before pregnancy	214	Malmqvist et al 2012	0	1	0	x	x	x	1	x[c]	x[b]	v	v	x[b]	x	x	+
Pre-pregnancy physical activity	950	Wang et al 2004	0	1	0	x	x	x	1	x[g]	x[b]	v	v	x[b]	x	x	+
Repetitive daily activities	950	Wang et al 2004	0	1	0	x	x	x	1	x[g]	x[b]	v	v	x[b]	x	x	+
Weight gain during pregnancy	855	Ostgaard et al 1993	0	1	0	x	x	x	1	x[d]	x[b]	v	v	x[b]	x	x	+
Spinal or epidural anaesthesia	950	Wang et al 2004	0	1	0	x	x	x	1	x[g]	x[b]	v	v	x[b]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Lifting heavy loads at work (10-20kg)	3284	Wergeland et al 1998	1	0	0	x	x	x	1	x[a]	x[b]	v	v	x[b]	x	x	+
Lifting at work	855	Ostgaard et al 1991a	1	0	0	x	x	x	1	x[d]	x[b]	v	v	x[b]	x	x	+
Strain at work^	2911	Endresen 1995	x	x	x	1	0	0	1	x[a]	x[b]	v	v	x[b]	x	x	+
Twisting and bending^	2911	Endresen 1995	x	x	x	1	0	0	1	x[a]	x[b]	v	v	x[b]	x	x	+
Twisting when working	855	Ostgaard et al 1991a	1	0	0	x	x	x	1	x[d]	x[b]	v	v	x[b]	x	x	+
Ability to change work posture	855	Ostgaard et al 1991a	1	0	0	x	x	x	1	x[d]	x[b]	v	v	x[b]	x	x	+
Standing work posture	855	Ostgaard et al 1991a	1	0	0	x	x	x	1	x[d]	x[b]	v	v	x[b]	x	x	+
Work above shoulder^	2853	Endresen 1995	x	x	x	1	0	0	1	x[a]	x[b]	v	v	x[b]	x	x	+
Oswestry back pain scale	1357	Mazicioglu et al 2006	1	0	0	x	x	x	1	x[e]	x[b]	v	v	x[b]	x	x	+
Hormone induced pregnancy	950	Wang et al 2004	0	1	0	x	x	x	1	x[g]	x[b]	v	v	x[b]	x	x	+
Caffeine use during pregnancy	950	Wang et al 2004	0	1	0	x	x	x	1	x[g]	x[b]	v	v	x[b]	x	x	+
≥ 4 cups of coffee per day	3286	Wergeland et al 1998	1	0	0	x	x	x	1	x[a]	x[b]	v	v	x[b]	x	x	+
Posterior/ fundal location of the placenta^	449	Orvieto et al 1994	0	1	0	x	x	x	1	x[d]	x[b]	v	v	x[b]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
PPGP in previous pregnancies	214	Malmqvist et al 2012	1	0	0	x	x	x	1	x[h]	x[b]	v	v	x[b]	x	x	+
History of low back pain during menstrua-tion	950	Wang et al 2004	1	0	0	x	x	x	1	x[g]	x[b]	v	v	x[b]	x	x	+
Nulliparous	214	Malmqvist et al 2012	0	1	0	x	x	x	1	x[h]	x[b]	v	v	x[b]	x	x	+
Birthweight baby	855	Ostgaard et al 1991c	0	1	0	x	x	x	1	x[d]	x[b]	v	v	x[b]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Questions to determine outcome open to interpretation (Moderate/high ROB for outcome measurement domain). [b] Only a single study examined this factor. [c] Retrospective data collection, high risk of recall bias. [d] Four domains moderate/high ROB. [e] Three domains moderate/high ROB. [f] Five domains moderate/high ROB. [g] Two domains moderate/high ROB. [h] High/moderate ROB for 2 domains; no clear definition of low back pain. [b] Phase 1: Identified potential risk factors, used multivariate regression. [c] Phase 1: Descriptive statistics extracted and unadjusted OR calculated.

Appendix 35: Full GRADE table – Psychological Risk factors for PLBP in any trimester of pregnancy or trimester not stated (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Zung depression scale	1357	Mazicioglu et al 2006	0	1	0	x	x	x	1[c]	x[t]	x[p]	v	v	x[p]	x	x	+
Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.																	
[a] Three domains moderate/high ROB. [b] Only a single study examined this factor. [c] No adjustment for confounders.																	

Appendix 36: Full GRADE table – Socio-demographic Risk factors for PLBP in any trimester of pregnancy or trimester not stated (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Woman's year of birth^	2853	Endresen 1995	x	x	x	1	0	0	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+
African-American (compared to other women)	950	Wang et al 2004	1	0	0	x	x	x	1[h]	x[c]	x[b]	v	v	x[b]	x	x	+
Sephardic origin	449	Orvieto et al 1994	1	0	0	x	x	x	1[j]	x[d]	x[b]	v	v	x[b]	x	x	+
Monotonous work	855	Ostgaard et al 1991a	1	0	0	x	x	x	1[i]	x[d]	x[b]	v	v	x[b]	x	x	+
Self-rated income: fair (vs good)	1357	Mazicioglu et al 2006	0	1	0	x	x	x	1[j]	x[e]	x[b]	v	v	x[b]	x	x	+
Self-rated income: bad (vs good)	1357	Mazicioglu et al 2006	0	1	0	x	x	x	1[j]	x[e]	x[b]	v	v	x[b]	x	x	+
Birth place: suburban (vs urban)	1357	Mazicioglu et al 2006	0	1	0	x	x	x	1[j]	x[e]	x[b]	v	v	x[b]	x	x	+
Birth place: rural (vs urban)	1357	Mazicioglu et al 2006	0	1	0	x	x	x	1[j]	x[e]	x[b]	v	v	x[b]	x	x	+
Assistant for housework (no vs yes)	1357	Mazicioglu et al 2006	1	0	0	x	x	x	1[j]	x[e]	x[b]	v	v	x[b]	x	x	+
Influence on breaks at work (yes vs no)	3272	Wergeland et al 1998	1	0	0	x	x	x	1[g]	x[a]	x[b]	v	v	x[b]	x	x	+
Ability to take breaks at work	855	Ostgaard et al 1991a	1	0	0	x	x	x	1[i]	x[d]	x[b]	v	v	x[b]	x	x	+
Influence on work pace (yes vs no)	3272	Wergeland et al 1998	0	0	1	x	x	x	1[g]	x[a]	x[b]	v	v	x[b]	x	x	+
Level of work pace control: No (vs high)	3321	Wergeland et al 1998	x	x	x	1	0	0	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+
Level of work pace control: low (vs high)	3321	Wergeland et al 1998	x	x	x	0	1	0	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of partici-pants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/ large effect**	**Dose effect**	**Overall quality**
Level of work pace control: medium (vs high)	3321	Wergeland et al 1998	x	x	x	0	1	0	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+
Externally paced work (yes vs no)	3280	Wergeland et al 1998	1	0	0	x	x	x	1[g]	x[a]	x[b]	v	v	x[b]	x	x	+
Manual work (yes vs no)	3273	Wergeland et al 1998	1	0	0	x	x	x	1[g]	x[a]	x[b]	v	v	x[b]	x	x	+
Influence on work content (yes vs no)	3262	Wergeland et al 1998	0	0	1	x	x	x	1[g]	x[a]	x[b]	v	v	x[b]	x	x	+
Work with video display terminals (yes vs no)	3187	Wergeland et al 1998	0	0	1	x	x	x	1[g]	x[a]	x[b]	v	v	x[b]	x	x	+
Weekly hours of paid work ≥35 (yes vs no)	3186	Wergeland et al 1998	0	0	1	x	x	x	1[g]	x[a]	x[b]	v	v	x[b]	x	x	+
Weekly hours of pain work >40 (yes vs no)	3186	Wergeland et al 1998	0	0	1	x	x	x	1[g]	x[a]	x[b]	v	v	x[b]	x	x	+
Sick listed for back pain before pregnancy	855	Ostgaard et al 1991a	1	0	0	x	x	x	1[i]	x[d]	x[b]	v	v	x[b]	x	x	+
Economic dependence*	2853	Endresen 1995	x	x	x	1	0	0	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+
Sex of colleagues (F/M; 0,1)^	2853	Endresen 1995	x	x	x	0	0	1	1[f]	x[a]	x[b]	v	v	x[b]	x	x	+
Work satisfaction	855	Ostgaard et al 1991a	0	0	1	x	x	x	1[i]	x[d]	x[b]	v	v	x[b]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Questions to determine outcome open to interpretation (Moderate/high ROB for outcome measurement domain). [b] Only a single study examined this factor. [c] Two domains moderate/high ROB. [d] Four domains moderate/high ROB. [e] Three domains moderate/high ROB. [f] Phase 1: Identified potential risk factors, used multivariate regression. [g] Phase 1: Descriptive statistics extracted and unadjusted OR calculated. [h] No adjustment or confounders; chi-square analysis. [i] No adjustment for confounders; Pittman's correlation. [j] No adjustment for confounders.

Appendix 37: Full data - Risk factors for PLPP examined in >1 study

Physical factors

Low back pain history

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise	Raw data
Low back pain history	Chang et al 2014	All	3rd trimester	3rd	PLPP excluding anterior PPGP; pain intensity	179	/	β-coefficient [a] 0.09 [-0.25-0.43]; p=0.6	Not available
			3rd trimester	3rd	PLPP excluding anterior PPGP; pain interference	179	/	β-coefficient [a] 0.01 [-0.3, 0.3]; p=0.9	Not available
	Ansari et al 2010	All	Within 48 hrs after birth (retro-spective)	Any	PLPP[?]	103	2.9* [1.1-7.7]; p=0.03	4.6 [1.6-13.4][b]; p=0.006	Available
	Mohseni-Bandpei et al 2009	All	Mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP[?]	1062	4.1* [3.2-5.4]; p<0.0001	OR 2.8 [2.1-3.6][c]; p=0.000	Available
Meta-analysis	Data not pooled due to significant heterogeneity including different follow up times and different sub-outcomes.								

[a] Adjusted for average pain intensity at gestational week 24, physical workload, social support, depression, pain catastrophizing, gestational time; [b] Other factors were included in the model but not clearly specified; [c] Adjusted for Age, LBP in previous pregnancy, parity, occupation, BMI, Living area, General health, Educational level, Assistant for housework

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Low back pain in previous pregnancies

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR	Raw data
Low back pain in previous pregnancies	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Any	Moderate to severe PLPP (defined as both PLBP and PPGP)	281	11.2* [5.5-22.7]; p<0.0001	/	Available
	Mohseni-Bandpei et al 2009	All	mean 22.98 (SD9.31) weeks gestation, range 5-41	Any	PLPP?	427	3.1* [2.0-4.7]; p<0.0001	3.1 [2.0-4.7][a]; p=0.000	Available
Meta-analysis	Data not pooled due to significant heterogeneity including different follow up times and sub-outcomes.								

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

[a] Adjusted for Age, previous LBP, parity, occupation, BMI, Living area, General health, Educational level, Assistant for housework

? For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

History of low back pain during menstruation

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR	Raw data
History of low back pain during menstruation	Ansari et al 2010	All	Within 48 hrs after birth (retro-spective)	Any	PLPP?	103	3.0* [1.3-6.8]; p=0.008	/	Available
	Melzack & Belanger 1989	All	Day after birth (retro-spective question)	Any	PLPP?	113	Pearson correlation NS	/	Not available
Meta-analysis	Insufficient data reported.								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)

? For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Gestational age

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	**Unadjusted OR unless stated otherwise**	Adjusted **OR**	Raw data
Time of gestation/ gestational age	Chang et al 2014	All	3rd trimester	3rd	PLPP excluding anterior PPGP (pain intensity)	179	β-coefficient[a] 0.18 [0.05-0.31]; p=0.01	/	Not available
			3rd trimester	3rd	PLPP excluding anterior PPGP (pain interference)	179	β-coefficient[a] 0.05 [0.01-0.21]; p<0.03	/	Not available
	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	Any	PLPP	280	Chi-square test p=0.01	/	Not available
Meta-analysis	Insufficient data reported.								

[a] Adjusted for Average pain intensity at gestational week 24, low back pain history, physical workload, social support, depression, pain catastrophizing.
Statistically significant (p≤0.05) results are marked in yellow.

Parity

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted **OR**	Adjusted **OR unless stated otherwise**	Raw data
Parity	Chang et al 2012	All	3rd trimester (35-41 weeks gestation; cross-sectional)	3rd	PLPP? (pain intensity)	183	/	β-coefficient[a] 0.14; NS	Not available
			3rd trimester (35-41 weeks gestation; cross-sectional)	3rd	PLPP? (pain interference)	183	/	β-coefficient[b] 0.05; NS	Not available
Parity: 1 (vs 0)	Mohseni-Bandpei et al 2009	All	mean 22.98 (SD9.31) weeks gestation, range 5-41	Any	PLPP?	960	1.1* [0.8-1.5]; p=0.4	1.0 [0.9-1.2][c] (unclearly reported to which parity it refers to)	Available

	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective)	Any	PLPP	377	1.8 [1.3-2.5]	1.8 [1.3-2.5][d]	Available
Parity: 2 (vs 0)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective)	Any	PLPP	514	2.0 [1.2-3.0]	2.0 [1.2-3.0][d]	Available
	Mohseni-Bandpei et al 2009	All	mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP[?]	751	1.1* [0.7-1.8]; p=0.6	/	Available
Parity: ≥3 (vs 0)	Mohseni-Bandpei et al 2009	All	mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP[?]	685	0.3* [0.09-1.1]; p=0.06	/	Available
Parity: 3-7 (vs 0)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective)	Any	PLPP	432	1.1 [0.6-2.1]	1.2 [0.6-2.1][d]	Available
Meta-analysis	Data not pooled due to significant heterogeneity including different follow up times.								

[a] Adjusted for age, lumbopelvic pain history, pre-pregnancy BMI, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising; [b] Adjusted for Average pain intensity this pregnancy, age, lumbopelvic pain history, pre-pregnancy BMI, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising, age x pain intensity; [c] Adjusted for Age, previous LBP, LBP in previous pregnancy, occupation, BMI, Living area, General health, Educational level, Assistant for housework; [d] Adjusted for place of delivery (i.e., hospital)

*** Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)**

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Note: In Mogren & Pohjanen 2005 first-time mother are presented as 'parity 1' but here adjusted to the term 'parity 0' for equivalent comparison (other categories were similarly adjusted by -1).

Number of previous pregnancies

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted **OR unless stated otherwise**	Adjusted **OR**	Raw data
Number of previous pregnancies	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	Any	PLPP	280	Chi-square test p=0.9	/	Not available
Number of previous pregnancies: 1 (vs 0)	Ansari et al 2010	All	Within 48 hrs after birth (retrospective)	Any	PLPP[?]	65	2.0* [0.7-5.5]; p=0.2	/	Available
Number of previous pregnancies: 2 (vs 0)	Ansari et al 2010	All	Within 48 hrs after birth (retrospective)	Any	PLPP[?]	57	1.5* [0.5-4.3]; p=0.5	/	Available
Number of previous pregnancies: 3 (vs 0)	Ansari et al 2010	All	Within 48 hrs after birth (retrospective)	Any	PLPP[?]	40	0.8* [0.2-4.1]; p=0.8	/	Available
Number of previous pregnancies: ≥4 (vs 0)	Ansari et al 2010	All	Within 48 hrs after birth (retrospective)	Any	PLPP[?]	40	2.7* [0.4-15.7]; p=0.3	/	Available
Meta-analysis	Insufficient data reported.								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Body Mass Index (BMI)

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR unless stated otherwise	Raw data
Body Mass Index (BMI) obese ≥30 (at any trimester of pregnancy; unclear if maybe pre-pregnancy)	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	Any	PLPP	280	Chi-square test p=0.3	/	Not available
BMI Obese >30 (vs 20-25) (mean 23 (SD 9) weeks pregnancy; unclear if maybe pre-pregnancy)	Mohseni-Bandpei et al 2009	All	Mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP[?]	608	0.9* [0.6-1.2]; p=0.5	/	Available
BMI overweight 25-29.99 (at any trimester of pregnancy; unclear if maybe pre-pregnancy)	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	Any	PLPP	280	Chi-square test p=0.5	/	Not available
BMI Overweight 25-30 (vs 20-25) (mean 23 (SD 9) weeks pregnancy; unclear if maybe pre-pregnancy)	Mohseni-Bandpei et al 2009	All	Mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP[?]	752	1.0* [0.7-1.3]; p=1	/	Available
BMI normal 18.5-24.99 (at any trimester of pregnancy; unclear if maybe pre-pregnancy)	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	Any	PLPP	280	Chi-square test p=0.6	/	Not available
BMI Normal 20-25 (mean 23 (SD 9) weeks pregnancy; unclear if maybe pre-pregnancy)	Mohseni-Bandpei et al 2009	All	Mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP?	1062	OR* reference	1.1* [0.9-1.2][a;] p=0.5	Available

Pre-pregnancy BMI	Chang et al 2012	All	3rd trimester (35-41 weeks gestation)	3rd	PLPP[?] (pain intensity)	183	/	β-coefficient [b] -0.09; NS	Not available
			3rd trimester (35-41 weeks gestation)	3rd	PLPP[?] (pain inter-ferenc e)	183	/	β-coefficient [c] -0.01; NS	Not available
	Malm-qvist et al 2012	All	Postpartum (retro-spective questions)	Any	Mode-rate to severe PPGP	281	2.6** [1.7-4.0] (SMD 0.5 [0.3-0.8]) (higher BMI-means more likely PLPP)	/	Not available
BMI at delivery	Malm-qvist et al 2012	All	Post-partum (retro-spective questions)	Any	Mode-rate to severe PPGP	281	3.1** [2.0-4.8] (SMD 0.6 [0.4-0.9]) (higher BMI-means more likely PLPP)	/	Not available
BMI Low <20 (vs 20-25) (mean 23 (SD 9) weeks pregnancy; unclear if maybe pre-pregnancy)	Mohsen i-Bandpei et al 2009	All	Mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP[?]	430	0.8* [0.5-1.4]; p=0.4	/	Available
Pre-pregnancy BMI ≥30 (vs <25)	Mogren & Pohjane n 2005	All	Within 24 hrs after birth (retro-spective)	Any	PLPP	514	1.9 [1.2-2.9]	2.0 [1.2-3.2][d]	Not available
		All	Within 24 hrs after birth (retro-spective)	Any	High pain-score PLPP	514	3.1 [1.7-5.7]	3.7 [1.9-7.2][d]	Not available
Meta-analysis	Insufficient data and no comparable categories to be able to pool data in meta-analysis.								

[a] Adjusted for Age, previous LBP, LBP in previous pregnancy, parity, occupation, Living area, General health, Educational level, Assistant for housework; [b] Adjusted forage, lumbopelvic pain history, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising; [c] Adjusted for average pain intensity this pregnancy, age, lumbopelvic pain history, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising, age x pain intensity; [d] Adjusted for place of delivery, maternal age, parity

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

** OR calculated from Standardised Mean Difference using formula: SMD=V3/π x ln OR (Chin 2000)

Workload

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise	Raw data
Workload	Chang et al 2012	All	3rd trimester	3rd	PLPP[?] (pain intensity)	183	/	β-coefficient[a] 0.03; NS	Not available
			3rd trimester	3rd	PLPP[?] (pain interference)	183	/	β-coefficient[b] 0.13; NS	Not available
Workload: heavy (vs moderate)	Ansari et al 2010	All	Within 48 hrs after birth (retrospective)	Any	PLPP[?]	69	1.6* [0.6-4.3]; p=0.3	/	Available
Workload: very heavy (vs moderate)	Ansari et al 2010	All	Within 48 hrs after birth (retrospective)	Any	PLPP[?]	66	1.4* [0.5-3.8]; p=0.5	/	Available
Meta-analysis	Insufficient data and no comparable categories to be able to pool data in meta-analysis.								

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

[a] Adjusted for age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising; [b] Adjusted for average pain intensity this pregnancy, age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising, age x pain intensity

Psychological factors

Pain catastrophising

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise	Raw data
Pain Catastro-phising	Chang et al 2014	All	3rd trimester	3rd	PLPP excluding anterior PPGP (pain intensity)	179	/	β-coefficient[a] 0.1 [0.08-0.1]; p<0.001	Not available
			3rd trimester	3rd	PLPP[?] (pain interference)	179	/	β-coefficient[a] 0.06 [0.04-0.08]; p<0.001	Not available

	Chang et al 2012	All	3rd trimester	3rd	PLPP[?] (pain intensity)	183	/	β-coefficient[b] 0.08; NS	Not available
			3rd trimester	3rd	PLPP[?] (pain interference)	183	/	β-coefficient[c] 0.23; p<0.05	Not available
Meta-analysis	Insufficient data reported.								
[a] Adjusted for average pain intensity at gestational week 24, low back pain history, physical workload, social support, depression, gestational time; [b] Adjusted for age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income; [c] Adjusted for average pain intensity this pregnancy, age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, age x pain intensity									
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation. Statistically significant (p≤0.05) results are marked in yellow.									

Socio-demographic factors

Age

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR unless stated otherwise	Raw data
Age	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	Any	PLPP	280	Chi-square test p=0.13	/	Not available
	Chang et al 2012	All	3rd trimester	3rd	PLPP[?] (pain intensity)	183	/	β-coefficient [a] 0.02; NS	Not available
			3rd trimester	3rd	PLPP[?] (pain inter-ference)	183	/	β-coefficient [b]; NS	Not available
Age at delivery	Malm-qvist et al 2012	All	Postpartum (retro-spective questions)	Any	Moderate to severe PPGP	281	0.9** [0.6-1.31] (SMD -0.09 [-0.3-0.2])	/	Not available
Age ≤20 (vs Age 21-26)	Mohseni-Bandpei et al 2009	All	Mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP[?]	637	1.2* [0.8-1.7]; p=0.3	/	Available

Age 21-26 (yes vs no)	Mohseni-Bandpei et al 2009	All	Mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP[?]	1062	refe-rence	1.2 [1.0-1.4][c]; p=0.02	Available
Age 27-33 (vs Age 21-26)	Mohseni-Bandpei et al 2009	All	Mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP[?]	808	0.9* [0.6-1.2]; p=0.3	/	Available
Age ≥34 (vs Age 21-26)	Mohseni-Bandpei et al 2009	All	Mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP[?]	591	0.7* [0.4-1.1]; p=0.1	/	Available
Age 25-29 years (vs ≤24)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retro-spective)	Any	PLPP	456	1.4 [0.9-2.2]	OR 1.4 [0.9-2.2][d]; 1.2 [0.7-2.0][e]	Available
Age 30-34 years (vs ≤24)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retro-spective)	Any	PLPP	415	0.9 [0.6-1.4]	0.9 [0.5-1.4][d]; 0.6 [0.4-1.1][e]	Available
Age ≥35 years (vs ≤24)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retro-spective)	Any	PLPP	259	0.9 [0.5-1.5]	0.9 [0.5-1.5][d]; OR 0.7 [0.4-1.2][e]	Available
Meta-analysis	Insufficient data and different comparisons; unable to conduct meta-analysis.								

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

** OR calculated from Standardised Mean Difference using formula: SMD=V3/π x ln OR (Chin 2000)

[a] Adjusted for lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising; [b] Adjusted for average pain intensity this pregnancy, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising, age x pain intensity; [c] Adjusted for Previous LBP, LBP in previous pregnancy, parity, occupation, BMI, Living area, General health, Educational level, Assistant for housework; [d] Adjusted for place of delivery (i.e., hospital); [e] Adjusted for parity and highest educational level

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Educational level

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise	Raw data
Educational level: high school or below	Chang et al 2012	All	3rd trimester	3rd	PLPP? (pain intensity)	183	/	β-coefficient[a] 0.4; p<0.01	Not available
			3rd trimester	3rd	PLPP? (pain inter-ference)	183	/	β-coefficient[b] -0.06; NS	Not available
Educational level: graduate school	Chang et al 2012	All	3rd trimester	3rd	PLPP? (pain intensity)	183	/	β-coefficient[a] -0.07; NS	Not available
			3rd trimester	3rd	PLPP? (pain inter-ference)	183	/	β-coefficient[b] -0.2; NS	Not available
Educational level: High school (vs primary and secondary)	Mohseni-Bandpei et al 2009	All	Mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP?	860	0.8* [0.4-1.7]; p=0.5	1.1 [0.9-1.2][c]; p=0.4 (unclear to which educational level it refers to)	Available
Educational level: University (vs primary and secondary)	Mohseni-Bandpei et al 2009	All	Mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP?	230	0.7* [0.3-1.6]; p=0.4	/	Available
Educational level: high folk education (vs 9 yr compulsory education)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retro-spective)	Any	PLPP	58	1.3 [0.1-12.0]	1.3 [0.1-11.9][d]; OR 1.7 [0.2-16.6][e]	Available
		All	Within 24 hrs after birth (retro-spective)	Any	High pain-score PLPP	514	0.5 [0.03-9.5]	1.5 [0.8-2.9][f]	Not available
Educational level: senior high school (vs 9 yr compulsory education)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retro-spective)	Any	PLPP	475	0.6 [0.3-1.3]	0.6 [0.3-1.3][d]; 0.6 [0.3-1.4][e]	Available
		All	Within 24 hrs after birth (retro-spective)	Any	High pain-score PLPP	514	0.5 [0.2-1.2]	0.7 [0.3-1.3][d]	Not available

Educational level: university (vs 9 yr compulsory education)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retro-spective)	Any	PLPP	451	0.5 [0.2-1.0]	0.5 [0.2-1.0][d]; 0.6 [0.3-1.3][e]	Available
		All	Within 24 hrs after birth (retro-spective)	Any	High pain-score PLPP	514	0.4 [0.1-0.8]	0.5 [0.2-1.1][f]	Not available
Education years	Malm-qvist et al 2012	All	Postpartum (retro-spective questions)	Any	Moderate to severe PPGP	281	0.7** [0.4-1.0] (SMD -0.2 [-0.5-0.01])	/	Not available
Meta-analysis	Insufficient data and different comparisons; unable to conduct meta-analysis.								

** OR calculated from Standardised Mean Difference using formula: SMD=V3/π x ln OR (Chin 2000)

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

[a] Adjusted for age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), monthly income, pain catastropising; [b] Adjusted for average pain intensity this pregnancy, age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), monthly income, pain catastropising, age x pain intensity; [c] Adjusted for Age, previous LBP, LBP in previous pregnancy, parity, occupation, BMI, Living area, General health Assistant for housework; [d] Adjusted for place of delivery (i.e., hospital); [e] Adjusted for parity and maternal age; [f] Adjusted for maternal age, parity, and place of delivery

Occupation

Factor	Study	Participants	Time of follow up	Trimester	Outcome	No of participants	Unadjusted OR	Adjusted OR	Raw data
Occupation: employed (vs unemployed)	Mohseni-Bandpei et al 2009	All	Mean 22.98 (SD9.31) weeks gestation, range 5-41 (cross-sectional)	Any	PLPP[?]	1062	1.1* [0.8-1.6]; p=0.5	0.9 [0.6-1.2][a]; p=0.5	Available
Main occupation before pregnancy: full or part-time work (vs unemployed/ searching for work)	Mogren 2005	All	Within 24 hrs after birth (retro-spective)	Any	PLPP	641	1.0* [0.5-2]; p=0.9	/	Available
			Within 24 hrs after birth (retro-spective)	Any	High pain-score PLPP (vs all other women)	641	1.3* [0.6-3.0]; p=0.6	/	Available
			Within 24 hrs after birth (retrospec tive)	Any	High pain-score PLPP (vs women with no pain)	323	1.2* [0.5-3.1]; p=0.7	/	Available
Main occupation before pregnancy: Student (vs unemployed/ searching for work)	Mogren 2005	All	Within 24 hrs after birth (retro-spective)	Any	PLPP	142	1.3* [0.6-2.8]; p=0.6	/	Available
			Within 24 hrs after birth (retro-spective)	Any	High pain-score PLPP (vs all other women)	142	1.6* [0.6-4.1]; p=0.3	/	Available
			Within 24 hrs after birth (retro-spective)	Any	High pain-score PLPP (vs women with no pain)	69	1.4* [0.6-5.1]; p=0.3	/	Available
Main occupation before pregnancy: Parental	Mogren 2005	All	Within 24 hrs after birth (retro-spective)	Any	PLPP	102	2.1* [0.8-5.5]; p=0.1	/	Available

leave (vs unemployed/ searching for work)			Within 24 hrs after birth (retro-spective)	Any	High pain-score PLPP (vs all other women)	102	2.6* [1-6.7]; p=0.06	/	Available
			Within 24 hrs after birth (retro-spective)	Any	High pain-score PLPP (vs women with no pain)	50	3.6* [1.1-12.0]; p=0.04	/	Available
Main occupation before pregnancy: sick leave (vs unemployed/ searching for work)	Mogren 2005	All	Within 24 hrs after birth (retro-spective)	Any	PLPP	112	1.7* [0.7-4.1]; p=0.3	/	Available
			Within 24 hrs after birth (retro-spective)	Any	High pain-score PLPP (vs all other women)	112	3.2* [1.2-8.1]; p=0.02	/	Available
			Within 24 hrs after birth (retro-spective)	Any	High pain-score PLPP (vs women with no pain)	61	3.4* [1.1-10.6]; p=0.03	/	Available
Meta-analysis	Insufficient data and different comparisons; unable to conduct meta-analysis.								

* Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)
[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

[a] Adjusted for Age, previous LBP, LBP in previous pregnancy, parity, BMI, Living area, General health, Educational level, Assistant for housework

Appendix 38: Full GRADE table – Physical Risk factors for PLPP (examined in more than 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**References [Phase] (No. of participants)**	**No. of papers (no. of studies)**	**+**	**0**	**-**	**+**	**0**	**-**	**Dominant phase****	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
History of low back pain^	Chang et al 2014 [1][j] (179); Ansari et al 2010 [1][j] (103); Mohseni-Bandpei et al 2009 [1][j] (1062)	3 (3)	2	0	0	2	1	0	1	x[a]	x[b]	v	v	x[c]	x	x	+
Low back pain in previous pregnancies	Malmqvist et al 2012 [1][k] (281); Mohseni-Bandpei et al 2009 [1][j] (427)	2 (2)	2	0	0	1	0	0	1	x[d]	v	v	v	x[c]	x	x	+
History of low back pain during menstruation	Ansari et al 2012 [1][j] (103); Melzack & Belanger 1989 [1][n] (113)	2 (2)	1	1	0	x	x	x	1	x[e]	x[b]	v	v	x[c]	x	x	+
Gestational age^	Chang et al 2014 [1][j] (179); Al-Sayegh et al 2012 [1][o] (280)	2 (2)	2	0	0	x	x	x	1	x[f]	v	v	v	x[c]	x	x	+
Parity*	Chang et al 2012 [1][j] (183); Mohseni-Bandpei et al 2009 [1][k] (1100); Mogren & Pohjanen et al 2005 [1][j] (891)	3 (3)	1	1	0	1	2	0	1	x[g]	x[b]	v	v	x[c]	x	x	+
Number of previous pregnancies	Al-Sayegh et al 2012 [1][o] (280); Ansari et al 2010 [1][k] (65)	2 (2)	0	2	0	x	x	x	1	x[h]	v	v	v	x[c]	x	x	+

			Univariate			Multivariate			GRADE factors									
Potential risk factor identified	**References [Phase] (No. of participants)**	**No. of papers (no. of studies)**	**+**	**0**	**-**	**+**	**0**	**-**	**Dominant phase****	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Body Mass Index (BMI)	Al-Sayegh et al 2012 [1][o] (280); Mohseni-Bandpei et al 2009 [1][k] (608); Mogren & Pohjanen 2005 [1][j] (514); Chang et al 2012 (183); Malmqvist et al 2012 [1][k] (281)	5 (5)	2	3	0	1	0	0	1	x[i]	x[b]	v	v	v	x	x	+
Workload	Chang et al 2012 [1][j] (183); Ansari et al 2010 [1][k] (69)	2 (2)	0	1	0	0	1	0	1	x[h]	v	v	v	x[c]	x	x	+

** If equal number of studies in different phases, then this was based on number of participants; Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Studies have 1-3 domains with high/moderate ROB; [b] Conflicting results between studies; [c] Limited number of studies explored this factor; [d] Both studies have high/moderate ROB for the outcome measurement domain; [e] The two studies have 3-5 domains with high/moderate ROB; [f] Studies have 1-4 domains with high/moderate ROB; [g] Two of the 3 studies have 1-4 domains with high/moderate ROB; [h] Studies have 3-4 domains with high/moderate ROB; [i] Four of the five studies have 1-4 domains with high/moderate ROB. [j] Phase 1: Identified potential risk factors, used multivariate regression. [k] Phase 1: Descriptive statistics extracted and unadjusted OR calculated. [l] Phase 1: simple comparative test (t-test/Mann Whitney U test). [m] Phase 1: No adjustment for confounders. [n] Phase 1: No adjustement for confounders; Pearson correlation analysis. [o] Phase 1: No adjustement for confounders; Chi-squared analysis.

Appendix 39: Full GRADE table – Psychological Risk factors for PLPP (examined in more than 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**References [Phase] (No. of participants)**	**No. of papers (no. of studies)**	**+**	**0**	**-**	**+**	**0**	**-**	**Dominant phase****	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Pain catastrophising^	Chang et al 2014 [1][c] (179); Chang et al 2012 [1][c] (183)	2 (2)	x	x	x	2	0	0	1	x[f]	v	v	v	x[c]	x	x	+

** If equal number of studies in different phases, then this was based on number of participants; Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Studies have 1-4 domains with high/moderate ROB; [b] Limited number of studies explored this factor. [c] Phase 1: Identified potential risk factors, used multivariate regression.

Appendix 40: Full GRADE table – Socio-demographic Risk factors for PLPP (examined in more than 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**References [Phase] (No. of participants)**	**No. of papers (no. of studies)**	**+**	**0**	**-**	**+**	**0**	**-**	**Dominant phase****	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Age	Al-Sayegh et al 2012 [1][h] (280); Chang et al 2012 [1][f] (183); Malmqvist et al 2012 [1][g] (281); Mohseni-Bandpei et al 2009 [1][g] (1062); Mogren & Pohjanen 2005 [1][f] (456)	5 (5)	0	4	0	1[i]	2	0	1	x[a]	x[b]	v	v	v	x	x	+
Educational level^	Chang et al 2012 [1][f] (183); Mohseni-Bandpei et al 2009 [1][fg] (160); Mogren & Pohjanen et al 2005 [1][f] (891); Malmqvist et al 2012 [1][g] (281)	4 (4)	0	3	0	0	4	0	1	x[c]	v	v	v	v	x	x	++
Occupation^ (employed vs unemployed)	Mohseni-Bandpei et al 2009 [1][fg](1062); Mogren 2005 [1][g] (641)	2 (2)	0	2	0	0	1	0	1	x[d]	v	v	v	x[e]	x	x	+

** If equal number of studies in different phases, then this was based on number of participants; Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Four of the five studies have 1-4 domains with high/moderate ROB; [b] Conflicting results between studies; [c] Three of the 4 studies have 1-4 domains with high/moderate ROB; [d] Studies have 1-4 domains with high/moderate ROB; [e] Limited number of studies explored this factor. [f] Phase 1: Identified potential risk factors, used multivariate regression. [g] Phase 1: Descriptive statistics extracted and unadjusted OR calculated. [h] Phase 1: No adjustment for confounders; Chi-squared analysis. [i] Unclear from publication whether older or younger group was more at risk.

Appendix 41: Full data - Risk factors for PLPP in the 1st trimester of pregnancy (examined in only 1 study)

Psychological factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR
Perceived stress (Perceived stress scale)	De Bakker et al 2013	All	12 weeks gestation	PLPP[?] (Operationalized with 2 scales)	217	β-coefficient 0.6, SE=0.1; p=0.000	State that adjustment for confounders[a] did not affect statistical significance of results; no details provided
Pregnancy-related anxiety	De Bakker et al 2013	All	12 weeks gestation	PLPP[?] (Operationalized with 2 scales)	217	β-coefficient 0.07, SE=0.1; p=0.5	State that adjustment for confounders[a] did not affect statistical significance of results; no details provided
Physical and psychological distress	De Bakker et al 2013	All	12 weeks gestation	PLPP[?] (Operationalized with 2 scales)	217	β-coefficient 0.2, SE=0.06; p=0.000	State that adjustment for confounders[a] did not affect statistical significance of results; no details provided
Coping styles: problem focused	De Bakker et al 2013	All	12 weeks gestation	PLPP[?] (Operationalized with 2 scales)	217	β-coefficient 0.07, SE=0.1; p=0.6	State that adjustment for confounders[a] did not affect statistical significance of results; no details provided
Coping styles: emotion focused	De Bakker et al 2013	All	12 weeks gestation	PLPP[?] (Operationalized with 2 scales)	217	β-coefficient -0.04, SE=0.2; p=0.8	State that adjustment for confounders[a] did not affect statistical significance of results; no details provided

[a] Adjusted for age, education, BMI, back pain before pregnancy

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Appendix 42: Full GRADE table – Psychological Risk factors for PLPP in the 1st trimester (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Perceived stress (Perceived stress scale)	217	De Bakker et al 2013	1	0	0	1	0	0	2[b]	v	x[a]	v	v	x[a]	x	x	++
Pregnancy-related anxiety	217	De Bakker et al 2013	1	0	0	1	0	0	2[b]	v	x[a]	v	v	x[a]	x	x	++
Physical and psychological distress	217	De Bakker et al 2013	1	0	0	1	0	0	2[b]	v	x[a]	v	v	x[a]	x	x	++
Coping styles: problem focused	217	De Bakker et al 2013	0	1	0	0	1	0	2[b]	v	x[a]	v	v	x[a]	x	x	++
Coping styles: emotion focused	217	De Bakker et al 2013	0	1	0	0	1	0	2[b]	v	x[a]	v	v	x[a]	x	x	++

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor. [b] Phase 2: Tested specific hypothesis, used multivariate logistic regression.

Appendix 43: Full data - Risk factors for PLPP in the 2nd trimester of pregnancy (examined in only 1 study)

Psychological factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR
Perceived stress (Perceived stress scale)	De Bakker et al 2013	All	24 weeks gestation	PLPP[?] (Operationalized with 2 scales)	98	β-coefficient 0.8, SE=0.2; p=0.000	State that adjustment for confounders[a] did not affect statistical significance of results; no details provided
Pregnancy-related anxiety	De Bakker et al 2013	All	24 weeks gestation	PLPP[?] (Operationalized with 2 scales)	98	β-coefficient 0.2, SE=0.2; p=0.3	State that adjustment for confounders[a] did not affect statistical significance of results; no details provided
Physical and psychological distress	De Bakker et al 2013	All	24 weeks gestation	PLPP[?] (Operationalized with 2 scales)	98	β-coefficient 0.3, SE=0.09; p=0.000	State that adjustment for confounders[a] did not affect statistical significance of results; no details provided
Coping styles: problem focused	De Bakker et al 2013	All	24 weeks gestation	PLPP[?] (Operationalized with 2 scales)	98	β-coefficient 0.03, SE=0.2; p=0.9	State that adjustment for confounders[a] did not affect statistical significance of results; no details provided
Coping styles: emotion focused	De Bakker et al 2013	All	24 weeks gestation	PLPP[?] (Operationalized with 2 scales)	98	β-coefficient 0.3, SE=0.2; p=0.2	State that adjustment for confounders[a] did not affect statistical significance of results; no details provided

[a] Adjusted for age, education, BMI, back pain before pregnancy

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Appendix 44: Full GRADE table – Psychological Risk factors for PLPP in the 2nd trimester (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Perceived stress (Perceived stress scale)	98	De Bakker et al 2013	1	0	0	1	0	0	2[b]	v	x[a]	v	v	x[a]	x	x	++
Pregnancy-related anxiety	98	De Bakker et al 2013	0	1	0	0	1	0	2[b]	v	x[a]	v	v	x[a]	x	x	++
Physical and psychological distress	98	De Bakker et al 2013	0	1	0	0	1	0	2[b]	v	x[a]	v	v	x[a]	x	x	++
Coping styles: problem focused	98	De Bakker et al 2013	0	1	0	0	1	0	2[b]	v	x[a]	v	v	x[a]	x	x	++
Coping styles: emotion focused	98	De Bakker et al 2013	0	1	0	0	1	0	2[b]	v	x[a]	v	v	x[a]	x	x	++

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor. [b] Phase 2: Tested specific hypothesis, used multivariate logistic regression.

Appendix 45: Full data - Risk factors for PLPP in the 3rd trimester of pregnancy (examined in only 1 study)

Physical factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise
Average pain intensity at gestation week 24	Chang et al 2014	All	3rd trimester	PLPP excluding anterior PPGP (pain intensity)	179	/	β-coefficient[a] 0.4 [0.3-0.5]; p<0.001
			3rd trimester	PLPP excluding anterior PPGP (pain interference)	179	/	β-coefficient[a] 0.6 [0.5-0.7]; p<0.001
Average pain intensity this pregnancy	Chang et al 2012	All	3rd trimester	PLPP? (Pain interference)	183	/	β-coefficient[b] 0.4; p<0.001
History of lumbopelvic pain before pregnancy	Chang et al 2012	All	3rd trimester	PLPP? (pain intensity)	183	/	β-coefficient[c] 0.1; NS
			3rd trimester	PLPP? (pain interference)	183	/	β-coefficient[d] 0.08; NS
Physical workload	Chang et al 2014	All	3rd trimester	PLPP excluding anterior PPGP (pain intensity)	179	/	β-coefficient[e] 0.0 [-0.1-0.1]; p=1.0
			3rd trimester	PLPP excluding anterior PPGP (pain interference)	179	/	β-coefficient[e] 0.05 [0.04-0.2]; p=0.3
Exercise frequency 1-2 per week during pregnancy (vs <1 per week)	Gjestland et al 2013	All	32 weeks	PLPP?	2013	0.8 [0.6-0.9]	0.8 [0.7-1.0][f]
Exercise frequency ≥3 per week during pregnancy (vs <1 per week)	Gjestland et al 2013	All	32 weeks	PLPP?	1575	0.8 [0.7-1.0]	0.8 [0.7-1.0][f]
Regular exercise	Chang et al 2012	All	3rd trimester	PLPP? (pain intensity)	183	/	β-coefficient[g] 0.07; NS
			3rd trimester	PLPP? (Pain interference)	183	/	β-coefficient[h] -0.08; NS
Amniotic fluid index	Chang et al 2012	All	3rd trimester	PLPP? (pain intensity)	183	/	β-coefficient[i] -0.01; NS
			3rd trimester	PLPP? (pain interference)	183	/	β-coefficient[j] -0.04; NS

Estimated body weight (fetus)	Chang et al 2012	All	3rd trimester	PLPP[?] (pain intensity)	183	/	β-coefficient[k] 0.06; NS
			3rd trimester	PLPP[?] (pain interference)	183	/	β-coefficient[l] 0.1; NS

[a] Adjusted for low back pain history, physical workload, social support, depression, pain catastrophizing, gestational time; [b] Adjusted for Age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising, age x pain intensity; [c] Adjusted for Average pain intensity this pregnancy, age, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising, age x pain intensity; [d] Adjusted for average pain intensity at gestational week 24, low back pain history, social support, depression, pain catastrophizing, gestational time; [e] Adjusted for age, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising; [f] Adjusted for maternal age, parity, education, smoking, prepregnancy body mass index, low-back pain and/or pelvic girdle pain before current pregnancy; [g] Adjusted for age, lumbopelvic pain history, pre-pregnancy BMI, parity, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising; [h] Adjusted for Average pain intensity this pregnancy, age, lumbopelvic pain history, pre-pregnancy BMI, parity, workload, amniotic fluid index, estimated body weight (fetus), educational level, monthly income, pain catastropising, age x pain intensity; [i] Adjusted for age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, estimated body weight (fetus), educational level, monthly income, pain catastropising; [j] Adjused for Average pain intensity this pregnancy, age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, estimated body weight (fetus), educational level, monthly income, pain catastropising, age x pain intensity; [k] Adjusted for age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, educational level, monthly income, pain catastropising; [l] Adjusted for average pain intensity this pregnancy, age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, educational level, monthly income, pain catastropising, age x pain intensity.

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Psychological factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR unless stated otherwise
Depression	Chang et al 2014	All	3rd trimester	PLPP excluding anterior PPGP (pain intensity)	179	/	β-coefficient[a] 0.02 [-0.02-0.06]; p=0.4
			3rd trimester	PLPP excluding anterior PPGP (pain interference)	179	/	β-coefficient[a] 0.1 [0.07-0.14]; p<0.001
Perceived stress (Perceived stress scale)	De Bakker et al 2013	All	36 weeks gestation	PLPP[?] (Operationalized with 2 scales)	171	β-coefficient 0.702, SE=0.128; p=0.000	State that adjustment for confounders[b] did not affect statistical significance of results; details not provided

Pregnancy-related anxiety	De Bakker et al 2013	All	36 weeks gestation	PLPP[?] (Operationalized with 2 scales)	171	β-coefficient 0.198, SE=0.099; p=0.048	State that adjustment for confounders[b] did not affect statistical significance of results; details not provided
Physical and psychological distress	De Bakker et al 2013	All	36 weeks gestation	PLPP[?] (Operationalized with 2 scales)	171	β-coefficient 0.196, SE=0.05; p=0.000	State that adjustment for confounders[b] did not affect statistical significance of results; details not provided
Coping styles: problem focused	De Bakker et al 2013	All	36 weeks gestation	PLPP[?] (Operationalized with 2 scales)	171	β-coefficient 0.115, SE=0.138; p=0.406	State that adjustment for confounders[b] did not affect statistical significance of results; details not provided
Coping styles: emotion focused	De Bakker et al 2013	All	36 weeks gestation	PLPP[?] (Operationalized with 2 scales)	171	β-coefficient 0.111, SE=0.14; p=0.428	State that adjustment for confounders[b] did not affect statistical significance of results; details not provided

[a] Adjusted for average pain intensity at gestational week 24, low back pain history, physical workload, social support, pain catastrophizing, gestational time; [b] Adjusted for age, education, BMI, back pain before pregnancy

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Socio-demographic factors

Factors	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise
Social support	Chang et al 2014	All	3rd trimester	PLPP excluding anterior PPGP (pain intensity)	179	/	β-coefficient[a] 0.08 [0.09-0.26]; p=0.34
			3rd trimester	PLPP excluding anterior PPGP (pain interference)	179	/	β-coefficient[a] 0.1 [0.05-0.26]; p=0.19
Monthly income NTD 19999 or below	Chang et al 2012	All	3rd trimester	PLPP[?] (pain intensity)	183	/	β-coefficient[b] 0 ; NS
			3rd trimester	PLPP[?] (pain interference)	183	/	β-coefficient[c] -0.04; NS
Monthly income NTD 20000-39999	Chang et al 2012	All	3rd trimester	PLPP[?] (pain intensity)	183	/	β-coefficient[b] -0.02; NS
			3rd trimester	PLPP[?] (pain interference)	183	/	β-coefficient[c] -0.02; NS
Monthly income NTD 60000-79999	Chang et al 2012	All	3rd trimester	PLPP[?] (pain intensity)	183	/	β-coefficient[b] 0.08; NS
			3rd trimester	PLPP[?] (pain interference)	183	/	β-coefficient[c] 0.04; NS
Monthly income NTD 80000 or above	Chang et al 2012	All	3rd trimester	PLPP[?] (pain intensity)	183	/	β-coefficient[b] -0.05; NS
			3rd trimester	PLPP[?] (pain interference)	183	/	β-coefficient[c] -0.03; NS

[a] Adjusted for average pain intensity at gestational week 24, low back pain history, physical workload, depression, pain catastrophizing, gestational time ; [b] Adjusted for age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, pain catastropising; [c] Adjusted for average pain intensity this pregnancy, age, lumbopelvic pain history, pre-pregnancy BMI, parity, regular exercise, workload, amniotic fluid index, estimated body weight (fetus), educational level, pain catastropising, age x pain intensity

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.
Statistically significant (p≤0.05) results are marked in yellow.

Appendix 46: Full GRADE table – Physical Risk factors for PLPP in the 3rd trimester (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of partici-pants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/ large effect**	**Dose effect**	**Overall quality**
Average pain intensity at gestation week 24^	179	Change et al 2014	x	x	x	1	0	0	1[d]	x[a]	x[b]	v	v	x[b]	x	x	+
Average pain intensity this pregnancy	183	Change et al 2012	x	x	x	1	0	0	1[d]	x[c]	x[b]	v	v	x[b]	x	x	+
History of lumbopelvic pain before pregnancy^	183	Change et al 2012	x	x	x	0	1	0	1[d]	x[c]	x[b]	v	v	x[b]	x	x	+
Physical workload^	179	Change et al 2014	x	x	x	0	1	0	1[d]	x[a]	x[b]	v	v	x[b]	x	x	+
Exercise frequency 1-2 per week during pregnancy (vs <1 per week)	2013	Gjestland et al 2013	0	1	0	0	1	0	2[e]	x[a]	x[b]	v	v	x[b]	x	x	+
Exercise frequency ≥3 per week during pregnancy (vs <1 per week)	1575	Gjestland et al 2013	0	1	0	0	1	0	2[e]	x[a]	x[b]	v	v	x[b]	x	x	+
Regular exercise^	183	Chang et al 2012	x	x	x	0	1	0	1[d]	x[c]	x[b]	v	v	x[b]	x	x	+
Amniotic fluid index^	183	Chang et al 2012	x	x	x	0	1	0	1[d]	x[c]	x[b]	v	v	x[b]	x	x	+
Estimated body weight (fetus)^	183	Chang et al 2012	x	x	x	0	1	0	1[d]	x[c]	x[b]	v	v	x[b]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Moderate ROB for outcome measurement domain (some questionnaire were administered; or question open to interpretation; or retrospective questions). [b] Only a single study examined this factor. [c] Four domains high/moderate ROB. [d] Phase 1: Identified potential risk factors, used multivariate regression. [e] Phase 2: Tested specific hypothesis, used multivariate logistic regression.

Appendix 47: Full GRADE table – Psychological Risk factors for PLPP in the 3rd trimester (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Depression*	179	Chang et al 2014	x	x	x	1	0	0	1[c]	x[a]	x[b]	v	v	x[b]	x	x	+
Perceived stress (Perceived stress scale)	171	De Bakker et al 2013	0	1	0	0	1	0	2[d]	v	x[b]	v	v	x[b]	x	x	++
Pregnancy-related anxiety	171	De Bakker et al 2013	0	1	0	0	1	0	2[d]	v	x[b]	v	v	x[b]	x	x	++
Physical and psychological distress	171	De Bakker et al 2013	0	1	0	0	1	0	2[d]	v	x[b]	v	v	x[b]	x	x	++
Coping styles: problem focused	171	De Bakker et al 2013	0	1	0	0	1	0	2[d]	v	x[b]	v	v	x[b]	x	x	++
Coping styles: emotion focused	171	De Bakker et al 2013	0	1	0	0	1	0	2[d]	v	x[b]	v	v	x[b]	x	x	++

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Moderate ROB for outcome measurement domain (some questionnaire were administered; or question open to interpretation; or retrospective questions). [b] Only a single study examined this factor. [c] Phase 1: Identified potential risk factors, used multivariate regression. [d] Phase 2: Tested specific hypothesis, used multivariate logistic regression.

Appendix 48: Full GRADE table – Socio-demographic Risk factors for PLPP in the 3rd trimester (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Social support^	179	Chang et al 2014	x	x	x	0	1	0	1[d]	x[a]	x[b]	v	v	x[b]	x	x	+
Monthly income NTD 19999 or below^	183	Chang et al 2012	x	x	x	0	1	0	1[d]	x[c]	x[b]	v	v	x[b]	x	x	+
Monthly income NTD 20000-39999^	183	Chang et al 2012	x	x	x	0	1	0	1[d]	x[c]	x[b]	v	v	x[b]	x	x	+
Monthly income NTD 60000-79999^	183	Chang et al 2012	x	x	x	0	1	0	1[d]	x[c]	x[b]	v	v	x[b]	x	x	+
Monthly income NTD 80000 or above^	183	Chang et al 2012	x	x	x	0	1	0	1[d]	x[c]	x[b]	v	v	x[b]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Moderate ROB for outcome measurement domain (some questionnaire were administered; or question open to interpretation; or retrospective questions). [b] Only a single study examined this factor. [c] Four domains high/moderate ROB. [d] Phase 1: Identified potential risk factors, used multivariate regression.

Appendix 49: Full data - Risk factors for PLPP (any trimester/trimester not stated) (examined in only 1 study)

Physical factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR unless stated otherwise	Adjusted OR unless stated otherwise
History of acute low back pain (3 or more episodes of pain which lasted 3 days or more during the 5 years before pregnancy)	Melzack & Belanger 1989	All	Day after birth (retrospective question)	PLPP?	113	Pearson correlation 0.3; p<0.02	/
History of lumbopelvic pain before pregnancy	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	PLPP	280	Chi-square test p=0.00	/
Low back pain in the year before pregnancy	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PLPP	281	8.4* [4.3-16.5]; p<0.0001	/
Pelvic girdle pain in the year before pregnancy	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PLPP	281	3.5* [1.3-9.4]; p=0.01	/
History of lumbopelvic pain in past pregnancies	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	PLPP	280	Chi-square test p=0.01	/
History of lumbopelvic pain during menstruation	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	PLPP	280	Chi-square test p=0.3	/
History of menstrual pain front (abdomen)	Melzack & Belanger 1989	All	Day after birth (retrospective question)	PLPP?	113	Pearson correlation NS	/
History of PLPP in mother	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	891	2.1 [1.2-3.7]	2.0 [1.1-3.5][a]
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP	891	2.3 [1.2-4.2]	2.0 [1.0-3.9] [a]
At least 1 sister with history of PLPP	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	891	2.8 [1.4-5.3]	2.9 [1.5-5.9][a]

Exercised at least 2-3 times a week before pregnancy	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PLPP	281	0.8* [0.5-1.3]; p=0.4	/
Regular physical activity during some period in life (yes vs no)	Mogren 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	881	1.1* [0.8-1.6]; p=0.7	/
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP (vs all other women)	881	1.0* [0.7-1.4]; p=0.9	/
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP (vs women with not pain)	455	1.0* [0.7-1.6]; p=0.9	/
Age at start of Regular physical activity	Mogren 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	677	1.2** [0.9-1.6]; (SMD (SMD 0.09 [-0.08,0.3])	/
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP	346	1.1** [0.7-1.6]; (SMD 0.04 [-0.2,0.3])	/
No. of years of regular physical activity: 6-10 (vs 1-5)	Mogren 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	891	0.9 [0.6-1.5]	1.0 [0.6-1.6][b]; 0.8 [0.5-1.4][c]
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP	891	1.0 [0.6-1.9]	1.0 [0.5-1.9][b]; 0.8 [0.4-1.7][c]
		Primi-parous	Within 24 hrs after birth (retrospective question)	PLPP	375 (+)	RR 1.0 [0.7-1.4]	RR 0.9 [0.6-1.3][d]
		Primi-parous	Within 24 hrs after birth (retrospective question)	High pain-score PLPP	375 (+)	RR 0.8 [0.3-1.8]	RR 0.7 [0.3-1.6][d]
No. of years of regular physical activity: 11-15 (vs 1-5)	Mogren 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	891	0.9 [0.6-1.5]	0.9 [0.6-1.6][b]; 0.8 [0.5-1.4][c]
		All	Within 24 hrs after birth (retrospective question)	High pain-score PLPP	891	0.8 [0.4-1.5]	0.8 [0.4-1.6][b]; 0.7 [0.3-1.4][c]
		Nulliparous	Within 24 hrs after birth (retrospective question)	PLPP	375 (+)	RR 0.8 [0.5-1.2]	RR 0.7 [0.5-1.1][d]
		Nulliparous	Within 24 hrs after birth (retrospective question)	High pain-score PLPP	375 (+)	RR 0.7 [0.3-1.6]	RR 0.6 [0.2-1.5][d]

No. of years of regular physical activity: 16-20 (vs 1-5)	Mogren 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	891	0.7 [0.4-1.2]	0.7 [0.4-1.2][b]; 0.6 [0.3-1.1][c]
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP	891	1.0 [0.5-1.8]	1.1[0.6-2.1][b]; 0.8 [0.4-1.8][c]
		Nulliparous	Within 24 hrs after birth (retrospective question)	PLPP	375 (+)	RR 0.5 [0.3-0.9]	RR[d] 0.4 [0.2-0.7]
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP	375 (+)	RR 0.6 [0.2-1.3]	RR[d] 0.4 [0.2-1.1]
No. of years of regular physical activity: 21-38 (vs 1-5)	Mogren 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	891	0.5 [0.3-0.9]	0.5 [0.3-0.9][b]; 0.4 [0.2-0.8][c]
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP	891	0.4 [0.1-0.8]	0.4 [0.1-0.9][b]; 0.2 [0.08-0.7][c]
		Nulliparous	Within 24 hrs after birth (retrospective question)	PLPP	375 (+)	RR 0.2 [0.1-0.4]	RR 0.2 [0.09-0.3][d]
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP	375 (+)	RR 0.1 [0.04-0.4]	RR 0.1 [0.02-0.4][d]
Trimester of pregnancy: first	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	PLPP	280	Chi-square test p=0.03	/
Trimester of pregnancy: first or second	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	PLPP	280	Chi-square test p=0.04	/
OCP	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	PLPP	280	Chi-square test p=0.3	/
Combined OCP (Yes vs no)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	891	0.8 [0.5-1.3]	/
Mini pill (Yes vs no)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	891	0.7 [0.5-1.3]	/
No. of prior deliveries: 1 (vs 0)	Ansari et al 2010	All	Within 48 hrs after birth (retrospective question)	PLPP[?]	71	1.4* [0.5-3.6]; p=0.5	/

No. of prior deliveries: 2 (vs 0)	Ansari et al 2010	All	Within 48 hrs after birth (retrospective question)	PLPP?	58	1.6* [0.5-5]; p=0.4	/
No. of prior deliveries: 3 (vs 0)	Ansari et al 2010	All	Within 48 hrs after birth (retrospective question)	PLPP?	47	0.6* [0.1-2.7]; p=0.5	/
No. of prior deliveries: ≥4 (vs 0)	Ansari et al 2010	All	Within 48 hrs after birth (retrospective question)	PLPP?	44	10.5* [0.5-202.0]; p=0.1	/
Multiple gestations	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	PLPP	280	Chi-squared: p=0.2	/
Spinal or epidural anaesthesia	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	PLPP	280	Chi-square test p=0.2	/
Number of abortions: 1 (vs 0)	Ansari et al 2010	All	Within 48 hrs after birth (retrospective question)	PLPP?	101	0.6* [0.2-2.0]; p=0.4	/
Number of abortions: ≥2 (vs 0)	Ansari et al 2010	All	Within 48 hrs after birth (retrospective question)	PLPP?	92	0.7* [0.04-11.5]; p=0.8	/
Trauma during pregnancy	Ansari et al 2010	All	Within 48 hrs after birth (retrospective question)	PLPP?	103	2.5* [0.6-9.7]; p=0.2	/
Self-rated health: healthy (vs unhealthy)	Mohseni-Bandpei et al 2009	All	mean 22.98 (SD9.31) weeks gestation, range 5-41	PLPP?	1062	0.0005* [0.000-0.009]; p<0.0001	0.7 [0.5-0.8][e]; p=0.001
Age of menarche	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	891	0.9** [0.7-1.1]; (SMD -0.09 [-0.2-0.06])	/
History of Menstruations: mainly irregular (vs mainly regular)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	789	1.1* [0.7-1.9]; p=0.7	/
History of Menstruations: mainly regular with one or more periods of amenorrhea (vs mainly regular)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	755	2.3* [1.0-5.3]; p=0.04	/

History of Menstruations: mainly irregular with one or more periods of amenorrhea (vs mainly regular)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	748	2.3* [1.0-5.6]; p=0.06	/
History of Menstruations: other bleeding pattern (vs mainly regular)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	713	1.3* [0.1-12.0]; p=0.8	/
one or more periods of amenorrhea (irrespective of regular or irregular) (vs mainly regular)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	891	2.3 [1.3-4.3]	2.4 [1.3-4.4][f]
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP	891	2.8 [1.4-5.6]	3.0 [1.4-6.1][f]
Diagnosed with hypermobility (vs not diagnosed with hypermobility)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	891	1.7 [1.1-2.7]	1.8 [1.1-2.8][g]
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP	891	2.7 [1.6-4.4]	2.7 [1.6-4.7][g]
Diagnosed with hypermobility and/or with a history of hypermobility in the family (yes vs no)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth (retrospective question)	High pain-score PLPP	891	2.1 [1.4-3.2]	2.1 [1.4-3.3][g]
Mainly active occupation (vs sedentary)	Mogren 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	595	1.4* [0.9-2.0]; p=0.1	/
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP (vs no pain)	302	2.0 [1.2-3.5]	2.0 [1.2-3.5][h]
Alternating sedentary and active occupation (vs sedentary)	Mogren 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	441	1.4* [0.9-2.2]; p=0.1	/
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP (vs no pain)	219	2.1 [1.2-3.7]	2.0 [1.1-3.6][h]
Physically demanding occupation (vs physically light occupation)	Mogren 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	501	1.5* [1.0-2.3]; p=0.03	/
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP (vs no pain)	258	1.9 [1.2-3.5]	2.0 [1.2-3.4][h]

Alternating physically demanding and light occupation (vs physically light occupation)	Mogren 2005	All	Within 24 hrs after birth (retrospective question)	PLPP	616	1.4* [1.0-1.9]; p=0.08	/
			Within 24 hrs after birth (retrospective question)	High pain-score PLPP (vs no pain)	316	1.6 [1.0-2.5]	1.5 [0.9-2.4][h]
Physically heavy work	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PLPP	281	2.7* [1.6-4.6]; p=0.0002	/
Lifting heavy loads at work (10-20 kg)	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PPGP? + Often PLBP?	1116	/	β coefficient[i] 0.06 (T-value 2.18); p<0.05
Strain at work	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PPGP? + Often PLBP?	1116	/	β coefficient[j] 0.085 (T-value 2.12) ;p<0.05
			Postpartum while on maternity ward (retrospective questions)	PLBP? + "yes" to PPGP?	1228		β coefficient[k] 0.06 (T-value 2.8); p<0.01
Twisting and bending	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PPGP? + Often PLBP?	1116	/	β coefficient[l] 0.069 (T-value 2.13); p<0.05
			Postpartum while on maternity ward (retrospective questions)	PLBP? + "yes" to PPGP?	1228	/	β coefficient[m] 0.06 (T-value 3.4); p<0.01
Work above shoulder	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PLBP? + "yes" to PPGP?	1228	/	β coefficient[n] 0.06 (T-value 3.2); p<0.01
PPGP in previous pregnancies	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PLPP	281	9.5* [4.8-19]; p<0.0001	/
Nulliparous (vs multiparous)	Malmqvist et al 2012	All	Postpartum (retrospective questions)	Moderate to severe PLPP	281	0.7* [0.4-1.1]; p=0.1	/
Smoking	Al-Sayegh et al 2012	All	During pregnancy (any trimester; cross-sectional)	PLPP	280	Chi-square test p=0.4	/
Birthweight baby: ≥4000g (<4000g)	Mogren & Pohjanen 2005	All	Within 24 hrs after birth	PLPP	891	1.5 [1.1-2.3]	1.4 [0.9-2.1][o]

			(retrospective question)				
Maternal weight gain	Ansari et al 2010	All	Within 48 hrs after birth (retrospective question)	PLPP[?]	103	0.5** [0.3-1.1]; (SMD -0.4 [-0.7-0.005])	/

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

** OR calculated from Standardised Mean Difference using formula: SMD=V3/π x ln OR (Chin 2000)

[a] Adjusted for place of delivery, parity, hypermobility; [b] Adjusted for parity; [c] Adjusted for parity, age at start of RLPA; [d] Adjusted for Age at start pf RLPA; [e] Adjusted for Age, previous LBP, LBP in previous pregnancy, parity, occupation, BMI, Living area, Educational level, Assistant for housework; [f] Adjusted for place of delivery, maternal age, parity; [g] Adjusted for place of delivery, maternal age, parity, and highest educational level; [h] Adjusted for place of delivery and parity; [i] Adjusted for parity, twisting and bending, strain at work; [j] Adjusted for frequent lifts 10-20kg, parity, twisting and bending; [k] Adjusted for twisting and bending, woman's year of birth, permanently employed, work above shoulder, sex colleagues; [l] frequent lifts 10-20kg, parity, strain at work; [m] Adjusted for strain at work, woman's year of birth, permanently employed, work above shoulder, sex colleagues; [n] Adjusted for twisting and bending, strain at work, woman's year of birth, permanently employed, sex colleagues; [o] Adjusted for parity, place of delivery, highest educational level, maternal BMI

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

(+) Obtained from Mogren & Pohjanen 2005

Psychological factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR
Mentally unstimulating occupation (vs mentally stimulating occupation)	Mogren 2005	All	Within 24 hrs after birth (retrospective)	PLPP	388	0.7* [0.4-1.1]; p=0.1	/
			Within 24 hrs after birth (retrospective)	High pain-score PLPP (vs all other women)	388	0.7* [0.5-1.2]; p=0.2	/
			Within 24 hrs after birth (retrospective)	High pain-score PLPP (vs women with not pain)	199	0.6* [0.3-1.1]; p=0.08	/
Alternating mentally unstimulating and stimulating occupation (vs mentally stimulating occupation)	Mogren 2005	All	Within 24 hrs after birth (retrospective)	PLPP	611	0.8* [0.5-1.2]; p=0.2	/
			Within 24 hrs after birth (retrospective)	High pain-score PLPP (vs all other women)	611	0.8* [0.5-1.1]; p=0.2	/
			Within 24 hrs after birth (retrospective)	High pain-score PLPP (vs women with not pain)	309	0.7* [0.4-1.1]; p=0.1	/
Intellectually unstimulating occupation (vs	Mogren 2005	All	Within 24 hrs after birth (retrospective)	PLPP	487	1.2* [0.7-2.0]; p=0.5	/

intellectually stimulating occupation)			Within 24 hrs after birth (retrospective)	High pain-score PLPP (vs all other women)	487	1.1* [0.7-1.8]; p=0.7	/
			Within 24 hrs after birth (retrospective)	High pain-score PLPP (vs women with not pain)	256	1.2* [0.7-2.3]; p=0.5	/
Alternating Intellectually unstimulating and stimulating occupation (vs Intellectually stimulating occupation)	Mogren 2005	All	Within 24 hrs after birth (retrospective)	PLPP	724	1.1* [0.8-1.5]; p=0.7	/
			Within 24 hrs after birth (retrospective)	High pain-score PLPP (vs all other women)	724	0.8* [0.6-1.2]; p=0.3	/
			Within 24 hrs after birth (retrospective)	High pain-score PLPP (vs women with not pain)	368	0.9* [0.6-1.3]; p=0.6	/

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)
Statistically significant (p≤0.05) results are marked in yellow.

Socio-demographic factors

Factors	Study	Participants	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR
Living area: rural (vs urban	Mohseni-Bandpei et al 2009	All	Mean 23 (SD 9.3) weeks gestation (range 5-41)	PLPP?	1062	0.5* [0.3-0.7] p=0.0005	0.5 [0.3-0.7][a] p=0.001
Assistant for housework: with servant (vs without)	Mohseni-Bandpei et al 2009	All	Mean 23 (SD 9.3) weeks gestation (range 5-41)	PLPP?	1062	0.7* [0.5-0.9] p=0.003	1.5 [1.1-1.9][b] p=0.003
Woman's year of birth	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PLBP? + "yes" to PPGP?	1228	/	β coefficient[c] 0.01 (T-value 2.8); p<0.01
Sex of colleagues (F/M; 0,1)	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PLBP? + "yes" to PPGP?	1228	/	β coefficient[d] -0.077 (T-value -2.02); p<0.05
Permanently employed	Endresen 1995	All	Postpartum while on maternity ward (retrospective questions)	PLBP? + "yes" to PPGP?	1228	/	β coefficient[e] -0.1 (T-value -2.42); p<0.05

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)
Statistically significant (p≤0.05) results are marked in yellow.

[a] Adjusted for Age, previous LBP, LBP in previous pregnancy, parity, occupation, BMI, General health, Educational level, Assistant for housework; [b] Adjusted for Age, previous LBP, LBP in previous pregnancy, parity, occupation, BMI, Living area, General health, Educational level; [c] Adjusted for twisting and bending, strain at work, permanently employed, work above shoulder, sex colleagues; [d] Adjusted for twisting and bending, strain at work, woman's year of birth, permanently employed, work above shoulder; [e] Adjusted for twisting and bending, strain at work, woman's year of birth, work above shoulder, sex colleagues

Appendix 50: Full GRADE table – Physical Risk factors for PLPP in the any trimester or trimester not stated (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
History of acute low back pain (3 or more episodes of pain which lasted 3 days or more during the 5 years before pregnancy)	113	Melzack & Belanger 1989	1	0	0	x	x	x	1[g]	x[a]	x[b]	v	v	x[b]	x	x	+
History of lumbopelvic pain before pregnancy	280	El-Sayegh et al 2012	1	0	0	x	x	x	1[h]	x[c]	x[b]	v	v	x[b]	x	x	+
Low back pain in the year before pregnancy	281	Malmqvist et al 2012	1	0	0	x	x	x	1[i]	x[d]	x[b]	v	v	x[b]	x	x	+
Pelvic girdle pain in the year before pregnancy	281	Malmqvist et al 2012	1	0	0	x	x	x	1[i]	x[d]	x[b]	v	v	x[b]	x	x	+
History of lumbopelvic pain in past pregnancies	281	El-Sayegh et al 2012	1	0	0	x	x	x	1[h]	x[c]	x[b]	v	v	x[b]	x	x	+
History of lumbopelvic pain during menstruation	280	El-Sayegh et al 2012	0	1	0	x	x	x	1[h]	x[c]	x[b]	v	v	x[b]	x	x	+
History of menstrual pain front (abdomen)	113	Melzack & Belanger 1989	0	1	0	x	x	x	1[g]	x[a]	x[b]	v	v	x[b]	x	x	+
History of PLPP in mother*	891	Mogren & Pohjanen 2005	0	1	0	0	1	0	1[j]	v	x[b]	v	v	x[b]	x	x	+
At least 1 sister with history of PLPP	891	Mogren & Pohjanen 2005	1	0	0	1	0	0	1[j]	v	x[b]	v	v	x[b]	v[o]	x	++
Exercised at least 2-3 times a week before pregnancy	281	Malmqvist et al 2012	0	1	0	x	x	x	1[i]	x[d]	x[b]	v	v	x[b]	x	x	+
Regular physical activity during some period in life (yes vs no)^	881	Mogren 2005	0	1	0	x	x	x	1[i]	x[e]	x[b]	v	v	x[b]	x	x	+
Age at start of Regular physical activity ^	677	Mogren 2005	0	1	0	x	x	x	1[i]	x[e]	x[b]	v	v	x[b]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
No. of years of regular physical activity: 6-10 (vs 1-5)^	891	Mogren 2005	0	1	0	0	1	0	1[j]	x[e]	x[b]	v	v	x[b]	x	x	+
No. of years of regular physical activity: 11-15 (vs 1-5)^	891	Mogren 2005	0	1	0	0	1	0	1[j]	x[e]	x[b]	v	v	x[b]	x	x	+
No. of years of regular physical activity: 16-20 (vs 1-5)^	891	Mogren 2005	0	1	0	0	1	0	1[j]	x[e]	x[b]	v	v	x[b]	x	x	+
No. of years of regular physical activity: 21-38 (vs 1-5)^	891	Mogren 2005	1	0	0	1	0	0	1[j]	x[e]	x[b]	v	v	x[b]	x	x	+
Trimester of pregnancy: first	280	El-Sayegh et al 2012	1	0	0	x	x	x	1[h]	x[c]	x[b]	v	v	x[b]	x	x	+
Trimester of pregnancy: first or second	280	El-Sayegh et al 2012	1	0	0	x	x	x	1[h]	x[c]	x[b]	v	v	x[b]	x	x	+
OCP	280	El-Sayegh et al 2012	0	1	0	x	x	x	1[h]	x[c]	x[b]	v	v	x[b]	x	x	+
Combined OCP (Yes vs no)	891	Mogren & Pohjanen 2005	0	1	0	x	x	x	1[k]	v	x[b]	v	v	x[b]	x	x	+
Mini pill (Yes vs no)	891	Mogren & Pohjanen 2005	0	1	0	x	x	x	1[k]	v	x[b]	v	v	x[b]	x	x	+
No. of prior deliveries: 1 (vs 0)	71	Ansari et al 2010	0	1	0	x	x	x	1[i]	x[f]	x[b]	v	v	x[b]	x	x	+
No. of prior deliveries: 2 (vs 0)	58	Ansari et al 2010	0	1	0	x	x	x	1[i]	x[f]	x[b]	v	v	x[b]	x	x	+
No. of prior deliveries: 3 (vs 0)	47	Ansari et al 2010	0	1	0	x	x	x	1[i]	x[f]	x[b]	v	v	x[b]	x	x	+
No. of prior deliveries: ≥4 (vs 0)	44	Ansari et al 2010	0	1	0	x	x	x	1[i]	x[f]	x[b]	v	v	x[b]	x	x	+
Multiple gestations	280	El-Sayegh et al 2012	0	1	0	x	x	x	1[h]	x[c]	x[b]	v	v	x[b]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of partici-pants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Spinal or epidural anaesthesia	280	El-Sayegh et al 2012	0	1	0	x	x	x	1[h]	x[c]	x[b]	v	v	x[b]	x	x	+
Number of abortions: 1 (vs 0)	101	Ansari et al 2010	0	1	0	x	x	x	1[i]	x[f]	x[b]	v	v	x[b]	x	x	+
Number of abortions: ≥2 (vs 0)	92	Ansari et al 2010	0	1	0	x	x	x	1[i]	x[f]	x[b]	v	v	x[b]	x	x	+
Trauma during pregnancy	103	Ansari et al 2010	0	1	0	x	x	x	1[i]	x[f]	x[b]	v	v	x[b]	x	x	+
Self-rated health: healthy (vs unhealthy)	1062	Mohseni-Bandpei et al 2009	0	0	1	0	0	1	1[j]	x[d]	x[b]	v	v	x[b]	x	x	+
Age of menarche	891	Mogren & Pohjanen 2005	0	1	0	x	x	x	1[i]	v	x[b]	v	v	x[b]	x	x	+
History of Menstruations: mainly irregular (vs mainly regular)	789	Mogren & Pohjanen 2005	0	1	0	x	x	x	1[i]	v	x[b]	v	v	x[b]	x	x	+
History of Menstruations: mainly regular with one or more periods of amenorrhea (vs mainly regular)	755	Mogren & Pohjanen 2005	1	0	0	x	x	x	1[i]	v	x[b]	v	v	x[b]	x	x	+
History of Menstruations: mainly irregular with one or more periods of amenorrhea (vs mainly regular)	748	Mogren & Pohjanen 2005	0	1	0	x	x	x	1[i]	v	x[b]	v	v	x[b]	x	x	+
History of Menstruations: other bleeding pattern (vs mainly regular)	713	Mogren & Pohjanen 2005	0	1	0	x	x	x	1[i]	v	x[b]	v	v	x[b]	x	x	+
one or more periods of amenorrhea (irrespective of regular or irregular) (vs mainly regular)^	891	Mogren & Pohjanen 2005	1	0	0	1	0	0	1[j]	v	x[b]	v	v	x[b]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Diagnosed with hypermobility (vs not diagnosed with hypermobility)^	891	Mogren & Pohjanen 2005	1	0	0	1	0	0	1[j]	v	x[b]	v	v	x[b]	x	x	+
Diagnosed with hypermobility and/or with a history of hypermobility in the family (yes vs no)	891	Mogren & Pohjanen 2005	1	0	0	1	0	0	1[j]	v	x[b]	v	v	x[b]	x	x	+
Mainly active occupation (vs sedentary)*	595	Mogren 2005	0	1	0	x	x	x	1[i]	v	x[b]	v	v	x[b]	x	x	+
Alternating sedentary and active occupation (vs sedentary)*	441	Mogren 2005	0	1	0	x	x	x	1[i]	v	x[b]	v	v	x[b]	x	x	+
Physically demanding occupation (vs physically light occupation)^	501	Mogren 2005	1	0	0	x	x	x	1[i]	v	x[b]	v	v	x[b]	x	x	+
Alternating physically demanding and light occupation (vs physically light occupation)^	616	Mogren 2005	0	1	0	x	x	x	1[i]	v	x[b]	v	v	x[b]	x	x	+
Physically heavy work	281	Malmqvist et al 2012	1	0	0	x	x	x	1[i]	x[d]	x[b]	v	v	x[b]	x	x	+
Lifting heavy loads at work (10-20 kg)	1116	Endresen 1995	x	x	x	1	0	0	1[j]	x[d]	x[b]	v	v	x[b]	x	x	+
Strain at work	1228	Endresen 1995	x	x	x	1	0	0	1[j]	x[d]	x[b]	v	v	x[b]	x	x	+
Twisting and bending	1116	Endresen 1995	x	x	x	1	0	0	1[j]	x[l]	x[b]	v	v	x[b]	x	x	+
Work above shoulders	1228	Endresen 1995	x	x	x	1	0	0	1[j]	x[d]	x[b]	v	v	x[b]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
PPGP in previous pregnancies	281	Malmqvist et al 2012	1	0	0	x	x	x	1[i]	x[d]	x[b]	v	v	x[b]	x	x	+
Nulliparous (vs multiparous)	281	Malmqvist et al 2012	0	1	0	x	x	x	1[i]	x[d]	x[b]	v	v	x[b]	x	x	+
Smoking	280	El-Sayegh et al 2012	0	1	0	x	x	x	1[h]	x[c]	x[b]	v	v	x[b]	x	x	+
Birthweight baby: ≥4000g (<4000g)	891	Mogren & Pohjanen 2005	1	0	0	0	1	0	1[j]	v	x[b]	v	v	x[b]	x	x	+
Maternal weight gain	103	Ansari et al 2010	0	1	0	x	x	x	1[i]	x[f]	x[b]	v	v	x[b]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Five domains with high ROB. [b] Only a single study examined this factor. [c] Four domains high/moderate ROB. [d] Moderate ROB for outcome measurement domain (some questionnaire were administered; or question open to interpretation; or retrospective questions). [e] Factor measurement domain moderate risk of bias. [f] Three domains high/moderate ROB. [g] Phase 1: No adjustment for confounders, Pearson correlation analysis. [h] Phase 1: No adjustment for confounders, chi-square analysis. [i] Phase 1: Descriptive statistics extracted and unadjusted OR calculated. [j] Phase 1: Identified potential risk factors, used multivariate regression. [k] Phase 1: No adjustment for counfounders for these variables.

Appendix 51: Full GRADE table – Psychological Risk factors for PLPP in the any trimester or trimester not stated (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Mentally unstimulating occupation (vs mentally stimulating occupation)^	388	Mogren 2005	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Alternating mentally unstimulating and stimulating occupation (vs mentally stimulating occupation)^	611	Mogren 2005	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Intellectually unstimulating occupation (vs intellectually stimulating occupation)^	487	Mogren 2005	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Alternating Intellectually unstimulating and stimulating occupation (vs Intellectually stimulating occupation)	724	Mogren 2005	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor. [b] Phase 1: Descriptive statistics extracted and unadjusted OR calculated.

Appendix 52: Full GRADE table – Socio-demographic Risk factors for PLPP in the any trimester or trimester not stated (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of partici-pants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Living area: rural (vs urban)	1062	Mohseni-Bandpei et al 2009	0	0	1	0	0	1	1[c]	x[a]	x[b]	v	v	x[b]	x	x	+
Assistant for housework: with servant (vs without servant)	1062	Mohseni-Bandpei et al 2009	0	0	1	1	0	0	1[c]	x[a]	x[b]	v	v	x[b]	x	x	+
Woman's year of birth	1228	Endresen 1995	x	x	x	1	0	0	1[c]	x[a]	x[b]	v	v	x[b]	x	x	+
Sex of colleagues (F/M; 0,1)	1228	Endresen 1995	x	x	x	0	0	1	1[c]	x[a]	x[b]	v	v	x[b]	x	x	+
Permanently employed	1228	Endresen 1995	x	x	x	0	0	1	1[c]	x[a]	x[b]	v	v	x[b]	x	x	+
Occupation: Student (vs unemployed/searching for work)^	142	Mogren 2005	0	1	0	x	x	x	1[d]	v	x[b]	v	v	x[b]	x	x	+
Occupation:Parental leave (vs unemployed/searching for work)*	102	Mogren 2005	0	1	0	x	x	x	1[d]	v	x[b]	v	v	x[b]	x	x	+
Occupation: Sick leave (vs unemployed/searching for work)*	112	Mogren 2005	0	1	0	x	x	x	1[d]	v	x[b]	v	v	x[b]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Moderate ROB for outcome measurement domain (some questionnaire were administered; or question open to interpretation; or retrospective questions). [b] Only a single study examined this factor. [c] Phase 1: Identified potential risk factors, used multivariate regression. [d] Phase 1: Descriptive statistics extracted and unadjusted OR calculated.

Appendix 53: Full data – Prognostic factors for PPGP persisting ≥ 1 month and < 3 months postpartum

Physical Factors

Factors (Robinson et al 2010b)	**Participants (all or subgroup)**	**Time of follow up**	**No of participants**	**Outcome**	**Unadjusted OR unless stated otherwise**	**Adjusted OR unless stated otherwise**
Level of severity in pregnancy: pain in 1 location (vs no pain)	All	12 weeks pp	179	Persistent PPGP (pain intensity)	β coefficient 3.9 [-3.5-11.4]	β coefficient 1.5 [-5.9-9.0][a]
		12 weeks pp	179	Persistent PPGP (non-recovery 12 weeks pp)	2.8 [1.2-6.2]; p=0.01	2.3 [1.0-5.5][a]; p=0.05
Level of severity in pregnancy: pain in 2 locations (vs no pain)	All	12 weeks pp	179	Persistent PPGP (pain intensity)	β coefficient 9.9 [0.4-19.3]	β coefficient 8.8 [-0.5-18.2][a]
		12 weeks pp	179	Persistent PPGP (non-recovery 12 weeks pp)	2.3 [0.8-6.4]; p=0.1	2.0 [0.7-5.7][a]; p=0.21
Level of severity in pregnancy: pain in 3-4 locations (vs no pain)	All	12 weeks pp	179	Persistent PPGP (pain intensity)	β coefficient 21.5 [10.7-32.3]	β coefficient 18.7 [7.9-29.6][a]
		12 weeks pp	179	Persistent PPGP (non-recovery 12 weeks pp)	5.2 [1.7-15.9]; p=0.004	4.4 [1.3-14.6][a]; p=0.02
Pre-pregnancy BMI ≥25 (vs BMI <25)	All	12 weeks pp	179	Persistent PPGP (Disability rating index)	β coefficient 5.6 [0.5-10.6]; p=0.03	β coefficient 4.6 [-0.3-9.5][b]; p=0.07
		12 weeks pp	179	Persistent PPGP (pain intensity)	β coefficient 8.8 [1.5-15.1]; p=0.02	β coefficient 5.7 [-0.3-11.8][c]; p=0.05
		12 weeks pp	179	Persistent PPGP (non-recovery 12 weeks pp)	2.2 [1.1-4.4]; p=0.03	2.1 [1.0-4.5][c]; p=0.05
Pre-pregnancy low back pain (vs no low back pain pre-pregnancy)	All	12 weeks pp	179	Persistent PPGP (Disability rating index)	β coefficient 5.0 [0.3-9.8]; p=0.04	β coefficient 5.0 [0.5-9.5][d]; p=0.03

[a] Adjusted for pre-pregnancy BMI, sum pain provocation tests; [b] Adjusted for pre-pregnancy LBP, sum pain provocation tests, ASLR; [c] Adjusted for number of pain sites, sum pain provocation tests; [d] Adjusted for pre-pregnancy BMI, sum pain provocation tests, ASLR.

Statistically significant (p≤0.05) results are marked in yellow.

Appendix 54: Full GRADE table – Physical Prognostic factors for PPGP persisting 1-3 months postpartum (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Pre-pregnancy low back pain	179	Robinson et al 2010	1	0	0	1	0	0	1	v	x[a]	v	v	x[a]	x	x	+
Pain in 1 locations of the pelvic girdle*	179	Robinson et al 2010	1	0	0	1	0	0	1	v	x[a]	v	v	x[a]	x	x	+
Pain in 2 locations of the pelvic girdle^	179	Robinson et al 2010	0	1	0	0	1	0	1	v	x[a]	v	v	x[a]	x	x	+
Pain in ≥3 locations of the pelvic girdle^	179	Robinson et al 2010	1	0	0	1	0	0	1	v	x[a]	v	v	x[a]	x	x	+
Pre-pregnancy BMI ≥25*	179	Robinson et al 2010	1	0	0	0	1	0	1	v	x[a]	v	v	x[a]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor.[b] Phase 1: Identified potential risk factors, used multivariate regression.

Appendix 55: Full data – Prognostic factors for PPGP persisting ≥ 6 month and < 9 months postpartum

Physical Factors

Factors (paper)	Participants (all or subgroup)	Time of follow up	No of participants	Outcome	Unadjusted OR	Adjusted OR
Mode of delivery: instrumental vaginal delivery (vs unassisted vaginal delivery) (Bjelland et al 2013c)	All	6 months pp	9002	Persistent Pelvic Girdle Syndrome?	1.3 [1.0-1.6] p<0.05	1.3 [1.0-1.7][a] p<0.05; 1.4 [1.1-1.8][b] p<0.05
		6 months pp	9002	Persistent Severe Pelvic Girdle Syndrome?	1.4 [0.7-2.6]	1.3 [0.7-2.4][a]; 1.3 [0.7-2.5][b]
	Women who did not use crutches in pregnancy week 30	6 months pp	6803	Persistent Pelvic Girdle Syndrome?	1.2 [0.9-1.7]	1.3 [0.9-1.9][a]
		6 months pp	6803	Persistent Severe Pelvic Girdle Syndrome?	1.3 [0.5-3.8]	1.1 [0.4-3.1][a]
	Women who used crutches in pregnancy week 30	6 months pp	2199	Persistent Pelvic Girdle Syndrome?	1.6 [1.0-1.9] p<0.05	1.5 [1.0-2.3][a] p<0.05
		6 months pp	2199	Persistent Severe Pelvic Girdle Syndrome?	1.6 [0.7-3.7]	1.3 [0.6-3.1][a]
Mode of delivery: emergency cesarian section (vs unassisted vaginal delivery) (Bjelland et al 2013c)	All	6 months pp	9060	Persistent Pelvic Girdle Syndrome?	1.0 [0.8-1.3]	0.9 [0.7-1.2][a]; 0.8 [0.6-1.1][b]
		6 months pp	9060	Persistent Severe Pelvic Girdle Syndrome?	1.8 [1.0-3.1] p<0.05	1.6 [0.9-2.8][a]; 1.5 [0.8-2.6][b]
	Women who did not use crutches in pregnancy week 30	6 months pp	6799	Persistent Pelvic Girdle Syndrome?	0.8 [0.5-1.2]	0.7 [0.5-1.1][a]
		6 months pp	6799	Persistent Severe Pelvic Girdle Syndrome?	1.0 [0.3-3.3]	0.6 [0.2-2.2][a]
	Women who used crutches in pregnancy week 30	6 months pp	2261	Persistent Pelvic Girdle Syndrome?	1.0 [0.7-1.9]	1.0 [0.7-1.4][a]
		6 months pp	2261	Persistent Severe Pelvic Girdle Syndrome?	2.0 [1.1-3.8] p<0.001	2.0 [1.0-4.0][a] p<0.05
Mode of delivery: planned cesarian section (vs unassisted vaginal delivery) (Bjelland et al 2013c)	All	6 months pp	8952	Persistent Pelvic Girdle Syndrome?	1.2 [1.0-1.6]	1.1 [0.8-1.4][a]; 1.0 [0.8-1.3][b]
		6 months pp	8952	Persistent Severe Pelvic Girdle Syndrome?	2.8 [1.7-4.6] p<0.001	2.6 [1.6-4.3][a] p<0.001 2.3 [1.4-3.9][b] p<0.01
	Women who did not use crutches in pregnancy week 30	6 months pp	6695	Persistent Pelvic Girdle Syndrome?	0.8 [0.5-1.3]	OR 0.7 [0.5-1.1][a]
		6 months pp	6695	Persistent Severe Pelvic Girdle Syndrome?	0.8 [0.2-3.5]	0.6 [0.1-3.6][a]
	Women who used crutches in pregnancy week 30	6 months pp	2257	Persistent Pelvic Girdle Syndrome?	1.4 [1.0-1.9]	1.3 [0.9-1.8][a]
		6 months pp	2257	Persistent Severe Pelvic Girdle Syndrome?	3.2 [1.8-5.5] p<0.001	3.3 [1.9-5.9][a] p<0.001

Obstetric complications (yes vs no) (Bjelland et al 2013c)	All	6 months pp	10400	Persistent Pelvic Girdle Syndrome?	1.0 [0.8-1.2]	0.9 [0.7-1.1][a]; 0.9 [0.7-1.1][b]
		6 months pp	10400	Persistent Severe Pelvic Girdle Syndrome?	1.0 [0.6-1.6]	0.7 [0.4-1.2][a]; 0.8 [0.4-1.3][b]
Other pain conditions (yes vs no) (Bjelland et al 2013c)	All	6 months pp	10400	Persistent Pelvic Girdle Syndrome?	1.8 [1.5-2.0] p<0.001	1.7 [1.5-1.9][a]; 1.6 [1.4-1.8][b]
		6 months pp	10400	Persistent Severe Pelvic Girdle Syndrome?	1.7 [1.2-2.3] p<0.001	1.5 [1.1-2.1][a] p<0.001; 1.3 [0.9-1.9][b] p<0.001
Birthweight <3000g (vs 3000-4499g) (Bjelland et al 2013c)	All	6 months pp	9753	Persistent Pelvic Girdle Syndrome?	1.1 [0.8-1.3]	1.1 [0.9-1.4][a]; 1.1 [0.9-1.5][b]
		6 months pp	9753	Persistent Severe Pelvic Girdle Syndrome?	1.0 [0.5-1.7]	1.0 [0.5-1.8][a]; 1.0 [0.5-1.9][b]
Birthweight ≥4500g (vs 3000-4499g) (Bjelland et al 2013c)	All	6 months pp	9489	Persistent Pelvic Girdle Syndrome?	0.9 [0.7-1.2]	0.9 [0.7-1.2][a]; 0.9 [0.6-1.2][b]
		6 months pp	9489	Persistent Severe Pelvic Girdle Syndrome?	0.7 [0.3-1.5]	0.6 [0.3-1.4][a]; 0.6 [0.3-1.4][b]
Use of crutches in pregnancy week 30 (yes vs no) (Bjelland et al 2013c)	All	6 months pp	10400	Persistent Pelvic Girdle Syndrome?	4.0 [3.5-4.6] p<0.001	3.8 [3.3-4.4][b] p<0.001
		6 months pp	10400	Persistent Severe Pelvic Girdle Syndrome?	6.9 [4.8-10] p<0.001	6.4 [4.4-9.3][b] p<0.001
Level of severity in pregnancy: pain in 3 locations (vs 1-2 locations) (Bjelland et al 2013b)	All	6 months pp	39726	Persistent Pelvic Girdle Syndrome?	4.7* [4.1-5.3]; p<0.0001	4.2 [3.7-4.8][c] p<0.001
		6 months pp	39726	Persistent Severe Pelvic Girdle Syndrome?	4.0* [2.7-5.8]; p<0.0001	3.5 [2.4-5.1][c]; p<0.001
Level of severity in pregnancy: Severe pain in 3 locations (vs 1-2 locations) (Bjelland et al 2013b)	All	6 months pp	32598	Persistent Pelvic Girdle Syndrome?	19.6* [17.0-22.7]; p<0.0001	16.3 [14-18.9][c] p<0.001
		6 months pp	32598	Persistent Severe Pelvic Girdle Syndrome?	31.3* [22.1-44.4]; p<0.0001	24 [16.8-34.3][c]; p<0.001
Co-morbidity index: 1 disease (vs 0 diseases) (Bjelland et al 2013b)	All	6 months pp	25313	Persistent Pelvic Girdle Syndrome?	1.4* [1.2-1.7]; p<0.0001	1.3 [1.1-1.6][d]; p<0.01
		6 months pp	25313	Persistent Severe Pelvic Girdle Syndrome?	1.4* [0.9-2.1]; p=0.18	1.2 [0.8-1.9][d]
Co-morbidity index: 2-3 diseases (vs 0 diseases) (Bjelland et al 2013b)	All	6 months pp	25093	Persistent Pelvic Girdle Syndrome?	2.2* [1.8-2.5]; p<0.0001	1.8 [1.5-2.1][d]; p<0.001
		6 months pp	25093	Persistent Severe Pelvic Girdle Syndrome?	2.2* [1.4-3.2]; p=0.0003	1.6 [1.1-2.5][d]; p<0.05
Co-morbidity index: ≥4	All	6 months pp	13165	Persistent Pelvic Girdle Syndrome?	3.9* [3.2-4.8] p<0.0001	2.4 [1.9-3.0][d] p<0.001

diseases (vs 0 diseases) (Bjelland et al 2013b)		6 months pp	13165	Persistent Severe Pelvic Girdle Syndrome?	4.7* [2.8-7.8] p<0.0001	2.3 [1.3-3.9][d]; p<0.01
BMI at inclusion (approx. 17 weeks gestation): 25-30 (vs <25) (Bjelland et al 2013b)	All	6 months pp	34103	Persistent Pelvic Girdle Syndrome?	1.3* [1.2-1.5] p<0.0001	1.1 [1.0-1.3][e]
		6 months pp	34103	Persistent Severe Pelvic Girdle Syndrome?	1.4* [1.0-2.0] p=0.04	1.1 [0.7-1.5][e]
BMI at inclusion (approx. 17 weeks gestation): ≥30 (vs <25) (Bjelland et al 2013b)	All	6 months pp	27025	Persistent Pelvic Girdle Syndrome?	2.5* [2.2-2.8] p<0.0001	1.8 [1.5-2.0][e] p<0.001
		6 months pp	27025	Persistent Severe Pelvic Girdle Syndrome?	2.9* [2.0-4.1]; p<0.0001	1.6 [1.1-2.4][e;] p<0.05
Age of menarche ≤10 yoa (vs ≥13 yoa) (Bjelland et al 2013b)	All	6 months pp	26126	Persistent Pelvic Girdle Syndrome?	2.1* [1.6-2.7]; p<0.0001	1.3 [1.0-1.8][f;] p<0.05
		6 months pp	26126	Persistent Severe Pelvic Girdle Syndrome?	5.1* [3.0-8.7]; p<0.0001	3.1 [1.8-5.3][f;] p<0.001
Age of menarche 11 yoa (vs ≥13 yoa) (Bjelland et al 2013b)	All	6 months pp	29383	Persistent Pelvic Girdle Syndrome?	1.5* [1.3-1.8]; p<0.0001	1.2 [1.0-1.4][f;] p<0.05
		6 months pp	29383	Persistent Severe Pelvic Girdle Syndrome?	2.3* [1.5-3.4]; p=0.0001	1.7 [1.2-2.6][f;] p<0.01
Age of menarche 12 yoa (vs ≥13 yoa) (Bjelland et al 2013b)	All	6 months pp	35736	Persistent Pelvic Girdle Syndrome?	1.2* [1.1-1.4]; p=0.0021	1.1 [0.9-1.2][f;]
		6 months pp	35736	Persistent Severe Pelvic Girdle Syndrome?	1.6* [1.1-2.2]; p=0.0055	1.4 [1.0-2.0][f;] p<0.05
Previous low back pain (yes vs no) (Bjelland et al 2013b)	All	6 months pp	41421	Persistent Pelvic Girdle Syndrome?	1.9* [1.7-2.2]; p<0.0001	1.5[1.4-1.7][g]; p<0.001
		6 months pp	41421	Persistent Severe Pelvic Girdle Syndrome?	2.0* [1.5-2.6]; p<0.0001	1.4 [1.0-1.9][g]; p<0.05
Smoking during pregnancy: occasional smoker (vs non-smoker) (Bjelland et al 2013b)	All	6 months pp	38865	Persistent Pelvic Girdle Syndrome?	1.5* [1.2-1.9]; p<0.0001	1.3 [1.0-1.6][h]; p<0.05
		6 months pp	38865	Persistent Severe Pelvic Girdle Syndrome?	1.1* [0.6-2.2]; p=0.6945	0.7[0.4-1.5][h]
Smoking during pregnancy: daily smoker (vs non-smoker) (Bjelland et al 2013b)	All	6 months pp	38856	Persistent Pelvic Girdle Syndrome?	1.4* [1.1-1.8]; p=0.0023	1.0 [0.8-1.3][h]
		6 months pp	38856	Persistent Severe Pelvic Girdle Syndrome?	1.7* [1.0-2.9]; p=0.046	1.2 [0.7-2.1][h]

[a] Adjusted for maternal age, parity, educational level, BMI, obstetric complications, other pain conditions, birthweight, emotional distress; [b] Adjusted for maternal age, parity, educational level, BMI, obstetric complications, other pain conditions, birthweight, emotional distress, and use of crutches in pregnancy; [c] Adjusted for emotional distress, co-morbidity index, BMI at inclusion, age at menarche, previous LBP, Smoking during pregnancy; [d] Adjusted for emotional distress, level of severity in pregnancy, BMI at inclusion, age at menarche, previous LBP, Smoking during pregnancy; [e] Adjusted for emotional distress, level of severity in pregnancy, co-morbidity index, age at menarche, previous LBP, Smoking during pregnancy; [f] Adjusted for emotional distress, level of severity in pregnancy, co-morbidity index, BMI at inclusion, previous LBP, Smoking during pregnancy; [g] Adjusted for emotional distress, level of severity in pregnancy, co-morbidity index, BMI at inclusion, age at menarche, Smoking during pregnancy; [h] Adjusted for emotional distress, level of severity in pregnancy, co-morbidity index, BMI at inclusion, age at menarche, previous LBP.

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Psychological Factors

Factor (Bjelland et al 2013b)	**Participants (all or subgroup)**	**Time of follow up**	**No of participants**	**Outcome**	**Unadjusted OR**	**Adjusted OR**
Emotional distress at one point: at 17 weeks or 30 weeks gestation (vs no emotional distress)	All	6 months pp	40029	Persistent Pelvic Girdle Syndrome[?]	1.7* [1.5-2.0]; p<0.0001	1.3 [1.1-1.5][i]; p<0.01
		6 months pp	40029	Persistent Severe Pelvic Girdle Syndrome[?]	2.8* [2.0-4.1]; p<0.0001	2.0 [1.4-2.9][i]; p<0.001
	Women with onset of PPGP after 17 weeks gestation	6 months pp	31637	Persistent Pelvic Girdle Syndrome[?]	1.8* [1.4-2.3]; p<0.0001	1.4 [1.1-1.7][i]; p<0.01
		6 months pp	31637	Persistent Severe Pelvic Girdle Syndrome[?]	3.2* [1.9-5.4]; p<0.0001	2.3 [1.3-4.0][i]; p<0.01
Emotional distress at two points: at 17 weeks and 30 weeks gestation (vs no emotional distress)	All	6 months pp	37909	Persistent Pelvic Girdle Syndrome[?]	2.4* [1.9-2.9]; p<0.0001	1.5 [1.2-1.9][i]; p<0.001
		6 months pp	37909	Persistent Severe Pelvic Girdle Syndrome[?]	3.4* [2.1-5.6]; p<0.0001	1.9 [1.1-3.1][i]; p<0.05
	Women with onset of PPGP after 17 weeks gestation	6 months pp	30009	Persistent Pelvic Girdle Syndrome[?]	2.8* [2.1-3.7]; p<0.0001	1.9 [1.4-2.6][i]; p<0.001
		6 months pp	30009	Persistent Severe Pelvic Girdle Syndrome[?]	3.7* [1.7-7.7]; p=0.0006	2.3 [1.1-4.9][i]; p<0.05

[i] Adjusted for level of severity in pregnancy, co-morbidity index, BMI at inclusion, age at menarche, previous Low back pain, Smoking during pregnancy

* Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Appendix 56: Full GRADE table – Physical Prognostic factors for PPGP persisting 6-9 months postpartum (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Obstetric complications^	10400	Bjelland et al 2013a	0	1	0	0	1	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Birthweight <3000g^	9753	Bjelland et al 2013a	0	1	0	0	1	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Birthweight ≥4500g^	9489	Bjelland et al 2013a	0	1	0	0	1	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
BMI 25-30 (vs <25)	34103	Bjelland et al 2013b	1	0	0	0	1	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
BMI ≥30 (vs <25)	27025	Bjelland et al 2013b	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Occasional smoker*	38865	Bjelland et al 2013b	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Daily smoker^	38856	Bjelland et al 2013b	1	0	0	0	1	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Instrumental delivery*	9002	Bjelland et al 2013a	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Emergency caesarean section*	9060	Bjelland et al 2013a	0	1	0	0	1	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Planned caesarean section*	8952	Bjelland et al 2013a	0	1	0	0	1	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Other pain conditions^	10400	Bjelland et al 2013a	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Use of crutches in week 30 of pregnancy^	10400	Bjelland et al 2013a	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	v	x	++
Co-morbidity index: 1 disease*	25313	Bjelland et al 2013b	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Co-morbidity index: 2-3 disease^	25093	Bjelland et al 2013b	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Co-morbidity index: ≥4 disease^	13165	Bjelland et al 2013b	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Age of menarche ≤10 (vs ≥13)^	26126	Bjelland et al 2013b	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Age of menarche 11 (vs ≥13)^	29383	Bjelland et al 2013b	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Age of menarche 12 (vs ≥13)*	35736	Bjelland et al 2013b	1	0	0	0	1	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Previous low back pain^	41421	Bjelland et al 2013b	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor. [b] Questions to determine PGS open to interpretation. [c] Phase 2: Test hypothesis. Multivariate logistic regression.

Appendix 57: Full GRADE table – Psychological Prognostic factors for PPGP persisting 6-9 months postpartum (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Emotional distress at 17 weeks or 30 weeks pregnancy^	40029	Bjelland et al 2013b	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Emotional distress at 17 weeks and 30 weeks pregnancy^	37909	Bjelland et al 2013b	1	0	0	1	0	0	2[c]	x[b]	x[a]	v	v	x[a]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor.[b] Questions to determine PGS open to interpretation. [c] Phase 2: Test hypothesis. Multivariate logistic regression.

Appendix 58: Full data – Prognostic factors for PLPP persisting ≥ 6 months and < 9 months postpartum

Physical Factors

Factor	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise
Mode of delivery: vacuum extraction (vs unassisted vaginal delivery)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	376	1.4* [0.7-2.9]; p=0.3	/
			6.1 months pp	Persistent PLPP (Recurrent)	351	1.3* [0.6-2.7]; p=0.5	/
			6.1 months pp	Persistent PLPP (Continuous)	242	2.4* [0.7-7.7]; p=0.2	/
Mode of delivery: forceps (vs unassisted vaginal delivery)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	345	0.2* [0.01-4.0]; p=0.3	/
			6.1 months pp	Persistent PLPP (Recurrent)	324	0.2* [0.01-4.7]; p=0.3	/
			6.1 months pp	Persistent PLPP (Continuous)	224	1.4* [0.07-28.1]; p=0.8	/
Mode of delivery: elective caesarean (vs unassisted vaginal delivery)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	386	2.8* [1.4-5.4]; p=0.002	/
			6.1 months pp	Persistent PLPP (Recurrent)	359	2.6* [1.3-5.1]; p=0.007	/
			6.1 months pp	Persistent PLPP (Continuous)	265	4.0* [1.4-11.5]; p=0.01	/
Mode of delivery: emergency caesarean (vs unassisted vaginal delivery)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	384	0.7* [0.4-1.4]; p=0.3	/
			6.1 months pp	Persistent PLPP (Recurrent)	361	0.7* [0.4-1.5]; p=0.4	/
			6.1 months pp	Persistent PLPP (Continuous)	251	0.7* [0.2-3.2]; p=0.7	/
Mode of delivery: caesarean section (vs no caesarean section)	Olsson et al 2012	All	6 months pp	Persistent PLPP	110	0.5* [0.2-1.7]; p=0.32	/
Mode of delivery: elective caesarean section (vs emergency caesarean section)	Mogren 2007a	All	6.1 months pp	Persistent PLPP (any)	86	3.9* [1.6-9.5];	4.6 [1.7-12.2][b]; 3.9 [1.5-9.1][c]; 3.4 [1.4-8.5][e]; 4.2 [1.6-10.6][g]; 3.4 [1.2-9.6][f]; 3.5 [1.2-10.3][h]
			6.1 months pp	Persistent PLPP (Recurrent)	78	3.6 [1.4-9.2];	4.6 [1.6-13.1][b]; 3.6 [1.3-9.5][c]; 3.1 [1.2-8.1][e]; 3.7 [1.4-9.8][g]; 3.4 [1.1-10.4][f]; 3.5 [1.1-10.1][h]

			6.1 months pp	Persistent PLPP (Continuous)	51	5.6 [1.0-31.2];	4.8 [0.8-27.5][b]; 5.1 [0.9-30.6][c]; 5.5 [1.0-31.4][e]; 9.7 [1.1-88.4][g]; 5.3 [0.8-36.1][f]; 17.7 [1.1-296.3][h]
Epidural or spinal anaesthesia during delivery (vs no Epidural or spinal anaesthesia during delivery)	Mogren 2007a	All	6.1 months pp	Persistent PLPP (any)	462	1.2* [0.8-1.7]; p=0.35	/
			6.1 months pp	Persistent PLPP (Recurrent)	430	1.2* [0.8-1.8]; p=0.3	/
			6.1 months pp	Persistent PLPP (Continuous)	294	1.0* [0.5-2.1]; p=0.9	/
Epidural or spinal anaesthesia during caesarean section (vs no Epidural or spinal anaesthesia during caesarean)	Mogren 2007a	All	6.1 months pp	Persistent PLPP (any)	85	0.1* [0.01-1.1]; p=0.06	/
			6.1 months pp	Persistent PLPP (Recurrent)	77	0.1* [0.01-1.3]; p=0.09	/
			6.1 months pp	Persistent PLPP (Continuous)	50	0.07* [0.006-0.9]; p=0.04	/
Exercise before pregnancy (no vs yes)	Olsson et al 2012	All	6 months pp	Persistent PLPP	111	1.3* [0.6-2.9]; p=0.57	/
Pre-pregnancy physical activity (yes vs no)	Mogren 2008	All	6 months pp	Persistent PLPP (any)	461	0.5* [0.3-0.8]; p=0.003	/
			6 months pp	Persistent PLPP (Recurrent)	429	3.1* [1.8-5.2]; p<0.0001	/
			6 months pp	Persistent PLPP (Continuous)	295	1.04* [0.4-2.7]; p=0.9	/
Age (years) at start of Physical Activity	Mogren 2008	All	6 months pp	Persistent PLPP (Recurrent)	341	1.03** [0.7-1.5]; (SMD 0.02 [-0.2 - 0.2])	/
			6 months pp	Persistent PLPP (Continuous)	229	1.1** [0.5-2.4]; (SMD 0.05 [-0.4 - 0.5])	/
Mean number of weekly events of current Physical activity	Mogren 2008	All	6 months pp	Persistent PLPP (Recurrent)	189	0.8** [0.5-1.4]; (SMD -0.1 [-0.4 - 0.2])	/
			6 months pp	Persistent PLPP (Continuous)	135	2.3** [0.9-6.1]; (SMD 0.5 [-0.05-1.0])	/
Start of Physical Activity	Mogren 2008	All	6 months pp	Persistent PLPP (Recurrent)	186	1.0** [0.6-1.7]; (SMD 0.0 [-0.30 - 0.30])	/

(months after delivery)			6 months pp	Persistent PLPP (Continuous)	134	0.6** [0.2-1.4]; (SMD -0.3 [-0.8 - 0.2])	/
Exercise at present (no vs yes)	Olsson et al 2012	All	6 months pp	Persistent PLPP	110	0.8* [0.4-1.8]; p=0.6	Hazard Ratio 0.7 [0.4-1.4][a]; p=0.3
Current physical activity (yes vs no)	Mogren 2008	All	6 months pp	Persistent PLPP (any)	463	1.0* [0.7-1.4]; p=0.9	/
			6 months pp	Persistent PLPP (Recurrent)	431	2.5* [1.7-3.7]; p<0.0001	/
			6 months pp	Persistent PLPP (Continuous)	296	1.4* [0.7-2.9]; p=0.4	/
No. of years of physical activity: 6-10 (vs 1-5)	Mogren 2008	All	6 months pp	Persistent PLPP	369 (365[i])	0.9 [0.5-1.6]	0.9 [0.5-1.7][b]; 0.8 [0.5-1.5][c]; 0.9[i] [0.5-1.6][d]
No. of years of physical activity: 11-15 (vs 1-5)	Mogren 2008	All	6 months pp	Persistent PLPP	370 (365[i])	0.9 [0.5-1.6]	1.0 [0.5-1.8][b]; 0.9 [0.5-1.7][c]; 0.9[i] [0.5-1.8][d]
No. of years of physical activity: 16-20 (vs 1-5)	Mogren 2008	All	6 months pp	Persistent PLPP	371 (365[i])	1.2 [0.6-2.3]	1.2 [0.6-2.3][b]; 1.2 [0.6-2.3][c]; 1.2[i] [0.6-2.4][d]
No. of years of physical activity: 21-38 (vs 1-5)	Mogren 2008	All	6 months pp	Persistent PLPP	372 (365[i])	0.9 [0.4-2.0]	0.7 [0.3-1.7][b]; 0.8 [0.4-2][c]; 0.9[i] [0.3-2.2][d]
Previous pregnancies (has been pregnant before vs 1st pregnancy)	Olsson et al 2012	All	6 months pp	Persistent PLPP	111	1.6* [0.7-3.4]; p=0.3	/
Reporting pain daily or constant pain	Olsson et al 2012	All	6 months pp	Persistent PLPP	112	1.7* [0.7-4.1]; p=0.3	/
Pain intensity >33 (VAS) at present (vs ≤33)	Olsson et al 2012	All	6 months pp	Persistent PLPP	112	1.7* [0.7-4.1]; p=0.3	Hazard Ratio 0.7 [0.3-1.5][a]; p=0.3
Pain intensity >69 (VAS) at worst (vs ≤69)	Olsson et al 2012	All	6 months pp	Persistent PLPP	112	2.2* [0.9-5.0]; p=0.07	Hazard Ratio 0.7 [0.8-3.0][a]; p=0.2
Disabilit Rating Index total >25 (versus ≤25)	Olsson et al 2012	All	6 months pp	Persistent PLPP	112	1.9* [0.8-4.3]; p=0.12	Hazard Ratio 2.7 [1.3-5.4][a]; p=0.007

Onset of lumbopelvic pain ≤11 weeks pregnancy (vs >11 weeks)	Olsson et al 2012	All	6.1 months pp	Persistent PLPP	112	3.2* [1.2-8.3]; p=0.02	Hazard Ratio 1.9 [0.99-3.5][a]; p=0.06
Maximum level of pain during pregnancy >2-4 VAS (vs 0-2)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	436[i]; 419[ii]; 436[iii]; 436[iv]; 419[v]	2.0[i] [0.7-5.4]	1.6[ii] [0.6-4.6][e]; 1.7 [iii] [0.6-4.9][a]; 1.9[iv] [0.7-5.4][c]; 1.4[v] [0.5-4.1][f]
Maximum level of pain during pregnancy >4-6 VAS (vs 0-2)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	436[i]; 419[ii]; 436[iii]; 436[iv]; 419[v]	3.0[i] [1.2-7.8]	2.8[ii] [1.1-7.4][e]; 2.6[iii] [1.0-6.9][a]; 2.9[iv] [1.1-7.6][c]; 2.4[v] [0.9-6.4][f]
Maximum level of pain during pregnancy >6-8VAS (vs 0-2)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	436[i]; 419[ii]; 436[iii]; 436[iv]; 419[v]	4.4[i] [1.7-11.4]	3.9[ii] [1.5-10.2][e]; 4.3[iii] [1.6-11.1][a]; 4.3[iv] [1.7-11.2][c]; 3.8[v] [1.4-10][f]
Maximum level of pain during pregnancy >8-10VAS (vs 0-2)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	436[i]; 419[ii]; 436[iii]; 436[iv]; 419[v]	6.9[i] [2.4-19.7]	6.4[ii] [2.2-18][e]; 7.4[iii] [2.6-21.2][a]; 6.7[iv] [2.4-19.1][c]; 6.7[v] [2.3-19.5][f]
Hypermobility (women reported being diagnosed as having hypermobility) (yes vs no)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	458	1.5* [0.9-2.3]; p=0.1	/
			6.1 months pp	Persistent PLPP (recurrent)	427	1.3* [0.8-2.2]; p=0.3	/
			6.1 months pp	Persistent PLPP (continuous)	292	2.2* [0.9-5.1]; p=0.07	/
Hypermobility (women reported diagnosed as having hypermobility and/or perception of hypermobility) (yes vs no)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	458	1.6* [1.0-2.4]; p=0.04	/
			6.1 months pp	Persistent PLPP (recurrent)	427	1.5* [0.9-2.3]; p=0.1	/
			6.1 months pp	Persistent PLPP (continuous)	292	2.1* [1.0-4.7]; p=0.07	/
Nottingham Health Profile-total score >13.6 (vs NHP-total score ≤13.6)	Olsson et al 2012	All	6 months pp	Persistent PLPP	112	3.0* [1.3-6.7]; p=0.008	HR 2.2 [1.1-4.4]a; p=0.03

*Calculated from raw data (95% CI calculated using natural logarithm method (Altman et al 1991)

** OR calculated from Standardised Mean Difference using formula: SMD=V3/π x ln OR (Chin 2000)

[a] Adjusted for exercise at present and onset of lumbopelvic pain; [b] Adjusted for maternal age; [c] Adjusted for parity; [d] Adjusted for parity, and age at the start of physical activity; [e] Adjusted for BMI; [f] Adjusted for BMI, maternal age and parity; [g] Adjusted for Epidural or spinal anaesthesia; [h] Adjusted for maternal age, parity, BMI, epidural or spinal anaesthesia

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Psychological Factors

Factors	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR unless stated otherwise
Pain Catastrophizing Scale-total score >17 (vs PCS-total score ≤17)	Olsson et al 2012	All	6 months pp	Persistent PLPP	112	0.5* [0.2-1.03]; p=0.06	Hazard Ratio 2.4 [1.3-4.6][a]; p=0.009
Fear Avoidance Beliefs Questionnaire-activity: >12.3 (vs FABQ-activity ≤12.3)	Olsson et al 2012	All	6 months pp	Persistent PLPP	112	1.2* [0.5-2.5]; p=0.7	Hazard Ratio 1.1 [0.6-2.1][a]; p=0.7
Perceived health before pregnancy (very good vs quite good)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	414	0.6* [0.4-0.9]; p=0.006	/
			6.1 months pp	Persistent PLPP (recurrent)	387	0.6* [0.4-0.9]; p=0.02	/
			6.1 months pp	Persistent PLPP (continuous)	267	0.4* [0.2-1.0]; p=0.04	/
Perceived health before pregnancy (fair vs quite good)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	251	0.9* [0.5-1.8]; p=0.8	/
			6.1 months pp	Persistent PLPP (recurrent)	230	0.9* [0.4-1.9]; p=0.8	/
			6.1 months pp	Persistent PLPP (continuous)	151	0.9* [0.2-3.2]; p=0.8	/
Perceived health before pregnancy (quite poor vs quite good)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	219	6.3* [0.8-53.7]; p=0.09	/
			6.1 months pp	Persistent PLPP (recurrent)	200	6.4* [0.7-55.9]; p=0.09	/
			6.1 months pp	Persistent PLPP (continuous)	129	6.1* [0.4-101.2]; p=0.2	/
Perceived health before	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	213	3.0* [0.1-79]; p=0.5	/

pregnancy (poor vs quite good)			6.1 months pp	Persistent PLPP (recurrent)	194	1.2* [0.03-65.2]; p=0.9	/
			6.1 months pp	Persistent PLPP (continuous)	128	17.8* [0.7-452.7]; p=0.08	/
Perceived health during pregnancy (very good vs quite good)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	246	0.8* [0.5-1.4]; p=0.4	/
			6.1 months pp	Persistent PLPP (recurrent)	231	0.9* [0.5-1.6]; p=0.7	/
			6.1 months pp	Persistent PLPP (continuous)	171	0.4* [0.1-1.6]; p=0.2	/
Perceived health during pregnancy (fair vs quite good)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	300	1.4* [0.9-2.3]; p=0.12	/
			6.1 months pp	Persistent PLPP (recurrent)	280	1.6* [1.0-2.5]; p=0.07	/
			6.1 months pp	Persistent PLPP (continuous)	193	0.9* [0.4-2.3]; p=0.9	/
Perceived health during pregnancy (quite poor vs quite good)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	218	1.9* [1.0-3.4]; p=0.05	/
			6.1 months pp	Persistent PLPP (recurrent)	202	2.0* [1.1-3.8]; p=0.03	/
			6.1 months pp	Persistent PLPP (continuous)	142	1.3* [0.4-4.3]; p=0.7	/
Perceived health during pregnancy (poor vs quite good)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	184	2.9* [1.1-7.1]; p=0.03	/
			6.1 months pp	Persistent PLPP (recurrent)	167	2.3* [0.8-6.2]; p=0.1	/
			6.1 months pp	Persistent PLPP (continuous)	125	5.2* [1.5-18.5]; p=0.01	/
Perceived health after pregnancy (very good vs quite good)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	344	0.4* [0.3-0.7]; p=0.0005	/
			6.1 months pp	Persistent PLPP (recurrent)	328	0.5* [0.3-0.8]; p=0.004	/
			6.1 months pp	Persistent PLPP (continuous)	232	0.2* [0.03-0.7]; p=0.01	/
Perceived health after pregnancy (fair vs quite good)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	297	1.7* [1.1-2.8]; p=0.03	/
			6.1 months pp	Persistent PLPP (recurrent)	273	1.7* [1.0-2.8]; p=0.05	/
			6.1 months pp	Persistent PLPP (continuous)	175	2.1* [0.8-5.0]; p=0.1	/
Perceived health after pregnancy (quite poor vs quite good)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	221	1.9* [0.7-5.2]; p=0.19	/
			6.1 months pp	Persistent PLPP (recurrent)	203	1.5* [0.5-4.3]; p=0.5	/

			6.1 months pp	Persistent PLPP (continuous)	137	4.6* [1.2-17.6]; p=0.03	/
Perceived health after pregnancy (poor vs quite good)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	221	1.5* [0.4-5]; p=0.5	/
			6.1 months pp	Persistent PLPP (recurrent)	195	2.9* [0.5-16.3]; p=0.2	/
			6.1 months pp	Persistent PLPP (continuous)	130	8.0* [1.0-61.4]; p=0.05	/
Satisfaction with pre-pregnancy weight (no vs yes)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	462	1.3* [0.9-1.9]; p=0.15	/
			6.1 months pp	Persistent PLPP (recurrent)	430	1.5* [1.0-2.2]; p=0.05	/
			6.1 months pp	Persistent PLPP (continuous)	296	0.7* [0.3-1.4]; p=0.3	/
Perceived problems with actual or previous overweight (vs no perceived problem)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	457	1.5* [1-2.2]; p=0.07	/
			6.1 months pp	Persistent PLPP (recurrent)	425	1.5* [1.0-2.3]; p=0.05	/
			6.1 months pp	Persistent PLPP (continuous)	293	1.1* [0.5-2.6]; p=0.7	/
Satisfying sexual life before pregnancy (no vs yes)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	440	2.1* [0.9-4.8]; p=0.08	/
			6.1 months pp	Persistent PLPP (recurrent)	410	2.0* [0.8-4.7]; p=0.1	/
			6.1 months pp	Persistent PLPP (continuous)	282	2.7* [0.7-10.4]; p=0.2	/
Satisfying sexual life before pregnancy (no opinion vs yes)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	436	1.05* [0.4-2.5]; p=0.9	/
			6.1 months pp	Persistent PLPP (recurrent)	407	1.0* [0.4-2.5]; p=0.9	/
			6.1 months pp	Persistent PLPP (continuous)	283	1.5* [0.3-7.0]; p=0.6	/
Satisfying sexual life during pregnancy (no vs yes)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	411	1.5* [1.0-2.2]; p=0.05	/
			6.1 months pp	Persistent PLPP (recurrent)	381	1.5* [1.0-2.2]; p=0.08	/
			6.1 months pp	Persistent PLPP (continuous)	259	1.6* [0.7-3.4]; p=0.3	/
Satisfying sexual life during pregnancy (no opinion vs yes)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	309	0.7* [0.4-1.3]; p=0.3	/
			6.1 months pp	Persistent PLPP (recurrent)	290	0.7* [0.4-1.4]; p=0.4	/
			6.1 months pp	Persistent PLPP (continuous)	206	0.5* [0.1-2.5]; p=0.4	/

Satisfying sexual life after pregnancy (no vs yes)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	414	1.4* [0.9-2.1]; p=0.13	/
			6.1 months pp	Persistent PLPP (recurrent)	385	1.3* [0.8-2.0]; p=0.3	/
			6.1 months pp	Persistent PLPP (continuous)	267	1.9* [0.9-4.2; p=0.1	/
Satisfying sexual life after pregnancy (no opinion vs yes)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	325	1.3* [0.7-2.5]; p=0.4	/
			6.1 months pp	Persistent PLPP (recurrent)	306	1.3* [0.7-2.6]; p=0.4	/
			6.1 months pp	Persistent PLPP (continuous)	211	1.3* [0.3-4.6]; p=0.7	/

*Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

[a] Adjusted for exercise at present and onset of lumbopelvic pain; [b] Adjusted for maternal age; [c] Adjusted for parity; [d] Adjusted for parity, and age at the start of physical activity; [e] Adjusted for BMI; [f] Adjusted for BMI, maternal age and parity.

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Socio-demographic Factors

Factors	Study	Participants (all or subgroup)	Time of follow up	Outcome	No of participants	Unadjusted OR	Adjusted OR
Married/cohabiting (yes vs no)	Olsson et al 2012	All	6 months pp	Persistent PLPP	111	0.1* [0.02-1.3]; p=0.09	/
Family situation: cohabiting (vs married) (asked within 24hrs after birth)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	451	1.0* [0.7-1.5]; p=1.0	/
			6.1 months pp	Persistent PLPP (recurrent)	419	1.0* [0.7-1.5]; p=0.9	/
			6.1 months pp	Persistent PLPP (continuous)	291	0.9* [0.4-2.0]; p=0.8	/
Family situation: relationship but not cohabiting (vs married) (asked within 24hrs after birth)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	166	2.7* [0.5-15.2]; p=0.3	/
			6.1 months pp	Persistent PLPP (recurrent)	154	3.2* [0.6-18.5]; p=0.2	/
			6.1 months pp	Persistent PLPP (continuous)	106	1.5* [0.07-32.6]; p=0.8	/
Family situation: single mother (vs married) (asked within 24hrs after birth)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	165	0.9* [0.1-5.5]; p=0.9	/
			6.1 months pp	Persistent PLPP (recurrent)	153	1.1* [0.2-6.8]; p=0.9	/

			6.1 months pp	Persistent PLPP (continuous)	107	1.1* [0.05-21.7]; p=1	/
Family situation: cohabiting (vs married) (6 months pp)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	453	1.1* [0.8-1.6]; p=0.6	/
			6.1 months pp	Persistent PLPP (recurrent)	421	1.1* [0.8-1.7]; p=0.5	/
			6.1 months pp	Persistent PLPP (continuous)	291	1.0* [0.5-2.1]; p=1.0	/
Family situation: relationship but not cohabiting (vs married) (6 months pp)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	169	1.4* [0.2-10.4]; p=0.7	/
			6.1 months pp	Persistent PLPP (recurrent)	157	1.7* [0.2-12.6]; p=0.6	/
			6.1 months pp	Persistent PLPP (continuous)	111	1.6* [0.1-34.4]; p=0.8	/
Family situation: single mother (vs married) (6 months pp)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	171	1.4* [0.3-7.3]; p=0.7	/
			6.1 months pp	Persistent PLPP (recurrent)	159	1.7* [0.3-8.9]; p=0.5	/
			6.1 months pp	Persistent PLPP (continuous)	112	1.1* [0.05-22.9]; p=0.9	/
Relationship before pregnancy: very good (vs good) (asked within 24hrs after birth)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	444	0.8* [0.5-1.3]; p=0.3	/
			6.1 months pp	Persistent PLPP (recurrent)	413	0.8* [0.5-1.4]; p=0.5	/
			6.1 months pp	Persistent PLPP (continuous)	287	0.6* [0.3-1.4]; p=0.2	/
Relationship before pregnancy: neither good or bad (vs good) (asked within 24hrs after birth)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	95	1.6* [0.5-5.4]; p=0.5	/
			6.1 months pp	Persistent PLPP (recurrent)	87	1.7* [0.5-6.1]; p=0.4	/
			6.1 months pp	Persistent PLPP (continuous)	58	1.1* [0.1-10.7]; p=0.9	/
Relationship before pregnancy: bad (vs good) (asked within 24hrs after birth)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	85	0.2* [0.01-4.8]; p=0.3	/
			6.1 months pp	Persistent PLPP (recurrent)	77	0.3* [0.01-6.1]; p=0.4	/
			6.1 months pp	Persistent PLPP (continuous)	54	1.0* [0.05-23.8]; p=1.0	/
Relationship before pregnancy: very bad (vs good) (asked within 24hrs after birth)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	87	3.4* [0.3-33.9]; p=0.3	/
			6.1 months pp	Persistent PLPP (recurrent)	79	4.3* [0.4-42.9]; p=0.2	/

			6.1 months pp	Persistent PLPP (continuous)	53	1.7* [0.06-46.5]; p=0.7	/
Relationship after pregnancy: very good (vs good) (asked at 6 months pp)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	407	0.8* [0.5-1.2]; p=0.2	/
			6.1 months pp	Persistent PLPP (recurrent)	379	0.8* [0.5-1.2]; p=0.4	/
			6.1 months pp	Persistent PLPP (continuous)	265	0.6* [0.3-1.3]; p=0.2	/
Relationship after pregnancy: neither good or bad (vs good) (asked at 6 months pp)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	225	1.4* [0.8-2.7]; p=0.3	/
			6.1 months pp	Persistent PLPP (recurrent)	206	1.5* [0.8-2.9]; p=0.2	/
			6.1 months pp	Persistent PLPP (continuous)	138	1.2* [0.4-3.9]; p=0.8	/
Relationship after pregnancy: bad (vs good) (asked at 6 months pp)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	180	0.2* [0.009-3.4]; p=0.2	/
			6.1 months pp	Persistent PLPP (recurrent)	165	0.2* [0.01-4.2]; p=0.3	/
			6.1 months pp	Persistent PLPP (continuous)	115	0.9* [0.04-18.3]; p=0.9	/
Relationship after pregnancy: very bad (vs good) (asked at 6 months pp)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	179	6.1* [0.3-128]; p=0.2	/
			6.1 months pp	Persistent PLPP (recurrent)	164	7.4* [0.4-157.6]; p=0.2	/
			6.1 months pp	Persistent PLPP (continuous)	112	6.3* [0.1-328.2]; p=0.4	/
Change in relationship during pregnancy: improved (vs no difference) (asked within 24hrs after birth)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	429	1.4* [0.9-2]; p=0.1	/
			6.1 months pp	Persistent PLPP (recurrent)	402	1.3* [0.8-1.9]; p=0.3	/
			6.1 months pp	Persistent PLPP (continuous)	274	1.9* [0.9-4.3]; p=0.1	/
Change in relationship during pregnancy: impaired (vs no difference) (asked within 24hrs after birth)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	277	2.8* [0.9-8.4]; p=0.08	/
			6.1 months pp	Persistent PLPP (recurrent)	261	2.1* [0.6-7.1]; p=0.2	/
			6.1 months pp	Persistent PLPP (continuous)	180	7.3* [1.6-34.2]; p=0.01	/
Change in relationship during pregnancy: don't know or no opinion (vs no difference) (asked within 24hrs after birth)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	282	0.9* [0.3-2.3]; p=0.8	/
			6.1 months pp	Persistent PLPP (recurrent)	267	0.7* [0.2-2.1]; p=0.6	/
			6.1 months pp	Persistent PLPP (continuous)	186	2.0* [0.4-10.1]; p=0.4	/

Change in relationship after pregnancy: improved (vs no difference) (asked 6 months pp)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	393	1.0* [0.6-1.5]; p=0.9	/
			6.1 months pp	Persistent PLPP (recurrent)	368	0.9* [0.6-1.5]; p=0.7	/
			6.1 months pp	Persistent PLPP (continuous)	251	1.2* [0.5-2.9]; p=0.7	/
Change in relationship during pregnancy: impaired (vs no difference) (asked 6 months pp)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	330	1.3* [0.7-2.4]; p=0.4	/
			6.1 months pp	Persistent PLPP (recurrent)	307	1.1* [0.6-2.2]; p=0.8	/
			6.1 months pp	Persistent PLPP (continuous)	209	2.4* [0.9-6.6]; p=0.1	/
Change in relationship during pregnancy: don't know or no opinion (vs no difference) (asked 6 months pp)	Mogren 2007b	All	6.1 months pp	Persistent PLPP (any)	302	0.8* [0.3-2]; p=0.6	/
			6.1 months pp	Persistent PLPP (recurrent)	284	0.8* [0.3-2.1]; p=0.6	/
			6.1 months pp	Persistent PLPP (continuous)	192	0.8* [0.1-6.5]; p=0.8	/
Occupation (non-sedentary vs sedentary)	Olsson et al 2012	All	6 months pp	Persistent PLPP	98	1.7* [0.7-3.9]; p=0.2	/
Sick leave (yes vs no)	Olsson et al 2012	All	6 months pp	Persistent PLPP	111	1.7* [0.5-6.4]; p=0.4	
Educational level: up to university (vs university)	Mogren 2006	All	6.1 months pp	Persistent PLPP (any)	463	0.9* [0.6-1.3]; p=0.7	/
			6.1 months pp	Persistent PLPP (recurrent)	431	0.9* [0.6-1.4]; p=0.7	/
			6.1 months pp	Persistent PLPP (continuous)	296	0.9* [0.4-1.8]; p=0.7	/

*Calculated from raw data (95% CI calculated using natural logarithm method Altman et al 1991)

[a] Adjusted for exercise at present and onset of lumbopelvic pain; [b] Adjusted for maternal age; [c] Adjusted for parity; [d] Adjusted for parity, and age at the start of physical activity; [e] Adjusted for BMI; [f] Adjusted for BMI, maternal age and parity.

[?] For outcomes marked with a question mark the pain location was not clearly specified or the questions asked to determine pain location were open to interpretation.

Statistically significant (p≤0.05) results are marked in yellow.

Appendix 59: Full GRADE table – Physical Prognostic factors for PLPP persisting 6-9 months postpartum (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	No. of participants	Reference	+	0	-	+	0	-	Phase	Study limitations	Inconsistency	Indirectness	Imprecision	Publication bias	Moderate/large effect size	Dose effect	Overall quality
Vacuum extraction vs unassisted vaginal delivery^	376	Mogren 2006	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Forceps vs unassisted vaginal delivery^	345	Mogren 2006	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Elective caesarean vs unassisted vaginal delivery^	386	Mogren 2006	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Emergency caesarean vs unassisted vaginal delivery^	384	Mogren 2006	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Caesarean section vs no caesarean	110	Olsson et al 2012	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Elective caesarean vs emergency caesarean*	86	Mogren 2007a	1	0	0	1	0	0	2[d]	v	x[a]	v	v	x[a]	v	x	+++
Epidural or spinal anaesthesia during delivery^	462	Mogren 2007a	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Epidural or spinal anaesthesia during caesarean section*	85	Mogren 2007a	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Exercise before pregnancy	111	Olsson et al 2012	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Pre-pregnancy physical activity*	461	Mogren 2008	0	0	1	x	x	x	1[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Age at the start of physical activity^	341	Mogren 2008	0	1	0	x	x	x	1[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Mean number of weekly events of physical activity^	189	Mogren 2008	0	1	0	x	x	x	1[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Start of physical activity after pregnancy^	186	Mogren 2008	0	1	0	x	x	x	1[c]	x[b]	x[a]	v	v	x[a]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	No. of participants	Reference	+	0	-	+	0	-	Phase	Study limitations	Inconsistency	Indirectness	Imprecision	Publication bias	Moderate/large effect size	Dose effect	Overall quality
Exercise at present	110	Olsson et al 2012	0	1	0	0	1	0	1[e]	v	x[a]	v	v	x[a]	x	x	+
Current physical activity*	463	Mogren 2008	0	1	0	x	x	x	1[c]	x[b]	x[a]	v	v	x[a]	x	x	+
Number of years of physical activity 6-10 (vs 1-5)	369	Mogren 2008	0	1	0	0	1	0	2[d]	x[b]	x[a]	v	v	x[a]	x	x	+
Number of years of physical activity 11-15 (vs 1-5)	370	Mogren 2008	0	1	0	0	1	0	2[d]	x[b]	x[a]	v	v	x[a]	x	x	+
Number of years of physical activity 16-20 (vs 1-5)	371	Mogren 2008	0	1	0	0	1	0	2[d]	x[b]	x[a]	v	v	x[a]	x	x	+
Number of years of physical activity 21-38 (vs 1-5)	372	Mogren 2008	0	1	0	0	1	0	2[d]	x[b]	x[a]	v	v	x[a]	x	x	+
Previous pregnancies	111	Olsson et al 2012	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Reporting pain daily or constant pain during pregnancy	112	Olsson et al 2012	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Pain intensity >33 (100 scale VAS) during pregnancy	112	Olsson et al 2012	0	1	0	0	1	0	1[e]	v	x[a]	v	v	x[a]	x	x	+
Pain intensity >69 (100 scale VAS) at worst during pregnancy	112	Olsson et al 2012	0	1	0	0	1	0	1[e]	v	x[a]	v	v	x[a]	x	x	+
Onset of PLPP ≤11 weeks gestation	112	Olsson et al 2012	1	0	0	0	1	0	1[e]	v	x[a]	v	v	x[a]	x	x	+
Disability Rating Index total <25 during pregnancy	112	Olsson et al 2012	0	1	0	1	0	0	1[e]	v	x[a]	v	v	x[a]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	No. of participants	Reference	+	0	-	+	0	-	Phase	Study limitations	Inconsistency	Indirectness	Imprecision	Publication bias	Moderate/large effect size	Dose effect	Overall quality
Maximum pain level during pregnancy >2-4 (10 scale VAS)	436	Mogren 2006	0	1	0	0	1	0	1[e]	v	x[a]	v	v	x[a]	x	x	+
Maximum pain level during pregnancy >4-6 (10 scale VAS)	436	Mogren 2006	1	0	0	0	1	0	1[e]	v	x[a]	v	v	x[a]	x	x	+
Maximum pain level during pregnancy >6-8 (10 scale VAS)	436	Mogren 2006	1	0	0	1	0	0	1[e]	v	x[a]	v	v	x[a]	v	x	++
Maximum pain level during pregnancy >8-10 (10 scale VAS)	436	Mogren 2006	1	0	0	1	0	0	1[e]	v	x[a]	v	v	x[a]	v	x	++
Hypermobility (reported being diagnosis)^	458	Mogren 2006	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Hypermobility (reported being diagnosis and/or perception)*	458	Mogren 2006	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Nottingham health profile >13.6 (vs ≤13.6)	112	Olsson et al 2012	1	0	0	1	0	0	1[e]	v	x[a]	v	v	x[a]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor.[b] Moderate risk of bias for 'Factor measurement' domain since no clear statement of what is considered physical activity. [c] Phase 1: Descriptive statistics. Unadjusted OR calculated. [d] Phase 2: Test hypothesis. Multivariate logistic regression. [e] Phase 1: Assessed potential prognostic variables.

Appendix 60: Full GRADE table – Psychological Prognostic factors for PLPP persisting 6-9 months postpartum (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Pain Catastrophising (PCS score >17)	112	Olsson et al 2012	0	1	0	1	0	0	1[b]	v	x[a]	v	v	x[a]	x	x	+
Fear avoidance beliefs (FABQ >12.3)	112	Olsson et al 2012	0	1	0	0	1	0	1[b]	v	x[a]	v	v	x[a]	x	x	+
Perceived health before pregnancy: very good vs quite good^	414	Mogren 2007b	0	0	1	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Perceived health before pregnancy: fair vs quite good^	251	Mogren 2007b	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Perceived health before pregnancy: quite poor vs quite good^	219	Mogren 2007b	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Perceived health before pregnancy: poor vs quite good^	213	Mogren 2007b	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Perceived health during pregnancy: very good vs quite good^	246	Mogren 2007b	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Perceived health during pregnancy: fair vs quite good^	300	Mogren 2007b	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Perceived health during pregnancy: quite poor vs quite good*	218	Mogren 2007b	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Perceived health during pregnancy: poor vs quite good*	184	Mogren 2007b	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Perceived health after pregnancy: very good vs quite good^	344	Mogren 2007b	0	0	1	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Perceived health after pregnancy: fair vs quite good*	297	Mogren 2007b	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Perceived health after pregnancy: quite poor vs quite good*	221	Mogren 2007b	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Perceived health after pregnancy: poor vs quite good*	221	Mogren 2007b	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Satisfaction with pre-pregnancy weight*	462	Mogren 2006	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Perceived problems with actual or previous weight*	457	Mogren 2006	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Satisfying sexual life before pregnancy^	440	Mogren 2007b	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Satisfying sexual life during pregnancy^	411	Mogren 2007b	1	0	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+
Satisfying sexual life after pregnancy^	414	Mogren 2007b	0	1	0	x	x	x	1[c]	v	x[a]	v	v	x[a]	x	x	+

Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor. [b] Phase 1: Assessed potential prognostic variables. [c] Phase 1: Descriptive statistics. Unadjusted OR calculated.

Appendix 61: Full GRADE table – Socio-demographic Prognostic factors for PLPP persisting 6-9 months postpartum (examined in only 1 study)

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	**No. of participants**	**Reference**	**+**	**0**	**-**	**+**	**0**	**-**	**Phase**	**Study limitations**	**Inconsistency**	**Indirectness**	**Imprecision**	**Publication bias**	**Moderate/large effect size**	**Dose effect**	**Overall quality**
Married or cohabiting	111	Olsson et al 2012	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Cohabiting (asked within 24 hrs after birth) vs married ^	451	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Relationship not cohabiting (asked within 24 hrs after birth) vs married ^	166	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Single mother (asked within 24 hrs after birth) vs married ^	165	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Cohabiting (6 months pp) vs married ^	453	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Relationship not cohabiting (6 months pp) vs married ^	169	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Single mother (6 months pp) vs married ^	171	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Relationship before pregnancy (very good vs good)^	444	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Relationship during pregnancy (neither good nor bad vs good)^	95	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Relationship during pregnancy (bad vs good)^	85	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Relationship during pregnancy (very bad vs good)^	87	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+

			Univariate			Multivariate			GRADE factors								
Potential risk factor identified	No. of participants	Reference	+	0	-	+	0	-	Phase	Study limitations	Inconsistency	Indirectness	Imprecision	Publication bias	Moderate/large effect size	Dose effect	Overall quality
Relationship after pregnancy (asked at 6 months pp) (very good vs good)^	407	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Relationship after pregnancy (asked at 6 months pp)(neither good nor bad vs good)^	225	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Relationship after pregnancy (asked at 6 months pp) (bad vs good)^	180	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Relationship after pregnancy (asked at 6 months pp) (very bad vs good)^	179	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Change in relationship during pregnancy: improved vs no difference^	429	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Change in relationship during pregnancy: impaired vs no difference*	277	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Change in relationship after pregnancy: improved vs no difference^	393	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Change in relationship after pregnancy: impaired vs no difference^	330	Mogren 2007b	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Sedentary occupation	98	Olsson et al 2012	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Sick leave	111	Olsson et al 2012	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+
Educational level^	463	Mogren 2006	0	1	0	x	x	x	1[b]	v	x[a]	v	v	x[a]	x	x	+

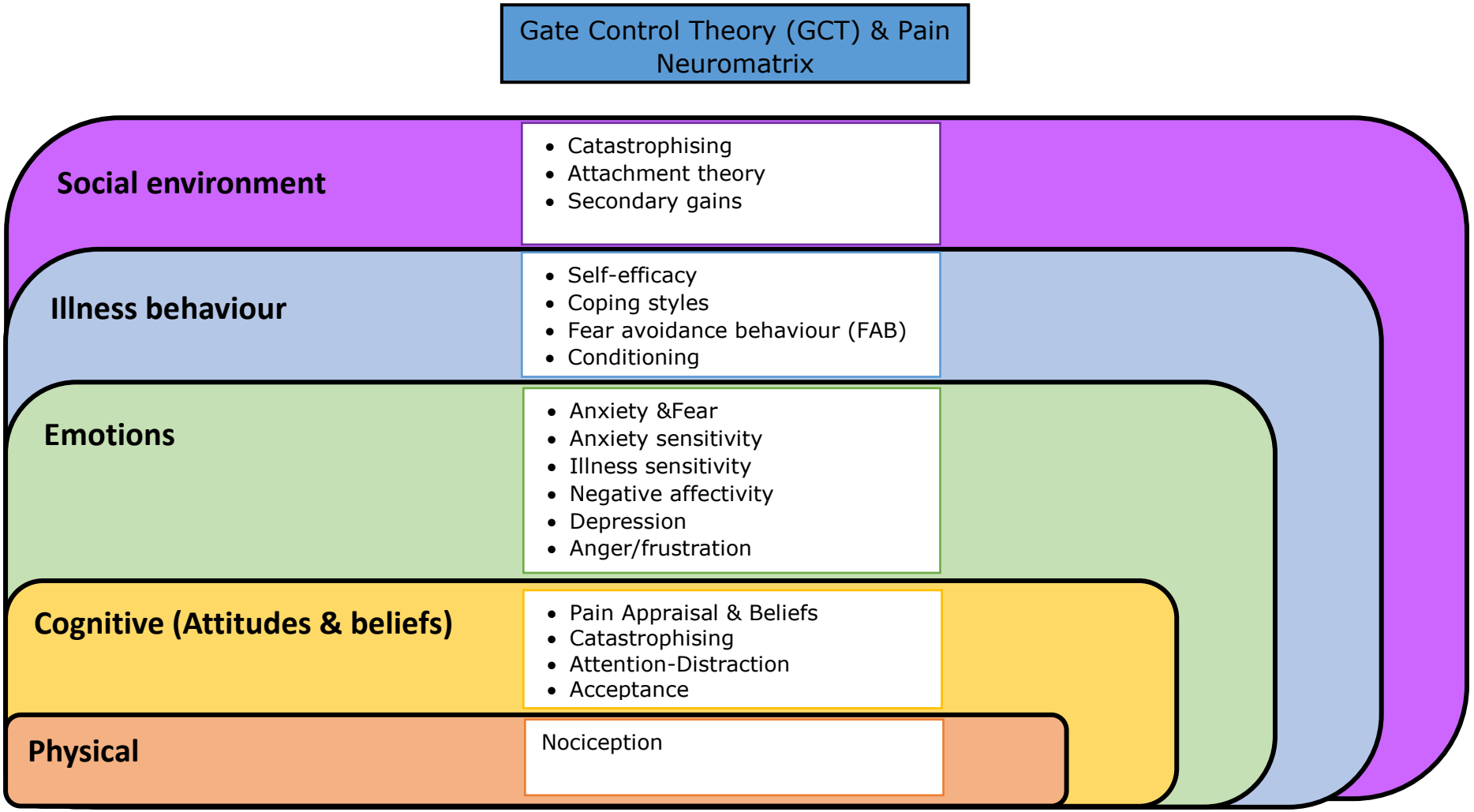
Phase, phase of investigation. For uni- and multivariate analyses: +, number of significant effects with a positive value; 0, number of non-significant effects; -, number of effects with a negative value; x, not reported. For overall quality of evidence: +, very low; ++, low; +++, moderate; ++++, high. After the name of the factor: *, subgroups present with inconsistent findings; ^, subgroups present with consistent findings.

[a] Only a single study examined this factor. [b] Phase 1: Descriptive statistics. Unadjusted OR calculated.

Appendix 62: Overview of the part 1 of the theoretical framework of this study:

Pain theory: The biopsychosocial model and relevant concepts

THEORETICAL FRAMEWORK: PAIN THEORY component: Biopsychosocial model of pain



Appendix 63: Sample size and power calculations

1. **One objective of this study is to determine the prevalence of persistent PPGP 12 months postpartum.**

   Based on previous studies, the prevalence of PPGP during pregnancy was estimated to be approximately 60% (Kovacs *et al.* 2012; Stomp van den berg *et al.* 2012; Gjestland *et al.* 2013; Robinson *et al.* 2010). A sample size of 384 women would allow the study to determine the prevalence of PPGP with a confidence interval of ±5%. A sample size of 1096 women would allow the study to determine the prevalence of PPGP with a confidence interval of ±3%.
   Using the proposed sample of 1600 women in this study, approximately 960 women will experience PPGP during pregnancy. This will give high precision of nearly a confidence interval of ±3%.

2. **Another objective of this study was to examine prognostic factors for PPGP 12 months postpartum.**

   The prevalence of persistent PPGP 12 months postpartum was estimated to be approximately 20% (Albert *et al.* 2002, Gutke *et al*. 2011, Ostgaard *et al.* 1996). Using the sample of 1600, this will mean that, of the 960 women who have PPGP during pregnancy, 192 women will have persistent PPGP 12 months postpartum. Key variables of interest to be assessed, and for which power calculations were done, are: mode of birth, Body Mass Index and age. Since no studies have examined prognostic factors for persistent PPGP 12 months postpartum, the calculations were done in both directions, i.e. hypothesising that the prognostic factor has a negative or positive effect.

Mode of birth

The data from the site hospital of all women who gave birth in 2012 (The Rotunda Hospital 2012) was used to estimate the proportions of women in each group and were as follows:

Mode of birth	n	%
Spontaneous vaginal	4792	53.0%
Ventouse or forceps	1628	18.0%
Caesarean section	2621	29.0%
Total	9041	100.0%

If 20% of the 509 women who had spontaneous vaginal births have persistent PPGP 12 months postpartum, the proposed sample will give the study 80% power to detect a statistically significant difference ($p \leq 0.05$) if the proportion is approximately 11.0% or 30.5% among 173 women who gave birth by ventouse or forceps.

If 20% of the 509 women who had spontaneous vaginal births have persistent PPGP 12 months postpartum, the proposed sample will give the study 80% power to detect a statistically significant difference ($p \leq 0.05$) if the proportion is approximately 12.5% or 29.0% among 278 women who had a caesarean section.

Body Mass Index (BMI)

Information regarding women's BMI was not available from the site hospital clinical report for 2012; hence, data were obtained from Sarkar *et al.* (2007), a prospective study conducted at the site hospital in 2003-2004. The proportions of the 883 women in each BMI group in Sarkar *et al.* (2007) was as follows:

BMI (kg/m^2)	n	%
<20	104	12.5%
20.01-25.0	486	58.3%
25.01-30.0	180	21.6%
≥30.01	63	7.6%
Total	833	100.0%

If 20% of the 560 women who had a BMI of 20.01-25 kg/m^2 have persistent PPGP 12 months postpartum, the proposed sample will give the study 80% power to detect a statistically significant difference ($p \leq 0.05$) if the proportion is approximately 10.0% or 32.3% among 120 women who had a BMI of >20 kg/m^2.

If 20% of the 560 women who had a BMI of 20.01-25 kg/m^2 have persistent PPGP 12 months postpartum, the proposed sample will give the study 80% power to detect a statistically significant difference ($p \leq 0.05$) if the proportion is approximately 11.7% or 29.8% among 207 women who had a BMI of 25.01-30.0 kg/m^2.

If 20% of the 560 women who had a BMI of 20.01-25 kg/m^2 have persistent PPGP 12 months postpartum, the proposed sample will give the study 80% power to detect a statistically significant difference ($p \leq 0.05$) if the proportion is approximately 8.0% or 35.4% among 73 women who had a BMI of >30.0 kg/m^2.

Age

The data from the site hospital of all women who gave birth in 2012 (The Rotunda Hospital 2012) was used to estimate the proportions of women in each age group and were as follows:

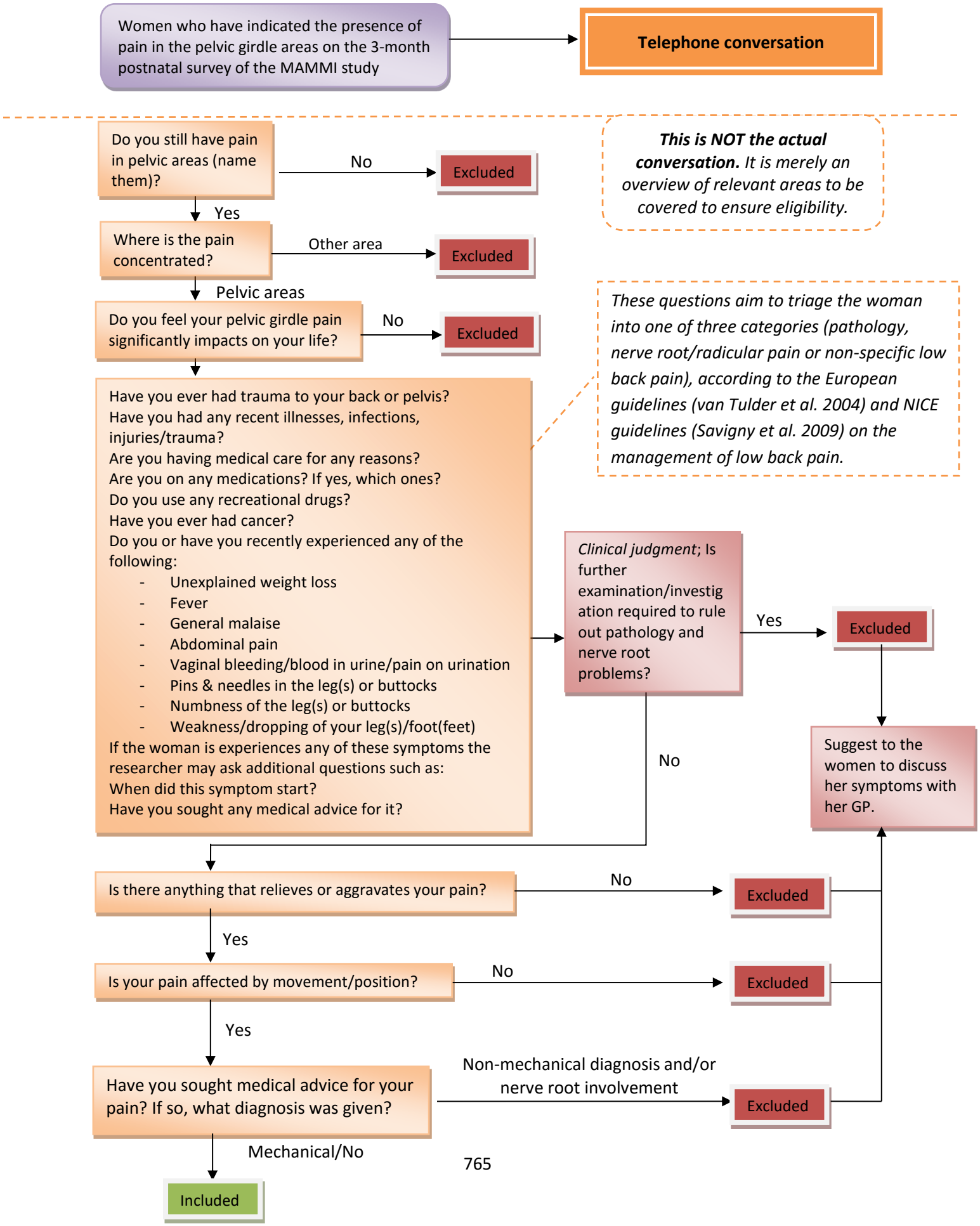
Age group (years)	n	%
Up to 24	872	22.2%
25 to 29	1031	26.2%
30 to 34	1307	33.3%
≥35	718	18.3%
Total	3928	100.0%

If 20% of the 252 women age 25 to 29 years have persistent PPGP 12 months postpartum, the proposed sample will give the study 80% power to detect a statistically significant difference ($p \leq 0.05$) if the proportion is approximately 10.7% or 31.3% among 213 women aged up to 24 years.

If 20% of the 252 women age 25 to 29 years have persistent PPGP 12 months postpartum, the proposed sample will give the study 80% power to detect a statistically significant difference ($p \leq 0.05$) if the proportion is approximately 11.5% or 30.2% among 320 women aged 30 to 34.

If 20% of the 252 women age 25 to 29 years have persistent PPGP 12 months postpartum, the proposed sample will give the study 80% power to detect a statistically significant difference ($p \leq 0.05$) if the proportion is approximately 10.2% or 32.0% among 176 women aged 35 years or more.

Appendix 64: Participant selection flow diagram; Phase 2 recruitment


Women who have indicated the presence of pain in the pelvic girdle areas on the 3-month postnatal survey of the MAMMI study
Telephone conversation
This is NOT the actual conversation. It is merely an overview of relevant areas to be covered to ensure eligibility.
Do you still have pain in pelvic areas (name them)?
No
Excluded
Yes
Where is the pain concentrated?
Other area
Excluded
Pelvic areas
Do you feel your pelvic girdle pain significantly impacts on your life?
No
Excluded
These questions aim to triage the woman into one of three categories (pathology, nerve root/radicular pain or non-specific low back pain), according to the European guidelines (van Tulder et al. 2004) and NICE guidelines (Savigny et al. 2009) on the management of low back pain.
Have you ever had trauma to your back or pelvis?
Have you had any recent illnesses, infections, injuries/trauma?
Are you having medical care for any reasons?
Are you on any medications? If yes, which ones?
Do you use any recreational drugs?
Have you ever had cancer?
Do you or have you recently experienced any of the following:
- Unexplained weight loss
- Fever
- General malaise
- Abdominal pain
- Vaginal bleeding/blood in urine/pain on urination
- Pins & needles in the leg(s) or buttocks
- Numbness of the leg(s) or buttocks
- Weakness/dropping of your leg(s)/foot(feet)
If the woman is experiences any of these symptoms the researcher may ask additional questions such as:
When did this symptom start?
Have you sought any medical advice for it?
Clinical judgment; Is further examination/investigation required to rule out pathology and nerve root problems?
Yes
Excluded
Suggest to the women to discuss her symptoms with her GP.
No
Is there anything that relieves or aggravates your pain?
No
Excluded
Yes
Is your pain affected by movement/position?
No
Excluded
Yes
Have you sought medical advice for your pain? If so, what diagnosis was given?
Non-mechanical diagnosis and/or nerve root involvement
Excluded
Mechanical/No
Included

Appendix 65: MAMMI survey 5 (12 months postpartum)

Study No

The MAMMI study

Maternal health And Maternal Morbidity in Ireland

A research study of 1600 first-time mothers' health during pregnancy and after giving birth

Survey Booklet Five: Twelve Months Postnatal

5

Thank you for taking the time to complete this survey. It will take you about **45 minutes** to complete it and your answers are **confidential**. If you have any questions about any part of this survey, or need help answering any of the questions, please feel free to call us on **087 1956441.**

The MAMMI survey has been approved by the Research Ethics Committees of the Rotunda Hospital and the Faculty of Health Sciences, Trinity College Dublin.

THE ROTUNDA HOSPITAL DUBLIN

TRINITY COLLEGE DUBLIN
COLÁISTE NA TRÍONÓIDE, BAILE ÁTHA CLIATH
THE UNIVERSITY OF DUBLIN

Contact: MAMMI Research Team (Deirdre Daly, Deirdre O Malley, Francesca Wuytack, Sunita Panda and Jamile Marchi)
Tel: 087 1956441
E-mail: contact@mammi.ie

Structure of the MAMMI Survey

The **M**aternal health **A**nd **M**aternal **M**orbidity in **I**reland (MAMMI) survey is in five (5) parts: (1) antenatal; (2) 3 months after the birth; (3) 6 months after the birth; (4) 9 months after the birth and (5) 12 months after the birth.

This is the fifth (5) and final part of the survey. It is about your health now (12 months after childbirth). It has seven (7) sections, numbered A through to G:

A about you, your baby and contact with health services;

B life with a 12 month old baby;

C your health over the past THREE months;

D sex after childbirth;

E your emotional health and well-being now;

F you and your household;

G you and your relationships.

You may notice that some questions are very similar or the same, however, the questions apply to different times in your life.

Please note, there is space after Section G for any comments you might like to make on the survey.

How to fill in the Survey

Most of the questions can be answered by putting a tick in the box next to the answer that best applies to you. For example:

Has tiredness been a problem for you in the past month?

Yes ☑

No ☐

A few questions may ask you to fill in a number in a box. For example:

What is your date of birth?

Day 30 /Month 04 / Year 1980

This filled-in sample represents a date of birth of 30th April 1980

Section A: About you, your baby and contact with health services

These questions are about you, your baby and contact with health services. If you feel uncomfortable answering any of these questions or they are too personal, you do not have to answer them. However, if you have experienced any of the symptoms or issues asked about, it would help us to understand them and it might help other women to know they are not alone in their experiences when the findings are published. Again, we would like to reassure you that all the information that you provide is **strictly confidential** and all the findings from this survey will be presented and published in a way that does not identify you or **any** individual woman.

A1 What is today's date?

☐☐ / ☐☐ / ☐☐☐☐
d d *m m* *y y y y*

A1a You may be pregnant now or have become pregnant since the birth of your first baby. Please tick ONE response below.

I have not been pregnant since my first baby's birth	☐ 1
I am pregnant now	☐ 2
I was pregnant but I had a miscarriage	☐ 3
I was pregnant but I had an abortion	☐ 4

If you have experienced a miscarriage, and want to talk to someone about your experiences, the Miscarriage Association of Ireland offer help and support. Their website is at: http://www.miscarriage.ie/
Their office is at: Miscarriage Association of Ireland, Carmichael Centre, North Brunswick Street, Dublin 7.
Telephone, (Central Lines): 01- 873 5702. A list of telephone support lines is available on the website. You can also email: mailto:info@miscarriage.ie

If you have experienced an abortion, and want to talk to someone about your experiences, there are several sources of help and support, some are free and some charge a fee. Choosing the right source of support is a personal matter and the following websites might be a useful starting place for you: **(i) The Crisis pregnancy agency** http://www.crisispregnancy.ie ; **(ii) The Irish Family Planning Association** http://www.ifpa.ie/index.php/eng/Pregnancy-Counselling/About-Abortion **OR (iii) The Marie Stopes Clinic** http://www.mariestopes.ie/.

All the websites provide a range of contacts, telephone numbers and services.

A2 What do you weigh now without clothes or shoes?

☐☐☐ kgs OR ☐☐ stones and ☐☐ pounds

A3 In the past THREE MONTHS, how many times have you visited a local doctor or GP
(Please do NOT include visits to a specialist.)

a. About your health?		**b. About your baby's health?**	
Never	☐ 1	Never	☐ 1
Once	☐ 2	Once	☐ 2
Twice	☐ 3	Twice	☐ 3
3 times	☐ 4	3 times	☐ 4
4 times	☐ 5	4 times	☐ 5
5-6 times	☐ 6	5-6 times	☐ 6
7 or more times	☐ 7	7 or more times	☐ 7

Please comment if you wish _____

_____

_____

_____

c. If you HAVE visited a doctor or GP more than once in the past THREE MONTHS

	Always	**Mostly**	**Sometimes**	**Rarely/ Never**
a. Did you go to the same place for each visit	☐ 1	☐ 2	☐ 3	☐ 4
b. Did you see the same doctor on each occasion?	☐ 1	☐ 2	☐ 3	☐ 4

A4 In the past THREE MONTHS, has any of the following happened to you?
(Please tick ONE response on EACH line.)

	Yes	No	Not sure
a. D & C *(dilatation and curettage)*	☐ 1	☐ 2	☐ 3
b. Wound breakdown – perineal tear or episiotomy	☐ 1	☐ 2	☐ 3
c. Wound breakdown – caesarean section	☐ 1	☐ 2	☐ 3
d. Repeat repair of perineal tear or episiotomy	☐ 1	☐ 2	☐ 3
e. Repeat repair of caesarean section wound	☐ 1	☐ 2	☐ 3

A5 In the past THREE MONTHS, how many times have you visited a hospital emergency department

a. About your health?		**b. About your baby's health?**	
Never	☐ 1	Never	☐ 1
Once	☐ 2	Once	☐ 2
Twice	☐ 3	Twice	☐ 3
3 times	☐ 4	3 times	☐ 4
4 times	☐ 5	4 times	☐ 5
5-6 times	☐ 6	5-6 times	☐ 6
7 or more times	☐ 7	7 or more times	☐ 7

Please give reasons if you wish _____

_____

A6 In the past THREE MONTHS, how many times have you or your baby been ADMITTED to hospital?

a. You?		**b. Your baby?**	
Never	☐ 1	Never	☐ 1
Once	☐ 2	Once	☐ 2
Twice	☐ 3	Twice	☐ 3
3 times	☐ 4	3 times	☐ 4
4 times	☐ 5	4 times	☐ 5
5-6 times	☐ 6	5-6 times	☐ 6
7 or more times	☐ 7	7 or more times	☐ 7

Please give reasons if you wish _____

_____

A7 If YOU were admitted to hospital in the past THREE MONTHS:

a. How many nights did YOU spend in the hospital?

First admission	**Second admission**	**Third admission**
☐☐ nights 1	☐☐ nights 2	☐☐ nights 3

b. Please describe the reason(s) for YOUR admission(s)? *(for example, urinary infection, miscarriage)*

_____

_____

A8 a. If YOUR BABY was admitted to hospital in the past THREE MONTHS:

a. How many nights did YOUR BABY spend in the hospital?

First admission	**Second admission**	**Third admission**
☐☐ nights 1	☐☐ nights 2	☐☐ nights 3

b. **Please describe the reason(s) for YOUR BABY'S admission(s)?** *(for example, breathing difficulties, vomiting, diarrhoea, constipation etc.)*

_____

_____

_____

_____

A9 **In the past THREE MONTHS, when you went to the doctor did you feel able to talk about things that were troubling you concerning your own health and well-being?** *(Please tick ALL statements that you agree with. Leave the statements that you do not agree with blank.)*

a. Yes, my doctor makes it easy for me to talk about anything that is concerning me ☐ 1

b. Yes, but he/she is often busy and doesn't seem to have time to listen ☐ 2

c. Yes, I can talk to my doctor and he/she is very supportive and reassuring ☐ 3

d. I can talk about some issues, but there are other things I do not feel comfortable talking about with my GP ☐ 4

e. There's no point in talking to the doctor about my health because he/she cannot fix any of my problems ☐ 5

f. No, I go to see the doctor about my baby not myself ☐ 6

g. I don't talk to my doctor because I am worried he/she will think I am not coping ☐ 7

h. I don't talk to the doctor because I am concerned he/she might want me to do something that will make the situation worse ☐ 8

i. There are some issues I don't talk about because I am concerned the doctor might tell someone else ☐ 9

A10 **In the past THREE MONTHS, has your local doctor or GP asked you directly whether or not you are experiencing any of the following** *(Please tick ONE response on EACH line.):*

	Yes	No	Not sure
a. Tiredness or exhaustion	☐ 1	☐ 2	☐ 3
b. Leakage or involuntary loss of urine	☐ 1	☐ 2	☐ 3
c. Leakage or involuntary loss of bowel motion	☐ 1	☐ 2	☐ 3
d. Perineal pain	☐ 1	☐ 2	☐ 3
e. Sexual problems	☐ 1	☐ 2	☐ 3
f. Haemorrhoids	☐ 1	☐ 2	☐ 3
g. Feeling depressed or low	☐ 1	☐ 2	☐ 3
h. Relationship problems	☐ 1	☐ 2	☐ 3

A11 **In the past THREE MONTHS, how many times have you visited OR been visited at home by a Public Health Nurse**

Never ☐ 1 *(Please go to A14)*

Once ☐ 2

Twice ☐ 3

3 times ☐ 4

4 times ☐ 5

5-6 times ☐ 6

7 or more times ☐ 7

A12 Are you able to talk to your Public Health Nurse about things that are troubling you concerning <u>your own health and well-being</u>? *(Please tick ALL statements that you agree with. Leave the statements that you do not agree with blank.)*

a. Yes, she/he makes it easy for me to talk about anything that is concerning me ☐ 1

b. Yes, but she/he is often busy and doesn't seem to have time to listen ☐ 2

c. Yes, I can talk to her/him and she/he is very supportive and reassuring ☐ 3

d. I can talk to her/him about some issues, but there are other things I do not feel comfortable talking about ☐ 4

e. There's no point in talking to her/him about my health because she/he cannot fix any of my problems ☐ 5

f. No, I go to see her/him about my baby not myself ☐ 6

g. I don't talk to her/him because I am worried she/he will think I am not coping ☐ 7

h. I don't talk to her/him because I am concerned she/he might want me to do something that will make the situation worse ☐ 8

i. There are some issues I don't talk about because I am concerned she/he might tell someone else ☐ 9

A13 In the past THREE MONTHS, has your Public Health Nurse asked you directly whether or not you are experiencing any of the following *(Please tick ONE response on EACH line.):*

	Yes	No	Not sure
a. Tiredness or exhaustion	☐ 1	☐ 2	☐ 3
b. Leakage or involuntary loss of urine	☐ 1	☐ 2	☐ 3
c. Leakage or involuntary loss of bowel motion	☐ 1	☐ 2	☐ 3
d. Perineal pain	☐ 1	☐ 2	☐ 3
e. Sexual problems	☐ 1	☐ 2	☐ 3
f. Haemorrhoids	☐ 1	☐ 2	☐ 3
g. Feeling depressed or low	☐ 1	☐ 2	☐ 3
h. Relationship problems	☐ 1	☐ 2	☐ 3

A14. In the past THREE MONTHS, has any OTHER health professional asked you directly about any of these issues?

	Yes	No	Not sure
a. Tiredness or exhaustion	☐ 1	☐ 2	☐ 3
b. Leakage or involuntary loss of urine	☐ 1	☐ 2	☐ 3
c. Leakage or involuntary loss of bowel motion	☐ 1	☐ 2	☐ 3
d. Perineal pain	☐ 1	☐ 2	☐ 3
e. Sexual problems	☐ 1	☐ 2	☐ 3
f. Haemorrhoids	☐ 1	☐ 2	☐ 3
g. Feeling depressed or low	☐ 1	☐ 2	☐ 3
h. Relationship problems	☐ 1	☐ 2	☐ 3

If yes, please identify the type of health professional i.e. practice nurse, social worker etc.

_____

_____

Section B: Life with a 12 MONTH old baby

The next few questions are about your life with a 12 month old baby. If you feel uncomfortable answering any of these questions or they are too personal, you do not have to answer them. However, if you have experienced any of the symptoms or issues asked about, it would help us to understand them and it might help other women to know they are not alone in their experiences when the findings are published. Again, we would like to reassure you that all the information that you provide is **strictly confidential** and all the findings from this survey will be presented and published in a way that does not identify you or **any** individual woman.

B1 Looking back over the past THREE MONTHS at home with your twelve month old baby, how would you describe your own health at that time? Did you feel:

- Extremely well ☐ 1
- Very well ☐ 2
- OK ☐ 3
- Not very well ☐ 4
- Extremely unwell ☐ 5

B2 How confident did you feel about looking after your baby over the past THREE MONTHS at home?

- Very confident ☐ 1
- Fairly confident ☐ 2
- Mixed ☐ 3
- Fairly anxious ☐ 4
- Not confident ☐ 5

B3 a. Did your baby cry a lot in the past THREE MONTHS?

- Yes ☐ 1
- No ☐ 2

b. Now that your baby is twelve months old, does he/she cry very much?

Yes ☐ 1

No ☐ 2

c. How easy is it to settle your baby NOW once she or he starts crying?

Usually very easy ☐ 1

Usually fairly easy ☐ 2

Sometimes easy and sometimes difficult ☐ 3

Often difficult ☐ 4

Often very difficult ☐ 5

B4 In the last week, which ONE of the following best describes your baby's pattern of sleeping?

My baby has not woken up during the night AT ALL in the past week ☐ 1

My baby has rarely woken up during the night in the last week ☐ 2

My baby has woken up several nights in the last week ☐ 3

My baby has woken up once a night most nights in the last week ☐ 4

My baby has woken up twice a night most nights in the last week ☐ 5

My baby has woken up three or more times a night most nights in the last week ☐ 6

B5 Do you feel like you are getting enough sleep yourself?

Yes ☐ 1

No ☐ 2

B6 a. Did you breastfeed your baby *(or give expressed breastmilk)*?

Yes ☐ 1

No ☐ 2 *(please go to B7)*

b. Are you still breastfeeding your baby *(or giving expressed breastmilk)*?

Yes ☐ 1

No ☐ 2

B7 Has your baby had any problems feeding (breast or bottle) in the past THREE MONTHS?

Yes, quite a lot ☐ 1

Yes, some ☐ 2

No, none ☐ 3

B8 a. Has your baby had any health problems, or problems with development that have had a major impact on your life in the past THREE MONTHS?

Yes ☐ 1

No ☐ 2

b. If YES, please describe:

_____

_____

_____

_____

B9 How confident do you feel NOW about looking after your baby?

Very confident ☐ 1

Fairly confident ☐ 2

Mixed ☐ 3

Fairly anxious ☐ 4

Not confident ☐ 5

B10 Is there anything else you would like to tell me about your baby?

_____

_____

_____

_____

B11 a. Now that your baby is twelve months old, do you ever have time for yourself when someone else looks after your baby? *(Please do not include time spent doing paid work.)*

Yes ☐ 1

No ☐ 2 *(please go to B12)*

b. What do you do when you have this time for yourself?

Relax, put my feet up, watch TV ☐ 1

Go walking ☐ 2

Go out with a friend (e.g. to the movies, or for a coffee) ☐ 3

Read a book or listen to music ☐ 4

Have a bath (with the door closed) or a long shower ☐ 5

Go shopping for the household ☐ 6

Go shopping for myself ☐ 7

Play sport (e.g. tennis, netball, golf) ☐ 8

Go to a gym, aerobics or another exercise class ☐ 9

Go running or bike riding ☐ 10

Go swimming ☐ 11

Go to an adult education class ☐ 12

Pay bills, go to the bank ☐ 13

Go to the hairdresser or beautician ☐ 14

Mow the lawn or do some gardening ☐ 15

Cook *(for enjoyment)* ☐ 16

Go out with partner (boyfriend/girlfriend) ☐ 17

Other *(please describe)* _____ ☐ 18

_____

_____

_____

_____

c. In the LAST MONTH, how often have you had time for yourself?

Hardly ever ☐ 1

Less than once a fortnight ☐ 2

About once a fortnight ☐ 3

About once a week ☐ 4

Usually two to three times a week ☐ 5

Usually four or more times a week ☐ 6

B12 a. During the LAST MONTH, have any of the following people given you any practical help? *(For example, with meals, housework, helping to care for your baby, etc.)*

Your partner (boyfriend/girlfriend) ☐ 1

Your mother ☐ 2

Your sister ☐ 3

Other relative ☐ 4

Friends or neighbours ☐ 5

Family day care or child care centre ☐ 6

Paid housekeeper ☐ 7

Nanny/au pair ☐ 8

Other *(please describe)* ☐ 9 _____

_____

_____

_____

_____

b. PLEASE TICK HERE IF YOU HAVE NOT HAD ANY HELP IN THE LAST MONTH. ☐

B13 Looking back over the LAST MONTH, would you have liked more practical help?
(e.g. with cooking meals, housework, caring for baby, etc.)

Yes, definitely ☐ 1

Yes, possibly ☐ 2

No, not really ☐ 3

B14 a. Are you happy with the contribution that your husband/partner (boyfriend/girlfriend) makes to household tasks?

Yes, definitely ☐ 1

Yes, in the circumstances *(e.g. work commitments)* ☐ 2

No ☐ 3

Not applicable, I do not have a partner ☐ 4 *(Please go to B15)*

b. Are you happy with the contribution that your husband/partner (boyfriend/girlfriend) makes to looking after your baby?

Yes, definitely ☐ 1

Yes, in the circumstances (e.g. work commitments) ☐ 2

No ☐ 3

c. How involved would you say your husband/partner is in being a parent?

Really involved ☐ 1

Somewhat involved ☐ 2

No, not really ☐ 3

The next few questions ask about physical activities you may have done in the LAST 7 Days.

B15 a. In the LAST WEEK, how many times have you <u>walked continuously, for at least 10 minutes</u>, for recreation, exercise or to get from place to place? *(e.g. walking with baby in a pusher)*

☐☐☐ times ☐ 2 None → **Skip to Q B16a.**

b. What do you estimate was the total time you spent walking in this way in the LAST WEEK?

☐☐☐ hours ☐☐ minutes

B16 a. In the LAST WEEK, how many times did you do any <u>vigorous gardening</u> or <u>heavy work around the house or garden</u> which made you breathe harder or puff and pant?

☐☐☐ times ☐ 2 None → **Skip to Q B17a.**

b. What do you estimate was the total time you spent doing vigorous gardening or heavy work around the house or garden in the LAST WEEK?

☐☐☐ hours ☐☐ minutes

B17 a. In the LAST WEEK, how many times did you do any <u>strenuous household chores</u> involving <u>moderate</u> physical activity? *(For example, vacuum cleaning, washing windows, carrying shopping up several flights of stairs, scrubbing floors)*

☐☐☐ times ☐ 2 None → **Skip to Q B18a.**

b. What do you estimate was the total time you spent doing these kinds of household chores in the LAST WEEK?

☐☐☐ hours ☐☐ minutes

B18 a. In the LAST WEEK, how many times have you held your baby <u>continuously for at least ten minutes</u> (in your arms or baby carrier) while standing up in order to soothe or comfort your baby?

☐☐☐ times ☐ 2 None → **Skip to Q B19a.**

b. What do you estimate was the total time you spent in this way in the LAST WEEK?

☐☐☐ hours ☐☐ minutes

B19 a. In the LAST WEEK, how many times have you done household chores or shopping <u>while carrying your baby</u> in a baby carrier or back pack?

☐☐☐ times ☐ 2 None → **Skip to Q B20.**

b. What do you estimate was the total time you spent in this way in the LAST WEEK?

☐☐☐ hours ☐☐ minutes

The next questions are about the types of exercise, if any, you currently do

B20 a. In the LAST WEEK how many times did you do any <u>vigorous physical activity</u> which made you breathe harder or puff and pant? *(For example, jogging, cycling, aerobics)*

☐☐☐ Times ☐ 2 None → **Skip to Q B21a.**

b. What do you estimate was the total time you spent doing this vigorous physical activity in the LAST WEEK?

☐☐☐ hours ☐☐ minutes

B21 a. In the LAST WEEK, how many times did you do any other more <u>moderate physical activity</u>? *(For example, gentle swimming)*

☐☐☐ Times ☐ 2 None → **Skip to Q B22.**

b. What do you estimate was the total time you spent doing these activities in the LAST WEEK?

☐☐☐ hours ☐☐ minutes

B22. If you do any <u>regular</u> exercise (for 10 minutes or more at least ONCE a week), please tick the types of exercise you do and how many times per week you do it.

Type of Exercise	Times / Week	
Fast walking		1
Jogging/running		2
Aerobics		3
Weight training		4
Dancing		5
Swimming		6
Cycling		7
Ball games (soccer, GAA, rugby)		8
Racket sports (tennis, badminton)		9
Weight lifting		10
Other		11

If other please specify: _____

B23a. Now, 12 months after having your baby, do you AVOID exercise because you leak urine?

Yes ☐ 1 No ☐ 2

B23 b. If yes, please tell us about the type(s) of exercise you avoid due to leaking urine.

_____

Section C: Your health over the past THREE months

The next few questions are about your health over the PAST three months. If you feel uncomfortable answering any of these questions or they are too personal, you do not have to answer them. However, if you have experienced any of the symptoms or issues asked about, it would help us to understand them and it might help other women to know they are not alone in their experiences when the findings are published. Again, we would like to reassure you that all the information that you provide is **strictly confidential** and all the findings from this survey will be presented and published in a way that does not identify you or **any** individual woman.

C1 In the past THREE MONTHS, have you experienced any of the following:
(Please tick one response on EACH line)

		Never	Rarely	Occasionally	Often
a.	Extreme tiredness or exhaustion	☐ 1	☐ 2	☐ 3	☐ 4
b.	Coughs, colds or other minor illnesses	☐ 1	☐ 2	☐ 3	☐ 4
c.	Severe headaches or migraines	☐ 1	☐ 2	☐ 3	☐ 4
d.	Back pain (in your lower back)	☐ 1	☐ 2	☐ 3	☐ 4
e.	Back pain (in the upper or middle part of your back	☐ 1	☐ 2	☐ 3	☐ 4
f.	Painful or sore perineum (from episiotomy / tear)	☐ 1	☐ 2	☐ 3	☐ 4
g.	Perineal wound infection	☐ 1	☐ 2	☐ 3	☐ 4
h.	Pain from caesarean section wound	☐ 1	☐ 2	☐ 3	☐ 4
i.	Caesarean section wound infection	☐ 1	☐ 2	☐ 3	☐ 4
j.	Uterine (womb) infection	☐ 1	☐ 2	☐ 3	☐ 4
k.	Pain when you pass urine	☐ 1	☐ 2	☐ 3	☐ 4
l.	Urinary tract infection	☐ 1	☐ 2	☐ 3	☐ 4
m.	Pain when passing a bowel motion	☐ 1	☐ 2	☐ 3	☐ 4
n.	Bleeding when you pass a bowel motion	☐ 1	☐ 2	☐ 3	☐ 4

		Never	Rarely	Occasionally	Often
o.	Constipation *(opening your bowels only twice a week or less, or pushing or straining to open your bowels every fourth time you go)*	☐ 1	☐ 2	☐ 3	☐ 4
p.	Haemorrhoids *(Swollen veins around your back passage, sometimes called piles)*	☐ 1	☐ 2	☐ 3	☐ 4
q.	Sore nipples	☐ 1	☐ 2	☐ 3	☐ 4
r.	Mastitis	☐ 1	☐ 2	☐ 3	☐ 4
s.	Pelvic pain	☐ 1	☐ 2	☐ 3	☐ 4
t.	Heavy vaginal bleeding or bleeding that worried you	☐ 1	☐ 2	☐ 3	☐ 4
u.	Other health issues *(please describe)*	☐ 1	☐ 2	☐ 3	☐ 4

_____

_____

_____

C2 a. In the past THREE MONTHS, have you felt depressed for two weeks or longer?

Yes, and I still feel depressed ☐ 1

Yes, I felt depressed a while ago, but I feel better now ☐ 2

No ☐ 3 *(Please go to C3)*

b. When did you start feeling depressed?

Before pregnancy ☐ 1

During pregnancy ☐ 2

After the birth ☐ 3

c. Are you taking tablets or medication, or having treatment for depression?

Yes, I'm taking tablets or medications ☐ 1

Yes, I'm having treatment ☐ 2

No ☐ 3

Please comment if you wish _____

_____

C3 a. SINCE THE BIRTH, have you experienced intense anxiety or panic attacks?

Never ☐ 1 (Please go to C4)

Rarely ☐ 2

Occasionally ☐ 3

Often ☐ 4

b. When did you start experiencing intense anxiety or panic attacks?

Before pregnancy ☐ 1

During pregnancy ☐ 2

After the birth ☐ 3

c. Are you taking tablets/medication or having treatment for anxiety or panic attacks now?

Yes, I'm taking tablets or medications ☐ 1

Yes, I'm having treatment ☐ 2

No ☐ 3

*Please comment if you wish*_____

_____

C4 In the past THREE MONTHS, have you experienced relationship problems with your partner or husband?

Never ☐ 1

Rarely ☐ 2

Occasionally ☐ 3

Often ☐ 4

C5 In the past THREE MONTHS, have you leaked even small amounts of urine:

a. When you coughed, laughed or sneezed, or did physical exercise?

No, never ☐ 1

Yes, less than once a month ☐ 2

Yes, one or several times a month ☐ 3

Yes, one or several times a week ☐ 4

Yes, every day ☐ 5

b. When you were on the way to the toilet?

No, never ☐ 1

Yes, less than once a month ☐ 2

Yes, one or several times a month ☐ 3

Yes, one or several times a week ☐ 4

Yes, every day ☐ 5

c. When you had to wait to use the toilet?

No, never	☐ 1
Yes, less than once a month	☐ 2
Yes, one or several times a month	☐ 3
Yes, one or several times a week	☐ 4
Yes, every day	☐ 5

d. If you did not go to the toilet immediately?

No, never	☐ 1
Yes, less than once a month	☐ 2
Yes, one or several times a month	☐ 3
Yes, one or several times a week	☐ 4
Yes, every day	☐ 5

C6a In the past THREE MONTHS, have you ever felt an URGENT need to urinate which was accompanied by a FEAR of leakage?

No, never	☐ 1
Yes, sometimes	☐ 2

C6b In the past THREE MONTHS, have you ever felt an URGENT need to urinate which was accompanied by ACTUAL leakage?

No, never	☐ 1
Yes, sometimes	☐ 2

If you answered NO to all of the questions in C5 and C6, please go to C11.

C7 When you leak urine, is it?

Drops or just a little ☐ 1

More like a trickle ☐ 2

More than a trickle ☐ 3

Not applicable – have always made it to the toilet ☐ 4

C8 Which of the following best describes how you manage this?

It is a minor problem, I ignore it ☐ 1

I carry a change of underwear with me wherever I go ☐ 2

I make sure I know where the nearest toilet is whenever I go out ☐ 3

I wear protection (e.g. pads or panty liners when I need to, e.g. when doing physical exercise) ☐ 4

I wear protection *(*e.g. pads or panty liners) **<u>all</u>** the time ☐ 5

Other *(please describe)* ☐ 6

_____

_____

C9 a. In the past THREE MONTHS have you discussed your bladder problems with anyone?

Yes ☐ 1

No ☐ 2

b. If YES, who did you discuss this with *(Please tick ALL that apply)*

General practitioner / local doctor ☐ 1

Public Health Nurse ☐ 2

GP Practice nurse ☐ 3

Obstetrician/gynaecologist ☐ 4

Physiotherapist ☐ 5

Other health professional ☐ 6

Partner ☐ 7

Friend ☐ 8

Sister ☐ 9

Mother ☐ 10

Other (please describe) ☐ 11

_____

c. If NO, is it because

I have thought about it but haven't felt able to talk about it ☐ 1

I don't want to discuss it ☐ 2

Other (please describe) ☐ 3

_____

_____

C10 How would you describe these problems now

About the same ☐ 1

Better than before ☐ 2

It's no longer a problem ☐ 3

Please comment if you wish _____

_____

C11 a. Have you taken, or have you been prescribed antibiotics for urinary infections in the past THREE MONTHS?

Yes ☐ 1

No ☐ 2

b. If yes, how many times have you taken antibiotics for urinary infections in the past THREE MONTHS?

Once ☐ 1

Twice ☐ 2

Three times or more ☐ 3

Please comment if you wish _____

_____

If you are worried or concerned about leaking urine and wish to get help, you can discuss it with your doctor or you can call the **Rotunda Hospital's physiotherapy department.**

Rotunda hospital number: 01 8730700 and ask to be put through to the physiotherapy department. Web: http://www.rotunda.ie/

Opening hours: 9.00am to 4.30pm Monday – Friday

Outside these hours, an answering service is available and you can leave a message and someone will return your call.

The next few questions ask about bowel symptoms. Please do not include problems during short-term illnesses such as the flu or a short viral infection.

C12 In the past THREE MONTHS have you:

a. Noticed soiling from your back passage on your underwear?

No, never ☐ 1

Minor amount ☐ 2

Major amount ☐ 3

b. Passed wind when you really didn't want to?

No, never ☐ 1

Yes, occasionally ☐ 2

Yes often ☐ 3

C13 a. In the past THREE MONTHS have you ever, even very occasionally, experienced leakage of <u>LIQUID</u> bowel motions at an inappropriate time or an inappropriate place?

No, never ☐ 1

Yes, less than once a month ☐ 2

Yes, one or several times a month ☐ 3

Yes, one or several times a week ☐ 4

Yes, every day ☐ 5

b. If YES, when this happened how much leakage typically occurred?

Small amount *(with stain about the size of a 50 cent coin)* ☐ 1

Moderate amounts *(often requiring a change of pad or underwear)* ☐ 2

Large amounts *(often requiring a complete change of clothes)* ☐ 3

C14 a. In the past THREE MONTHS have you ever, even very occasionally, experienced leakage of <u>SOLID</u> bowel motions at an inappropriate time or inappropriate place?

No, never ☐ 1

Yes, less than once a month ☐ 2

Yes, one or several times a month ☐ 3

Yes, one or several times a week ☐ 4

Yes, every day ☐ 5

b. If YES, when this happened how much leakage typically occurred?

Small amount *(with stain about the size of a 50 cent coin)* ☐ 1

Moderate amounts *(often requiring a change of pad or underwear)* ☐ 2

Large amounts *(often requiring a complete change of clothes)* ☐ 3

C15 In the past THREE MONTHS, have you ever experienced an URGENT need to open your bowels that made you rush to the toilet immediately?

No, never ☐ 1

Yes, less than once a month ☐ 2

Yes, one or several times a month ☐ 3

Yes, one or several times a week ☐ 4

Yes, every day ☐ 5

C15a In the past THREE MONTHS, have you ever experienced an URGENT need to open your bowels that you could not delay or defer for <u>more than 5 minutes</u>?

No, never	☐ 1
Yes, less than once a month	☐ 2
Yes, one or several times a month	☐ 3
Yes, one or several times a week	☐ 4
Yes, every day	☐ 5

If you answered NO to all of the questions in C13 and C14 and C15, please go to C19.

C16 Which of the following best describe how you manage?

It doesn't happen very often and I just cope with it when it does	☐ 1
I carry a change of underwear with me wherever I go and change whenever I need to	☐ 2
I make sure I know where the nearest toilet is whenever I go out	☐ 3
I wear protection *(e.g. pads or panty liners)* when I need to	☐ 4
I wear protection *(e.g. pads or panty liners)* **<u>all</u>** the time	☐ 5
Other (*please describe*)	☐ 6

_____

C17 a. In the past THREE MONTHS have you discussed your bowel problems with anyone?

Yes	☐ 1
No	☐ 2

C17 b. If YES, who did you discuss these with? *(Please tick all that apply)*

General practitioner / local doctor	☐ 1
Public Health Nurse	☐ 2
GP Practice Nurse	☐ 3
Obstetrician/Gynaecologist	☐ 4
Physiotherapist	☐ 5
Other health professional	☐ 6
Partner	☐ 7
Friend	☐ 8
Sister	☐ 9
Mother	☐ 10
Other (please describe)	☐ 11

_____

C17c If no, is it because

I have thought about it but haven't felt able to talk about it	☐ 1
I don't want to discuss it	☐ 2
Other *(Please describe)*	☐ 3

_____

_____

C18. If you have experienced bowel problems in the past THREE MONTHS, how would you describe these problems now

About the same	☐ 1
Better than before	☐ 2
It's no longer a problem	☐ 3

If you are worried or concerned about soiling from your back passage and wish to get help, you can discuss it with your doctor or you can call the **Rotunda Hospital's physiotherapy department.**

Rotunda hospital number: 01 8730700 and ask to be put through to the physiotherapy department. Web: http://www.rotunda.ie/

Opening hours: 9.00am to 4.30pm Monday – Friday

Outside these hours, an answering service is available and you can leave a message and someone will return your call.

The next few questions ask about perineal pain and pelvic floor problems you may have experienced since the birth. The perineum is the area around the entrance to the vagina, including the labia and other external genital organs. Please answer these questions even if you had a caesarean section.

(Please note that questions on sex are in section D)

The words used to describe pain are in increasing order of intensity. Please tick ONE response on EACH line.

C19 How would you describe the worst pain or discomfort you feel CURRENTLY in the perineal area *(around the entrance to your vagina)* when you are*:*

	No pain	Mild	Discomforting	Distressing	Horrible	Excruciating
a. Lying in bed?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
b. Shifting positions in bed?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
c. Getting in and out of bed?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
d. Feeding your baby?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
e. Sitting in a chair?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
f. Lifting your baby?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
g. Walking?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
h. Bathing or showering yourself	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
i. Doing physical exercise e.g. running, aerobics, climbing stairs?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
j. Carrying your baby for extended periods?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
k. Passing urine?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
l. Passing a bowel movement	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

Please comment if you wish _____

_____

If you have not experienced pain in any of these situations, please go to C22 .

C20 a. In the past four weeks have you used any medication or other therapies for pain or tenderness in the perineal area *(around the entrance to your vagina)*?

Yes ☐ 1

No ☐ 2 *(If no, please go to C22)*

b. If yes, which medication have you used (tick ALL that apply)?

	Yes	No	Not sure
a Paracetamol *(e.g. Panadol®)*	☐ 1	☐ 2	☐ 3
b. Paracetamol and codeine *(panadeine)*	☐ 1	☐ 2	☐ 3
c. Ponstan®	☐ 1	☐ 2	☐ 3
d. Difene (Voltarol) *(taken orally)*	☐ 1	☐ 2	☐ 3
e. Difene (Voltarol) *(suppository inserted into the back passage)*	☐ 1	☐ 2	☐ 3
f. Nurofen/Isobrufen	☐ 1	☐ 2	☐ 3
g. Aspirin	☐ 1	☐ 2	☐ 3
h. Local anaesthetic gel	☐ 1	☐ 2	☐ 3
i. Herbal remedies	☐ 1	☐ 2	☐ 3
j. Other *(please describe)*	☐ 1	☐ 2	☐ 3

_____

_____

_____

_____

C21 a. In the past THREE MONTHS, have you discussed this perineal pain with anyone?

Yes ☐ 1

No ☐ 2 *(if NOT, please go to C22)*

b. If YES, who did you discuss it with? *(Please tick ALL that apply.)*

General practitioner / local doctor	☐ 1
Public Health Nurse	☐ 2
GP practice nurse	☐ 3
Obstetrician/Gynaecologist	☐ 4
Physiotherapist	☐ 5
Other health professional	☐ 6
Partner	☐ 7
Friend	☐ 8
Sister	☐ 9
Mother	☐ 10
Other *(Please describe)*	☐ 11

_____

When you were pregnant and since you gave birth, you may have been encouraged to do pelvic floor exercises. These exercises involve contracting your pelvic floor, as you would do if you interrupted the flow of urine midstream. The pelvic floor is the muscular structure that supports your rectum, uterus and bladder.

C22 a. To what extent would you say your pelvic floor feels 'back to normal' as opposed to too loose or slack?

Completely back to normal	☐ 1
Almost back to normal	☐ 2
Moderately back to normal	☐ 3
Somewhat back to normal	☐ 4
Not at all back to normal	☐ 5

b. If your pelvic floor does not feel completely back to normal, please describe the ways in which it feels different?

_____

_____

_____

_____

C23 a. In the last month, have you been doing pelvic floor exercises?

Yes, regularly	☐ 1
Yes, when I remember	☐ 2
No	☐ 3

b. If YES, approximately how often do you do them?

☐ Number of days each week ☐☐ Number of times per day

C24 a. In the past THREE MONTHS, has there been any period when you felt as if something was bulging in the vaginal area?

Yes, often	☐	1
Yes, sometimes	☐	2
No, not at all	☐	3

b. Are you CURRENTLY having trouble with a feeling of bulging or falling down in the vaginal area?

Yes, often	☐	1
Yes, sometimes	☐	2
No , not at all	☐	3

C25 a. To what extent would you say your vagina feels 'back to normal' or like it did before you got pregnant?

Completely back to normal	☐	1
Almost back to normal	☐	2
Moderately back to normal	☐	3
Somewhat back to normal	☐	4
Not at all back to normal	☐	5

b. If your vagina does not feel completely back to normal, please describe the way(s) in which it feels different?

_____

_____

_____

_____

The next few questions in this section ask about abdominal pain *(tummy pain)* **you may have experienced since the birth. Please answer this question whether you had a caesarean section or a vaginal birth.**

C26 How would you describe the worst pain or discomfort you feel CURRENTLY in your lower abdomen *(below your tummy)* **when you are:**

The words used to describe pain are in increasing order of intensity. Please tick ONE response to EACH line.

		No pain	Mild	Discomforting	Distressing	Horrible	Excruciating
a.	Lying in bed?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
b.	Shifting positions in bed?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
c.	Getting in and out of bed?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
d.	Feeding your baby?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
e.	Sitting in a chair?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
f.	Lifting your baby?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
g.	Walking?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
h.	Bathing or showering yourself?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
i.	Doing physical exercise e.g. running, aerobics, climbing stairs?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
j.	Carrying your baby for extended periods?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
k.	Passing urine?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
l.	Passing a bowel movement?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

*Please comment if you wish*_____

_____

_____

_____

C27 a. In the past four weeks have you used any medication or other therapies for pain or tenderness in your tummy area?

Yes ☐ 1

No ☐ 2

b. If yes, which medication have you used (tick ALL that apply)?

	Yes	No	Not sure
a Paracetamol *(e.g. Panadol®)*	☐ 1	☐ 2	☐ 3
b. Paracetamol and codeine *(panadeine)*	☐ 1	☐ 2	☐ 3
c. Ponstan®	☐ 1	☐ 2	☐ 3
d. Difene (Voltarol) *(taken orally)*	☐ 1	☐ 2	☐ 3
e. Difene (Voltarol) *(suppository inserted into the back passage)*	☐ 1	☐ 2	☐ 3
f. Nurofen/Isobrufen	☐ 1	☐ 2	☐ 3
g. Aspirin	☐ 1	☐ 2	☐ 3
h. Local anaesthetic gel	☐ 1	☐ 2	☐ 3
i. Herbal remedies	☐ 1	☐ 2	☐ 3
j. Other *(please describe)*	☐ 1	☐ 2	☐ 3

_____

_____

_____

_____

C28 a. In the past THREE MONTHS, have you discussed this tummy pain with anyone?

Yes ☐ 1

No ☐ 2

b. If YES, who did you discuss it with? *(Please tick ALL that apply.)*

General practitioner / local doctor	☐ 1
Public Health Nurse	☐ 2
GP practice nurse	☐ 3
Obstetrician/Gynaecologist	☐ 4
Physiotherapist	☐ 5
Other health professional	☐ 6
Partner	☐ 7
Friend	☐ 8
Sister	☐ 9
Mother	☐ 10
Other *(Please describe)*	☐ 11

_____

C29 NOW, 12 months AFTER THE BIRTH of your baby, are you satisfied with your body image?

Always	Sometimes	Never
☐ 1	☐ 2	☐ 3

Please comment if you wish _____

_____

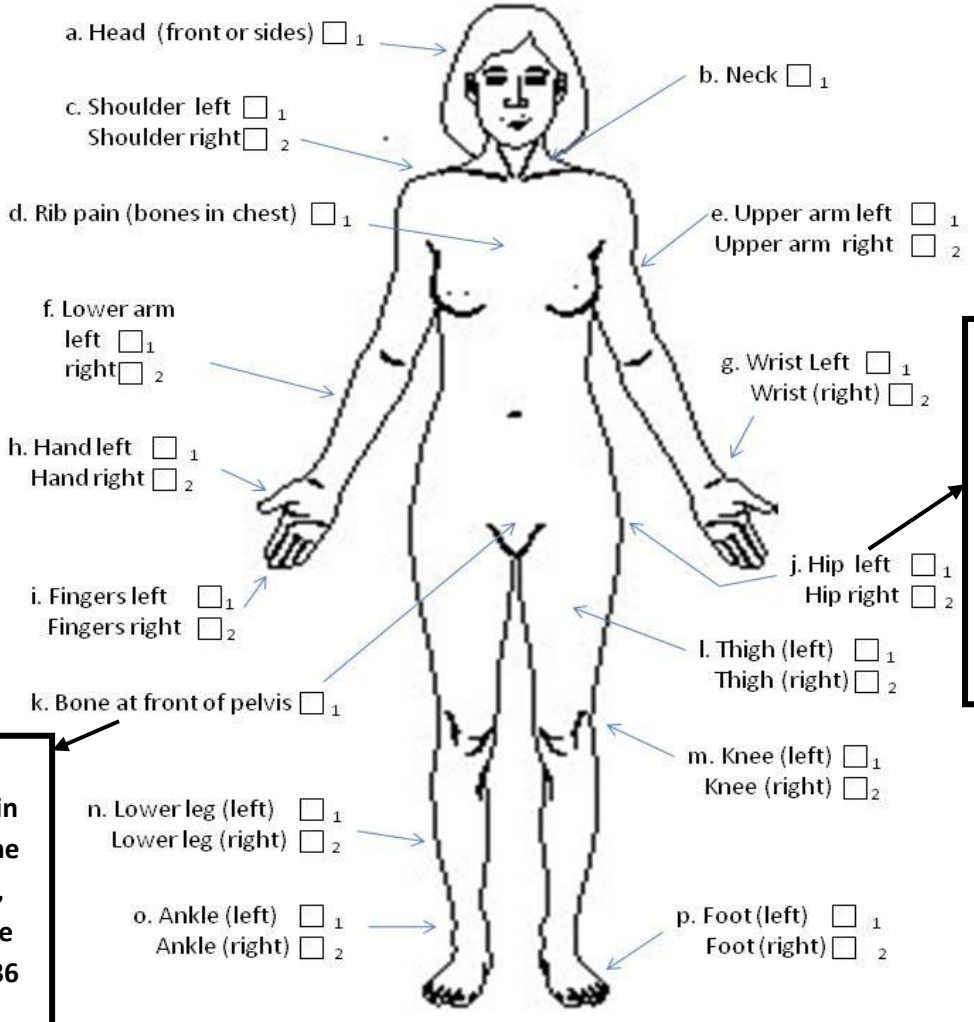
_____

C30 Please look at the two pictures below. Picture A is looking at the body from the front. Picture B is looking at the body from the back. In the past THREE MONTHS, have you experienced pain in any of the parts of the body named?

Yes ☐ 1 No ☐ 2

A. ***Please tick the boxes if you have experienced pain in any of the parts of the body named in the past THREE MONTHS.***

Picture A
Front of Body



If you have experienced pain in any of these areas in the past 3 months, please complete SECTION C31-C36 as well.

If you have experienced pain in this area in the past 3 months, please complete SECTION C31-C36 as well.

If you experienced pain in any other parts not named or shown here, please tick here ☐

Please give details _____

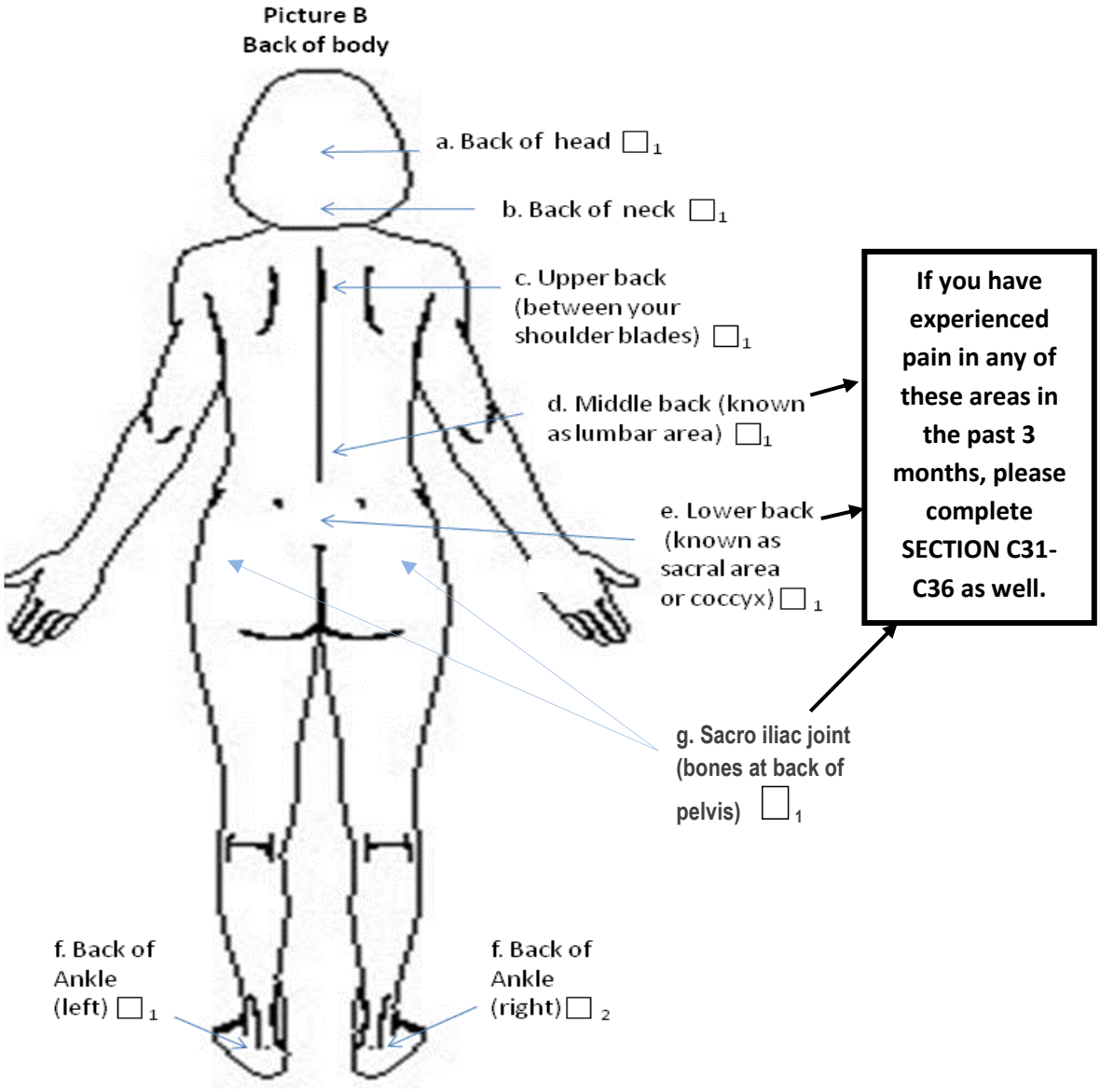
_____

_____

Please tick the boxes if you have experienced pain in any parts of the body named or shown in the past THREE MONTHS.

B. **Picture B**

Back of Body



If you experienced pain in any other parts not named or shown here, please tick here ☐

Please give details _____

_____

Most pain can be treated successfully. If you are worried or concerned about pain and wish to get help, you should discuss it with your doctor or another health professional.

The next few questions ask about your BACK and/or PELVIC GIRDLE PAIN. (If you have not had low back or pelvic girdle pain in the past 3 months, go directly to section D on page 44.)

C31 How problematic is it for you because of your back and/or pelvic girdle pain to do the following:

	Not at all	To a small extent	To some extent	To a large extent
a. Dress yourself	☐ 0	☐ 1	☐ 2	☐ 3
b. Stand for less than 10 minutes	☐ 0	☐ 1	☐ 2	☐ 3
c. Stand for more than 60 minutes	☐ 0	☐ 1	☐ 2	☐ 3
d. Bend down	☐ 0	☐ 1	☐ 2	☐ 3
e. Sit for less than 10 minutes	☐ 0	☐ 1	☐ 2	☐ 3
f. Sit for more than 60 minutes	☐ 0	☐ 1	☐ 2	☐ 3
g. Walk for less than 10 minutes	☐ 0	☐ 1	☐ 2	☐ 3
h. Walk for more than 60 minutes	☐ 0	☐ 1	☐ 2	☐ 3
i. Climb stairs	☐ 0	☐ 1	☐ 2	☐ 3
j. Do housework	☐ 0	☐ 1	☐ 2	☐ 3
k. Carry light objects	☐ 0	☐ 1	☐ 2	☐ 3
l. Carry heavy objects	☐ 0	☐ 1	☐ 2	☐ 3
m. Get up/sit down	☐ 0	☐ 1	☐ 2	☐ 3
n. Push a shopping cart	☐ 0	☐ 1	☐ 2	☐ 3
o. Run	☐ 0	☐ 1	☐ 2	☐ 3
p. Carry out sporting activities	☐ 0	☐ 1	☐ 2	☐ 3
q. Lie down	☐ 0	☐ 1	☐ 2	☐ 3
r. Roll over in bed	☐ 0	☐ 1	☐ 2	☐ 3
s. Have a normal sex life	☐ 0	☐ 1	☐ 2	☐ 3
t. Push something with one foot	☐ 0	☐ 1	☐ 2	☐ 3

C32 How much back and/or pelvic girdle pain do you experience:

	None	Some	Moderate	Considerable
a. In the morning	☐ 0	☐ 1	☐ **2**	☐ 3
b. In the evening	☐ 0	☐ 1	☐ 2	☐ 3

C33 To what extent because of your back and/or pelvic girdle pain:

	Not at all	To a small extent	To some extent	To a large extent
a. Has your leg/have your legs given way?	☐ 0	☐ 1	☐ 2	☐ **3**
b. Do you do things more slowly?	☐ 0	☐ 1	☐ 2	☐ **3**
c. Is your sleep interrupted?	☐ 0	☐ 1	☐ 2	☐ **3**

C34 To what extent because of your back and/or pelvic girdle pain do you have difficulty lifting/ handling your baby?

Not at all	To a small extent	To some extent	To a large extent
☐ **0**	☐ 1	☐ 2	☐ 3

C35 a. In the past four weeks have you used any tablets/medication or other therapies for pain or tenderness in the back and/or pelvic girdle area?

Yes ☐ 1 **No** ☐ 2

b. If YES, which medication have you used (tick ALL that apply)

		Yes	No	Unsure
a.	Paracetamol *(e.g. Panadol®)*	☐ 1	☐ 2	☐ 3
b.	Paracetamol and codeine *(panadeine)*	☐ 1	☐ 2	☐ 3
c.	Ponstan®	☐ 1	☐ 2	☐ 3
d.	Difene (Voltarol) *(taken orally)*	☐ 1	☐ 2	☐ 3
e.	Difene (Voltarol) *(suppository inserted into back passage)*	☐ 1	☐ 2	☐ 3
f.	Nurofen/Isobrufen	☐ 1	☐ 2	☐ 3
g.	Aspirin	☐ 1	☐ 2	☐ 3
h.	Local anaesthetic gel	☐ 1`	☐ 2	☐ 3
i.	Other *(please describe)*	☐ 1	☐ 2	☐ 3

_____

C36 a. In the past THREE MONTHS, have you discussed this back/pelvic girdle pain with anyone?

Yes ☐ 1 No ☐ 2

b. If YES, who did you discuss it with? *(Please tick ALL that apply.)*

General practitioner / local doctor	☐ 1	Partner	☐ 7
Public Health Nurse	☐ 2	Friend	☐ 8
GP practice nurse	☐ 3	Sister	☐ 9
Obstetrician/Gynaecologist	☐ 4	Mother	☐ 10
Physiotherapist	☐ 5	Other (Please describe below)	☐ 11
Other health professional	☐ 6	_____	

Section D: Sex after childbirth

The next few questions are about your sexuality and sexual health in the past three months. Again, if you feel uncomfortable answering any of these questions or they are too personal, you do not have to answer them, but if you have experienced any of the symptoms or issues asked about, it would help us to understand them. Again, we would like to reassure you that all the information that you provide is strictly confidential and all the findings from this survey will be presented and published in a way that does not identify **any** individual woman.

D1 a. When did you first have sexual or intimate contact again after you had your baby: *(Please include all forms of sexual contact i.e. do not restrict your answer to vaginal intercourse.)*

- I have not had sexual or intimate contact since the birth ☐ 1 (Please go to D2)
- During the first 3 months ☐ 2
- 4-6 months after the birth ☐ 3
- 7-9 months after the birth ☐ 4
- 10-12 months after the birth ☐ 5

b. Did you feel that this was:

- Too soon after the birth ☐ 1
- Would have liked to start sooner ☐ 2
- About the right time after the birth ☐ 3

D2 a. If you have NOT had any sexual or intimate contact since the birth is this because?

- You do not have a partner ☐ 1
- Other reasons ☐ 2

D2 b. If you have a partner, but have not had any sexual contact since the birth, please tell me why? *(Please tick ALL that apply.)*

Too tired / exhausted	☐	1
Relationship problems	☐	2
Scared it will be painful	☐	3
Fear of getting pregnant	☐	4
Baby waking up	☐	5
Still experiencing pain from perineal wound	☐	6
Still experiencing pain from caesarean sectio	☐	7
Don't feel interested	☐	8
Other reason (please describe)	☐	9

Please comment if you wish _____

_____

_____

_____

If you have not had any sexual or intimate contact since the birth, please go to question D12.

D3 a. Have you had vaginal intercourse since your baby was born?

Yes	☐	1
Tried on one or more occasions, but it was too painful each time I tried	☐	2
No	☐	3

b. When did you first have vaginal intercourse again *(or attempt vaginal intercourse again)* after you had your baby?

Have not had sexual or intimate contact since the birth	☐ 1 *(Please go to D12)*
During the first 3 months	☐ 2
4-6 months after the birth	☐ 3
7-9 months after the birth	☐ 4
10-12 months after the birth	☐ 5

c. Did you feel that this was:

Too soon after the birth	☐ 1
Would have liked to start sooner	☐ 2
About the right time after the birth	☐ 3

D4 How much pain or discomfort, if any, did you feel the first time you attempted to have vaginal intercourse after your baby was born?

No pain	☐ 1
Mild	☐ 2
Discomforting	☐ 3
Distressing	☐ 4
Horrible	☐ 5
Excruciating	☐ 6

D5 a. Other than the first time you tried having vaginal intercourse after your baby's birth, have you experienced pain or discomfort during vaginal intercourse in the past THREE MONTHS?

Yes	☐ 1
No	☐ 2
Haven't tried again	☐ 3

b. If YES, how would you describe the worst pain or discomfort you have experienced?

- ☐ No pain 1
- ☐ Mild 2
- ☐ Discomforting 3
- ☐ Distressing 4
- ☐ Horrible 5
- ☐ Excruciating 6

D6 a. Are you still experiencing pain or tenderness during vaginal intercourse?

- ☐ Yes 1
- ☐ No 2

b. If NO, how many weeks after you baby's birth was it when vaginal intercourse stopped being painful?

☐☐ Number of weeks after the birth

D7 How often would you say intercourse is painful for you NOW?

- ☐ Always painful 1
- ☐ Painful most of the time 2
- ☐ Occasionally painful 3
- ☐ Rarely painful 4

D8 a. How would you describe the pain or discomfort you are experiencing during vaginal intercourse NOW?

No pain	☐	1
Mild pain	☐	2
Discomforting	☐	3
Distressing	☐	4
Horrible	☐	5
Excruciating	☐	6

b. Looking at the following list, please tick the words that apply to the pain or discomfort you are experiencing during vaginal intercourse NOW.

Aching	☐	1
Throbbing	☐	2
Shooting	☐	3
Stabbing	☐	4
Gnawing	☐	5
Sharp	☐	6
Tender	☐	7
Burning	☐	8
Exhausting	☐	9
Tiring	☐	10
Penetrating	☐	11
Nagging	☐	12
Miserable	☐	13
Unbearable	☐	14

D9 a. Have you discussed the pain or discomfort you are experiencing with anyone?

Yes ☐ 1

No ☐ 2 *(Please go to D10*

b. If YES, who have you discussed this with *(Please tick ALL that apply.)*

General practitioner / local doctor ☐ 1

Public Health Nurse ☐ 2

GP Practice Nurse ☐ 3

Obstetrician/Gynaecologist ☐ 4

Physiotherapist ☐ 5

Other health professional ☐ 6

Partner ☐ 7

Friend ☐ 8

Sister ☐ 9

Mother ☐ 10

Other (please describe) ☐ 11

_____

D10 In the past THREE months, how satisfied are you with your overall sex life?

Very satisfied ☐ 1

Moderately satisfied ☐ 2

Equally satisfied/dissatisfied ☐ 3

Moderately dissatisfied ☐ 4

Very dissatisfied ☐ 5

Prefer not to answer ☐ 6

D11 In the PAST four weeks, have you had:

		Yes	No	Prefer not to answer
a.	Oral sex	☐ 1	☐ 2	☐ 3
b.	Anal sex	☐ 1	☐ 2	☐ 3
c.	Other sexual contact *(i.e. forms of contact with the genital area not leading to intercourse but intended to achieve orgasm)*	☐ 1	☐ 2	☐ 3

D12 How emotionally satisfying have you found your relationship with your partner in the past THREE MONTHS?

- Extremely emotionally satisfying ☐ 1
- Very emotionally satisfying ☐ 2
- Moderately emotionally satisfying ☐ 3
- Slightly emotionally satisfying ☐ 4
- Not at all emotionally satisfying ☐ 5
- Not sure ☐ 6

D13 In the past THREE MONTHS have you experienced any of the following:
(Please tick one response on each line.)

	Yes	No	Prefer not to answer
a. Lack of vaginal lubrication	☐ 1	☐ 2	☐ 3
b. Painful penetration	☐ 1	☐ 2	☐ 3
c. Pain during sexual intercourse	☐ 1	☐ 2	☐ 3
d. Pain on orgasm	☐ 1	☐ 2	☐ 3
e. Difficulty reaching orgasm	☐ 1	☐ 2	☐ 3
f. Unable to reach orgasm	☐ 1	☐ 2	☐ 3
g. Vaginal tightness	☐ 1	☐ 2	☐ 3

	Yes	No	Prefer not to answer
h. Vaginal looseness / lack of muscle tone	☐ 1	☐ 2	☐ 3
i. Bleeding or physical irritation after sex	☐ 1	☐ 2	☐ 3
j. Loss of interest in sex compared with before your pregnancy	☐ 1	☐ 2	☐ 3
k. More interest in sex compared with before your pregnancy	☐ 1	☐ 2	☐ 3
l. Being pressured to take part in unwanted sexual activity	☐ 1	☐ 2	☐ 3
m. Being forced to take part in unwanted sexual activity	☐ 1	☐ 2	☐ 3
n. Other (please describe)	☐ 1	☐ 2	☐ 3

_____

_____

D14 a. Have you ever discussed any of the above with anyone?

Yes ☐ 1

No ☐ 2 *(Please go to D15)*

b. If YES, who have you discussed this with *(Please tick ALL that apply.)*

General practitioner / local doctor ☐ 1

Public Health Nurse ☐ 2

GP Practice Nurse ☐ 3

Obstetrician/Gynaecologist ☐ 4

Physiotherapist ☐ 5

Other health professional ☐ 6

Partner	☐	7
Friend	☐	8
Sister	☐	9
Mother	☐	10
Other (please describe)	☐	11

_____

_____

c. What issues did you discuss? *(Please tick all that apply)*

Lack of vaginal lubrication	☐	1
Painful penetration	☐	2
Pain on orgasm	☐	3
Difficulty reaching orgasm	☐	4
Vaginal tightness	☐	5
Vaginal looseness / lack of muscle tone	☐	6
Bleeding or physical irritation after sex	☐	7
Loss of interest in sex compared with before your pregnancy	☐	8
More interest in sex compared with before your pregnancy	☐	9
Being pressured to take part in unwanted sexual activity	☐	10
Being forced to take part in unwanted sexual activity	☐	11
Other *(Please describe)*	☐	12

_____

D15 In the past THREE months, which of the following best describes the frequency of your sexual activity *(please tick only one response)*

a. 1-2 times per month ☐ 1

b. 1-2 times per week ☐ 2

c. 3-4 times per week ☐ 3

d. More than 4 times per week ☐ 4

Prefer not to answer ☐ 5

Please comment if you wish _____

D16 Overall, would you say that your sex life has changed in the past THREE MONTHS?

It has improved ☐ 1

It's about the same ☐ 2

Not as good ☐ 3

Not sure? ☐ 4

D17 How often have the following issues affected your sex life in the past THREE MONTHS?

		Very often	Often	Sometimes	Rarely	Never
a.	Tiredness / exhaustion	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
b.	Feeling, depressed, low or blue	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
c.	Relationship problems	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
d.	Pain / tenderness	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
e.	Lack of time	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
f.	Baby waking up / interrupting you	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
g.	Other (please describe)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

_____

D18 Is there anything else you would like to tell me about in relation to your sexual and intimate relationships in the past THREE MONTHS?

_____

_____

_____

_____

If you are worried or concerned about pain when having sex and wish to get help, you can discuss it with your doctor.

If you are worried or concerned about unwanted or forced sexual activity and wish to get help, you can call the **Sexual Assault Treatment Unit (SATU)** based in the Rotunda hospital.

SATU telephone number:	01 8171736
SATU e-mail:	SATU@ROTUNDA.IE
Web:	http://www.rotunda.ie/
Opening hours:	9.00am to 4.30pm Mon – Fri
	Outside of these hours please contact the Rotunda Hospital at 01 8171700

Or you can call the **national** Dublin Rape Crisis Centre. The Dublin Rape Crisis Centre was established in 1979 and is a national organisation offering a wide range of services to women and men who are affected by rape, sexual assault, sexual harassment or childhood sexual abuse.

The services include a national **24-hour helpline**, one to one counselling, court accompaniment, outreach services, training, awareness raising and lobbying.

Dublin Rape Crisis Centre telephone number: HELPLINE 1800 778888

Section E: Your emotional health and well-being now

The next few questions are about your emotional health and well-being now. Again, if you feel uncomfortable answering any of these questions or they are too personal, you do not have to answer them, but if you have experienced any of the symptoms or issues asked about, it would help us to understand them. Again, we would like to reassure you that all the information that you provide is **strictly confidential** and all the findings from this survey will be presented and published in a way that does not identify **any** individual woman.

Please look at the following statements and for each one think about how you have been feeling IN THE LAST WEEK.

E1 a. During the last week I have been able to laugh and see the funny side of things

- As much as I always could ☐ 1
- Not quite as much now ☐ 2
- Definitely not as much now ☐ 3
- Not at all ☐ 4

b. During the last week I have looked forward with enjoyment to things

- As much as I ever did ☐ 1
- Rather less than I used to ☐ 2
- Definitely less than I used to ☐ 3
- Hardly at all ☐ 4

c. During the last week I have blamed myself unnecessarily when things went wrong

- Yes, most of the time ☐ 1
- Yes, some of the time ☐ 2
- Not very often ☐ 3
- No, never ☐ 4

d. During the last week I have felt worried and anxious for no very good reason

No, not at all ☐ 1

Hardly ever ☐ 2

Yes, sometimes ☐ 3

Yes, very often ☐ 4

e. During the last week I have felt scared or panicky for no very good reason

Yes, quite a lot ☐ 1

Yes, sometimes ☐ 2

No, not much ☐ 3

No, not at all ☐ 4

f. During the last week things have been getting on top of me

Yes, most of the time I haven't been able to cope at all ☐ 1

Yes, sometimes I haven't been coping as well as usual ☐ 2

No, most of the time I have copied quite well ☐ 3

No, I have been coping as well as ever ☐ 4

g. During the last week I have been so unhappy that I have had difficulty sleeping

Yes, most of the time ☐ 1

Yes, sometimes ☐ 2

Not very often ☐ 3

No, not at all ☐ 4

h. During the last week I have felt sad or miserable

Yes, most of the time ☐ 1

Yes, quite often ☐ 2

Not very often ☐ 3

No, not at all ☐ 4

i. During the last week I have been so unhappy that I have been crying

Yes, most of the time ☐ 1

Yes, quite often ☐ 2

Only occasionally ☐ 3

No, never ☐ 4

j. During the last week the thought of harming myself has occurred to me

Yes, quite often ☐ 1

Sometimes ☐ 2

Hardly ever ☐ 3

Never ☐ 4

E2 Is there anyone you can talk to about how you are feeling? *(Please tick ALL that apply.)*

Yes, but I am not sure they understand ☐ 1

Yes, and they are very supportive ☐ 2

No, there isn't anyone I can really talk to ☐ 3

I don't particularly want to talk about how I feel ☐ 4

There isn't anything I feel I need to talk about ☐ 5

E3 Looking back over the time in the past THREE MONTHS, would you like to have had more emotional support *(e.g. someone who regularly asked how you were, someone happy to listen to how you were feeling)*?

Yes, definitely ☐ 1

Yes, probably ☐ 2

No, not really ☐ 3

Please comments if you wish _____

_____

E4. Please read each statement and circle a number 0, 1, 2 or 3 which indicates how much the statement applied to you *OVER THE PAST WEEK*. There are no right or wrong answers. Do not spend too much time on any statement.

		Not at all	Some of the time	A good part of the time	Most of the time
1	I found it hard to wind down	0	1	2	3
2	I was aware of dryness of my mouth	0	1	2	3
3	I couldn't seem to experience any positive feeling at all	0	1	2	3
4	I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5	I found it difficult to work up the initiative to do things	0	1	2	3
6	I tended to over-react to situations	0	1	2	3
7	I experienced trembling (e.g. in the hands)	0	1	2	3
8	I felt that I was using a lot of nervous energy	0	1	2	3
9	I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10	I felt that I had nothing to look forward to	0	1	2	3
11	I found myself getting agitated	0	1	2	3
12	I found it difficult to relax	0	1	2	3
13	I felt down-hearted and blue	0	1	2	3

E4 *continued*

		Not at all	Some of the time	A good part of the time	Most of the time
14	I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15	I felt I was close to panic	0	1	2	3
16	I was unable to become enthusiastic about anything	0	1	2	3
17	I felt I wasn't worth much as a person	0	1	2	3
18	I felt that I was rather touchy	0	1	2	3
19	I was aware of the action of my heart in the absence of physical exertion (e.g. sense of heart rate increase, heart missing a beat)	0	1	2	3
20	I felt scared without any good reason	0	1	2	3
21	I felt that life was meaningless	0	1	2	3

If you are experiencing any problems with your emotional health and wellbeing and wish to talk to someone, you can telephone the mental health midwife at the Rotunda hospital. The midwives are Kathleen O Donohue and Louise Rafferty, telephone: 01- 817 1700 bleep 472

Or you can call the Aware (Depression) Helpline on 1890 303 302

TEXT MESSAGING

Information on where to go for help in a crisis is now available through your mobile phone. Text the word HeadsUp to 50424. The HeadsUp text service is run by RehabCare and sponsored by Meteor.

ONLINE information and support

A number of support services are now using the internet to reach out to people.

For example, www.yourmentalhealth.ie

Section F: You and your household

The next few questions are about you and your household. Again, if you feel uncomfortable answering any of these questions or they are too personal, you do not have to answer them, but if you have experienced any of the symptoms or issues asked about, it would be help me to understand them. Again, I would like to reassure you that all the information that you provide is **strictly confidential** and all the findings from this survey will be presented and published in a way that does not identify **any** individual woman.

F1 Are you currently *(Please tick ONE only.)*

Married	☐ 1
Living with partner (boyfriend/girlfriend)	☐ 2
Divorced or separated	☐ 3
In a relationship - not living together	☐ 4
Widowed	☐ 5
Single	☐ 6
Other (Please describe)	☐ 7

_____

F2 Who else lives with you in your household? *(Please tick all that apply.)*

Your child	☐ 1
Your partner/husband	☐ 2
Your mother	☐ 3
Your father	☐ 4
Your partner's mother	☐ 5
Your partner's father	☐ 6
Partner's child/children from previous relationship	☐ 7

Your sister or brother ☐ 8

A friend ☐ 9

Nanny / Au pair ☐ 10

No one ☐ 11

Other *(please describe)* ☐ 12 _____

F3 How would you describe your current living accommodation?

House *(with a mortgage)* ☐ 1

House *(with no mortgage)* ☐ 2

Apartment *(with a mortgage)* ☐ 3

Apartment *(with no mortgage)* ☐ 4

Rented house *(rented privately)* ☐ 5

Rented house *(rented from local authority)* ☐ 6

Rented apartment *(rented privately)* ☐ 7

Rented apartment *(rented from local authority)* ☐ 8

Caravan / Mobile Home ☐ 9

Bed and breakfast accommodation ☐ 10

Hostel accommodation ☐ 11

No fixed accommodation *(homeless)* ☐ 12

Other, please give details ☐ 13

Please comment if you wish _____

_____

_____

_____

F4 a. Since having your baby have you gone back to work or study?

Yes, gone back to paid work ☐ 1

Yes, returned to study ☐ 2

Am on paid maternity leave ☐ 3

Am on unpaid maternity leave ☐ 4

No, not in paid work or studying at the present time ☐ 5 *(Please go to F7)*

b. How old was your baby when you returned to paid work or study?

☐☐ Weeks old

c. How many hours did you spend at work or studying last week?

Less than 10 hours ☐ 1

Between 10 and 20 hours ☐ 2

More than 20 hours ☐ 3

F5 How would you describe your current employment status *(please tick one response)*

I gave up my job when my baby was born ☐ 1

Full time paid work ☐ 2

Part-time paid work ☐ 3

Casual paid-work ☐ 4

Looking for first job ☐ 5

Unemployed ☐ 6

Student or pupil ☐ 7

Looking after home/family ☐ 8

Unable to work due to sickness / disability ☐ 9

Unpaid voluntary work ☐ 10

Other *(Please describe)* ☐ 11

_____

_____

F6 Have you had to take time off work due to your own ill health or the ill health of your baby since the birth of your baby?

Yes, due to my own ill health ☐ 1

Yes, due to my baby's ill health ☐ 2

No ☐ 3 *(please go to F7a)*

F6b If you have had to take time off work due to your own ill health or the ill health of your baby, was this

Paid time off (sick leave, compassionate leave, annual leave) ☐ 1

Unpaid time off (unplanned parental leave, or special unpaid leave) ☐ 2

Please comment if you wish _____

_____

_____

_____

_____

F6c If you have had to take time off work, was this:

For your OWN ill health (Please tick ONE response)		**For your BABY's ill health? (Please tick ONE response)**	
1-3 days	☐ 1	1-3 days	☐ 1
4-7 days	☐ 2	4-7 days	☐ 2
1-2 weeks	☐ 3	1-2 weeks	☐ 3
3-4 weeks	☐ 4	3-4 weeks	☐ 4
More than 4 weeks	☐ 5	More than 4 weeks	☐ 5

Please comment if you wish _____

_____

_____

_____

F7 a. Are you hoping to have another baby?

Yes, ☐ 1

No, ☐ 2

Not sure ☐ 3

b. If YES, would you prefer to have?

A vaginal birth ☐ 1

A caesarean section ☐ 2

No particular preference ☐ 3

Section G: You and your relationships

The next few questions are about you and your relationships If you feel uncomfortable answering any of these questions or they are too personal, you do not have to answer them, but if you have experienced any of the symptoms or issues asked about, it would help us to understand them. Again, we would like to reassure you that all the information that you provide is **strictly confidential** and all the findings from this survey will be presented and published in a way that does not identify **any** individual woman.

Even though you were asked about being pregnant at the beginning of the survey, the next few questions ask you to provide a little more detail please.

G1 a. Are you currently pregnant?

Yes ☐ 1

No ☐ 2

b. If YES, how many weeks pregnant are you?

☐☐ Number of weeks

G2 a. Since you had your 12 months old baby, have you had a pregnancy that ended in a miscarriage?

Yes ☐ 1

No ☐ 2 *(Go to G3)*

b. If YES, please say when this happened:

☐☐ month ☐☐☐☐ year

c. How many weeks pregnant were you when this happened?

☐☐ Weeks

G3 a. Since you had your one-year old baby, have you had a pregnancy that ended in an abortion *(termination of pregnancy)***?**

Yes ☐ 1

No ☐ *(Go to G4)* 2

b. If YES, please say when this happened:

☐☐ month ☐☐☐☐ year

c. How many weeks pregnant were you when this happened?

☐☐ weeks

If you have experienced a miscarriage and want to talk to someone about your experiences, the **Miscarriage Association of Ireland** offer help and support. Their website is at: http://www.miscarriage.ie/
Their office is at: Miscarriage Association of Ireland, Carmichael Centre, North Brunswick Street, Dublin 7.
Telephone, (Central Lines): 01- 873 5702. A list of telephone support lines is available on the website. You can also email: mailto:info@miscarriage.ie

If you have experienced an abortion and want to talk to someone about your experiences, there are several sources of help and support, some are free and some charge a fee. Choosing the right source of support is a personal matter and the following websites might be a useful starting place for you: **(i) The Crisis pregnancy agency** http://www.crisispregnancy.ie ; **(ii) The Irish Family Planning Association** http://www.ifpa.ie/index.php/eng/Pregnancy-Counselling/About-Abortion **OR (iii) The Marie Stopes Clinic** http://www.mariestopes.ie/.

All the websites provide a range of contacts, telephone numbers and services.

The next few questions ask about your experiences in adult intimate relationships (for example, husband, partner, girlfriend or boyfriend of longer than one month.)

G4 Are you currently in a relationship?

Yes ☐ 1 No ☐ 2 *(Go to D6)*

G5 Are you afraid of your current partner?

Yes ☐ 1 No ☐ 2

G6 Have you ever been afraid of any partner?

Yes ☐ 1 No ☐ 2

Please comment if you wish _____

_____

_____

_____

G7 I would like to know if you have experienced any of the actions listed below and how often they happened during the last THREE months, since you had your baby. Please answer, even if you are not with a partner at present. *(Please indicate how often it happened OVER THE LAST 3-MONTH PERIOD, by ticking one box on each line.)*

My Partner…	**Never**	**Only once**	**Several times**	**Once a month**	**Once a week**	**Daily**
Told me I wasn't good enough	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Tried to turn my family, friends and children against me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Slapped me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Told me I was ugly	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Tried to keep me from seeing or talking to my family	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Threw me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Blamed me for causing their violent behaviour	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Shook me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Pushed, grabbed or shoved me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Became upset if dinner/housework wasn't done when they thought it should be	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Told me I was crazy	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Told me no-one would ever want me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Hit or tried to hit me with something	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Did not want me to socialise with my female friends	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Kicked me, bit me or hit me with a fist	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Tried to convince my friends, family or children that I was crazy	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Told me I was stupid	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
Beat me up	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

*Please comment on **ANY** of the issues raised in G7 if you wish*

_____

_____

_____

_____

G8 Have you told anyone about the above experiences? *(Please tick ALL that apply.)*

I have not had any of the above experiences ☐ 1

I have not told anyone ☐ 2

I have told my Public Health Nurse ☐ 3

I have told my regular GP/family doctor ☐ 4

I told someone else *(Please say who)* ☐ 5 _____

If you would like to tell us more about your experiences please use the space below.

_____

_____

_____

_____

_____

Women's Aid - working to end violence against women

If you need help, phone them on:

National Freephone Helpline

1800 341 900 - 10am to 10pm

http://www.womensaid.ie/

Email: info@womensaid.ie

Everton House
47 Old Cabra Road
Dublin 7
Tel: +353 1 868 4721
Fax: +353 1 868 4722

If you or someone you know is experiencing domestic violence, Women's Aid can help:

- **Women's Aid** operate the National Freephone Helpline 1800 341 900 (10am to 10pm, 7 days a week except Christmas Day)
- **Women's Aid** provide one to one support in six locations throughout Dublin including Cabra, Coolock, Swords, Dublin City Centre, Amiens and Ballymun.
- **Women's Aid** provide a court accompaniment service in the Greater Dublin Area.
- **Women's Aid** refer women to local domestic violence support services and refuges.

All of **Women's Aid** services offer **free**, confidential support to women and their children who are experiencing domestic violence in the Republic of Ireland.

Comments

H1 Now that you have got to the end of the MAMMI SURVEY I am interested in knowing how you found it? *(Please tick ALL that apply.)*

I managed to finish it but it took ages.	☐	1
I was pleased to be asked about my experiences	☐	2
It was OK	☐	3
It was interesting	☐	4
I didn't understand some of the terms or language used	☐	5
Other (please say what)	☐	6

_____

_____

_____

_____

H2 About the MAMMI Study website http://www.mammi.ie

a. Have you had an opportunity to look at the MAMMI Study website?

Yes ☐ 1 No ☐ 2

b. Did you recommend the website to others?

Yes ☐ 1 No ☐ 2

c. If you have looked at the website, please comment on how you found it and/or what other information **you** would have liked to see on it.

_____

_____

_____

_____

If you wish to write any further comments please do so on this page. Thank you.

If you have agreed to being contacted in the coming years and your address has changed or you are about to move home, please fill in the details below:

Your NEW address:	Your NEW phone number(s):

Thank you for taking the time to complete this survey. Your answers will help us to understand more about the health of first-time mothers before, during and after their pregnancy and it may help other women to know about some of the health problems experienced by women when the findings are published. Again, we want to reassure you that no names will be used in any publication and it will not be possible to identify any individual woman or her responses.

Please use the reply paid envelope to send this survey back to us. If no envelope was enclosed with this survey or you have mislaid it, please call us on **087 1956441** and we will send you out another one.

We are very grateful for the time and trouble you have taken to participate in the study. All the information you provide will help us to fill in some of the gaps in what is currently known about first-time mothers' health during pregnancy and after giving birth.

The final survey results will not be available until all of the women taking part in the study have completed this final survey. As soon as all the survey results are available, we will let you know via the website and the study newsletter for participants.

Please call us if you have any questions about the study. I hope you and your family enjoy good health and happiness always.

Best wishes.

The MAMMI study team

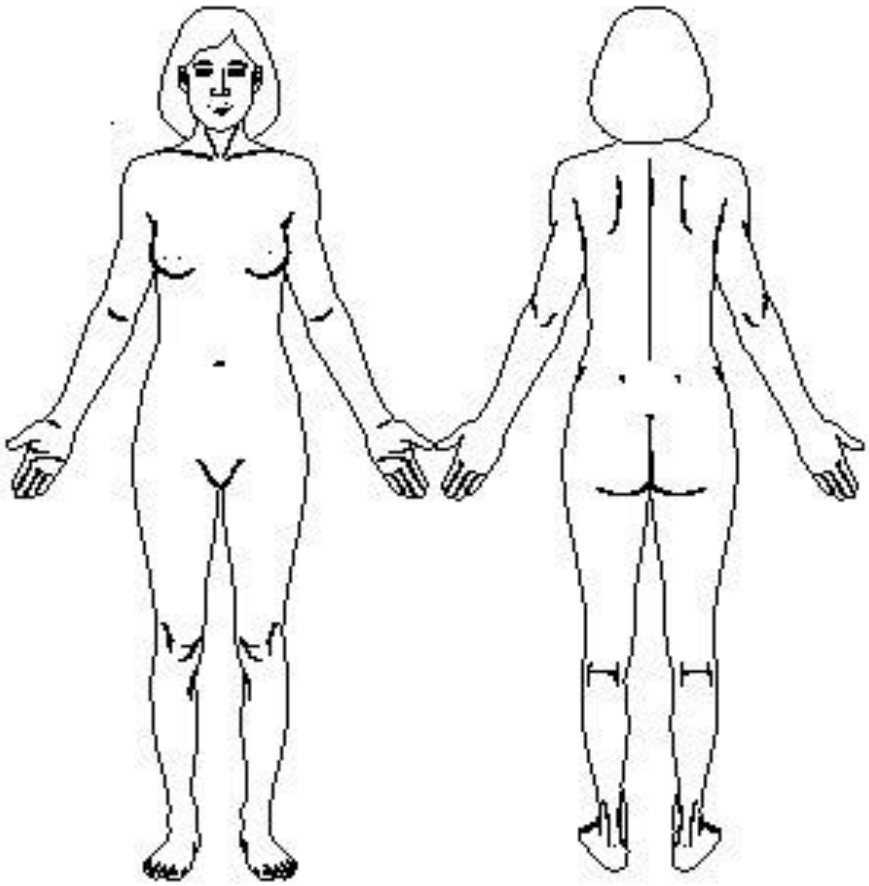
Our sincerest thanks to Dr Stephanie Brown, Murdock Children's Research Institute, Melbourne, Australia for granting us permission to amend and use this survey in an Irish setting.

Appendix 66: Pre-interview questionnaire Phase 2

Pre-interview questionnaire

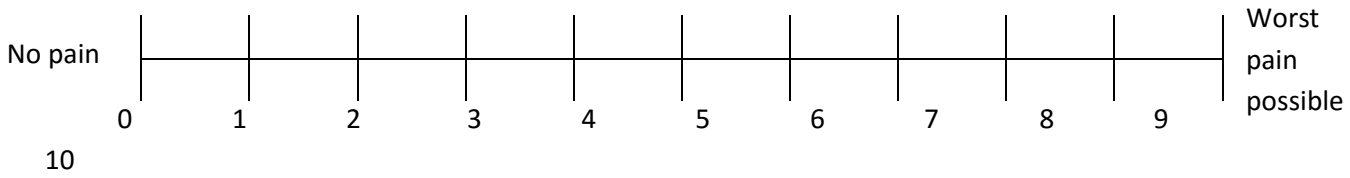
Before we start the interview I would like you to complete the following questions. It will only take a few minutes to complete.

1. **On the diagram, please indicate all areas where you experience pain**

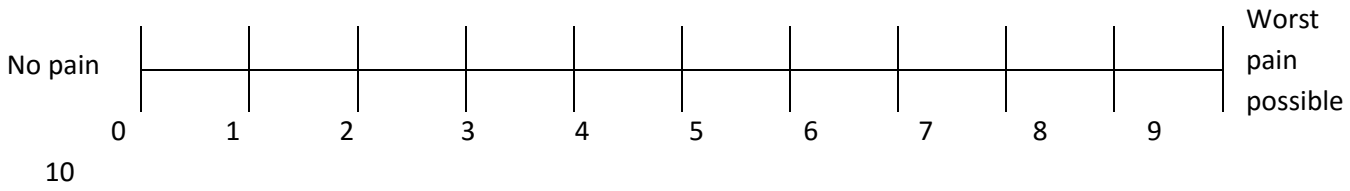


2. **How does your pain change with time: What pattern best describes your pain in the pelvic girdle are:**
   A. Continuous /steady/constant
   B. Intermittent/rhythmic/periodic
   C. Transient/brief/momentary
   D. Mix of any of the above (please circle all relevant ones)

3. **How would you rate your pain in the <u>morning</u> with 0 being no pain and 10 being the worst pain possible (circle the appropriate number)?**



4. **How would you rate your pain in the <u>evening</u> with 0 being no pain and 10 being the worst pain possible (circle the appropriate number)?**



Thank you!

Appendix 67: Semi-structured interviews guidance questions Phase 2

PHASE 2 Semi-structured interviews: guidance questions

BEFORE THE INTERVIEW

Provide information leaflet

Obtain informed verbal & written consent

Short pre-interview questionnaire

Provide the woman with an outline of the four main areas for discussion

INTERVIEW (audio-recorded)

Grand tour questions

A. Tell me about your experiences of living with pelvic pain since you're a mother.
B. Going through a regular day, tell me the story of what you usually do and what your pain means?

Possible Prompt questions

1. ***Life as a new mother***
   - 1.1. How do you feel about your pain when caring for your baby?
   - 1.2. How does your pain impact the way you see yourself as a mother?
   - 1.3. How do you feel when you are in pain?
   - 1.4. How do you feel your pain impacts on your general health?
   - 1.5. When you were still pregnant, what were your expectations about the pain for after the birth?

2. ***Interaction with others***
   - 2.1. What has been the role of others (family, friends, lay people) in regards to your pain?
   - 2.2. What, if any positive aspects or experiences have you had regarding your pain?
   - 2.3. What, if any negative aspects or experiences have you had regarding your pain?

3. ***Health seeking behavior***
   - 3.1. What do you usually do when you're in pain?
   - 3.2. How do you feel you're coping with your pain?
   - 3.3. Tell me about the help or care you have been offered wrt your pelvic pain since the birth? How do you feel about the care or support you have been offered?
   - 3.4. Describe what, if any, help or advice you have sought yourself since the birth?
   - 3.5. What do you feel would best help you cope with the pain?
   - 3.6. What care or support do you feel you need?

4. ***Views on the future/progress***
   3.1 How do you feel your pain will progress?
   3.2 How would you feel about having another baby wrt your pelvic pain?

Ending question

A. Is there anything else you would like to tell me?

Additional probing questions may also include:

- Please tell more about it.
- What does that mean to you?
- Is it possible to give an example?
- Describe to me what that was like for you.

Appendix 68: Audit Trial Phase 2 analysis

Data familiarisation

a) Data Collection: face-to-face interviews

b) Interview transcription and transcript accuracy checking (x2)

Internals

Name	Nodes	References
Interview 1	112	244
Interview 10	63	141
Interview 11	67	103
Interview 12	71	115
Interview 13	89	197
Interview 14	63	91
Interview 15	85	153
Interview 16	81	139
Interview 17	97	131
Interview 19	85	127
Interview 2	69	107
Interview 20	63	83
Interview 21	47	65
Interview 22	67	81
Interview 23	61	81
Interview 24	71	91
Interview 25	63	79
Interview 3	77	109
Interview 4	97	147
Interview 6	71	93
Interview 7	79	119
Interview 8	75	91
Interview 9	73	106

Figure: Overviews of all 23 interviews imported into NVivo, including the number of nodes and references in each interview

Data management and analysis

a) Open coding (Free nodes): All open codes in the 23 interviews are presented in below

Free Nodes

Name	Sources	References
6 week check; focus on baby	8	10
6 week check; focus on other problems	5	6
Adapt activities to help manage	7	12
Admitting it; realising it	2	8
Advice is general; not specific to my problem	1	1
Affecting mood	9	17
Afraid it will be worse with another baby	9	14
Annoying pain	8	11
Antenatal classes	4	4
Avoiding provocative things	8	9
birth experiences	4	4
Cannot avoid certain provocative things	7	8
Can't go to hospital anymore after 6 weeks	3	4
Challenge balancing exercise; activities	9	15
Challenges as new mum; general	3	6
Changes in pain location	3	3
Conflicting advice health profs	3	6
Cost of treatment	6	7
Didn't expect it to go away after birth	1	1
Different now compared to during pregnancy	10	10
Difficult to find time to exercise	7	9
Difficult to get comfortable at night	12	13
Difficult to get physio appointment	4	6
Difficulty doing housework	10	14
Don't go to doctor quickly	1	2
Don't talk about it; private person	3	4
Don't want another baby but PGP is not the reason	2	2
Don't want it to become a 'thing'	3	4
Exercise is painful	14	23
Exercise to relief	17	35
Expected some pain after birth but not this much;long	4	4
Fear of dropping baby	4	5
Feel like an old woman	7	8
Feel like still pregnant; don't feel back to normal yet	5	6
Feeling good because it's improving	7	11
Feeling 'unaware' of any problems postpartum; want more info	11	15
Feeling weak;immobile	2	6
Getting it sorted before having more children	4	8
Getting paid help	1	1
Going back to work	6	9
Happy with baby	3	5
Have to think about it; take it into account	5	6
Health prof; it just takes time	7	13
Health profs should make it a bigger deal; more thorough chec	9	15
Healthcare profs; 'part of pregnancy'	8	9

Free Nodes

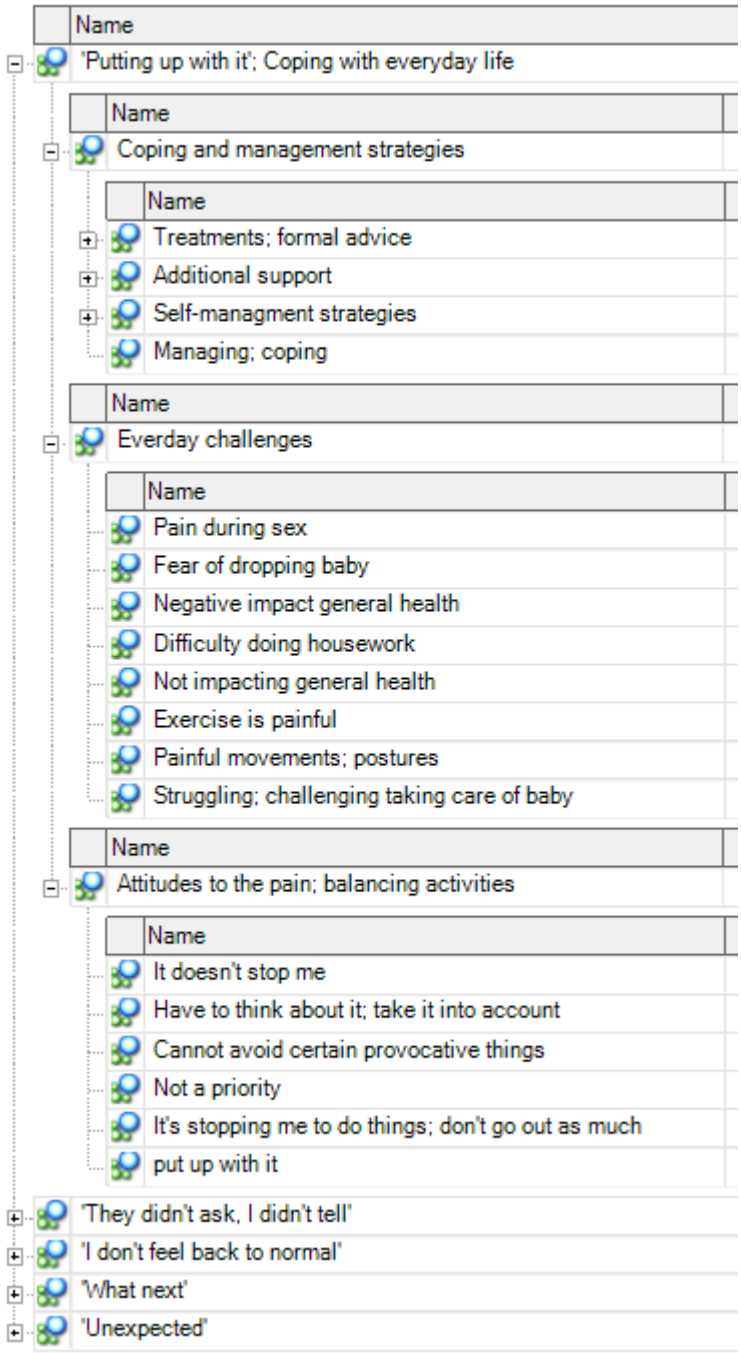
Name	Sources	References
Help from family	13	21
Help from friends	4	5
Help from husband	15	29
Help;support during pregnancy	3	3
Helpful in hospital	2	2
Helpul;unhelpful talking to; advice from other women	9	16
Hoping it will get better	14	25
How the pain was;started during pregnancy	6	7
I need to give it time	1	1
Importance of relation and time with health prof	3	3
Intentions for next pregnancy	6	8
Invisibility	1	1
It doesn't stop me	3	8
It's always there to some extend	2	3
It's stopping me to do things; don't go out as much	8	9
Keeping pain under control in future	3	3
Link with other problems; other problems that add to burden	8	10
Little postnatal follow up	2	4
Losing weight to relief	2	4
MAMMI surveys make you think about things	3	3
Managing; coping	12	17
Need to go see someone but haven't had time	4	6
Negative impact general health	4	4
Never had any pain before	5	6
No expectations about pain after birth	10	11
No negative experiences in interactions	3	3
Not a priority	7	8
Not able to do as many things as a mum	7	9
Not affecting being good mother	11	13
Not impacting general health	12	12
Not so happy with care offered; lack of care	6	10
Not sure what help to seek	11	16
Pain during sex	2	3
Pain goes up and down	16	37
Pain is still there; improved or worse; wish it was gone	13	19
Painful in the morning; difficult to get going	4	4
Painful movements; postures	17	40
Painful; anxious; agony	11	16
Painkillers	19	25
Part of pregnancy	7	12
People don't talk about childbirth issues	2	2
People's stories about progression	12	19
PGP 'hidden' after birth because of other pains&problems	10	14
Physiotherapist; Chiro; Osteopath expertise	7	12
Postnatal class	3	5

Free Nodes

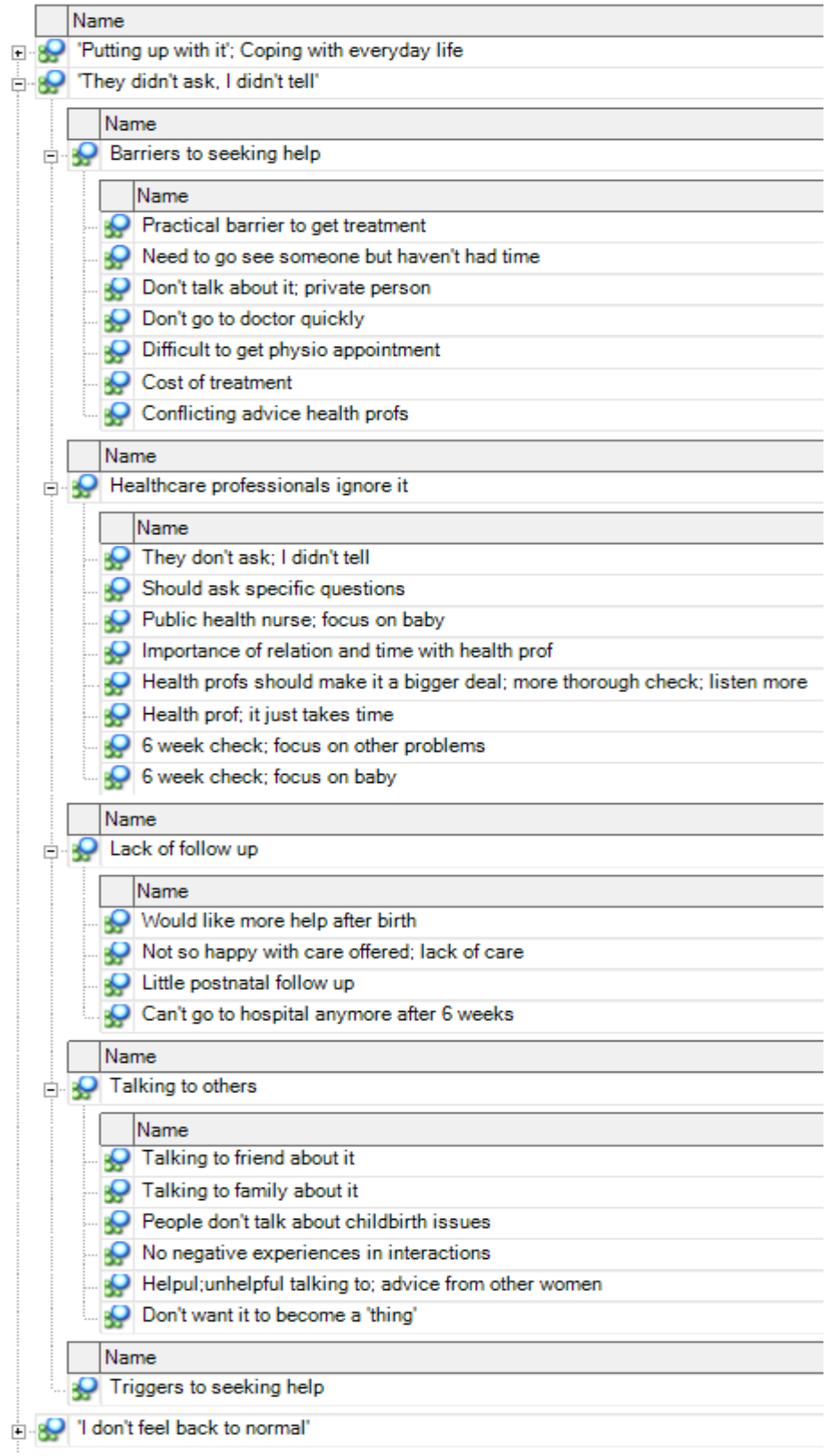
Name	Sources	References
posture and supports to relief	10	13
Practical barrier to get treatment	2	2
Public health nurse; focus on baby	4	4
put up with it	12	37
Questioning why the pain is there	23	47
Rest to relief	5	5
Seeking help abroad	1	1
Should ask specific questions	4	6
Should have sought help sooner	1	3
Slows me down; feel restricted	4	9
So much going on just after birth; overwhelming	8	12
Stretching; pressure to relief	11	18
Struggling; challenging taking care of baby	23	69
Support that would be helpful	11	17
Take responsibility; do sth about it	12	17
Talking to family about it	14	27
Talking to friend about it	11	17
They don't ask; I didn't tell	13	18
Thought it would be worse after pregnancy	1	1
Thought it would go away after birth.	13	16
Tiredness; draining	9	22
Tried many things to relief	7	9
Trigger to seek help	6	9
Try not to think about it	4	6
Uncertainty about progression	7	14
Used to be fit before pregnancy	6	7
Worry of damaging	3	3
Worse at night; evening	9	12
Worse just after the birth	6	8
Would like more help after birth	7	11
Wouldn't stop me becoming pregnant again.	13	14
'You just had a baby'	2	3

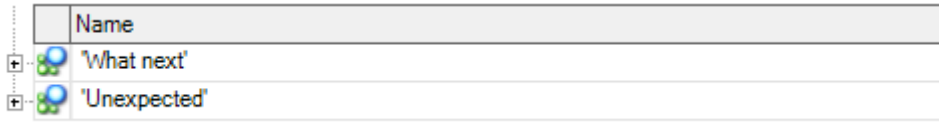
b) Axial coding (Tree nodes): The initial five themes and the categories and codes for each theme are presented below.

Tree Nodes

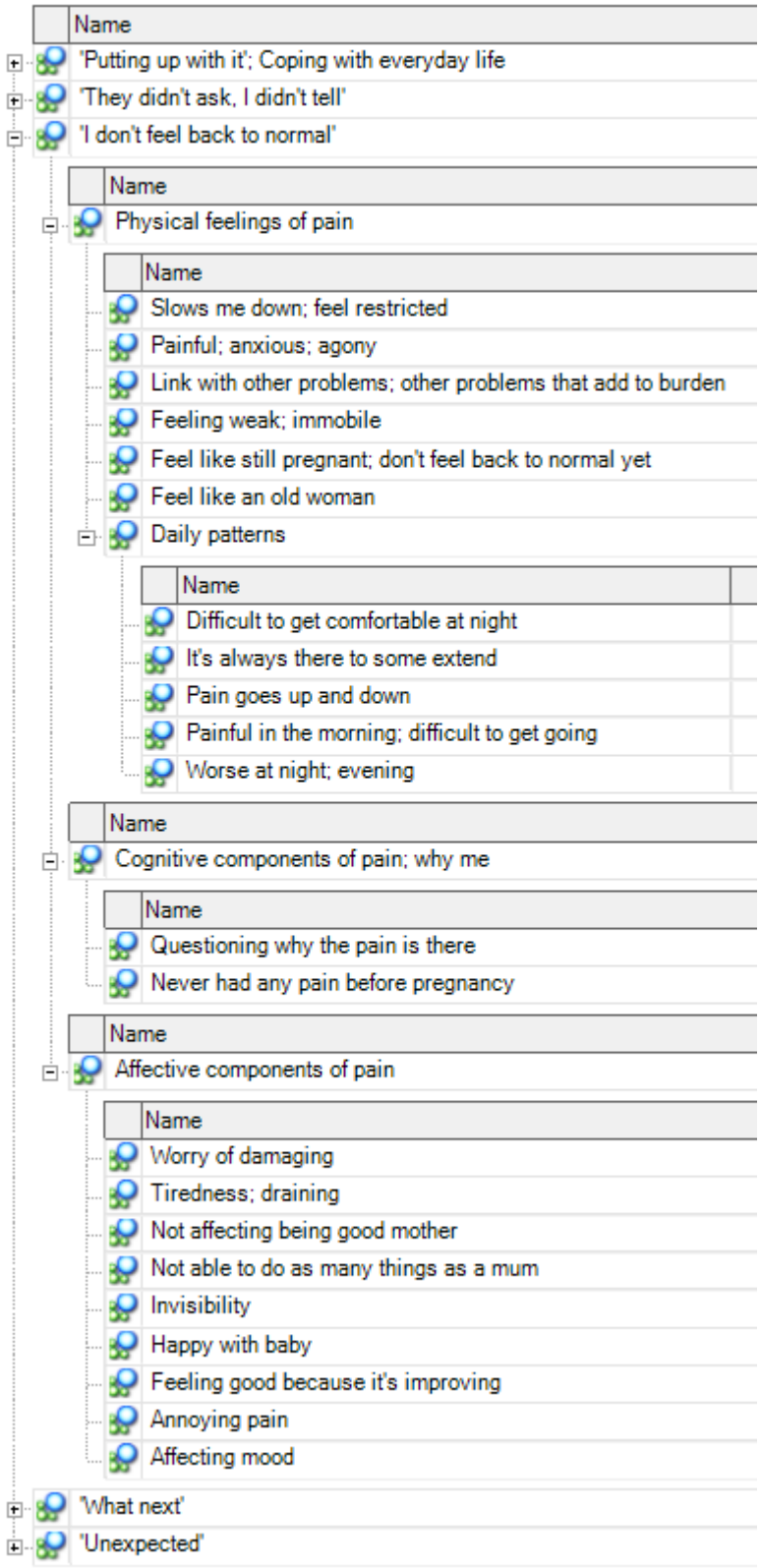


Tree Nodes

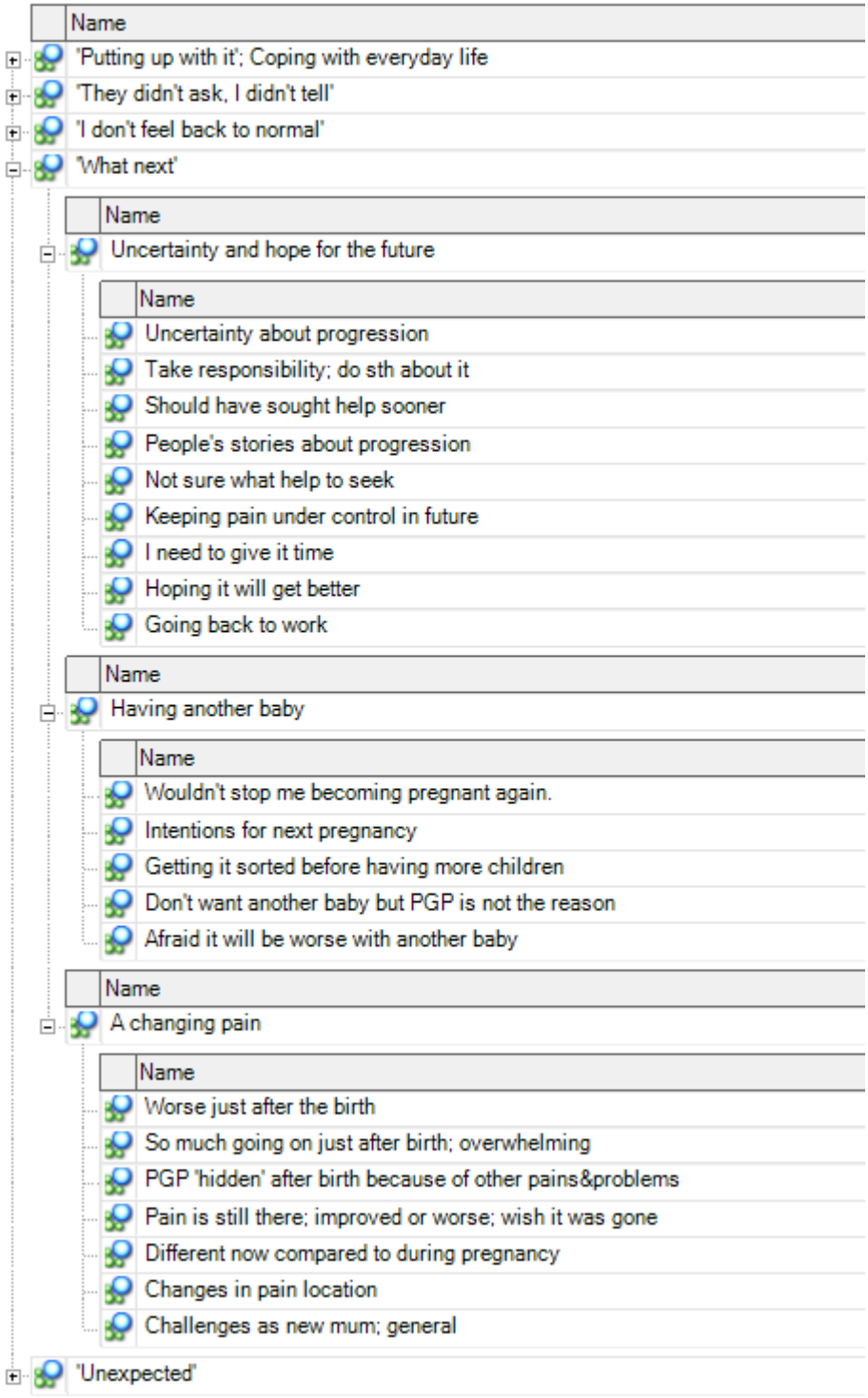

Name
'Putting up with it'; Coping with everyday life
'They didn't ask, I didn't tell'
Name
Barriers to seeking help
Name
Practical barrier to get treatment
Need to go see someone but haven't had time
Don't talk about it; private person
Don't go to doctor quickly
Difficult to get physio appointment
Cost of treatment
Conflicting advice health profs
Name
Healthcare professionals ignore it
Name
They don't ask; I didn't tell
Should ask specific questions
Public health nurse; focus on baby
Importance of relation and time with health prof
Health profs should make it a bigger deal; more thorough check; listen more
Health prof; it just takes time
6 week check; focus on other problems
6 week check; focus on baby
Name
Lack of follow up
Name
Would like more help after birth
Not so happy with care offered; lack of care
Little postnatal follow up
Can't go to hospital anymore after 6 weeks
Name
Talking to others
Name
Talking to friend about it
Talking to family about it
People don't talk about childbirth issues
No negative experiences in interactions
Helpul;unhelpful talking to; advice from other women
Don't want it to become a 'thing'
Name
Triggers to seeking help
'I don't feel back to normal'


Name
'What next'
'Unexpected'

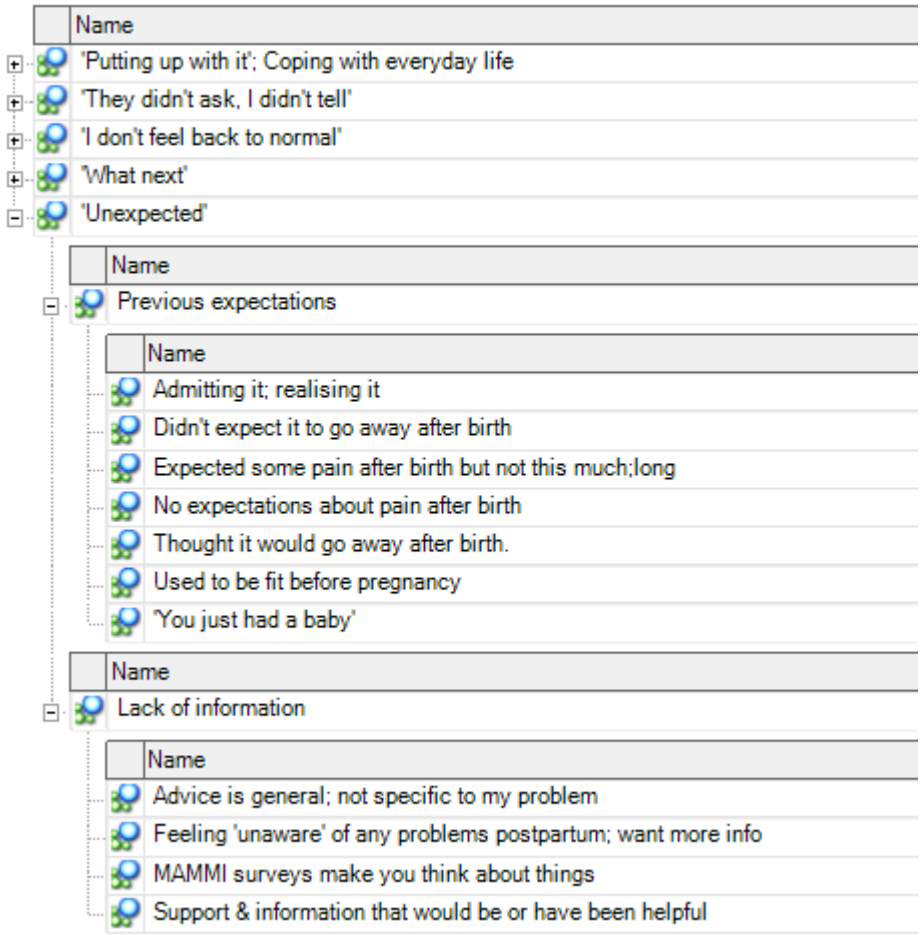
Tree Nodes


Name
'Putting up with it'; Coping with everyday life
'They didn't ask, I didn't tell'
'I don't feel back to normal'
Name
Physical feelings of pain
Name
Slows me down; feel restricted
Painful; anxious; agony
Link with other problems; other problems that add to burden
Feeling weak; immobile
Feel like still pregnant; don't feel back to normal yet
Feel like an old woman
Daily patterns
Name
Difficult to get comfortable at night
It's always there to some extend
Pain goes up and down
Painful in the morning; difficult to get going
Worse at night; evening
Name
Cognitive components of pain; why me
Name
Questioning why the pain is there
Never had any pain before pregnancy
Name
Affective components of pain
Name
Worry of damaging
Tiredness; draining
Not affecting being good mother
Not able to do as many things as a mum
Invisibility
Happy with baby
Feeling good because it's improving
Annoying pain
Affecting mood
'What next'
'Unexpected'

Tree Nodes


Name
'Putting up with it'; Coping with everyday life
'They didn't ask, I didn't tell'
'I don't feel back to normal'
'What next'
Name
Uncertainty and hope for the future
Name
Uncertainty about progression
Take responsibility; do sth about it
Should have sought help sooner
People's stories about progression
Not sure what help to seek
Keeping pain under control in future
I need to give it time
Hoping it will get better
Going back to work
Name
Having another baby
Name
Wouldn't stop me becoming pregnant again.
Intentions for next pregnancy
Getting it sorted before having more children
Don't want another baby but PGP is not the reason
Afraid it will be worse with another baby
Name
A changing pain
Name
Worse just after the birth
So much going on just after birth; overwhelming
PGP 'hidden' after birth because of other pains&problems
Pain is still there; improved or worse; wish it was gone
Different now compared to during pregnancy
Changes in pain location
Challenges as new mum; general
'Unexpected'

Tree Nodes


Name
'Putting up with it'; Coping with everyday life
'They didn't ask, I didn't tell'
'I don't feel back to normal'
'What next'
'Unexpected'
Name
Previous expectations
Name
Admitting it; realising it
Didn't expect it to go away after birth
Expected some pain after birth but not this much;long
No expectations about pain after birth
Thought it would go away after birth.
Used to be fit before pregnancy
'You just had a baby'
Name
Lack of information
Name
Advice is general; not specific to my problem
Feeling 'unaware' of any problems postpartum; want more info
MAMMI surveys make you think about things
Support & information that would be or have been helpful

c) Changes made after the initial analysis:

- In the process of publishing the findings of phase 2 of this study, the following change was made based on the feedback from peer-reviewers:
  An additional theme 'Seeking advice and support' was created to host the categories 'Triggers to seek help', 'barrier to getting help' and 'talking to others', because these admittedly did not really fit under the theme 'They didn't ask, I didn't' tell'.

Appendix 69: Face validity testing of the Pelvic Girdle Questionnaire

We would appreciate your views about the **Pelvic Girdle Questionnaire** that you just completed and would be grateful if you could answer the eight statements below.

1. The language used in the questionnaire was clear.			
Strongly disagree	Disagree	Agree	Strongly agree
2. The questions were easy to understand.			
Strongly disagree	Disagree	Agree	Strongly agree
3. The instructions were clear and adequate.			
Strongly disagree	Disagree	Agree	Strongly agree
4. The presentation and sequencing of the questions was satisfactory.			
Strongly disagree	Disagree	Agree	Strongly agree
5. The layout (e.g. font size) of the questions was satisfactory.			
Strongly disagree	Disagree	Agree	Strongly agree
6. The questions were relevant to Pelvic Girdle Pain.			
Strongly disagree	Disagree	Agree	Strongly agree
7. The length of this questionnaire and time it took to complete was acceptable.			
Strongly disagree	Disagree	Agree	Strongly agree

8. Any comments/thoughts about the Pelvic Girdle Questionnaire:

Thank you!

Appendix 70: Content validity testing of the Pelvic Girdle Questionnaire

CONTENT VALIDITY RATING TOOL: Pelvic Girdle Questionnaire

The aim of this tool is to examine the content validity of the Pelvic Girdle Questionnaire (PGQ) in an Irish context. The PGQ was developed originally by Stuge *et al.* (2011) in Norway as a condition-specific questionnaire to assess pain and disability in people with Pelvic Girdle Pain during pregnancy and postpartum.

CONTENT VALIDITY involves verification that a measurement actually measures what it is expected to measure, covering all areas reasonably and thoroughly (Dorland 2003).

The **Pelvic Girdle Questionnaire** is embedded in the MAMMI study to examine **pain** and **disability** related to Pelvic Girdle Pain (PGP).

The MAMMI study consists of a cohort of consenting primiparous women, of at least 18 years of age, and with a sufficient level of English to understand and complete the questionnaires. In the MAMMI surveys, participants who indicate that they experience pain in the pelvic girdle area in the past 3 months on a pain diagram are then asked to complete the PGQ regarding these symptoms.

A copy of the PGQ is included here in addition to the content validity rating tool.

I should be very grateful if you would:

a. Determine the **RELEVANCE** of each item of the PGQ, that is, determine that the item and the response options are relevant to women with Pelvic Girdle Pain by rating it on a scale of 1-4.

   Please indicate the relevance of each item by placing an X or √ in the box in the appropriate column. The item numbers in this document correspond to the items in ***PELVIC GIRDLE QUESTIONNAIRE.***

b. Review the PGQ in terms of instructions, responses and options for clarity and write your concerns in the 'comment' column of this rating tool. A comment box is also present at the end for any general comments you might have.

Thank you for your support.
Kind Regards
Francesca Wuytack, PhD Student

Explanation of rating scale:

For this rating tool, **RELEVANCE** is determined using the *relevance rating scale* employed by Lynn (1986). This scores items on a scale of 1 to 4 as outlined below:

1. The item is **NOT RELEVANT** to the aim of the PGQ	Comments on scores 1-3 will help clarify why that item is less relevant/need revision. Please write your concerns about an item in this column.
2. The item **NEEDS MAJOR REVISION** to be relevant to the aim of the PGQ	
3. The item **NEEDS MINOR REVISION** to be relevant to the aim of the PGQ	
4. The item is **RELEVANT** to the aim of the PGQ	A score of 4 requires no comment

	Relevance rating SCALE PELVIC GIRDLE QUESTIONNAIRE ITEMS				Comment
PGQ activity subscale (Question C31)					
Score	1. The item IS NOT RELEVANT	2 The item needs MAJOR REVISION to be RELEVANT	3. The item needs MINOR REVISION to be RELEVANT	4. The item IS RELEVANT	Comment on scores 1-3 please. A score of 4 indicates that the item requires no revision. Please write your concerns about any item here.
C31a					
C31b					
C31c					
C31d					
C31e					
C31f					
C31g					
C31h					
C31i					
C31j					
C31k					
C31l					
C31m					
C31n					
C31o					
C31p					

C31q					
C31r					
C31s					
C31t					
PGQ Symptom subscale (Question C32 and C33)					
Score	**1.** **The item IS NOT RELEVANT**	**2** **The item needs MAJOR REVISION to be RELEVANT**	**3.** **The item needs MINOR REVISION to be RELEVANT**	**4.** **The item IS RELEVANT**	**Comment on scores 1-3 please.** **A score of 4 indicates that the item requires no revision.** Please write your concerns about any item here.
C32a					
C32b					
C33a					
C33b					
C33c					

GENERAL comments on the PELVIC GIRDLE QUESTIONNAIRE

Thank you!

Appendix 71: Member Checking of finding of phase 2

COLÁISTE NA TRÍONÓIDE, BAILE ÁTHA CLIATH | TRINITY COLLEGE DUBLIN
Ollscoil Átha Cliath | The University of Dublin

School of Nursing and Midwifery
Trinity College Dublin
24 D'Olier Street
Dublin 2

25 August 2014

Dear

I hope this letter finds you and your family well.

Thanks again for your participation in the MAMMI study, having taken part in an interview about your experiences of having pelvic girdle pain last summer. I thought you might be interested in seeing the draft findings. I have analysed the interviews from you and 22 other women, and I would very much like some feedback from you as to whether or not you recognise your experience in the overall categories that I have identified. I should be grateful, if you had some time to spare, if you would please read the attached findings and fill in the short questionnaire that I have included.

Feel free to get in touch if you have any questions.

Best Wishes,

Francesca

Email: wuytacf@tcd.ie

Tel: 087 1956441

OVERVIEW OF FINDINGS

(Please read before completing the short questionnaire)

Below I have outlined the main themes (numbered 1 to 5) that seem to be apparent in the interviews, each with several sub-themes (given a letter a-d depending on the number of sub-themes). I have giving a brief explanation of each of them and also provided a quote from one of the interviews to illustrate that particular theme/sub-theme.

THEME 1: 'Putting up with it: coping with everyday life'

a. Attitudes to pain: balancing activities
Women said they generally just 'put up with the pain' and got on with their daily lives. Some women said that their pain stopped them from doing things or going out of the house, but for others it did not stop them. Women described trying to balance activities; on the one hand continuing as normal and on the other hand trying to avoid worsening of their symptoms, but this was difficult in their busy lives as new mums.
Example quote: *'It's at the bottom of a long list of things that I have to worry about at the moment so I ignore it.'*
b. Coping & management strategies
Their partner was the main source of support. Other family members also helped out from time to time if they didn't live too far away. Most women felt they could cope with their persistent PPGP, although they wished the pain would no longer be present. Women tried different things to help relieve their symptoms such as rest, stretching, ice packs, and adapting activities being mindful of their posture. Some took painkillers from time to time and a few women had been to a physiotherapist/osteopath/chiropractor. Many women also tried to exercise although it was often difficult to find the time.
Example quote: *'I'm not carrying her up to change her and I'm not changing her on a lower surface. And I suppose always trying out first, like I'd sit first before I'll try and lift her from flat. And then kind of making sure that I'm in front of her to lift her up, so that I'm not lifting her, like, at an awkward angle.'*

c. Everyday challenges
Women described how their pain affected activities related to taking care of their child such as lifting and carrying their baby, and getting down on the floor to play with him/her. Doing too much or intense exercise, or certain housework like hoovering could also make the pain worse for some. Although they generally still could continue such activities despite the pain, it was sometimes frustrating. Women did not feel their pain impacted their general health.
Example quote: *'And it's a lot worse after I've been walking and especially when I'm walking around here because it's hilly. I'll know that evening and the next morning that I've walked!'*

THEME 2: 'I feel like an old women'

a. Physical feelings of pain
The pain pattern and pain severity varied amongst women. Women felt the pain often slowed them down. Women also said the pain was draining and tiring.
Example quote: *'I just feel like slowed. I feel like sometimes that I'm not able to do quite as much with her (baby) as I would like. Sometimes if I'm down on the mat with her I feel like an old lady trying to get up.'*
b. Cognitive components of pain: Why me?
Women questioned why the pain was still there and had some suggestion of what could have contributed, but were uncertain.
Example quote: *'Something also, because having had the section, I don't know if I, like, held myself differently. I don't know if that sounds silly but I don't know if that contributed to the pain.'*
c. Affective components of pain
Women felt frustrated and annoyed by the pain. However, women expressed joy because of having a baby and said that the PPGP did not, and they would not let it, impact on being a good mother.
Example quote: *'I feel frustrated that I can't always do what I want to do. Or that I should maybe change what I was going to do, or that I get pain during an activity and that I think; maybe I should stop or maybe I should take down the intensity. I find that frustrating because I hadn't had to consider that before.*'

THEME 3: 'They didn't ask, I didn't tell'

a. Lack of follow up after birth
Women said they would have liked more advice and follow up after the birth.
Example quote: *'Before you have the baby you have so many check-ups and you have scans and everything, there is fantastic support system, but once you've had the baby it's like you're left to your own devices.'*
b. Healthcare professionals ignore it
Women said that healthcare professionals did not inquire after any pelvic girdle pain symptoms they were still experiencing during their postnatal visits and that it would be good if they asked more specific questions. Women felt these consultations were focussed on the baby and often did not mention their symptoms themselves either. If it was mentioned, they felt it was generally minimised.
Example quote: *'The couple of times that I've seen someone we just talk about him and breastfeeding and stuff like that. So I haven't mentioned it but they haven't asked either. And at the 6 weeks check I didn't mention it to my GP either; I was concentrating on him (baby) and if he was doing well I just didn't think about me so.'*
c. Talking to others
Their partner was the person women generally talked to about their pain symptoms; however, most women did not really talk about it a lot. Talking to other women who had babies was helpful, although there was sometimes a lack of understanding from women who had not experienced similar symptoms.
Example quote: *'He (partner) is aware I still have pain. We don't really talk too much about it, but it's still there, and he is very supportive anyway.'*
d. Triggers to seek help
The women who had sought additional help had been triggered to do so by various reasons; for example, flaring up of symptoms, encouraged by their partner, filling in the MAMMI surveys.
Example quote: *'Well, I probably wouldn't have gotten help if my husband and family wouldn't have pushed it, but I'm glad they did.'*

e. Barriers to getting help Physical feelings of pain
Time to go and see someone, finding someone to mind the baby in the meantime, and the cost of private care were all barriers to seeking help that women described. Women who had contacted the physiotherapy department in the hospital said it was difficult to get through to them and get an appointment.
Example quote: *'I mean, what kind of slowed me going to the physio was again fitting it in, even the appointment, you know, getting somebody to mind the baby if they only have daytime appointments or whatever.'*

THEME 4: 'Unexpected'

a. 'I thought it would be gone by now' –previous expectations
During pregnancy most women thought their pelvic girdle pain symptoms were just 'part of pregnancy' and thought they would resolve with the birth, or they said they had had no expectations during pregnancy about what would happen after the birth with regards to their symptoms.
Example quote: *'But yeah, I thought it would just go away after the birth. I didn't really know I guess, I didn't think anything different.'*
b. Lack of information
Women felt unaware of any problems that might persist postpartum and expressed a desire for more information regarding specific issues that they might encounter after the birth.
Example quote: *'It would be great if there was more information about this type of pain, what to do about it. We got leaflets on the pelvic floor; it was all about the pelvic floor and doing the pelvic floor exercises, but that isn't really what's been impacted in me; it's more the joints and the skeleton, kind of the hips and the back of the pelvis, the tailbone, that sort of thing.'*

THEME 5: 'What next'?

a. A changing pain
For many, symptoms had changed over time in severity or location. This change, however, varied across participants. The first few days or weeks immediately after the birth women say their pelvic girdle pain had been 'hidden' behind general aches or because there was so much going on after the birth.
Example quote: *'Everything else was so overwhelming, you know, I didn't really think about that then. It's more when things settle down that you're going 'Oh, that's not great', because you're all kind of physically sore after the birth everywhere anyway.'*
b. Uncertainty & hope for the future
Women strongly hoped their symptoms would go away soon. However, many were doubtful whether they would. Women whose symptoms had improved somewhat over time were more hopeful that it would get better.
Example quote: *'I hope it's going to go away. And I can't try and get a bit stronger, like I said. It is less than it was, so I feel if I keep working on it, it will go away but I don't know.'*
c. Having another baby; 'I'm worried but it wouldn't stop me'
Women said that they were anxious that their symptoms would be worsened when having another baby, although it would not stop them from becoming pregnant again.
Example quote: *'I suppose I worry for the next pregnancy, what effect that might have. It wouldn't put me off, but I worry it might be more of a constant problem rather than just intermittent, you know.'*

Do you still have any pain in the pelvic girdle area (front and/or back) now? (Please circle)

YES NO

If YES, what best describes your pain since the time of the interview? (Circle)

1. It has improved since the interview
2. It has worsened since the interview
3. It has stayed roughly the same since the interview

Five main themes have been identified so far from the interviews. For each I would like to know the extent you can relate to it, based on your experiences of having pelvic girdle pain. (If your pain has resolved since the time of the interview, then please complete the questions as you would have completed them when you still had the pain).

Do you recognise any of your experiences in the following descriptions of living with pelvic girdle pain after the birth? (Please circle answer)

1. 'I put up with the pain'

Yes, very true to life	Yes, fairly true to life	No, not really true to life	Not true to life at all

2. 'I feel like an old woman'

Yes, very true to life	Yes, fairly true to life	No, not really true to life	Not true to life at all

3. 'They didn't ask, I didn't tell' (Healthcare professional didn't enquire about my pelvic girdle pain)

Yes, very true to life	Yes, fairly true to life	No, not really true to life	Not true to life at all

4. 'Unexpected' (I did not expect the pain to last so long after the birth)

Yes, very true to life	Yes, fairly true to life	No, not really true to life	Not true to life at all

5. 'What next?' (Uncertain about the progression)

Yes, very true to life	Yes, fairly true to life	No, not really true to life	Not true to life at all

Do the following descriptions of living with pelvic girdle pain after the birth have meaning/significance to you? (Please circle answer)

1. 'Putting up with the pain'

Yes, great significance	Yes, some significance	No, not much significance	No significance at all

2. 'I feel like an old woman'

Yes, great significance	Yes, some significance	No, not much significance	No significance at all

3. 'They didn't ask, I didn't tell' (Healthcare professional didn't enquire about my pelvic girdle pain)

Yes, great significance	Yes, some significance	No, not much significance	No significance at all

4. 'Unexpected' (Did not expect the pain to last so long after the birth)

Yes, great significance	Yes, some significance	No, not much significance	No significance at all

5. 'What next?' (Uncertain about the progression)

Yes, great significance	Yes, some significance	No, not much significance	No significance at all

What aspects of your experience have I omitted?

What aspects of your experience have I exaggerated?

Any further comments you may have:

Thank you very much for participating in this study!

Appendix 72: Reflective diary entries examples

Phase of study during which the diary entry was made:	
Conducting interviews	***June 2013***
	After having done all previous interviews at the women's home, I did an interview in a room at the university today. It felt somewhat different; although the woman was very talkative and open about her experiences, it felt less 'personal' in a way, but I guess that was probably more my perception because of the environment.
Conducting interviews	***September 2013***
	I just interviewed a woman who had sought help from a chiropractor. I wonder if the fact that I am a chiropractor myself influenced in any way what she said about the standard postnatal follow-up which she was not very happy about. Would she have been more reserved in her opinion regarding standard postnatal care in relation to PPGP? On the other hand, would she have been less positive about the chiropractic care she had received if I had not been a chiropractor?
During transcription of interviews	***November 2013***
	It seems that women often don't seek support because their symptoms are intermittent. Check this on the pre-interview questionnaire and relate to transcripts when doing the analysis.

Appendix 73: Ethical Approval

COLÁISTE NA TRÍONÓIDE, BAILE ÁTHA CLIATH TRINITY COLLEGE DUBLIN

Dámh na nEolaíochtaí Slainte,
Foirgneamh na Ceimice
Colaiste na Tríonóide,
Baile Átha Cliath 2, Éire.

Faculty of Health Sciences,
Chemistry Building,
Trinity College,
Dublin 2, Ireland.
T:- +353 (0)1 8964255

Francesca Wuytack
School of Nursing and Midwifery
Trinity College Dublin
24 D'Olier Street
Dublin 2

5 April 2013

Study: Maternal health and Maternal morbidity in Ireland (MAMMI Study): Pregnancy related pelvic girdle pain strand

Dear Applicant(s),

Further to a meeting of the Faculty of Health Sciences Ethics Committee held in January 2013, we are pleased to inform you that the above project (as amended) has been approved without further audit.

Yours sincerely,

p.p. Caroline Rooney

__ _____
Dr. Ruth Pilkington
Chairperson
Faculty Research Ethics Committee

Supervisor: Dr Elizabeth Curtis and Prof Cecily Begley

ROTUNDA HOSPITAL
Parnell St • Dublin 1
Tel: 01 - 817 1700 • www.rotunda.ie

DR SAM COULTER-SMITH
MASTER

3rd October, 2011.

Ms. Deirdre Daly,
Lecturer in Midwifery/Research Fellow,
School of Nursing & Midwifery,
24 D'Olier Street,
Dublin 2.

Re: The MAMMI Study (Maternal health And Maternal Morbidity in Ireland)

Dear Deirdre,

Just a note to confirm that the Research Ethics Committee of the Hospital are now happy for you to commence the above study. We wish you well with this work.

Kind regards.

Yours sincerely,

Dr. Michael Geary.
Chairman.
Research Ethics Committee.

• Tel: 01 - 817 1731 • Fax: 01 - 873 0932
• email: masterssecretary@rotunda.ie

Appendix 74: Participant information leaflet Phase 1

Trinity College Dublin

The MAMMI Study

THE ROTUNDA HOSPITAL DUBLIN

Your invitation to join

The MAMMI Study

A study to find out more about the health and health problems of first-time mothers during pregnancy and during the first year after the baby's birth.

Plain English
Approved by NALA

The MAMMI study has been approved by the Research Ethics Committees of the Rotunda Hospital Dublin and the Faculty of Health Sciences, Trinity College Dublin. MAMMI stands for **M**aternal health **A**nd **M**aternal **M**orbidity in **I**reland.

If you have any questions about this study, please contact researcher Deirdre Daly at 087 195 6441.

Contents

Why have I been given this booklet?

You were given this booklet because you are having your first baby. This booklet tells you about the MAMMI study and what it means if you decide to take part.

What is the MAMMI study?

MAMMI stands for **M**aternal health **A**nd **M**aternal **M**orbidity in **I**reland. It is a study to look into the health and health problems of first-time mothers during pregnancy and during the year after the birth.

Why are you doing this study?

We want to find out:

- what health problems, if any, women experience during pregnancy and after the birth of their first baby;
- what health services, if any, pregnant women use; and
- how to improve women's health during and after pregnacy.

What sort of questions will you ask me?

We will ask you about:

- your general health and whether you have any medical conditions or have had any operations;
- any problems you have passing urine (water);
- any problems you have with your bowel movements such as soiling yourself or passing wind when you don't mean to;
- any problems or pain you may have during sex;
- your relationship with your partner and if you are worried about or experiencing violence in the home;
- how often you talk to a doctor, nurse or midwife about your health problems;
- your work or study; and
- the type of flat, apartment or house you live in.

Who else is taking part in this study?

We are inviting women, aged 18 and over, who are having their first baby to take part in the study. We are also asking women who may have had miscarriages or abortions to take part. Altogether, we are asking 1,600 women to take part.

What does taking part in the study mean for me?

We are asking you to complete **five** surveys. You should fill out the first survey (which came with this booklet) while you are pregnant. You complete the other four surveys at 3, 6, 9 and 12 months after you have given birth. We will post these surveys to you closer to the time. The surveys are also on the website, www.MAMMI.ie. Each survey takes about 45 minutes to complete.

If you have problems when you pass urine (water), we may invite you to talk to a midwife in confidence around six months after your baby's birth.

If you decide to take part in the study, we will ask you to:

- sign the consent form which came with this booklet;
- fill out the survey form that came with this booklet while you are pregnant;
- complete four surveys about your health and health problems at 3, 6, 9 and 12 months after your baby's birth; and
- agree to let the research team have access to your and your baby's medical records held by the Rotunda Hospital.

Are there any risks for me or my baby?

We do not see any risks with taking part in this study. However, if we find out during the study that a woman or her baby is being harmed or that there may have been a problem with the care a woman received, we must tell the Study Data Monitoring Group.

What is the Study Data Monitoring Group?

The Study Data Monitoring Group has been set up to:

- guide the research team;
- manage any problems that may arise during the study; and.
- deal with complaints.

If you raise a serious complaint, the group will discuss it. They won't know who you are. If they decide that your complaint should be brought up with midwives or medical regulatory authorities, they will ask your consent to share your personal details but can no longer protect your identity. The regulatory bodies need to know who they are representing.

The group is made up of senior staff from the Rotunda Hospital and Trinity College Dublin.

Are there any benefits for me or my baby?

The study will not benefit you personally. The information you give will be pooled with the information given by all the other women in the study. This will help us to better understand some of the health problems that women experience during pregnancy and after birth and what can be done to help them.

By taking part in the study you will be helping other mothers and their babies in the future.

Can anyone take part in the study?

To take part in the study you must be aged 18 or over and able to read and understand English.

How will you protect my personal information?

- We will keep all the information you give us private and confidential.

- We will give your survey information a unique number (a code). We will also remove your personal details from the first survey. This means that your answers will not be linked to your personal details.

- We will store your personal details and your code number securely and separately from the completed surveys. They will be kept in a locked cabinet, in a locked office in an area where few people have access.

- Paper copies of the information you give on the surveys will be identified by your code.

- We will keep an electronic version of the information you give us on a computer. Only the research team will have access to this information. We will use passwords, encryption (special software to scramble the information so it cannot be read) and anti-virus software to protect the information on the computer.

- If we do a face-to-face interview with you, we will record the interview. We will make a paper copy of the recording and show it to you so that you can confirm it is an accurate copy of the interview. We will then destroy the recording. We will use your code number to identify you on the paper copy. We will store the paper copy in a locked cabinet, in a locked office in an area to which few people have access.

- All members of the study team who have access to your information must sign a confidentiality agreement form.

- We will only disclose your personal details in **exceptional circumstances** for example if you or your baby is being harmed or you complain about the

researchers (for more information see ‘What is the Study Data Monitoring Group’ on page 6).

What happens to the information at the end of the study?

We will publish the findings from the study and may give talks about the findings at healthcare conferences. It will not be possible to identify you or your answers in these publications or talks.

The information from the surveys may also be used in future research projects. However, the **researchers will not contact you unless you give your consent** to future contact. This is explained below.

What do the options on the consent form mean?

The consent form asks you to sign your name to show that you agree to take part in this study.

The consent form also asks you to agree to the following options:

- **Paragraph 5** lets you say if you want a member of the research team to call you after your baby’s birth. If you say yes, they will contact you and invite you to take part in an interview.

- **Paragraph 9** lets you agree to information collected from you as part of this study being used for future research studies.

- **Paragraph 10** lets you say if you want your personal details such as your name and address to be destroyed after stage 1 of this research. If you say yes, the research team will not be able to contact you when this stage of the research is over.

- **Paragraph 11** lets you to agree to us keeping your personal details for five years after the end of the first stage of this research. If you say yes, the research team will contact you and invite you to take part in future studies.

Remember, **you do not have to agree to any of these options.** However, if you do agree, you will help us to continue our study of the health problems of pregnant women, mothers and their babies.

What do I do next?

1. Sign the consent form.
2. Keep a copy for yourself.
3. Post the original signed consent form and your completed survey form using the stamped address envelope that came with this booklet.

Can I leave the study?

Taking part in the study is voluntary. You can withdraw from the study at any time without giving a reason. This will not affect the care you or your baby receives.

How can I get in touch with you?

My name is Deirdre Daly and you can contact me on (087) 195 6441. Either myself or Margaret Carroll, a midwife and member of the research team from Trinity College Dublin, will be in the antenatal clinics for most of the time during the study. We will be happy to answer any questions you may have.

You can also get information on our website, www.mammi.ie.

Appendix 75: Consent form Phase 1 (MAMMI study surveys)

Trinity College Dublin

THE ROTUNDA HOSPITAL DUBLIN

CONSENT FORM

Research title: Maternal heath And Maternal Morbidity in Ireland (The MAMMI study)
Researcher: Deirdre Daly Tel: 087 1956441

DECLARATION by participant: Please tick (X or √) and provide your initials

1.	I have read the information booklet for this research study and I understand the contents.	**Yes [ ] No [ ] initials [ ]**
2.	I have had the opportunity to ask questions and all my questions have been answered to my satisfaction.	**Yes [ ] No [ ] initials [ ]**
3.	I fully understand that my participation is completely voluntary and that I am free to withdraw from the study at any time (prior to publication) without giving a reason and that this will not affect my care or the care that my baby receives in any way.	**Yes [ ] No [ ] initials [ ]**
4.	I agree that my medical records and those of my baby will be accessed by the research team for the purpose of this research.	**Yes [ ] No [ ] initials [ ]**
5.	I understand that I may be contacted by a member of the research team and requested to participate in an interview(s) on one or more topics covered by this research and I consent to this.	**Yes [ ] No [ ] initials [ ]**
6.	I understand that I will be given an opportunity to review the transcript of such an interview(s) to confirm accuracy.	**Yes [ ] No [ ] initials [ ]**
7.	I understand that the transcript will not identify me by name but will use the study code and that the original digital recording will be erased once the accuracy of the transcript has been confirmed.	**Yes [ ] No [ ] initials [ ]**
8.	I understand that information from this research will be published but that I will not be identified as a participant in this research in any publication.	**Yes [ ] No [ ] initials [ ]**
9.	I agree that information obtained from me in this research which has been coded so as not to identify me may be stored and used for the purpose of future research which will have obtained Research Ethics Committee approval without the need for further consent from myself.	**Yes [ ] No [ ] initials [ ]**

10.	I understand that my personal details (name and address and other identifying information that links my identity to the study data) will be destroyed when this study is complete **unless** I have agreed to its retention after that date and to being contacted about future research.	**Yes [ ] No [ ] initials [ ]**
11.	I consent to my personal details being retained for a further period of 5 years after this study has been completed and used to invite me to participate in future research in accordance with this consent.	**Yes [ ] No [ ] initials [ ]**
12.	I consent to being contacted in the future regarding participation in research *relating to the topics covered by this research* which will have Research Ethics Committee approval.	**Yes [ ] No [ ] initials [ ]**
13.	I consent to being contacted in the future in relation to participation in research *unrelated to topics covered by this research* which will have Research Ethics Committee approval.	**Yes [ ] No [ ] initials [ ]**
14.	I understand that the researchers undertaking this research will hold in confidence and securely all collected data and other relevant information.	**Yes [ ] No [ ] initials [ ]**
15.	I freely and voluntarily consent to participating in this research study.	**Yes [ ] No [ ] initials [ ]**

PARTICIPANT'S NAME ……..

Contact Address……..

……..

Phone number:…… **Email:**……..……..

Participant's signature: …… **Date:** ……..……

Name of person taking consent: …… Signature: ……...Date:……..…

Researcher: ……..…. Signature: …….. Date:…….……

One copy of this form must be retained by the participant and one copy must be retained by the researcher

Appendix 76: Participant information leaflet Phase 2

INFORMATION LEAFLET FOR PARTICIPANTS: MAMMI study – Pregnancy-related Pelvic Girdle Pain Strand

Dear Madam,

My name is Francesca Wuytack. I would like to invite you to take part in a study that is part of my PhD at the School of Midwifery (Trinity College Dublin). This study looks at pelvic girdle pain in women during and after pregnancy.

1. What the study is about?

Many women experience pain of the pelvis during pregnancy. Although it often goes away after the birth, for some mothers the pain persists. This study aims to explore women's experiences with regards to the impact of pelvic girdle pain that persists after the birth on their life as a new parent, and find out what health services were available and used by women seeking help for this problem.

2. Who can take part?

To be able to take part you have to speak fluent English and have pain of the pelvic girdle that started during or just after the pregnancy and is still present now.

3. What does the study involve? What will you be asked to do?

If you choose to take participate in the study, we will arrange a time and place for an interview convenient to you. During the interview I will ask you open questions about the pain you are experiencing and how it impacts on your life. You are encouraged to answer freely and add anything you feel is important. The length of the interview may vary but is estimated to be 45 minutes on average.

4. Location of research: The interview will take place somewhere that is convenient for you, for example your home, a room in Trinity College Dublin, a quiet public place.

5. What will happen to the results of the study

You will receive a summary of the results and you will be given the opportunity to provide feedback. The information you and all the other women provide will be of interest to all those concerned with the health and wellbeing of women during pregnancy and after the birth of the baby, including women and health professionals. For this reason the findings from the research study will be presented and published. It will not be possible to identify any woman individually in these presentations and publications.

6. Potential Benefits of the study

By taking part in this study you will help increase our understanding of the impact of having pelvic girdle pain on mothers' lives. The research study is unlikely to benefit you individually, but

it is hoped that the information you and all the other women provide will provide knowledge to improve care for mothers in the future.

7. Potential Risks of the study

No physical risk of harm is related to this study. Everything possible will be done to make sure you feel comfortable.

8. Exclusion from participation

You cannot participate in this study if you are not confident in speaking and understanding English.

9. Confidentiality

Your identity will remain confidential at all times. Your name will not be published and will not be disclosed to anyone outside the study group. A number instead of your name will be used and your personal details will be stored securely and separately from the interview recordings and transcripts. After the study has been completed the recordings and transcripts of the recordings will be kept securely for 5 years and then destroyed permanently. In addition, all information collected will always be stored securely (in a locked cabinet or secured hard disk) only accessible to the research team.

10. Compensation

This study is covered by standard institutional indemnity insurance. Nothing in this document restricts or curtails your rights.

11. Voluntary Participation

If you decide to volunteer to participate in this study, you may withdraw at any time. If you decide not to participate, or if you withdraw, you will not be penalised and will not give up any benefits or care that you had before entering the study.

12. Stopping the study

You understand that the investigators may withdraw your participation in the study at any time without your consent.

13. Permission

This study has been approved by the Ethics committee of the Rotunda Hospital and the Faculty of Health Sciences, Trinity College Dublin.

Further information: *You can get more information or answers to your questions about the study, your participation in the study, and your rights, at any point.* My name is ***Francesca Wuytack*** *and I can be contacted at* ***0851299776*** *or* ***wuytacf@tcd.ie****.*

Appendix 77: Consent form Phase 2

PROJECT TITLE: Maternal Health & Maternal Morbidities in Ireland (MAMMI) – Pregnancy-Related Pelvic Girdle Pain Strand

RESEARCHER: Francesca Wuytack (Contact number: 0851299776)

DECLARATION by participant: Please tick (X or √) and provide your initials

1.	I have read the information booklet for this research study and I understand the contents.	**Yes [ ] No [ ] initials [ ]**
2.	I have had the opportunity to ask questions and all my questions have been answered to my satisfaction.	**Yes [ ] No [ ] initials [ ]**
3.	I fully understand that my participation is completely voluntary and that I am free to withdraw from the study and this interview at any time (prior to publication) without giving a reason and that this will not affect my care or the care that my baby receives in any way.	**Yes [ ] No [ ] initials [ ]**
4.	I understand that I will be given an opportunity to review the transcript from this interview to confirm accuracy.	**Yes [ ] No [ ] initials [ ]**
5.	I understand that the transcript will not identify me by name but will use the study code and that the original digital recording will be erased once the accuracy of the transcript has been confirmed.	**Yes [ ] No [ ] initials [ ]**
6.	I understand that the information from this research and this interview will be published but that I will not be identified as a participant in this research in any publication.	**Yes [ ] No [ ] initials [ ]**
7.	I agree that information obtained from me in this research and this interview which has been coded so as not to identify me may be stored and used for the purpose of future research which will have obtained research Ethics Committee approval without the need for further consent from myself.	**Yes [ ] No [ ] initials [ ]**
8.	I understand that my personal details (name and address and other identifying information that links me to the study data) will be destroyed when this study is complete unless I have agreed to its retention after that date and to being contacted about future research.	**Yes [ ] No [ ] initials [ ]**
10.	I understand that I may be contacted by a member of the research team and requested to participate in an additional interview(s) on more topics covered by this research and I consent to this.	**Yes [ ] No [ ] initials [ ]**

9. I freely and voluntarily consent to participating in this interview. **Yes [ ] No [ ] initials [ ]**

PARTICIPANT'S NAME: ……..

CONTACT ADDRESS: ……..

EMAIL: ……..
PHONE NUMBER: ……..

PARTICIPANT'S SIGNATURE: ……..

Date:……..

Statement of investigator's responsibility: I have explained the nature and purpose of this research study, the procedures to be undertaken and any risks that may be involved. I have offered to answer any questions and fully answered such questions. I believe that the participant understands my explanation and has freely given informed consent.

RESEARCHER'S SIGNATURE:…… Date:……

One copy of this form must be retained by the participant and one copy must be retained by the researcher

Appendix 78: Univariate analysis assessing risk factors for PPGP: Additional tables

a. Age as a risk factor for PPGP

Age (years)	Number of participants	No PPGP	Any PPGP		p	Unadjusted OR (95% CI)
	n=1474	n=589	n=885	%		
18-24	129	50	79	61.2	0.4	0.8 (0.5-1.2)
25-29	346	118	228	65.9		1.0 (ref.)
30-34	631	259	372	59.0	0.03	0.7 (0.6-1.0)
35-39	317	141	176	55.5	0.006	0.6 (0.5-0.9)
≥40	51	21	30	58.8	0.3	0.7 (0.4-1.4)
Missing	4					

Table: Age as a risk factor for PPGP in early/mid pregnancy – 5 categories (Age 25-29 as reference)

Age (years)	Number of participants	No PPGP	Any PPGP		p	Unadjusted OR (95% CI)
	n=1474	n=589	n=885	%		
18-24	129	50	79	61.2		1.0 (ref.)
25-29	346	118	228	65.9	0.3	1.2 (0.8-1.8)
30-34	631	259	372	59.0	0.6	0.9 (0.6-1.3)
35-39	317	141	176	55.5	0.3	0.8 (0.5-1.2)
≥40	51	21	30	58.8	0.8	0.9 (0.5-1.7)
Missing	4					

Table: Age as a risk factor for PPGP in early/mid pregnancy – 5 categories (Age 18-24 as reference)

Age (years)	Number of participants	Anterior PPGP		p	Unadjusted OR (95% CI)	Posterior PPGP		p	Unadjusted OR (95% CI)	Combined anterior & posterior PPGP		p	Unadjusted OR (95% CI)
	n=1474	n=34	%			n=722	%			n=129	%		
18-24	129	1	0.8	0.9	0.9 (0.09-8.7)	62	48.1	0.3	0.8 (0.5-1.2)	16	12.4	0.7	1.2 (0.6-2.1)
25-29	346	3	0.9		1.0 (ref.)	187	54.0		1.0 (ref.)	38	11.0		1.0 (ref.)
30-34	631	17	2.7	0.7	3.2 (0.9-10.9)	304	48.2	0.08	0.8 (0.6-1.0)	51	8.1	0.1	0.7 (0.6-1.1)
35-39	317	12	3.8	0.02	4.5 (1.3-16.1)	143	45.1	0.02	0.7 (0.5-0.9)	21	6.6	0.05	0.6 (0.3-1.0)
≥40	51	1	2.0	0.5	2.3 (0.2-22.4)	26	51.0	0.7	0.9 (0.5-1.6)	3	5.9	0.3	0.5 (0.2-1.7)
Missing	4												

Table: Age as a risk factor for anterior and/or posterior PPGP in early/mid pregnancy – 5 categories (Age 25-29 as reference)

Age (years)	Number of participants	Anterior PPGP		p	Unadjusted OR (95% CI)	Posterior PPGP		p	Unadjusted OR (95% CI)	Combined anterior & posterior PPGP		p	Unadjusted OR (95% CI)
	n=1474	n=34	%			n=722	%			n=129	%		
18-24	129	1	0.8		1.0 (ref.)	62	48.1		1.0 (ref.)	16	12.4		1.0 (ref.)
25-29	346	3	0.9	0.9	1.1 (0.1-10.9)	187	54.0	0.2	1.2 (0.8-1.9)	38	11.0	0.7	0.9 (0.5-1.6)
30-34	631	17	2.7	0.2	3.5 (0.5-26.9)	304	48.2	1.0	1.0 (0.7-1.4)	51	8.1	0.1	0.6 (0.3-1.1)
35-39	317	12	3.8	0.1	5.0 (0.6-39.1)	143	45.1	0.6	0.9 (0.6-1.3)	21	6.6	0.05	0.5 (0.3-0.9)
≥40	51	1	2.0	0.5	2.5 (0.1-41.7)	26	51.0	0.7	1.1 (0.6-2.2)	3	5.9	0.2	0.4 (0.1-1.6)
Missing	4												

Table: Age as a risk factor for anterior and/or posterior PPGP in early/mid pregnancy – 5 categories (Age 18-24 as reference)

Age (years)	Number of participants	No PPGP	Any PPGP		p	Unadjusted OR (95% CI)
	n=1175	n=357	n=818	%		
18-24	78	13	65	83.3	0.07	1.8 (1.0-3.5)
25-29	272	73	199	73.2		1.0 (ref.)
30-34	516	157	359	69.6	0.3	0.8 (0.6-1.2)
35-39	267	98	169	63.3	0.01	0.6 (0.4-0.9)
≥40	42	16	26	61.9	0.1	0.6 (0.3-1.2)
Missing	6					

Table: Age as a risk factor for PPGP in last month of pregnancy – 5 categories (Age 25-29 as reference)

Age (years)	Number of participants	No PPGP	Any PPGP		p	Unadjusted OR (95% CI)
	n=1175	n=357	n=818	%		
18-24	78	13	65	83.3		1.0 (ref.)
25-29	272	73	199	73.2	0.07	0.5 (0.3-1.0)
30-34	516	157	359	69.6	0.01	0.5 (0.2-0.9)
35-39	267	98	169	63.3	0.001	0.3 (0.2-0.7)
≥40	42	16	26	61.9	0.01	0.3 (0.1-0.8)
Missing	6					

Table: Age as a risk factor for PPGP in last month of pregnancy – 5 categories (Age 18-24 as reference)

Age (years)	Number of participants	Anterior PPGP		p	Unadjusted OR (95% CI)	Posterior PPGP		p	Unadjusted OR (95% CI)	Combined anterior & posterior PPGP		p	Unadjusted OR (95% CI)
	n=1175	n=53	%			n=514	%			n=251	%		
18-24	78	2	2.6	0.7	0.8 (0.2-3.6)	34	43.6	0.8	0.9 (0.6-1.5)	29	37.2	0.03	1.8 (1.1-3.2)
25-29	272	9	3.3		1.0 (ref.)	124	45.6		1.0 (ref.)	66	24.3		1.0 (ref.)
30-34	516	28	5.4	0.2	1.7 (0.8-3.6)	231	44.8	0.8	1.0 (0.7-1.3)	100	19.4	0.1	0.8 (0.5-1.1)
35-39	267	14	5.2	0.3	1.6 (0.7-3.8)	105	39.3	0.1	0.8 (0.5-1.1)	50	18.7	0.1	0.7 (0.5-1.1)
≥40	42	0	0	x	x	20	47.6	0.8	1.1 (0.6-2.1)	6	14.3	0.2	0.5 (0.2-1.3)
Missing	6												

Table: Age as a risk factor for anterior and/or posterior PPGP in last month of pregnancy – 5 categories (Age 25-29 as reference)

Age (years)	Number of participants	Anterior PPGP		p	Unadjusted OR (95% CI)	Posterior PPGP		p	Unadjusted OR (95% CI)	Combined anterior & posterior PPGP		p	Unadjusted OR (95% CI)
	n=1175	n=53	%			n=514	%			n=251	%		
18-24	78	2	2.6		1.0 (ref.)	37	43.6		1.0 (ref.)	29	37.2		1.0 (ref.)
25-29	272	9	3.3	0.7	1.3 90.3-6.1)	124	45.6	0.8	1.1 (0.7-1.8)	66	34.3	0.02	0.5 (0.3-0.9)
30-34	516	28	5.4	0.3	2.2 (0.5-9.3)	231	44.8	0.8	1.0 (0.6-1.7)	100	19.4	0.001	0.4 (0.2-0.7)
35-39	267	14	5.2	0.3	2.1 (0.5-9.5)	105	39.3	0.5	0.8 (0.5-1.4)	50	18.7	0.001	0.4 (0.2-0.7)
≥40	42	0	0.0	x	x	20	47.6	0.7	1.2 (0.6-2.5)	6	14.3	0.01	0.3 (0.1-0.7)
Missing	6												

Table: Age as a risk factor for anterior and/or posterior PPGP in last month of pregnancy – 5 categories (Age 18-24 as reference)

b. Body Mass Index as a risk factor for PPGP

BMI	Number of participants	No PPGP	Any PPGP		p	Unadjusted OR (95% CI)
	n=1358	n=548	n=810	%		
Underweight	57	21	36	63.2	0.4	1.3 (0.7-2.2)
Ideal	924	397	527	57.0		1.0 (ref.)
Overweight	247	97	150	60.7	0.3	1.2 (0.9-1.6)
Obese	114	32	82	71.9	0.003	1.9 (1.3-3.0)
Very obese	16	1	15	93.8	0.02	11.3 (1.5-85.9)
Missing	120					

Table: BMI as a risk factor for PPGP in early/mid pregnancy – 5 categories

BMI	Number of participants	No PPGP	Any PPGP		p	Unadjusted OR (95% CI)
	n=1094	n=333	n=761	%		
Underweight	44	17	27	61.4	0.3	0.7 (0.4-1.3)
Ideal	740	228	512	69.2		1.0 (ref.)
Overweight	196	62	134	68.4	0.8	1.0 (0.7-1.4)
Obese	102	23	79	77.5	0.09	1.5 (0.9-2.5)
Very obese	12	3	9	75	0.7	1.3 (0.4-5.0)
Missing	87					

Table: BMI as a risk factor for PPGP in the last month of pregnancy – 5 categories

BMI	Number of participants	Anterior PPGP		p	Unadjusted OR (95% CI)	Posterior PPGP		p	Unadjusted OR (95% CI)	Combined anterior & posterior PPGP		p	Unadjusted OR (95% CI)
	n=1358	n=31	%			n=658	%			n=121	%		
Underweight	57	1	1.8	0.9	0.9 (0.1-6.5)	31	54.4	0.3	1.3 (0.8-2.3)	4	7.0	0.8	0.9 (0.3-2.5)
Ideal	924	19	2.1		1.0 (ref.)	435	47.1		1.0 (ref.)	73	7.9		1.0 (ref.)
Overweight	247	7	2.8	0.5	1.4 (0.6-3.3)	124	50.2	0.4	1.1 (0.9-1.5)	19	7.7	0.9	1.0 (0.6-1.6)
Obese	114	3	2.6	0.7	1.3 (0.4-4.4)	58	50.9	0.4	1.2 (0.8-1.7)	21	18.4	0.0	2.6 (1.5-4.5)
Very obese	16	1	6.3	0.3	3.2 (0.4-25.3)	10	62.5	0.2	1.9 (0.7-5.2)	4	25	0.02	3.9 (1.2-12.4)
Missing	120												

Table: BMI as a risk factor for anterior and/or PPGP in early/mid pregnancy – 5 categories

BMI	Number of participants	Anterior PPGP		p	Unadjusted OR (95% CI)	Posterior PPGP		p	Unadjusted OR (95% CI)	Combined anterior & posterior PPGP		p	Unadjusted OR (95% CI)
	n=1094	n=53	%			n=476	%			n=232	%		
Underweight	44	1	2.3	0.4	0.1 (0.1-3.0)	12	27.3	0.02	0.5 (0.2-0.9)	14	31.8	0.04	2.0 (1.1-3.9)
Ideal	740	40	5.4		1.0 (ref.)	334	45.1		1.0 (ref.)	138	18.6		1.0 (ref.)
Overweight	196	7	3.6	0.3	0.6 (0.3-1.5)	82	41.8	0.4	1.0 (0.6-1.5)	45	23	0.2	1.3 (0.9-1.9)
Obese	102	5	4.9	0.8	0.9 (0.3-2.3)	45	44.1	0.9	0.4 (0.1-1.5)	29	28.4	0.02	1.7 (1.1-2.8)
Very obese	12	0	0.0	1	0.4 (0.1-3.0)	3	25.0	0.2	0.5 (0.1-1.5)	6	50	0.01	4.3 (1.4-13.7)
Missing	87												

Table: BMI as a risk factor for anterior and/or PPGP in the last months of pregnancy – 5 categories

c. Educational level as a risk factor for PPGP

Educational level	Number of participants	No PPGP	Any PPGP		p	Unadjusted OR (95% CI)
	n=1468	n=587	n=881	%		
No formal education/primary /lower secondary/ upper secondary	390	141	249	63.8	0.07	1.2 (1.0-1.6)
University degree or equivalent/ postgraduate	1078	446	632	58.6		1.0 (ref.)
Missing	10					

Table: Highest educational level as a risk factor for PPGP in early/mid pregnancy – 2 categories

Educational level	Number of participants	No PPGP	Any PPGP		p	Unadjusted OR (95% CI)
	n=1172	n=356	n=816	%		
No formal education/primary /lower secondary/ upper secondary	277	68	209	75.5	0.02	1.5 (1.1-2.0)
University degree or equivalent/postgraduate	895	288	608	67.8		1.0 (ref.)
Missing	9					

Table: Highest educational level as a risk factor for PPGP in the last month of pregnancy – 2 categories

Educational level	Number of participants	Anterior PPGP		p	Unadjusted OR (95% CI)	Posterior PPGP		p	Unadjusted OR (95% CI)	Combined anterior & posterior PPGP		p	Unadjusted OR (95% CI)
	n=1468	n=34	%			n=718	%			n=129	%		
No formal education/primary/lower secondary	390	7	1.8	0.4	0.7 (0.3-1.6)	201	51.5	0.2	1.2 (0.9-1.5)	41	10.5	0.2	1.3 (0.9-2.0)
University degree or equivalent/postgraduate	1078	27	2.5		1.0 (ref.)	517	48		1.0 (ref.)	88	8.2		1.0 (ref.)
Missing	10												

Table: Highest educational level as a risk factor for anterior and/or posterior PPGP in early/mid pregnancy – 2 categories

Educational level	Number of participants	Anterior PPGP		p	Unadjusted OR (95% CI)	Posterior PPGP		p	Unadjusted OR (95% CI)	Combined anterior & posterior PPGP		p	Unadjusted OR (95% CI)
	n=1172	n=53	%			n=513	%			n=250	%		
No formal education/primary /lower secondary	277	12	4.3	0.9	0.9 (0.5-1.8)	127	45.8	0.4	1.1 (0.9-1.5	70	25.3	0.07	1.3 (1.0-1.8)
University degree or equivalent/ postgraduate	895	41	4.6		1.0 (ref.)	386	43.1		1.0 (ref.)	180	20.1		1.0 (ref.)
Missing	9												

Table: Highest educational level as a risk factor for anterior and/or posterior PPGP in the last month of pregnancy – 2 categories

Appendix 79: Univariate analysis assessing prognostic factors for PPGP persisting 0-3 months postpartum: Additional tables

Appendix 79: Univariate analysis assessing prognostic factors for PPGP persisting 0-3 months postpartum: Additional tables

a. Age as a prognostic factor for PPGP persisting 0-3 months postpartum

Age (years)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=823	n=257	n=566	%		
18-24	202	14	51	78.5	0.1	0.18 (0.9-3.4)
25-29	361	66	136	67.3		1.0 (ref.)
30-34	169	121	240	66.5	0.8	1.0 (0.7-1.4)
35-39	26	50	119	70.4	0.5	1.2 (0.7-1.8)
≥40	65	6	20	76.9	0.3	0.6 (0.9-3.4)
Missing	0					

Table: Age as a prognostic factor for PPGP persisting 0-3 months postpartum – 5 categories (Age 25-29 as reference)

Age (years)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=823	n=257	n=566	**%**		
18-24	65	14	51	78.5		1.0 (ref.)
25-29	202	66	136	67.3	0.1	0.6 (0.3-1.1)
30-34	361	121	240	66.5	0.06	0.5 (0.3-1.0)
35-39	169	50	119	70.4	0.2	0.7 (0.3-1.3)
≥40	26	6	20	76.9	0.9	0.9 (0.3-2.7)
Missing	0					

Table: Age as a prognostic factor for PPGP persisting 0-3 months postpartum – 5 categories (Age 18-24 as reference)

b. Body Mass Index (BMI) as a prognostic factor for PPGP persisting 0-3 months postpartum

BMI	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=763	**n=244**	**n=512**	**%**		
Underweight	28	7	21	75	0.3	1.6 (0.7-3.8)
Ideal	513	176	337	65.7		1.0 (ref.)
Overweight	134	46	88	65.7	1	1.0 (0.7-1.5)
Obese	79	13	66	83.5	0.002	2.7 (1.4-4.9)
Very obese	9	2	7	77.8	0.5	1.8 (0.4-8.9)
Missing	60					

Table: Body Mass Index (BMI) as a prognostic factor for PPGP persisting 0-3 months postpartum – 5 categories (BMI 18.5-24.99 as reference)

c. Educational level as a prognostic factor for PPGP persisting 0-3 months postpartum

Educational level	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=820	n=256	n=564	%		
No formal education/ primary/lower secondary	15	3	12	80.0	0.4	2.1 (0.6-7.8)
Upper secondary	197	49	148	75.1	0.02	1.6 (1.1-2.4)
University degree or equivalent	316	102	214	67.7	0.5	1.1 (0.8-1.6)
Postgraduate qualification	292	102	190	65.1		1.0 (ref.)
Missing	3					

Table: Educational level as a prognostic factor for PPGP persisting 0-3 months postpartum – 4 categories (postgraduate qualification as reference)

d. Employment status as a prognostic factor for PPGP persisting 0-3 months postpartum

Employment status	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=814	n=256	n=558	%		
Full-time paid work	605	197	408	67.4		1.0 (ref.)
Part-time paid work/casual work	72	21	51	70.8	0.6	1.2 (0.7-2.0)
Unemployed/gave up job after birth	89	22	67	75.3	0.1	1.5 (0.9-2.5)
Student/pupil	10	6	4	40.0	0.1	0.3 (0.09-1.2)
Looking after home/family	33	8	25	75.8	0.3	1.5 (0.7-3.4)
Unable to work due to sickness/disability	5	2	3	60.0	0.7	0.7 (0.1-4.4)
Missing	9					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Employment status as a prognostic factor for PPGP persisting 0-3 months postpartum – 6 categories (full-time paid employment as reference)

e. Return to work as a prognostic factor for PPGP persisting 0-3 months postpartum

Return to work	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=821	n=257	n=564	%		
Returned to work/study	42	15	27	64.3		1.0 (ref.)
Maternity leave (paid or unpaid)	684	222	462	67.5	0.7	1.2 (0.6-2.2)
Not in paid work or studying	95	20	75	78.9	0.07	2.1 (0.9-4.6)
Missing	2					

Table: Return to work as a prognostic factor for PPGP persisting 0-3 months postpartum – 3 categories (Returned to work/study as reference)

f. Anxiety during pregnancy as a prognostic factor for PPGP persisting 0-3 months postpartum

Anxiety during pregnancy (DASS)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=803	n=254	n=550	%		
Normal	659	212	447	67.8		1.0 (ref.)
Mild	88	24	64	72.7	0.4	1.3 (0.8-2.1)
Moderate	32	11	21	65.6	0.8	0.9 (0.4-1.9)
Severe	13	2	11	84.6	0.2	2.6 (0.6-11.9)
Very severe	11	4	7	63.6	0.8	0.8 (0.2-2.7)
Missing	20					

Table x: Anxiety during pregnancy as a prognostic factor for PPGP persisting 0-3 months postpartum – 5 categories

g. Depression during pregnancy as a prognostic factor for PPGP persisting 0-3 months postpartum

Depression during pregnancy (DASS)	Number of participants	No persistent PPGP	Persistent PPGP*		P	Unadjusted OR (95% CI)
	n=809	n=252	n=557	%		
Normal	707	231	476	67.3		1.0 (ref.)
Mild	56	15	41	73.2	0.4	1.3 (0.7-2.4)
Moderate	29	2	27	93.1	0.01	6.6 (1.5-27.8)
Severe	13	3	10	76.9	0.5	1.6 (0.4-5.9)
Very severe	4	1	3	75.0	0.7	1.5 (0.2-14.1)
Missing	14					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table x: Depression (DASS) during pregnancy as a prognostic factor for PPGP persisting 0-3 months postpartum – 5 categories

Depression during pregnancy (EPDS)	Number of participants	No persistent PPGP	Persistent PPGP		P	Unadjusted OR (95% CI)
	n=811	n=253	n=509	%		
Score 0-9	667	217	450	67.5		1.0 (ref.)
Score 10-12	78	19	59	75.6	0.1	1.5 (0.9-2.6)
Score 13-19	57	17	40	70.2	0.7	1.1 (0.6-2.0)
Score ≥20	9	0	9	100	X	x
Missing	12					

Table x: Depression (EPDS) during pregnancy as a prognostic factor for PPGP persisting 0-3 months postpartum – 4 categories

h. Stress during pregnancy as a prognostic factor for PPGP persisting 0-3 months postpartum

Stress during pregnancy (DASS)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=805	n=251	n=554	%		
Normal	708	229	479	67.7		1.0 (ref.)
Mild	44	10	34	77.3	0.2	1.6 (0.8-3.3)
Moderate	34	8	26	76.5	0.3	1.6 (0.7-3.5)
Severe	10	2	8	80.0	0.4	1.9 (0.4-9.1)
Very severe	9	2	7	77.8	0.5	1.7 (0.3-8.1)
Missing	18					

Table x: Stress during pregnancy as a prognostic factor for PPGP persisting 0-3 months postpartum – 5 categories

Appendix 80: Univariate analysis assessing prognostic factors for PPGP persisting 3-6 months postpartum: Additional tables

a. Age as a prognostic factor for PPGP persisting 3-6 months postpartum

Age (years)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=717	n=350	n=367	%		
18-24	53	19	34	64.2	0.04	2.0 (1.1-3.7)
25-29	175	92	83	47.4		1.0 (ref.)
30-34	320	156	164	51.3	0.4	1.2 (0.8-1.7)
35-39	147	72	75	51.0	0.5	1.2 (0.7-1.8)
≥40	22	11	11	50.0	0.8	1.1 (0.45-2.7)
Missing	0					

Table: Age as a prognostic factor for PPGP persisting 3-6 months postpartum – 5 categories (25-29 as reference)

Age (years)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=717	n=350	n=367	%		
18-24	53	19	34	64.2		1.0 (ref.)
25-29	175	92	83	47.4	0.04	0.5 (0.3-1.0)
30-34	320	159	164	51.3	0.08	0.6 (0.3-1.1)
35-39	147	72	75	51.0	0.1	0.6 (0.3-1.1)
≥40	22	11	11	50.0	0.3	0.6 (0.2-1.5)
Missing	0					

Table: Age as a prognostic factor for PPGP persisting 3-6 months postpartum – 5 categories (18-25 as reference)

b. Body Mass Index (BMI) as a prognostic factor for PPGP persisting 3-6 months postpartum

BMI	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=669	n=329	n=340	%		
Underweight	24	12	12	50.0	0.9	1.0 (0.5-2.3)
Ideal	448	227	221	49.3		1.0 (ref.)
Overweight	117	65	52	44.4	0.3	0.8 (0.5-1.2)
Obese	71	21	50	70.4	0.001	2.4 (1.4-4.2)
Very obese	9	4	5	55.6	0.7	1.3 (0.3-4.8)
Missing	48					

Table: BMI as a prognostic factor for PPGP persisting 3-6 months postpartum – 5 categories (BMI 18.5-24.99 as reference)

c. Educational level as a prognostic factor for PPGP persisting 3-6 months postpartum

Educational level	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=715	n=349	n=366	%		
No formal education/primary /lower secondary	10	3	7	70.0	0.2	2.5 (0.6-9.9)
Upper secondary	170	71	99	58.2	0.04	1.5 (1.0-2.2)
University degree or equivalent	278	142	136	48.9	0.9	1.0 (0.7-1.4)
Postgraduate qualification	257	133	124	48.2		1.0 (ref.)
Missing	2					

Table: Educational level as a prognostic factor for PPGP persisting 3-6 months postpartum – 4 categories (postgraduate qualification as reference)

d. Employment status as a prognostic factor for PPGP persisting 3-6 months postpartum

Employment status	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=710	n=348	n=362	%		
Full-time paid work	495	248	247	49.9		1.0 (ref.)
Part-time paid work/casual work	83	40	43	51.8	0.7	1.1 (0.7-1.7)
Unemployed/gave up job after birth	86	36	50	58.1	0.2	1.4 (0.9-2.2)
Student/pupil	9	5	4	44.4	0.7	0.8 (0.2-3.0)
Looking after home/family	29	15	14	48.3	0.9	0.9 (0.4-2.0)
Unable to work due to sickness/disability	8	4	4	50	1.0	1.0 (0.2-4.1)
Missing	7					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Employment status as a prognostic factor for PPGP persisting 3-6 months postpartum – 6 categories (full-time paid employment as reference)

e. Return to work as a prognostic factor for PPGP persisting 3-6 months postpartum

Return to work	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=713	n=348	n=365	%		
Returned to work/study	152	71	81	53.3		1.0 (ref.)
Maternity leave (paid or unpaid)	461	235	226	49.0	0.4	0.8 (0.6-1.2)
Not in paid work or studying	100	42	58	58.0	0.5	1.2 (0.7-2.0)
Missing	4					

Table: Return to work as a prognostic factor for PPGP persisting 3-6 months postpartum – 3 categories (Returned to work/study as reference)

f. Anxiety during pregnancy and 0-3 months postpartum as a prognostic factor for PPGP persisting 3-6 months postpartum

Anxiety during pregnancy (DASS)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=703	n=345	n=358	%		
Normal	582	293	289	49.7		1.0 (ref.)
Mild	72	30	42	58.3	0.2	1.4 (0.9-3.2)
Moderate	30	15	15	50.0	1	1.0 (0.5-2.1)
Severe	12	3	9	75.0	0.1	3.0 (0.8-11.3)
Very severe	7	4	3	42.9	0.7	0.8 (0.2-3.4)
Missing	14					

Table: Anxiety during pregnancy as a prognostic factor for PPGP persisting 3-6 months postpartum – 5 categories

Anxiety 0-3 months postpartum (DASS)	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=711	n=349	n-362	%		
Normal	638	316	322	50.5		1.0 (ref.)
Mild	45	23	22	48.9	0.8	0.9 (0.5-1.7)
Moderate	15	6	9	60.0	0.7	1.5 (0.5-4.2)
Severe	8	3	5	62.5	0.5	1.6 (0.4-6.9)
Very severe	5	1	4	80.0	0.2	3.9 (0.4-35.3)
Missing	6					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Anxiety 0-3 months postpartum as a prognostic factor for PPGP persisting 3-6 months postpartum – 5 categories

g. Depression during pregnancy and 0-3 months postpartum as a prognostic factor for PPGP persisting 3-6 months postpartum

Depression during pregnancy (DASS)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=704	n=344	n=360	%		
Normal	620	310	310	50.0		1.0 (ref.)
Mild	48	20	28	58.3	0.3	1.4 (0.8-2.5)
Moderate	21	8	13	61.9	0.3	1.6 (0.7-4.0)
Severe	12	4	8	66.7	0.3	2.0 (0.6-6.7)
Very severe	3	2	1	33.3	0.6	0.5 (0.5-5.5)
Missing	13					

Table: Depression (DASS) during pregnancy as a prognostic factor for PPGP persisting 3-6 months postpartum – 5 categories

Depression during pregnancy (EPDS)	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=706	n=344	n=362	%		
Score 0-9	584	290	294	50.0		1.0 (ref.)
Score 10-12	66	31	35	58.3	0.7	1.1 (0.7-1.9)
Score 13-19	47	20	20	61.9	0.4	1.3 (0.7-2.4)
Score ≥20	9	3	30	66.7	0.3	2.0 (0.5-8.0)
Missing	11					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Depression (EPDS) during pregnancy as a prognostic factor for PPGP persisting 3-6 months postpartum – 4 categories

Depression 0-3 months postpartum (DASS)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=709	n=348	n=361	%		
Normal	631	309	322	51.0		1.0 (ref.)
Mild	36	21	15	41.7	0.3	0.7 (0.3-1.4)
Moderate	33	15	18	54.5	0.7	1.2 (0.6-2.3)
Severe	5	2	3	60.0	0.7	1.5 (0.2-8.7)
Very severe	4	1	3	75.0	0.4	2.9 (0.3-27.8)
missing	8					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Depression (DASS) 0-3 months postpartum as a prognostic factor for PPGP persisting 3-6 months postpartum – 3 categories

Depression 0-3 months postpartum (EPDS)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=709	n=345	n=364	%		
Score 0-9	613	310	303	49.4		1.0 (ref.)
Score 10-12	44	15	29	65.9	0.04	2.0 (1.0-3.8)
Score 13-19	46	19	27	58.7	0.2	1.5 (0.8-2.7)
Score ≥20	6	1	5	83.3	0.1	5.1 (0.6-44.0)
missing	8					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Depression (EPDS) 0-3 months postpartum as a prognostic factor for PPGP persisting 3-6 months postpartum – 4 categories

h. Stress during pregnancy and 0-3 months postpartum as a prognostic factor for PPGP persisting 3-6 months postpartum

Stress during pregnancy (DASS)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=704	n=344	n=360	%		
Normal	622	311	311	50.0		1.0 (ref.)
Mild	48	20	28	58.3	0.3	1.4 (0.8-2.5)
Moderate	21	8	13	61.9	0.3	1.6 (0.7-4.0)
Severe	12	4	8	66.7	0.3	2.0 (0.6-6.7)
Very severe	3	2	1	33.3	0.6	0.5 (0.5-5.5)
Missing	13					

Table: Stress during pregnancy as a prognostic factor for PPGP persisting 3-6 months postpartum – 5 categories

Stress 0-3 months postpartum (DASS)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=710	n=348	n=362	%		
Normal	597	303	294	49.2		1.0 (ref.)
Mild	52	24	28	53.8	0.5	1.2 (0.7-2.1)
Moderate	42	16	26	61.9	0.1	1.7 (0.9-3.2)
Severe	17	4	13	76.5	0.04	3.3 (1.1-10.4)
Very severe	2	1	1	50.0	1.0	1.0 (0.06-16.6)
Missing	13					

Table: Stress 0-3 months postpartum as a prognostic factor for PPGP persisting 3-6 months postpartum

Appendix 81: Univariate analysis assessing prognostic factors for PPGP persisting 6-9 months postpartum: Additional tables

a. Age as a prognostic factor for PPGP persisting 6-9 months postpartum

Age (years)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=618	n=369	n=250	%		
18-24	44	20	24	54.5	0.1	1.9 (0.9-3.6)
25-29	150	91	59	39.3		1.0 (ref.)
30-34	275	165	110	40.0	0.9	1.0 (0.7-1.5)
35-39	129	80	49	38.0	0.8	0.9 (0.6-1.5)
≥40	20	12	8	40.0	1	1.0 (0.4-2.7)
Missing	0					

Table: Age as a prognostic factor for PPGP persisting 6-9 months postpartum – 5 categories (25-29 as reference)

Age (years)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=618	n=369	n=250	%		
18-24	44	20	24	54.5		1.0 (ref.)
25-29	150	91	59	39.3	0.1	0.5 (0.3-1.1)
30-34	275	165	110	40.0	0.1	0.6 90.3-1.1)
35-39	129	80	49	38.0	0.1	0.5 (0.3-1.0)
≥40	20	12	8	40.0	0.3	0.6 (0.2-1.6)
Missing	0					

Table: Age as a prognostic factor for PPGP persisting 6-9 months postpartum – 5 categories (18-25 as reference)

b. Body Mass Index (BMI) as a prognostic factor for PPGP persisting 6-9 months postpartum

BMI	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=578	n=348	n=230	%		
Underweight	19	12	7	36.8	1.0	1.0 (0.4-2.6)
Ideal	393	248	145	36.9		1.0 (ref.)
Overweight	97	63	34	35.1	0.7	0.9 (0.6-1.5)
Obese	62	22	40	64.5	<0.001	3.1 (1.8-5.4)
Very obese	7	3	4	57.1	0.3	2.3 (0.5-10.3)
Missing	40					

Table: BMI as a prognostic factor for PPGP persisting 6-9 months postpartum – 5 categories (BMI 18.5-24.99 as reference)

c. Educational level as a prognostic factor for PPGP persisting 6-9 months postpartum

Educational level	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=616	n=367	n=249	%		
No formal education/primary /lower secondary	8	3	5	62.5	0.2	2.7 (0.6-11.7)
Upper secondary	139	68	71	51.1	0.01	1.7 (1.1-2.6)
University degree or equivalent	245	157	88	35.9	0.6	0.9 (0.6-1.3)
Postgraduate qualification	224	139	85	37.9		1.0 (ref.)
Missing	2					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Educational level as a prognostic factor for PPGP persisting 6-9 months postpartum – 4 categories (postgraduate qualification as reference)

d. Employment status as a prognostic factor for PPGP persisting 6-9 months postpartum

Employment status	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=617	n=368	n=249	%		
Full-time paid work	395	239	156	39.5		1.0 (ref.)
Part-time paid work/casual work	100	53	47	47.0	0.2	1.4 (0.9-2.1)
Unemployed/gave up job after birth	76	50	26	34.2	0.4	0.8 (0.5-1.3)
Student/pupil	6	2	4	66.7	0.2	3.1 (0.6-16.9)
Looking after home/family	29	16	13	44.8	0.6	1.2 (0.6-2.7)
Unable to work due to sickness/disability	11	8	3	27.3	0.4	0.6 (0.2-2.2)
Missing	1					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Employment status as a prognostic factor for PPGP persisting 6-9 months postpartum – 6 categories (full-time paid employment as reference)

e. Anxiety during pregnancy and 0-3 months postpartum as a prognostic factor for PPGP persisting 6-9 months postpartum

Anxiety during pregnancy	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=608	n=363	n=245	%		
Normal	496	305	191	38.5		1.0 (ref.)
Mild	67	34	33	49.3	0.09	1.6 (0.9-2.6)
Moderate	28	16	12	42.9	0.6	1.2 (0.6-2.6)
Severe	11	5	6	54.5	0.3	1.9 (0.6-6.4)
Very severe	6	3	3	50.0	0.6	1.6 (0.3-8.0)
Missing	10					

Table: Anxiety during pregnancy as a prognostic factor for PPGP persisting 6-9 months postpartum – 5 categories

Anxiety 0-3 months postpartum	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=612	n=364	n=248	%		
Normal	549	332	217	39.5		1.0 (ref.)
Mild	41	22	19	46.3	0.4	1.3 (0.7-2.5)
Moderate	12	7	5	41.7	0.9	1.1 (0.3-3.5)
Severe	7	2	5	71.4	0.1	3.8 (0.7-19.9)
Very severe	3	1	2	66.7	0.4	3.1 (0.3-34.0)
Missing	8					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Anxiety 0-3 months postpartum as a prognostic factor for PPGP persisting 6-9 months postpartum – 5 categories

f. Depression during pregnancy and 0-3 months postpartum as a prognostic factor for PPGP persisting 6-9 months postpartum

Depression during pregnancy (DASS)	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=609	n=363	n=246	%		
Normal	537	322	215	40.0		1.0 (ref.)
Mild	38	22	16	42.1	0.8	1.1 (0.6-2.1)
Moderate	20	12	8	40.0	1.0	1.0 (0.4-5.2)
Severe	11	5	6	54.5	0.3	1.8 (0.5-6.0)
Very severe	3	2	1	33.3	0.8	0.7 (0.07-8.3)
Missing	9					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Depression (DASS) during pregnancy as a prognostic factor for PPGP persisting 6-9 months postpartum – 5 categories

Depression during pregnancy (EPDS)	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=607	n=360	n=247	%		
Score 0-9	500	297	203	40.6		1.0 (ref.)
Score 10-12	57	34	23	40.4	1.0	1.0 (0.6-1.7)
Score 13-19	41	25	16	39.0	0.8	0.9 (0.5-1.8)
Score ≥20	9	4	5	55.6	0.4	1.8 (0.5-6.9)
Missing	11					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Depression (EPDS) during pregnancy as a prognostic factor for PPGP persisting 6-9 months postpartum – 4 categories

Depression 0-3 months postpartum (DASS)	Number of participants	No persistent PPGP	Persistent PPGP*		P	Unadjusted OR (95% CI)
	n=611	n=365	n=246	%		
Normal	542	325	217	40.0		1.0 (ref.)
Mild	32	22	10	31.3	0.3	0.7 (0.3-1.5)
Moderate	29	15	14	48.3	0.4	1.4 (0.7-3.0)
Severe	4	2	2	50.0	0.7	1.5 (0.2-10.7)
Very severe	4	1	3	75.0	0.2	4.5 (0.5-43.4)
Missing	7					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Depression (DASS) 0-3 months postpartum as a prognostic factor for PPGP persisting 6-9 months postpartum – 5 categories

Depression 0-3 months postpartum (EPDS)	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=613	n=363	n=250	%		
Score 0-9	526	322	204	38.8		1.0 (ref.)
Score 10-12	42	19	23	54.8	0.05	1.9 (1.0-5.6)
Score 13-19	42	21	21	50.0	0.2	1.6 (0.8-3.0)
Score ≥20	3	1	2	66.7	0.3	3.2 (0.3-35.0)
Missing	5					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Depression (EPDS) 0-3 months postpartum as a prognostic factor for PPGP persisting 6-9 months postpartum – 4 categories

g. Stress during pregnancy and 0-3 months postpartum as a prognostic factor for PPGP persisting 6-9 months postpartum

Stress during pregnancy	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=608	n=362	n=246	%		
Normal	531	324	207	39.0		1.0 (ref.)
Mild	36	19	17	47.2	0.3	1.4 (0.7-2.8)
Moderate	25	11	14	56.0	0.1	2.0 (0.9-4.5)
Severe	9	4	5	55.6	0.3	2.0 (0.5-7.4)
Very severe	7	4	3	42.9	0.8	1.2 (0.3-5.3)
Missing	10					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Stress during pregnancy as a prognostic factor for PPGP persisting 6-9 months postpartum – 5 categories

Stress 0-3 months postpartum	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=611	n=364	n=247	%		
Normal	511	320	191	37.4		1.0 (ref.)
Mild	49	15	24	49.0	0.1	1.6 (0.9-2.9)
Moderate	34	13	21	61.8	0.006	2.7 (1.3-5.5)
Severe	15	5	10	66.7	0.03	3.3 (1.1-10.0)
Very severe	2	1	1	50.0	0.7	1.7 (0.1-27.0)
Missing	7					

Table: Stress 0-3 months postpartum as a prognostic factor for PPGP persisting 6-9 months postpartum – 5 categories

Appendix 82: Univariate analysis assessing prognostic factors for PPGP persisting 9-12 months postpartum: Additional tables

a. Age as a prognostic factor for PPGP persisting 9-12 months postpartum

Age (years)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=514	n=369	n=250	%		
18-24	32	18	14	43.8	0.3	1.6 (0.7-3.5)
25-29	124	83	41	33.1		1.0 (ref.)
30-34	232	159	73	31.2	0.8	0.9 (0.6-1.5)
35-39	109	74	35	32.1	0.9	1.0 (0.6-1.7)
≥40	17	9	8	47.1	0.4	1.8 (0.6-5.0)
Missing	0					

Table: Age as a prognostic factor for PPGP persisting 9-12 months postpartum – 5 categories (25-29 as reference)

Age (years)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=514	n=369	n=250	%		
18-24	32	18	14	43.8		1.0 (ref.)
25-29	124	83	41	33.1	0.3	0.6 (0.3-1.4)
30-34	232	159	73	31.2	0.2	0.6 (0.3-1.3)
35-39	109	74	35	32.1	0.2	0.6 (0.3-1.4)
≥40	17	9	8	47.1	0.8	1.1 (0.4-3.7)
Missing	0					

Table: Age as a prognostic factor for PPGP persisting 9-12 months postpartum – 5 categories (18-25 as reference)

b. Body Mass Index (BMI) as a prognostic factor for PPGP persisting 9-12 months postpartum

BMI	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=488	n=329	n=159	%		
Underweight	16	13	3	18.8	0.4	0.6 (0.2-2.0)
Ideal	335	237	98	29.3		1.0 (ref.)
Overweight	78	54	24	30.8	0.8	1.1 (0.6-1.8)
Obese	53	22	31	58.5	<0.001	3.4 (1.9-6.2)
Very obese	6	3	3	50.0	0.3	2.4 (0.5-12.2)
Missing	26					

Table: BMI as a prognostic factor for PPGP persisting 9-12 months postpartum – 5 categories (BMI 18.5-24.99 as reference)

c. Educational level as a prognostic factor for PPGP persisting 9-12 months postpartum

Educational level	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=512	n=342	n=170	%		
No formal education/primary /lower secondary	6	3	3	50.0	0.3	2.5 (0.5-12.8)
Upper secondary	115	70	45	39.1	0.1	1.6 (1.-2.6)
University degree or equivalent	202	134	68	33.7	0.3	1.3 (0.8-2.0)
Postgraduate qualification	189	135	54	28.6		1.0 (ref.)
Missing	2					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Educational level as a prognostic factor for PPGP persisting 9-12 months postpartum – 4 categories (postgraduate qualification as reference)

d. Employment status as a prognostic factor for PPGP persisting 9-12 months postpartum

Employment status	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=507	n=310	n=167	%		
Full-time paid work	308	212	96	31.2	0.3	1.0 (ref.)
Part-time paid work/casual work	97	30	37	38.1	0.2	1.4 (0.8-2.2)
Unemployed/ gave up job after birth	66	44	22	33.3	0.7	1.1 (0.6-2.0)
Student/pupil	9	8	1	11.1	0.2	0.3 (0.03-2.2)
Looking after home/family	19	13	6	31.6	1	1.0 (0.4-2.8)
Unable to work due to sickness/ disability	8	3	5	62.5	0.1	3.7 (0.9-15.7)
Missing	7					

Table: Employment status as a prognostic factor for PPGP persisting 9-12 months postpartum – 6 categories (full-time paid employment as reference)

e. Anxiety during pregnancy and 0-3 months postpartum as a prognostic factor for PPGP persisting 9-12 months postpartum

Anxiety during pregnancy (DASS)	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=507	n=338	n=169	%		
Normal	423	283	140	33.1		1.0 (ref.)
Mild	51	34	17	33.3	1.0	1.0 (0.5-1.9)
Moderate	20	14	6	30.0	0.8	0.9 (0.3-2.3)
Severe	10	5	5	50.0	0.3	2.0 (0.6-7.1)
Very severe	3	2	1	33.3	1.0	1.0 (0.1-11.2)
Missing	7					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Anxiety during pregnancy as a prognostic factor for PPGP persisting 9-12 months postpartum – 5 categories

Anxiety 0-3 months postpartum (DASS)	Number of participants	No persistent PPGP	Persistent PPGP		P	Unadjusted OR (95% CI)
	n=509	n=338	n=171	%		
Normal	451	304	147	32.6		1.0 (ref.)
Mild	37	23	14	37.8	0.5	1.3 (0.6-2.5)
Moderate	11	7	4	36.4	0.8	1.2 (0.3-4.1)
Severe	7	3	4	57.1	0.2	2.8 (0.6-12.5)
Very severe	3	1	2	66.7	0.2	4.1 (0.4-46.0)
Missing	5					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Anxiety 0-3 months postpartum as a prognostic factor for PPGP persisting 9-12 months postpartum – 5 categories

f. Depression during pregnancy and 0-3 months postpartum as a prognostic factor for PPGP persisting 9-12 months postpartum

Depression during pregnancy (DASS)	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=506	n=337	n=169	%		
Normal	447	300	147	32.9		1.0 (ref.)
Mild	29	20	9	31.0	0.8	0.9 (0.4-2.1)
Moderate	16	10	6	37.5	0.7	1.2 (0.4-3.4)
Severe	11	5	6	54.5	0.1	2.4 (0.7-8.2)
Very severe	3	2	1	33.3	1.0	1.0 (0.1-11.3)
Missing	8					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Depression (DASS) during pregnancy as a prognostic factor for PPGP persisting 9-12 months postpartum – 5 categories

Depression during pregnancy (EPDS)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=505	n=310	n=168	%		
Score 0-9	414	279	135	32.6		1.0 (ref.)
Score 10-12	48	31	17	35.4	0.7	1.1 (0.6-2.1)
Score 13-19	34	23	11	32.4	1.0	1.0 (0.5-2.1)
Score ≥20	9	4	5	55.6	0.2	2.6 (0.7-9.8)
Missing	9					

Table: Depression (EPDS) during pregnancy as a prognostic factor for PPGP persisting 9-12 months postpartum – 4 categories

Depression 0-3 months postpartum (DASS)	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=508	n=341	n=169	%		
Normal	447	297	150	33.6		1.0 (ref.)
Mild	29	23	6	20.7	0.2	0.5 (0.2-1.3)
Moderate	26	17	9	34.6	0.9	1.0 (0.5-2.4)
Severe	3	1	2	66.7	0.3	4.0 (0.4-44.0)
Very severe	3	1	2	66.7	0.3	4.0 (0.4-44.0)
Missing	6					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Depression (DASS) 0-3 months postpartum as a prognostic factor for PPGP persisting 9-12 months postpartum – 5 categories

Depression 0-3 months postpartum (EPDS)	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=510	n=339	n=171	%		
Score 0-9	435	295	140	32.2		1.0 (ref.)
Score 10-12	34	21	13	38.2	0.5	1.3 (0.6-2.7)
Score 13-19	38	22	16	42.1	0.2	1.5 (0.8-3.0)
Score ≥20	3	1	2	66.7	0.2	4.2 (0.4-47.0)
Missing	4					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Depression (EPDS) 0-3 months postpartum as a prognostic factor for PPGP persisting 9-12 months postpartum – 4 categories

g. Stress during pregnancy and 0-3 months postpartum as a prognostic factor for PPGP persisting 9-12 months postpartum

Stress during pregnancy (DASS)	Number of participants	No persistent PPGP	Persistent PPGP*		p	Unadjusted OR (95% CI)
	n=508	n=339	n=169	%		
Normal	443	304	139	31.4		1.0 (ref.)
Mild	32	18	14	43.8	0.2	1.7 (0.8-3.5)
Moderate	21	11	10	47.6	0.1	2.0 (0.8-4.8)
Severe	7	3	4	57.1	0.2	2.9 (0.6-13.2)
Very severe	5	3	2	40.0	0.7	1.5 (0.2-8.8)
Missing	6					

*Chi square assumption was violated with >20% of cells having an expected count of less than five

Table: Stress during pregnancy as a prognostic factor for PPGP persisting 9-12 months postpartum – 5 categories

Stress 0-3 months postpartum (DASS)	Number of participants	No persistent PPGP	Persistent PPGP		p	Unadjusted OR (95% CI)
	n=510	n=340	n=170	%		
Normal	422	296	126	29.9		1.0 (ref.)
Mild	45	27	18	40.0	0.2	1.6 (0.8-2.9)
Moderate	29	11	18	62.1	0.001	3.8 (1.8-8.4)
Severe	12	4	8	66.7	0.01	4.7 (1.4-15.9)
Very severe	2	2	0	0	x	x
Missing	4					

Table: Stress 0-3 months postpartum as a prognostic factor for PPGP persisting 9-12 months postpartum – 5 categories

Appendix 83: Peer-reviewed publications

Experiences of First-Time Mothers With Persistent Pelvic Girdle Pain After Childbirth: Descriptive Qualitative Study

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Background. Pelvic girdle pain (PGP) is common during pregnancy and negatively affects women's lives. When PGP persists after the birth, the way it affects women's lives may change, particularly for first-time mothers as they adjust to motherhood, yet the experiences of women with persistent PGP remain largely unexplored.

Objectives. The objective of this study was to explore primiparous women's experiences of persistent PGP and its impact on their lives postpartum, including caring for their infant and their parental role.

Design. This was a descriptive qualitative study.

Methods. Following institution ethical approval, 23 consenting primiparous women with PGP that had started during pregnancy and persisted for at least 3 months postpartum participated in individual interviews. These interviews were recorded, transcribed, and analyzed using thematic analysis.

Results. Four themes emerged: (1) "Putting up with the pain: coping with everyday life," in which women put up with the pain but had to balance activities and were grateful for support from family and friends to face everyday challenges; (2) "I don't feel back to normal," in which women's feelings of physical limitations, frustration, and a negative impact on their mood were described; (3) "Unexpected," in which persistent symptoms were unexpected for women due to a lack of information given about PGP; and (4) "What next?," in which the future of women's symptoms was met with great uncertainty, and they expressed worry about having another baby.

Conclusion. For first-time mothers, having persistent PGP postpartum affects their daily lives in many ways. These findings provide important information for health care providers, which will improve their understanding of these women's experiences, will enhance rapport, and can be used to provide information and address concerns to optimize maternity care during pregnancy and beyond.

Pelvic girdle pain (PGP) is pain of musculoskeletal origin between the posterior iliac crest and the inferior gluteal fold in proximity of the sacroiliac joints, and pain also may be experienced at the pubic symphysis.[1] Pelvic girdle pain is often related to pregnancy, although not exclusively. Pregnancy-related pelvic girdle pain (PPGP) is a common complaint affecting from 23% to 65% of pregnant women, depending on the definition used in prevalence studies.[2-9] The pain often subsides after birth, but about 17% still have PGP 3 months postpartum,[10] and 8.5% continue to have symptoms 2 years postpartum.[11]

Pain is a perception whereby physical, cognitive, affective, social, and behavioral aspects intertwine[12,13]; hence, the meaning of pain is subjective and contextual and requires examination beyond mere quantification. Recently, 3 qualitative studies explored the impact of PPGP on women's lives during pregnancy. Themes that emerged from these studies included feeling unprepared for PPGP, struggling to balance activities and dependency, and the importance of being understood by health care professionals.[14-16]

The postpartum period is a time of great change, particularly for first-time mothers. Infant care is a demanding activity and may coexist with other challenges, including exhaustion, changes in relationships when becoming a parent, and financial burdens. The transition to motherhood, defined as "a process of personal and interpersonal change when a woman assumes maternal tasks and appraises herself as a mother,"[17(p204)] also referred to as the process of "becoming a mother,"[18,19] influences developing mother/child relationships.[20] This dynamic process is influenced by women's physical, social, and psychological well-being,[21,22] and delayed postpartum recovery adds to the disruption inherent in this transition.[23] When PGP persists after birth, the context of a woman's pain experience encompasses the care of her child.

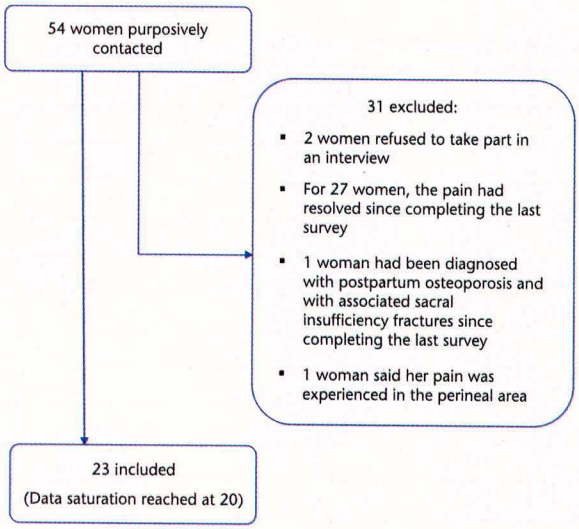

Figure.
Overview of recruitment of participants for interviews.

Until recently, no significant studies had explored the experiences of women with persistent PGP after childbirth. Engeset et al[24] interviewed 5 women with postpartum PGP concerning their experiences of living with their persistent symptoms. The impact of persistent PGP on the women's lives that emerged from this small-scale study warrants further exploration in a larger sample to provide more in-depth information on women's experiences with persistent PGP postpartum. The study included 3 primiparous and 2 multiparous women, whereas it may be valuable to ascertain women's experiences on the first occurrence of PGP. Thus, the objective of the present study was to explore primiparous women's experiences of persistent PGP and its impact on their lives postpartum, including caring for their infant and their parental role.

Method

A descriptive, qualitative design was adopted, which aims to provide a rich straight description of a phenomenon.[25] In line with this study's objective of providing a truthful account of the women's experiences, this design was not theory driven and aimed to stay as close as possible to the participants' descriptions of their experiences, with minimal interpretation.[25,26] Despite this low-inference approach, qualitative description is more interpretative than quantitative designs, allowing us to learn more about the meaning that participants give to events.[26]

Ethics

Ethical approval for this study was granted by the site hospital in 2011 and by Faculty of Health Sciences Ethics Committee of Trinity College Dublin (Ireland) in March 2013. All participants provided written informed consent to take part in a recorded interview.

Participants

Twenty-three participants were recruited from the MAMMI (Maternal Health and Morbidity in Ireland)

Table 1.
Participants' Pain and Sociodemographic Characteristics[a]

Variable	Data
Age (y), n	
≤24	2
25–29	2
30–34	12
35–39	7
Country of birth, n	
Ireland	19
United Kingdom	1
Denmark	1
Italy	1
Poland	1
Highest qualification, n	
Upper secondary leaving certificate–applied and vocational programs, A levels, NCVA level 1	2
Completed apprenticeship, NCVA level 2/3, Teagasc certificate, diploma, or equivalent	1
Primary degree	6
Professional qualification of degree status	2
Postgraduate certificate or diploma	6
Postgraduate degree (eg, master's degree)	6
Time postpartum at the time of interview, n	
3–6 mo (91–182 d)	14
6–9 mo (183–273 d)	6
9–12 mo (274–364 d)	3
Pain severity at the time of interview (VAS, 10 cm), $\bar{X}$ (SD)	
Morning	5.0 (2.3)
Evening	5.7 (1.9)
Pain pattern, n	
Constant	1
Intermittent	10
Transient	1
Constant and intermittent (day dependent)	10
Constant and transient (day dependent)	1
Pain location, n	
Anterior PGP	2
Posterior PGP	14
Combined anterior and posterior PGP	7

[a] NCVA=National Vocational Certificate, Teagasc=the agriculture and foot development authority in Ireland, VAS=visual analog scale, PGP=pelvic girdle pain.

study, a longitudinal survey-based cohort study. All primiparous women, aged 18 years or older, who attended a large maternity hospital in Dublin (Ireland) between February 2012 and October 2014 were asked to take part in the cohort study, which involved completing a survey concerning their health and well-being at 5 different time points: during early pregnancy and 3, 6, 9, and 12 months postpartum. One thousand eight-hundred thirty-three women consented to participate in the MAMMI study during this period, with a 38% (n=4,809) response rate. A purposive sample of 23 women, who met the inclusion criteria below, were recruited from this cohort (Figure). Data saturation, the point at which no new codes emerged,[27] was reached at 20 interviews, but all 23 interviews were included in the analysis.

Inclusion criteria to take part in the interview were: (1) written consent to be contacted concerning any interview, within their MAMMI study consent form, and (2) experiencing PGP between the posterior iliac crest and the inferior gluteal fold or in the pubic symphysis area[1] (indicated on a pain diagram) that had started during pregnancy, had persisted for at least 3 months postpartum, and was still present at the time of the interview. A minimum of 3 months of persistent PPGP was chosen because persistence beyond 12 weeks is considered "chronic."[28] Exclusion criteria were: (1) any history of low back pain or PGP before their pregnancy, (2) suspected serious pathology (eg, trauma, infection, malignancy) or nerve involvement (eg, radiculopathy), and (3) resolution of PGP by the time of interview. These selection criteria were assessed based on women's responses in the MAMMI study surveys and during telephone recruitment for this interview study. The telephone recruitment process was

Table 2.
Examples of Coding Process in Thematic Analysis of the Transcripts

Transcript Part	Codes	Categories	Themes
3: I don't feel as strong as I should, and I don't feel as active as I'd like to be. Now, it doesn't matter too much at the moment because she is not even crawling yet, but if she gets more active, I want to be able to keep up with her. And I never saw myself as being inactive.	Feeling weak Worry about being able to keep up with child	Physical feelings of pain Cognitive components of pain	"I don't feel back to normal"
1: The only time it'd really kind of bother me would be when I get that sharp type of pain, because that's kind of stopping you. That would kind of worry me that, you know, you might get weakness or something when you're carrying him or that pain would come if you'd move a certain way maybe, you know, carrying the car seat or whatever. That bothers me, but the underlying kind of general pain I just put up with it, and don't think too much.	Feeling weak Worry about dropping baby Just puts up with the pain	Physical feelings of pain Everyday challenges Attitudes to pain: balancing activities	"I don't feel back to normal" "Putting up with the pain: coping with everyday life"

conducted by a qualified chiropractor (F.W.) and was guided by a flow diagram consisting of a set of questions to assess potential participants' suitability to take part in an interview. This process included detailed questioning concerning their pain location and any symptoms of weakness, numbness, or paresthesia. Moreover, women were asked whether they had experienced any injuries, trauma, or recent illnesses; took any medications; or experienced any systematic or visceral symptoms, such as fever, unexplained weight loss, general malaise, or urinary or abdominal symptoms. These recruitment questions were constructed by the first author (F.W.) and reviewed independently by the other authors and by a consultant obstetrician and anesthesiologist before use. Table 1 shows the participants' characteristics regarding their pain and sociodemographic data.

Data Collection

Face-to-face interviews were conducted between June and October 2013, at a time and in a place convenient for the women; 17 women were interviewed at their home, 4 interviews took place in a private room at the university, and 2 interviews were conducted in a public location. Prior to the interview, the women completed a short questionnaire that included a pain diagram to confirm the pain location and questions concerning pain pattern and pain severity. Other sociodemographic data, including age, highest qualification, and the number of days postpartum when taking part in the interview, were obtained from the MAMMI study surveys. An interview guide consisting of open-ended questions (Appendix) was used, but women were free to direct the interview in other directions if they so desired.

Data Analysis

Interviews were transcribed verbatim, checked twice for transcription errors, and imported into NVivo 8 software (QSR International Pty Ltd, Doncaster, Victoria, Australia)[29] for data management and analysis. Thematic analysis was used in which, after familiarization with the data, all interviews were coded.[30] Open coding was used to assign a word or short phrase (ie, a "code") to all portions of narratives. This coding followed by axial coding to identify emerging categories and broader themes.[31] Table 2 demonstrates the coding process using example quotes. The first author (F.W.) analyzed all 23 transcripts. For quality control, the last author (C.B.) coded the transcripts of 3 interviews independently prior to any discussion concerning the data. As analysis of the 3 transcripts demonstrated congruence between the 2 researchers' findings, no further reviews were necessary. Other strategies to enhance methodological rigor included negative case analysis and member checking.[32] For member checking, the identified categories and themes were sent to the women in writing, together with a short questionnaire to assess the extent to which these categories and themes resonated with them and to give them the opportunity to comment on the findings, thus enhancing credibility of the data.[33] In addition, a reflective diary was kept by the first author, who conducted the interviews and analysis, in which critical reflections on the process and personal assumptions were entered.[34] These reflections and assumptions were discussed during regular peer debriefing sessions, promoting dependability, enhancing conformability, and ensuring the research process was logical and the findings were clearly derived from the data.[33] The Results section contains quotations to support the findings. These quotes are identified by a number for

Table 3.
Overview of Emerging Themes and Categories

Categories	Themes
• Attitudes to pain: balancing activities • Coping and support • Everyday challenges	"Putting up with the pain: coping with everyday life"
• Physical feelings of pain • Cognitive components of pain: Why me? • Affective components of pain	"I don't feel back to normal"
• "I thought it would be gone by now"—previous expectations • Lack of information	"Unexpected"
• A changing pain • Uncertainty and hope for the future • Having another baby: "I'm worried, but it wouldn't stop me"	"What next?"

confidentiality purposes and the number of days since the birth.

Results

Four themes emerged from the experiences that the women described: (1) "Putting up with the pain: coping with everyday life," (2) "I don't feel back to normal," (3) "Unexpected," and (4) "What next?" Fourteen of the 23 participants responded to the member checking of the results. All but one woman said that theme 1 was true to life or significant. This woman no longer had pain at the time of the member checking, which may explain the difference between her interview transcript and her response to member checks. Theme 2 was initially called "I feel like an old woman," but following member checking, half of the participants who responded did not think the name was appropriate, despite the relevance of its content and categories. Subsequently, the name of theme 2 was changed to "I don't feel back to normal." Only one woman did not say that theme 3 was true to life or significant, but in her original transcript, she had said that she had not expected her pain to go away immediately after the birth. Theme 4 resonated with all but 4 participants. These 4 participants no longer had any symptoms, which is probably why the theme "What next?" no longer had significance for them. Table 3 gives an overview of all categories and themes that emerged from the data.

Theme 1—"Putting Up With the Pain: Coping With Everyday Life"

Attitudes to pain: balancing activities. The women said they generally just "put up with the pain" and "got on" with their daily lives. In that context, they also told how they often had no choice in avoiding pain-provoking activities if nobody was around to help. However, some women (8/23) said that their persistent PGP stopped them from doing things or going out of the house, although for others the pain was present but did not prevent activities. Many women (12/23) expressed that the PGP is something they have to be cognizant of when doing and planning things, but they could not make it a priority in their busy lives as new mothers:

> I suppose the honest thing is, it's at the bottom of a long list of things that I have to worry about at the moment, so I ignore it, I just let it go. (10; 170 days)

This ambiguity reflects the challenging balancing act that women had to deal with daily: on the one hand, continuing as normal, and on the other hand, trying to avoid worsening of their symptoms.

Coping and support. Many women (12/23) felt they could cope well with their persistent PGP, although they wished the pain would no longer be present. Women's partners played a crucial role in providing support to manage daily activities with the additional burden of having persistent PGP. Other family members also were a great support for the women, in various ways (eg, minding the baby sometimes, helping with housework). Although their partners and family members were the main sources of help, 5 women said they received support from friends:

> I've friends who kind of say, "If you need a break, drop her in" or "If you need to go off shopping or whatever, just to get a bit of headspace even," you know. They've all been very good. (17; 132 days)

One woman also employed someone to assist with housework, such as cleaning, because of her PGP.

Everyday challenges. The women said their persistent postpartum PGP affects their ability to do everyday activities. All women described how their PGP affected activities related to taking care of their child, such as lifting and carrying their baby and getting down on the floor to play with him or her. Four women said they were afraid of dropping their baby if they had a sudden pain:

> When I get that sharp type of pain, that worries me that, you know, you might get weakness or something when you're carrying him (baby), like that the pain would come if you'd move a certain way carrying the car seat or whatever. (1; 209 days)

Although they generally still could continue such activities despite the pain, they expressed frustration that it made these everyday tasks more

difficult. Moreover, 10 women said that household activities were challenging and provoked pain, although this factor was regarded as less important than taking care of their baby. The women did not feel their PGP affected their general health, with the exception of one woman who said she thought that taking painkillers would not be good for her health and 2 women who referred to the possible negative impact on their health of not being able to exercise much.

Theme 2—"I Don't Feel Back to Normal"

Physical feelings of pain. Women described their pain in a variety of ways, depending on its pattern and severity. Eight women mentioned it was a more constant or dull pain, whereas 5 women described experiencing more severe or sharp pain. Women who had more constant pain felt that they were coping less well than those who said their pain was intermittent. Five women described their PGP, not only in terms of the pain but also how it made their body feel weaker and more restricted:

> I started to exercise more because I was able to with her (baby), and then I felt the pain was getting worse again. It felt like my pelvis was about to fall apart. That's the only way to describe it; it feels like it is kind of hanging and about to fall. (12; 300 days)

Moreover, 9 women said that their PGP slows them down. Seven women used the metaphor of "feeling like an old lady" to describe how they felt. Four women said that it felt as if they were still pregnant. Nine women said that their PGP was very draining and made them feel even more tired, particularly for those women who also experienced symptoms at night (7/23):

> It's just, I suppose, because you're overtired from having a small child, and it's just another layer of exasperation, you know. (2; 227 days)

Cognitive components of pain: Why me? All 23 women questioned why the pain was still there and tried to think of possible reasons. Some women (13/23) ascribed the pain to their posture and the way they carry and lift or felt it was because their body was weakened from the pregnancy. Others (6/23) thought it might be because of a difficult birth that the PGP persisted. Someone else read it could be hormonal, as she was still breastfeeding, and another woman noticed it was worse mid-menstrual cycle. Some thoughts also provoked worry. Seven women were worried about being able to keep up when their child is older and starts walking. Three women also questioned whether they are damaging their pelvis more over time by just putting up with the pain:

> It just makes simple enough things harder, and then you have always a bit of worry. Am I damaging something? Am I doing permanent damage by all the lifting or whatever way you're moving? (1; 209 days)

Affective components of pain. The women felt frustrated and annoyed by the pain, especially because they could not do the activities they wanted to do. However, they expressed joy because of having a baby, and 11 women said that the PGP did not—and they would not let it—have an impact on being a good mother. On the other hand, 7 women did felt that sometimes they were not able to do as many things with their child as they would like:

> It affects things, certain things I can't do with her (baby). . .that would be the one that really bugs me; the fact that I can't get down on the floor with her and kind of have a play with her; that really bothers me. (2; 227 days)

Nine women also described how they felt the pain was having a negative impact on their mood and made them less patient:

> The pain just makes me cross and grumpy and out of sorts, and just niggly, that you'd love to go to bed, but you can't go to bed. It's just, yeah, if you didn't have a baby, I would have been in bed a long time, but you just have to get on with it. (22; 235 days)

The 5 women whose pain was improving also expressed feelings of happiness and relief that it was getting better.

Theme 3—"Unexpected"

"I thought it would be gone by now"—previous expectations. During pregnancy, many women (18/23) thought their PPGP symptoms were just "part of pregnancy." As a result, they thought the PPGP would resolve with the birth, or they had had no expectations during pregnancy about what would happen postpartum with regard to their symptoms:

> But yeah, I thought it would just go away after the birth. I didn't really know; I guess, I didn't think anything different. (3; 167 days)

As a result, for 2 women, it took some time to acknowledge that they continued to have problems:

> You kind of have to admit to yourself: yes, there is still stuff left over from pregnancy, and it has to be dealt with. (1; 209 days)

Four women said they had not expected the pain to go away immediately after the birth; however, despite the fact that they had expected some PGP postpartum, they had not thought that it would persist for so long. Also, 4 women said they were somewhat surprised the pain persisted, as they were fit before their pregnancy.

Lack of information. Some women (12/23) felt unaware of any problems that might persist postpartum and expressed a desire for more information regarding specific issues that they might encounter after the birth (eg, persistent PGP):

> It would be great if there was more information about this type of pain, what to do about it. We got leaflets on the pelvic floor; it was all about the pelvic floor and doing the pelvic-floor exercises, but that isn't really what's been impacted in me; it's more the joints and the skeleton, kind of the hips and the back of the pelvis, the tailbone, that sort of thing. (19; 119 days)

Theme 4—"What Next?"

A changing pain. Although all women stated their PGP had started during pregnancy and persisted postpartum, for many, symptoms had changed over time. This change, however, varied across participants. Ten women said their symptoms were somewhat different at the time of the interview compared with during pregnancy. For some women, the pain had become less severe; for others, the pain had increased since the birth, or sometimes the type of pain had changed. Three women also mentioned that the pain location had changed (eg, from side to side or from the front to the back of the pelvis). Ten women described how their PGP symptoms had been temporarily "hidden" behind general aches or other birth-related issues in the first few days or weeks immediately after the birth. For others (8/23), it was also the adjustment to motherhood that "hid" the PGP in that early postpartum period.

> I had a C-section, so initially when I came home from hospital, my focus was on the section pain. And I was trying to reduce the painkillers and get used to being more mobile. I first noticed the issues with my pelvis were still there when I was going up and down the stairs. (19; 119 days)

Uncertainty and hope for the future. All women strongly hoped their symptoms would go away soon. However, they were doubtful whether they would. Women whose symptoms had improved somewhat over time (7/23) were more hopeful about the future progression of the PGP than those who had worsened or equally severe symptoms:

> I hope it's going to go away. And I can try and get a bit stronger, like I said. It is less than it was, so I feel if I keep working on it, it will go away, but I don't know. (6; 219 days)

Six women expressed worries about going back to work, and one was on sick leave. Twelve women also felt they would have to do something actively about it to improve, either by doing more exercise or by seeking advice from health care professionals. One woman was an exception in that she thought she would just have to give it more time to resolve itself. Other people's stories about persisting symptoms after the birth added to the uncertainty and created worry about the progression of their PGP:

> I'd love to be just back to normal, prepregnancy. I wonder, is that possible? Is that normal? Does that happen? Because you know the way women say, "Well, wait until you have a baby" or "Wait until you've your second," and they give you the impression that your body is never going to be the same again. (1; 209 days)

Having another baby: "I'm worried, but it wouldn't stop me." Eighteen women said that they were anxious that their symptoms would be worsened when having another baby, although it would not stop them from becoming pregnant again:

> I suppose I worry for the next pregnancy, what effect that might have. It wouldn't put me off, but I worry it might be more of a constant problem rather than just intermittent, you know. (24; 364 days)

Four women felt they had to try and get their symptoms improved or resolved before becoming pregnant again. Six women also described how they would seek more help and try and manage it (their symptoms) earlier on if they were to become pregnant again.

Discussion

The findings of this study suggest that first-time mothers with persistent PGP after childbirth tend to "put up with the pain" yet have to balance activities, "don't feel back to normal," experience the persistence of their symptoms as "unexpected," and wonder about progression of their symptoms in the future.

Theme 1—"Putting Up With the Pain: Coping With Everyday Life"

The impact of persistent PGP on everyday life and the balancing of activities in this study also have been described previously by pregnant women with PPGP,[14–16] and thus seem to be a continuing challenge for women with persistent PGP postpartum. Having a young child also makes it more difficult to pace activities,[16] which may explain why women felt they just had to "put up with the pain" and "get on with" their daily tasks. Nevertheless, the women said they are conscious of their pain and try to adapt activities accordingly where possible. Pain has a tendency to conquer a person's focus of attention,[35,36] and patients with chronic pain are known to experience cognitive impairment when performing everyday attentional tasks, regardless of the disease status of chronic pain and the level of pain experienced.[37] Three women, however, said they tried not to think about their pain to help them cope, which may be because distraction reduces pain levels.[38]

Support, in general, when having a first baby is important.[39] For women with PGP, it is thus understandable that help of family and friends was very much valued, a feeling that was expressed by the women in this study. *Social support* has been defined as a complex concept consisting of "resources and interactions with others that help people cope with problems,"[40(p11)] and patients with pain do better when receiving adequate social support. Women's partners were said to be a key source of support, which was also an emerging theme from studies looking at women's experiences of PPGP during pregnancy.[14,16] However, the women in the present study expressed they were very grateful for their partner's support, but they did not say it was putting their relationship under negative pressure, despite this increased dependence, unlike women with PPGP in previous studies who described how their complaint puts strain on their relationship.[14,16] This finding, however, may have resulted from sampling bias due to the nature of the sampling approaches of qualitative research.

A clear distinction emerged in terms of the meaning women placed on having difficulty carrying out certain tasks. Activities that were part of caring for their child and were affected by their PGP led to feelings of frustration, whereas for other tasks, the meaning of women's pain was considered much less significant. In line with the current definition of pain,[13] this finding confirms that pain is a perception and not a mere physical sensation. This distinction of meaning of their pain is important, as it will likely influence the emotional aspects of women's pain experience.

Theme 2—"I Don't Feel Back to Normal"

Women described their physical pain in various ways during the interview, with different patterns and varying severity across participants. More severe pain in PPGP has been associated with greater functional disability; however, the impact of the pain pattern on disability has not been investigated as much.[2,10] In contrast to Elden et al,[15] who found that pregnant women had difficulties describing their PPGP, women in the postpartum period did not seem to have this difficulty, although they did use a variety of words to express their symptoms. This disparity may have occurred because, in this study, women's pain had been present for longer and, over time, they became more familiar with their symptoms, making it easier to describe them. Women also said their pain slowed them down and they felt physically restricted, in line with previous literature demonstrating that many women with PPGP report disability during pregnancy and postpartum.[10,41] Furthermore, women felt their PGP was draining and tiring. Early motherhood is a time inherently characterized by reduced sleep due to the needs of the infant, but most women in this study felt their PGP added to this exhaustion, although they were all first-time mothers and thus could not make comparisons with previous experiences. Pain also is related to sleep disturbance,[42] and PPGP is associated with sleep deprivation.[43] In the context of chronic pain, reduced sleep may become a perpetuating factor. This added exhaustion and impact of PPGP on sleep that many women in this study experienced also have been described by women with PPGP during pregnancy.[16] This may be one of the reasons why some women in this study said they "still felt pregnant."

Patients with chronic pain have been shown to ruminate upon the potential causes of their symptoms, especially if the exact cause is unknown.[44,45] Worrying about chronic pain is a normal process related to an increased awareness of somatic sensations, and pain-related worries have been shown to be more attention-demanding and more distressing than non-pain-related worries.[44] Pain also is intimately related to a person's emotional well-being. The extent of suffering depends on the affective response to the cognitive appraisal of the symptoms, and worrying thoughts may subsequently lead to anxiety, distress, and low mood.[46] The questioning about the cause and uncertainty about the progression of women's persistent PGP may have contributed to the negative impact on their mood and patience, and to the sense of frustration that women in this study described. Other qualitative studies[14–16] showed that, during pregnancy, women with PPGP described the same feeling of having less patience and being moody and quick to complain. Mogren et al[47] also found this to be an emerging theme that midwives had experienced when working with women who experienced PPGP during pregnancy.

Theme 3—"Unexpected"

During pregnancy, many women thought their PPGP symptoms were just "part of pregnancy." As a result, they expected their PPGP would resolve soon after the birth, or they had had no expectations during pregnancy about what would happen postpartum with regard to their symptoms. Persson et al,[16] interviewing women with PPGP during pregnancy, found that these women often endured the pain and looked forward to the birth, thinking that symptoms would then subside. Although PPGP commonly resolves postpartum,[2,48] when this expectation is not met, it may add to women's negative appraisal of their symptoms due to the cognitive nature of expectations and its link with affec-

tive and behavioral aspects of the pain experience.

The described unmet expectations of what would happen to the women's PPGP symptoms postpartum may be linked to the feeling that emerged of a lack of information postpartum, which is similar to what 27 women with severe PPGP experienced during pregnancy in Sweden.[15] However, for the women with persistent PGP postpartum in the present study, this lack of knowledge seemed to evoke more worry about its progression, whereas during pregnancy, women were more concerned about the nature of symptoms.[15]

Theme 4—"What Next?"

The changes in pain over time from pregnancy to the time of the interview described by the women in this study could have been due to various reasons. Maladaptive postures or deconditioning due to reduced physical activity may have contributed to changing pain locations or worsening of symptoms described by some women. Moreover, some women's symptoms had improved somewhat, which might represent a progressive resolution of their PGP. Birth-related factors and unsuccessful adjustment to a normal gravitational posture also could have contributed to the changes in their pain. No clear differences emerged among the participants in this study related to pain location or time since delivery. Instead, any improvement or worsening in the women's symptoms seemed to have a bigger impact on their experiences of persistent PGP, particularly on women's expectations and subsequent hope or frustration.

Episodes of pain-related worry are likely to be triggered by increased pain.[44] For a minority of women interviewed, their symptoms had worsened since the pregnancy, and most women hoped their symptoms would improve; however, they expressed doubt and uncertainty. Knowing how long a pain will last improves the reaction to the pain, as it reduces uncertainty.[44] Women also expressed concerns about going back to work, and one woman was on sick leave. Placing these findings in the context of the literature on sick leave postpartum, in a cohort of 204 mothers (15 employers) in the Netherlands, PGP was the most common reason for taking sick leave.[49]

Women with a history of PGP or low back pain are more likely to develop PPGP when becoming pregnant[7]; hence, the worry that women described of their symptoms worsening when becoming pregnant again is understandable. Elden et al[14] found that, during pregnancy, women with PPGP expressed that they were "not looking forward to another pregnancy" because of their PPGP, whereas postpartum, feelings of worry and anxiety about another pregnancy seemed to be stronger, although these feelings did not stop them wanting more children.

Strengths and Limitations

To our knowledge, only one study previously explored women's experiences of persistent PGP postpartum. Engeset and colleagues[24] identified 3 main themes: (1) Activity and pain, (2) Lack of acknowledgment of pain and disability, and (3) Changed roles. The physical pain and limitations, feelings of exhaustion, and frustration related to their persistent PGP described by these women[24] show clear similarity to the categories "Everyday challenges" and "Attitudes to pain: balancing activities" and to the theme of "I don't feel back to normal" in the present study. Moreover, the content of the theme "Unexpected" seemed apparent in the study by Engeset et al[24] as a perceived lack of information and unmet postpartum expectations experienced by their participants. The importance of support from the husband and family in the theme "Changed roles" also matches what women described in the present study. However, the cognitive components of the pain experience that emerged from the present study did not feature in their study.

Furthermore, the women in the study by Engeset et al[24] did not describe any thoughts about future pregnancies, and, although they expressed hope for the future similar to the women in the present study, any uncertainty about the future was not noted in the study. Some of these discrepancies might be related to differences in the study sample and methods used. In the study by Engeset et al,[24] only 5 women were interviewed, and all 5 participants had already contacted the health services regarding their PGP after the birth. The present study greatly adds to knowledge regarding these women's experiences, as it utilized a more diverse sample, by having recruited participants from a large cohort who had not necessarily contacted health care professionals regarding their PGP. In addition, a greater number of participants were included, beyond the point of data saturation, which adds credence to the findings. Moreover, this study specifically explored the experiences of primiparous women, which allows identification of unique characteristics of first-time mothers' experiences. One limitation of the present study is that participants did not undergo a physical examination to differentiate between PGP and low back pain; however, the recruitment process involved detailed questioning concerning their symptoms, conducted by a registered chiropractor, and, if there was any uncertainty regarding the nature of their symptoms based on this history, women were not included.

Implications and Future Research

This study provides unique insights into the experiences of first-time mothers with PGP that persists for more than 3 months after the birth. The findings should assist health care professionals involved in the care of women during pregnancy and in the postpartum period to develop a better understanding of the complexity and multifaceted nature of how persistent PGP affects women's lives. Particularly, the findings highlight unmet expectations and can give guidance to those providing information to women regarding PGP. Future research exploring the experiences of multiparous women specifically would be of interest for comparison with the findings from the present study to identify potential differences in how women experience persistent PGP after childbirth depending on parity.

All authors were involved in the design of the study. Ms Wuytack conducted the interviews and data analysis and drafted the manuscript. Dr Begley completed the independent analysis of 3 transcripts for quality assurance. All authors reviewed and made amendments to the manuscript.

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Appendix.

Interview Guidance Questions

Grand tour questions
A. Tell me about your experiences of living with pelvic girdle pain since you've become a mother.
B. Going through a regular day, tell me the story of what you usually do and what your pain means.
Possible prompt questions
1. Life as a new mother
1.1. How do you feel about your pain when caring for your baby?
1.2. How does your pain affect the way you see yourself as a mother?
1.3. How do you feel when you are in pain?
1.4. How do you feel your pain affects your general health?
1.5. When you were still pregnant, what were your expectations about the pain for after the birth?
2. Interaction with others
2.1. What has been the role of others (eg, family, friends, laypeople) in regard to your pain?
2.2. What, if any, positive or negative aspects or experiences have you had regarding your pain?
3. Views on the future/progress
3.1 How do you feel your pain will progress?
3.2 How would you feel with regard to your pelvic pain about having another baby?
Ending question
Is there anything else you would like to tell me?
Additional probing questions may include:
Please tell me more about it.
What does that mean to you?
Is it possible to give an example?
Describe to me what that was like for you.

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The health-seeking behaviours of first-time mothers with persistent pelvic girdle pain after childbirth in Ireland: A descriptive qualitative study

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ABSTRACT

Objective: to explore the health-seeking behaviours of primiparous women with pelvic girdle pain persisting for more than three months post partum.
Design: a descriptive qualitative design involving face-to-face semi-structured interviews following institutional ethical approval. Transcripts were analysed using thematic analysis.
Setting: an urban hospital in Ireland.
Participants: a purposive sample of 23 consenting first-time mothers with pelvic girdle pain persisting for at least three months post partum.
Findings: 'they didn't ask, I didn't tell' was a key theme, which included emerging categories of a perceived lack of follow-up post partum, and feeling ignored by healthcare professionals. The theme 'Seeking advice and support' describes women's role of talking to others, and triggers and barriers to getting help. 'Coping strategies' was the third theme emerging from the interviews, whereby participants described different strategies they used to deal with their symptoms, although many expressed uncertainty about what to do or who to see.
Conclusion and implications for practice: our findings show the importance of appropriate information and follow-up care for women with pelvic girdle pain and highlight barriers they encounter in seeking help. They also question the duration of postnatal care as participants felt that postnatal care was stopped too early. The findings may assist maternity care providers in addressing mothers' expectations and needs related to persistent pelvic girdle pain.

Introduction

Pelvic girdle pain (PGP) is common during pregnancy with approximately 23–65% of pregnant women reporting pregnancy-related pelvic girdle pain (PPGP) depending on the criteria used for assessment (Albert et al., 2002; Kovacs et al., 2012). In Ireland, where this study took place, maternity care is provided jointly by the family doctor, or General Practitioner (GP), and the maternity hospital. This scheme also includes postnatal care, which typically consists of two visits with the GP at two and six weeks' post partum, and visits from a public health nurse (PHN) within these six weeks (HSE, 2013). This six to eight weeks length of postnatal care is comparable to many other countries (Southfield (MI): Michigan Quality Improvement Consortium, 2012; NICE, 2014). Although PPGP mostly subsides after the birth, 8–10% of women continue to have persistent PGP 18–24 months after the birth (Albert et al., 2001; Rost et al., 2006). National clinical guidelines recommend out-patient physiotherapy for the management of persistent PGP post partum with individualised assessment and treatment focussing on stabilising exercises and movement advice and possibly including multidisciplinary interventions if physical interventions fail (Hogan et al., 2012). However, limited resources often make it difficult for services to deliver such individual care. Moreover, PGP may persist beyond the six to eight weeks postnatal care; yet, the health-seeking behaviours of women for whom PGP persists for many months post partum, beyond the end of standard postnatal care, have not previously been explored. In addition, a lack of connectivity between maternity hospital records and records of any care that women might receive later on

Abbreviations: GP, General Practitioner; PHN, public health nurse; PGP, pelvic girdle pain; PPGP, pregnancy-related pelvic girdle pain

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leaves a knowledge gap concerning any help women with persistent PGP may seek. In-depth information from the women's perspective concerning their health-seeking behaviours can offer useful data for addressing the needs of these women and provide a basis for optimising maternity care related to PGP. The objective of the study was to explore the health-seeking behaviours of primiparous women with PGP persisting for more than three months post partum.

For the purpose of this study, health-seeking behaviours were defined as any remedial actions that individuals undertake to rectify a perceived health problem (Ward et al., 1997). This is different from 'health behaviour', which is related to preventing health problem/disease (Kasl and Cobb, 1966), and is sometimes referred to as 'health-promoting behaviour' (Lo et al., 2014). It is also different from 'help seeking behaviour' which Cornally and McCarthy (2011), in a concept analysis, defined as a problem-focused, planned behaviour, involving interpersonal interaction with a selected health-care professional; also often referred to as 'healthcare-seeking behaviour' (Chowdhury et al., 2007). However, 'health-seeking behaviours', of interest in this study, may or may not involve a health-care professional, and can include other 'informal' actions aimed at improving or resolving the health problem they experience (El Kahi et al., 2012).

Methods

Setting and design

This study employed a descriptive qualitative design to gain in-depth knowledge of the health-seeking behaviours from the women's perspective (Neergaard et al., 2009). While quantitative description is limited in learning about the meaning that participants give to events by pre-selecting variables, qualitative description allows for unanticipated themes to emerge (Sandelowski, 2000). On the other hand, a descriptive qualitative design involves minimal interpretation and stays closer to the data compared to other qualitative approaches; nonetheless, it is still interpretative (Sandelowski, 2010). A descriptive qualitative design is thus particularly appropriate to obtain straight answers to questions of importance to healthcare practitioners and policy makers (Sandelowski, 2000). This is in contrast to other qualitative approaches that aim to develop theory (grounded theory) or seek interpretative meaning of an experience (phenomenology) (Neergaard et al., 2009), which were not appropriate to address the aim of this study. This study was designed to answer the question 'What are the health-seeking behaviours of women with persistent PGP post partum?' and the qualitative approach allowed for the participants' views and thoughts surrounding this question to be explored in depth from their personal accounts. This study took place in Ireland, and ethical approval was obtained from the site hospital and the Faculty of Health Sciences of Trinity College Dublin, the University of Dublin.

Sample and recruitment

A purposive sample of 23 first-time mothers attending one tertiary maternity hospital in Dublin (Ireland) was recruited based on the following characteristics: having PGP that had started during their pregnancy and persisted for three or more months post partum to some extent and with no history of pain in the low back or pelvic girdle areas prior to becoming pregnant. Women were also excluded if they had any symptoms suggestive of nerve involvement (lumbar radiculopathy), or serious illness including infection, malignancy or traumatic injuries. Participants may or may not have sought help before the interview; this was not a criterion to participate. The participants' characteristics are presented in Table 1.

Participants were recruited from a survey-based longitudinal cohort study (the MAMMI study), which followed women from early pregnancy to a year post partum using self-administered postal questionnaires to assess all types of morbidity. The MAMMI study involved all consenting primiparous women aged 18 years or over, booking at a large maternity hospital in Dublin (Ireland) with a 38% (1833/4809) response rate. Sixty-nine women who indicated they experienced persistent PGP for at least three months post partum in their MAMMI study surveys were consecutively contacted by telephone. For 27 women their PGP had resolved since their last survey, 15 did not answer, one woman had been diagnosed with postpartum osteoporosis and sacral insufficiency fractures, one women experienced perineal pain primarily, and two woman did not want to take part in an interview. Data saturation was reached after 20 interviews (Green and Thorogood, 2004) but a further three interviews were conducted and a final sample of 23 women were included in the analysis. During this telephone conversation, the researcher (a qualified chiropractor) asked detailed questions regarding their symptoms to exclude serious pathology or nerve involvement. The purpose of the study and what it would involve were also explained to the woman.

Data collection

Semi-structured face-to-face interviews took place between June and October 2013, in a private location that was most convenient for the women, either at the woman's home or at the university. Written consent was obtained and women completed a short questionnaire regarding their pain levels, pain location and pain pattern prior to the interview. The interviews were guided by the following key questions: 'What do you do when you're in pain?', 'Tell me about the care/support you have been offered since the birth', and 'Tell me about any help/advice you have sought'. All interviews were conducted by the same researcher (FW) and were audio recorded

Data analysis

Interviews were transcribed verbatim, checked twice for accuracy, and analysed by FW in NVivo software (2008) using thematic analysis (Vaismoradi et al., 2013). Analysis involved initial open coding of all transcripts into meaningful segments without trying to fit data into a pre-existing coding scheme (Braun and Clarke, 2006). Subsequently, axial coding identified emerging themes and categories. Rigour in research is important and has been described as a way of demonstrating the legitimacy of the research process to ensure representation of reality as much as possible (McBrien, 2008). Lincoln and Guba (1985) proposed the term 'trustworthiness' to describe questions of the truth value, applicability, consistency and neutrality of qualitative research. Strategies to enhance trustworthiness in this study included independent analysis of three transcripts by a second researcher (CB) and reflective journal entries. This ensured that the findings were clearly derived from the data and that the research process was carried out logically, thus increasing dependability and confirmability of the results. To promote the accuracy of the descriptions or interpretations of the experiences that were studied (credibility), negative-case analysis, regular peer-debriefing, and member checking took place (Lincoln and Guba, 1985). All participants were sent a summary of the findings of the study and a short accompanying questionnaire to rate the extent to which these findings resonated with them. They were also given the opportunity to comment. Fourteen of the 23 participants replied and results showed high resonance of the findings with the participants. Subsequently, no changes were required to the emerging categories and themes.

Table 1
Participants' characteristics.

	Number of participants (n)
Age	
≤ 24	2
25–29	2
30–34	12
35–39	7
Country of birth	**n**
Ireland	19
Other European country	4
Highest qualification	**n**
Upper secondary leaving cert – applied and vocation progs., A levels, National Vocational Certificate (NCVA) level 1	2
Completed apprenticeship, NCVA level 2/3, Teagasc certificate, diploma or equivalent	1
Primary degree	6
Professional qualification of degree status	2
Postgraduate certificate or diploma	6
Postgraduate degree Masters	6
Time post partum at the time of interview	**n**
Three and six months (91–182 days)	14
Three and nine months (183–273 days)	6
Three and 12 months (274–364 days)	3
Pain pattern	**n**
Constant	1
Intermittent	10
Transient	1
Constant and intermittent (day dependent)	10
Constant and transient (day dependent)	1
Pain location	**n**
Anterior PGP	2
Posterior PGP	14
Combined anterior and posterior PGP	7
Pain severity at the time of interview (VAS 10 cm)	**Mean (SD)**
Morning	5.0 (SD 2.3)
Evening	5.7 (SD 1.9)

Findings

Three main themes, each with several categories (Table 2), emerged from the women's accounts of their health-seeking behaviours: (1) 'They didn't ask, I didn't tell', (2) Seeking advice and support, and (3) Coping strategies. These findings are described below and are supported by quotes that are labelled with the participant's number to maintain confidentiality. Quotes also include the number of days between the day that the woman gave birth and the date of the interview, for illustrative purposes.

Table 2
Overview of emerging themes and categories.

Themes	**Categories**
(1) 'They didn't ask, I didn't tell'	• Lack of follow-up after birth • Healthcare professionals ignore it
(2) Seeking advice and support	• Talking to others • Triggers to seek help • Barriers to getting help
(3) Coping strategies	• Self-management strategies • Pain medication

'They didn't ask, I didn't tell' (1)

Lack of follow-up after birth

Women said they would have liked more support and advice in hospital after the birth and more follow-up care later on:

> Before you have the baby you have so many check-ups and you have scans and everything, there is a fantastic support system, but once you've had the baby it's like you're left to your own devices. (16; 243 days)

Three women said they would like to be able to go back to the maternity hospital for a longer period after the birth because of their expertise in maternity-related issues, although opinions of women who had attended postnatal hospital services for their PGP post partum were mixed. Other postnatal support that women would like to have had, included more physiotherapy classes post partum, specifically addressing PGP, easier access to physiotherapy services or other practitioners such as osteopaths or chiropractors, and more structured follow-up care.

Healthcare professionals ignore it

Women said that healthcare professionals did not enquire after any persisting PGP symptoms during their postpartum visits, and expressed a need for specific questions to be asked concerning their health:

> I suppose the 6-weeks check; I was quite surprised by just how basic it was, and I know a lot of friends have said the same. There is no kind of like real physical proper check. But I would feel that a lot of, even friends with things that are unaddressed, because it's a fairly just 'Ok, fine, see you now'. They didn't ask specific questions and it was very quick and very minimal. If you said you were fine, you were fine. (24; 364 days)

Women thought postpartum contacts with their GP/public health nurse were primarily focussed on the baby only. Women often did not mention their symptoms either because of their own focus being on their baby's health, a perceived lack of time during the encounter, negative experiences in past encounters, or because

they thought it was just part of having given birth. Others forgot to mention it during the visit because of the intermittent nature of their pain and not being in pain during the consultation:

> But I think, they were not conscious of me having pain and there are days I think; 'Was I stupid never to tell?', but I don't have anything to compare it to so I was like 'That's part of giving birth I presume?' because I didn't know; it's my first baby so I didn't know any different. When I went to the 2-week and 6-week check, the doctor never asked me; he just said 'how was I?' and I said I was fine, I didn't say anything. It was all about my baby. (16; 243 days)

If their pain was mentioned, women felt their complaint was minimised with the most common advice being to 'give it time to settle'. As a result women wanted healthcare professionals to make 'a bigger deal out of it', listen to and examine their complaint carefully. One woman, however, was very pleased with her care.

Seeking advice and support (2)

Talking to others

Most women had mentioned their persisting symptoms to their partner but did not really talk about it much:

> He is aware I still have pain. We don't really talk too much about it, but it's still there, and he is very supportive anyway. (12; 300 days)

Conversely, one woman did say she often complained to her husband about her PGP. Women greatly valued talking to family members or other women who had experienced persistent postpartum PGP for advice about managing their pain, but sometimes were worried after hearing others' experiences. Women often did not feel understood when talking to women without persistent PGP. Some women had mentioned it to friends; however, others kept it to themselves as they did not want it to become 'the thing', or the focus of conversation was on the baby.

Triggers to seek help

Certain factors had encouraged some women to seek help including, completing the MAMMI surveys, an acute flare-up of PGP symptoms, realising the impact of the pain after taking pain relief medication, or encouragement from family members to seek help:

> Well, I probably wouldn't have gotten help if my husband and family wouldn't have pushed it, but I'm glad they did. (3; 167 days)

Barriers to getting help

Women described various practical barriers to getting professional help including the cost of seeking private treatment, and finding the time and someone to care for the baby. Moreover, many women were uncertain from whom they should seek help and said that advice was often conflicting.

> I know I'm getting no kind of joy with my GP but I don't know what the next step could be, what I could personally do with it, who I could go to with it. So, I don't know; I'm kind of in limbo. I don't know what the next step is. (2; 227 days)

Four of the six women who had contacted the physiotherapy department in the maternity hospital post partum said they had had difficulties getting through to them by telephone but all except one woman eventually got an appointment. Three women also expressed how conflicting advice from different healthcare professionals added to their confusion.

Coping strategies (3)

Self-management strategies

Most women felt they could cope with their persistent PGP, but would prefer to be pain free. They described numerous coping strategies including avoiding or adapting provocative activities, being mindful of their posture, wearing comfortable shoes, storing items at a height, and two women tried to lose weight. Seventeen of the 23 women tried to, or believed they should, exercise regularly to improve their symptoms but had to be cautious not to exercise too intensively as this often had an adverse effect; finding this balance was challenging:

> Exercise is good and it's not sore when I do it, well, it depends for how long. Particularly softer ground is better than concrete. I can really find it hurting when I'm walking on concrete. (24; 364 days)

However, four women said their main coping strategy was 'trying not to think about it'. Other strategies were stretching, applying pressure on tender muscles and resting between activities, although they had few opportunities for the latter.

Pain medication and treatments

Nine women mentioned using pain medication. Seven women were reluctant to take pain medication or were trying to cut down on painkillers:

> I cut down on the pain relief so it's not as much; I'm glad I got off Solpadine because that was quite harsh on the system. Panadol is a little bit softer but obviously if it's a bad day you still need it. (17; 132 days)

Three women said that they did not take any pain medication because they were breast feeding. Some women used other remedies such as hot/cold packs, hot baths or supplements. Three women had attended a postnatal physiotherapy class at the hospital and four had sought advice from private physiotherapists, chiropractors or osteopaths to help manage their symptoms, whereas two women said they were going to seek such help soon.

Discussion

'They didn't ask, I didn't tell'

Women described limited opportunities to discuss any problems postnatally compared to antenatally. Existing literature into postnatal care highlights this challenge of giving individualised information at the right time to parents, particularly with the increasing trend of early discharge (Danbjorg et al., 2014), although the impact of early discharge on many maternal and infant outcomes remains unclear (Brown et al., 2002). Home visits seem to increase maternal satisfaction with postnatal care (Yonemoto et al., 2013) but some women in this study wanted to be able to go back to the hospital for a longer period of time post partum as they experienced symptoms far beyond their six-week check-up.

Most women said that healthcare professionals (usually GPs and public health nurses (PHNs)) did not ask any questions regarding PGP and that the focus was on the baby. PHNs and GPs are 'generalists' in healthcare practice (Hanafin et al., 2002); however, in the combined model of care under the Maternity and Infant Care Scheme in Ireland, they are responsible for the well-being of mother and child (HSE, 2013). A more structured approach to postnatal consultations might address this perceived lack of attention to, and knowledge about, women's complaints.

When women mentioned their PGP symptoms during a consultation, they felt ignored. Similarly, in a study by Elden et al. (2014), pregnant women with PPGP described how they were met with a lack of knowledge and understanding. Fredriksen et al. (2008) examined online discussions about PPGP, and Engeset et al. (2014) explored the lived experiences of five women with persistent PGP. Both studies reported a lack of acknowledgment as an emerging theme. In a study exploring midwives' experiences of dealing with women with PPGP, the time limit during visits was considered a restrictive factor on what issues could be addressed in relation to PPGP (Mogren et al., 2010). This lack of time during postpartum follow-up visits was also perceived by several women in the present study.

Seeking advice and support

Most women had mentioned their persistent PGP symptoms to their husband, although they did not often talk about it. For females with chronic pain, talking about their pain with their spouses has been associated with greater marital satisfaction, whereas this is not the case for their spouses (Newton-John and Williams, 2006). The latter may explain why most women did not often speak about their pain to their husbands, if they perceived his satisfaction as more important than their own. Talking to family members and other mothers was also mostly considered helpful and was a common source of advice on self-management strategies; a finding which coincides with qualitative studies of peer support in pain management groups (Haraldseid et al., 2014). However, the lack of understanding by women who did not experience persistent PGP may be because PPGP subsides after the birth for many women and thus there is a lack of awareness that for some women PGP may persist.

Women who had sought additional help sometimes encountered conflicting diagnoses and advice. Similarly, in internet discussions regarding PPGP, women said that conflicting labels were given by different healthcare professionals (Fredriksen et al., 2008). Mogren et al. (2010) reported that midwives expressed doubts about whether women were sometimes falsely diagnosed with PPGP by themselves or others. Continuity and consistency of information in maternity care is important to women, especially to first-time mothers (Jenkins et al., 2015). When problems persist beyond the end of standard maternity care, information becomes more prone to inconsistency due to the absence of information transfer, particularly when a woman seeks help from healthcare professionals who have not been involved in the woman's care before and who do not have access to maternity care records.

Coping strategies

Chang et al. (2011) surveyed 183 pregnant women with low back and/or pelvic girdle pain during pregnancy regarding the coping strategies they used, and found that rest, task persistence and seeking assistance were the three most common ones. Women in this study described similar strategies and highlighted the difficult balance between continuing as normal, and adapting or avoiding activities. This uncertainty could impede self-efficacy and reduce their confidence that they can successfully execute a course of action to relieve their symptoms (Bandura, 1997). Self-efficacy has an important psychological influence on chronic pain, and higher self-efficacy is associated with less functional impairment, less affective distress and reduced pain (Jackson et al., 2014). Addressing the need for more precise and consistent advice (theme 1) may enhance self-efficacy in women with persistent PGP post partum.

The reason why some women sought help, and others had not, is likely to be multifactorial. Cornally and McCarthy (2011) identified three antecedents to help-seeking including problem recognition (a), decision to act (b) and selection of sources of help (c), all of which are likely to be influenced by the advice and information that women seek or receive. This again demonstrates the close relationship between the three main emerging themes from this study.

Conclusions

Primiparous women with persistent postpartum PGP adopt several self-management strategies to deal with their symptoms. Findings from this study indicate that participants felt that their PGP was often ignored by healthcare professionals. These findings are important for those responsible for providing maternity care if women's expectations and needs are to be met. It also calls into question the timing of postnatal follow-up care, which participants felt was stopped too soon. Participant selection based on history only and no physical examination is a limitation of this study. Strength however, lies in the fact that women did not have to make contact with any health service provider regarding their PGP to participate in the study and provides a unique perspective regarding health-seeking behaviours. Future research could include similar studies in countries with different maternity care systems for comparison.

Author's contributions

FW was involved in the design of the study, conducted the interviews and data analysis, and drafted the manuscript. EC and CB were involved in the design of the study and peer-debriefing sessions, and they reviewed the manuscript. CB completed independent analysis of three transcripts for quality assurance.

Conflict of interest

No competing interests.

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