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Parent-Infant Sleep as Co-Occupation

A Meta-Ethnography of Parent Experiences and Perspectives

A thesis submitted for the degree of Master of Research (MSc by Research) to the

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DECLARATION AND STATEMENT OF PLAGARISM

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Signed:  **Date:** 09/05/2024

Patricia Bernadette Flynn

"If I Sleep While My Baby Sleeps"

I will hear his sleep
in and through my own, my sleep
will be bathed in his as if we slept
in one same fluid

My sleep floats within a listening
so deep that the separating
spaces of air become
as pliant and full as snowfall,
its singing silence as profound

My ears and his throat —
the sensation of anticipated
hearing close inside the ear
and the incipient murmur or cry
forming at the end of his sleep —
borne like birds and thrumming
on the air of rooms between us

My own sleep will be his
clock, safely keeping time,
his sleep tunes my dreams to listen,
our sleep binds the hour,
heavy and warm,
into a blanket of air
and sound

Alice B Fogel from *Elemental*.

"People who say they sleep like a baby usually don't have one."

Leo J. Burke, Psychologist

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ABBREVIATIONS

AAP	American Academy of Pediatrics
AOTA	American Occupational Therapy Association
CASP	Critical Appraisal Skill Programme
HSE	Health Service Executive
MeSH	Medical Subject Headings
NIH	National Institute for Child Health and Human Development
SES	Socio-Economic Status
SIDS	Sudden Infant Death Syndrome
UK	United Kingdom
USA	United States of America
WFOT	World Federation of Occupational Therapists
WHO	World Health Organisation

SUMMARY

Sleep is a key component of health and wellbeing for both adults and infants and has implications for daytime functioning and quality of life. Infants' sleep patterns in the first two years involve unpredictable, short sleep bouts occurring across day and night that typically differ greatly from their parents' sleep patterns. Parents identify infant sleep as one of their primary postnatal concerns; however, in the current body of research there is an incomplete understanding of the phenomenon of parent-infant sleep and considerable variance in the definition and reported prevalence of infant and parent postnatal sleep problems.

The aim of this meta-ethnographic synthesis is to generate a novel understanding of parent-infant sleep by exploring the phenomenon through the lens of co-occupation. The construct of co-occupation offers a theoretical lens that describes subjective, interactive occupational experiences across spatial, temporal, and relational domains while acknowledging the influences of socio-cultural factors.

A systematic search of English language qualitative studies of parents' perspectives on and experiences of parent-infant sleep resulted in the inclusion of 59 studies from a wide range of disciplines and geographical locations. Meta-ethnographic analysis and synthesis of the data generated three themes: mutual wellbeing: meeting parent and infant sleep needs; parent protection of the sleeping infant; and connection: sleep and the parent-infant relationship. This synthesis describes the relationships between these three themes in their broader socio-cultural context to generate a novel understanding of parent-infant sleep as an interactive, dynamic, and subjective phenomenon where parents' sleep experiences are shaped by their infant's sleep and vice versa. By applying the co-occupational theoretical lens, this synthesis describes a diverse range of parent-infant sleep experiences, while highlighting the aspects of participating in interactive parent-infant sleep activities that were consistent across studies. The findings identify mutual sleep-related wellbeing and infant safety and security as parent-infant sleep needs and describe how these needs are negotiated within the context of the parent-infant relationship. The concept of parent-infant sleep pattern synchrony is proposed to describe the degree to which a parent perceives both their own and their infant's sleep needs to be adequately met and, accordingly, the extent to which participation in co-occupational parent-infant sleep activities is experienced as satisfactory. The findings are presented as a written line-of-argument synthesis with a diagrammatic representation demonstrating the inter-relationships between the synthesis themes which are subsequently discussed in the context of existing literature.

This synthesis contributes to the body of research by recognising the inherently interactive nature of engaging in co-occupational parent-infant sleep activities, irrespective of whether participation is experienced as rewarding or challenging. By describing the bidirectional interplay of parent and infant sleep needs in shared space and time within the context of their relationship, this synthesis has the potential to impact how parents' and infants' sleep-related wellbeing, infant sleep safety, and parent-infant relationship dynamics are supported. The findings of this synthesis can be used to prioritise the role and support the professional reasoning of occupational therapy practitioners working with parents and infants by broadening the understanding of co-occupational parent-infant sleep experiences to incorporate the complexity, challenges, subjectivity, and range of influences involved. Further research to test the application of the findings is recommended.

CHAPTER 1: INTRODUCTION

1.1 Introduction to the synthesis

It is widely accepted that sleep plays a key role in health, wellbeing, and in the performance of daily activities (World Health Organisation [WHO], 2004). Maslow (1970) classified sleep, with food, water, and oxygen, as a fundamental physiological need essential to survival and proposed that it is necessary first to meet these basic needs before the drive to meet higher needs such as safety, meaningful relationships, and personal achievement can be accessed (Carducci et al., 2020). The importance of sleep permeates our everyday lives, impacting our level of functioning and quality of life. (Szentkirályi et al., 2009).

While acknowledging that sleep needs can be variable between individuals and change according to age (Hirshkowitz et al., 2015), international guidelines generally advise that adults should aim to sleep for seven to nine consecutive nighttime hours, should limit wakings from disturbances such as noise, and avoid daytime naps in order to maintain good health (Department of Health (Ireland), 2022). In contrast to adult sleep, typically developing infants' sleep is unpredictable, distributed throughout the day and night hours, and night wakings where they need to be fed or comforted are common (Barry, 2021b; Galland et al., 2012). When an infant is born, a parent-infant sleep relationship is established where parents' nighttime sleep is frequently interrupted in response to their infants' shorter sleep cycles and need for care (Parsons et al., 2022; Philbrook & Teti, 2016; Sadeh et al., 2010).

This interaction of parent and infant sleep patterns can define sleep in the early postnatal years and is often experienced by parents as physically and emotionally challenging (Chivers et al., 2021; Parsons et al., 2022; Sadeh et al., 2011) and yet, parent-infant sleep

remains poorly understood. While the impact of infant sleep patterns on parent sleep is one of the primary concerns of parents and professionals during the postnatal period (Brockway et al., 2021; Hauck et al., 2007; Mindell et al., 2010; Smart & Hiscock, 2007); there is a lack of interdisciplinary consensus on what constitutes normal infant sleep (Barry, 2021b; Rudzik & Ball, 2021). The prevalence of infant sleep problems in the general population has not been conclusively established, with estimates ranging from 10% to 50%, with some of the variance attributable to the inconsistency in the definition of infant sleep problems and the influence of individual and socio-cultural factors (Byars et al., 2012; France, 1992; Galland et al., 2017; Mindell et al., 2010; Sadeh et al., 2011; Scott & Richards, 1990; Whittingham & Douglas, 2014). There is an acknowledged need for further multidisciplinary research to identify the range of influencing factors and move towards a more complete understanding of parent-infant sleep (Barry, 2021b; Camerota et al., 2019; Yang et al., 2020).

1.2 Establishing the need for the research

There is a growing recognition in the literature of the interplay between parent and infant sleep and an increasing number of multi-disciplinary researchers are conceptualising the phenomenon of parent-infant sleep as "*dyadic"* and interactive (Camerota et al., 2019, p. 17; de Graag et al., 2012; Rudzik & Ball, 2021). Co-occupation, a construct original to occupational science, was first developed with a view to understanding the "*dyadic interplay*" of the occupational experiences of a mother and infant across spatial, temporal, and social/relational dimensions (Pierce, 2009, p. 204). With increasing recognition of the interaction between parent and infant sleep in the postnatal period, a need to understand and describe the shared experience and to identify potential influencing factors has been established (Ball et al., 2019; McKenna & Mosko, 1994; Whittingham & Douglas, 2014). The construct of co-occupation offers a holistic framework with the potential to generate a

fresh understanding of the subjective and interactive occupational experiences of both the parent and infant, while also considering the transactional influences of the socio-cultural context within which they occur (Pierce, 2009).

This synthesis, by applying the theoretical lens of co-occupation, has the potential to generate a novel understanding of the interactive nature of parent-infant sleep in time, space, and their socio-cultural context. This synthesis has the potential to make a fresh contribution to the literature and enable further research and testing of constructs in order to support and enable the satisfactory and meaningful performance of parent-infant sleep co-occupations.

1.3 Definition of terms

For the purpose of this study, occupation is defined as the "…*everyday activities that people do as individuals, in families, and with communities to occupy time and bring meaning and purpose to life. Occupations include things people need to, want to, and are expected to do.*" (World Federation of Occupational Therapists [WFOT], 2012, as cited in American Occupational Therapy Association [AOTA], 2020, p. 7)

While a range of definitions and conceptualisations of co-occupation will be outlined in the literature review in chapter two, the following definition will be applied throughout the data extraction, analysis, and synthesis phases of this synthesis:

> Co-occupations are the most highly interactive types of occupation in which the occupational experiences of the individuals involved simply could not occur without the interactive responses of the other person or persons with whom the occupations are being experienced… These highly interactive experiences of doing… are a synchronous dance back and forth between the occupational experiences of the individuals involved, the action of one closely shaping the action of the other in a close match (Pierce, 2003, pp. 199-200).

Throughout this synthesis, parent-infant sleep is considered to be a co-occupation that encompasses all sleep preparation and sleep participation activities that have an interactive element between the parent and infant (AOTA, 2020; Pierce, 2009). Aspects of sleep that are individual to the parent or infant, such as the impact of a specific disorder on sleep, are not considered to be within the scope of this study.

For the purpose of this study, when an infant and parent share a sleep surface it is described as sharing a bed or bedsharing. The American Academy of Pediatrics (AAP) Task Force on Sudden Infant Death Syndrome (SIDS) state that medical examiners prefer the term "*surface sharing*" to describe parents and infants sleeping together on any surface (e.g. bed, couch, chair etc.) (2022, p. 2); however, in the case of this synthesis, where infant sleep safety is not the primary topic, the term "bedsharing" has been chosen for clarity and readability.

The terms 'prenatal' and 'postnatal' have been chosen to represent the time before and after the birth of the infant respectively, in the case of both the infant and parent, in line with the World Health Organisation (2010).

Throughout this synthesis, sleep training refers to any parenting approach to infant sleep that involves a parent scheduling, delaying, or avoiding responding to their infant's cries during infant sleep times with the aim of promoting independent infant sleep onset and longer infant sleep duration without waking. The term sleep training is considered, within this thesis, to be synonymous with controlled comforting, controlled crying, the cry-it-out method, behavioural sleep interventions, graduated extinction, and the Ferber method (Liu, 2020).

1.4 Methodology used

Meta-ethnography is a method of qualitative evidence synthesis developed to produce a new meaning or understanding of a phenomenon from bringing together and analysing primary data (Boland et al., 2017). Meta-ethnography was therefore selected as an appropriate methodology to achieve the aim of this study which is to generate a novel understanding of parent-infant sleep by exploring the phenomenon through the lens of co-occupation. As a method of qualitative evidence synthesis, meta-ethnography is an approach that offers a rigorous procedure for bringing together concepts, themes, and metaphors with a view to generating a higher order interpretation (Noblit & Hare, 1988) making it an appropriate method to conduct a meaningful synthesis of parents' perspectives and experiences as told in their own words, while also accessing the interpretations of the researchers who originally gathered the data in the field (Toye et al., 2014).

1.5 Thesis structure

In this first chapter, I have introduced the synthesis, established the need for the research, defined the terms used throughout the thesis, and introduced the methodology used. I will conclude this chapter with a statement of the aim and objectives of the study. In the second chapter I will provide a background examination of the literature for the synthesis. The third chapter will describe the meta-ethnographic methodology applied, including a description of my own guiding philosophical perspective as the researcher and the research design and methods I have used. In chapter four I will present the synthesis findings in three major themes with their related sub-themes and conclude with a text and diagrammatic line-of-argument synthesis that represents the thematic inter-relationships. Chapter five presents a discussion of the synthesis findings in the context of the existing

literature. I will conclude the thesis with a discussion of the implications for practice, the limitations of the study, and will make recommendations for further research.

1.6 Research aim and objectives

The aim of this meta-ethnographic synthesis is to generate a novel understanding of parent-infant sleep by exploring the phenomenon through the lens of co-occupation.

The objectives of this synthesis are:

(i) To describe parents' co-occupational experiences of parent-infant sleep.

(ii) To explore parents' perspectives on the interactions between their own and their infant's sleep patterns and activities.

(iii) To describe the spatial, temporal, and relational aspects of parent-infant sleep viewed through a co-occupational lens.

In chapter two, I will now present the background literature review which summarises the evolution of the existing knowledge base pertaining to parent-infant sleep.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

Parent-infant sleep involves an interplay between the sleep occupations of both infant and parent in a unique interaction in their personal context (Olson, 2004; Pierce, 2009). This background literature review will first describe the individual characteristics and patterns of typical infant and parent sleep in the first two postnatal years set in a context of evolving conceptualisation of the parent-infant relationship and the changing, and often conflicting, professional advice offered to parents on how best to support their infant's sleep. The influence of socio-cultural factors on parent and infant sleep will then be considered. The literature review concludes with a discussion of existing theoretical models of infant sleep and highlights the potential of the theoretical lens of co-occupation to generate a novel, holistic, and multi-faceted understanding of parent-infant sleep.

2.2 Infant sleep

Sleep has been shown to be important in supporting infants' physical, emotional, and cognitive health and development (Bernier et al., 2010; Hirshkowitz et al., 2015; Hysing et al., 2016; Tarullo et al., 2011; Tikotzky et al., 2010); however, there is considerable debate regarding what constitutes optimal infant sleep in terms of sleep duration and expected frequency of nighttime waking (Barry, 2021b; Bernier et al., 2010; Rudzik & Ball, 2021). While most official infant sleep guidelines provide a recommended sleep duration range according to age (Centres for Disease Control and Prevention, 2022; Health Service Executive [HSE], 2023a), many argue that these recommendations do not recognise the variability in typical infant sleep or the relevance of developmental and socio-cultural factors (Barry, 2021b; Bernier et al., 2010; Rudzik & Ball, 2021). The process of infant sleep consolidation, where infants' total sleep need, proportion of daytime sleep, and

frequency of waking is expected to gradually reduce with maturity, is also viewed by some as incompletely understood (Barry, 2021a). Inadequate recognition in the existing body of research of wide inter-infant variability, of the typically non-linear nature of the process of infant sleep consolidation, and of the influence of individual, demographic, and socio-cultural factors has been highlighted (Barry, 2021a; Bernier et al., 2010; Sadeh et al., 2009).

2.3 New parents' sleep

When considering typical infant sleep patterns and infant sleep support needs, it follows that becoming a parent often involves a dramatic reduction in parent sleep quality and quantity (Parsons et al., 2022). In the first postnatal months, new parents can expect to be frequently woken by their infant seeking to be fed, comforted, or settled back to sleep (Mindell et al., 2016; Rudzik & Ball, 2021). While sleep disturbances tend to be greatest during the first few postnatal months, the majority of parents' sleep has not reverted to pre-pregnancy quality and duration two years after the birth of their infant, with disturbances persisting in many cases for up to six years (Richter et al., 2019).

While some new parents' sleep difficulties can also be caused by underlying physical and mental health factors, the majority of disturbances are directly related to their infant's sleep pattern and nighttime needs (Hunter et al., 2009; Swanson et al., 2020). The impact of this sleep disturbance has been noted to manifest similarly to an insomnia disorder in up to 40% of parents in the first two postnatal years and presents with equivalent risks to parents' mental and physical health (Bayer et al., 2007; Dørheim et al., 2009; Quin et al., 2022; Sivertsen et al., 2015). In addition to the mental and physical health implications, parent fatigue due to infant-related sleep disruption has also been linked to reduced quality of life and poorer daytime functioning in parents (Montgomery-Downs et al., 2010).

Parental fatigue related to nighttime infant caregiving has also been shown to have a negative impact on parent-infant interactions during waking hours (King et al., 2020; Tikotzky, 2016) and to be correlated with poorer infant social-emotional development in the first two years of life (Adler et al., 2021).

2.4 Sleep and the parent-infant relationship

In 1940, Winnicott first conceptualised the mother and infant dyad as one interdependent unit saying "*... whenever one finds an infant one finds maternal care, and without maternal care there would be no infant"* (as cited in Winnicott, 1975, p. xxxvii). Bowlby later developed attachment theory which identified the key role that the parent-infant relationship plays in healthy infant development (Bowlby, 1969) with subseqeunt work by Ainsworth (1969) emphasising the agency of the infant in eliciting responses in mother-infant interactions. This evolving understanding of the impact of parent-infant interactions on infant development has influenced many researchers, professionals, and parents in their identification of their preferred infant sleep practices and their approach to settling infants to sleep.

2.5 Evolution of professional advice given to parents on infant sleep

Evolutionary anthropologists assert that the human infant has naturally slept in continuous physical contact with their parent for millennia, being entirely dependent in terms of nutrition, protection, and biological regulation (Ball et al., 2019; McKenna et al., 1993). Until the seventeenth century, most infants were expected to regulate their own sleep schedules without external parental control of their sleep-wake timing (Barry, 2021b). Infants necessarily slept in the same room and most often in the same bed as their parents given that most houses up until then consisted of only one room (Anders & Taylor, 1994).

In modern times, however, economic, scientific, and socio-cultural trends in parenting have had a significant impact on parent-infant sleep practices.

Between the 19th and 20th centuries, a new concern around infant sleep quality and family sleep habits began to feature in public health guidance in industrialising Western societies. Around this time, parents began to receive advice and warnings around infant sleep via family magazines and medical professionals (Stearns et al., 1996). Initially, the information related primarily to safe positioning and the risks posed by certain bedding; however, from the early 20th century, medical professionals also began to cite concerns and issue recommendations around the quality and quantity of children's sleep and the risks of "*overfatigue"* (Stearns et al., 1996, p. 349). The popularity of commercial infant feeding formula, first invented and marketed in 1865 (Stevens et al., 2009), is also considered to have played a role in the prevailing medical advice for separate beds and scheduled feeding (Anders & Taylor, 1994; Bartick et al., 2018).

In the subsequent decades, parenting manuals recommending independent and separate infant sleep gained popularity in Western societies. In order to encourage infants to go to sleep and stay asleep for longer without caregiver involvement, parents were advised to delay or avoid responding to their infant's cries at bedtime or if they woke during the night (Bartick et al., 2018). This behavioural approach to infant sleep became broadly known as sleep training and was subsequently popularised by Ferber in 1985 and Weissbluth in 1987 (as cited in Rosier & Cassels, 2021). Sleep training, as an approach to getting infants to "*sleep through the night*" without seeking intervention or support from their parents, remains popular to the current day (Barry, 2021b, p. 661) especially in societies considered to be culturally individualistic or where mothers routinely re-enter the workforce with limited maternity leave and rights (Barry, 2021b; Blunden et al., 2011).

Attachment parenting, offering an alternative approach informed by attachment theory, gained mainstream popularity in the early 1990s with the publication of Sears' (1993) parenting manual *The Baby Book.* This parenting philosophy advocates, amongst other practices, that mothers should maintain physical contact with their infant throughout the day as much as possible (using a sling for naps for example) and remain in contact throughout the night by sharing a bed with their infant.

Both approaches of behavioural sleep training and attachment parenting have attracted criticism and are often presented as being incompatible with each other in the academic literature (see Blunden et al., 2011; Douglas, 2016; Ermann et al., 2014; and Ramos & Youngclarke, 2006 for example) and in published popular books on infant sleep and parenting (see Giordano & Abidin, 2006; Ockwell-Smith, 2015 for example).

In a relatively recent development, parents now increasingly seek and receive external guidance on infant sleep from professional sleep coaches through accessing services offered primarily online or by telephone. Sleep coaches are largely self-titled and unregulated providers, with a varied level of experience and training, whose popularity of services is described as "*burgeonin*g" (Ingram et al., 2015; Mindell et al., 2017, p. 488). While there is a dearth of recent research on the proliferation and popularity of infant sleep coaching services; internet searches, anecdotal evidence, and the popular press suggest that the industry, and demand from parents, has continued to grow exponentially in the past decade (BBC, 2022, February 9; Potter, 2021, May 29).

2.6 Safe infant sleep

Consensus on the issue of safe infant sleep has eluded sleep experts for decades which further complicates parents' decision-making on infant sleep. While it is recognised that public campaigns advising parents to put their infants to sleep on their back rather than on their front have reduced the incidence of Sudden Infant Death Syndrome (SIDS) by approximately 50% (Moon et al., 2016; Sidebotham et al., 2018); additional advice introduced in 2000 by the American National Institute for Child Health and Human Development (NIH) to avoid sharing a bed due to the increased risk of SIDS is more contentious (NIH, n.d.; Ball, 2017). The argument that parents often value sharing a bed with their infant as it facilitates breastfeeding, which is recognised as mitigating the risk of SIDS, and because the practice often holds cultural or personal significance has recently been recognised in some national guidelines where the relative risks and benefits have been individually cited to facilitate parents' decision-making (AAP, 2022; National Health Service, 2021). Other national guidelines, such as those issued from the Irish health and social services, continue to advise against parent-infant bedsharing in all circumstances due to the increased risk to the infant of SIDS or suffocation (HSE, 2022).

2.7 Socio-cultural influences on infant sleep practices

From this socio-historical review of professional infant sleep advice and services, it is evident that much of the guidance offered to parents is based on dominant cultural, social, and disciplinary assumptions rather than empirical research, observation of the phenomenon, or the lived experience of parents (Douglas et al., 2011). One related ongoing debate in the literature involves anthropological, attachment, and socio-cultural perspectives challenging the dominant Western "medicalised" assumptions that solitary, formula-fed, and unfragmented infant sleep is normative. Some researchers contend that practices common in Eastern or more traditional cultures, such as bedsharing and frequent

infant night-time waking and feeding, should not be assumed to be problematic (Barry, 2021a, 2021b; Jenni & O'Connor, 2005; Kawasaki et al., 1994; Rudzik & Ball, 2021, p. 2). One cross-cultural survey of 29,287 parents of infants and toddlers aged 0-3 from 17 countries by Sadeh and colleagues, however, revealed that parents from predominantly Asian countries were significantly more likely to identify infant sleep problems than parents from predominantly Caucasian countries (52% to 26% respectively) (Sadeh et al., 2011). While Sadeh and colleagues' study confirms the relevance of socio-cultural and demographic variables when defining sleep problems, it challenges the argument that dominant Western assumptions have led to the over-pathologising of normal infant sleep in those societies. This highlights a gap in understanding of the impact of socio-cultural and demographic variables and of what constitutes normal or problematic infant sleep from the perspective of parents.

While the impact of culture is increasingly identified as a significant influencing factor in parent's chosen infant sleep practices, the focus of existing studies on this topic have been primarily limited to explorations of sleep location choices in the context of (non-) adherence to safe infant sleep guidelines or cross-cultural variances in the prevalence and perception of parent or infant sleep problems (Airhihenbuwa et al., 2016; Kawasaki et al., 1994; Mindell et al., 2010; Sadeh et al., 2011). The majority of the studies exploring culture and infant sleep assume mostly homogenous practices within cultures and primarily involve contrasting parent-infant sleep practices in Eastern countries or indigenous or minority cultures with their Western, white, or ethnic majority counterparts (Kawasaki et al., 1994; McKenna et al., 1993; Mindell et al., 2010; Morelli et al., 1992; Wennergren et al., 2021; Yang & Hahn, 2002).

2.8 The transactional model of infant sleep

Transactional models understand human experiences as transcending individual subjectivity to incorporate the influences of the physical, family, social, and the cultural environments (Cutchin et al., 2017). In 1993, Sadeh and Anders proposed a novel and influential transactional model of infant sleep problems that represented the relationship between parenting practices and infant sleep problems as bidirectional and dynamic (Teti et al., 2022). The model, informed by a systems perspective, suggested a direct relationship between parents' behaviours, cognitions, and emotions and infant sleep problems (defined as delayed sleep onset and frequent night waking episodes). The bidirectional nature of this relationship recognised that infant sleep problems can also directly impact parental mood and wellbeing with the potential to influence parental behaviours and interactions at infant bedtimes (Sadeh & Anders, 1993; Sadeh et al., 2010). These "*complex and multi-dimensional"* interactions between parenting and infant sleep are presented as being influenced by individual parent and infant factors and as occurring within the context of the parent-infant relationship and the broader socio-cultural environment (Sadeh et al., 2010, p.10). While the transactional model of infant sleep problems acknowledges the potential impact of parents' health and wellbeing on their infant's sleep, it does not extend to consider the impact of infants' sleep on the quality and quantity of their parents' sleep (Sadeh & Anders, 1993; Sadeh et al., 2010).

2.9 Parent-infant sleep: Current literature and future directions

Two subsequent models of infant sleep interventions and problems (D'Souza & Cassels, 2023; Teti et al., 2015) also acknowledge the potential impact of context and broader environmental factors on infant sleep. As is the case with the transactional model described in the previous section, these recent models of infant sleep also do not extend to consider the impact of infant sleep patterns on parent sleep quality and quantity (D'Souza

& Cassels, 2023; Teti et al., 2015). While another paradigm of parent-infant sleep proposed by Whittingham and Douglas (2014) does acknowledge the impact of poor sleep on parents of young infants, the authors explicitly reject, however, "…*the assumption that increasing the infant's self-regulated sleep duration will improve parental sleep and/or will have additional benefits for the parent–infant dyad…*", instead proposing that elevated parent sympathetic nervous system arousal is the primary cause of parent sleep problems in the first six postnatal months (p.2). This omission or rejection of the relevance of the direct impact of infant sleep patterns on parent sleep patterns highlights the need for further research to contribute towards consensus on a definition and parameters of parent-infant sleep and a greater understanding of the complex phenomenon.

Despite a definition of parent-infant sleep not yet being proposed, in the past two decades academic interest in parent-infant sleep has continued to grow (Teti et al., 2022) with the focus primarily on the topic areas of co-sleeping (Ball, 2002; McKenna & Volpe, 2007 for example); infant sleep ecology and bio-socio-cultural influencing factors (Rudzik et al., 2021; Sadeh et al., 2009; Teti et al., 2022; Teti et al., 2015 for example); the interaction between infant sleep, sleep location, and feeding methods (Ball, 2003; McKenna et al., 1997 for example); and the impact of parenting approaches on infant sleep (Philbrook & Teti, 2016; Sadeh et al., 2010 for example). In this nascent field of study, there is a recognised need for further interdisciplinary research exploring the interactions and transactions within and external to the parent-infant dyad relevant to both parties' sleep (Barry, 2021a; Douglas et al., 2011; Teti et al., 2022).

2.10 Sleep within the occupational therapy and occupational science literature

Sleep has been recognised as an important aspect of meaningful functional performance from the inception of occupational therapy. One of the profession's earliest pioneers,

psychiatrist Adolf Meyer, highlighted the need for occupational therapy practitioners to acquire an understanding of "*…the range and fluctuation of fitness with regard to work, play, rest, and sleep"* in order to gain an understanding of the whole person and their functional performance in the context of their everyday lives (Meyer, 1922, p. 97). A fellow pioneer of occupational therapy, Mary Reilly, also cautioned her fellow occupational therapists during her seminal 1963 lecture that there is a "*…clear-cut mandate… if we wish to exist as a profession…"* to first recognise the vital self-preservation needs of hunger, thirst, and sleep that drive the motivation to be occupied (p.10). Despite these professional foundations, in the decades thereafter sleep seldom featured in the occupational therapy and science literature (Green, 2008). In 2000, however, Howell and Pierce noted that the lack of attention given to sleep and rest in occupational therapy and science literature ignored the restorative and health-promoting aspects of these occupations. In their paper, Howell and Pierce identified the omission as "*…remarkable when considering how much individuals enjoy the occupation of sleep* [and] *invest meaning in sharing sleep with others…"* (p.69) and proposed that rather than considering occupations within the traditional categories of productivity, leisure, and self-care, occupational therapists should instead consider the "*subjective pleasure, productivity, and restoration experienced during occupation"* (p.69) to better understand balance in occupational performance (Howell & Pierce, 2000).

When considering the proportion of time humans spend sleeping, the health and quality of life implications of sleep, and the potential impact of sleep on functional performance it is clear that defining sleep as an occupation is consistent with the World Federation of Occupational Therapists' (WFOT) definition of occupations as being "*…everyday activities that people do as individuals, in families, and with communities to occupy time and bring meaning and purpose to life. Occupations include things people need to, want*

to, and are expected to do." (2012, as cited in American Occupational Therapy Association [AOTA], 2020, p. 7) .

In 2002, the first American Occupational Therapy Association [AOTA] practice framework recognised sleep as an activity of daily living *"...to be assessed in relation to how* [it] *affect*[s] *ability to effectively engage in occupations and in daily life activities"* (AOTA, 2002, p. 624); however, it was not until the second practice framework that sleep was identified as an occupation in its own right (AOTA, 2008). The third and fourth editions of the practice framework (AOTA, 2014, 2020) expanded the understanding of sleep as an occupation further, defining sleep as incorporating a range of sleep preparation activities (such as managing timing of sleep and preparing the sleep environment for example) and sleep participation activities (including napping, sustaining sleep without interruption, and meeting others' nighttime needs such breastfeeding and ensuring the safety and comfort of sleeping children, for example). See Table 2.1 for a full list of sleep preparation and participation activities related to the occupation of sleep as defined by AOTA (2020).

Table 2.1

Activities related to the occupation of sleep

Sleep Preparation Activities	Sleep Participation Activities
Bedtime routines	Ceasing activities to go to sleep
Washing and dressing	Staying asleep without disruption
Reading, singing lullabies, saying prayers	Meeting toileting and hydration needs
Saying goodnight	Providing nighttime caregiving to others e.g. feeding
Establishing sleep patterns	Monitoring comfort, safety of others who are sleeping
Preparing the sleep environment	

(AOTA, 2020)

Over the past two decades there has been increasing interest, recognition, and research around sleep in the occupational therapy and science literature (Green & Brown, 2015).

While some general guidelines have been published on sleep assessment and intervention for occupational therapists, most are reliant on assessment tools and interventions that are not informed by occupational therapy or occupational science theory (Fung et al., 2013; Green & Brown, 2015; Tester & Foss, 2018). One review of eleven quantitative studies of occupational therapy-led sleep interventions, with participants ranging from thirty days to eighty-two years old, highlighted the lack of occupational therapy theoretical models and frameworks specific to sleep (Ho & Siu, 2018).

2.11 Conceptualising co-occupation

Co-occupation is a concept original to occupational science, first generated from applying inter-disciplinary theory to research exploring the *"highly interdependent"* occupations of mothers and children (Pierce, 2009, p. 204). Pierce (2009) claims to have first coined the term "co-occupation" in 1990 when playing with her three-year-old daughter, and has described the construct as follows:

> … These highly interactive experiences of doing… are a synchronous dance back and forth between the occupational experiences of the individuals involved, the action of one closely shaping the action of the other in a close match (Pierce, 2003, pp. 199-200).

In this early definition, Pierce has emphasised the interdependence of both participants' engagement stating that the co-occupation "…*simply could not occur*…" without one another, while also stressing the synchrony and choreography of actions in time and space (Pierce, 2009, p. 204) .

In the early days of occupational science, Zemke and Clark proposed a spectrum of occupations that occurred in the presence of others incorporating parallel occupations (e.g. browsing in a shop), shared occupations (e.g. harvesting), and *"deeply social"* co-occupations (e.g. caregiving) (1996, p. 213). In order for an activity in the presence of another, or others, to be considered co-occupational, Zemke and Clark emphasised that

"…both people must be seen as actors to define their activity as co-occupation" (1996, p. 213). In their discussion of the active agency of each participant, the example of mother-infant participation in caregiving is given, with the authors specifically arguing that infants in this context should not be considered as merely passive recipients of care:

> We must acknowledge and reframe the data available today that identify, even in the newborn infant-mother occupations of feeding, diapering, dressing, and playing, the elements of the nature of the human infant, which make them active agents in co-occupation with their primary caregiver. (Zemke & Clark, 1996, p. 213)

While also considering interactive parent-infant occupations, Olson subsequently described co-occupation as involving both parties "…*bring*[ing] *personal, cognitive, physical, and affective skills*" to the experience (2004, p. 34). Pickens and Pizur-Barnekow (2009) built upon this conceptualisation in 2009, to further define co-occupation as meaningful activity between two or more agents acting within the same timeframe, with varying degrees of shared physicality, emotionality, and intentionality; later adding an additional factor of shared communication (Barnekow & Davel Pickens, 2011).

In response to the Pickens and Pizur-Barnekow (2009) definition, Pierce, while acknowledging "*the need to welcome multiple definitions*" (2009, p. 203), shared her own view that co-occupation does not necessarily occur within the same timeframe or have to involve the participants sharing of all five aspects of time, space, meaning, affect, or intent. Supporting this argument, Pierce (2000) contrasted a game of tennis, where both players are seen to symmetrically share physicality, emotionality, and intentionality, with the daily pattern of a toddler who empties a toy box to play during the day and their mother who tidies the toys back into the box every evening. Pierce argues that both interactive occupations can be defined as co-occupational as both constitute a "*dyadic interplay*" of meaningful occupations (2009, p. 204). For Pierce, restricting co-occupation to occurring in the same timeframe risked over-privileging the social or relational aspects of occupation

to the detriment of the spatial and temporal components of co-occupation (2009). According to Pierce "*the essence of co-occupation is simply the degree to which the occupations of two or more individuals are interactively shaping each other"* (2009, p.204).

See Table 2.2 for a summary of the conceptualisation of co-occupation in the literature over time.

Table 2.2

Evolution of the conceptualisation of co-occupation

Year	Contribution to Conceptualisation of Co-Occupation
1990	Pierce (2009) claims to have coined the term co-occupation while playing with daughter.
1996	Zemke and Clark (1996) introduce a spectrum of occupations from solitary to co-occupational and state that the active agency of both participants is a requisite of co-occupation.
2003	Pierce (2003) defines co-occupation as being highly interactive, synchronous, and entirely interdependent. Introduces alternative spectrum of social involved occupations from solitary to shared occupations to co-occupation.
2004	Olson (2004) explores co-occupation in the mothering context further, identifying "*feeding/eating, getting settled for sleep/sleeping, and comforting/self-comforting*" (p. 48) as co-occupational between parent and infant who both *"bring personal, cognitive, physical, and affective skills*" to the experience (p. 34).
2009	Pickens and Pizur-Barnekow (2009) propose a definition of co-occupation as "*involving aspects of shared physicality, shared emotionality, and shared intentionality, embedded in shared meaning"* (p.151) and suggest the categorisation of co-occupations from essential to complex depending on degree that all three aspects are shared.
2009	Pierce (2009)* responds to Pickens' and Pizur-Barnekow's (2009) definition with the view that multiple definitions should be considered. Stresses the importance of giving consideration to the spatial and temporal aspects, in addition to the social aspects, of co-occupation. States her view that co-occupations can, but do not necessarily have to share a timeframe or occur within shared space, meaning, affect, or intent. Proposes that both the subjective experiences of participants and the transactional characteristics of occupation hold value when considering the nature of co-occupation.
2011	Barnekow and Davel Pickens (2011) add a fourth aspect– shared communication – to the Pickens and Pizur-Barnekow (2009) definition of co-occupation, while stating that co-occupations do not require all four aspects to be present to the same degree. Propose a spectrum of co-occupations from foundational to complex, characterising complexity by the degree to which all four aspects are shared.

*** Pierce's 2009 definition of co-occupation is used for the purpose of this study**

2.12 Parent-infant sleep as co-occupation

While parent-infant sleep as co-occupation is underrepresented in the occupational therapy and occupational science literature, Olson established the relevance of the topic by describing a mother settling her infant to sleep as co-occupational in 2004. While this is, to my knowledge, the first study specifically exploring parent-infant sleep as co-occupation, an increasing number of studies have begun to include sleep in their explorations of parent-infant co-occupations leading them to identify the current gap in the knowledge base and calls for further research of the topic (Cardin, 2020; Crawford et al., 2023; Price & Miner, 2009; Smith et al., 2019).

2.13 Conclusion

This background literature review has summarised the evolution of the existing knowledge base pertaining to parent and infant sleep, the relevance of the parent-infant relationship to sleep, the evolution of and debate around advice given to parents about infant sleep, while considering the established importance of considering individual and socio-cultural influences on parent-infant sleep. The construct of co-occupation has been identified as offering a holistic framework with the potential to generate a fresh understanding of the subjective and interactive occupational experiences of both the parent and infant, while also considering the transactional influences of the socio-cultural context within which they occur.

In the next chapter, I will introduce the meta-ethnographic methodology that is applied throughout this study, give a description of my own guiding philosophical perspective, and describe the research design and methods I have used.

CHAPTER 3: METHODOLOGY

3.1 Introduction

The aim of this meta-ethnographic synthesis is to generate a novel understanding of parent-infant sleep by exploring the phenomenon through the lens of co-occupation. In the first two chapters, I have introduced the topic, established the need for this synthesis, and presented a background examination of the literature. In this chapter, I will now describe the research methodology used, beginning with the research design, theoretical background, philosophical underpinnings, and will conclude the chapter with the methods applied to guide the study selection, data extraction, analysis, and synthesis process.

3.2 Theoretical background

This synthesis is underpinned by a specific philosophical approach to the nature of reality and knowledge. In this section, I will describe the philosophical perspective I have taken as a researcher, which has informed the research design and methods applied throughout the process.

3.2.1 Interpretivist paradigm

The research design and methods I have applied are informed in the first instance by an overarching interpretivist perspective of reality. The interpretivist worldview assumes the existence of multiple co-exiting realities, constructed by individuals through their subjective experiences and interactions within their specific social and historical contexts (Merriam & Tisdell, 2016). The paradigm is consistent with the aim of this synthesis to develop a deeper understanding of parents' subjective perspectives on their co-occupational experiences of parent-infant sleep grounded in their everyday lives.

3.2.2 Constructivism

Constructivist theory has also guided my assumptions regarding the nature of reality, a research perspective which is congruent with the overarching interpretivist paradigm (Gray, 2016; Merriam & Tisdell, 2016; Schwandt, 1994). This ontological viewpoint is underpinned by the assumption that meaning is not attributed to any objective reality until it is experienced and interpreted by people (Sarantakos, 2005). Constructivist ontology, as applied in this study, values the subjective meanings that parents apply to their experiences of participating in sleep-related occupations with their infants as reality, also recognising that their interpretations and understandings are influenced by their interactions and relationships within their personal contexts (Denzin & Lincoln, 2008).

3.2.3 Relativism

Epistemologically, I have taken a relativist position, where it is assumed that knowledge is only valid relative to a described individual, society, culture, or context (Clarke & Braun, 2013a). Wilson (2000) describes the relativist worldview as recognising the inter-dependence of the knower and the known, in contrast to the objectivist epistemological position that considers knowledge to have a distinct existence external to the mind. I have interpreted this viewpoint as asserting that one parent's perspective cannot be valued as more true or more valid than another's and as further emphasising the importance of interpreting parents' words and intended meanings with reference to their own personal contexts.

3.3 Researcher positioning

In qualitative research, the philosophical position of the researcher is acknowledged to have the potential to influence the research process. The responsibility of the researcher is to acknowledge and examine their own personal and theoretical assumptions from the

outset and continue to interrogate their potential impact at each stage of the process (Burck, 2005). I will now describe how I have identified and interrogated my positioning as a researcher in the context of completing this synthesis.

3.3.1 A priori theoretical assumptions

Unlike deductive quantitative research, that seeks to prove a hypothesis or test existing theory, qualitative research is inherently inductive in seeking to build new concepts, theories, or novel hypotheses as the researcher works up from the particular (people's accounts and descriptions) to the general (themes, categories, patterns, and meanings) (Gray, 2016). In this regard, an inductive qualitative research design is particularly fitting to explore a phenomenon where there is a dearth of existing theory (Clarke & Braun, 2013b; Gray, 2016) as currently is the case with parent-infant sleep as co-occupation.

While undertaking this study as an inductive researcher, it is necessary to recognise that it is not possible to approach the research as an entirely blank slate. As an occupational therapist researcher, it is critical that I acknowledge that I have constructed the aim and objectives of this study around the theoretical concept of co-occupation, a construct original to occupational science (Pierce, 2009) while also drawing from the constructivist, relativist worldview. While this starting point reveals certain values, judgements, and assumptions, many interpretivist researchers would argue that any research that has an identified purpose reveals a series of value-based choices and assumptions to some extent (Gray, 2016). From this declared theoretical and philosophical starting point, the on-going practice of reflexivity and engagement in open discussion and reflection with fellow researcher or supervisors is an essential component of qualitative research. Throughout this research process, I engaged in frequent personal questioning and reflection through journaling and discussion with research supervisors in order to identify and attempt to set

aside any further assumptions, beliefs, or values that might lead me to shape rather than comment on the data (Clarke & Braun, 2013a).

3.3.2 Reflexivity

Reflexivity is embedded in the methodology and the design of this study, being a definitive feature of an interpretive and constructivist philosophical approach (Gray, 2016). While Merriam and Tisdell (2016) identify the adaptable, responsive qualitative researcher as the *"primary instrument for data collection and analysis"* (p.16); they also caution that any assumptions, beliefs, interests, and values must be acknowledged and differentiated from the perspectives and experiences being collected and analysed. In addition, it is necessary to explore the dynamic relationship of the researcher to the subjects and topic of the study in an on-going process of self-reflection and interrogation (Clarke & Braun, 2013b; Denzin & Lincoln, 2008). My own on-going critical reflection has been an integral component of this research process, and has involved writing regular reflexive statements and charting, discussing, and challenging the development of my interpretations both within the supervisory relationship and through reflective journaling. In addition to exploring and recording all questions arising, interpretations, and decision-making throughout all the stages of the research (Noyes et al., 2022) significant consideration has also been given to the potential impact of my positioning as a mother with personal experiences of parent-infant sleep, as a clinician with historical narratives of new parents in memory, and as a researcher interpreting data through the lens of my own past experiences, knowledge, and context (Lincoln et al., 2011).

3.3.3 My positioning as a researcher

It was during my work with an antenatal and mother-and-baby service that I first became aware of the importance to new parents of infant sleep as a topic. Curious about the high levels of concern that I was hearing from parents around infant sleep duration, frequency of waking, sleep locations, and settling strategies, and the impact and responses of parents to the disruption to their own sleep, I began to seek current guidelines and evidence-based information. As I read, I became increasingly interested in parent-infant sleep as an area that demanded further research. It appeared to me that existing advice to parents on supporting infant sleep was often didactic and primarily based on professional opinion rather than parents' lived experience or robust empirical evidence.

In addition to my search for knowledge, around this time I also began to reflect on my own relatively recent experiences as a new mother. As a health professional, I was personally risk-adverse and convinced of the value of evidence-based practices and so, before the birth of my first child, I naturally had a plan for where, when, and how my baby would go to sleep. That both my daughter, and subsequently son, arrived with different sleep plans (to mine and each other) and that there was little to no guidelines or resources that recognised our reality, efforts, or individuality was unexpected and disorientating. I recalled that the only professional advice provided to me as a new mother was on safe sleep environments and being told that there was a "right" way to settle my infant to sleep and that I was doing it the "wrong" way. This experience, I later recognised, mirrored that of many other new parents that I subsequently worked with.

On a professional level, knowing the importance of sleep for adults' physical and mental health and for infant's health and development, I experienced the dearth of published research on simultaneously supporting infant *and* parent sleep as a call to action. I

wondered what parents, from different backgrounds and cultures, could tell us about that relationship between their own and their infant's sleep, and how the reality of trying to get their infant to sleep while also getting some sleep themselves could be better understood and reflected in the body of literature and ultimately, in my clinical practice. This thesis aims to address these areas of interest with a view to generating a new and better understanding of this complex, yet everyday, phenomenon. Active and frequent interrogation and discussion of my positioning, interpretations, and decisions with the research supervisors acted as an external check on the potential impact of these personal and professional experiences and potential bias throughout the research process.

3.4 Research design

This section will describe the qualitative research design and include an outline of the systematic review protocol written to guide the research journey ahead.

3.4.1 Qualitative research design

Qualitative research seeks to understand the many different subjective meanings, narratives, and perspectives that people use to construct their own personal realities (Gray, 2016; Sarantakos, 2005). I accordingly selected a qualitative research design that was congruent with the interpretivist philosophical paradigm and the aim of my research. A qualitative approach to research considers people's subjective experiences and the meanings they bring to them as data that can be collected using methods such as interviews, focus groups, observations, or diaries for example (Denzin & Lincoln, 2008; Merriam & Tisdell, 2016; Sarantakos, 2005).

As the aim of my research was to generate a deeper understanding of a widespread phenomenon experienced by parents in the general population, I identified a systematic

review of existing qualitative studies as an appropriate methodology. A systematic review of qualitative evidence is a secondary research method that offers a structured framework to bring together narratives from a broad range of contexts and backgrounds, with the view of creating a meaningful and in-depth exploration of the phenomenon of interest (Boland et al., 2017). In order to ensure internal consistency and clarity of purpose throughout the project ahead, I wrote and published a review protocol setting out my proposed work plan.

3.4.2 Systematic review protocol

Writing a review protocol at the start of the process formalises the research design by generating a roadmap of the process ahead, outlining each stage of the research project including the formulation of the research question and plans for the selection and appraisal of relevant primary studies, and the extraction, analysis, and synthesis of the qualitative data (Boland et al., 2017; Ranganathan & Aggarwal, 2020). The protocol for this study was registered on 13th December 2022 on the PROSPERO international prospective register of systematic reviews (Flynn et al., 2022, available at https://www.crd.york.ac.uk/prospero/display_record.php?RecordID=380988). Registration of a review protocol is considered best practice in research in order to avoid duplication and bias and ensure accountability and clarity of conduct throughout the process (Straus & Moher, 2010). The phases of the research design are represented as discrete stages in the protocol; however, in practice, the methodological stages are iterative, often overlapping, and occur in parallel (Noblit & Hare, 1988). This is outlined further in this chapter. A copy of the published protocol is included as Appendix A.

3.5 Research methods

This section will describe qualitative systematic review methods and outline the meta-ethnographic method and the rationale for its selection.

3.5.1 Qualitative systematic review methods

As outlined previously, I selected a systematic review of existing qualitative evidence as the most appropriate means of researching a wide range of parents' experiences of and perspectives on co-occupational parent-infant sleep. Qualitative evidence syntheses, as a broad subcategory of qualitative systematic review methods, incorporates a range of approaches to synthesising primary research that can be located on different points along a spectrum from integrative to interpretive. While integrative methods involve a deductive process of aggregating evidence from a collection of similar studies, interpretive syntheses seek to inductively generate concepts and novel understandings grounded in the primary findings of comparable studies (Boland et al., 2017). Guided by the aim of the research, my theoretical standpoint, and the outcomes of initial scoping reviews, I selected the meta-ethnographic approach, a method "*firmly based in the interpretivist paradigm"*, to guide the research journey ahead (Flemming & Noyes, 2021; Noblit & Hare, 1988, p. 11; Noyes et al., 2022).

3.5.1.1 Meta-ethnography

Meta-ethnography is currently the most frequently used method of qualitative evidence synthesis (Britten et al., 2002; Cahill et al., 2018). In their definitive 1988 text, Noblit and Hare described a systematic seven-phase procedure for conducting a synthesis of qualitative evidence with the aim of generating a higher-level understanding of social and cultural phenomena through a comparative rather than aggregative approach. While the term 'meta-ethnography' was adopted specifically to distinguish interpretive synthesis

from positivist meta-analysis, the authors specified from the outset that the method was developed to synthesise collections of all types of interpretive research (Noblit & Hare, 1988). Meta-ethnography offers the researcher a rigorous procedure to follow in bringing together a collection of qualitative studies while preserving their uniqueness and holism, to generate a substantive interpretation that is "*something more than the parts alone imply"* (Noblit & Hare, 1988, p. 28). The seven-phase meta-ethnographic process proposed by Noblit and Hare informs the research design of this project as outlined in Table 3.1. In order to ensure clarity and completeness, the eMERGe meta-ethnography reporting guidelines (France, Cunningham, et al., 2019) were followed throughout this thesis with specific criteria and reference page numbers also included in Table 3.1

3.5.2 Inclusion and exclusion criteria

The aim of this meta-ethnographic synthesis is to generate novel understandings from existing qualitative research on parent-infant sleep through exploring the phenomenon through the lens of co-occupation. In order to guide the search for relevant studies, it was necessary to define inclusion and exclusion criteria that clearly reflect this aim. The study inclusion criteria and rationale are outlined in Table 3.2.

Table 3.1

Meta-ethnography phases as applied to stages of the research design

Phase of Meta-Ethnography	Description of the Stage of Research Design	Relevant eMERGe Reporting Criteria (page number)
1. Getting started:	Writing the research proposal. Conducting scoping literature searches. Conducting background literature review. Writing the research protocol including the aim of the research, research question, and inclusion criteria.	1. Rationale and context (p.1-3) 2. Aims (p.6) 3. Objectives (p. 6) 4. Rationale for using meta-ethnography (p.5)
2. Deciding what is relevant	Conducting the search strategy. Screening and selection of primary studies.	5. Search strategy (p.34) 6. Search processes (p.31-36) 7. Selecting primary studies (p.37) 8. Outcome of study selection (p.37-40)
3. Reading the studies	Reading and re-reading primary studies. Completing data extraction. Conducting quality appraisal. Coding of data from primary studies.	9. Reading and data extraction approach (p.41-43) 10. Presenting characteristics of included studies (p.43-58)
4. Determining how the studies are related	Comparing and analysing similarities and differences between individual subcodes and codes to generate groups leading to interpretive iterations.	11. Process for determining how studies are related (p.57-58) 12. Outcome of relating studies (p.163)
5. Translating the studies into one another	Exploring similarities, differences, and relationships between codes and interpretive iterations to develop sub-thematic categories. Comparing categories to relevant findings and contextual data of original studies.	13. Process of translating studies (p.59-60) 14. Outcome of translation (p.164)
6. Synthesising translations	Completing further reduction of sub-thematic categories to generate overarching themes and explore conceptual relationships to create a line-of-argument synthesis.	15. Synthesis process (p.60) 16. Outcome of the synthesis process (p.165)
7. Expressing the synthesis	Expressing the meta-ethnographic synthesis in written and diagrammatic form with reference to existing literature with discussion of findings, limitations, recommendations and conclusions.	17. Summary of findings (p.62-104) 18. Strengths, limitations (p.105-127, and reflexivity (p.24-27) 19. Recommendations and conclusions (p.127-130)

(France, Cunningham, et al., 2019; Noblit & Hare, 1988; Toye et al., 2014)

Table 3.2

Primary study inclusion criteria

Inclusion	Reference	Rationale
Studies using qualitative methods to collect and analyse data, including mixed method research.	Sandelowski et al. (2013)	Area of interest with a limited pool of existing research requires a comprehensive search for relevant qualitative data to produce a meaningful synthesis.
Parents are defined as the mother or father of a person, or someone who looks after a person in the same way that a parent does.	Cambridge University (2022)	Perspectives were sought from the main person(s) who spend(s) most time with the sleeping infant and perform(s) most of the sleep-supporting tasks including adoptive or substitute parents.
Infants were defined as children less than or equal to two years (24 months 0 days) of chronological age.	National Library of Medicine thesaurus of medical subject headings (MeSH) (2022) (Paavonen et al., 2020)	Infants' night-waking and daytime sleep needs are most prevalent in the first two years of life.
Sleep as co-occupation includes all sleep preparation and participation activities with an interactive aspect between an infant and their parent or parent(s).	(AOTA, 2020; Pierce, 2009)	Consistent with the definition of co-occupation used throughout the study and the AOTA definition of sleep as a category of occupation incorporating sleep preparation and participation activities.
English language	(Lefebvre et al., 2023)	Native language of researcher, not pragmatic to seek translation. Excluding non-English studies found to be unlikely to change the conclusions of most systematic reviews.

3.5.3 Search strategy

The generation of a meaningful outcome from conducting a qualitative evidence synthesis is dependent on the retrieval of relevant studies within the extensive pool of existing research. In order to conduct a comprehensive, reproducible, and transparent search strategy, the elements of the research question were inserted into the framework of the SPIDER search strategy tool. The SPIDER search strategy tool was identified as most appropriate for the selected meta-ethnographic methodology and the specific aim of this research project (Cooke et al., 2012; Methley et al., 2014). The elements of the research question as they aligned with the SPIDER tool headings are outlined in Table 3.3.

Table 3.3

Elements of the research question structured according to the SPIDER search strategy tool

SPIDER Tool Headings	Elements of Research Question
S – Sample	Parents of infants aged two years or younger (chronological age)
P of I– Phenomenon of **I**nterest	Parent-infant sleep as co-occupation
D – Design	Studies with qualitative data collection and analysis methodologies
E- Evaluation	Reported lived experiences and perspectives of parents
R- Research Type	Qualitative or mixed methods

A further table was subsequently populated with terms, constructed with reference to each element of the research question and to the Medical Subject Headings (MeSH) vocabulary thesaurus (National Library of Medicine, 2022); the Oxford Thesaurus of English (Waite, 2009); the AOTA Practice Framework (AOTA, 2020); and personal professional vocabulary (see Table 3.4 for search strategy terms). Additional complexity, owing to the duality of the parent and infant sample and the multi-faceted phenomenon of co-occupation

was addressed through the addition of multi-disciplinary terms related to the performance of sleep preparation and participation activities and to the parent-infant relationship.

Referring to structured research question and the table of search strategy terms, a university subject librarian developed a pilot search strategy as recommended to guide an effective and comprehensive search (Cahill et al., 2018). This search strategy was initially piloted on Embase.com and following a review of the results, the search was further optimised for sensitivity and translated to other databases. The search was run on the 11th November 2022 in the following databases: Embase.com (date of inception 1971), MEDLINE ALL via Ovid (1946 to Daily Update), Web of Science Core Collection, and CINAHL via EBSCOhost. Terms were searched for in the titles and abstracts of results in all databases. See Appendix B for the final search strategy.

The search returned 2650 results which were downloaded in Embase bibliographic software and automatically deduplicated to remain with 1690 references. These references were further automatically and manually deduplicated when imported into Covidence systematic review software, leaving 1648 primary studies to be screened for inclusion.

Table 3.4

Search Strategy Terms

RESEARCH QUESTION ELEMENTS	SEARCH TERMS
(S^1) Parent	"parent*" OR "mother*" OR "father*" OR "maternal" OR "paternal" OR "caregiv*"
(S^2) Infant	"infant" OR "baby" OR "babies" OR "neonat*" OR "infancy" OR "newborn" OR "child" OR "toddler" OR "first two years" OR "0-24 months"
(S^3) Parent-Infant	"dyad" OR "pair" OR "relat*" OR "interact*" OR "transact*" OR "bidirect*" OR "perinatal" OR "postnatal" OR "postpartum" OR "shared"
(P of I) Sleep as Co-Occupation	"sleep" OR "co-sleep" OR "nap*"or "night*" OR "wake" OR "waking" OR "sleep problem" OR "bedtime" OR "circadian" OR "diurnal" OR "nocturnal" OR "sleep deprivation" OR "sleep needs" OR "sleep maintenance" OR "sleep disturbance" OR "sleep patterns" OR "sleep onset" OR "insomnia" OR "sleep hygiene" OR "diurnal rhythm" OR "sleep environment" OR "sleep equipment" OR "sleep clothing" OR "bedding" OR "fatigue" OR "tired" OR "occupation" OR "routine" OR "ritual" OR "schedule" OR "settling" OR "habits" OR "bedtime" OR "nighttime" OR "daily activities" OR "practices" OR "rest" OR "calming" OR "strategies" OR "attachment" OR "bond*" OR "co-regulation" OR "responsive"
(D) Qualitative methods and design	"interpretiv*" OR "thematic" OR "narrative" OR "descriptive" OR "phenomenol*" OR "observ*" OR "focus group" OR "interview" OR "case study" OR "ethnograph" OR "grounded theory" OR "context"
(E) Perspectives and experiences	"views" OR "perspective" OR "perception" OR "perceive" OR "meaning*" OR "expect*" OR "belief" OR "opinion" OR "view*" OR "interpret*" OR "feel*" Or "impression" OR "thought*" OR "attitude" OR "cognit*" OR "mindset"
(R) Research Design	"qualitative" OR "mixed method*"

[**S^1** OR **S^2** OR **S^3**] AND **P of I^1** AND [(**D** OR **E**) AND **R**]

(Cooke et al., 2012)

3.5.4 Study selection

While there is no one accepted approach to study selection in meta-ethnography (Atkins et al., 2008; Cahill et al., 2018; France, Uny, et al., 2019); theoretical sampling (mirroring primary qualitative research) is argued by some to make the meta-ethnographic process more efficient and manageable (Boland et al., 2017; Noyes et al., 2022); however, this approach to selection is dependent on the assumption that all likely insights on the topic can be said to be addressed by the included studies (Boland et al., 2017; France et al., 2014). In the case of this synthesis, where there is a dearth of primary research sharing my specific research question but an extensive pool of relevant direct parent quotations within those primary studies, a comprehensive and exhaustive approach was adopted in the sampling process to ensure that all relevant studies were captured with a view to producing a complete, rich, and convincing interpretation of a complex human phenomenon (Thorne, 2017).

Having executed the search strategy, decisions on the inclusion or exclusion of studies during the screening stage was informed by the aims and objectives of the synthesis (Boland et al., 2017). Qualitative or mixed method studies, with direct quotations from parents describing their perspectives on or experiences of sleep as co-occupation in the first two postnatal years were included; studies that did not use qualitative methods, that did not relate directly to the perspectives of parents of infants two years and younger, or where sleep was explored in relation to the infant or parent in isolation were excluded.

Relevant studies where the age of the infant was not specified were included if it was evident that the parent was referring to an infant approximately within the age range of 0-2 years (for example, where they referred to the risk of SIDS or described the child as an infant or baby). Studies with data related to parents and infants from birth to beyond the

first two postnatal years or where the perspectives of other family members or professionals were also explored were included if relevant direct parent quotations relating to the first two postnatal years could be extracted. Grey literature and conference abstracts were excluded due to the anticipated large volume of search results and the decision was made to only include studies which were published in peer-review journals to ensure a basic level of quality and rigour.

The screening process was completed using Covidence systematic review software (Veritas Health Innovation, Melbourne, Australia available at www.covidence.org). Of the initially identified 1648 papers, abstract and title screening led to the exclusion of 1424 studies due to relevance. An additional 168 studies were excluded following full text screening. To reduce bias and introduce triangulation of researchers, twenty percent of the search results were independently double screened at both title and abstract and full-text screening stages by each of the two study supervisors and myself. The reasoning behind decision making for inclusion or exclusion of studies was then discussed in supervision sessions in order to reach consensus. On the basis of these discussions, I then independently screened the remaining 80 percent of the studies for inclusion.

When considering the broad concept of co-occupation, where the definition is neither exacting nor established (Pierce, 2009), repeated reference to the study aims and objectives, on-going reflexive journaling and supervision discussions provided an opportunity to ensure clarity, consistency, and rigour in the study screening process.

Another consideration that emerged at the point of screening involved the inclusion of studies studying parents' and infants' experiences in clinical settings such as neonatal or maternity units. Considering the impact of factors external to the parent and infant, such as

hospital staff, equipment, policies and procedures, and the clinical environment, it became clear that it would prove difficult to isolate the co-occupational aspects of parent-infant sleep in such contexts. This necessitated the exclusion of studies describing parent and infant sleep studied in hospital, clinical, or residential settings. In addition, studies examining the specific impact of developmental or medical diagnoses on sleep were excluded as not relating to the phenomenon of interest, as the research questions in these cases related to either the sleep of the infant or parent with the condition rather than considering parent-infant sleep interactions.

Studies were considered to have insufficient primary qualitative data if there was one or two relevant parent quotations only within the reported data that were judged unlikely to make a meaningful contribution to the end synthesis. Decisions where the potential contribution could be considered debatable were made in collaboration with both the research supervisors.

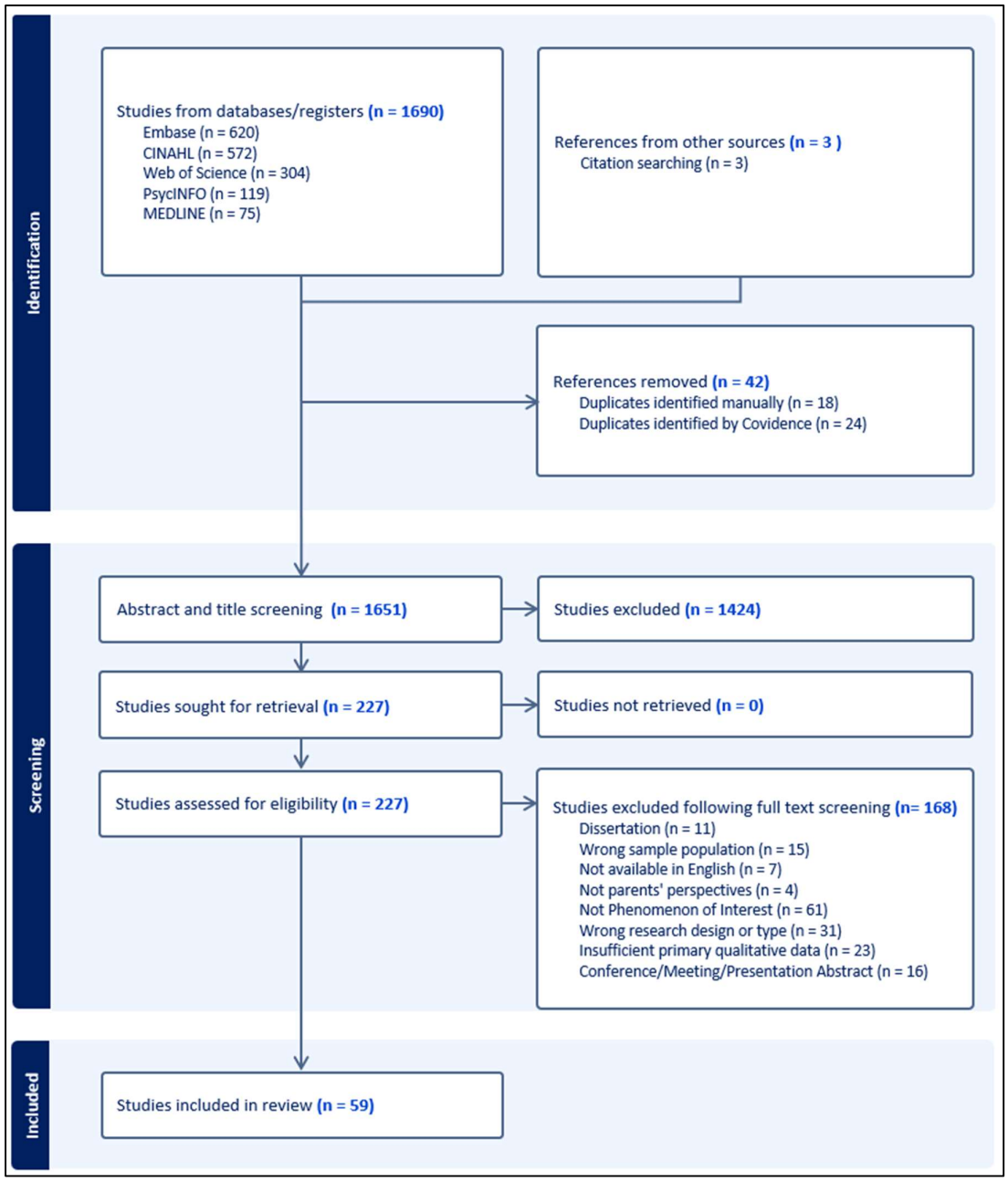
All other studies published up until the date of the search that met the inclusion criteria were included, irrespective of demographics, socio-economic background, ethnicity, or gestational age at birth in order to maximise the theoretical and contextual variance of the included studies and preserve complexity (Thorne, 2017).

Following the screening process, I also subsequently completed comprehensive supplementary backward-citation searching of reference lists and forward-citation searching of included studies using Google Scholar, which identified three further potentially relevant studies, one of which was included in the final synthesis following full-text review of the three studies. Figure 3.1 shows the results of the search strategy and the selection of studies for inclusion in this meta-ethnography using the Preferred

Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram (Page et al., 2021).

Figure 3.1

PRISMA flow diagram



3.5.5 Data extraction

Once I completed the screening process as outlined, I commenced the data extraction process which included populating a table of primary study characteristics (see Table 3.6) and a bespoke data extraction table. Data extraction decisions were guided by the aims and objectives of the synthesis. All relevant parent quotations (defined as first order constructs by Britten et al. (2002) in the context of meta-ethnography) were extracted in conjunction with their relevant original researcher interpretations, key concepts, and themes (defined as second order constructs) following the worked examples by Britten and Pope (2011) and Malpass and colleagues (2009). First order constructs were not extracted in isolation from related second order constructs in order to preserve the original authors' interpretations while also accessing parents' intended meanings relevant to the specific aim of this synthesis (France, Uny, et al., 2019). In order to reduce the risk of bias influencing data extraction decisions, dual data extraction was completed independently on four studies each by both research supervisors and myself. All differing decisions and any subsequent data extraction queries for the remaining fifty one studies were discussed and consensus reached at research supervision meetings. The data extraction process was demonstrated and discussed with both research supervisors throughout the process to ensure completeness of extraction, examination of potential bias, and alignment with the synthesis' aim. See Table 3.5 for an extract of a *Data Extraction Table* which was completed for each included study.

Table 3.5

Extract from Data Extraction Table

Data Extraction Table

Reference: Doering, J. J., Sims, D. A., & Miller, D. D. (2017). How postpartum women with depressive symptoms manage sleep disruption and fatigue. *Research in Nursing & Health*, *40*(2), 132-142.	
Author Findings (themes/ metaphors/ interpretation) (Second Order Constructs)	Participants' Own Words (First Order Constructs)
Pg 135 **Theme: Basic Social Process** "Finding a Routine Together" Over time, women engaged in the process *of Finding a Routine Together*, moving from *Retreating* toward *Establishing the New Normal*, when they reported the infant had established a routine that was predictable enough for participants to be able to plan and carry out their everyday activities without being excessively fatigued.	*Pg 135* *And I feel wonderful in the morning, because she really slept all night, it give me enough time to do what I have to do, you know. Especially when I'm behind in my work.* *Pg 135-136* *Their nights and days is mixed up. They don't know when to go to sleep and when to stay awoke, so it's like when they tired, you're not tired. But it's when they woke, that's when you be tired and it's like you can't stay woke while they woke, you know. That's how I am with my baby* (month 1). *I'm really not getting none now. It seem like you think that...you would get more sleep now that he getting older, I'm getting less, less sleep. And it's like he still got his nights and days kind of mixed up, he don't sleep at all very well* (same woman at month 3). *But [infant] would sleep all day and then stay up all night. She wake up at night 1:00 in the morning till 6:00 in the morning and then she will finally go to sleep. Like she did last night. And I get no sleep. I was so tired. It's like I was watching her. I wanted to go to sleep, but I just couldn't. I keep feeling like tired ... I'm not ... my body feels like I don't want to do nothing, because I be so tired, but I can't go to sleep, because I always got to attend her [infant] if she whine or something and he [3 year old] keep me up too and it's just I be really, really tired, though.*

A bespoke table of primary study characteristics was populated with the following information from all primary studies, which ensured that extracted data could be continuously contextualised during the analysis and synthesis process (See Table 3.6: *Table of Primary Study Characteristics*).

The table included:

- Bibliographic information
- Aim of the study
- Primary phenomenon of interest
- Geographical location
- Discipline of primary researcher
- Level on Daly Hierarchy of Evidence (see section on Quality Appraisal)
- Population

- Infant age
- Number of participants
- Theoretical framework
- Sampling method
- Setting for data collection
- Data collection methods
- Data analysis methods
- Any relevant contextual data
- Summary of relevant findings

For the purpose of populating the table of primary study characteristics and quality appraisal, five studies that generated findings from the same population of 83 mothers were merged (Ajao et al., 2011; Joyner et al., 2010; Joyner et al., 2016; Moon et al., 2010; Oden et al., 2010). Data were extracted and coded from each of these five studies as individual studies.

The table of primary study characteristics identifies a wide geographical spread of included studies, limited perhaps by the English language requirement, with participants from a broad range of cultural and ethnic backgrounds (see Table 3.7 for the geographical location of included studies and Appendix C for the geographic spread of studies). While the spread of locations is wide, the greatest number of included studies by a significant proportion were conducted in the United States of America.

Table 3.6

Table of Primary Study Characteristics

No.	Author(s)	Aim of study	Primary Phenomenon of Interest	Country	Discipline	Daly Level	Population	Infant Age	No of Ppnts	Theoretical Framework	Sampling	Setting for Data Collection	Data Collection Methods	Methodology	Context	Relevant Findings
1-5	Ajao et al., 2011 Joyner et al., 2010 Joyner et al., 2016 Moon et al., 2010 Oden et al., 2010	To examine SIDS related beliefs, knowledge, decisions, and perceptions of black mothers around sleep environments, positions, location, and use of pacifiers.	Safe sleep practices	USA	Paediatric Medicine	II	Mothers	1.1-9.3 Months	83	Not specified	Convenience with aim of cultural homogeneity	Community	13 Focus Groups & 10 Individual Interviews	Grounded Theory	47 lower SES and 26 higher SES black mothers (7 lower SES and 3 higher SES parents) Cultural homogeneity (African American mothers) as stated aim of sampling.	These mothers consider safety, comfort, convenience, aesthetics, and the quality of parent and/or infant sleep when making infant sleep positioning, bedding, sleep environment, location, and pacifier-use decisions. When considering the risk of SIDS, mothers can trust their own judgement, experience, and vigilance over officially identified risk factors, which can be considered as implausible.
6	Aslam et al., 2009	To explore socio-cultural influences on migrant mother decisions and beliefs regarding co-sleeping as a risk factor for SIDS.	Safe sleep practices	Australia	Public Health	II	Mothers	Up to 1 year	5	Social Constructivist	Purposive	At participants' home	Semi-structured interviews	Principles of discourse analysis applied	Indian-born mothers living in Australia. Participants were from a socio-economically disadvantaged suburb.	Benefits of sharing a sleep surface - bonding, sense of security, ease of monitoring and feeding infant - outweighs risks of SIDS risk for some. Experience seen by some to supersede official guidance. Independence (separate sleeping) contrasted with connectedness (sharing sleep surface) seen as reflecting wider social values of individualism versus traditional communalism.
7	Bailey, 2016	To explore the lived experiences of breastfeeding mothers who share a sleep surface with their infants in a Western cultural setting	Sleep location: infant feeding	Australia	Breastfeeding	III	Mothers	Not specified	6	Evolutionary biology / anthropological theoretical lens.	Purposive supplemented by convenience – homogenous sample	Not specified	Semi-structured interviews	Interpretive Phenomenological Analysis	Homogenous sample of middle-class, suburban urban context. Five mothers from Anglo-Saxon Australian and one from Asian background. All had access to the same health and support services	These mothers described sharing a sleep surface as bringing them personal enjoyment, as increasing infant and parent sleep quality and/or quantity, as easier for infant settling, and as having a strong relationship with breastfeeding ease and duration Conflict with prevailing culture promoting separate sleep and the importance of a supportive community were identified.
8	Ball, 2002	This paper examines the practice of parents sharing a sleep surface with their young infants.	Sleep location: Sharing a sleep surface	UK	Anthropology	III	Mothers	1-3 months	253	Not specified	Convenience	At participants' home	Sleep diaries and interviews	Iterative process to sort and categorise data from interviews	Predominantly Caucasian UK mothers, of mixed SES background.	This group of mothers shared a sleep surface with their infants regularly, and for a variety of reasons including convenience, ideology, enjoyment, necessity, and anxiety. Ease of breastfeeding is the most prominent reason given and is closely intertwined with sharing a sleep surface.

Table 3.6

Table of Primary Study Characteristics

9	Capper et al., 2022	To identify factors influencing decisions concerning infant sleep practices of mothers of preterm infants.	Safe sleep practices	USA	Neonatal nursing	III	Mothers	Two groups of less than 1 year and more than 1 year old. Quotations up to two years extracted.	98	The health belief model	Convenience	Online	Mixed methods study. Online survey generated qualitative data.	Content analysis.	Mothers of preterm infants on return home. Primarily Caucasian well-educated women (97 American and 1 Irish)	Anxiety around their infant's vulnerability and wellbeing resulted in a felt need for sleep practices that allow close monitoring that may or may not adhere to official safe sleep guidelines. Infant-guided sleep schedule valued over interrupted sleep in clinical setting.
10	Caraballo et al., 2016	To investigate practices, knowledge, attitudes, and beliefs regarding safe infant sleep among adolescent mothers.	Safe sleep practices	USA	Paediatric Medicine	III	Mothers	2-21 Months	43	None, in line with grounded theory methodology	Convenience–self-selected.	High school day care centres	7 Focus Groups	Grounded theory	Adolescent mothers < 20 years accessing Highschool daycare services.	Mothers balance adherence to safe sleep guidelines with their own and infant sleep quality and quantity; comfort; bonding opportunities; and ease of monitoring and meeting infant nighttime needs.
11	Chae et al., 2022	To explore the sleep ecology of infants under two years of age and their mothers	Infant sleep practices, problems, and strategies: Sleep ecology	South Korea	Nursing	I	Mothers	3-19 Months	20	Ecological model	Purposive	Home or quiet place	In-depth interviews	Thematic analysis	Mixed SES Mixed Feeding Korean cultural norms emphasize the maternal role in parenting. Room-sharing for sleep between infants and mothers is a prominent feature of Korean culture.	The sleep patterns of infants and their mothers were mutually interrelated and strongly affected by various environmental factors, including infants' biological maturity (a microsystem) as well as cultural factors (a macrosystem).
12	Chianese et al., 2009	To understand parents' beliefs, and motivations for sharing a sleep surface, their safety concerns and attitudes to advice.	Sleep location: Sharing a sleep surface	USA	Paediatrics	III	Mothers (26) Fathers (2)	1-6 months	28	Theory of reasoned action	Purposive	Not specified	4 Focus groups of 6- 10 ppnts	Grounded theory – interpretive codes generated in an iterative fashion	Inner City, 85% African American 11% breastfeeding Sampled for parents who regularly shared a sleep surface.	Parents' motivation to share a sleep surface – perception of safety, opportunity for bonding, ease of monitoring often outweighed the personal and external concerns and the warnings from others.
13	Cole et al., 2021	To understand which safe sleep recommendations parents find most challenging to implement, identifying barriers and challenges to adherence.	Safe sleep practices	Australia	Paediatric nursing and medicine	III	Mothers	Approx. 3 months	3341	Medical model / public health implied.	Convenience	Questionnaire completed electronically or returned by freepost.	Cross-sectional survey	Content analysis	Approx 15% most disadvantaged quintile	Parent/infant sleep preferences, and sleep practices that promote good quality and quantity of parent and/or infant sleep are found by many mothers to contravene official safe sleep guidance making adherence challenging.
14	Cox et al., 2021	To listen to the voices of young mothers around their experience of motherhood.	New parents' experience of infant sleep: motherhood	USA	Orthopsychiatry	II	Mothers	4-24 months	179	Emerging Adulthood (Arnett)	Purposive	Health Clinic	3 interviews at infant age 4, 12, and 24 months	Content Analysis	Young (13-19 yrs) urban African American mothers Primarily low-income	Challenges reflected common stresses of parenting for people of all ages, competing parent-infant sleep needs and burden of caregiving.

Table 3.6

Table of Primary Study Characteristics

15	Crane & Ball, 2016	To discover how white British and Pakistani mothers recall, understand and interpret SIDS-reduction guidance, and to explore whether and how they implement this guidance.	Safe sleep practices	UK	Anthropology	II	Mothers	8-12 weeks	46	Personal-social-cultural model implied	Convenience	Participants' home.	In-depth narrative interviews	Narrative thematic analysis	Bi-Cultural community – 46 mothers (25 white British origin and 21 Pakistani origin)	Cultural and traditional background can influence parent's responses to official sleep guidance. Many mothers misunderstood or misinterpreted the guidance given and explained their infant care behaviour according to their social and cultural circumstances.
16	Doering & Durfor, 2011	To generate a grounded theory of fatigue and sleep in nondepressed lower-income urban women during the 6 months following childbirth	Maternal Postnatal wellbeing: fatigue	USA	Nursing	II	Mothers	1-6 months	16	Symbolic interactionism	Purposeful	Not specified	Semi-structured interviews at month 1,3, & 6	Grounded theory	Predominantly low-income sample. Most (n = 15) participants were African American, and one participant was Caucasian.	Describes impact of fatigue and new challenge of parenting. Meaningfulness of supporting infant sleep explored. Adaptation to new parenthood and establishing routines identified as a significant coping process
17	Doering et al., 2017	To generate a grounded theory of the process used by postpartum women with depressive symptoms to manage sleep and fatigue.	Maternal Postnatal wellbeing: depressive symptoms and fatigue	USA	Nursing	II	Mothers	1-6 months	19	Not described	Convenience	Mostly homes, one in researcher's car, one in transitional home	Interviews at month 1,3, & 6	Grounded theory Constant comparative analysis	Low-income, urban mothers scoring above cut off score in Postpartum Depression Screening Scale recruited. 63% African American, 37% Non-Hispanic White, and 21% Hispanic.	Interdependence of maternal well-being and infant sleep explored. A theoretical process of *Finding a Routine Together* with their infant allowed women in this study to manage their postpartum sleep and fatigue.
18	Fägerskiöld, 2008	To explore first-time fathers' experiences during early infancy of their children.	New parents' experience of infant sleep: Fatherhood	Sweden	Nursing	I	Fathers	5-9 months	20	Symbolic interactionism	Theoretical	Convenient place for fathers, "mostly in their homes"	Individual interviews	Grounded theory and constant comparative method	First time fathers Mixed SES, urban / rural	Low sleep needs of infant lead parents to view their infant positively, and vice versa.
19	Gaydos et al., 2015	To compare decision making regarding sleep practices of mothers to better understand how to effectively mitigate risk.	Safe Sleep practices	USA	Public Health	III	Mothers	Up to 6 months	60	Not stated	Convenience	Not stated	8 Focus groups	Content analysis	Low-income, African American women	Some mothers described safe sleep guidelines as source of fear for survival of their infant. Mothers describe taking care in preparation of infant sleep environment considering safety, convenience, and comfort.
20	Grant et al., 2021	To identify if the Pepi-pod® was perceived as culturally safe and to explore the process of implementing the program.	Safe sleep practices	Australia	Nursing, Midwifery, and Indigenous Health	II	Mothers	Birth to 12 weeks	4	Cultural focus - appropriateness, safety, Health equity with a focus on decolonization.	Purposive	Participants' home	Photo elicited yarning sessions (n = 7), focus groups (n = 2), field notes (n=15)	Thematic analysis	Many Aboriginal families struggled to provide safe sleeping spaces for their infants with limited access to appropriate bedding and that the cultural practice of sleeping the infant in the parent/caregiver's bed was common.	Parents found sleeping close to their infant while being confident of their safety enjoyable and reassuring. Safety, comfort, and portability of infant sleep equipment identified as positive.

Table 3.6

Table of Primary Study Characteristics

21	Gray et al., 2022	To discover the sleeping habits and routines of Hispanic toddlers at risk for obesity through the perspective of their mothers.	Infant sleep practices, problems, and strategies	USA	Paediatrics Population Health	III	Mothers	6-18 months	14	Socio-ecological model Phenomenology	Purposive	At participants' home or another quiet location	Interviews	Thematic analysis (Creswell)	Mostly Low SES Hispanic culture values interdependence and advice from family.	Sleep practices such as sharing a sleep surface (intentional and reactive), feeding to sleep, middle of the night feeding, and lack of structured sleep habits explored.
22	Herman et al., 2015	To investigate beliefs among Africa American and American Indian families about infant safe sleep practices	Safe sleep practices	USA	Community Health	III	54 Mothers 26 Supporters (13 M, 13 F)	0-24 months	73	Not specified	Convenience	Not specified	Focus groups	Grounded theory	African American and Indian American mothers and "supporters" ("partners, grandmothers etc.") from urban areas	Parents consider their infant's physical and emotional comfort, safety, and convenience when making infant sleep decisions.
23	Howard et al., 2022	To investigate barriers and facilitators of infant sleep practices.	Safe sleep practices	USA	Paediatric Medicine	II	13 mothers 2 fathers	0-12 months	15	None specified in line with grounded theory	Purposive	Online (due to COVID-19)	3 focus groups	Grounded theory	Significantly higher mortality rates in parts of DC linked (by authors) to poverty, race and non-transient population. Demographics of participants not limited to these specific localities. Race/ethnicity Black 10 (67) White 2 (13) Hispanic 3 (20). No SES info.	Sharing a sleep surface considered to benefit both parents and infants; facilitating bonding; good quality and quantity of infant sleep, ease of feeding, and parents' perception of infant safety and security.
24	Hsu et al., 2017	To explore the perceptions and experiences of parental professional help-seeking for infant sleep and sleep-related concerns.	Infant sleep practices, problems, and strategies	Taiwan	Nursing	II	Parents 19 mothers 1 father	12 months old	20	Not specified.	Purposive for diversity	At home or in hospital as per participant's choice	Data sheet followed by face-to-face interviews	Thematic content analysis	Taiwanese parents sampled for diversity of SES.	Gives voice to parents' expectations, sense of coping and support needs around infant sleep. Parents identify own and professionals' gap in knowledge around infant sleep as significant
25	Hwang et al., 2021	To identify barriers and facilitators to adherence to safe sleep practices among mothers of preterm infants.	Safe sleep practices	USA	Paediatrics	I	Mothers	2-6 months after hospital discharge.	23	Theory of Planned Behaviour	Purposeful	In participants' home	Interviews by 'phone or video conference	Grounded theory	Mothers of mixed SES and racial background	Mothers' fear about their infants' vulnerable preterm state and their perception of their infant's sleep preferences and comfort, in addition to considering their own sleep needs, influenced their sleep practices.
26	Jacobson & Himes, 2021	To examine perceptions of the AAP guidelines held by parents and health care providers as they relate to guidelines comprehension and compliance.	Safe sleep practices	USA	Neonatology	IV	Mothers Fathers Grandmothers Guardians Professionals	Not specified	87	Public health campaign Not specified	"There was a purposive element in sample selection"	Online	Online focus groups conducted by commissioned research firms	Not specified	States selected for geographical and statistical diversity.	Sharing a sleep surface often gives parents sense of being able to protect their infants (despite known risks) and believed to promote attachment. Parents speak of balancing need to connect with reported risk. Infant sleep choices are experienced as personal and influenced by relationships with family, community, and care providers.

Table 3.6

Table of Primary Study Characteristics

27	Jones et al., 2017	To describe what approaches Māori parents use to get their babies to sleep, and what factors they identify as influencing their decision-making.	Infant sleep practices, problems, and strategies	Aotearoa New Zealand	Psychology	II	8 Mothers 2 fathers	2 months – 2 years	10	Cultural perspective	Purposeful to select Māori group, convenience group of acquaintances	"Generally" participants' homes	Interviews	Kaupapa Māori methodology Thematic analysis	Māori families	Parent and infant preferences, safety, discomfort with crying, convenience, whānau (family) influence, and culture impact infant sleep practices One size does not fit all
28	Kennedy et al., 2007	To learn from mothers about their experience of sleep during pregnancy and the immediate months of becoming a new mother.	New parents' experience of infant sleep: motherhood	USA	Nursing	III	Mothers	3 months approx.	20	Mercer's framework of becoming a mother	Convenience sample	At participants' home	Semi-structured interviews	Interpretive hermeneutical approach Narrative analysis	Diverse racial and SES background	Sleep disturbances were common to all of the mothers, and sleep became a negotiated behaviour as they adjusted to the mothering role.
29	Kihlström et al., 2020	To understand caregivers' perspectives on safe sleep practices.	Safe sleep practices	USA	Public Health	III	5 Caregivers – mothers, grandmothers, fathers?	0-6 months	5 from 3families	Refers to socio-ecological model, participatory research	Convenience	At home	Photovoice methodology including interviews	Thematic Analysis	Caregivers enrolled in Maternal, Infant, and Early Childhood Home Visiting (MIECHV) programs – "high-risk" communities	Socio-cultural, socio-economic, and cross-generational influences on sleep practices and sleep location choices explored.
30	Lau & Hall, 2016	To explore Canadian mothers' experiences with infant sleep safety	Safe sleep practices	Canada	Nursing	II	Mothers	Birth to 6 months	14	Not specified	Purposeful sampling	Convenient times and locations: their homes, coffee shops, community centres, parks	Interviews	Inductive, qualitative, descriptive study using grounded theory	13 Breastfeeding, 1 not breastfeeding. 50% second generation Asian-Canadian, remaining of mixed racial heritage. All identified as middle-class Canadian.	Range of parent and infant sleep preferences and practices explored Theoretical Infant Sleep Safety Cycle proposes a cyclical process encompassing sleep safety from the prenatal period to the first six months of infants' lives.
31	Liamputtong, 2002	To explore the childrearing beliefs and practices related to child health amongst the immigrant Hmong culture.	Infant sleep practices, problems, and strategies	Australia	Anthropology	IV	Mothers	Not specified	27	Ethnography	Snowball	Participants' homes	Interviews and observations	Thematic analysis	Hmong migrants to Australia	Exploration of impact of cultural beliefs and traditional practices on parent-infant sleep
32	MacFarlane et al., 2021	To explore infant sleep practices and key motivators among selected Māori and non-Māori mothers in relation to the risk of SUDI.	Safe sleep practices	Aotearoa New Zealand	Paediatrics Child and Youth Health	I	Mothers	5-24 weeks	30	a Kaupapa Māori cultural framework Motivation theory (Ryan & Deci)	Purposeful	Chosen by participants - their home, emergency housing, a partner's house, and respite care home	Interviews	Thematic analysis	17 mothers were Māori 9 Pasifika 4 European/NZ/Other /Asian Sample matched nationwide racial distribution in Aotearoa New Zealand	Service providers are encouraged to respond to the lived experiences and cultural realities, values, beliefs, and knowledge of māmā (mothers). Culture and experience contrasted with intrinsic fear in sleep location decision-making.

Table 3.6

Table of Primary Study Characteristics

33	Marshall & Thompson, 2014	To provide an account of the subclinical spectrum of postnatal psychological difficulties from the perspective of mothers.	Postnatal maternal wellbeing and sleep	Australia	Psychology	III	Mothers	6 weeks to 11 months	7	Not specified	Purposive	Participants' home	Face-to-face interviews in participants' homes	Interpretive Phenomenological Analysis and thematic analysis	"Idiopathic sample" with diversity of lifestyle but not ethnicity (6 Caucasian, 1 Asian mother)	Themes generated: (1) effectiveness as a mother; (2) relationship dynamics; and (3) sense of self, plus discussion of adjustment to new parenthood Impact of sleep deprivation on parent's mental health and parent-infant relationship explored.
34	Mathews & Moon, 2015	To compare infant care practices among African American and Hispanic families	Safe sleep practices	USA	Paediatrics	III-IV	Mothers	Up to 6 Months	89	Not specified	Purposeful	Not disclosed	Interviews and focus groups.	Grounded Theory	83 African American (see Ajao 2011) and 6 Hispanic mothers. Statistically significant demographic variables between the groups	Although the rationale for infant care decisions was similar for African American and Hispanic families, practices differed. This may help to explain the racial/ethnic disparity seen in sleep-related infant deaths.
35	McKenna & Volpe, 2007	An exploration of parents' accounts of sharing a sleep surface.	Infant sleep location: sharing a sleep surface	Canada USA Australia UK	Anthropology	IV	Mothers	Not specified	"over 200"	Not specified	Self-selected via websites	Online	Online questionnaire	Not specified	Middle class mothers	Co-sleeping is a description of diverse practices that carry varying degrees of risks and benefits There is an emotional basis to co-sleeping Identifies the possibility that co-sleeping might present life-saving opportunities
36	Morelli et al., 1992	To come to a broader understanding of cultural practices in two different cultures.	Infant sleep practices, problems, and strategies	USA Guatemala	Psychology	III-IV	Mothers	2-28 months (USA) 12-22 months (Mayan)	32	None specified	Convenience	In participants' homes	Interviews with an interpreter if needed and participant drawings.	Not described	18 Caucasian American mothers 14 Mayan mothers from Guatemala	Findings indicate importance of culture in parents' decisions on infant sleep locations
37	Mosley et al., 2007	To determine decision-making factors for infant sleep position among low-income parents and other relatives.	Safe sleep practices	USA	Health Behaviour	III	Mothers (79% - 107) Fathers (10% - 14) Caregivers (11% - 15)	Less than 12 months	136 caregivers	Not specified	Convenience	In a public facility	18 Focus groups	Not specified	Mixed urban and rural. Participants were "fairly young". Ages ranged from 14 to 55, with an average age of 25. Seventy-five percent were under age 30.	The process for most parents and caregivers is complex, and information is considered from a variety of sources including family members and health experts.
38	Muller, 2022	To explore the subjective well-being of parents in the context of infant sleep problems.	Infant sleep practices, problems, and strategies	South Africa	Psychology	II	8 mothers 2 fathers	3-12 months	10	Subjective well-being model (Diener)	Nested and Snowball sampling	On the phone or online	Telephone or virtual interviews	Inductive and reflexive thematic analysis	Nine Caucasian and one self-identified as coloured	Contributes to understanding of impact of infant sleep problems on parents' perceived wellbeing

Table 3.6

Table of Primary Study Characteristics

39	Murray et al., 2019	To investigate how infant settling was perceived "through the eyes" of new mothers.	Infant sleep practices, problems, and strategies	Vietnam	Women's Healthcare	I	Mothers	3-6 months	5	Collectivism and interdependence within family Traditional humoral schemas	Snowball	Home	Photo elicitation followed by interviews	photo-elicitation in conjunction with narrative methodologies Visual ethnographic approach (Musello 1980) Thematic analysis	In Asian societies such as Japan, China, Hong, Kong, Korea and Vietnam, it is more common for parents to bed-share with infants than in high-income western nations. Mixed urban and rural	**Emotional needs of infant** The themes were: 1) Reasons babies cry ("loneliness" in the midst of the crowd), 2) Soothing unsettled infants (finding the right "position"), 3) The sleep environment ("protecting from cold"), and 4) Mother's emotional responses to unsettled infants ("affection and exhaustion"
40	Murray et al., 2018	To describe caregivers' understandings of, and responses to, unsettled infant behaviours and the family caregiving contexts in which it occurs.	Infant sleep problems and strategies	Vietnam	Child public health	I	Mothers	0-6 months	21	Cultural perspective Intrinsic and extrinsic factors in settling	Purposive	home	Semi structured Interviews	Thematic Analysis (Braun & Clarke)	One urban, one rural site	**Settling strategies** **Intergenerational context** Educational interventions on interpreting infant cues, infant sleep requirements and bed sharing may be appropriate in Vietnam if multiple generations are included and traditional beliefs about infant crying are addressed
41	Noble et al., 2002	To explore parents' perceptions of using controlled comforting as a method of sleep management.	Infant sleep practices, problems, and strategies	Australia	Nursing	III-IV	10 mothers 1 father	6-18 months	11	Narrative Interpretative	Purposeful	Not specified	Interviews	Emden's core story creation process for analysis	Little demographic or contextual information given on participants	Living through the experience of having an infant with disturbed sleep patterns had a profound impact on the families' lives.
42	Ou et al., 2022	To explain how and why mothers develop persistent and intense anger, the steps they take to manage their anger, and outcomes associated with its management during the postnatal period	Maternal Postnatal wellbeing: maternal anger	Canada	Nursing	I	Mothers	7-23 months	20	Relational autonomy theoretical framework Constructivist, interpretive Anger recalibration theory	Purposeful sampling to identify mothers experiencing intense anger	Telephone	Interviews	Grounded theory	Two BIPOC participants, 18 of European descent. All in heterosexual relationships	Competing parent-infant sleep needs explored with maternal needs for autonomy, sleep, and emotional connection identified.
43	Pease et al., 2017	To understand the views and decision-making process of mothers of babies at risk of SIDS on the infant sleep environment and safe sleep messages.	Safe sleep practices	UK	Social and Community Medicine	III	Mothers	3-26 weeks	20	None specified	Purposive sampling for SIDS risk factors	At participants' home	Semi-structured interviews	Thematic analysis, continuous comparative method	Deprived areas of UK determined by postcode	The findings demonstrate the complexity of how mothers navigate sleep location decisions, varying between families, with different children and even across each night.

Table 3.6

Table of Primary Study Characteristics

44	Rolls & Hanna, 2001	To understand the experiences of women and families and how they coped with and managed an infant with sleep problems.	Infant sleep practices, problems, and strategies	Australia	Nursing	III-IV	28 women 2 men 1 grandmother	6 weeks – 18 months	28	None specified	Convenience	In room at residential service unit	4 focus groups	Thematic analysis	Parents with access to healthcare and referral systems. In-patient 3-5 day programme participants.	Emotional toll of sleep problems described. Women experienced major role confusion as they internalised the image that "a good mother does it all". Persistent infant crying and their own sleep deprivation exacerbated their loss of identity and shattered their self-image.
45	Rudzik & Ball, 2016	To investigate women's perceptions of the nature of infant sleep and of links between infant feeding method and sleep practices in the first year.	Sleep and infant feeding	UK	Anthropology	III	Mothers	Under 1 year old	39	"Proximal self-care" Constructivist	Convenience	In community group setting (1 not disclosed)	7 Focus groups – semi-structured interview guide.	Experience-near approach to thematic analysis	Heterogenous group of UK mothers.	Diverging narratives between breastfeeding and formula-feeding mothers. Maternal perceptions of the nature of infant sleep and its relation to infant feeding method impact infant care practices in the first year of life.
46	Runquist, 2007	To construct a substantive theory of postnatal fatigue.	Postnatal maternal wellbeing: fatigue	USA	Nursing	I	Mothers	2-5 weeks	13	Social process of persevering over time Self-transcendence	Theoretical sampling followed by	At home (12) coffee shop (1) as chosen by participants.	Semi-structured interviews	Grounded theory, constant comparative analysis		Competing infant sleep needs leading to profound negative feelings and an overwhelming need to rest and sleep brought on by fatigue in parents were offset by the use of coping techniques and self-transcendence, which enabled women to persevere in the provision of care to their children.
47	Shimizu et al., 2017	To explore the relationship between values and practices and how social change is negotiated by individual mothers.	Infant sleep practices, problems, and strategies	Japan	Developmental Psychology	II	Mothers	Up to 2 years old	51	Greenfield's theory of social change and human development,	Theoretical	Pre-existing internet message boards	Data collected from internet	Qualitative thematic analysis	Japanese children have traditionally slept with parents, especially mothers, in physical proximity; however, there is heterogeneity of practice and values within the culture.	Cultural and personal valuing of interdependence in contrast to independence explored. Challenging for Japanese mothers to construct values for child rearing and gender roles that integrate traditional infant care practices with current sociodemographic conditions.
48	Shorey et al., 2017	To explore first-time fathers' postnatal experiences and support needs in the early postnatal period.	New parents' experience of infant sleep: Fatherhood	Singapore	Nursing	II	Fathers	5-14 weeks old	15	Not specified	Purposive for ethnic representation	Mainly at participants' home	Semi-structured interviews	Descriptive qualitative inductive	9 Singaporean, 6 non-Singaporean (Chinese, Malay, Indian and other) Unique to the Asian context in Singapore, a higher proportion of young couples still live with or close to their extended families.	Describes fathers taking on role to support mother as primary infant caregiver at night. Describes challenges of supporting infant sleep.
49	Stiffler et al., 2020	To identify why African American mothers do not tend to follow the official safe sleep recommendations.	Safe sleep practices	USA	Nursing	III	Mothers	Over 6 months	15	Not specified	Convenience	In health centre	2 focus groups	Modified ethnography	African American mothers accessing specific health services or attending high school.	Rationale for not following official safe sleep guidelines include "it's just easier"; "can't fight culture and grandma"; and effectively teaching mother.

Figure 3.6

Table of Primary Study Characteristics

50	Tipene-Leach et al., 2000	To increase understanding of present day Maori infant care practices	Safe sleep practices	Aotearoa New Zealand	Public Health	II	17 Mothers 9 fathers	Under 12 months	26	Māori cultural perspective	Purposive	Not disclosed	7 focus groups and one individual interview	Thematic analysis	Some had a strong commitment to Māori heritage while others did not. Most were in the low to middle income bracket.	Infant care practices of these Māori parents spanned a broad spectrum – heterogeneity in sleep practices within cultures.
51	Tomori et al., 2016	To investigate breastfeeding experiences in societies where breastfeeding is promoted but formula feeding remains common.	Sleep and infant feeding	USA Canada	Public Health	III	Mothers	Not Specified	18	Cross-cultural, evolutionary, historical, and feminist perspectives	Not Specified	In participants' home	Ethnographic observation and in-depth interviews	Anthropological analysis	Primarily Caucasian, middle-class mothers	Sharing of sleep surface was unplanned prenatally, yet nearly all families did so at least periodically, and nearly half of the families continued to share their beds for some part of the night throughout the year.
52	Tsai et al., 2014	To describe the aspects of infant sleep perceived as problematic by first-time mothers and to discover how mothers cope	Infant sleep practices, problems, and strategies	Taiwan	Midwifery	II	Mothers	Less than 3 months 21-75 days	12	transactional model of infant sleep–wake regulation	Convenience supplemented by Purposive	In participants' home	Interviews	Qualitative content analysis	Taiwanese women of unspecified SES	Individuals, interpersonal networks, and informal and formal help sources interact, and together influence maternal perceptions and coping with infant sleep patterns and problems.
53	Tse & Hall, 2008	To describe parents' perspectives about implementing a sleep intervention.	Infant sleep practices, problems, and strategies	Canada	Nursing	III	N = 25 14 mothers, 11 fathers	9-16 months	25	Not described.	Purposive sampling	In participants' home	Interviews	Grounded theory Inductive content analysis	Heterogenous SES, ethic, cultural group of Canadian residents	Direct and indirect benefits of infant sleep intervention described. Many factors interfered with success of intervention including parents' difficulty tolerating their infant's distress or incompatibility with lifestyle.
54	van Schaik et al., 2020	To articulate the practices relating to establishing daily rhythms in infants as described by mothers.	Infant sleep practices, problems, and strategies	Netherlands USA	Pedagogic science / Human development	II	Mothers 33 Dutch 41 US	2-6 months	74	Developmental niche framework (Super and Harkness) Heuristic Cultural perspective	Purposive	In participants' home	Questionnaires, interviews & diaries	Inductive thematic analysis	Both cohorts recruited from middle class populations	Culture was identified as a deciding factor in sleep routines and practices
55	Veltkamp et al., 2020	To analyse family practices informed by attachment theory within their social, cultural, and material contexts.	Infant sleep practices, problems, and strategies	Netherlands	Sociology	III	Mothers (14) Fathers (4) 12 Families	Up to 12 months old	12	Attachment theory Critical Sociological Perspective	Purposive followed by snowball	In participants' home or in a café supplemented with home observations	2-time-point interviews (2 x 12 = 24) triangulated with observations at home	Qualitative Ethnographic description Abductive analysis through collective thematic analysis	First time parents from mixed SES, cultural backgrounds	Across different families, competences develop enabling parents to balance a) attaching and b) detaching in particular ways. Parents learn how to observe and interpret their newborns, bracket doubt, build, build trust, manage time pressures, and mobilize support networks.

Table 3.6

Table of Primary Study Characteristics

56	Welles-Nystrom, 2005	To examine the Swedish practice of co-sleeping and relate it to the cultural discourse on the gendered family and health.	Sleep Location: Sharing a sleep surface	Sweden	Perinatal Healthcare	III	Parents	Data relevant to 6 and 18 month old cohorts extracted	60 for *all* four age cohorts	Theory of Parents' Cultural Belief Systems	Snowball	In participants' home	Questionnaires, maps of home, diaries, semi-structured interviews	Ethnographic descriptions, thematic analysis, calculations from diaries	Most participants were suburban and from middle to upper-middle class backgrounds	Highlights families' valuing bedsharing despite prevalent public health messaging against the practice
57	Zahra et al., 2015	The aim of this study was to explore successful breastfeeding mothers' experiences of the difficulties of breastfeeding.	Sleep and infant feeding	Iran	Nursing	III	Mothers	Up to 12 months old	16	Not specified	Purposeful for maximum heterogeneity	Researcher's or participants' home	Unstructured interviews	Qualitative Content Analysis	Iran Mothers reportedly found breastfeeding and baby changing in public places difficult.	Participants' experiences of the difficulties associated with exclusive breastfeeding including nighttime wakefulness. Our participants… had assigned greater priority to their babies' health over their own health and preferences.
58	Zambrano et al., 2016	To understand facilitators and barriers that exist to getting a good night's sleep among these high-risk mothers.	Maternal Postnatal wellbeing: fatigue	USA	Psychology	III	Mothers	3-6 months	18	Not specified	Convenience	Private office in postnatal clinic	Semi-structured interviews in 2011 & 2012	Thematic coding and content analysis Inductive approach	Low-income African American mothers 83% overweight or obese Excluded if depressive symptoms present 94% formula or combination feeding	Low-income African American mothers experience poor sleep in the early postpartum period that is largely independent of babies' sleep patterns.
59	Zoucha et al., 2016	Explore the cultural influences of safe sleep practices by African American caregivers of children under 2 years old.	Safe sleep practices	USA	Public Health Nursing	III	Primary Caregivers (16 Female, 3 Male)	Up to 2 years	19	Contextual cultural perspective	Convenience followed by snowball	Community centre or own homes	Semi structured Interviews fieldwork, participant observation, participant and family interaction, individual and follow-up focus groups	Focused Ethnography	African American mothers All residents of one Public Housing Development	Sleep, sleep behaviours, and the act of "putting the baby to sleep" carried significant weight for our participants. For many, having the baby in arms, close by, was a demonstration of caring and providing comfort

Table 3.7

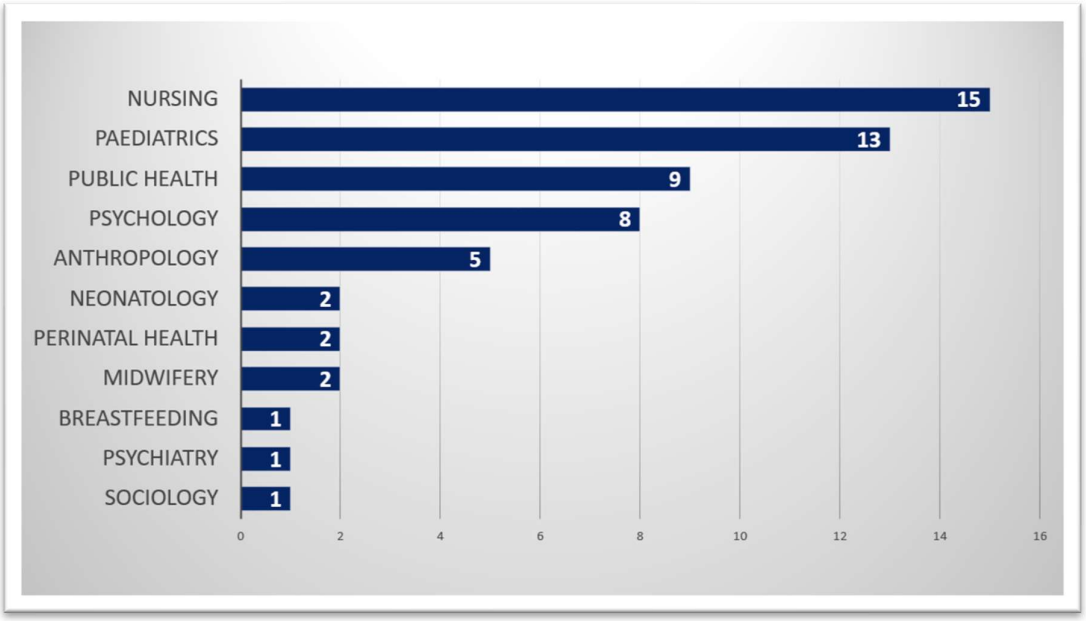
Geographical location of included studies

Country	No. of Studies	Single location	Two Locations	Four locations
Aotearoa NZ	3	3		
Australia	9	8		1
Canada	5	3	1	1
Guatemala	1		1	
Iran	1	1		
Japan	1	1		
Netherlands	2	1	1	
Singapore	1	1		
South Africa	1	1		
South Korea	1	1		
Sweden	2	2		
Taiwan	2	2		
USA	29	25	3	1
UK	5	4		1
Vietnam	2	2		

The overall number of parents who participated in the included studies (n=5150) is somewhat meaningless in the context of the end synthesis, given that the studies with the most participants often yielded the least rich qualitative data; however, it is notable that the fathers accounted for only 2% of participants and mothers for the remaining 98%. The data was drawn from studies from a thirty year period (1992- 2022) and from a wide disciplinary base; however, almost half of the studies were from a paediatric or nursing discipline. See Figure 3.2 for a breakdown of the multi-disciplinary base of the included studies, determined by the discipline of the primary researcher.

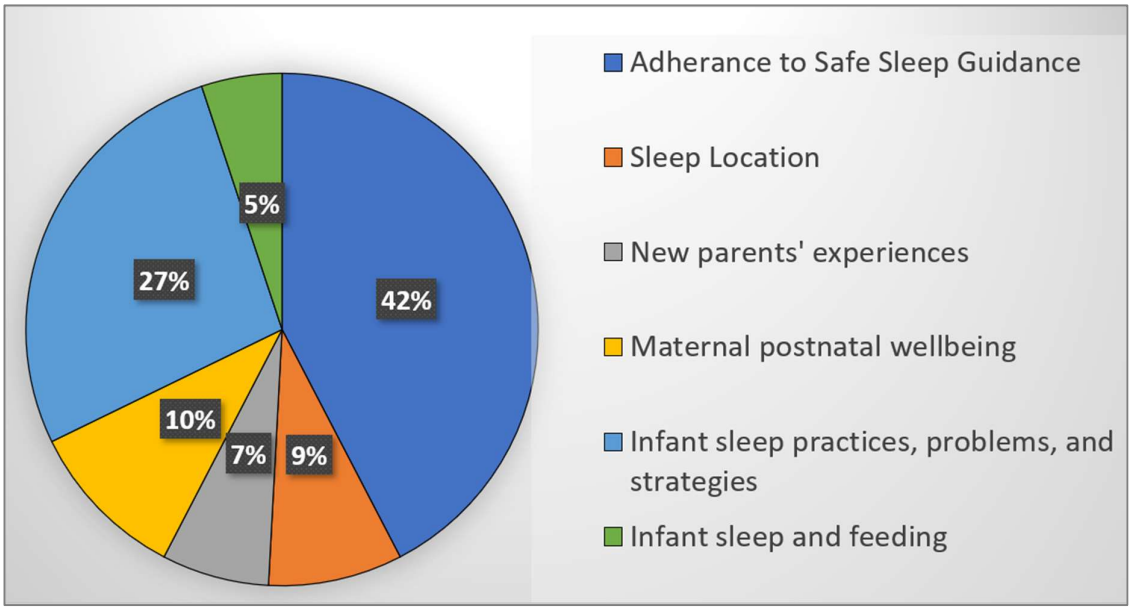
Figure 3.2

Disciplinary base of the included studies



As noted previously, the research aims of the included studies all differed from the research aim of this synthesis, given the current dearth of research on parents' perspectives on and experiences of parent-infant sleep as co-occupation. The included studies explored topics as diverse as infant sleep strategies, infant sleep and feeding, sleep location, early parenting, and maternal postnatal wellbeing as illustrated in Figure 3.3. In addition to study characteristics, the original primary study findings and relevant contextual data were also extracted to the table of primary study characteristics to facilitate contextualisation of extracted data throughout the research process.

Figure 3.3 *Phenomenon of interest of included studies*



3.5.6 Quality appraisal

Quality appraisal was completed concurrently with the data extraction process described in section 3.5.5. Quality appraisal is a contested area in qualitative research as the outcomes of the process have been demonstrated to be subjective and some researchers argue that the process is not aligned with the underlying interpretivist philosophy of qualitative research (Cahill et al., 2018; Campbell et al., 2012; Noblit & Hare, 1988; Noyes et al., 2018). Conducting a robust review of the strengths and limitations of included studies, however, is mostly considered to be an important process for the trustworthiness of the end synthesis (Campbell et al., 2003; Noyes et al., 2022; Toye et al., 2014). To this end, I used two methods of quality appraisal, the *CASP Qualitative Checklist* (Critical Appraisal Skills Programme [CASP], 2018), which is the most frequently used and endorsed quality appraisal tool in health-related qualitative syntheses (Long et al., 2020) and the Daly et al. (2007) *Hierarchy of Evidence for Assessing Qualitative Health Research*. While the purpose of the CASP tool is to appraise the methodological rigour and trustworthiness of included studies, the Daly Hierarchy was used as an additional consideration of the

application of theory and concepts guiding the primary research, a required consideration of any researcher wishing to undertake a meaningful meta-ethnography (Daly et al., 2007; Noyes et al., 2022).

The quality appraisal process was conducted concurrently with the data extraction, using Covidence software to complete and collate the CASP and entering the Daly rating in the *Table of Primary Study Characteristics*. To reduce the risk of bias, both research supervisors independently quality appraised ten percent each of all the included studies, in addition to my own completed appraisals of all 59 included studies, with consensus being reached through discussion where necessary.

See Appendix D for an example of a completed quality appraisal using the CASP tool.

3.5.7 Data coding

As described in section 3.5.5, relevant parent quotations and original researcher interpretations were extracted verbatim to a bespoke data extraction table for each individual study. In order to facilitate coding, the individual data extraction tables were merged into one Microsoft Word document consisting of 59 consecutive tables to form a complete dataset for coding while retaining a reference to their original study source. Manual line-by-line coding was completed on the entire dataset of direct parent quotations and original author interpretations. Coding software was not used, but repeated reading and hand notations of the data set was undertaken in order to maximise familiarity with the dataset and extend the opportunity for concurrent analysis during the coding process (Elliott, 2018; Noblit & Hare, 1988). Codes generated from the original authors' interpretations were coloured in blue throughout the process to differentiate them from direct parent quotations.

In order to ensure consistency of coding throughout the dataset and confirmability of the synthesis findings, the extracted data from one study were jointly coded by one research supervisor and myself in order to develop a consensus approach to the relevant data to be extracted from the primary studies. I then independently coded the remaining data according to the agreed coding approach (Blair, 2015; Elliott, 2018; Tobin & Begley, 2004). To further enhance credibility and reduce the risk of bias in the coding process, further researcher triangulation was employed by the two research supervisors independently coding data from one study each. Any arising similarities and differences to coding that I had completed on the same studies were discussed during research meetings. Consistency in my own coding over time was enhanced by re-coding data extracted from one previously personally coded study and comparing both sets of generated codes to highlight any inconsistency in approach (Elliott, 2018). In order to strengthen the trustworthiness of this synthesis' findings, studies that rated as higher quality on the Daly Hierarchy of Evidence (2007) were coded first in author-alphabetical order to facilitate weighting of the findings of higher quality studies in the final synthesis (Tobin & Begley, 2004; Long et al., 2020).

A process of emergent coding involving minimal researcher inference or interpretation was used to generate initial subcodes (Blair, 2015). These subcodes took the form of short phrases that captured the core content and meaning of each data segment that presented a distinct perspective or concept (Elliott, 2018). A total of 635 subcodes were exported to a separate Microsoft Word table to allow grouping into 174 codes based on shared or similar meanings, concepts, and perspectives using a process of sorting and constant comparison (Elliott, 2018; Noblit & Hare, 1988).

An example of the coding process is included in the *Extract from Data Extraction and Coding Table* in Appendix E.

3.5.8 Data analysis

In order to analyse the coded data, the 174 codes were exported into a separate *Data Analysis Table* in Microsoft Word which allowed for further categorisation of related ideas and concepts into groups using an iterative process of manual sorting and constant comparison (Britten et al., 2002; France, Uny, et al., 2019; Noblit and Hare, 1988). To enhance confirmability, codes were continuously contextualised throughout this grouping process by cross-referencing them with their subcodes and original author interpretations and parent quotations. These groups of codes formed the first interpretive iterations, each of which consisted of a descriptive sentence summarising the shared meaning of their constituent codes. The first iterations were subsequently further reduced and grouped into second iterations by interpreting and describing relationships and connections between related groups of first iterations (Noblit & Hare, 1988). These second iterations took the form of longer sentences containing multiple related concepts. The second iterations were then grouped together once again with their collective meanings and connections described in a series of interpretive narrative summaries that took the form of several sentences or short paragraphs. These interpretive summaries were further synthesised into subthemes through an iterative process of interpretating the points of similarity, overlap, and connection between their content and meanings (Noblit and Hare, 1988). Through further sorting and comparison of the subthemes, referencing of the original studies, and on-going discussion and debate of inter-relationships with the research supervisors, the 11 subthemes were further categorised under three overarching themes. Frequent discussions, debate, and collaborative interpretation with the research supervisors at each stage of the data analysis process ensured that the codes, iterations, subthemes, and themes fit with the

original meanings within the primary data (Tobin & Begley, 2004). Credibility and confirmability of the themes, subthemes, iterations, codes, and subcodes is also demonstrable though the maintenance of an auditable line of reference from the themes and subthemes to their constituent codes, subcodes, and the relevant original data in context (Tobin & Begley, 2004).

See Appendix F for an extract of the *Data Analysis Table* used to generate interpretive summaries from the first and second interpretive iterations generated from the grouping of codes (Britten et al., 2002).

3.5.9 Data synthesis

In meta-ethnography, the generation of a line-of-argument synthesis asks of the researcher "*What can we say of the whole… based on selective studies of the parts*?" (Noblit & Hare, 1988, p.62). In this synthesis, the process of describing the "whole" involved writing an interpretive text summary outlining the breadth of and relationships between parent experiences represented by the three overarching themes and their constituent eleven subthemes. A diagrammatic representation of the text summary was also generated to illustrate the range, complexity, dynamic, and interactive nature of parents' experiences of parent-infant sleep in an accessible visual format. Constructing both the interpretive text and diagrammatic synthesis involved an iterative process of drafting and re-drafting, revisiting the original dataset and studies to ensure credibility, and frequent discussion and debate with the research supervisors to ensure the final synthesis aligned with the meanings in the original studies. A table of individual studies' contribution to the themes and subthemes is included in Appendix G.

The following chapter presents the themes and subthemes generated from the primary studies and concludes with the written and diagrammatic interpretive synthesis of the findings.

CHAPTER 4: FINDINGS AND META-ETHNOGRAPHIC SYNTHESIS

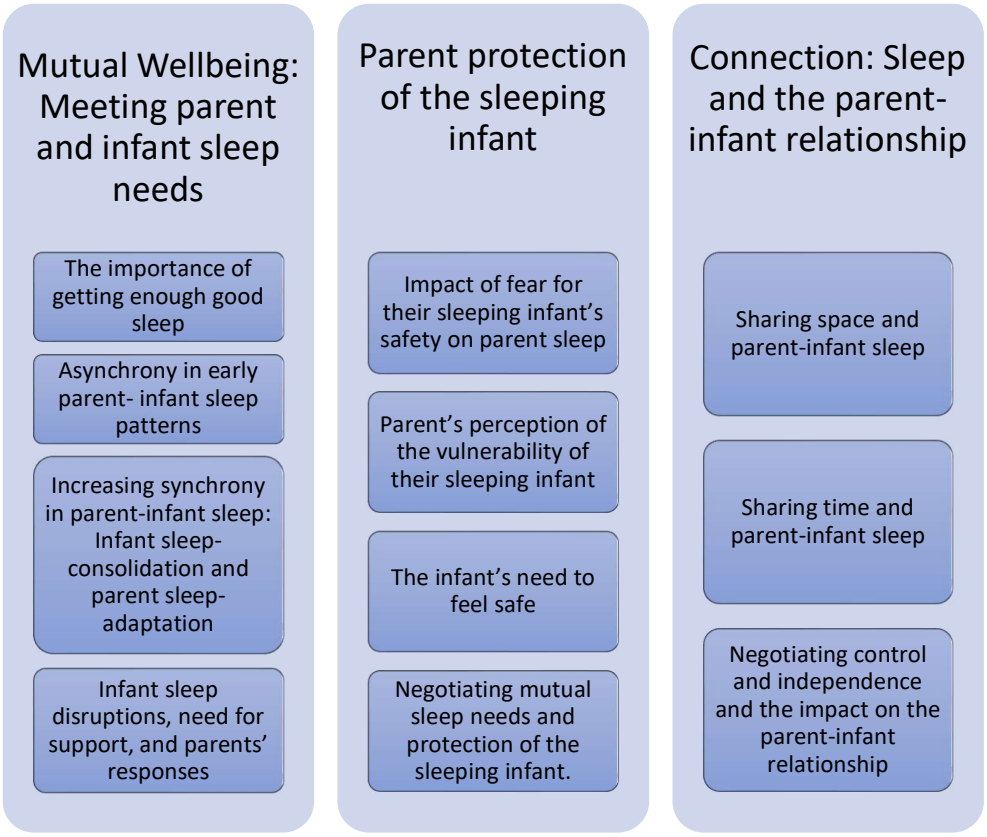
4.1 Findings of the meta-ethnographic analysis and synthesis

In this chapter, I will present the findings of the data analysis and synthesis which examined parents' experiences of and perspectives on parent-infant sleep as co-occupation and offer a novel interpretation of the phenomenon.

I have expressed the findings of the meta-ethnographic synthesis in the three themes of a) mutual wellbeing: meeting parent and infant sleep needs, b) parent protection of the sleeping infant, and c) connection: sleep and the parent-infant relationship. I generated these three themes through exploring analogies and relationships between constructs and sub-themes generated using the iterative analysis process described in the previous chapter. I present each of the three themes in detail here, first through presenting an outline of the major theme, followed by a description of the constituent sub-themes including examples of the parent narratives and primary study author interpretations from which they developed, and finish with a thematic synthesis for each. I then conclude the chapter with a synthesised interpretation and summary of the findings. See Figure 4.1 for a representation of the synthesis themes and subthemes.

Figure 4.1:

Representation of the synthesis themes and subthemes



4.2 Mutual wellbeing: Meeting parent and infant sleep needs

The first theme, mutual wellbeing: meeting parent and infant sleep needs, was generated from four sub-themes:

(i) The importance of getting enough good sleep

(ii) asynchrony in early parent-infant sleep patterns

(iii) increasing synchrony in parent-infant sleep: infant sleep-consolidation and parent sleep-adaptation

(iv) infant sleep disruptions, need for support, and parents' responses

4.2.1 The importance of getting enough good sleep

What parents consider to constitute getting enough good sleep, either for themselves or their infant, is notably consistent across studies; being defined as when one or both achieve a satisfactory length of uninterrupted sleep, or by the perceived positive impact on their wellbeing the during the day. There are many accounts from parents describing how important it is to them that their infant gets enough good quality sleep, with one example being the mother who describes how she sometimes felt that "*…the world was going to end if my baby didn't sleep well the night before"* (Chae et al., 2022, p. 104).

The expected and actual impact of enough good sleep on their infants' physical and emotional wellbeing and functioning when awake is described by one mother who stresses the importance of *"making sure she actually sleeps through the night… she needs rest and recuperation to help her grow and stay healthy"* (Capper et al., 2022, p. 451); another who describes how when her son "*…started sleeping more, he just woke up in a better mood, and it was better for him*" (Caraballo et al., 2016, p. 84); and by the mother who says "…*as long as she sleeps, the baby looks really good. During the waking hours, she is happy and alert, feeding well…"* (Lau & Hall, 2016, p. 2822).

There are also many accounts from parents describing how their infant getting a good night's sleep is important because of the reciprocal impact on their own sleep quality and duration, and consequently on their own sense of wellbeing. While a small number of parents describe the positive impact experienced when they get enough good sleep on their own perceived wellbeing, there are far more descriptions of the negative impact of interrupted or insufficient parent sleep due to the need to respond to infant night-wakings. What constitutes a negative impact on parents' perceived wellbeing varies, with parents' experiences ranging from global feelings of being overwhelmed or losing their sense of

sanity, to more specific negative outcomes. The physical consequences of interrupted and insufficient sleep, such as fatigue and exhaustion, are experienced by many parents, such as this mother of a young infant:

> …And I get no sleep. I was so tired. It's like I was watching her. I wanted to go to sleep, but I just couldn't. I keep feeling like tired ... I'm not ... my body feels like I don't want to do nothing, because I be so tired, but I can't go to sleep, because I always got to attend her [infant] if she whine or something… it's just I be really, really tired, though. (Doering et al., 2017, p. 136)

Disturbed parent sleep, due to the need to respond to their infant's nighttime needs, is also described as having an impact on their cognitive functioning, with some parents experiencing a sense of confusion, disorientation, and disconnection from reality:

> Throughout the whole day, and the whole night ... days and nights were a blur... I didn't know when day ... it was just all blurred day and night together... I would be really disoriented... I was like a zombie. (Kennedy et al., 2007, p. 118)

> Sometimes, you awake four to five times a night. When you lack sleep, you can't think carefully and concentrate properly. You become agitated and irritated. These problems are difficult to handle. (Zahra et al., 2015, p. 1482)

Other new parents also identify emotional distress as an outcome of reduced postnatal sleep quality and quantity; with parents expressing persistent feelings of anger, resentment, sadness, stress, and anxiety:

> I don't feel angry towards her but it's almost like an anxious feeling, like I'm so tired and my mind's racing to take care of her and figure out why is she crying at 9:00 at night when she should be resting. It's almost kind of sad, I feel kind of sad. (Doering et al., 2017, p. 138)

> There would be times where I would be in tears. Maybe feeling sorry for myself…. Just wanting my needs met, and they're not being met, like night after night. I'm not getting sleep…During the day then I wouldn't cry, normally. That's when I would get angry and want to yell. But at night then it would be no, I'm angry and I'm going to cry. (Ou et al., 2022, p. 1785)

While many parents reflected on their infant's or their own sleep-related wellbeing in isolation, a feature of other parents' narratives was also a tendency to simultaneously express concern for both their own and their infant's wellbeing, demonstrating their experience of a reciprocal relationship between parent-infant sleep and mutual wellbeing:

> My baby's sleep has affected my daily schedule. It has also influenced my mood for sure, take yesterday for example: She did not fall asleep all night, and I am extremely worried about the negative consequences of her lack of sleep on her own health. (Tsai et al., 2014, pp. 252-253)

This interplay between parent-infant sleep needs and mutual wellbeing suggests a complex dynamic where the importance to parents of meeting their infant's sleep needs can lead to a concern for their infant's wellbeing, while concurrently also having to hold in mind their own sleep needs and consequent potential impact on their sense of wellbeing.

4.2.2 Asynchrony in parent-infant sleep patterns

With regards to meeting both parent and infant sleep and related wellbeing needs, the interplay between parents' and infants' sleep patterns is identified as significant in the findings of many of the included original studies. The authors of these studies represent parents' experiences of a reciprocal, "*mutually interrelated"* (Chae et al., 2022, p. 101) and "*bidirectional*" (Doering et al., 2017, p. 132) sleep pattern relationship. This is frequently experienced as challenging (Cox et al., 2021; Shorey et al., 2017), conflicting (Rudzik & Ball, 2016; Runquist, 2007), *"problematic"* (Tsai et al., 2014, p. 752), overwhelming (Doering et al., 2017; Howard et al., 2022), and unpredictable (Chae et al., 2022; Zambrano et al., 2016). The asynchrony in sleep patterns is described as being especially challenging in the early postnatal months, when there is a marked contrast between parents' own preferred regular sleep pattern and the unpredictable sleep pattern of their young infant, as explained by the following parents:

> Their nights and days is mixed up. They don't know when to go to sleep and when to stay awoke, so it's like when they tired, you're not tired. But it's when they woke, that's when you be tired and it's like you can't stay woke while they woke, you know. That's how I am with my baby. (Mother of a one-month-old, Doering et al., 2017, pp. 135-136)

> …baby usually sleeps in the morning and then wakes up around 10pm... and then he is awake up until maybe 7 in the morning. Sleeping pattern is not same as us, so it is very difficult… (Father of less-than-two week-old, Shorey et al., 2017, p. 2991)

> His sleep problem is mainly about the irregularity of nighttime sleep. Sometimes he falls asleep at 11pm or midnight, but a few days later his sleep time will be delayed until 3 or 4 am. Sometimes he will cry and not want to sleep for quite a while before going to bed. (Mother of a two-month-old, Tsai et al., 2014, p. 792)

In many cases, parents describe their infant's sleep pattern, and the related impact on their own sleep, as unexpected. One included study describes how "*All* [twenty] *of the* [participating] *mothers were surprised at the level of disturbance and exhaustion they experienced*" initially (Kennedy et al., 2007, p. 114), giving the example of the mother who describes being "…*just shocked at how tired I was for the first... three months maybe*" (Kennedy et al., 2007, p. 118). Many parents also report feeling unprepared for their infant's sleep needs, with one saying "*They just don't prepare you for things other than just put them on their backs."* (Howard et al., 2022, p. 5).

In contrast to the majority of parents' who felt unprepared for the unexpected extent of their infant's sleep demands, there was a smaller proportion of mothers who did expect to be woken frequently by their young infants in the first few months due to previous experience with their own older children, children within their family or social circle, or due to professional advice received. The following mothers, for example, describe a level of acceptance and reduced concern, due to professional advice or previous experience:

> Many of my friends have babies. According to their experiences, babies' sleep patterns are all like this, reversed day-night sleepwake patterns. So it is not his problem. I think he will grow out of it after 3–4 months (Tsai et al., 2014, p. 753)

> The doctor told me it is normal that sometimes infants wake themselves up with the jerky movements of their own arms or legs. My friend and my mom also said that babies sometimes have sudden, involuntary body movements when sleeping, so I felt less worried about her sleep disruptions during the night. (Tsai et al., 2014)

In addition to realistic expectations, this group of parents find that normalising their infant's sleep needs or accepting their infant's sleep needs as being an aspect of their individual temperamental make-up, can also dictate the degree to which infant sleep is perceived as problematic by their parent. In this regard, two mothers from the Hsu et al.

(2017) study explain the reasons why that they haven't sought professional advice on their infant's sleep, despite experiencing a degree of challenge, with one saying "*I think it's quite normal that babies' sleep is challenging...*" (p. 5146) and the other stating that "*I think that it relates to the baby's own innate temperament... Babies are what they are*" (p. 5146). While these parents experience a similar sleep disturbance related to their infant's nighttime needs, their prior knowledge of typical infant sleep behaviour and the reframing of their infant's sleep needs as normal and innate appears to have reduced the degree to which they considered their infant's sleep to be concerning or problematic.

4.2.3 Increasing synchrony in parent-infant sleep: Infant sleep-consolidation and parent sleep-adaptation

With maturation, many parents find that their infant's sleep consolidates, meaning that they then tend to sleep for longer and more predictable periods. As the frequency of infant night wakings reduce, many parents describe an associated improvement in the quality and quantity of their own sleep, and consequently in their own sense of wellbeing. The authors of one study of twenty South Korean mothers' experiences found that parent-infant sleep patterns "*evolve together in a reciprocal relationship*" with a primary influencing factor being the maturation of the infant (Chae et al., 2022, p. 105). This associated positive impact of infant sleep-consolidation on parents' own sleep patterns, following the first few challenging months, is described as follows by one of the participants of that study:

> My baby has slept a little longer since the third month of life… my baby finally started to sleep for 4 hours at a time, so I could also take a nap for about 2 hours... Before that, I nearly had a mental breakdown. I mostly took catnaps or slept for 2 hours at a time… Now I feel more comfortable since I can really sleep. (Mother of four-month-old, Chae et al., 2022, p. 102)

> …My baby's sleep pattern is regular now; however, it was like chaos when his sleep had no pattern. Back then, I was so nervous that I couldn't sleep well. (Mother of eight-month-old, Chae et al., 2022, p. 104)

The increased synchrony between parent-infant sleep patterns is not solely a function of the infant's maturation, however, but, according to some parents, also can be a result of their own parallel process of sleep-adaptation. In one study, two mothers of infants under one year old describe how, over time, they experienced a corresponding physiological adaptation of their own sleep leading to increased alignment between their own and their infants' sleep patterns:

> I think your body retrains, doesn't it, when you have a baby…to not be in a routine as such, just to get good sleep where you can, even if it's just an hour here or an hour there. (Rudzik & Ball, 2016, p. 39)

> I feel like I've had a really good night's sleep, when I think I was up 3, 4 times last night but I just feel OK and I think if I had…a good 8-hours sleep I'd probably wake up feeling…really groggy. (Rudzik & Ball, 2016, p. 39)

Other parents also describe consciously changing their own sleep behaviours in an effort to mirror the timing of their infant's sleep. The authors of one primary study interpreted this adaptation to be a progressive "*integration of sleep disturbance"* into mothers' lives as they adapt to the "*new normal*" of motherhood (Kennedy et al., 2007, p.119). This theoretical integration process involves mothers learning with experience, over the course of the initial postnatal months, to take the opportunity to sleep themselves when their infants slept, irrespective of the time of day or night. This behavioural adaptation, where parents consciously match their own sleep pattern to their infants', is also described by participants of other studies, for example:

> [Be]cause that's kind of the rule in the house, you can take a nap but only when the baby is napping…You're up when the baby wakes up. (Mother of a six-month-old, van Schaik et al., 2020, p. 26)

One mother in the Marshall and Thompson (2014) study also described an adaptive cognitive reframing of her own beliefs around what constitutes "good" sleep, in response to the need to support her infant's sleep:

> I mean I had to really change my conception of sleep… that the only kind of good sleep was unbroken sleep and quite a lot of it (Australian mother of less-than-one-year-old, p.51)

These individual mothers describe a process of parent sleep-adaptation that has the potential to occur across the physiological, behavioural, and cognitive domains and can be experienced in parallel with their infant's sleep-consolidation process. These parent-infant sleep processes explain the increasing synchrony between parent and infant sleep patterns that can lead to parents experiencing periods where both their own and their infant's sleep needs are adequately met.

4.2.4 Infant sleep disruptions, need for support, and parents' responses

While an increased synchrony between sleep patterns over time is experienced by the majority of parents, this increased alignment of sleep is rarely experienced as constant or predictable once established but, rather, as frequently and easily disrupted. Chae et al. (2022) describe how "*after a short period of relief, the mothers again experienced sleep deprivation and decreased quality of sleep when their infants were sick or reached developmental milestones, such as teeth eruption, rolling over, and starting to eat solid food*." (p.103).

In addition to the increased challenges during these periods of transient infant sleep disruptions, many parents also describe how, even though their infants might be sleeping for longer they still require active parental support to go to sleep or return to sleep when they wake. There are many accounts of parents using an extensive range of infant settling strategies to encourage their infant to initiate and maintain sleep. Examples of settling strategies used include use of physical closeness, touch and movement such as cradling, rocking, hugging, patting, caressing, massaging, carrying in arms, and comfort feeding; and the use of sound such as shushing, singing, soft talking, and playing music. The task of settling their infant to sleep is described as a process of trying a range of settling

strategies and establishing effectiveness according to the infant's response, such as the process outlined by this Vietnamese mother:

> If he cries loudly, I will sing, and breast-feed. If he refuses to be fed, I will lull the baby to sleep, or pat him softly to stop him crying … If breast milk is not enough, I will supplement with formula milk. (Murray et al., 2018, p. 65)

Many parents also describe the value of working to discover their infant's personal preferences in terms of their physical comfort in their sleep environment with a view to supporting the infant to settle to sleep:

> …now I found out that the ways that he likes to be ... he goes to sleep faster, then quiets down (Doering et al., 2017, p. 136).

Parents frequently describe trialling different infant sleep positions, bedding, and sleep surfaces, interpreting their infant's responses, and adapting the infant sleep environment according to the response of their infant, in an effort to discover how best to support their infant to go to sleep quicker and for longer:

> …it was just every time we'd put him on his back, he'd either instantly wake up screaming or he would roll on his own to his side or his stomach and we learned just if we automatically put him on his side or his stomach, he never would wake up, he would just continue his nap. (Hwang et al., 2021, p. 1994)

> It seems like he sleeps better when I do [use blankets and pillows]. When I added the pillow, he started sleeping a lot longer in his crib, which is really good. (Caraballo et al., 2016, p. 84)

This process of interpreting their infant's responses to discover what factors disrupt or support their sleep describes how parents adapt the sleep environment and their sleep practice on an ongoing and responsive basis to ensure their infants', and consequently their own, sleep needs are met.

In contrast to the parents who find that infant sleep-consolidation and their own sleep-adaptation processes contribute to increased parent-infant sleep pattern synchrony, there are also a minority of parents that describe persistent sleep pattern asynchrony beyond the first postnatal months.

In the Chae et al. (2022) study, for example, five out of twenty mothers describe how their infants began to sleep for shorter periods after the first one hundred days of life; and a similar proportion of mothers, four out of nineteen, in the Doering et al. (2017) study were still experiencing fatigue, poor sleep, and difficulties establishing an infant sleep routine after three months. While the smaller group of mothers in the Chae et al. (2022) study attribute their infants' on-going shorter sleep duration (and their own related sleep disturbance) to factors specific to their infant's stage of development and maturation, mothers in other studies also identify longer-term infant physical or health issues such as reflux, colic, digestive discomfort, or eczema as a cause of persistent infant sleep problems (Cole et al., 2021; Marshall & Thompson, 2014; Runquist, 2007; Tsai et al., 2014). While such factors individual to the infant are described as significant to parents' experiences of their infant's sleep, individual parental factors with the potential to influence their ability to adapt to their infants' sleep patterns were identified by the study conducted by Doering and colleagues (2017). In this study of nineteen mothers, the authors describe how the mothers who experience continuing asynchrony in their own and infant's sleep patterns also appear to have an "*absence of strategies to help the infant establish a routine",* were experiencing symptoms of depression, had a lack of help or social support, and often spoke negatively about their infant (Doering et al., p.138).

4.2.5 Synthesised summary: Mutual wellbeing: Meeting parent and infant sleep needs

Parents place significant importance in their infant getting enough good sleep, both because of the perceived positive impact of longer, uninterrupted sleep on their infant's wellbeing and because it allows parents themselves to get enough good quality sleep, which, in turn, contributes to their own sense of sleep-related wellbeing.

After an initial period of frequent night-time waking, most parents find that their infants' sleep pattern gradually consolidates into longer uninterrupted periods of sleep as they mature. During this initial phase, some parents also describe a parallel process of personal sleep adaptation with changes potentially occurring across the physiological, behavioural, and/or cognitive domains to varying degrees. The outcome of this infant sleep-consolidation and parent sleep-adaptation process is a synchronisation of parent-infant sleep patterns to better allow both parents' and infants' sleep needs to be met. Periodic disturbances to parent-infant sleep after this period are nonetheless described as frequent, and significant parent involvement in settling infants to sleep is still routinely required.

A minority of parents describe not experiencing this period of increased parent-infant sleep pattern synchrony, instead reporting persistent difficulties in meeting their own and their infant's sleep needs. Individual infant factors such as physical and health issues, developmental milestones, and stage of maturity can impact on the establishment of the sleep-consolidation process; while parent factors, such as their prenatal expectations of typical infant sleep, their physical and mental health, their access to support, and their repertoire of effective settling strategies were described as potentially impacting parents' adaptation to their infants' sleep patterns.

4.3 Parent protection of the sleeping infant

The second theme, parent protection of the sleeping infant, was generated from four sub-themes:

(i) impact of fear for their sleeping infant's safety on parent sleep,

(ii) parent perception of the vulnerability of their sleeping infant,

(iii) the infant's need to feel safe, and

(iv) negotiating mutual sleep needs and protection of the sleeping infant.

4.3.1 Impact of fear for their sleeping infant's safety on parent sleep

When discussing their infant's sleep, a large proportion of parents describe experiencing stress, fear, or anxiety related to their infant's safety and survival. This mother of a three-month-old, for example, describes "*just the stress, just like being really stressed out about him, you know, checking on him to make sure he was breathing…"* (Kennedy et al., 2007, p. 118). In addition to more general fears of something harmful happening to their infant or of the risk of Sudden Infant Death Syndrome (SIDS), many parents also have specific worries that their infant might hurt themselves on their physical surroundings or that their choice of infant sleep positioning, bedding, or surface could have harmful or fatal consequences:

> I be scared... what if he try to roll over and his arm can't get out?... 'Cause I've been told, don't use it [cot bumpers], so I haven't used it, but I'm scared... What if my baby was trying to move, hitting his hand, anything? (Ajao et al., 2011, p. 498)

> I know, like, how they were saying, how you [have] your baby on his/her back. The baby could have choked, like they were saying, and then on the other hand, when you lay your baby on his/her stomach the baby could smother his- or herself. (Oden et al., 2010, p. 876)

Parents identify a range of influencing factors that can contribute to the concern they experience around their infant's safety during sleep, and the protective actions they take in response. These factors can include the degree of confidence they have in their own protective instincts to guide them to make the safest sleep choices, their past experiences

and knowledge of incidences or infant injury or death, and their personal response to opinions and advice from others, including messages received from the media and health professionals. This mother shares her belief in her personal ability to keep her sleeping infant safe by virtue of her choices being informed by her maternal instincts and sense of responsibility:

> You yourself trust yourself first because you yourself as a mother know that you would not let no harm, and you are going to protect your baby, so other people's opinions don't matter. Because if you let other people dictate, then you as the mother have to deal with the consequences for listening to the next person. (Oden et al., 2010)

While trust in their own instincts can lead to parents to feel more confident regarding the safety of their sleeping infant, a small number of parents identified tragic events within their extended family or social groups that caused them to exercise an increased level of caution when making decisions around the infant's sleep environment and their position within it:

> …Well, he can't sleep with us, or me…Safety reasons definitely … Squashing him. Rolling over on him. We've had an incident and it's happened and it killed our cousin's baby. So, we've been through that... (MacFarlane et al., 2021, p. 312)

> I wouldn't ever lay her on the bed. I've actually lost a nephew and a niece to SIDS, so I'm not fond of putting any babies on our bed ... (Kihlström et al., 2020, p. 562)

Illustrating the potential impact that the prevailing professional and public health advice can also have on parents' anxiety and, consequently, on their ability to sleep well, another mother describes being made to watch "*a lot of videos of scary things that will happen if you don't follow it. I lost sleep watching the baby, looking to see if she was sleepin*g." (Stiffler et al., 2020, p. 5); echoing the experience of the mother who says: "*Especially with sudden infant death, the SIDS. Man, they had me scared to death if I put her in the crib she was going to roll over or something"* (Gaydos et al., 2015, p. 500). Conversely, a similar proportion of parents say that they gain reassurance from the practice of following official safe sleep guidelines, as is the case for this mother:

> … I become pregnant I think I did all those pregnancy classes and I learned about how the beddings in the crib is actually not safe for the baby to sleep in. So, when she was born, I decided not to put the bedding around the bed so I can have peace of mind and she could be safer. (Kihlström et al., 2020, p. 362)

One study exploring African American mothers' descriptions of their decision-making around infant sleep location (Joyner et al., 2010) identified the potential impact of wider societal factors by describing how some parents of low Socio-Economic Status (SES) might also have to contend with anxiety related to lower standard housing and neighbourhood crime, causing them to fear insect and vermin infestations, intrusion, or their sleeping infant being a victim of stray gunfire:

> And then that crib, man, you know, you got things that be crawling around and stuff, you don't know…them thousand-leg things? Them things could crawl in his crib or anything, I'm serious, or a spider or something. (Joyner et al., 2010, p. 887)

> My baby sleeps right here [points to her arms]. Breaking people's windows, kidnappings, shooting lately. Lately… they just be shooting out there… It's like if I hear something, oh we are going to get shot together, you know, we are going to do this together. I guess I just a little overprotective. (Joyner et al., 2010, p. 887).

4.3.2 Parent perception of the vulnerability of their sleeping infant

Parents' behaviours aimed at protecting their sleeping infant have been described in the previous subtheme as being frequently influenced by factors internal to the parent, such as their level of anxiety; or external to the parent-infant dyad, such as their family or social circle, their socio-economic circumstances, and their responses to public health advice. Parents also describe how factors individual to their infants can also drive their protective responses. For example, some parents remain alert throughout the night to actively protect their infant if they perceive that their infant is particularly vulnerable at that time. Often, parents consider their infants to be more vulnerable in the first months of their life, due to age, size, or having been hospitalised or born prematurely, with parents gradually becoming more confident of their sleeping infant's safety as they grew older and stronger:

> When he was initially discharged someone (myself or my husband) would stay up with him to monitor him while he slept …Looking back, mainly it was made out of fear. Fear that we would miss something while he slept. (Capper et al., 2022, p. 451)

> You know the more time passes, the more confidence you'll feel. The anxiety gets less and the confidence gets more. Plus with her getting bigger and sturdier, that helps a lot. (Lau & Hall, 2016, p. 2822)

This mother also describes a reduction in her level of anxiety around infant sleep safety as her infant matures and she considers them to be less vulnerable and her own confidence simultaneously increases, which in turn influences her infant sleep positioning choices:

> At first when they are newborns, don't get me wrong, I be scared to death. I put him right on the back like they tell you to do, but then after a while, once I get comfortable with the child, and real comfortable about him being home and me being adjusted to him and stuff like that, then I'll start doing my own little thing. I go by the rules at first, but then once I get back into the midst of caring for a child, then I, you know, like my son he sleeps on his stomach now. And he sleeps real good on his stomach. (Moon et al., 2010, p. 97)

In addition to the individual infant's age, health, and physical factors, sleep behaviours specific to their infant and previous alarming incidences such as infant choking or reflux, also informed parents' perception of their own infant's vulnerability, impacting the degree of anxiety experienced:

> That's what I'm afraid of, too. Like laying on his back. I did that a few with the newest baby… [until one time, when] he was (making choking sounds) like he was choking and that scared me, you know. I was like he was trying to throw something up, but it was going all back down his throat… When I heard that, that really scared me… (Joyner et al., 2010, p. 876)

> …her milk sticks in the middle of her throat and she's started coughing and choking before on her back, so that's what prompted me to sit her upright, so if she was to reflux it would just flow out the side of her mouth instead of her choking on it coming back down (Hwang et al., 2021, p. 1994).

Individual parents' perception of their individual infant's vulnerability is described as overriding external safe sleep messaging at times, as demonstrated by this mother who gains reassurance of her sleeping infant's safety from her personal assessment of her newborn's strength: *"My son has been lifting his head up ever since he was born… I feel that if you can do that you're pretty much telling me your tummy is ok [for sleeping]."* (Oden et al., 2010, p. 876).

Parents' perception of the vulnerability of the infant is influenced by a range of factors, including the age and health of their infant, the confidence the parent has in their own instincts and decisions, previous incidences of choking or reflux, and their own assessment of their infant's relative strength.

4.3.3 The infant's need to feel safe

Many parents also describe interpreting some of their infant's sleep behaviours as communicating the infant's own need to feel physically and emotionally safe while sleeping. Parents explain how they gauge the extent to which this safety need is met through interpreting their infant's response to where and how they are put to sleep. One mother, for example, says that her infant "…*feels safe when she's in Mommy's bed. She knows when she's in the bed*" (Chianese et al., 2009, p. 29). This mother explains she gains a sense of reassurance from supporting her infant's sense of security and safety "…*I think it's nice to have a little cuddles* [sic] *and stuff before he nods off and then that way I think they feel safe, you feel safe knowing that they're all good…"* (Jones et al., 2017, p. 33).

While many parents find that sharing a bed with their infants meets both their own and their infant's protection needs, a smaller number perceive that their infant feels safer, and they gain greater reassurance, when they sleep in a separate bed. One mother says that her son *"…slept in a bassinet in our room for the first seven months he was home… Because it felt safer for both of us"* (Capper et al., 2022); and two other mothers who were providing feedback on their use of a specific separate infant bed (a Pepi-Pod®) said that their infants looked *"…peaceful and safe…"* and *"…safely and comfortably sleeping"* in their own separate space (Grant et al., 2021, p. 4). A reciprocal relationship is suggested here again by these parents who, interpreting their infant's responses, make decisions aimed at

supporting their infant's sense of safety which then supports infant sleep, affording parents, in turn, their own feeling of security and reassurance.

4.3.4 Negotiating mutual sleep needs and protection of the sleeping infant

The concern that parents hold for their sleeping infant's safety was described in the previous three subthemes as influencing sleep practices and leading them to engage in a range of protective behaviours. These efforts to keep their infant safe and well during sleep can also compromise the quality and quantity of their own sleep. This mother describes her anxiety and protective behaviours in response impacted on her own sleep:

> When we first brought her home from the hospital I was too scared to fall asleep the first couple of days she was home. So I was kind of awake for two or 3 days straight holding her at night… (Herman et al., 2015, p. 16)

In some cases, parents describe having to knowingly negotiate between infant sleep safety and supporting their infant to get a good night's sleep. For example, some parents find that the infant sleep positions and the locations that facilitate their infant's sleep are often considered to hold risk or are contrary to prevailing safe sleep advice. These mothers describe the practices that they undertake to support their infant's sleep while having to accept a degree of known risk:

> Placing heavy objects on the baby's body such as pillows [to] make the baby sleep easier. But we have to be careful when placing the pillow because when the baby stirs, the pillow could be pushed to the face area and make the baby unable to breath [sic]. Some babies have died because of this reason. (Murray et al., 2018, p. 507)

> He had very strong neck muscles so we started sleeping him on his tummy from 3 weeks onwards. He slept much longer and more soundly like this (we knew it wasn't recommended…) (Cole et al., 2021, p. 3090)

Parents describe how their efforts to adhere to official safe sleep guidelines can also impact negatively on their efforts to meet their infant's sleep needs, in some cases leading to shared distress or a feeling of being in conflict with their infant:

> You're not sleeping at all. When I put her down in her crib, she would cry and I would cry. You know it would be like "why isn't this working?" You feel a little better

> holding her because you don't have to put her down and then she doesn't cry and you don't cry. (Lau & Hall, 2016, p. 2820)

> We're all busy, we're all working… When you get home…, you're exhausted. You're like, I'm not going to fight with this baby to put them in a safe place that I know is safe. What else can I do? How else can I, instead of just a flat cold hard mattress, what are some other alternatives for safe sleep? (Herman et al., 2015, p. 16)

Highlighting this experience of many parents who describe having to negotiate between meeting mutual sleep needs, protecting their sleeping infant, and considering their infant's need to stay close, one mother says *"I don't want to see my baby cry, so of course, I allow him to sleep in the bed with me. But does he need to be in a crib? Does he need to be his own safe space?"* (Jacobson & Himes, 2021, p. 66).

Illustrating the interdependent nature of parent and infant sleep, the following mothers describe their decision to put their infant to sleep in positions or locations considered to hold increased risk, but that facilitate the infant to go to sleep quicker or for longer, with the emphasis, in these cases, on the parents wish to also meet their own sleep needs:

> I understand, you know, not to let them sleep on their backs, but after three and a half months, he would not sleep on his back—the screaming. No matter what, he wouldn't fall asleep. So, what I had to do is just manage him carefully, and I was also sleep deprived. (Howard et al., 2022, p. 5)

> I know that she shouldn't have been on the couch [with me], but it was like that was the only place she would sleep. And I was super tired. So, I gave into it and left her there when I shouldn't have. Because they told me so many times just don't do it because of the cot death thing, the sudden infant, that sudden death thing. (MacFarlane et al., 2021, p. 311)

Monitoring infant safety using technology was identified by many parents as a means of reassuring themselves that their sleeping infant remained safe and unharmed, while also allowing them to sleep:

> …once we could not physically take being up that much, we purchased a monitor… (Capper et al., 2022, p. 451)

> That's how I felt. Like, 'Right, [the breathing monitor is] in there. He's okay. If anything happens, it'll go off.' That's what I kept thinking, so in that way it kind of just reassured me that everything would be alright. (Pease et al., 2017, p. 4)

However, once again, individual factors influence the usefulness of specific strategies such as monitoring infant safety using technology, with the authors of the Pease et al. (2017) study reporting that for one mother in their study "*the* [breathing] *monitor induced anxiety, especially when the alarm went off falsely"* (p.4). Many other parents also identified sleeping close to their infant as another alternative strategy to personally monitor their infant's safety with minimal disturbance to their own sleep, as described by this mother, for example:

> My baby sleeps in the bed with me, because I can keep checking on him. All I've got to do is open my eyes and check on him. I'm right there beside him so I can tell whether he's breathing or not, you know. (Moon et al., 2010, p. 97)

There is a wide range of parental views and experiences regarding their ability to effectively protect their infant while both are sleeping and sharing a bed. Some parents believe that the nature of their own sleep adapts to the extent that they retain a degree of alertness to the position and wellbeing of their infant:

> …before I had my baby… I was everywhere all over my bed. But when you have a baby in the bed with you, your body just acts different; you are not going to roll over on top of your baby. (Mosley et al., 2007, p. 578)

> …a lot of people… who say they can't feel their baby… that's just crazy to me because my instincts as a mother… When he move in his sleep, I'm jumping up, so I just don't understand it, how you can't" (Herman et al., 2015, p. 16)

Another mother considered sharing a bed with her infant to be protective to the point of viewing separate sleep to be neglectful of parental responsibility, saying "*To me, [a baby sleeping alone] is just irresponsible... If your baby had an accident, who would take responsibility for that*? (Shimizu et al., 2014, p. 4). A similar proportion of other parents, however, disagree; with the following mother believing, for example, that there is a real risk of the sleeping parent forgetting that their infant is beside them with a consequent risk of suffocation:

> Me personally, I really don't like [having the baby in my bed] because I think that, when you are asleep...if you are exhausted after taking care of your baby and you're asleep, you might forget that your baby is there, you know, and you may put a pillow

> over top of the baby. I mean, anything can happen. So if the baby isn't there, it just decreases the chances of anything crazy happening. (Joyner et al., 2010, p. 886)

While parents' perceptions of, and responses to, the risks and safety of sleep locations, surfaces, bedding, positions, and practices varied greatly, the experience of anxiety and need to protect their sleeping infant was a common parent experience described by many of participants in the included studies.

4.3.5 Synthesised summary: Parent protection of the sleeping infant

In addition to their efforts to support their infant's sleep, parents also describe how their need to protect their sleeping infant can influence their infant sleep practices and also impact on their own quality and quantity of sleep.

While a level of anxiety for their sleeping infant's safety and survival is widely described, the degree of night-time alertness and the range and frequency of protective behaviours that parents adopt in response was varied. Parents' perceptions of their infant's vulnerability was described by some as one factor driving their need to stay awake, or awaken frequently, in order to check that their infant was safe which had consequences for their ability to meet their own sleep needs. Parents also describe how they interpret their infant's behaviours as expressing a need to feed safe and secure and they respond according to the infant's individual sleep location preferences.

In an effort to meet both their need to protect their infant overnight and their need to sleep themselves, parents describe adapting their infant sleep practices and environment in an effort to balance the protection of the infant's safety with the parent's and infant's sleep needs. Infant monitoring technology or an infant sleep location that allows parents to check on their infant with minimal disturbance to their own sleep can offer a solution; however, parents differed on their perceptions of whether sharing a bed was protective of,

or unsafe for, the infant. Influences on parents' perception of risk ranged from factors individual to the parent and infant to external familial and socio-cultural factors and included level of parenting experience, parents' trust in their own instincts, past incidents in the parents social or family circle, and their relationship with official safe sleep guidelines.

4.4 Connection: Sleep and the parent-infant relationship

The third theme, connection: sleep and the parent-infant relationship, brings together the three related subthemes of

(i) sharing space and parent-infant sleep,

(ii) sharing time and parent-infant sleep, and

(iii) the impact of negotiating control and independence on the parent-infant sleep relationship.

4.4.1 Sharing space and parent-infant sleep

Parents from a broad range of diverse cultural backgrounds speak of the emotional and sensory pleasure of watching, holding, or lying close to their infant as they sleep. Parents describe being physically near to their sleeping infant as an opportunity to experience enjoyment and intimacy:

> It is a blissful time when I sleep with my baby. It is my great pleasure to see [his/her] adorable face, to hear the breathing, and to touch the soft body. (Japanese mother, Shimizu et al., 2014, p. 4)

For many parents this enjoyable experience can translate into a personal need to remain physically close to their sleeping infant, with some believing it to contribute towards strengthening of the parent-infant bond:

> You feel closer, more, like, attached to your baby, and sometimes you feel the need to have them there [sharing a bed]. I don't know—I have the need to have him there. (American mother, Caraballo et al., 2016, p. 80)

> Like, you love your baby so much. You want to spend all the time in the world with him. And so, like, the whole thing sleeping with him—they want to hold him, they want to grasp him, they want to love him. It's kind of like you're satisfying your selfish needs… (American mother, Caraballo et al., 2016, p. 84)

For parents, the emotional importance of sleeping close to their infant can be heightened following time spent apart, if they work outside the home during the day for example:

> If I sleep with the baby, I can feel close, cuddled up, and it somehow helps me not to feel so guilty about leaving her through the day. (British mother, Ball, 2002, p. 217)

Some parents also relate their need to be physically close to their sleeping infant to a sense of personal wholeness, to the extent that they describe feeling lonely or incomplete when apart:

> I try to [put him in the crib], but it's like it's a part of me missing, and I can't let him sleep in there. (African-American mother, Joyner et al., 2010, p. 887)

> She is a part of us – why wouldn't we like to have her next to us? (Swedish mother, Welles-Nystrom, 2005, p. 358)

> Sometimes I go get [my children] to come in the bedroom. I don't want to be in there by myself. I want them in there. (American mother, Chianese et al., 2009, p. 29)

Furthermore, many parents consider their infants to also have a reciprocal need, distinct from their own need, for closeness and physical connection while sleeping. Infants are described by these parents as communicating their rejection of sleeping in a separate space by crying or not going to sleep until they are brought physically closer to them:

> He cries because he feels lonely and needs to be comforted. If he wakes up at midnight and knows someone is beside him, he won't cry. Otherwise, he will cry. (Vietnamese mother, Murray et al., 2018, p. 66)

> He just cries and cries when I put him in his cot. Like early hours of the morning. So, I put him in my bed and give him cuddles, and he goes to sleep. (Māori mother, MacFarlane et al., 2021, p. 314)

Some mothers, with shared body space of their pregnancy still in mind, described how being physically far apart from their sleeping infant while they slept seemed tantamount to leaving her infant alone:

> They spent nine months like right attached to mom and then… BOOM! You were leading them to the crib. That seems kind of harsh. They are all alone...The crib was massive. It felt like a giant warehouse. (Canadian mother, Lau & Hall, 2016)

This perspective mirrors Jacobson and Himes (2021) interpretation, of American mothers' perspectives, that being a parent *"may include a feeling that making the infant sleep in a separate bed is a form of abandonment"* (p. 65). This sense that there was something wrong with "leaving" their infant to sleep alone in a separate space was also shared by the

following mothers who believe that staying close to their sleeping infant is somehow "right" or "natural":

> Babies aren't supposed to be left alone in their cribs. It feels good to be close to your baby. (American mother, Howard et al., 2022, p. 5)

> …[keeping infants close night and day is] just expected…it wouldn't feel right if my babies weren't with me. (Pakistani mother living in Britain, Crane & Ball, 2016, p. 2)

> … I decided to lie down with him… it's just a more natural approach you know (Māori mother, Jones et al., 2017, p. 33)

Some parents also choose to share a bed with their infants, informed by their own values and beliefs around independence, as in the case with this mother, for example:

> Still now she doesn't sleep in the cot. We don't have anything separate for the kids at all. Because we believe in a more sort of link you know? Kids need that warmth initially from the parents. I didn't want that independence to come into them so early. They tend to be independent in everything. I mean, I'm not, having anybody in mind, but you know, it's just to get the habit of sharing and knowing, you know. Instead of being possessive – this is mine and this is my toy . . . I don't like that concept at all. (Indian mother living in Australia, Aslam et al., 2009)

There are also accounts where parents, when considering their relationship with their infant, prefer to sleep separately; with many voicing the fear that sharing a sleep space might lead to prolonged attachment or the infant becoming over-dependent on sleeping with them, as these mothers explain:

> I definitely fear that I won't be able to get her out of my bed… It becomes an attachment issue…They kind of feel like your bed is their bed as well, you know, and I just don't want him to be four, five and six still in my bed. (African American mother, Herman et al., 2015, p. 16)

> Yeah I just don't want them sleeping with us forever, one of auntie's kids slept with my nan until she was 12, and I do not want that. (Māori mother, Jones et al., 2017, p. 34)

In contrast to the group of parents described previously, these parents value having their own personal sleep space and seek to promote independent and separate infant sleep.

While many parents describe their experience of being close to their sleeping infant as meeting an emotional need of their own and of their infant's, there are a smaller number of

parents who express a preference for separate beds for themselves and their infant to better meet their personal space or sleep needs. This American mother, for example, states "*They need their own space…Right after I brought my daughter from the hospital… she directly got her own room. "Never mind, leave me alone." That's how I do it."* (Joyner et al., 2010, p. 885) and this Japanese mother who agrees saying "*It is ideal that the baby sleeps in a crib, since I want to sleep well*." (Shimizu et al., 2014, p. 4).

While many of the included studies interpreted culture as being a primary determinant of the extent to which parents valued bedsharing (Aslam et al., 2009; Chae et al., 2022; Chianese et al., 2009; Crane & Ball, 2016; Gaydos et al., 2015; Grant et al., 2021; Gray et al., 2022; Herman et al., 2015; Liamputtong, 2002; Mathews et al., 2015; Stiffler et al., 2020; Welles-Nystrom, 2005; Zoucha et al., 2016); other studies highlighted how individual parents' values and practices can frequently differ within homogenous cultural or ethnic groups (Bailey, 2016; Jones et al., 2017; MacFarlane et al., 2021; Morelli et al., 1992; Shimizu et al., 2014; Tipene-Leach et al., 2000; Tomori, 2012). While some parents do identify ethnic tradition as a decisive factor in choosing where their infant slept, such as the Pakistani mother who says "*I like him with me even if he's sleeping. I know the English put their babies in their own rooms but Pakistani mums don't do that"* (Crane & Ball, 2016, p. 2); a similar proportion of other parents specifically described adopting practices that diverge from their cultural norms, prioritising other considerations such as infant safety, as described by this Māori mother, for example: "*I used to sleep with him because my mum wanted me to. Because she thinks it's a "wairua" [spiritual] thing. But when my midwife said all the risks, I was like, "nah I'm not sleeping with him by me'*." (MacFarlane et al., 2021, p. 311) While traditional and cultural influences are often described as significant by many parents, the extent to which they dictate the ultimate decision on where infants sleep varies, often from night-to-night and, in some cases, hour-to-hour.

This Vietnamese's mother's response *'Where does he sleep? ...Sometimes in a cot, sometimes in the middle of the bed'* (Murray et al., 2018, p. 67) reflects many other parents' descriptions of their infants sleeping in a separate bed for a proportion of the night and sharing their bed for the rest of the night in response to safety or pragmatic considerations, or the infant's or parent's needs at the time, irrespective of cultural or ethnic background.

4.4.2 Sharing time and parent-infant sleep

In many cases, where parents do want to remain close to their sleeping infant, this desire is not limited to night-time alone but is true also for daytime naps. Parents describe their efforts to preserve this closeness over the twenty-four-hour period, by having a range of different sleep location options for their sleeping infant with closeness to the parent being the factor in common:

> …I let her [fall asleep on me] during the day, then I put her down here (on couch) so I'm always by her... (Jones et al., 2017, p. 35)

> The baby sleeps in a cot, bed, sleeps in my arms. I always lie next to the baby, sleep in the same bed with him. (Murray et al., 2018, p. 67)

The considerably greater sleep needs of their infant, in comparison to their own, however, means that parents' control of their own time use can often be limited while they are awake during their infant's day-time sleep periods. The following mothers describe how this dynamic can be experienced as challenging and limiting:

> It was hard. The baby didn't seem to be sleeping deeply, and he kept waking up... He cried a lot. He woke up and cried. And I had to hold him in my arms to make him sleep deeply... When I put him down, he woke up... I couldn't do anything in the meantime. I think that was hard. (Chae et al., 2022, p. 103)

> I lay next to the baby and pat him again when he moves a little or opens his eyes, then he sleeps well. But if I am not with him, he wakes up completely, so I can't do anything while he is taking a nap ... I have to lie down and just watch my baby. (Chae et al., 2022, p. 103)

Parents' experiences highlight how sharing space with their sleeping infant inevitably has implications for how parents can spend their time. As a result of their infant's need to always sleep close to them, many parents find that their infant's daytime sleep schedule determines when they themselves can sleep, rest, eat, work, interact with others, and care for their other children. This creates an interdependence between infant sleep and parent time-use, where infants are often dependent on their parents to support their sleep, and parents experience a reciprocal dependence on their infant being able to sleep for long enough to allow them to perform tasks unrelated to, but reliant on, that sleep.

In one study exploring motherhood in the first two postnatal years (Cox et al., 2021), mothers described this relationship between infant sleep and control over their own time to sleep or rest, saying "*I have to do everything around his schedule… sleep when he's sleeping"* (p.126) and "*only time I get rest is when he sleep"* (p.126). Similarly, participants in a number of other studies (Doering et al., 2017; MacFarlane et al., 2021; Shimizu et al., 2014; van Schaik et al., 2020; Zambrano et al., 2016) describe using the time when their infant sleeps to relax, make 'phone calls, or undertake housework when possible:

> After the baby falls asleep, I try to do little things that I can't really do when I'm working. Probably like, making phone calls or washing clothes, stuff like that (Zambrano et al., 2016, p. 493).
>
> …I rarely sleep at the same time when the baby sleeps, so I [usually] talk with my husband or do domestic work after baby falls asleep… (Shimizu et al., 2014, p. 5)

In order to regain some control over their time use, some parents describe using portable infant sleep equipment, such as infant beds, carriers, or strollers, or other general furniture, such as couches or futons, in order to keep their sleeping infants close during the day while also undertaking other activities nearby, for example:

> Car-seats, pushchairs, prams, bouncers, rockers, a baby nest, sheepskin, baby carriers, and being cradled by a parent or relative were among the other bed-types and sleep spaces used during the day… using these sleep spaces helped māmā

> [Māori mothers] maintain proximity with their pēpē [infants] for supervision and continue their daily routines, such as running errands, tending to older children, grocery shopping, or exercise. (Primary study finding, MacFarlane et al., 2021, p. 311)

While these parents' accounts describe how their infants' sleep schedules dictate how they can use their own time; the degree to which parents believe that they can take personal control, as opposed to their infant having control, over infant sleep and wake times varies. While many parents describe establishing an infant sleep schedule according to their own sleep or other pragmatic needs; a similar proportion of parents find, in their experience, that control ultimately rests with their infant. One mother finds that her infant adopts a schedule without her active input: *"He [infant] did it on his own. I didn't know how to get him in a routine anyway"* (Doering et al., 2017, p. 138) and another mother says "*But see, you can take a horse to water but you can't make him drink. You can't make a baby sleep either"* (van Schaik et al., 2020). This contrasts with the following mothers who take a parent-led approach to sleep scheduling: "*No, he basically just has to join our schedule—too bad for him*!" (van Schaik et al., 2020, p. 23) and another who says "*You have to get them [baby and other children] on a schedule. You have to be organized."* (Zambrano et al., 2016, p. 496).

The relevance of shared time in parent-infant sleep does not only involve parents negotiating personal control and time-use with their infant's sleep schedule, but also extends to parents and infants reciprocally sharing time such as when both engage interactively in sleep-related activities together. The significance of time spent together by parents and infants during bedtime routines is highlighted in a number of the included studies (Chae et al., 2022; Gray et al., 2022; Tse & Hall, 2008; van Schaik et al., 2020; Veltkamp et al., 2020). These sequences of shared actions, repeated every evening, are described as having a ritualistic quality (Chae et al., 2022; Gray et al., 2022; Veltkamp et al., 2020) and are created by parents, not only to settle their infant to sleep, but also as a

means of sharing "*important moments… for family boding and attachment*" (Author interpretation, Veltkamp et al., 2020, p. 5). The descriptions of bedtime routines involve the parent, prompted by their infant's sleep schedule or signs of tiredness, to initiate a series of familiar sleep preparation tasks such as singing songs, interacting with favourite comfort objects, and participating in moments of shared intimacy. The parents' intimate knowledge of, and responsivity to, their infant's individual preferences and needs are evident in mothers' descriptions of these shared interactions:

> I usually first change him into his pajamas [sic], then I'll sing a bit and hold him and cuddle him and he has a kind of wooden doll with a feather hanging from the ceiling over his bed and…if you pull it a bit then…well he just loves that! So then he will look at me in this way, almost like he's sort of following it with me. And a little music box; those are the things I basically always…always do... (van Schaik et al., 2020, pp. 26-27)

> …she usually takes her socks off. Like she just… that's how I know she's getting sleepy. [laughs] The socks start coming off, and she's gonna run around for like a few minutes and then at that point we start saying good night to everybody and go upstairs brush our teeth…And then put on some relaxing music, and make sure that's going. And then I just nurse her. (Gray et al., 2022, p. 7).

These accounts not only illustrate parents' and infants' mutual involvement for the duration of infant sleep routines, but also describe the highly personal and responsive interactions constructed by the parent with the infant's preferences and past behaviours in mind, with a view to supporting infant sleep.

4.4.3 The impact of negotiating control and independence on the parent-infant sleep relationship

The first two subthemes describe how, in the context of sleep, the parent's and infant's use of space and time are closely interconnected and can involve an aspect of negotiating control and independence. Reflecting this dynamic, Kennedy et al. (2007) describe parent-infant sleep as being a "*negotiated behaviour*" (p. 119) that involves a parent realising the importance of meeting their own sleep needs, as well as their infants'. This mother

describes the emotional distress she experiences as she struggles to meet her own sleep needs in the context of her infant's dependence on her:

> There would be times where I would be in tears. Maybe feeling sorry for myself. Like, why do I have to be up taking care of this baby, having to breastfeed the baby? Just wanting my needs met, and they're not being met, like night after night. I'm not getting sleep…During the day then I wouldn't cry, normally. That's when I would get angry and want to yell. But at night then it would be no, I'm angry and I'm going to cry. (Ou et al., 2022, p. 1785)

In addition to the challenge involved in trying to meet both their own and their infant's needs, parents also describe the impact that holding the primary responsibility for their dependent infant's sleep can have on their feelings towards their infant, and on representations they hold of their infant. Those who perceive their infants to sleep well, not waking or disrupting parent sleep too much, frequently describe their infants as being "*good*" infants, as is the case with this mother: "*He's a good baby. He'll wake up at like 12:30 and I just have to make his bottle, and he'll go right back to sleep until the morning. Yeah it makes me sleep more too so, it's really nice*" (Zambrano et al., 2016, p. 496) and this father: "*We were lucky to have such a good child…in the beginning he was quite trying, didn't want to sleep, we had to carry him around the whole time, but now he sleeps well*" (Fägerskiöld, 2008, p. 67).

When describing their feelings towards their infants in the context of sleep, a number of other parents also seem to attribute a degree of intent to their infants' frequent waking and related disturbance of their own sleep, with one mother describing how she "*…struggle*[s] *at night because … he doesn't let me sleep"* (Gray et al., 2022, p. 7) and another saying of her infant daughter *"She keeps me up late.* [I'm] *tired."* (Cox et al., 2021, p. 126).
There were two accounts that describe how parents who find their infant's sleep needs difficult to manage can struggle with negative feelings towards their infant to the extent that the parent-infant relationship is placed at risk:

> Yeah ... and then I have to hold her and sit up with her all night ... I think I hate her. (Doering et al., 2017, p. 138)

> …with the child not sleeping I was at the point where I probably could have abused him. (Noble et al., 2002, p. 7)

This emotional response to the challenge of meeting both their infant's and their own needs can often be linked to some parents' expectation that they should be able to control their infant's sleep:

> I definitely had a lot of anger around sleep. I attribute it back to the inability to control his sleep. And then getting frustrated with, why the hell won't you sleep, and what's wrong with you, what's wrong with me, because I haven't been able to fix it for him, I haven't been able to make him more comfortable or figure out what's causing the problem. (Ou et al., 2022, p. 1785)

When this expectation of being able to control or "fix" their infant's sleep is not realised, parents can interpret the outcome as being evidence of something being "wrong" with themselves or their infant or as a negative reflection of their parenting competence. Five of the included studies (Ou et al., 2022; Rolls & Hanna, 2001; Shorey et al., 2017; Tse & Hall, 2008; Veltkamp et al., 2020) describe the negative impact of difficulty settling their infants to sleep can have on parents' sense of competency, a response which can be further compounded by the expectations or judgement of others within or outside the family, with one mother describing how her "*…husband actually says I shatter his confidence and sometimes he feels like he's just totally inadequate and hasn't got a clue what he's doing because I'll come in and say what are you doing the baby's still crying*" (Rolls & Hanna, 2001, p. 51). Conversely, some parents describe the positive impact of experiencing success in settling their infants to sleep on their sense of competence, with one father describing how he experienced a "*sense of achievement"* and "*joy*" when he succeeded in settling his infant to sleep (Shorey et al., 2017, pp. 2990-2991).

Some parents describe addressing their need to exert some control over their infant's sleep by delaying or avoiding responding to their infant if they cry when put to sleep or when

they wake during the night, an approach often known as sleep training. This mother explains how she is trying to change her infant's sleep pattern to reduce interruptions to her own sleep:

> …I need to stick to my goal of changing her feeding pattern to improve her sleep. But I am the one, the only one, taking care of my baby…and... so I want her to sleep overnight… I need to be persistent taking these actions…I mean…changing her feeding pattern to improve sleep… otherwise I will be exhausted by her sleeping patterns. (Tsai et al., 2014, p. 752).

Some parents describe trying sleep training with the expectation that decreasing their infants' dependency on them to go to sleep will lead to a reciprocal increase in their own sense of independence and control:

> I think it's more like giving them the confidence to do it by themselves, so that they don't have to have mum, its ok to go and do something on your own kind of thing, well I think that was my push. (Jones et al., 2017, p. 34)

> They need to gain the skills to fall asleep on their own, and if their parents are always helping them fall asleep, then you could have a five year old that still needs parents to fall asleep, and that's not really what most parents aspire to have for their children. (Tse & Hall, 2008, p. 165)

Sleep training is described as having a positive impact on some parents' sense of control with this mother saying that the resulting improvement in her own sleep meant that "*life was more predictable, it gave us more control… I feel like somewhere along the line all the problems have dissolved away and I'm back on track. I feel like a new woman"* (Noble et al., 2002, p. 8). Other parents can find that sleep training comes with at an emotional cost to them, however, with many describing the advice not to respond immediately to their infant's cries as emotionally demanding or personally distressing. This mother, for example, finds that the approach challenges her instincts to stay and enjoy watching her infant settle to sleep:

> Then I'm tucking him in nicely and I'm consciously leaving the room, since I want him to fall asleep by himself. […] So that you're not tempted to stay with him and watch him fall asleep. While this is very cute, but … no, I really try to walk away, close the door and make myself doing that. (Veltkamp et al., 2020, p. 5)

This mother describes how distressing it can prove when a parent can hear but not respond to the cries of their infant: "*When you hear a little baby that you love so dearly, you feel like your heart is torn out and you just can't, it's very hard to do it because you can't go anywhere to get away from it either"* (Rolls & Hanna, 2001, p. 51)

While some parents experience this emotional discomfort, they describe persevering with sleep training motivated by their hopes of independent infant sleep and their own beliefs around the lack of harm caused to their infant:

> I didn't know whether it was going to work… It was a bit harrowing having to persevere with not going to him immediately, but in the long run it was fine; however, I had to remind myself that it wasn't going to hurt him. (Noble et al., 2002, p. 7)

Some other parents, however, do not share this confidence, expressing concern that not responding to their infant's cries would have a long-term negative impact on their infant and on their relationship, like the mother who shares that she "…*had fears of this child being emotionally tormented at 16 and remembering that her mother never went to her."* (Rolls & Hanna, 2001, p. 52). Other parents describe finding the approach too emotionally challenging to persist, explaining how they eventually relent and respond to their infant's cries. This mother says: *"…we felt bad she cried so hard, that's why we finally picked her up…"* (Tse & Hall, 2008, p. 167); while another mother describes not responding to her infant as simply too emotionally difficult: "*I just don't have the strength to leave her, I'm just like no, especially when they start crying hard out. But nah I can't do it* (Jones et al., 2017, p. 34).

Parents, arguing against sleep training share their views that not only is remaining with and supporting their infant better aligned with their personal parenting values, but it also proved, in their case, to be effective in settling their infants to sleep:

> I just can't handle hearing them cry for that long and plus it [a parent-assisted approach to settling] gets them to sleep faster. I mean sometimes it's long, sometimes it [sic] short. You know its ok to be there for your kids when you're trying to get them to sleep, I think just trust your instincts in the way that you want to get your baby to sleep. (Jones et al., 2017, p. 34)

> Yea pretty much, and it was easier to put her to sleep that way [with parent assistance] than just to lie her in her bed and let her cry. Everyone told me to leave her in her bed and let her cry, but I just couldn't do it. (Jones et al., 2017, p. 34)

While these parents have described their attempts at changing their infant's sleep behaviours; other parents find that they did not need to influence their infant's sleep at all as they seemed to have an innate ability or preference for independent sleep. This mother describes her infant as sleeping independently without any intervention from her to the extent that she feels that she is not needed: "*It's like she [baby] doesn't even need me. 'Okay, you changed me and gave me a bottle. Alright, bye. I can do the rest on my own*!" (Zambrano et al., 2016, p. 496) and another mother describes her happiness that her infant "…*knows how to self-soothe. He'll just wake up and open his eyes, turn, look, and close them back up… I'm so happy he does that… I don't have to pick him up, soothe him, or give him a bottle or anything*." (Zambrano et al., 2016, p. 496).

Contrary to the parents seeking to control their infants' sleep, some parents also describe being personally able to adapt emotionally to their infant's sleep demands. These parents describe reframing their infant's needs as being more important than their own or considering them within the context of their parental love, which they say helps them cope with holding the primary responsibility for their infants' sleep and with the related negative impact on their own sleep:

> I just realize that his needs are more important than mine and I'll find another time to sleep. It's just kind of an understanding of what's more important is probably the way I cope with it. (Runquist, 2007, p. 33)

> I feel good about myself because I know me being tired, I'm just making sure I make do for my baby. I love my baby regardless if he keeps me up all night and I don't get no sleep at all (Doering & Durfor, 2011, p. 263)

Parents describe a wide range of responses to the challenge of meeting both their own and their infant's sleep needs. When parents cannot settle their infants to sleep as quickly or easily as they expect, their sense of parenting competence can be negatively impacted. While some parents describe being able to minimise their own needs and prioritise their infants', others can struggle with the responsibility of supporting their dependent infant's sleep to the extent that they experience negative emotions towards their infant and, in some cases, the parent-infant relationship can be threatened.

In response, some parents seek to control their infant's sleep, through being less immediately responsive to their infant's cries at sleep times. This strategy, while effective for some parents, can often come at significant emotional cost.

Parents who actively support their infant to go to sleep and respond to their cries if they wake, described their approach to be easier, more emotionally affirming, and aligned with their values. There were two accounts from parents who described their infants as being innately independent sleepers, which one of the mothers described as making her feel happy, while the other mother described a feeling of being unneeded.

While many parents of infants described facing the same challenge of meeting mutual sleep needs, their responses to the inherent dynamics of control and independence varied widely, influenced by factors such as the fatigue or distress experienced by the parent; their feelings towards, and representations of, their infant; their chosen infant sleep strategies and personal values around independent infant sleep; and their infant's responses and sleep behaviours.

4.4.4 Theme Synthesis: Connection: Sleep and the parent-infant relationship

Many parents describe enjoying sleeping physically close to their infants, expressing a belief that this time spent together offers a sense of shared security, warmth, and comfort contributing to a strengthening of the parent-infant bond. These parents describe an emotional need to be with their infant, and perceive their infant to have a reciprocal need, with some parents describing a feeling of being incomplete or lonely when apart. Other parents choose to sleep separately to their infants as they perceive sharing a bed to present a risk to their infant that outweighs their need to be close or find that sharing a bed interferes with their own or their infant's sleep.

While supporting infant sleep often involves parents and infants sharing space during the night and day, parents also describe how their time use is inextricably linked to their infant's sleep and wake times. Parents control over their own time use can be dictated by the length of their infant's sleep periods; their infant's need to be physically close to them as they sleep; and in the shared time invested in the enactment of shared infant sleep routines.

The dependency of the infant on the parent to support their sleep can often lead to parents experiencing a loss of control and independence in terms of their time use or freedom to complete other tasks. While some parents find anticipating, accepting, or reframing their infant's dependency on them helps them to cope; others sought strategies to encourage their infants to go to sleep independently, and stay asleep for longer without seeking their parent's support. These parents' accounts illustrate the range of individual parent emotional responses resulting from their efforts to meet both their own and their infant's sleep needs.

4.5 Line-of-argument synthesis of the findings

In meta-ethnography, a line-of-argument is a statement or expression of the synthesis findings that "*puts the similarities and differences between studies* [and participant accounts] *into interpretive order"* in a way that is relevant to the intended audience (Noblit &Hare, 1998, p.64). In the case of this synthesis, the line-of-argument is expressed as both a written summary statement and a diagrammatic representation of parent-infant sleep as co-occupation.

4.5.1 Written line-of-argument synthesis

When describing their experiences of parent-infant sleep, parents depict a highly interactive experience that they engage in with their infant, with the aim of meeting their infant's and their own sleep needs, thereby maintaining mutual sleep-related wellbeing. Meeting both their infant's and their own sleep needs is a considerable and dynamic challenge which can be influenced over time by an increasing synchrony or asynchrony in parent-infant sleep patterns.

Both the parallel infant sleep-consolidation and parent sleep-adaptation processes that contribute to increasing sleep pattern synchrony have the potential to occur across multiple domains, including physical, cognitive, and behavioural, and are influenced by multiple individual parent and infant factors, such as infant's innate temperament, stage of development, and other physical and health factors; and the parent's expectations of infant sleep, their emotional health, their access to social support, and their repertoire of infant sleep support strategies (see Appendix H for a table of influencing factors).

While parents place great importance on supporting their infant's sleep and getting a good night's sleep themselves, they also often prioritise the need to protect their sleeping infant during the night over their own uninterrupted sleep. Parents who perceive their infant to be vulnerable or otherwise at risk describe a level of anxiety and related protective behaviours, such as repeated checking and monitoring, that can often interfere with their own sleep. Once they perceive their infant to be less vulnerable (due to age, size, health, or perception of strength) or they find continuous nighttime checking unsustainable, parents often seek alternative strategies that support both their own sleep and their need to monitor their infant's safety, for example using audio/visual technology or sleeping in close proximity to their infant for ease of checking. A reciprocal infant need to feel safe and protected was also perceived by parents to be expressed through their infant's preference for sleeping physically close to them. While the need to protect their infant is described by many parents, the range of perspectives on what represents a risk to sleeping infants and which safety strategies effectively reduce risk is wide, often contradicts official advice, and differs from one parent to the next, revealing a highly individualised decision-making process that involves negotiating parent and infant sleep needs, infant sleep preferences, and the parents' own perceptions of risk.

This on-going negotiation between parents' need to preserve sleep-related wellbeing and their need to protect their sleeping infant, occurs in the context of the parent-infant relationship which involves continuous negotiations of control and independence within shared space and time. Parents' experiences highlight how sharing space with their sleeping infant has implications for how parents spend their time. Many parents identified a need in themselves and their infants to remain continuously close to one another while the infant sleeps and while this physical proximity is often perceived as enjoyable and necessary, it can also be experienced as limiting parents' independence to complete other

tasks. An interdependence in daytime time use is established where infants are often dependent on their parents' proximity in order to sleep, and parents experience reciprocal dependence on their infants to sleep independently for long enough to allow them to perform other tasks such as resting, working, interacting with others, or caring for their other children. This dynamic of continuously negotiated space and time can involve a parent embracing or struggling with the considerable responsibility of supporting their infant's sleep, which can impact the parent-infant relationship. Different parents describe efforts to control their infants sleep through using settling strategies that require their direct involvement or, alternatively, through delaying or avoiding responding to their infant during sleep times. A parent's perceived ability to effectively settle their infant to sleep is described by some parents as improving their own and their infant's sleep and wellbeing, in addition to their improving their sense of parenting competence and enjoyment. Conversely, when parents struggle to settle their infant to sleep they can experience distress, a low sense of parenting competency, and, in some cases, a negative impact on their feelings towards and representations they hold of their infant.

4.5.2 Diagrammatic synthesis of the findings

While it is recognised that a diagrammatic synthesis can risk further reduction of rich qualitative data, it is included here to aid reader accessibility and contribute to structuring the discussion of the findings (see figure 4.2) (Atkins et al., 2008; France, Uny, et al., 2019; Noblit & Hare, 1988).

Figure 4.2

Diagrammatic representation of parent-infant sleep as co-occupation

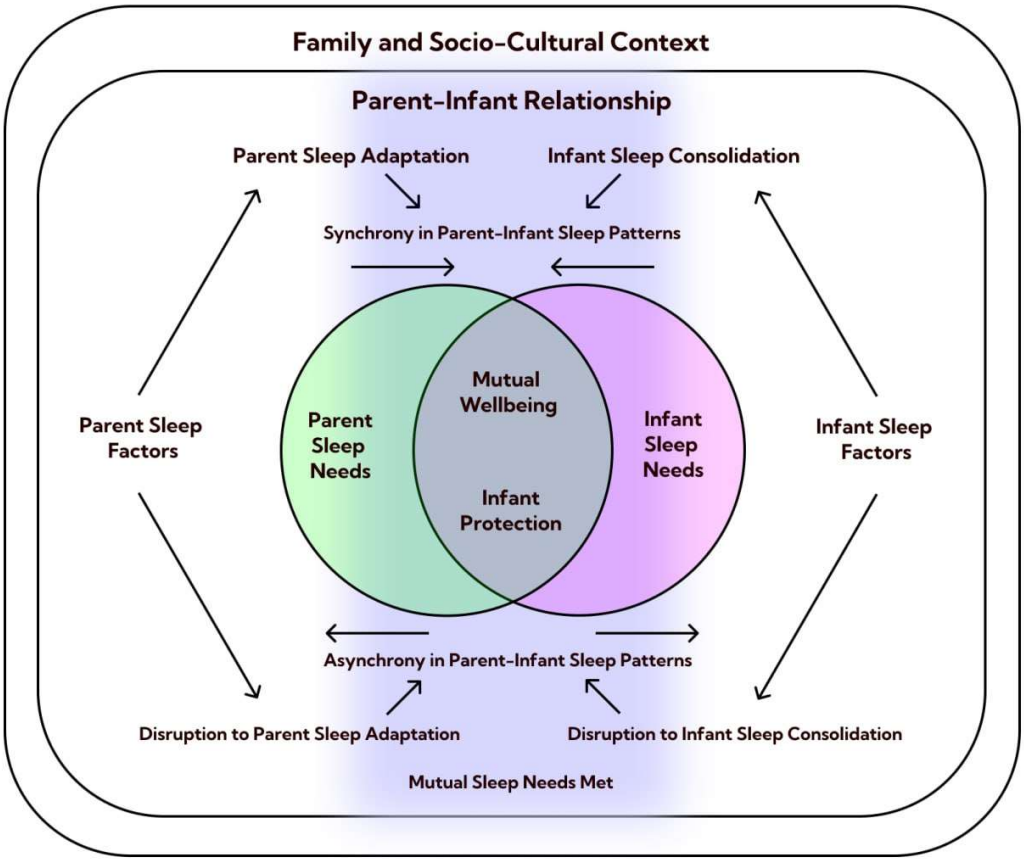


Figure 4.2 encompasses the three themes generated from this synthesis through representing the interaction between the parent and infant sleep needs of mutual wellbeing and infant protection, identified in the first and second themes, as two interlocking circles in the centre of the diagram. The third theme of 'connection: sleep and the parent-infant

relationship' is represented by the inner rectangle that contains the two interlocking circles and serves to demonstrate that the negotiation of mutual wellbeing and infant protection is occurring within the context of the parent-infant relationship. The three themes are then embedded in an outer rectangle representing the influences of the wider familial and socio-cultural context that is relevant across all three themes. The interlocking circles are represented as being in dynamic motion in order to reflect parents' described experiences of parent-infant sleep as non-linear involving transient or persistent periods of sleep pattern synchrony and asynchrony. Greater portions of circle overlap represent the experience of increasing parent-infant sleep pattern synchrony. A smaller portion of circle overlap represents an experience of parent-infant sleep pattern asynchrony.

The parent sleep-adaptation and infant sleep-consolidation processes are shown as influencing the experience of parent-infant sleep pattern synchrony with the impact of disruption to either or both processes leading to increased asynchrony. The parent sleep-adaptation and infant sleep-consolidation processes are shown to be influenced by both individual parent and infant factors (see Appendix H for the *Table of Influencing Factors* generated from the findings of this study.

4.6 Conclusion

In summary, parent-infant sleep is described by parents as an interactive and dynamic experience involving a bidirectional relationship between their infant's and their own sleep needs. These mutual sleep needs can be summarised as the parent and infant getting enough good quality sleep to support mutual wellbeing, while both also experiencing a sense of infant safety and security. Both individual and broader contextual factors were described as influencing whether parent-infant sleep patterns were experienced as synchronous, where both parent and infant sleep needs are sufficiently met, or

asynchronous, where parents perceive that their infant's or their own needs are not being adequately met. Parent-infant sleep was perceived to occur in the context of the parent-infant relationship which can involve on-going negotiations of shared space and time and can impact, both positively and negatively, on the parent's sense of general parenting competence, enjoyment, and the representations they hold of and their feelings towards their infant**.**

CHAPTER 5: DISCUSSION

5.1 Introduction

In this chapter, I will discuss the synthesis findings in the context of existing literature. I will also outline the implications for practice, consider the limitations of this study, and conclude the chapter with recommendations for future research.

The aim of this meta-ethnographic synthesis was to generate a novel understanding of parent-infant sleep by exploring the phenomenon through the lens of co-occupation. This was achieved through describing parents' co-occupational experiences of parent-infant sleep; exploring parents' perspectives on the interactions between their own and their infant's sleep patterns and activities; and consideration of the spatial, temporal, and relational aspects of parent-infant sleep consistent with the conceptualisation of co-occupation.

This synthesis' findings have identified that parent-infant sleep is a highly interactive and dynamic co-occupational experience, where mutual wellbeing needs and infant protection needs are negotiated within the context of the parent-infant relationship. Parent-infant sleep patterns can be experienced as synchronous, when the parent perceives both their own and their infant's sleep needs to be adequately met; or asynchronous, where either or both parties' sleep needs are perceived to be inadequately met. Individual parent or infant factors and family and socio-cultural factors were identified as having the potential to influence the extent to which parent-infant sleep patterns are experienced as synchronous or asynchronous.

5.2 Parent-infant sleep viewed through the lens of co-occupation

To my knowledge, this is the first qualitative evidence synthesis to apply the lens of co-occupation to parents' experiences of parent-infant sleep. To date, the literature has primarily considered infant and parent sleep in isolation from one another (Whittingham & Douglas, 2014). In the instances where parent-infant sleep has been considered as one interactive phenomenon, the focus has been given to one aspect, such as infant sleep location (Ball, 2002; McKenna & Volpe, 2007); parenting and infant sleep problems and interventions (Sadeh et al., 2010; Whittingham & Douglas, 2014); infant feeding and sleep (Ball, 2003); and family and contextual influences on infant sleep (D'Souza & Cassels, 2022; Teti et al., 2022). For the most part, existing parent-infant sleep literature has also privileged consideration of the quality and quantity of infant sleep over the impact of infant sleep on new parents' sleep (D'Souza & Cassels, 2022; Sadeh et al., 2010; Teti et al., 2022; Whittingham & Douglas, 2014). This synthesis has generated a novel understanding of parent-infant sleep as being inherently and consistently interactive and co-occupational, while being characterised by varying degrees of sleep pattern synchrony involving on-going negotiation of mutual sleep wellbeing and infant safety needs within the context of the parent-infant relationship and broader socio-cultural influencing factors.

By applying the co-occupational theoretical lens, this synthesis offers a description of parent-infant sleep that extends beyond assumptions of homogeneity within groups of parents and infants according to their culture, feeding methods, sleep locations, parenting approaches, or compliance with safe sleep guidelines to a describe the aspects of engaging in parent-infant sleep that are commonly shared by parents irrespective of their values, beliefs, sleep practices, or background. While the described parent-infant sleep experiences were diverse, parents' need for mutual sleep-related wellbeing and infant protection and security during shared sleep activities was consistent across studies. The

degree to which parents described being able to meet those mutual sleep needs also differed; however, the highly interactive nature of parent-infant sleep activities was present across the range of parents' accounts. In addition, with reference to the Barnekow and Davel Pickens (2011) conceptualisation of co-occupation, the degree to which physicality, intentionality, emotionality, and communication were shared between the parent and infant during sleep activities varied; however, parents invariably described how the occupational performance of parent-infant sleep activities of one shaped the other's, consistent with Pierce's definition of co-occupation (2003). Parents described, for example, how their infant's communication of their nighttime feeding and emotional security needs interrupted their own sleep; how their freedom to complete domestic and social tasks relied on their infant staying asleep for long enough during daytime naps; and how their choice and preparation of their infant's sleeping environment could determine how well, long, and how safely their infant subsequently slept.

The co-occupational experience of parent-infant sleep was described as being dynamic, consisting of periods where parents perceived both their own and their infants' sleep needs to be adequately met and of periods where they perceived the sleep needs of one or both as being inadequately met. The majority of parent accounts in this synthesis described the task of meeting mutual sleep needs as being particularly challenging in first postnatal months and intermittently challenging thereafter due to transitory infant maturational or health events; however, for a minority of parents this challenge in meeting one or both of their sleep needs persisted. This synthesis conceptualises the co-occupational experiences of parent-infant sleep where both parent and infant sleep needs are adequately met as being synchronous and where the sleep needs of parent, infant, or both are inadequately met as being asynchronous, offering a new understanding of how the processes of parent sleep-

adaptation and infant sleep-consolidation can contribute to satisfactory co-occupational engagement in parent-infant sleep.

The findings of this synthesis have also detailed a wide range of interactive parent and infant sleep activities incorporated within the co-occupation of parent-infant sleep, mirroring the list of sleep preparation and sleep participation activities identified within the AOTA practice framework (2020) (see figure 2.1). Parents described shared routines; interdependent sleep and daytime scheduling; management of synchronous and asynchronous sleep patterns; parent preparation of the infant sleep environment to promote sleep and safety; sleeping and napping together and apart; parents waking to feed or settle their infant; parent monitoring of infant safety; and parents supporting their infant's and their own sleep onset and maintenance. This description of interactive parent-infant sleep activities makes a novel contribution to the existing knowledge base and has utility in describing the reality of participation in parent-infant sleep as it occurs in parents' everyday lives.

Parents' experiences of and perspectives on the interactions between their own and their infant's sleep patterns and activities varied greatly. Different parents described a range of personal perspectives such as considering their infant's sleep patterns as either synchronous or asynchronous with their own; perceiving their sleeping infant to be vulnerable to risk or describing confidence in their own protective instincts; viewing bedsharing with their infant as either protective and an opportunity for bonding or unsafe or undesirable; perceiving either their infant or themselves to be in control of sleep and wake times; and viewing infant sleep onset as requiring their active intervention or as an opportunity to promote infant independence. These findings are consistent with previous research on the perspectives of parents on infant sleep that highlighted the wide range and

subjectivity of parents' perspectives on infant sleep behaviours and practices (Zanetti et al., 2022). In addition to describing the range and subjectivity of parents' experiences and perspectives, this synthesis also highlights individual developmental differences and normal variability in typical infant sleep contributing towards the increasing recognition in the literature of the range of "*meaningful individual differences"* in individual infants' sleep patterns and behaviours (Bernier et al., 2010, p. 1741; Zanetti et al., 2022). As considering the "*wholeness and subjective experience"* of participation in interactive parent-infant activities upholds a central tenet of the co-occupational perspective (Pierce, 2009, p. 205), this synthesis further emphasises the importance of recognising the subjectivity of individual experiences when seeking to understand the phenomenon of co-occupational parent-infant sleep.

Pierce's (2009) conceptualisation of co-occupation also offers an understanding of the aspects of parent-infant sleep that were not experienced as positive by the parents in this synthesis. Pierce argued that while negative co-occupational experiences might be indicative of co-occupational performance difficulties and a need for support, they are not considered as less co-occupational than positive shared experiences as they can remain inherently highly interactive. While research on parent-infant co-occupations to date has typically described parent-infant co-occupation as an opportunity for positive interactive experiences (Aubuchon-Endsley et al., 2020; Cardin, 2020; Price, 2009; Richter, 2023; Whitcomb, 2012), the findings of this synthesis expand the understanding of sleep as a parent-infant co-occupation to describe how challenging parent-infant co-occupational experiences of sleep are no less interactive or co-occupational irrespective of the degree to which they are experienced as positive or the extent to which space, intention, communication, or emotions are shared. Some parents, for example, described how their struggles supporting their infant's sleep could lead to negative feelings toward their infant

due to the impact on their own sleep; for others, sharing space with their sleeping infant impacted negatively on their sense of independence to do other tasks or on their sense of control over their own time; others described a perception that their infant did not share their intention to go to sleep as they actively worked to settle them; descriptions of shared emotions often involved parents' distress at hearing their infants cry; and parents' struggles with settling their infant to sleep or establishing their infant's sleep needs indicate the possibility of difficulties with shared communication.

Barnekow and Davel Pickens (2011) proposed that co-occupations could be categorised on a spectrum ranging from foundational to complex with placement on the scale determined by the degree to which all four aspects of physicality, emotionality, intentionality, and communication are shared. The findings of this synthesis, however, suggest that participating in parent-infant sleep remains highly interactive irrespective of the degree to which the parent and infant share space, intentions, communication, and emotions at any given time and that measurement of the degree to which parents and infant sleep needs are met, a concept described by this synthesis as parent-infant sleep synchrony, could have utility as a meaningful measure of satisfactory engagement in the co-occupation of parent-infant sleep.

5.2.1 Sharing space and shared physicality in parent-infant sleep

When considering the co-occupational aspect of shared physicality and space, parents' experiences and perspectives were diverse. The need for both to get good quality sleep and for the infant's sleep space to be safe remained consistent across studies, however, irrespective of the degree of shared physicality. This synthesis' findings describe how parent-infant sleep was no less interactive, or co-occupational, when parents and infants slept in separate spaces compared to a shared sleep space, with parents describing how

they continued to monitor and meet their infant's sleep safety and wellbeing needs irrespective of the distance between their respective sleep locations. While it has been long-established in the literature that sharing a sleep space can offer parents and infants a sense of individual or shared enjoyment, bonding, reassurance, or safety (Ball, 2009; McKenna & McDade, 2005; McKenna and Mosko, 1994), this synthesis also highlighted some parents' experiences that separate sleep spaces can also meet mutual parent and infant sleep needs and involve aspects of shared communication, such as when the parent percieves the infant's to express a preference for a separate sleep space, and shared emotion, such as when the mother describes how her love for her infant does not fade with distance between their sleep locations.

While their experiences remained inherently co-occupational irrespective of the degree to which physicality or space was shared, the extent of parent-infant sleep synchrony varied over time and between parent-infant dyads. Parents described synchronous parent-infant sleep experiences related to sharing space, such as mutual enjoyment of staying close while sleeping, and asynchronous experiences, where parents experienced a sense of loss of personal control and independence because of their infant's conflicting need to remain in physical proximity to them while sleeping.

The broader spatial aspect of parent-infant sleep, described in these findings, where parents described how their infants slept in a range of different locations within and external to the home to facilitate parent-infant proximity across a 24-hour period is under-represented in the current body of research. One ethnographic study that did explore the "geographies" of parent-infant sleep described how the arrival of an infant changes the spatial and temporal order of the prenatal home by eroding the differentiation between day and night and extending the range of both parent and infant sleep locations throughout the house

which reflects the intersection between shared space and time parent-infant sleep also described in this synthesis (Tomori & Boyer, 2019). The Tomori and Boyer study also echoed the findings of this synthesis in describing how parents experience their infants as exerting control over their sleep location irrespective of their parents' wishes or safety considerations. This dynamic can result in parent and infant sleeping arrangements that can often contradict both official safe sleep guidelines and the parents' own prenatal plans, highlighting further co-occupational intersectionality of shared space, time, and intentions in parent-infant sleep. This finding has particular relevance when considering how sharing space and physicality is often considered unsafe in the case of bedsharing (Volpe et al., 2013) or as a possible cause of infant sleep problems when considering parents' choice of settling strategies (Sadeh et al., 2010). Conceptualising parent-infant sleep as co-occupational incorporates the complexity and diversity of parent experiences and perspectives and, when considering the aspect of sharing space and physicality, offers a new understanding of the range of interacting factors that can influence parents' safe sleep decisions beyond awareness of official safe sleep guidelines alone.

5.2.2 Parent-infant sleep and sharing time

While engaging in the co-occupation of parent-infant sleep, the parents in this synthesis held various perspectives and had a range of experiences of sharing time with their sleeping infant. Many of the parents' accounts described efforts to control their infants' sleep schedules with the aim of achieving uninterrupted sleep themselves or gaining freedom to undertake other tasks independent of their infant. However, a different group of parents described an alternative preference for more flexible infant-led schedules that they described as offering them independence from strict infant sleep and wake times. One recently published study exploring the impact of a responsive-parenting intervention on parent-infant co-occupations (Crawford et al., 2023) echoed this finding that some mothers

prefer infant-led sleep timing to a strict parent-led schedule as it affords them more flexibility to socialise and participate in activities outside the home during the day. While official advice to parents often directs them to establish a regular day and night sleep schedule for their infants from three months of age onwards (HSE, 2023b), this synthesis' findings, by viewing parent-infant sleep through the lens of interactive co-occupation and describing the needs of both parent and infant in terms of time-use, makes a case for a more nuanced approach to infant sleep scheduling that recognises both the infant's sleep needs and the parent's need for a degree of agency in the use of their own time.

5.2.3 Infant intentionality and parent agency in parent-infant sleep

Many parents in this synthesis described how they experienced their infants as intentional, describing them as communicating their preferences and exerting control over when, where, and how they went to sleep. While positive responses from parents to their infant's intentional behaviour is often considered to be supportive of the infant's development (Polkinghorne, 1996), the parents in this synthesis also described the potential negative impact on their own sense of competency when they felt that their infant had complete control over their own sleep schedule or when they perceived their infant to be intentionally resisting their efforts to settle them to sleep. Parents described their experiences of supporting their infant's sleep as having the potential to impact on their feelings towards their infant and on the representations they held of their infant. While, in these instances, parents and infants could be described as not sharing intentions and emotions, their engagement in parent-infant sleep nonetheless remains highly interactive, or co-occupational, as they continue in their efforts to settle their infant to sleep. Defining parent-infant sleep as inherently co-occupational, irrespective of the degree of synchrony, is consistent with Pierce's assertion that engagement in co-occupations cannot be solely defined as positive experiences as this "*narrows its definitions and denies the fullness of its*

power… Abstaining from the glorification of occupation or co-occupation as solely reflective of peak experiences will result in the type of clarity that will better support the maturation of occupational science" (2009, p.205). While this understanding defines parent-infant sleep as co-occupational irrespective of whether the parent or infant is experiencing it as positive or negative, the concept of parent-infant sleep synchrony / asynchrony generated from this synthesis has relevance when considering the degree to which parent-infant sleep needs are being met.

This potential relationship between parents' perception of their infant's sleep as problematic, their sense of competency in supporting their infants' sleep, and the impact on the parent-infant relationship has also been identified in previous research. For example, the findings of a survey conducted by Scott and Richards also found a correlation between infant sleep problems and mothers feeling like they were being "*dominated"* by their infant and speaking negatively of their infant (1990, p. 283). The potential contribution of viewing this correlation through the lens of co-occupation lies in understanding the impact of a perceived sense of being in control (or having agency) on parents' co-occupational experiences. Zemke and Clark (1996) stressed that "*we must explore, recognise, and celebrate the active agency of both participants"* (p. 213) in the co-occupations of mothers and infants, emphasising the evidence that infants are capable of exercising control during interactive activities with their parent. This synthesis highlights how, in addition to recognising the agency of the infant, the parents' sense of agency, their sense of parenting competence, and their perception of intentions being shared with their infant during the co-occupation of parent-infant sleep is also worthy of attention.

5.3 The impact of parent-infant sleep on the parent-infant relationship

This synthesis has described how parent-infant sleep is enacted as co-occupation within the context of the parent-infant relationship. Parents described how parent-infant sleep often involves sharing space and time with their infant and can be experienced as a negotiation of control and independence between parent and infant. For some parents the spatial and temporal interdependence of parent-infant sleep was experienced as enjoyable and as reinforcing the parent-infant bond, whereas for others it could be experienced as a distressing challenge to their sense of control and independence and lead to negative feelings towards their infant.

Consistent with the findings of this synthesis that the degree of synchrony experienced during parent-infant sleep can have an impact on the parent-infant relationship, a review by Whitcomb (2012) exploring co-occupation and the parent-infant relationship identified the potential impact of co-occupational experiences on the development of mother-infant attachment. Whitcomb offers a viewpoint on parent-infant synchronicity (attunement, shared intention, and shared attention) which can further illuminate the experiences described by parents in this synthesis. Whitcomb states that, in co-occupational experiences, the synchronicity between the parent and infant is inevitably broken at times, and that such an expected and healthy event should not lead to the assumption that the parent-infant relationship is at risk of damage. In fact, the learning and adaptation that occurs in response to the rupture in synchronisation holds the potential to strengthen the relationship; however, there is the potential for harm to the relationship if re-synchronisation does not occur. While Whitcomb was specifically referring to the construct of synchronicity in parent-infant interactions, both the rupture and repair dynamic and parent learning and sleep-adaptation processes have relevance when

considering the findings of this synthesis, particularly in the instances where parents describe experiencing parent-infant sleep as persistently challenging or negative.

Citing the significance of this potential link, identified in Whitcomb's (2012) review, between parent-infant co-occupation and attachment and bonding in parent–infant relationships, Aubuchon-Endsley and colleagues (2020) subsequently conducted a study of the relationship between parent-infant co-occupation and reciprocity. The study involved analysing reciprocal interactions between infants and caregivers during videoed free play across the co-occupational domains of physicality, emotionality, and intentionality at three time points when the infants were 8, 12, and 16 months old. Consistent with this synthesis, the findings of the study described how the nature of parent-infant co-occupational interactions often changed over time. This finding reflects the dynamic nature of parent-infant sleep co-occupational interactions, identified in this synthesis as consisting of periods of both sleep pattern synchrony and asynchrony with the potential to impact on and be impacted by parent-infant relationship factors. While the primary data used in this synthesis did not offer the possiblity to isolate specific changes in reciprocal physicality, emotionality, or intentionality in the same parent-infant pairs at particular time points, a wide range of responses to the co-occupational aspects of parent-infant sleep was described by a range of parents of infants of different ages. Parents in this synthesis, for example, described a range of emotional responses to their infants' dependency on them to feel emotionally secure while sleeping; how they were able to better discern their infant's intentions in terms of sleep preferences with time; and how they moved their infant from a shared to a separate sleep space once they were older in order to preserve their own sleep. This highlights the need for futher research to explore how patterns of shared physicality, intentionality, emotionality, and communication during parent-infant sleep can change over time with reference to their potential impact on the parent-infant relationship.

5.4 The interplay of parent and infant sleep needs

Through viewing parent-infant sleep through the lens of co-occupation, the findings of this synthesis' have highlighted the subjective and dynamic experiences of both the parents and infants, while identifying the inherently interactive, co-occupational nature of parent-infant sleep. Getting enough good sleep, for both themselves and their infants, was described as important by parents because of the potential negative impact of poor sleep on their wellbeing. Parents also described how their need to protect their sleeping infant can lead to anxiety and protective behaviours that can interfere with their sleep. In addition, infants were perceived by their parents to express a reciprocal need to be protected which also impacted parents' infant sleep practices and decision-making. This interplay of parents' and infants' sleep needs is conceptualised in this synthesis as parent-infant sleep synchrony and has been described in the findings as an influencing factor in satisfactory engagement in co-occupational parent-infant sleep.

5.4.1 Mutual wellbeing as a parent-infant sleep need

While existing models of infant sleep capture much of the complexity and transactive nature of the phenomenon (Sadeh et al., 2010; Teti et al., 2015; Whittingham & Douglas, 2014), this synthesis of parents' accounts offers an extension of this understanding by also describing the interplay between both parent and infant sleep needs and their mutual wellbeing without privileging one over the other. Parents described how they were concerned that poor sleep would impact on their infant's mood, growth, and general health and functioning, while also describing how their infant's sleep patterns disrupted their own sleep which could lead to a reduced sense of their own wellbeing across physical, cognitive, and emotional domains. Existing multi-disciplinary research confirms this link between infant sleep patterns and parents' physical and mental wellbeing in the first two postnatal years and beyond (Bayer et al., 2007; Giallo et al., 2011; Hiscock & Wake, 2001;

Martin et al., 2007; Scott & Richards, 1990). Poor physical and mental health related to disrupted parent sleep has also been shown to have a potential impact on parents' daytime functioning and their emotional regulation and availability (Giallo et al., 2011; King et al., 2020; Lollies et al., 2022) which has implications for parents' interactions with their child (Bayer et al., 2007; Kienhuis et al., 2010; McQueen & Mander, 2003). This established interplay between the sleep-related wellbeing of both infant and parent reinforces the relevance of the conceptual lens of co-occupation which recognises the highly interactive and bidirectional nature of parent-infant sleep and the mutual, interdependent sleep needs of both parent and infant. The conceptualisation of parent-infant sleep synchrony within the findings of this synthesis offers a new conceptual understanding of how satisfactory engagement in parent-infant sleep activities can support mutual wellbeing.

5.4.2 Parents' need to protect their infant

Parents in this study described how they experienced an instinctive need to protect their sleeping infant from risk of harm or death that can compete with their infant's sleep preferences and their own need to sleep. This tension between both parents and infants getting a good night's sleep and infant sleep safety has not been widely acknowledged in the literature and is an important consideration when seeking to promote safe parent-infant sleep practices.

The findings of this synthesis also highlight parents' anxiety around their infant's sleep safety as a common parental experience. While many parents described anxiety, stress, and fear related to infant sleep safety, the protective behaviours and risk-reduction decisions taken in response were varied and often contravened prevailing public and professional safe sleep advice. While a search of the literature reveals a considerable body of research investigating parents' understanding of and adherence to official safe sleep

guidelines, there is little acknowledgement of parents' anxiety around the risk of adverse infant sleep events or of the consequent impact of that anxiety on their sleep. One study that surveyed mothers' anxiety around infant sleep safety in the context of a national infant safe sleep campaign reported that "*almost all"* mothers reported some anxiety around cot death (Cooper & Lumley, 1996, p. 313). Through exploration of interacting influencing factors on both parent and infant sleep in the first two years, the findings of this synthesis further extend this understanding that societal factors such as public campaigns and professional advice can impact infant sleep safety but can also lead to increased parental anxiety for their sleeping infant's safety to also highlight the impact that this anxiety can have on parents' own sleep and consequently, their sleep-related wellbeing. Again, reflecting the diversity of parents' co-occupational experiences, this synthesis also described how other parents have the converse experience of being reassured of their sleeping infant's safety when they adhere to such guidelines.

The perspectives expressed by some parents in this study, that sharing a bed with their infant is protective rather than unsafe, has gained traction in the literature, despite being in contravention with much of the prevailing public health advice (AAP Task Force on SIDS, 2022; Gordon et al., 2015; McKenna & Volpe, 2007; Volpe et al., 2013). Parents being able to check on their sleeping infant's wellbeing with minimal disturbance to their own sleep was shown by this study to be an important factor in their decision to share a bed with their infant. This reflects similar findings from previous studies of parents' rationale for bedsharing with their infant (D'Souza et al., 2023; Ward, 2015). Parents in this synthesis also addressed their need to protect their infant while meeting their own sleep needs by using technology to monitor infants sleeping at a distance. This is of interest as both these solutions, of bedsharing and using technology to protect the infant while permitting the parent to sleep, are identified as possibly elevating the risk of SIDS that

parents are seeking to minimise (AAP Task Force on SIDS, 2022; Ball & Keegan, 2022). This study makes an additional contribution towards the understanding of parents' experiences of decision-making around infant sleep safety through acknowledging the importance of infant sleep safety to parents, while also revealing that sleep practices and perception of risk vary from parent to parent, with potential influencing factors including parent's values, their sleep needs, level of parenting experience, their subjective perception of their infant's vulnerability, narratives in their family and social circles, their response to public health campaigns, and cultural traditions

5.4.3 Safety and survival as an infant sleep need

By exploring parent-infant sleep through the co-occupational lens, this synthesis has highlighted the challenge that many parents experience in their efforts to ensure their infant's sleep safety while also meeting mutual sleep needs. This study found that some parents perceive their infants as intentionally communicating a need to be protected through their behaviours and responses, such as only sleeping when they are physically close to their parents and crying when put to bed alone. Mirroring this finding, evolutionary anthropologists have also expressed the view that infants preferring to sleep in contact with their mother is an intentional survival mechanism of the dependent infant, allowing them to feed with ease and to avail of the protection of their mother while sleeping (Ball et al., 2019; McKenna & McDade, 2005). The findings of this synthesis also confirm existing evidence that parents recognise and respond to their infants' survival behaviours that intentionally seek proximity (Ainsworth, 1969). This synthesis, however, uniquely describes how responding to the need to ensure infant safety can give rise to a tension between their perceived infant's wishes, parents' personal instincts, cultural beliefs that closeness is protective, parents' own sleep needs, and the prevailing public health advice that sharing a bed presents a risk of infant injury, suffocation, or SIDS. In this

regard, exploring the co-occupational nature of parent-infant sleep has generated a novel understanding of how parents' intention to meet the mutual parent-infant sleep need for infant safety can involve complex, multi-factorial, and interactive negotiation between parent, infant, and their external context and can often be experienced as being in conflict with their mutual need for enough, good quality sleep.

5.5 Asynchrony and synchrony in parent-infant sleep patterns

This synthesis describes how parent-infant sleep patterns can be experienced as synchronous, when the parent perceives both their own and their infant's sleep needs to be adequately met, or asynchronous, where either or both parties' sleep needs are perceived to be inadequately met. Parents in this study described the positive impact of sleep pattern synchrony and, conversely, the negative impact of sleep pattern asynchrony, on their own sleep and perceived wellbeing. While the phenomenon of parent-infant sleep pattern synchrony / asynchrony is recognised, existing research focuses primarily on the infant sleep-consolidation process (McKenna & Mosko, 1994; Thomas et al., 2014; Tsai et al., 2011; Whittingham & Douglas, 2014). The parallel process of parent sleep-adaptation described by parents in this study is under-represented in the literature. While there are descriptions of the postnatal sleep-related changes that parents can experience across the physiological (McKenna et al., 2007; Parsons et al., 2022); behavioural (Hunter et al., 2009; Matsumoto et al., 2003; Quillin, 1997; Whittingham & Douglas, 2014); and cognitive (Sadeh et al., 2007; Whittingham & Douglas, 2014) domains there are few studies that holistically represent parents' sleep adaptation as a process co-occurring with their infant's sleep-consolidation as described in this synthesis. One study evaluating an intervention that aimed at supporting both the infant sleep-consolidation and parent sleep-adaptation processes was perceived by participating parents to "*align parent and infant needs"* and improve their quality of life (Ball et al., 2018, p. 524; Whittingham & Douglas,

2014) highlighting the possiblity that interventions aimed at supporting the process of parent sleep-adaptation, in conjunction with infant sleep-consolidation, have the potential to enhance parent satisfaction when participating in parent-infant sleep. In this synthesis, the construct of co-occupation has extended the understanding of satisfactory parent-infant sleep to describe both parents' and infants' concurrent sleep needs in detail and also consider how these needs interact to achieve greater or lesser degrees of parent-infant sleep synchrony within the context of their relationship and their broader socio-cultural environment. The description of parent-infant sleep synchrony has the potential to inform an understanding of the interaction and complexity of factors that can contribute towards the satisfactory participation in co-occupational parent-infant sleep activities.

5.6 The influence of family and socio-cultural factors on parent-infant sleep

Pierce's (2009) understanding of co-occupation both acknowledges the external transactional influences of the socio-cultural context while also retaining an emphasis on the participants' internal subjective experiences of co-occupation. The influence of family, society, and culture on infant sleep specifically, as described by parents in this synthesis, has been recognised in the literature since Sadeh and Anders' transactional model of infant sleep was first introduced in 1993 (Teti et al., 2022). In the Sadeh and Anders transactional model, factors intrinsic to the infant (such as constitution, health, maturity, and temperament) are presented as interacting with proximal extrinsic factors (such as parenting) and distal extrinsic factors (such as family, environment, and culture) to influence infant sleep patterns, schedules, duration, and quality (Sadeh & Anders, 1993; Sadeh et al., 2010). Consistent with Sadeh and colleagues' (2010) model, this synthesis describes how infant sleep can be influenced at family level by a range of factors; however, the co-occupational lens extended the findings of this synthesis to also highlighting the impact of the familial and socio-cultural environment on new parent's sleep. Parents in

this study identified the opinions of, and advice from, other family members and wider family experiences (of typical infant sleep patterns or infant death in their extended family) as influencing their experience of parent-infant sleep. While the transactional model broadens the influencing factors within the family beyond the findings of this synthesis to include levels of support and stress, parent relationships, and sibling rivalry (Sadeh & Anders, 1993; Sadeh et al., 2010), the co-occupational lens applied in this synthesis deepens the understaning of the dynamic, bidirectional interaction between parent and infant sleep needs situated within their relationship, the family, and their socio-cultural context. Parents' accounts included in this synthesis also described the potential influence of socio-cultural factors such as expectations and opinions within social groups and the influence of traditional cultural practices relating to parents sharing a bed with their infant consistent with Sadeh and colleagues' transactional model. The potential influence of societal factors such public campaigns and prevailing opinions on safe infant sleep campaigns on parent-infant sleep experienced [discussed in Section 5.3.2 of this chapter] has also been identified by this synthesis.

In this synthesis, many parents described culture as influencing their sleep location choices; however, it was not always the sole determining factor. Parents' perceptions of infant safety, infant sleep preferences, and mutual sleep needs also influenced parents' decision-making around where their infant slept. In addition to recognising that infant sleep location decisions are often influenced by dominant cultural practices (Jenni & O'Connor, 2005; Kawasaki et al., 1994; Richardson, 2013), previous studies have also recognised that infant sleep patterns and parents' and professionals' perceptions of normal and problematic infant sleep can be influenced by culture (Jenni & O'Connor, 2005; McKenna & Gettler, 2008; Mindell et al., 2010). While many parents in this synthesis recognised the contribution of cultural factors to their approach to supporting their infants'

and their own sleep, there were also many who diverged from the dominant practice within their wider family or social circles. This highlights the value of applying the co-occupational lens, which emphasises the importance of both understanding the *"transactional characteristics of occupation… without discrediting… the individual perspectives of those studied"* (Pierce, 2009, p. 203). This synthesis of the perspectives and experiences of parents from a wide range of geographical locations and socio-cultural backgrounds, with a focus on the co-occupational nature of parent-infant sleep, has revealed diversity within groups of parents that otherwise share a culture or background. This finding extends the understanding of the impact of culture on parent-infant sleep from being a determinant of parent sleep practices and choices to being one aspect of many factors with varying degrees of influence on the sleep of individual parents and infants.

5.7 Implications for practice

This interpretive synthesis has offered a novel understanding of parent-infant sleep as co-occupation. By describing the complex and interactive co-occupational nature of parent-infant sleep, and by identifying a wide range of factors that influence co-occupational experiences, the findings of this study have the potential to inform occupational therapy practitioners' clinical reasoning and their understanding of how best to promote the co-occupational performance of parent-infant sleep.

Viewing parent-infant sleep through the lens of co-occupation has offered a new understanding of the diversity, complexity, and dynamic nature of the experiences and perspectives of parents experiencing the phenomenon.

While recognising parent-infant sleep as inherently and consistently co-occupational, this synthesis conceptualises the co-occupational experiences of parent-infant sleep where both

parent and infant sleep needs are adequately met as being synchronous and where difficulties are experienced in meeting mutual sleep needs as asynchronous. This conceptualisation offers a new construct to explore how the processes of parent sleep-adaptation and infant sleep-consolidation can contribute to satisfactory co-occupational engagement in parent-infant sleep.

The findings of this synthesis have also detailed a wide range of interactive parent and infant sleep activities incorporated within the co-occupation of parent-infant sleep. This extensive description of parent-infant sleep activities that shape the shared use of time and space makes a novel contribution to the existing knowledge base and has utility in describing the reality of participation in parent-infant sleep as it occurs in peoples' everyday lives.

This synthesis has identified a role for occupational therapy practitioners in supporting the co-occupational performance of parent-infant sleep in perinatal, postnatal, and early intervention settings. An individualised and holistic co-occupation focused approach to parent-infant sleep has the potential to enable both parents' and infants' meaningful and satisfying co-occupational sleep experiences, which have been demonstrated by this synthesis to have the potential to impact of on parents' and infants' health and wellbeing across multiple domains.

While disrupted sleep is widely considered to be a normal parenting experience, parents have nonetheless described the considerable challenge of meeting their infant's and their own sleep needs as unexpected. The findings of this study suggest that parents who have prior experience or knowledge of typical infant sleep patterns might be more accepting and less concerned about their infant's frequent waking at night. Inclusion of psychoeducation

on typical infant sleep and the variability and potential impact of infant sleep patterns on parents' own sleep could be considered in antenatal programmes for the general population.

The findings of this synthesis describe how parent-infant sleep experiences also have the potential to impact on aspects of the parent-infant relationship. The importance of sleep for mutual wellbeing, daytime functioning, and interactions of parents and infants, and the potential impact on infant development in the long term, highlights the potential value of occupational therapy practitioners assuming a role supporting positive co-occupational parent-infant sleep experiences in perinatal and infant mental health settings.

5.8 Limitations

While a comprehensive quality appraisal was completed for all included studies, no studies were excluded based on the outcome of the appraisal which has the potential to influence the end synthesis. A decision was made to include all studies in order to prevent the exclusion of parent quotations that could prove relevant or provide rich insights irrespective of the methodological rigour of the study. In order to privilege data from higher quality studies data extraction was first completed on studies that rated as being of higher quality on the Daly Hierarchy of Evidence scale (Daly et al., 2007) in alphabetical order. In practice, it transpired that studies rated as III or IV on the Daly Hierarchy did not generate any new constructs but served to confirm those that were first generated from studies rated as I or II on the scale.

Restrictions on the publication language of the included studies was another limitation of this study. Due to the anticipated large volume of publications relating to infant sleep, the study only included papers which had been published in peer-review journals to ensure a

basic level of quality and rigour. Grey literature and conference abstracts were excluded on this basis. Due to this pragmatic need to limit included studies to published research in the English language, it is possible that some relevant data was omitted.

One of the strengths of this study is the range of variability of the included primary studies, achieved through comprehensive sampling which yielded data from a wide range of geographic locations, cultures, and contexts. A limitation of the data nonetheless was that mothers represented 98% of the participants, while fathers provided only 2% of the data. One included study made one reference to the experience of a same-sex parent, but there were no direct quotations from non-gestational same-sex parents.

It was not possible to conduct a meta-ethnography on primary studies whose research questions related directly to the topic of parent-infant sleep as co-occupation due to the current gap in research. It is possible that the research topics of the included studies influenced the constructs and themes generated by this synthesis. For example, 51% of the studies included had research questions related to either safe infant sleep or infant sleep location. The impact of this limitation was mitigated by comprehensive extraction of direct parent quotations relevant to the aim and objectives of this study. To further address this limitation, reflexivity and frequent discussion of constructs and themes with the project supervisors provided perspective, reduced the risk of bias, and ensured the aim of this research study guided the data extraction, analysis, and synthesis process.

It was not possible to explore how parents' experiences and perspectives potentially changed and adapted over the course of the first two years of their infant's life due to the nature of the primary data that presented individual parent quotations at one point in time. As infants sleep undergoes considerable developmental changes and parents' perspectives

and experiences cannot be assumed to remain static during this time, this is an area that requires further research.

This synthesis included studies published over a thirty year period (1992-2022). While accounting for the contexts of the parents and infants described in the primary studies, consideration of changes in the societal and scientific understanding of parent and infant sleep according to the chronology of the individual studies was beyond the scope of this project.

5.9 Recommendations for future research

This study has generated a novel understanding of parent-infant sleep through completing an interpretive synthesis of qualitative data from existing multi-disciplinary studies with a range of research questions. Primary research with the specific aim of exploring parent-infant sleep as co-occupation is recommended to test the utility of the findings of this study.

This synthesis incorporated primary studies from a wide range of geographic locations and cultural contexts and identified a range of socio-cultural influencing factors; however, none of the included studies addressed the phenomenon as it occurs currently in an Irish context. Primary research exploring parent-infant sleep through the lens of co-occupation within an Irish context is recommended to explore the phenomenon as experienced currently by different groups of parents and infants residing in Ireland.

Further research exploring transitory and persistent periods of parent-infant sleep pattern synchrony and asynchrony and possible changes in the co-occupational aspects of shared physicality, intentionality, emotionality, and communication as experienced by the same

parent-infant dyads over time is required to further understand the phenomenon of parent-infant sleep.

The vast majority of the participants that contributed to the findings of this synthesis were mothers. Further research is required to explore the parent-infant sleep experiences and perspectives of fathers and non-gestational same-sex parents.

The studies included in this study primarily related to the experiences of non-clinical populations. Researching the experiences of parents or infants with additional needs, such as those on Neonatal Intensive Care Units, or accessing early intervention, perinatal, or infant mental health services, would add to the understanding of the factors that influence, and potentially disrupt, the co-occupational experience of parent-infant sleep.

While the primary studies included in this synthesis offered insights on shared space, shared time, and shared intentionality, the data on shared parent-infant communication and emotions was limited. Further primary research using direct observation of interactions during parent-infant sleep activities is needed to gain a deeper understanding of these aspects of the co-occupational parent-infant sleep experience.

5.10 Concluding remarks

Parents identify infant sleep as one of their primary postnatal concerns; however, in the current body of research there is an incomplete understanding of the phenomenon of parent-infant sleep and considerable variance in the definition and reported prevalence of infant and parent postnatal sleep problems. This synthesis set out to explore parent-infant sleep through the lens of co-occupation with the aim of generating a novel understanding of the phenomenon as it occurs in parents' everyday lives. This synthesis makes a

contribution to the body of research by uniquely recognising that parent-infant sleep needs pertain to both maintaining mutual wellbeing and protecting the sleeping infant and that participating in parent-infant sleep requires on-going and interactive negotiation between parent and infant in order to meet these mutual sleep needs. The importance to parents of being able to support their infants' sleep needs has been highlighted, while also acknowledging the challenges involved in simultaneously meeting their own sleep needs.

While the theoretical lens of co-occupation has identified the influence of family and socio-cultural factors on parent-infant sleep practices and decisions, the emphasis on individual subjective experience has placed parents' personal interpretation of their own context in the foreground therefore avoiding disciplinary, cultural, or ideological generalisations or assumptions around their experiences or perspectives.

The findings of this synthesis can be used to support the professional reasoning of occupational therapy practitioners who work with parents and infants in all settings by broadening the understanding of the complexity, challenges, and range of influences involved in the parent-infant sleep co-occupational experience. Further research to test the application of the findings has the potential to prioritise the role of occupational therapists in supporting parent-infant sleep occupations in a range of clinical settings such as Neonatal Intensive Care Units, perinatal mental or physical health settings, antenatal and parenting education, early intervention, and infant mental health services.

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Appendix A: *Systematic Review Protocol*

NIHR | National Institute for Health Research

PROSPERO
International prospective register of systematic reviews

My Sleep is Your Sleep: Parent-Infant Sleep as Co-Occupation - a Meta-Ethnography of Parent Perspectives and Experiences.

Citation

Patricia Flynn BSc., Michelle Spirtos BScOT, MSc, PhD, Deanna Gibbs BAppSc(OT), MOT, Grad Cert Res Meth, PhD., David Mockler. My Sleep is Your Sleep: Parent-Infant Sleep as Co-Occupation - a Meta-Ethnography of Parent Perspectives and Experiences.. PROSPERO 2022 CRD42022380988 Available from: https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42022380988

Review question

What are parents' perspectives and experiences of sleep as co-occupation with their infants in the first two years postpartum?

The review question was defined using the SPIDER framework (Cooke, Smith, & Booth, 2012):

S – Sample: Parents of infants aged two years or younger (chronological age).

P of I – Phenomenon of Interest: Parent-Infant Sleep as Co-Occupation.

D – Design: Studies with qualitative data collection and analysis methodologies.

E- Evaluation: Reported lived experiences and perspectives of parents.

R- Research Type: Qualitative or mixed methods.

Cooke, A., Smith, D., & Booth, A. (2012). Beyond PICO: the SPIDER tool for qualitative evidence synthesis. Qualitative health research, 22(10), 1435-1443.

Searches

An exhaustive search strategy was developed by an experienced information specialist (DM). The search was developed in Embase.com, optimised for sensitivity, and then translated to other databases. The search will be carried out in the following databases: Embase.com (date of inception 1971), MEDLINE ALL via Ovid (1946 to Daily Update), Web of Science Core Collection, and CINAHL via EBSCOhost.

The search strategies for EMBASE and MEDLINE will use relevant thesaurus terms from Emtree and Medical Subject Headings (MeSH), respectively. Terms were searched for in the titles and abstracts of references in all databases. The search contained terms for: (1) sleep; (2) parents/caregivers. Terms were combined with the Boolean operators AND and OR, and proximity operators were used to combine terms into phrases. Supplementary backward-citation searching of reference lists and forward-citation searching of included studies using Google Scholar will also be utilised.

Types of study to be included

Study Type: Qualitative studies and mixed-method studies incorporating a distinct qualitative component which includes sufficient primary data that can be extracted for the synthesis.

Language: English

Publication Year: No limits

The studies must describe parents' perspectives or experiences of sleep as co-occupation with their infants in their first two years postpartum.

Studies that describe parent or infant sleep in isolation from one another will be excluded.

Condition or domain being studied

The domain being studied is parent-infant sleep.

The inter-infant variability (Paavonen et al., 2020), specific developmental trends (Galland, 2012), and bi-directional nature (Sadeh & Anders, 1993) of parent-infant sleep in the first two years postpartum justifies its conceptualisation as one dynamic, transactional phenomenon between parent and infant.

Galland, B. C., Taylor, B. J., Elder, D. E., & Herbison, P. (2012). Normal sleep patterns in infants and children: a systematic review of observational studies. Sleep medicine reviews, 16(3), 213-222.

Paavonen, E. J., Saarenpaa-Heikkila, O., Morales-Munoz, I., Virta, M., Hakala, N., Polkki, P., Kylliainen, A., Karlsson, H., Paunio, T., & Karlsson, L. (2020). Normal sleep development in infants: findings from two large birth cohorts. Sleep Med, 69, 145-154. https://doi.org/10.1016/j.sleep.2020.01.009

Sadeh, A., & Anders, T. F. (1993). Infant sleep problems: Origins, assessment, interventions. Infant mental health Journal, 14(1), 17-34.

Participants/population

Inclusions:

Parents of infants less than or equal to two years (24 months 0 days) of chronological age.

Parents are defined as "Persons functioning as natural, adoptive, or substitute parents" as per US National Library of Medicine (2022) definition.

Exclusions:

Non-primary caregivers.

Professionals or service-providers.

Parents of children more than two years (24 months 0 days) of chronological age.

National Library of Medicine NLM (2022). Medical Subject Headings (MeSH) search engine. https://www.ncbi.nlm.nih.gov/mesh/?term=parent accessed on 30/10/2022.

Intervention(s), exposure(s)

The phenomenon being studied is parent-infant sleep as co-occupation.

Co-occupation is a concept original to occupational science (Pierce, 2009), defined by Pickens and Pizur-Barnekow (2009) as meaningful activity between two or more agents acting within the same timeframe, with varying degrees of

shared physicality, emotionality, intentionality, and/or meaning. Shared sleep-preparation and sleep-participation activities as defined by the American Occupational Therapy Association (AOTA, 2020) will be considered as subcategories of parent-infant sleep as co-occupation.

American Occupational Therapy Association. (2020). Occupational therapy practice framework: Domain and process (4th ed.). American Journal of Occupational Therapy, 74(Suppl. 2), 7412410010. https://doi.org/10.5014/ajot.2020.74S2001

Pickens, N. D., & Pizur-Barnekow, K. (2009). Co-occupation: Extending the dialogue. Journal of Occupational Science, 16(3), 151-156.

Pierce, D. (2009). Co-occupation: The challenges of defining concepts original to occupational science. Journal of Occupational Science, 16(3), 203-207.

Comparator(s)/control

Not applicable.

Context

International studies describing parent-infant sleep as co-occupation without restriction on setting, culture, nationality, or medical status will be included.

Studies using generic or other discipline-specific terminology comparable to co-occupation will be included in order to ensure capture of relevant studies beyond occupational therapy and occupational science literature.

Main outcome(s)

This meta-ethnographic synthesis aims to generate novel understandings from existing research on parent-infant sleep, to make a fresh contribution to the literature by exploring the phenomenon through the lens of co-occupation, and to generate a conceptual understanding of how parent-infant sleep is enacted as co-occupation. This will enable further research and the testing of aligned interventions promoting occupational performance.

Additional outcome(s)

None.

Data extraction (selection and coding)

Results yielded from the search strategy will be downloaded to EndNote to enable reference management. Title, abstract, and full text screening of the search results will be completed by the lead author (PF).

An independent screening of a random sample of a minimum of 10% of the results will be conducted by the research supervisors (MS and DG) against inclusion criteria. Consensus will be reached through discussion in the event of any disagreement.

Covidence software will be used for data extraction using a pre-designed table of study characteristics including:

Bibliographic information

Aim of study / Research question

Study Design:

Study Context

Methodology

Theoretical underpinnings (if any)

Sampling Strategy

Sample size

Inclusion/Exclusion criteria

Participant characteristics

Perspectives studied (e.g. mothers', fathers', or both)

Infant age range

Results:

Main findings/ themes/metaphors

Quality Appraisal:

Grading

Reviewer rationale for grade allocated

A Joanna Briggs Institute (JBI) Qualitative Data Extraction Tool (Pearson, 2004) will be used to extract findings (participant quotations, themes, metaphors, and concepts), author interpretations, and narrative descriptions from the included studies. This tool will also record the quality evidence rating.

The research supervisors (MS and DG) will each conduct independent critical appraisal and data extraction of a minimum of 10% of the included studies to ensure internal consistency (Boland, Cherry, & Dickson, 2017).

The selection process will be summarised and reported using the PRISMA flow chart (Page et al., 2021).

Boland, A., Cherry, G., & Dickson, R. (Eds.). (2017). Doing a systematic review: A student's guide. SAGE Publishing.

Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., ... & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. Systematic reviews, 10(1), 1-11.

Pearson, A. (2004). Balancing the evidence: incorporating the synthesis of qualitative data into systematic reviews. JBI reports, 2(2), 45-64.

Risk of bias (quality) assessment

The Critical Appraisal Skills Programme (CASP) tool (Public Health Resource Unit, 2006) will be used to assess the included studies by the lead author (PF). The CASP tool has been selected as it is the most frequently used quality appraisal tool in qualitative syntheses (Long, 2020).

Additional grading of the the conceptual richness and contribution to practice of the primary studies will be undertaken with reference to the Daly et al (2007) Hierarchy of Evidence.

Independent quality appraisal of a random sample of a minimum of 10% of the included studies will also be completed by the research supervisors (MS and DG) with any disagreements being resolved through discussion.

Daly, J., Willis, K., Small, R., Green, J., Welch, N., Kealy, M., & Hughes, E. (2007). A hierarchy of evidence for assessing qualitative health research. Journal of clinical epidemiology, 60(1), 43-49.

Long, H. A., French, D. P., & Brooks, J. M. (2020). Optimising the value of the critical appraisal skills programme (CASP) tool for quality appraisal in qualitative evidence synthesis. Research Methods in Medicine & Health Sciences, 1(1), 31-42.

Public Health Resource Unit (2006). Critical Appraisal Skills Programme (CASP). 10 questions to help you make sense of qualitative research. Available from: http://www.phru.nhs.uk/Doc_Links/Qualitative%20Appraisal%20Tool.pdf

Strategy for data synthesis

An inductive and interpretive qualitative evidence synthesis will be undertaken following the seven-phase process of meta-ethnography originally described by Noblit & Hare (1988), with reference to further guidance for occupational therapy researchers from Cahill et al. (2018).

The seven phases are:

1. Getting started

2. Deciding what is relevant

3. Reading the studies

4. Determining how the studies are related

5. Translating the studies into one another

6. Synthesising translations

7. Expressing the synthesis

Following the first two phases which align with the systematic search and screening process, the selected studies will be read and re-read to extract and list the findings. Initial mapping of the relationships between the studies will commence through a process of listing and juxtaposing key metaphors, phrases, ideas and/or concepts.

Translating the studies into one another will involve a systematic comparison of the studies and of the emerging relationships while maintaining the overall contextual and individual characteristics of each study. The resulting translations will subsequently be compared in order to discover further groupings and relationships with a view to generating second- and third- order interpretations from the first-order constructs.

The eMERGe guidelines for reporting meta-ethnography (France et al., 2019) will be adhered to in the expression of this synthesis.

Expression of the meta-ethnography will involve submitting the synthesis for peer-reviewed publication and presentation at professional conferences.

Cahill, M., Robinson, K., Pettigrew, J., Galvin, R., & Stanley, M. (2018). Qualitative synthesis: a guide to conducting a meta-ethnography. British journal of occupational therapy, 81(3), 129-137.

France, E. F., Cunningham, M., Ring, N., Uny, I., Duncan, E. A., Jepson, R. G., ... & Noyes, J. (2019). Improving reporting of meta-ethnography: the eMERGe reporting guidance. BMC medical research methodology, 19(1), 1-13.

Noblit, G. W., Hare, R. D., & Hare, R. D. (1988). Meta-ethnography: Synthesizing qualitative studies (Vol. 11). Sage Publishing.

Analysis of subgroups or subsets

Not applicable.

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Mr David Mockler. Subject Librarian, John Stearne Medical Library – Trinity College Dublin, St. James's Hospital, James's Street; 1st Floor, Trinity Centre; St James's Hospital, Dublin 8, Ireland.

Type and method of review

Synthesis of qualitative studies, Systematic review

Anticipated or actual start date

01 December 2022

Anticipated completion date

25 August 2023

Funding sources/sponsors

None

Grant number(s)

State the funder, grant or award number and the date of award

Not applicable.

Conflicts of interest

Language

English

Country

Ireland

Stage of review

Review Ongoing

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

MeSH headings have not been applied to this record

Date of registration in PROSPERO

13 December 2022

Date of first submission

02 December 2022

Stage of review at time of this submission

Stage	Started	Completed
Preliminary searches	Yes	No
Piloting of the study selection process	No	No
Formal screening of search results against eligibility criteria	No	No
Data extraction	No	No
Risk of bias (quality) assessment	No	No
Data analysis	No	No

The record owner confirms that the information they have supplied for this submission is accurate and complete and they understand that deliberate provision of inaccurate information or omission of data may be construed as scientific misconduct.

The record owner confirms that they will update the status of the review when it is completed and will add publication details in due course.

Versions

13 December 2022

13 December 2022

Appendix B: *Search Strategy*

EMBASE [645]

'sleep'/exp OR 'sleep disorder'/exp OR 'sleep parameters'/exp OR 'sleep deprivation'/exp OR 'sleep medicine'/exp

(Sleep* OR co-sleep* OR naps OR napping OR sleep-wake):ti,ab,kw

('Total wake time' OR 'Time in bed' OR 'Arousal index' OR 'Rising time' OR 'Wake up time' OR Drowsiness OR insomnia OR settling):ti,ab,kw

'wakefulness'/exp

(Awake OR waking OR wakefulness):ti,ab,kw

#1 OR #2 OR #3 OR #4 OR #5

'parent'/exp OR 'child parent relation'/exp

(Parent* OR mother* OR father* OR maternal OR paternal OR caregiver*):ti,ab,kw

#7 OR #8

'infant'/exp

(Infant* OR baby* OR babies OR newborn* OR new-born OR neonate*):ti,ab,kw

#10 OR #11

(((semi-structured or semistructured or unstructured or informal or in-depth or indepth or face-to-face or structured or guide OR data) NEAR/3 (interview* or discussion* or questionnaire*))):ti,ab or (‘focus group*’ or qualitative or ethnograph* or fieldwork or ‘field work’ or ‘key informant’ OR mixed-method* OR ‘phenomenological stud*’):ti,ab,kw or 'qualitative research'/de

#6 AND #9 AND #12 AND #13

Medline [428]

exp Sleep/ OR exp Sleep Wake Disorders/ OR Sleep Medicine Specialty/ OR Polysomonography/

(Sleep* OR co-sleep* OR naps OR napping OR sleep-wake).ti,ab.

(Total wake time OR Time in bed OR Arousal index OR Rising time OR Wake up time OR Drowsiness OR insomnia OR settling).ti,ab.

Wakefulness/

(Awake OR waking OR wakefulness).ti,ab.

or/1-5

exp Parents/ OR exp Parent-Child Relations/

(Parent* OR mother* OR father* OR maternal OR paternal OR caregiver*).ti,ab.

or/7-8

exp infant/

(Infant* OR baby* OR babies OR newborn* OR new-born OR neonate*).ti,ab.

or/10-11

((("semi-structured" or semistructured or unstructured or informal or "in-depth" or indepth or "face-to-face" or structured or guide) adj3 (interview* or discussion* or questionnaire*))).ti,ab. or (focus group* or qualitative or ethnograph* or fieldwork or "field work" or "key informant").ti,ab. or interviews as topic/ or focus groups/ or narration/ or qualitative research/

6 and 9 and 12 and 13

CINAHL [769]

(MH "Sleep+") OR (MH "Sleep Hygiene+") OR (MH "Sleep Stages+") OR (MH "Arousal") OR (MH "Sleep Deprivation") OR (MH "Sleep Disorders+")

TI (Sleep* OR co-sleep* OR naps OR napping OR sleep-wake) OR AB (Sleep* OR co-sleep* OR naps OR napping OR sleep-wake)

TI ("Total wake time" OR "Time in bed" OR "Arousal index" OR "Rising time" OR "Wake up time" OR Drowsiness OR insomnia OR settling) OR AB ("Total wake time" OR

"Time in bed" OR "Arousal index" OR "Rising time" OR "Wake up time" OR Drowsiness OR insomnia OR settling)

(MH "Wakefulness")

TI (Awake OR waking OR wakefulness) OR AB (Awake OR waking OR wakefulness)

S1 OR S2 OR S3 OR S4 OR S5

(MH "Parents+") OR (MH "Parent-Infant Relations") OR (MH "Parent-Infant Bonding") OR (MH "Parent-Child Relations") OR (MH "Parents of Children with Disabilities") OR (MH "Single Parent") OR (MH "Parental Attitudes") OR (MH "Adoptive Parents") OR (MH "Parental Behavior")

TI (Parent* OR mother* OR father* OR maternal OR paternal OR caregiver*) OR AB (Parent* OR mother* OR father* OR maternal OR paternal OR caregiver*)

S7 OR S8

(MH "Infant+") OR (MH "Infant, Newborn+") OR (MH "Infant Behavior")

TI (Infant* OR baby* OR babies OR newborn* OR new-born OR neonate*) OR AB (Infant* OR baby* OR babies OR newborn* OR new-born OR neonate*)

S10 OR S11

(MH "cluster sample+") or TX life experiences or TX human science or TX discourse* analysis or TX narrative analysis or TX lived experience* or TX field research or TX field studies or TX field study or TX giorgi* or TX husserl* or TX merleau ponty* or TX van kaam* or TX van manen* or TX spiegelberg* or TX colaizzi* or TX heidegger* or TX participant observ* or TX data saturat* or TX semiotics or TX heuristic or TX hermeneutic* or TX etic or TX emic or TX focus group* or TX purpos* sampl* or TX constant comparison or TX constant comparative or TX grounded research or TX grounded studies or TX grounded study or TX grounded theor* or TX phenomenol* or TX ethnon* or TX qualitative or (MH "ethnological research") or (MH "ethnography") or (MH "phenomenology") or (MH "focus groups") or (MH "discourse analysis") or (MH

"theoretical sample") or (MH "field studies") or (MH "constant comparative method") or (MH "thematic analysis") or (MH "content analysis") or (MH "observational methods+") or (MH "purposive sample") or (MH "qualitative validity+") or (MH "grounded theory") or (MH “action research”) or (MH “naturalistic inquiry”) or (MH "ethnonursing research") or (MH "phenomenological research") or (MH "ethnographic research") or (MH "qualitative studies") or (MH "Interviews+") or (MH "Narratives") or (MH "Videorecording+") or (MH "Audiorecording") or (MH "Historical Records")

S6 AND S9 AND S12 AND S13

PsycINFO [252]

DE "Sleep" OR DE "Napping" OR DE "Sleep Onset" OR DE "Sleep Quality" OR DE "Polysomnography" OR DE "Sleep Deprivation" OR DE "Sleep Wake Cycle" OR DE "Sleepiness"

TI (Sleep* OR co-sleep* OR naps OR napping OR sleep-wake) OR AB (Sleep* OR co-sleep* OR naps OR napping OR sleep-wake)

TI ("Total wake time" OR "Time in bed" OR "Arousal index" OR "Rising time" OR "Wake up time" OR Drowsiness OR insomnia OR settling) OR AB ("Total wake time" OR "Time in bed" OR "Arousal index" OR "Rising time" OR "Wake up time" OR Drowsiness OR insomnia OR settling)

DE "Wakefulness"

TI (Awake OR waking OR wakefulness) OR AB (Awake OR waking OR wakefulness)

S1 OR S2 OR S3 OR S4 OR S5

DE "Parents" OR DE "Adoptive Parents" OR DE "Fathers" OR DE "Mothers" OR DE "Surrogate Parents (Humans)" OR DE "Coparenting" OR DE "Parenting" OR DE "Caregivers" OR DE "Parent Child Relations" OR DE "Parenting" OR DE "Father Child Relations" OR DE "Mother Child Relations" OR DE "Parental Attitudes" OR DE "Parent

Training" OR DE "Parental Characteristics" OR DE "Parental Involvement" OR DE "Parental Role" OR DE "Parenting Skills" OR DE "Parenting Style"

TI (Parent* OR mother* OR father* OR maternal OR paternal OR caregiver*) OR AB (Parent* OR mother* OR father* OR maternal OR paternal OR caregiver*)

S7 OR S8

DE "Infant Temperament"

TI (Infant* OR baby* OR babies OR newborn* OR new-born OR neonate*) OR AB (Infant* OR baby* OR babies OR newborn* OR new-born OR neonate*)

S10 OR S11

TX ((("semi-structured" or semistructured or unstructured or informal or "in-depth" or indepth or "face-to-face" or structured or guide or guides) N3 (interview* or discussion* or questionnaire*)) or TX (focus group* or qualitative or ethnograph* or fieldwork or "field work" or "key informant")) or exp qualitative research/ or DE "Qualitative Methods" OR DE "Focus Group" OR DE "Grounded Theory" OR DE "Interpretative Phenomenological Analysis" OR DE "Narrative Analysis" OR DE "Semi-Structured Interview" OR DE "Thematic Analysis" OR DE "Interviews" OR DE "Focus Group Interview" OR DE "Semi-Structured Interview" OR DE "Group Discussion" OR DE "Debates")

S6 AND S9 AND S12 AND S13

Web of Science [556]

(Sleep* OR co-sleep* OR naps OR napping OR sleep-wake OR "Total wake time" OR "Time in bed" OR "Arousal index" OR "Rising time" OR "Wake up time" OR Drowsiness OR insomnia OR settling OR awake OR waking OR wakefulness)

(Parent* OR mother* OR father* OR maternal OR paternal OR caregiver*)

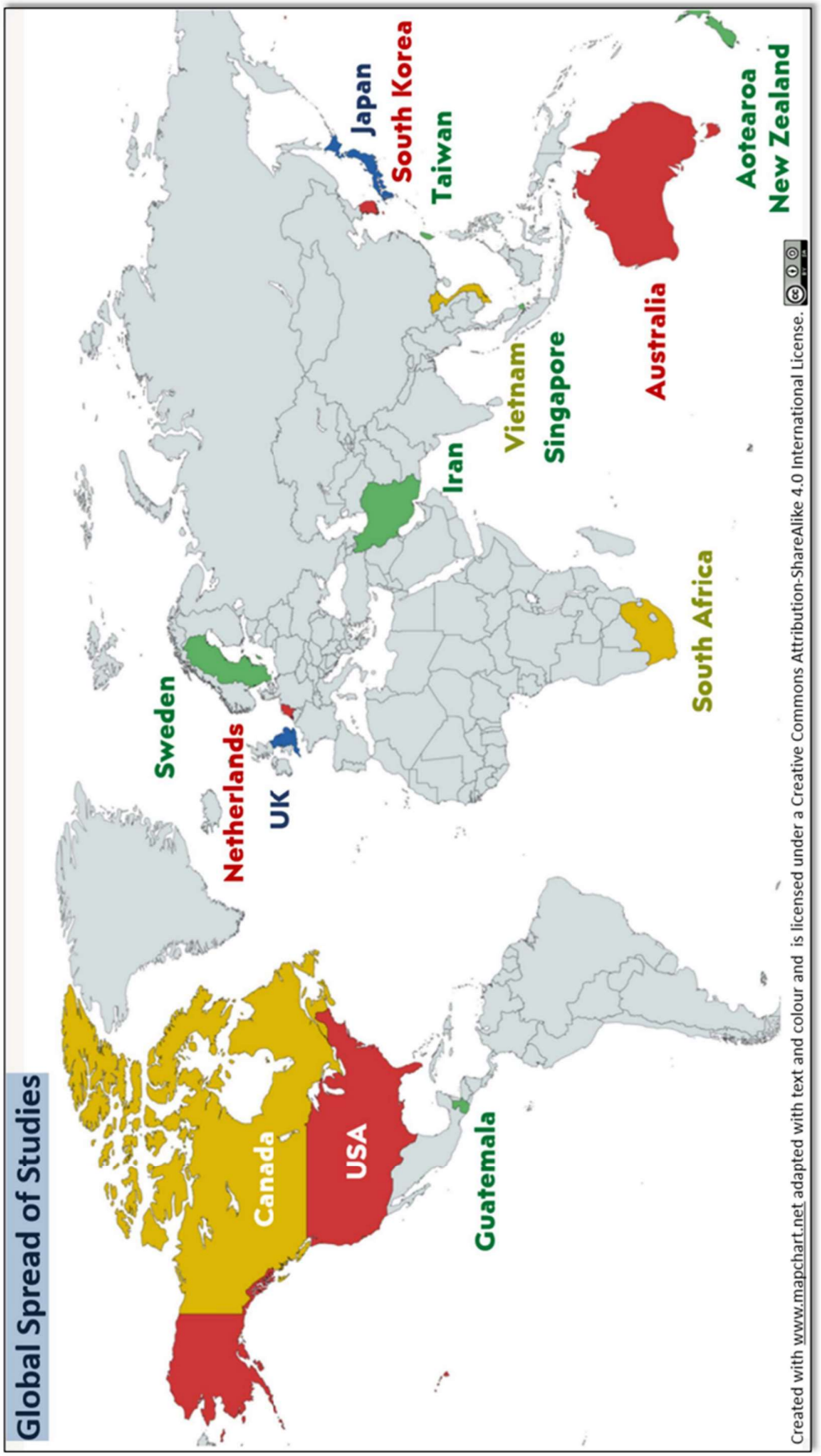
(Infant* OR baby* OR babies OR newborn* OR new-born OR neonate*)

(qualitative OR ethnol* OR ethnog* OR ethnonurs* OR emic OR etic OR leininger OR noblit OR "field note*" OR "field record*" OR fieldnote* OR "field stud*" or "participant

observ*" OR "participant observation*" OR hermaneutic* OR phenomenolog* OR "lived experience*" OR heidegger* OR husserl* OR "merleau-pont*" OR colaizzi OR giorgi OR ricoeur OR spiegelberg OR "van kaam" OR "van manen" OR "grounded theory" OR "constant compar*" OR "theoretical sampl*" OR glaser AND strauss OR "content analy*" OR "thematic analy*" OR narrative* OR "unstructured categor*" OR "structured categor*" OR "unstructured interview*" OR "semi-structured interview*" OR "maximum variation*" OR snowball OR audio* OR tape* OR video* OR metasynthes* OR "meta-synthes*" OR metasummar* OR "meta-summar*" OR metastud* OR "meta-stud*" OR "meta-ethnograph*" OR metaethnog* OR "meta-narrative*" OR metanarrat* OR " meta-interpretation*" OR metainterpret* OR "qualitative meta-analy*" OR "qualitative metaanaly*" OR "qualitative metanaly*" OR "purposive sampl*" OR "action research" OR "focus group*" or photovoice or "photo voice" or "mixed method*")

#1 AND #2 AND #3 AND #4

Appendix C: *Geographic Spread of Studies*



Appendix D: *Example of Completed CASP Quality Appraisal*

Qualitative CASP Tool for use in Meta-Ethnographic Synthesis

References:	Public Health Resource Unit (2006). Critical Appraisal Skills Programme (CASP). 10 questions to help you make sense of qualitative research. Available from: http://www.phru.nhs.uk/Doc_Links/Qualitative%20Appraisal%20Tool.pdf Campbell R, Pound P, Pope C, Britten N, Pill R, Morgan M, Donovan J (2003). Evaluating meta-ethnography: a synthesis of qualitative research on lay experiences of diabetes and diabetes care. *Social Science and Medicine, 56,* 671-684.

Citation:	Ajao, T. I., Oden, R. P., Joyner, B. L., & Moon, R. Y. (2011). Decisions of black parents about infant bedding and sleep surfaces: a qualitative study. *Pediatrics*, *128*(3), 494-502.

Screening Questions

1. Does this paper report on findings from qualitative research and did that work involve both qualitative methods of data collection and analysis? ☑ **Yes** ❑ **No**

Comments

Focus groups and individual interviews.

"*Using grounded theory methods, themes were developed and revised in an iterative manner as patterns within the data became more apparent*." (Ajao et al., 2011, p. 496)

2. Is this research relevant to the synthesis topic? ☑ **Yes** ❑ **No**

Comments:

Preparing sleep environment (AOTA, 2020) – parent acting with infant's comfort in mind, with choices informed by infant's past responses and behaviours "*simply could not occur without the interactive responses of the other… with whom the occupations are being experienced… they are a synchronous back and forward between the occupational experiences of the individuals involved, the action of one shaping the actions of the other in a close match"* (Pierce, 2003 as cited in Pierce, 2009, p.204)

Decision:

☑ Continue with appraisal

❑ Exclude from synthesis

Detailed Questions

3. Was there a clear statement of the aims of the research? *Comments*

Consider:
- *what the goal of the research was*
- *why it is important*
- *its relevance*

"*The goal of this qualitative study was to examine factors influencing decisions by black parents regarding use of soft bedding and sleep surfaces for their infants*."
(p494)
"Infants born to black mothers succumb to SIDS at a rate more than twice that of white, non-Hispanic infants. Black infants are also disproportionately affected by accidental suffocation and strangulation in bed and undetermined deaths, with rates 2 to 3 times those seen for nonblack infants.
p495
Soft bedding increases risk of SIDS yet continues to be frequently used.
Relevant to inform advice given to new parents by professionals, educators, community programmes, and bedding manufacturers.

4. Is the qualitative methodology appropriate for the authors' stated aims?

Consider:
– if the research seeks to interpret or illuminate the actions and/or subjective experiences of research participants

Comments

Yes – clear rationale given for focus groups and individual interviews.
The research seeks to illuminate parents' decisions on infant bedding.

5a. Has a theoretical perspective been identified? ❑ **Yes** ❑ **No**

Unsure - Not described beyond stated use of

Grounded Theory methodology. ?Biomedical

?Public Health (SIDS prevention, education)

5b. If Yes, which theoretical perspective has been used?

Grounded theory methodology.
Social processes (social relationships and behaviours) in group of black mothers of mixed SES in Washington DC described. (Noble & Mitchell, 2016)

6a. Where is the location of the study sample (e.g. hospital/community)?

Community group recruited via childcare, health, and support services. Detailed information on recruitment described in a linked article (cited in text)

"Families were enrolled from newborn nurseries, urban pediatric primary care centers, WIC sites, private pediatric practices, advertisements in newsletters, and on-hold messages" (Moon et al., 2010, p. 93)

6b. Is it clear why this setting for the study chosen?
The fact that the group was a culturally homogenous community group of mothers from Washington DC was identified as a limitation of the study, in terms of considering prevalence and generalisability.

6c. Is clear and accurate information given on who was selected?
Yes; however, complete information on recruitment and selection needed to be accessed from another study referenced in the text (Moon et al., 2010).

6d. Is it clear why this sample was selected (e.g. inclusion criteria)?
Detailed inclusion criteria and rationale provided. Authors deliberately sampled for cultural homogeneity (Black mothers) due to the prevalence of SIDS/SUDI deaths in that specific population (more than double the incidence in comparison to white, non-hispanic parents).

6e. How were the sample recruited?
Via community and health services, fliers, on-hold phone messages.

6f. What was the sample size of the study, and is it justified?
73 participants in 13 focus groups
10 individual interviews
Thematic saturation reached with 83 participants.

6g. How many prospective participants refused?
Not disclosed.

6h. Were reasons given as to why prospective participants refused?
No. Linked published article of same cohort offers:
"A parent was also excluded when s/he was not the custodial parent of the child, the infant had a chronic illness that might preclude use of the supine sleep position (eg, recent spinal surgery), or the infant was born prematurely" (Moon et al., 2010, p. 93)

6i. Has adequate information been provided on the participant characteristics?
Yes – economic status, age range and mean, age of infant.

Is the sampling strategy used in the study appropriate to address the study aims?

☑ **Yes** ❑ **No**

Comments:

Yes, targeted sampling to study a phenomenon within a specific population.

Community services accessed to recruit mothers in the community (volunteers offered significant incentive to participate (Moon et al., 2010)).

7a. Is it clear where the setting of the data collection was?

Recruitment settings described but not location of interviews or focus groups.

7b. How was the setting for data collection chosen?

Not described.

7c. Is it clear how the purpose of the research was explained and presented to the participants?

Not described.

7d. Is it clear how the data were collected (e.g. interviews, focus groups etc)?

Yes – videotaped and audiotaped interviews and focus groups.

7e. Why was this data collected?

"Qualitative interviewing is used to better understand motivations and perceptions underlying health decisions and relies on obtaining the widest possible range of perspectives through systematic sampling. We selected 2 different qualitative interview formats: focus groups, because they provide participants of similar backgrounds with a comfortable forum to express opinions, and individual, in-depth, semi-structured interviews, because socially sensitive topics might be more likely to be raised."p495

7f. How was the data recorded?

Videotaped, audiotaped, and transcribed.

7g. Is there evidence of flexibility or an iterative process in the way the research was conducted (e.g. were the data collection methods modified)?
Iterative process described in line with Grounded Theory methodology.

7h. Who collected the data?

All four authors.

Overall, was the data collected in a way that addresses the research aims? ☑ **Yes** ❑ **No**

Comments

8a. Is it clear how the data analysis was undertaken?

Yes – description of stages of process given: "*Qualitative analysis software (NVivo 8 [QSR International Pty Ltd, Melbourne, Australia]) was used to organize, sort, and code the data. Using grounded theory methods, themes were developed and revised in an iterative manner as patterns within the data became more apparent. In weekly meetings, authors discussed emerging themes and patterns and reached consensus on the major themes. Individual interviews and focus group interviews were analyzed separately, after which emerging themes were compared.*" P.496

8b. Is it clear how the categories/themes were derived from the data?

Through coding, discussion, and consensus amongst the four authors. *"Using grounded theory methods, themes were developed and revised in an iterative manner as patterns within the data became more apparent." P 496*

8c. Was an adequate description of the analysis?

Yes – initial theme generation and checking with multiple researchers described.

8d. Have attempts been made to feedback results to respondents?

Not to the respondents but to professionals, researchers, and the community
"*Our findings were additionally corroborated through peer review and feedback during presentations to community groups, pediatric and SIDS researchers, and maternal and child health professionals*."p496

8e. Have different sources of data about the same issue been compared where appropriate (triangulation)?

"Concurrent triangulation, or use of multiple sources for verification of findings, of the focus group interviews and the individual interviews was used to confirm findings." P496

8f. Was the analysis repeated by more than one researcher to ensure reliability?

All four researchers were concurrently involved in the analysis.

Overall, do you consider that the data analysis was sufficiently rigorous to address the aims?

☑ **Yes** ❑ **No**

Comments:
Range of factors influencing black mothers' decisions around bedding identified and organised into themes, addressing research question.

9a. Did the researcher critically examine their own role, potential bias and influence during:

- formulation of research questions
- data collection, including sample recruitment and choice of location.

Not described
Rationale not given for decision to recruit a culturally homogenous group of parents; however, this was identified as a potential limitation.

9b. Has the relationship between researchers and participants been adequately considered? Not described.

10a. Relevant findings:

"Central Themes: Several topics related to infant sleep surfaces and bedding were discussed: desirable qualities of infant sleep surfaces, reasons for blanket use/nonuse, reasons for pillow use/nonuse, and reasons for bumper pad use/nonuse.

The central themes that emerged for all of these topics were infant comfort and safety. Aesthetics was an additional theme that emerged in discussions about bumper pads." P497

10b. Were the findings explicit and easy to understand? Yes

10c. What are the key concepts and interpretations? *Please outline in as much detail as possible.*

- Parent's bedding decisions are driven by their concern for their infant's comfort and safety
    - Parents access their own comfort experiences when judging what their infant is likely to find comfortable.
        - *Q2. "I wouldn't want to sleep on nothing too hard. So I would think that he wouldn't . . . be comfortable on nothing that is hard.*
    - Time for infant to fall sleep also informs some parents' judgement on comfort of bedding:
        - Q1. *"Not too hard or too soft. As long as . . . he goes to sleep good, it's okay. He's comfortable."p498*
        - Q3. "*My son sleeps on a pillow... because he like soft surfaces. And his playpen . . . is not as soft as he would like it . . . so we put a pillow in it and he sleeps on top of the pillow*." P498
        - Q10. *"His bed is cold, because he haven't been on it. As soon as he feels that it is cold he'll just wake up...I have to put a receiving blanket down . . . he wants to feel a certain warmth in order for him to stay asleep."p498*
    - Parents' understanding of descriptive terms e.g. "firm" differed and was a factor in bedding decisions.
    - Concern that injuries from cot without bed bumpers might lead to a referral to social services lead to the decision to use bumpers:
        - Q2. "*My first daughter . . . she get in there and get to moving that head and hit the bar. I be like, 'Oh lord, baby going to have a knot. Somebody going to call social services on me*.' " p498
- Aesthetics as part of the "experience" of parenthood is also a factor

.....

11a. Are sufficient data presented to support the descriptive findings?
Numbered quotes to support each finding. Degree of agreement amongst the group, other supporting or contradicting quotes not described.

11b. Are participant quotes numbered/identified?
Quotes numbered but individual participant sources not identifiable.

11c. Do the researchers explain how the data presented in the paper were selected from the original sample?
Not described beyond organising and coding to generate themes.

11d. Do the researchers indicate how they developed their conceptual interpretations of what the data contain?

Conceptual interpretations not presented – findings presented to advise professionals, researchers, and bedding manufacturers.

11e. To what extent is contradictory data (negative cases) taken into account?
Five quotes of 24 (21%) cited quotes (Q8, Q9,Table 3; Q2 Table 4; Q1, Q5 Table 6 p498) contradict the main finding that mothers' "*misconceptions"* about their infants comfort and safety place their infants at risk p500

11f. Is there adequate discussion of the evidence both for and against the researcher's arguments?
Evidence against argument not discussed.

Overall, are you confident that all of the data were taken into account? ❑ **Yes** ❑ **No**

Comments:

Unsure. Other published papers by same authors describe other aspects explored within the same focus groups and interviews.

.....

12a. Has the researcher discussed the credibility of their findings (e.g. triangulation, respondent validation, more than one analyst)? Yes

12b. How transferable are the research outcomes?

Limitations in generalisability discussed. (culturally homogenous group – prevalence of attitudes cannot be assumed)

.....

13a. How useful is the research publication to the synthesis?

Holding infant's comfort in mind through imagining infant's physical sensations (comfort/discomfort) is useful concept for consideration in synthesis.

13b. How important are the findings to practice?	Important in terms of informing professionals who work with this population.

Overall Assessment:

Include the exploration of the *"synchronous back and forth between the occupational experiences of the individuals involved, the action of one* [mother preparing sleep environment, (American Occupational Therapy Association, 2020)] ***shaping the action of the other*** [infant initiating and maintaining sleep, (American Occupational Therapy Association, 2020) ***in a close match" (Pierce, 2009, p. 204)***

Include in synthesis? ☑ **Yes** ❑ **No**

Data Extraction and Coding Tool

Reference: Doering, J. J., Sims, D. A., & Miller, D. D. (2017). How postpartum women with depressive symptoms manage sleep disruption and fatigue. *Research in Nursing & Health*, *40*(2), 132-142.		
Author Findings (themes/ metaphors/ interpretation) (Second Order Constructs)	Participants' Own Words (First Order Constructs)	Researcher Codes/Themes (Third Order Constructs)
Pg 135 **<u>Theme: Basic Social Process</u>** "Finding a Routine Together" Over time, women engaged in the process *of Finding a Routine Together*, moving from *Retreating* toward *Establishing the New Normal*, when they reported the infant had established a routine that was predictable enough for participants to be able to plan and carry out their everyday activities without being excessively fatigued.	*Pg 135* *And I feel wonderful in the morning, because she really slept all night, it give me enough time to do what I have to do, you know. Especially when I'm behind in my work.* *Pg 135-136* *Their nights and days is mixed up. They don't know when to go to sleep and when to stay awoke, so it's like when they tired, you're not tired. But it's when they woke, that's when you be tired and it's like you can't stay woke while they woke, you know. That's how I am with my baby* (month 1). *I'm really not getting none now. It seem like you think that...you would get more sleep now that he getting older, I'm getting less, less sleep. And it's like he still got his nights and days kind of mixed up, he don't sleep at all very well* (same woman at month 3). *But [infant] would sleep all day and then stay up all night. She wake up at night 1:00 in the morning till 6:00 in the morning and then she will finally go to sleep. Like she did last night. And I get no sleep. I was so tired. It's like I was watching her. I wanted to go to sleep, but I just couldn't. I keep feeling like tired ... I'm not ... my body feels like I don't want to do nothing, because I be so tired, but I can't go to sleep, because I always got to attend her [infant] if she whine or something and he [3 year old] keep me up too and it's just I be really, really tired, though.*	*Finding a Routine Together*, moving from *Retreating* toward *Establishing* the New Normal Infant sleep predictable enough for mothers to engage in other ADLs Mothers less fatigued when infant sleep more predicable Infant slept all night, mother feels wonderful Infant sleeping gives mother enough time to work Reversed day-night infant sleep patterns Mother's and infant's conflicting sleep patterns Mother not tired when infant tired and vice versa Expected to get more sleep as infant is older, but getting less Reversed day-night infant sleep patterns Reversed day-night infant sleep patterns Mother not sleeping at night because infant not sleeping at night Infant not sleeping well impacts mother's physical wellbeing - fatigue

Appendix F: *Extract from Data Analysis Table*

Grouping of Codes	*First Iteration*	*Second Iteration*	*Interpretive Summary*	*Relevant Studies*
• Importance to parent of infant sleeping well • Perceived impact of sleep on infant wellbeing • Perceived impact of sleep on parent wellbeing	Parents describing the importance of good quality and quantity of sleep for their infant and themselves due to the impact on their wellbeing.	The quality and quantity of their infant's sleep and their own sleep holds importance for parents due to its impact on both their infant's and their own wellbeing.	Parents described supporting their infant's sleep as important but challenging. Parents' **sleep patterns** change significantly postnatally in response to their infants' sleep patterns. The quality and quantity of their infant's sleep and their own sleep holds **importance** for parents due to its impact on their own and their infant's **wellbeing**. With time and **infant sleep consolidation** some parents described a **sleep adaptation** to achieve increased **synchrony** with their infant's sleep. Individual parent and/or **infant influencing factors** impact on the degree of parent-infant sleep synchrony achieved.	Ball, 2002; Chae et al., 2022; Cox et al., 2021; Doering et al., 2017; Kennedy et al., 2007; Noble et al., 2002; Ou et al., 2022; Rolls & Hanna, 2001; Rudzik & Ball, 2016; Tsai et al., 2014; Zahra et al., 2015
• Parents' anxiety about the quality of their infant's sleep can negatively impact the quality of their own sleep.	Parents expressing the importance of their infant sleeping well to the extent that anxiety related to their infant's sleep impacts the quality of their own sleep.			
• Parents describing their sleep patterns as being out of sync with their infant's sleep pattern. • Frequent infant waking requiring settling/ feeding leading to parent sleep loss and fatigue. • Responding to infant night care needs can be tiring / difficult/overwhelming for parents. • Sleep deprivation related to meeting infant's night care needs can have a negative impact on parent's mood and emotional wellbeing. • Sleep deprivation related to meeting infant's night care needs has negative impact on parent's physical wellbeing. • Parents finding unpredictable infant sleep pattern challenging.	Infant sleep patterns can be experienced as unpredictable overwhelming, challenging, and fatiguing for parents due to infant frequent wakings clashing with their own need for uninterrupted sleep.	The dynamic relationship between infant and parent sleep patterns is described as having an impact on parent sleep quality and quantity and consequently, on their physical and emotional wellbeing.		
• Parents describing their sleep patterns as being in sync with their infant's sleep pattern. • Parent-infant sleep patterns described as evolving together. • Quality of parents' sleep improves with infant sleep consolidation. • Parent describing own sleep pattern adapting to frequent wakings.	Parents describing how consolidation of infant's sleep pattern, and a related adaptation of their own sleep pattern in response to infant sleep needs, can, in time, lead to better quantity and quality of parent sleep.			
• Periods of relief alternate with periods of (parent) sleep deprivation. • Infant sleep pattern influenced by developmental stage and age. • Infant health impacts on sleep pattern	Parent-infant sleep patterns are dynamic and vary according to individual factors such as infant's age, stage, and health status.	Influencing factors on the degree of impact on the parent's sleep pattern include infant age, stage, and health status and parents' prenatal expectations, and perceived ability to manage and adapt to the challenge.		
• The demands of supporting infant sleep, and related levels of fatigue, described as unexpected by parents. • Frequent infant wakings experienced as unproblematic by parents when expected or normalised.	Parents comparing their prenatal expectations of infant sleep patterns, and associated levels of fatigue and manageability, with their experienced reality.			

Appendix G: *Primary Study Contributions to Themes and Subthemes*

Primary study relevance to themes and subthemes

Themes	Mutual Wellbeing: Meeting Parent and Infant Sleep Needs				Parent protection of the sleeping infant				Connection: Sleep and the parent-infant relationship		
Subthemes / **Author(s)**	The importance of a good night's sleep	Asynchrony in early parent-infant sleep	Increasing synchrony in parent-infant sleep	Infant sleep disruption and continuous parent adaptation	Impact of fear for their sleeping infant's safety on parent sleep	Parent perception of the vulnerability of their sleeping infant	The infant's need to feel safe	Negotiating mutual sleep needs and protection of the sleeping infant	Sharing space in parent-infant sleep	Sharing time in parent-infant sleep	The impact of negotiating control and independence on the parent-infant sleep relationship
Ajao et al., 2011					✓			✓			
Aslam et al., 2009							✓	✓	✓		✓
Bailey, 2016		✓				✓		✓	✓		
Ball, 2002		✓							✓		
Capper et al., 2022	✓			✓	✓	✓	✓	✓			
Caraballo et al., 2016	✓			✓					✓		
Chae et al., 2022	✓	✓	✓	✓					✓	✓	
Chianese et al., 2009					✓		✓		✓		
Cole et al., 2021				✓				✓	✓		
Cox et al., 2021		✓								✓	✓
Crane & Ball, 2016									✓		
Doering & Durfor, 2011											✓
Doering et al., 2017	✓	✓		✓						✓	✓
Fägerskiöld, 2008											✓
Gaydos et al., 2015					✓				✓		
Grant et al., 2021						✓	✓		✓		
Gray et al., 2022				✓					✓	✓	✓
Herman et al., 2015								✓	✓		✓
Howard et al., 2022		✓						✓	✓		
Hsu et al., 2017		✓									
Hwang et al., 2021				✓	✓	✓		✓			
Jacobson & Himes, 2021									✓		✓
Jones et al., 2017					✓	✓	✓		✓	✓	✓
Joyner et al., 2010					✓	✓			✓		
Joyner et al., 2016											
Kennedy et al., 2007	✓		✓		✓						✓
Kihlström et al., 2020					✓						
Lau & Hall, 2016	✓					✓			✓		✓
Liamputtong, 2002									✓		
MacFarlane et al., 2021					✓			✓	✓	✓	✓
Marshall & Thompson, 2014			✓	✓							
Mathews et al., 2015									✓		
McKenna & Volpe, 2007									✓		
Moon et al., 2010						✓		✓			
Morelli et al., 1992									✓		
Mosley et al., 2007				✓	✓			✓			✓
Muller, 2022	✓	✓									✓
Murray et al., 2019									✓		✓
Murray et al., 2018				✓				✓	✓		✓
Noble et al., 2002											✓
Oden et al., 2010					✓	✓					
Ou et al., 2022	✓	✓									✓
Pease et al., 2017						✓		✓	✓		
Rolls & Hanna, 2001											✓
Rudzik & Ball, 2016		✓	✓								
Runquist, 2007	✓	✓		✓							✓
Shimizu et al., 2017							✓	✓	✓	✓	✓
Shorey et al., 2017		✓									✓
Stiffler et al., 2020					✓			✓	✓		
Tipene-Leach et al., 2000								✓	✓		
Tomori et al., 2016									✓		✓
Tsai et al., 2014	✓	✓		✓							✓
Tse & Hall, 2008				✓						✓	✓
van Schaik et al., 2020			✓							✓	
Veltkamp et al., 2020										✓	✓
Welles-Nystrom, 2005									✓		✓
Zahra et al., 2015	✓	✓									✓
Zambrano et al., 2016		✓	✓							✓	✓
Zoucha et al., 2016					✓				✓		

Appendix H: *Table of Influencing Factors*

Influencing Factor	Parent	Infant
Individual	Prenatal expectations of infant sleep needs	Maturity
	Parenting experience	Temperament
	Previous exposure to infant sleep	Stage of development
	Physiological sleep adaptation	Physical or health issues
	Behavioural sleep adaptation	Sleep preferences
	Cognitive reframing / adaptation	Innate sleep pattern
	Emotional wellbeing	Sleep behaviours
	Repertoire of effective settling strategies	Incidences of choking/reflux
	Anxiety around infant safety	
	Protective behaviours	
	Response to safety advice and opinions	
	Expectations of being able to control infant sleep	
	Confidence in own instincts	
	Perception of vulnerability of infant	
Parent-Infant Relationship Factors		
Shared Space	Infant / parent preference for proximal or separate sleep	
	Cultural practices and values around infant sleep location	
	Response to official guidance on infant sleep location	
	Parent beliefs and values around independent infant sleep	
Shared Time	Parent's need to complete other tasks while infant sleeps	
	Parent's need to move locations while infant sleeps	
	Preference for parent-led or infant-led infant approach to sleep scheduling	
	Bedtime routines	
Control and independence	Shared or individual emotional responses to interplay between sleep, protection, and connection needs	
	Feeling towards and representations of infant	
Contextual Factors		
Familial	Availability of support	
	Mother holds lone responsibility for infant sleep	
	Traditional infant sleep practices	
	Past incidences of SIDS	
	Experience with infants within the wider family	
Socio-Cultural	Others' opinions and advice	
	Cultural sleep practices	
	Housing standards	
	Community security	
	Prevailing public health advice on safe sleep	