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**ALCOHOL INTERVENTION PROGRAMME
IN A SPORTING SETTING:**

**A CLUSTER RANDOMISED TRIAL TO
EVALUATE A SETTING-BASED ALCOHOL
INTERVENTION PROGRAMME IN THE GAA**

Anne O'Farrell

**Thesis submitted for the degree
Doctor in Philosophy at
University of Dublin**

January 2010

DECLARATION

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SUMMARY

Introduction

The link between alcohol and sport is pervasive in many countries, including Ireland, but there is a dearth of information on alcohol use among amateur sporting organisations in Ireland and internationally. A cluster randomised controlled trial was established to evaluate an alcohol intervention programme in the largest amateur sporting organisation in Ireland, namely the Gaelic Athletic Association (GAA).

Aim and objectives

The aim of the programme was to reduce alcohol related harms among GAA players. The study objectives were to establish baseline data on alcohol consumption patterns, behaviours, knowledge, harms and beliefs among GAA club players and to evaluate the effectiveness of a community mobilisation alcohol programme.

Participants and Methods

The study was located in two of the four counties in the Health Service Executive North East region. All the clubs in the control county (N=29) and a 20% random sample (12/60) in the intervention county were selected. All players aged 16 years and over were eligible. Baseline (pre-intervention) data and follow-up (post-intervention) data were collected by self-administered questionnaire from the GAA club players, club managers and club coaches. Player outcome measures included reduced: prevalence of regular binge drinking, Alcohol Use Disorder Identification Test (AUDIT) score, total alcohol consumption and number of alcohol related harms. Club level process outcomes were also investigated.

A community mobilisation approach that involved attempting to change the GAA club environment as well as the individual players was used. The intervention included: (1) alcohol education for the players; (2) alcohol policy training for club managers and coaches and (3) an alcohol media campaign.

Multivariate regression analyses were carried out at individual and cluster level and multi-level modelling was also performed.

Results

Response rate at baseline in the control county was 93.1% (27/29 clubs) and 83.3% (10/12 clubs) in the intervention county. Two additional clubs were randomly selected for the intervention. Baseline data were collected on 960 players (N=628 control, N=332 intervention). All the intervention clubs and all but two of the control clubs were followed up.

At baseline, average yearly consumption was 12.5 litres with almost one third of players (30%) reporting drinking over the recommended limit of 21 units per week. Over half of the players (50.7%) were regular binge drinkers and three-quarters (74.7%) had an AUDIT score of 8 or more. The majority of the players (81%) reported experiencing at least one harm due to their drinking and there was a strong association between regular binge drinking and increasing odds of experiencing harms. The age having first full alcoholic drink was inversely associated with all of the alcohol outcome measures.

Follow-up data were collected on 659 players (441 control, 218 intervention). There were some declines in alcohol outcomes and some of these declines were significantly greater in the intervention players. However, after adjusting for club (cluster) there were no significant differences. One third of the clubs had a written alcohol policy in place and 83.3% found the programme effective, with 58.3% stating that it improved player performance and reduced alcohol related incidents at the club (process outcomes).

Conclusions

The community based intervention did not have a differential impact on alcohol outcome measures among the GAA players. However, many alcohol outcome measures declined in both control and intervention players. A similar reduction in per capita consumption for the population was observed over the same time period.

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1 Introduction to the project

This thesis described the evaluation of an alcohol intervention programme in a sport setting by means of a cluster randomised controlled trial. The project involved the administration of an alcohol intervention programme to playing members of clubs within the Gaelic Athletic Association (GAA). It was a cluster randomised controlled trial that utilised a community mobilisation approach to reduce alcohol related harms among GAA players. The aim and objectives are described in more detail later in this chapter but the overall aim of the programme was to reduce alcohol related harm in the GAA community by reducing binge drinking and reducing alcohol related harm among the GAA club players. The project involved GAA clubs from two counties in Ireland; clubs from one county acted as controls and selected clubs from another county received the intervention. The alcohol intervention programme is described in Chapter 2, and had four components to it; an alcohol education programme for the players, and alcohol education programme for the coaches, alcohol policy training for club managers and other GAA personnel and an alcohol media campaign. The project was implemented at the club (cluster) level to all playing members aged 16 years and over from clubs randomly selected from the intervention county. A description of the intervention programme is given in this thesis in Chapter 2, but the thesis relates to the evaluation of the programme.

1.1 Introduction to the literature review

This chapter outlines the literature review that was carried out prior to the evaluation of this project. The methodology used to carry out the literature review and the literature review are presented in the first chapter. The second chapter outlines the methodology issues arising from the study; the third chapter outlines the methodology used in the study, the fourth chapter describes the results of the study and the fifth chapter deals with the discussion, conclusions and recommendations arising from the study.

Search strategy

A computerised literature search of Medline and Highwire databases was performed using the search term 'alcohol' in combination with the terms: 'health', 'policy', 'sport', 'harm' 'interventions', 'community mobilisation initiatives' and 'health promotion initiatives'. The Highwire database is a search engine designed by Stanford University that searches for published articles and includes peer-reviewed publications from independent publishers, societies, associations and university presses to facilitate the digital dissemination of 1,330 journals, reference works, books, and proceedings. Relevant articles were identified and retrieved and the references of each of these were hand searched for further articles. Relevant articles were also identified from published reports, research days and the Cochrane library. A search of the grey literature was also performed in order to identify any studies published in non-indexed journals and conference reports. The last search update was undertaken in September 2009. The literature review is presented in five main sections covering alcohol and alcohol related harms; alcohol policies to reduce harm; alcohol in Ireland; alcohol policy in Ireland and alcohol and sport.

1.2 Alcohol

The drinking of alcohol is an integral part of many societies and plays a major role in social, cultural and sporting activities. We drink alcohol to mark such events as births, weddings and funerals as well as to mark the transition from work to leisure time. The benefits to those who drink during social occasions are greatly influenced by culture: There is extensive evidence that the immediate effect of alcohol include increased enjoyment, happiness and sociability, feelings that are experienced more strongly in groups rather than drinking alone.¹ However, alcohol is also a drug and the harmful effect of alcohol and in particular, the binge drinking culture, on the population at individual and societal levels is clearly evident. The main cause of alcohol related harm in the general population is alcohol intoxication and the mechanisms of toxicity are closely related to the way in which people consume alcohol.² Alcohol related harms from a single drinking event (for example, drinking to excess or binge drinking) can result in an increased risk of the acute effects of alcohol such as accidents, injuries, unsafe sex, relationship problems, reduced ability to work, attempted suicide and

drowning.³ There are also chronic adverse effects of long-term alcohol use with evidence of a strong dose-response relationship. The relative risks for cardiovascular diseases, liver cancer, oesophageal cancer, mouth and other cancers together with cirrhosis of the liver are significantly higher among those who consume high levels of alcohol.^{3,4} The negative effects of problem alcohol use are also often felt by those around the drinker with alcohol harm to others being a contributory factor in assaults,⁵ road crashes,⁵ child neglect,⁶ spousal abuse⁷ and homicides.⁸

1.3 Alcohol related harm

The harms associated with problem alcohol use are widespread and include physical harms, physiological harms and social harms. The acute physical effects of alcohol include intentional and unintentional deaths and injury from road traffic accidents, accidents, homicide and suicide. The chronic physical effects of alcohol include alcohol related deaths and morbidity from diseases such as cirrhosis of the liver and other alcohol related diseases. Physiological effects of problem alcohol use include increased morbidity from depression and anxiety. Social harms associated with problem alcohol use are widespread in society and many of the social problems caused by alcohol arise from intoxication whereas others reflect the breakdown of relationships as a consequence of chronic alcohol abuse. Social problems associated with problem alcohol use include criminal behaviour, violence, physical abuse and disharmony in society.

1.3.1 Alcohol related mortality

It is estimated that alcohol causes one in four of all deaths of young men in Europe between the ages of 15 and 29 years with the majority of these deaths resulting from intentional and unintentional injury.⁹ Problem alcohol use causes approximately 195,000 deaths annually in the EU (25 member states in 2006).⁴ Globally, alcohol contributes to nearly half of all deaths from motor vehicle accidents, over one-third of deaths from poisonings, drowning and homicide and one-fifth of deaths from suicides.⁹ For young women aged 15 to 29 years, alcohol contributes to one third of all deaths from poisonings, drowning and homicide and one in five deaths from motor vehicle accidents.⁹

The European Comparative Alcohol Study (ECAS) studied the connection between changes in population drinking and mortality rate for the period 1950 to 1995 in 15 European countries including Ireland. This time-series study found that a one litre increase in alcohol consumption lead to a significant increase in male mortality for cirrhosis (6.7%), accidents (7.5%) and homicide (20.6%).¹⁰

In Ireland, alcohol related mortality has increased substantially. During the period 1992-2002 an increase of 61% in alcohol specific chronic conditions and an increase of 90% in alcohol specific acute conditions were recorded.¹¹ A total of 14,223 people died in Ireland from the five main alcohol related deaths during the decade 1992-2002; these deaths included deaths due to cancers related to alcohol, alcohol chronic conditions (e.g. alcohol dependency, alcohol abuse and alcohol psychosis), chronic liver disease and cirrhosis, alcohol acute conditions (e.g. alcohol poisoning, toxic effect of alcohol) and suicide. The number of deaths in a single year was highest at 1,542 deaths in 2001 which corresponds to the year that alcohol consumption per capita peaked in Ireland. This increase in alcohol related deaths contrasts sharply with a decrease of 14% in all cause mortality during the same time period.¹¹ Between 1995 and 2005, alcohol related mortality peaked for both men and women in the 50-59 year age group with 68% of alcohol related deaths occurring in people aged less than 60 years. In comparison, only 21% of all other deaths in the Irish population for the same time period occur in people aged less than 65 years. This highlights the increased risk of premature mortality associated with problem alcohol use.¹²

1.3.2 Alcohol related morbidity

This increase in alcohol consumption has also had an impact on morbidity with alcohol related problems presenting at different levels in the health service sector. A study by Rehm *et al.* estimated that six per cent of deaths, 12% of years of life lost (YLL) and 11% of disability adjusted life years (DALY) in Europe in 2002 could be attributed to alcohol use.¹³ An American study on hospital discharges among short-stay community hospitals in 2005 found that approximately 441,000 hospital discharge episodes for persons aged 15 and older in the United States had a principal (first-listed) alcohol

related diagnosis, and approximately 1.6 million discharge episodes had an any (all-listed) alcohol related diagnosis; this represents a very high rate of 18.8 per 10,000 population for first-listed diagnosis and 69.7 per 10,000 for all-listed diagnosis.¹⁴ A UK report recently published by Alcohol Concern suggested that one in four emergency hospital admissions of men in the UK are alcohol related.¹⁵ There is also evidence to show that patients who drink too much have more complications after surgery.¹⁶

A study in a North Dublin hospital showed that alcohol abuse was the primary factor in 38% of those less than 31 years of age in attendance at the A&E department.¹⁷ A more recent national study involving 2,500 patients in six major acute hospitals across Ireland found that over one in four (29%) of all injury attendances in the accident and emergency departments were alcohol related.¹⁸ Other studies on hospital admissions in Ireland showed that 30% of male and 8% of female patients had underlying alcohol problems.¹⁹ Alcohol accounted for a substantial number of emergency admissions to acute hospitals in a health board region in Ireland, where an 80% increase was observed in the five year period of 1997-2001.²⁰ Between 1995 and 2004 there were 139,362 alcohol related hospital admissions with the number of discharges increasing by 92% between 1995 and 2002.¹² Hospital admissions in Ireland for acute pancreatitis increased by 54% between 1997 and 2004.²¹ Trends in age standardised incidence rates for cancers compiled by the National Cancer Registry between 1994 and 2003 showed that cancer of the liver had the highest increase of all cancer rates with a 10.7% increase for females and a 7.4% increases for males.²² A study of postnatal women in the Rotunda Hospital in Dublin in 2003 found that alcohol was consumed by 89% of the women, with 10% reporting binge drinking during pregnancy.²³ In 2002, alcohol disorder was the second highest cause for admission to psychiatric hospitals for males and the fourth highest for women.²⁴

1.3.3 Alcohol related social harms

One of the indicators of alcohol related social harm is the level of drunkenness and public disorder in public places. A study carried out in the EU in 2003 found that seven million adults reported being in fights when drinking over the past year.⁴ An Irish study carried out by the Institute of Criminology showed that alcohol was a contributory factor in 97% of public order offences recorded on the Garda computer system PULSE

(Police Using Leading Systems Effectively) system in 2003.²⁵ A study of Irish crime files over a 20 year period showed that almost half (46%) of the perpetrators of and 42% of the victims of homicide were intoxicated when the crime was committed intoxicated.⁸ International research has shown that problem alcohol use and domestic abuse are significantly associated with each other.⁷ A national report on domestic violence in Ireland reported that alcohol was involved in one in four severe abuse cases.²⁶ A national survey on drinking habits in Ireland found that drinkers reported high levels of personal (regrets, accidents, and fights), economic (work/college) and social (friendship/home life) harms with 43.4% of the 18-29 year old males reporting at least one harm associated with their drinking.²⁷ Alcohol related social harms were also evident in young Irish students: 13% of Irish 16 year olds interviewed in the European School Survey Project on Alcohol and Drugs (ESPAD) study reported that their alcohol use interfered with their school work and 17% indicated that it led to problems with their parents.²⁸

1.4 Alcohol policies to reduce harm

Alcohol policy is broadly defined as “any purposeful effort or authoritative decision on the part of governments or non-government groups to minimize or prevent alcohol related consequences”.² Over the past twenty five years, a good deal of progress has been made in the scientific understanding of the relationship between alcohol policies, alcohol consumption and alcohol related harm. Alcohol policies can be grouped under five headings: (i) policies that regulate the alcohol market; (ii) policies that reduce drinking and driving; (iii) policies that support interventions for individuals including treatment and early intervention services; (iv) policies that support education, communication, training and public awareness; (v) policies that support the reduction of harm in drinking and surrounding environments and (vi) policies based on community alcohol programmes/community mobilisation programmes. Each of these is discussed below.

1.4.1 Alcohol policies that regulate the alcohol market

There is very strong evidence for the effectiveness of policies that regulate the alcohol market in reducing alcohol related harm, including taxation and reducing the physical availability of alcohol (i.e. limiting hours and days of sale and raising the minimum

drinking age). Alcohol taxes are particularly effective in reducing alcohol related harms and economic studies have demonstrated that increased alcohol beverage taxes and prices are related to reductions in alcohol use and related problems. Studies have found that increases in the price of alcohol reduce the alcohol consumption of young people, with a greater impact on more frequent and heavier drinkers than on less frequent and light drinkers.^{29 30}

Historical evidence has shown that total or partial bans on the sale of alcohol can reduce alcohol related harm.³¹ Studies from current more limited bans on alcohol sales have shown that restrictions on sale of alcohol can reduce alcohol related problems.^{32 33}

However, for most of the developed world, total prohibition is not an acceptable option even if the potential for significantly reducing alcohol problems does exist. Bans on alcohol sales for specific persons (e.g. children and adolescents) or in specific circumstances (e.g. at soccer championships) have been successful. Studies have shown that changes in the minimum legal drinking age from 18 to 19 years decreased single vehicle night time accidents.³⁴ Changes in the minimum drinking age were related to changes in other alcohol related injury admissions to hospitals and injury fatalities.³⁵ The regulating of retail alcohol outlets also has an effect on reducing alcohol related harms. A time-series study on the number of on-premise outlets in Norway in 1960-1995 found a significant positive association with outlets and the number of violent crimes.¹⁰

Another method of regulating the alcohol market is to regulate the promotion of alcohol. Although some studies showed that annual advertising expenditure had little impact on total alcohol consumption,³⁶ one US study compared data from states with different policies on non-broadcast advertising and showed an association with spirit consumption and advertising and novelty give-aways and beer consumption and outdoor price advertising.³⁷ Research in the US on fifth and eighth grade students (aged 10 and 13 years) showed no increase in expectation of drinking after viewing television advertisements for beer.³⁸ However, teenage students rated alcohol as more beneficial and less risky after repeated exposure to alcohol advertisements in magazines.³⁹ A longitudinal study in New Zealand also demonstrated an impact of both exposure to, and liking for advertisements, among young people. The study showed that those who gave more positive responses to alcohol advertising at age 18 years were heavier

drinkers and reported more alcohol related aggression at aged 21 years and this was independent of the amount study members were drinking at age 18 years.⁴⁰ Legislation restricting alcohol advertising is used internationally, and in Europe the overall policy trend from 1990's onwards was towards tighter control over alcohol advertising through regulation and self-regulation. However, it has been shown that self-regulation is of little benefit. A Federal Trade Commission enquiry in the US in 1999 into the advertising practices of eight large beer and spirit companies found that half were in violation of their codes and two were targeting underage audiences in a quarter of their ads.⁴¹ Saffer (1991) evaluated the effectiveness of regulation on broadcast alcohol advertising by comparing countries with different policy regimes using time-series data. Countries with a ban on spirit broadcast advertising had 16% lower alcohol consumption and 10% fewer motor vehicle fatalities than countries with no such ban.⁴² Regulation of the alcohol market can be carried out in many ways and appears to be effective in reducing alcohol consumption and subsequent harm.

1.4.2 Alcohol policies that reduce drinking and driving

Most countries have laws that clearly define drink driving as driving with a blood alcohol concentration (BAC) at or above a prescribed level for the whole population (e.g. 0.08% to 0.5%) or for young drivers (e.g. 0 to 0.2%). Lowering BAC levels is one of the most effective measures for reducing drinking and driving,⁴³ although the effect tends to erode over time.⁴⁴ Ross hypothesized that the deterrent impact wears off because drivers gradually become used to the new law and realize that their chances of detection are not very high.⁴⁴

One strategy for increasing certainty of detection is to increase the frequency and visibility of drink driving enforcement. This can be done by the use of sobriety tests at selective checkpoints. However, only motorists who are judged to have been drinking are asked to take a breath test and this greatly weakens the deterrent potential since experienced offenders believe that they can avoid detection. An alternative to such selective testing of drivers is random breath testing (RBT) whereby motorists are stopped at random by police and required to take a breath test. The defining feature of the RBT is that any motorist at any time may be required to take a test and refusal to submit to a test is equivalent to a fail. Shults *et al.* reviewed 23 studies of RBT. These studies showed a decline of 22% (range 13-36%) in fatal crashes.⁴⁵ Suspension of the

driving licence of those convicted of drink driving is only partially effective as a way to reduce drink driving recidivism and further alcohol related crashes. It has been suggested that without some form of education, counselling or treatment programme, the effects of license suspension last only as long as the driver is suspended from driving.⁴⁶ A meta-analysis of 215 evaluations of remedial programmes found them to yield an average reduction of 8%-9% both in recurrence of alcohol-impaired driving offences and in alcohol related accidents.⁴⁷

1.4.3 Alcohol policies that support interventions for individuals

While the management of alcohol problems at the individual level (e.g. individual treatment programmes) has benefits at the individual level, there is only limited evidence for its impact at the population level.⁴⁸ However, there is some evidence that declining liver cirrhosis rates might be associated with the increased treatment of alcohol problems in Ontario, Canada.⁴⁹ There is a large body of evidence that shows that alcohol brief advice is effective.⁵⁰⁻⁵¹ Brief intervention is designed to motivate those who engage in high risk and harmful drinking to moderate their alcohol use. It has been shown that the number needed to treat is just eight for both hazardous and harmful alcohol consumption (i.e. eight patients at risk need to be offered advice for one person to benefit).⁵² After brief advice, behavioural skill training and pharmacotherapies dominate the top ten list of effective treatment methods. Behavioural skill training includes the 12-step alcohol programmes, Alcoholics Anonymous (AA) meetings and general alcoholism counselling.⁵³ Programmes supporting expectant mothers in vulnerable families have shown evidence of positive outcomes for maternal alcohol use and infant health.⁵⁴ A number of evaluation studies have shown that workplace programmes succeeded in returning a substantial proportion of employees with alcohol related problems to effective performance.⁵⁵⁻⁵⁷

1.4.4 Alcohol policies that support education, communication, training and public awareness

It has been shown that educational school, college or university based campaigns have limited impact on reducing alcohol related harms. Although there are individual examples of beneficial impact of some school-based alcohol education programmes,⁵⁸ systematic reviews and meta-analysis find that the majority have shown no real impact

in the long-term.⁵⁹ It has been shown that strategies that try to use education alone to prevent alcohol related harm, while they can increase knowledge and change attitudes towards alcohol use, they were unlikely to deliver long-term benefits or be cost-effective. In addition, there was some evidence that simply providing information about the dangers of different substances may, in some cases, increase use.⁶⁰

The use of mass media to heighten public awareness and reduce alcohol related harm has also limited effectiveness. A study on high-school students in the USA showed that the use of mass media interventions did not significantly affect alcohol use or its mediators.⁶¹ However, it has been shown that mass media marketing can be used to reinforce community awareness of the problems created by problem alcohol use and to prepare the ground for specific interventions.

The use of warning labels was introduced in 1989 in the US and there is some evidence that warning labels may increase knowledge regarding the risk of drink driving and drinking during pregnancy.^{62 63} However, MacKinnon *et al.* (1993) found that although 12th graders (17 year olds) reported increased awareness of, exposure to, and recognition of warning labels, there were no substantial changes in alcohol use or beliefs about the risk described in the warning labels.⁶⁴

1.4.5 Alcohol policies that support the reduction of harm in drinking and surrounding environments

The consumption of alcohol takes place in a social, cultural and community context and changing the environment or context can be used to reduce alcohol related harm. It has been shown that aggressive behaviour can be a problem associated with drinking in certain licensed premises. Bars that have serving practices that promote intoxication, and crowded bars were associated with alcohol related problems.⁶⁵ The training of bar staff in responsible serving of alcohol has been shown to be successful in reducing bad serving practices such as 'pushing' drinks and increased the use of interventions such as suggesting food and slowing service.⁶⁶ Time-series analyses of mandatory server training suggest that training was associated with fewer visibly intoxicated persons and fewer single-vehicle night-time crashes.⁶⁶ Holding servers legally liable for the consequences of providing more alcohol to persons who were already intoxicated or

those under-age has shown consistent benefits in the United States.⁶⁷ Interventions that focus on changing the bar environment (e.g. changes in policies related to games, management of queues and re-entry into the bar, modifications of the physical environment and improvements in staff communication and intervention skills) have been shown to be effective in reducing harms from drinking in these settings without altering overall consumption levels.^{66,67}

1.4.6 Alcohol policies based on community alcohol programmes/community mobilization programmes

Community based alcohol programmes, commonly known as community mobilization programmes, usually involve a geographically defined community and usually include a range of local stakeholders who have input into defining the programme. Community mobilisation programmes employ a community-wide approach to the prevention of alcohol related harms. They differ from individual interventions and specific settings such as schools in that they focus on the community as a system involving numerous components including: the individual drinker; the family; the licensed premises; the local enforcement agencies and other social organisations that may support and promote health promotion/public health campaigns. The major vehicle by which change is facilitated is the adoption of appropriate practices and policy development by all stakeholders in the community. In this way, traditional cultures of problem alcohol use are challenged. Community strategies that focus on changing the local environment to decrease heavy drinking and reduce alcohol problems, among all age groups or specifically among young people, have the potential to effect structural changes in the community drinking environment that could have an especially broad and long-lasting impact on drinking behaviour.⁶⁸⁻⁶⁹

Many community mobilisation programmes have been shown to be effective in reducing drinking and driving, alcohol related traffic fatalities and assault injuries.⁷⁰⁻⁷¹ Although the sport setting would appear to have significant potential for community mobilisation programmes to be effective, the use of community mobilisation programmes in the sport setting is not widespread. Evaluation of the programmes have not been sufficient to allow conclusions to be drawn about the impact of health promoting policy on outcomes.⁷² A community mobilisation programme was carried out in amateur sporting clubs in Melbourne, Australia.⁷³ The aim of the Australian

programme was to employ a community-wide approach to reducing risky alcohol consumption and alcohol related harms. The authors concluded that the programme was a success. Those involved believed that the level of intoxication among the members of participating clubs decreased during and after the programme and that club members of participating clubs had increased awareness about the dangers of alcohol.⁷⁴ However, this study was not controlled so evaluation of its effectiveness is difficult to interpret.

1.5 Alcohol in Ireland

Alcohol plays an important role in Irish society with alcohol commonly consumed at social occasions such as wedding, christenings and funerals. Long-standing stereotypes portray Irish people as prone to using alcohol to excess. Heavy drinking is part of the culture of Northern Europeans particularly in countries such as Ireland, the UK and Denmark. The available data indicate that the ‘problem’ of Irish drinking and Irish attitudes to alcohol is not as straightforward as traditionally supposed. For example rates of abstinence from alcohol are higher in Ireland than in the UK.⁷⁵ Amongst migrants in the UK, the Irish are no more likely to consume alcohol than the indigenous population. However, those Irish people who do drink alcohol do so at generally higher levels than their British born counterparts.⁷⁵

1.5.1 Alcohol consumption in Ireland

Up until 2007, Irish society has experienced major social and economic change with rapid economic growth and increased employment opportunities leading to increased affluence and heightened interest in recreational, sporting and leisure activities. Against this backdrop, there has also been a dramatic rise in per capita alcohol consumption in Ireland. There was a 41% increase in alcohol consumption in the decade 1989 to 1999 and in 2001 alcohol consumption in Ireland peaked at 14.4 litres of pure alcohol per adult aged 15 years and over.⁷⁶ The increased consumption although linked to the increased affluence has also been linked to the relative decline in alcohol taxes and greater access to alcohol. Increased alcohol consumption among women and youths is also associated with this development.⁷⁷ Although alcohol consumption in 2003 showed a decline (to 13.5 litres per adult aged 15 years and over) for the first time

in sixteen years, Ireland still remained the second highest consumer of alcohol in the EU, after Luxembourg. Although alcohol consumption decreased again in 2008 to 12.4 litres per adult aged 15 years and over, Irish drinkers still drink about 20% more than the average European drinker.⁷⁸ While beer remains the most popular alcoholic drink in Ireland, representing 51% of total alcohol consumption, the growth in the consumption of wine and cider has been strong with the market share for wine increasing from 6% in 1986 to 21% in 2006 and the market share for cider increasing from 2% in 1986 to 8% in 2006.⁷⁹ Wine is now the second most popular drink with spirits representing 19% of market share. The decline in alcohol consumption in 2008 mirrors the recent sharp decline in the Irish economy and the decline in affluence over the same time period.

1.5.2 Drinking patterns in Ireland

Drinking patterns, that is, the amount of alcohol consumed per occasion and the frequency of consumption are also very important. While the per capita consumption data are of considerable use from a public health perspective, they say nothing about whether the alcohol is drunk in small quantities across a large number of drinking occasions or whether a large amount of alcohol is drunk on one occasion. The pattern of drinking large amounts of alcohol on a single drinking occasion is commonly referred to as binge drinking and is associated with drinking with the intention of becoming intoxicated. Definitions of what constitutes binge drinking vary. In 2004, the National Institute on Alcohol Abuse and Alcoholism (NIAAA) National Advisory Council defined binge drinking as drinking more than five drinks in a row (or 70g or more of pure alcohol) for men and more than four drinks in a row (or 50g or more of pure alcohol) for women on one occasion/drinking session. The Council suggested that ‘consuming this quantity of alcohol on one occasion could reasonably be expected to lead to intoxication which is a key feature of binge drinking and places the individual at increased risk of harm’.⁸⁰ This is the definition used by the European School Survey Project on Alcohol and Other Drugs (ESPAD). The national lifestyle survey (SLAN) used six or more drinks per occasion as the definition of binge drinking.⁸¹ In order to allow for comparison with the national survey (SLAN) this definition of 6 or more drinks per occasion was used.

There is evidence that binge drinking is very common in Ireland.^{27 81 82} A recent survey carried out on a sample of the Irish drinking population aged 18 years and over showed that out of 100 drinking events, 58 end up in binge drinking for men and 30 end up in binge drinking for women. This finding suggests that among those consuming alcohol in Ireland, binge drinking is the norm among men and is common in women.²⁷ The national lifestyle survey (SLAN) in 2002 also reported that a high percentage of the population (45%) said that they consumed six or more drinks on one occasion at least once a week (i.e. binge drinking).⁸¹ Although there was a decrease in 2007, the figure was still high with 28% consuming 6 or more standard drinks on one occasion at least once a week.⁸² Furthermore the prevalence of binge drinking remained high in the younger age group of 18-29 year olds although reduced from 48% in 2002 to 40% in 2007. The percentage of all drinkers consuming above the recommended weekly limit of 21 standard drinks for men and 14 standard drinks for women also decreased from 13% in 2002 to 8% in 2007. The percentage of male drinkers aged 18-29 years old who reported drinking over the recommended weekly limit remained high at 15% in 2007.⁸² However, these decreases must be viewed with caution since the survey method has changed over the study period from postal self-report questionnaires in 2002 to face-to-face interviews in 2007.

The recent European School Survey Project on Alcohol and Other Drugs (ESPAD) study found that students aged 16 from Ireland reported the highest average intoxication scores among the 35 countries surveyed.²⁸ Furthermore Irish students were in the top eight for having been drunk during the last 12 months with 47% of the 16 year old students reporting that they had been drunk during the last year and 26% reporting being drunk in the month before interview.²⁸ This is of grave concern given that binge drinking is particularly linked to an increased risk of the short-term or acute effects of alcohol and is strongly associated with accidents, injuries⁸³ and homicide.⁸⁴

The Irish Health Behaviour in School-aged Children (HBSC) 2006 study on 9-18 year olds reported that 26% of children stated they had an alcohol drink in the last month. There was a clear age gradient.⁸⁵ They found that between 2-5% per cent of boys and 1-2% of girls aged 10-11 years and between 10-16% of boys and 11-12% of girls aged 12-14 years had an alcohol drink in the last month. These findings are a cause for concern

because studies have shown that age at first drinking is predictive of future alcohol related harms. A US study found that first use of alcohol at ages 11–14 greatly heightens the risk of progression to the development of alcohol disorders.⁸⁶ Young people who begin drinking before age 15 are four times more likely to develop alcoholism than those who begin drinking at 21.⁸⁷

1.5.3 The economic impact of alcohol

Alcohol is a major economic commodity that is associated with substantial consumer spending. An EU wide study published in 2006 showed that the greatest proportion and level of expenditure on alcohol in Europe is found in Ireland with each household spending an estimated €1700 on alcohol each year. This is on average three times the level of any other country within the EU and ten times the level spent in Greece.⁴ In 2002, the Strategic Taskforce on Alcohol 2nd report stated that, based on revenue commissioners figures, personal expenditure on alcohol was approximately €6.6 billion which is equivalent to €1,942 per adult.⁷⁶ It has been estimated that in 2002 the average weekly expenditure on alcohol in Ireland represented approximately 5.5% of the total household expenditure.⁸⁸

Alcohol-specific taxes are an important source of revenue for many national governments with alcohol taxes making up between 0.5% and 3% of total tax income in EU countries.⁴ In Ireland, alcohol products are subject to excise duty and value added tax (VAT). In 2002, the government received an estimated €1.8 billion in revenue from alcohol taxes. However, it has been suggested that the cost in monetary terms of alcohol related problems outweighs the gain in revenue from alcohol. A report on the estimated alcohol related cost imposed on Irish society was valued at €2.65 billion in 2003.⁸⁹ However, this figure is thought to be conservative as it is difficult to put a monetary cost on the harm problem alcohol use has on the fabric of Irish society.

1.5.4 Availability of alcohol in Ireland

In Ireland a licence must be obtained from the Revenue Commissioners in order to sell alcohol and the licence must be renewed each year. Currently there are approximately 13,000 outlets that sell alcohol and these include bars, restaurants, clubs and off-

licences. In 1998 the Competition Authority recommended deregulation of the licensing laws to open competition in the retails drinks trade market in Ireland and the Dail Select Committee recommended the extending of opening hours.⁹⁰ These two measures led to the increased availability of alcohol.⁷⁶

1.5.5 Alcohol advertising and marketing

In Ireland, alcohol advertising is governed by voluntary codes and self-regulation. During the last decade alcohol advertising has increased in volume with approximately €43.2 million being spent in 2002 compared to €25.8 million in 1996.⁹¹ The greatest increase in advertising was in spirit advertisements on television (+228%), outdoors (+136%), cinema (+116%), and press (+83%). Commercial sponsorship has also expanded greatly since the 1980's.⁹² Sponsorship can bring a number of benefits to the sponsor as it can provide a means of avoiding regulations on direct advertising.⁹³ A recent study in New Zealand found that the alcohol industry sponsorship of sports people and sports events was associated with hazardous drinking. Sports people receiving alcohol industry sponsorship at multiple levels of participation (i.e. individual, team and club) had higher AUDIT scores than sports people not receiving alcohol sponsorship.⁹⁴ In Ireland the drinks industry has sponsorship deals with many musical, cultural and sporting events. In 1995 the alcohol industry began its relationship with the Gaelic Athletic Association (GAA) with the sponsorship of hurling in the Guinness All Ireland Hurling Championship. However, the GAA taskforce recommended that sponsorship of GAA activities by alcohol related companies should be limited to two years and ultimately be phased out in the future.⁹⁵

The Alcohol Marketing, Communications and Sponsorship body (AMCS) agreed a revised code of practice with the Department of Health and Children and the alcohol and advertising industries. The purpose of this code is to reduce the exposure of children and young people to alcohol advertisements. The code will dictate that there can be no sponsorship of sports broadcasts by alcohol products. Only one in four advertisements in any medium – sponsorship, TV, internet, print, outdoor or billboards, for example – can be for alcohol products. No advertisement for alcohol can appear anywhere where more than 25% of the audience is under 18. The codes came into effect on 1 July 2008 for new contracts and 1 October 2008 for all existing contracts.⁹⁶

However, it is not legally binding and the continuation of sponsorship of sport by alcohol companies is likely. Sport sponsorship is an inexpensive form of advertising for the alcohol industry which can easily reach target audience i.e. young men who are both the keenest sports fans and the heaviest drinkers, and alcohol advertising and marketing in sport is very prominent in Ireland. Alcohol advertising and marketing spending totalled €69m in 2007, a 31% increase on the previous year. Last year alone Guinness spent more than €1.4m on rugby sponsorship and €1.6m on hurling. Heineken spent €2m on its Irish rugby sponsorship, €239,000 on its Heineken Cup sponsorship and €217,000 on the Heineken Champions League.

1.6 Alcohol policy in Ireland

In recent times alcohol policy in Ireland has been reactive instead of proactive. For example, public concern about the increase in alcohol related problems led to the Minister for Health and Children establishing a Strategic Taskforce on Alcohol (STFA) in 2002 to “*recommend specific, evidence based measures to Government to prevent and reduce alcohol related harm in Ireland*”. The taskforce published their interim report in 2002 and made recommendations which included: regulating availability; reducing drink driving; limiting harm in drinking environments; protecting children and reducing pressure on adolescents to drink; providing information, education and services; and to research and monitor data.⁷⁶

A number of the taskforce recommendations have been implemented. In December 2002, excise duty on spirits was increased and the duty on spirit-based “alco-pops” was also increased to the full spirit rate. Following these increases the alcohol sales figures for both cider and spirits decreased.⁷⁶ However, the recovery of cider sales in 2003 demonstrates increases in alcohol taxes need to be continued in order to reduce overall consumption. The Government has failed to increase taxes on alcohol in recent years and this has led to the increased affordability of alcohol. For example, in the past 15 years, there have only been three increases in excise duty with an increase in duty in cider in 2001, an increase in spirit duty in 2002 and an increase in wine duty in October 2008. The last excise duty increase on beer was in 1994. Successive price increases over the past 15 years have largely been trade and industry led which means that an

increasing proportion of the price of a drink have gone to trade and industry while the proportion of tax (VAT and excise duty combined) going to the government has actually fallen. In the recent budget (December 2009), the Minister for Finance chose to reduce excise duty on beer, spirits and wine leading to a greater reduction in excise duty from alcohol going to the government. This backward step is likely to lead to greater affordability of alcohol and a possible increase in population alcohol consumption.

The Government has strengthened the licensing laws through enactment of the Intoxicating Liquor Act in 2003 in response to the recommendations of the Taskforce. The Act contains measures to combat underage drinking and disorderly conduct and closing time on Thursday night reverted to the earlier time of 11.30 p.m. Bar staff are now being trained in responsible serving practices through the Responsible Serving of Alcohol (RSA) programme. The taskforce recommendation regarding the protection of children has been met in some way with the provision in the Intoxicating Liquor Act 2003 that prohibits those under 18 years old from bars after 9.00 p.m. and a requirement that 18-20 year olds carry an age document and that alcohol consumption by a person under 18 years in a private residence is conditional on the consent of the person's guardian or parent.

The taskforce recommended the promotion of alcohol-free sporting events for all under-age team events and celebrations and that adults should also refrain from drinking alcohol at such events and that children's sport should not be sponsored by the drinks industry.⁷⁶ Based on this, the Irish Sports Council produced the "Code of Ethics and Good Practice for Children's Sport in Ireland".⁹⁷ Furthermore, as mentioned in section 1.5.5, the Alcohol Marketing, Communications and Sponsorship (AMCS) body agreed a revised code of practice with the Department of Health and Children and the alcohol and advertising industries whereby there can be no sponsorship of sports broadcasts by alcohol products and no advertisement for alcohol can appear anywhere where more than 25% of the audience is under 18 years. The codes came into effect on 1 July 2008 for new contracts and 1 October 2008 for all existing contracts.⁹⁶ The introduction of random breath testing in July 2006 has also been successfully implemented and in 2006 there was an increase of 34% in the number of drink drivers detected.⁹⁸ The Road

Safety Authority (RSA) has credited the introduction of random breath testing and greater driver awareness for fewer deaths and serious injuries over recent years. The lowering of the blood alcohol concentration (BAC) levels from 80mg/100ml to 50mg/100ml next year should have a positive impact on road safety in Ireland.

With regard to providing information and education, the introduction of a three year alcohol awareness campaign has been implemented by the Health Promotion Unit and the drinks industry developed a TV advertising campaign promoting responsible drinking. The Taskforce also recommended the development of health education and policy and support services in both school and out of school settings and to this end, the Department of Education and Science has made the provision of health education mandatory through the Social Personal and Health Education (SPHE) programme. In the out of school setting, the substance abuse prevention programme is being carried out in Youthreach, Traveller Training Centres, and FAS Community Training Workshops.⁷⁶

A number of research initiatives have also been carried out since the publication of the taskforce's recommendations in 2002 and these include the SLAN lifestyle surveys, the European comparative study and the Irish College of General Practitioners (ICGP) project. All of these research projects published since 2002 have undertaken to monitor and inform alcohol policy decision making. Although much has been done to reduce alcohol related harm, more needs to be done and the Strategic Taskforce on Alcohol 2004 report set out recommendations based on the WHO European Charter on Alcohol.⁹⁹ These include: regulating availability; controlling promotion of alcohol; enhancing society's capacity to respond to alcohol related harm; protect public, private and working environments; responsibility of the alcohol beverage industry; provide information and education; put in place effective treatment services; support non-governmental organisations; research and monitor progress; and reduce drink driving.

In January 2008 the Minister of Justice appointed the Government Alcohol Advisory Group. The role of the group was to make recommendations to guide new legislation on public order aspects of alcohol consumption. This led to the Intoxicating Liquor Act 2008 being passed. The Commencement Order on the Intoxicating Liquor Act 2008 was

signed on 23 July 2008. The purpose of this Act is to amend the Licensing Acts 1933 to 2004 and the Criminal Justice (Public Order) Act 1994 in order to give effect to reforms recommended by the Government Alcohol Advisory Group.¹⁰⁰ The main provisions in the new Act cover the sale of alcohol, extended opening hours, public order, alcohol promotions and penalties and sanctions. These are described below.

Sale of alcohol

- Off-sales of alcohol will be restricted to the hours from 10.30 am to 10.00 pm (12.30 pm to 10.00 pm on Sundays and on Saint Patrick's Day).
- Any future applicants for a wine retailer's off-licence will also require a District Court certificate. The grounds on which the District Court may refuse to grant a certificate for a spirit, beer or wine retailer's off-licence will be extended. When granting a certificate, the District Court may also impose a condition that a CCTV system be installed.
- In premises that are engaged in mixed trading, such as supermarkets, convenience stores and petrol stations, alcohol products must be displayed and sold in a specified area that is structurally separated from the rest of the premises. As compliance with this provision may require structural alterations to premises, it is intended to give licensees an adequate period of time to make the necessary arrangements before bringing it into force.
- The grounds on which an objection may be made to the granting of a District Court certificate for any off-licence will be extended to include consideration of the needs of the neighbourhood to the number of existing off-licences in the area.
- Test purchasing of alcohol products will be permitted in both on- and off-licences; appropriate safeguards for the protection of the young people concerned will be put in place.

Extended opening hours

- The conditions under which 'special exemption orders' can be made will be amended to require the operation of a CCTV system and compliance with fire safety standards. The public order ground on which objection may be made by the gardaí to the granting of such orders is also being strengthened.

- The sale of alcohol in premises with theatre licences will be permitted during normal licensing hours only, or during extended opening hours under a special exemption order granted by the District Court.

Public order

- The gardaí will have the power to seize bottles and containers of alcohol in the possession of a person who is aged less than 18 years. It will be an offence for a person, to refuse to give his or her name, address and age, or to hand over the bottle or container, when requested by a Garda with a fine of up to €500 on conviction.

Alcohol promotions

- Advertising, promoting, selling or supplying alcohol at reduced prices will be prohibited.

Penalties and sanctions

- There will be a minimum two-day closure period for temporary closure orders made by the District Court on the conviction of licensees for certain licensing offences, such as, for example, sale of alcohol to a person under 18, or permitting drunkenness or disorderly conduct on the premises. Certain fines in the Licensing Acts 1833 to 2004 and fines under the Criminal Justice (Public Order) Act 1994 will be increased. Whilst the majority of provisions in the Act came into operation on 30 July 2008, the provisions relating to test purchasing of alcohol products and to structural separation of alcohol in supermarkets and convenience stores have not yet been commenced.

1.7 Alcohol and sport

The links between health behaviours and sporting activities have been well documented.^{101 102} In particular the relationship between physical activity and tobacco consumption has been explored and studies have found that the more active adolescents were less likely to smoke.^{103 104} However, with respect to alcohol and sport, studies have led to contradictory results. Some researchers found that those most involved in sport had the lowest alcohol consumption¹⁰⁵ while others have shown that those most

involved in sport consume more alcohol.¹⁰⁶ Some studies found no relationship at all between alcohol and sports.¹⁰⁷ One study in France on sport science students showed that compared to their peers in the general population, students studying sport drank less frequently but reported more episodes of intoxication¹⁰⁸ A study on US college athletes found that athletes reported more binge drinking, heavier alcohol use and a greater number of alcohol related harms than non-athlete students.¹⁰⁹ It appears that those involved in team sports may be at greater risk of excessive drinking than individual athletes. It would appear that playing level is also important in determining the relationship between alcohol use and sports participation.^{110, 111} A study in New Zealand on sports people showed that hazardous drinking behaviours differed across different levels of sporting participation (e.g. elite-international players vs. elite-provincial players vs. social/club players) Elite-provincial sports players had the highest level of hazardous drinking, followed by club/social players and elite-international players had the lowest level.¹¹² A study among US sports people found higher rates of binge drinking among the leaders of sports teams than among sports club members.¹¹⁰ A curvilinear link between alcohol use and sporting activities has been mooted, whereby it has been suggested that athletes drink less alcohol than those who perform no physical activity but those who play sports intensively drink more than those who practice sports in moderation.¹¹³

A recent study in England found that people meeting the recommended levels of physical activity were more likely to smoke and drink heavily.¹¹⁴ Schuit *et al.* put forward the ***sport hypothesis*** to explain this positive association between drinking and physical activity suggesting that participation in sports and exercise leads to heavy drinking and smoking.¹¹⁵ Alternatively Poortinga puts forward the ***occupation hypothesis*** and they suggested that people with a manual occupation are more likely to participate in sport and also be more likely to drink and smoke heavily.¹¹⁴ Although some studies found that heavy drinking was more common among manual workers¹¹⁶ other studies found no clear socioeconomic pattern in heavy alcohol consumption.¹¹⁷

1.7.1 Biological effect of alcohol on sports performance

The metabolism of alcohol occurs in the liver where it is oxidised firstly to acetaldehyde and then to acetate. Acetaldehyde is responsible for many of the adverse effects of alcohol. The rate at which alcohol is cleared from the liver varies for each individual but usually depends on the amount of alcohol consumed in relation to habitual intake. It is not altogether clear whether the metabolism of alcohol is increased or decreased by exercise as there are conflicting data in the literature.^{118, 119} The effect of alcohol on various body tissues and the variability of subject responses to alcohol make it difficult to determine the direct effect of alcohol on sports performance.¹¹⁸ However it has been shown that alcohol does not contribute significantly to energy stores used for exercise although in situations of prolonged exercise it may increase the risk of hypoglycaemia due to suppression of hepatic gluconeogenesis. Increased heat loss can be associated with this hypoglycaemia causing an impairment of temperature regulation in cold temperatures. The few studies on acute alcohol ingestion and actual sports performance show variability in results. Houmard *et al.* (1987) showed that ingestion of small amounts of alcohol (e.g. keeping BAC below 0.5g/100ml) did not have a significant effect on the performance of a 5 mile treadmill time trial whereas McNaughton and Preece showed that although low alcohol intake did not affect performance of sprinters at short distances, performance was reduced over longer distances and as alcohol intake increased.^{120, 121} There is also a limited amount of information available on the effects of acute ingestion of alcohol on motor control and performance but a review of the literature showed that even small doses of alcohol had a detrimental effect on athlete concentration, visual perception, reaction times and co-ordination.¹²² A review by the American College of Sports Medicine and a review by Williams (1991) summarized the acute effects of alcohol ingestion on metabolism and sports performance and both reviews concluded that small to moderate amounts of alcohol had detrimental effects on overall sports performance.^{122 123} Studies on the effect of acute alcohol ingestion on post-exercise recovery have shown that alcohol use impedes rehydration and may impede repair processes and the restoration of glycogen storage.¹¹⁸ A study of the effect of previous day's alcohol intake (i.e. hangover) on performance was carried out by O'Brien (1993) and it showed that any level of alcohol intake appeared to impair aerobic capacity.¹²⁴

1.8 *Alcohol and the GAA*

The Gaelic Athletic Association (GAA) is the largest amateur sporting and community organisation in Ireland and has over 3,000 clubs. There are approximately 800,000 paid up members, 320,000 of whom are playing members. Clubs are generally based on a specific geographical area, usually a parish, and draw their players from that area. In certain cases, e.g. universities, the club will represent an organisation or institution and will draw players from the members of that organisation. Games played at the clubs include hurling, gaelic football, ladies camogie and handball. Clubs usually have one or more teams at various levels and will play in their county's leagues, cups and championships. Most clubs will have hurling and football teams but some clubs will concentrate exclusively on one or other of the two games. A study carried out by the ESRI in 2003 on approximately 3,000 people showed that around 8% of the male population play gaelic football and 5% play hurling.¹²⁵ The habit of drinking alcohol, including underage drinking at sporting clubs and during and after sporting events is not a new phenomenon in Ireland. Athletes and spectators have long marked winning and losing of matches with alcohol after club and training sessions. Traditionally many sporting clubs have also viewed alcohol sales and sponsorship as necessary revenue to financially support clubs. The alcohol industry has supported alcohol promotion and consumption through advertising and sponsorship of sporting clubs and sporting competitions. Sponsorship deals with high profile sporting activities are a sound investment for the alcohol industry as it gives in-depth exposure through event naming and product placing. It also creates positive associations between alcohol and the traits associated with athletes and teams, linking alcohol to masculinity, health and sport. In 1994 the alcohol industry began its relationship with the GAA with the sponsorship of hurling with the Guinness All Ireland Hurling Championship. However, in light of the strong association between alcohol and sports in Ireland, the Strategic Taskforce on Alcohol⁶⁸ recommended the "*promotion of alcohol-free sporting environments by all national sporting organisations*". Taking these recommendations on board, the GAA recognised that as a large sport and community based organisation, they could play a positive role in the alcohol abuse problem. The GAA established a taskforce of its own to examine the issue of problem alcohol use and sport. The GAA taskforce produced a

report and recommended that the GAA put in place a comprehensive education programme and a code of conduct in relation to alcohol.⁹⁵ A code of conduct has now been introduced. However, the GAA taskforce recognised that the GAA were not experts in the field and suggested that the GAA liaise with health professionals to develop a comprehensive education programme. As previously shown, although educational-based programmes may increase knowledge and change attitudes towards alcohol, these programmes generally produce modest effects and are short-lived. However, there is a substantial body of scientific evidence from international studies that a community mobilisation approach with several measures interlinked can reduce alcohol problems.^{68 126} As the World Health Organization 2002 declaration on alcohol policy emphasised “*Alcohol policies directed at young people should be part of a broader societal response, since drinking among young people to a large extent reflects the attitudes and practices of the wider adult society.*”¹²⁷

In the meantime the GAA also employed an alcohol and substance abuse national co-ordinator who was tasked with the job of setting up an Alcohol and Substance Abuse Education Programme (ASAP). The overall aim of the ASAP programme is to reduce the harm caused by alcohol and other drugs among GAA club members. The GAA are currently appointing ASAP officers at county and club level who will be responsible for promoting and implementing club drug and alcohol policies and organising education/prevention initiatives in conjunction with professional drug and alcohol agencies. The ASAP co-ordinator (BM) liaised with us on the project and was a member of our steering committee.

1.9 Study rationale

It was felt the sport club setting within the GAA was an ideal setting for a community based community mobilisation programme since GAA sport participation is an integral part of the cultural identity of Ireland. Although some community mobilisation programmes have been carried out in the sport setting, there have not been many, and evaluation of the programmes has not been sufficient to allow conclusions to be drawn about the impact of health promoting policy on outcomes.⁷² Furthermore, a Cochrane systematic review on policy interventions implemented through sporting organisations found that there were no controlled trials in this area.¹²⁸

A community mobilisation programme was carried out in amateur sporting clubs in Melbourne, Australia.⁷³ The aim of the Australian programme was to employ a community-wide approach to reducing risky alcohol consumption and alcohol related harms. The programme included a number of stakeholders including sport officials (eg, club managers and coaches) and those responsible for the serving of alcohol to club members and was evaluated after one year. The authors concluded that the programme was a success. Those involved believed that the level of intoxication among the members of participating clubs decreased during and after the programme and that club members of participating clubs had increased awareness about the dangers of alcohol.⁷⁴ However, this study did not have a control group and therefore the evaluation of the project was limited.

In this project we have adapted the Australian programme to make it culturally appropriate to the Irish setting and have evaluated the programme by means of a controlled intervention trial: alcohol consumption, alcohol awareness and alcohol related behaviours have been compared before and after the implementation of the programme in an intervention area and also in a control area (without the programme). (This project includes the intervention programme and the evaluation study).

We chose to locate this project in the Health Service Executive -North Eastern Area (HSE-NE) formerly known as the North Eastern Health Board (NEHB) region. This was appropriate since the HSE-NE health promotion department has created a problem alcohol use prevention service employing a health promotion team consisting of a specialist alcohol prevention officer. This service is supported by the health board's public health department and addiction services. Moreover, the health promotion department already had strong links to the GAA clubs in the region and to many key community stakeholders such as the schools, local gardai, publicans and off-licences in the area.

This project, although similar to previous community mobilisation projects, differs in three important respects. Firstly, the intervention was implemented within a specific setting (i.e. GAA sports clubs). Secondly, the intervention was tailored to address the

unique drinking problems and drinking patterns of young club members aged 16-25 who disproportionately experience alcohol related problems. Thirdly, this project also collected data from control clubs in a control county. This study, by establishing baseline data on alcohol consumption and behaviour among GAA club members, will be the first study on alcohol behaviour in amateur sports clubs in Ireland and, due to the fact that there will be a reference (control) county, this will be the first controlled community intervention trial within a sports setting ever to be carried out.^{73,128}

1.10 Aims of the intervention programme

The aim of the programme was to reduce binge drinking and alcohol related harms in the GAA community.

1.11 Objectives of the intervention programme

The programme objectives were:

1. To reduce binge drinking among club members
2. To reduce alcohol related harms among club members
3. To promote a healthy and risk-aware approach to alcohol in participating clubs.

1.12 Aim and objectives of the evaluation study

1. To establish baseline data on alcohol consumption patterns, behaviours, knowledge, harms and beliefs among GAA club players.
2. To evaluate the effectiveness of a community mobilisation alcohol programme with respect to:
 - Reduced binge drinking and reduced alcohol consumption among club players aged 16 years and over;
 - Reduced alcohol related harm among club players aged 16 years and over;
 - Increased awareness of effects of alcohol on sports performance among club players;
 - Development of written alcohol policies within the clubs.

2 Methodological Issues

This chapter outlines the methodological issues that arose during the development of this complex community intervention trial. The methodological issues that arose with regard to conducting and analysing the community intervention trial are described and presented in seven sections:

- 2.1 Study design
- 2.2 Randomisation
- 2.3 Sample size issues
- 2.4 Data analysis issues
- 2.5 Study management issues
- 2.6 Type of intervention
- 2.7 Components of intervention

Chapter three will describe in more detail the methodology used in the study, including the survey instruments used together with the statistical analyses employed in the study

2.1 Study design

Although the randomised controlled trial (RCT) is the gold standard for researching interventions that have the potential to alter health outcomes,¹²⁹ for some health care interventions, such as community intervention programmes, the standard RCT can be problematic. Because a community intervention operates at the group level rather than at the individual level, the standard RCT is not appropriate. In this case, as the intervention was designed to improve individual GAA players' behaviour and knowledge by changing the community (i.e. the GAA club setting and the GAA club personnel), it was not possible to randomise at the player level. Instead cluster or group randomisation was necessary. The cluster was defined as the unit in which the intervention was taking place, in this case the GAA club. This research was therefore designed as a controlled trial comparing the players in intervention clubs with the players in control clubs. Just as the randomised controlled trial is the gold standard in public health and medicine when randomisation of individuals is possible, the group randomised controlled trial is the gold standard in public health and medicine when randomisation of individuals is not possible.¹³⁰

The use of cluster randomised controlled trials is not without its problems. The main consequence of adopting a cluster design is that the outcome for each individual can no longer be assumed to be independent of that of any other individual (which is the case in a standard RCT). Individuals within a cluster are more likely to have similarities, in this case, GAA club players in specific GAA clubs. Therefore, members of clusters cannot be treated as independent, and the effect of this on outcomes leads to a requirement to increase sample size.^{131 132} However, according to Torgerson, cluster randomisation may not be the optimal method to deal with these similarities, or as he puts it, contamination.¹³³ In his discussion paper, Torgerson argues that individual randomisation, with consideration of the potential sources and effect size of contamination, is the optimal approach and that cluster trials are only more efficient where contamination exceeds thirty per cent. However, this implies an ability to measure the effect size of any potential contamination and he acknowledges that there are few published estimates of contamination effect sizes. Given that this was the first community based intervention among GAA clubs ever to be carried out, the contamination effect size in relation to this intervention was unknown so when this research was being planned, cluster randomisation was considered to be the best method.

2.2 *Randomisation*

Group or cluster randomised controlled trials are comparative studies designed to evaluate interventions that operate at a group level, for example, school-based, worksite-based, sport club-based or community-based studies designed to improve the health of students, sport athletes, employees and residents respectively.¹³⁴

Randomisation by group or cluster has implications for the design, power, conduct and analysis of such trials.¹³⁵

For example, as mentioned in section 2.1, cluster randomisation involves a potential reduction in the power of a study because there are likely to be similarities between cluster members, in this case, GAA players in specific GAA clubs. These similarities

are likely to have an effect on the sample size required to detect differences between the control and intervention. If cluster members are similar, then each cluster acts as one member and the only way to increase power would be to increase the number of clusters in the study.

A major analytical problem is that there is an expectation for a positive intra-class correlation (ICC) among observations of members of the same group. This ICC represents an extra component of variance attributable to the group and this extra variation will increase the variance of any group-level statistic beyond what would be expected with simple randomisation. Furthermore, with a limited number of groups, the degrees of freedom available to estimate group-level statistics are limited. Any test that ignores either the extra variation or the limited degrees of freedom will have a type I error rate that is inflated and this effect will worsen as the ICC increases.¹³⁶ The impact on sample size can be substantial and depends on the size of the clustering effect and the numbers of clusters available.

2.3 *Sample size issues*

As stated previously, cluster randomisation involves a potential reduction in the power of the study because there are likely to be similarities between cluster members, in this case, GAA players in the same GAA club. The lack of independence between individual study members (i.e. GAA players in the same club) leads to a loss of statistical power in comparison to a simple randomised controlled trial. Typically, to achieve the equivalent power of an individual level randomised controlled trial, standard sample size calculations need to be inflated by a factor of:

$1 + (n-1) \rho$ where n = average cluster size and ρ is an estimate of the Intra-Cluster Correlation (ICC). The ICC or $\rho(\text{rho})$ is a measure that compares the within-group variance with the between group variance.¹³⁷ The calculation of the ICC together with calculation of the sample size is presented in more detail in Chapter 3.

2.4 *Data analysis issues*

The analysis of a cluster randomised trial must also take into account the clustered nature of the data. As standard statistical techniques require the data to be independent,

standard statistical techniques are no longer appropriate unless an aggregated analysis is performed at the level of the cluster.¹³⁸ If the clustering effect is ignored, p values will be artificially lowered and confidence intervals will be too narrow, increasing the chances of spurious significance.¹³¹ Despite these problems, many studies fail to take into account the effect of clustering when carrying out their analysis, even when they adopt a cluster design.¹³¹

The analysis of a community based cluster intervention is complex as the intervention is given at the cluster level (i.e. the GAA club). Therefore the intervention effect must be assessed against the between-group (i.e. GAA club) variance rather than the within-group variance (i.e. at the individual level).^{139 134} In addition, the degrees of freedom (df) available to estimate the between-group variance will be less than that for the within-group variance when there is a limited number of groups per condition (i.e. clusters).¹³⁴ This extra variation together with the limited degrees of freedom can combine to reduce power. In spite of these challenges, the cluster randomised controlled trial remains the best design available when researchers wish to evaluate an intervention that is implemented at the group level or evaluate an intervention that manipulates the social environment. To overcome these difficulties, a large study with many clusters needs to be considered. In our study 39 clusters were involved which improved the ability of the study to provide reliable robust variance estimates.¹³⁹

There are a number of approaches to the analysis of cluster randomised trials and there is considerable debate surrounding the choice of units of analysis in cluster randomised trials.^{140 141} Some authors stress that analysis should only be undertaken at the levels of randomisation i.e. “analyse as you randomise”. Therefore if a trial is randomized by site (eg, GAA club), it should only be analysed by site (eg, GAA club). Other authors would argue that this emphasis on unit of analysis is mis-placed and that adjustment for clustering can be applied to real-life data once there are a sufficient number of clusters (around 30 to 40) and a sufficient number of participants per cluster (around 10-20).¹⁴¹⁻¹⁴²

The simplest analysis is aggregated analysis performed at the cluster level using standard statistical techniques. For example, one can calculate simple summary statistics for each cluster and then apply standard statistical tests such as two sample t-tests to these summary statistics and obtain appropriate confidence intervals and p-

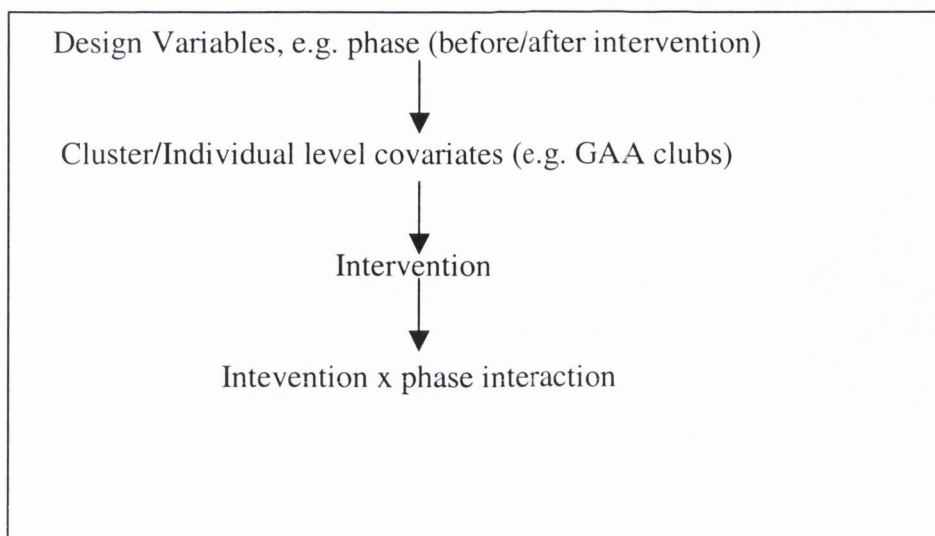
values. This can then be improved by weighting the analysis for cluster size if cluster sizes vary considerably. However, this method can be statistically inefficient as it does not allow variation at the individual level to be explored. More advanced techniques have now been developed to analyse individual level data arising from the cluster design which allow the hierarchical nature of the data to be modelled appropriately.¹³¹ According to Ukoumunne *et al.* (2001) when analysing a cluster nested cross-sectional design, as in this study, there are three main analytical approaches that can be taken.

These include:

- (1) Analysis of follow-up responses alone, without adjustment for baseline imbalance.
- (2) Analysis of follow-up responses adjusting for baseline responses using analysis of covariance (ANCOVA). Owing to repeated cross-sectional design (i.e. different subjects used at each measurement occasion) it is not possible to adjust for subject specific baseline responses.
- (3) Analysis of change (ANOVA) from baseline to follow-up, comparing this measure between the two groups (i.e. control and intervention).

These approaches are considered to have limitations with regard to inadequate control of intra-cluster variability leading to p values being artificially lowered and confidence intervals too narrow, increasing the chances of spurious significance. According to Campbell *et al.* (2000) more complex data modelling should be used. (Figure 2.1). They suggest that an *a priori* model-fitting analysis which identifies the order in which covariates are included in the model should be used and that only after all covariates are included in the model should the “intervention x phase” interaction be examined.¹⁴¹

Figure 2.1. Data modelling for cluster randomised controlled trial.



For this thesis, the outcome data in this research will be analysed at the club level and weighted for potentially significant variables such as cluster size. The statistical methodology used is described in more detail in Chapter 3. More sophisticated analyses are outside the scope of this thesis but are being developed by AK (statistician) for publications.

2.5 *Study management*

This project involved the implementation, delivery and evaluation of a structured alcohol education and awareness programme. It was a complex intervention that included the GAA players, the GAA club managers, and the GAA coaches and where appropriate, the GAA bar staff.

A project steering committee was established at the outset. Members included:

Professor Shane Allwright, Associate Professor in Epidemiology, Department of Public Health & Primary Care, Trinity College Dublin.

Ms. Anne O'Farrell, PhD Student, Department of Public Health & Primary Care, Trinity Collge Dublin.

Dr Nazih Eldin, Health Promotion Manager, Health Promotion Department, HSE-North East, Navan, Co. Meath.

Mr. Gerry Roddy, Project Manager, Health Promotion Department, HSE-North East, Ardee, Co. Louth.

Ms. Susan Kenny, Alcohol Misuse Prevention Officer, Health Promotion Department, HSE-North East, Ardee, Co. Louth.

The HSE-NE Health Promotion Department (NE, GR, SK) undertook to design and deliver the intervention. The Department of Public Health and Primary Care in Trinity College Dublin (AO'F and SA) assumed responsibility for evaluating the intervention by means of a cluster controlled trial. Additional staff were recruited to deliver the intervention and conduct the surveys as required.

2.6 *Type of intervention*

2.6.1 *Community mobilisation*

A community mobilisation approach was taken whereby the intervention involved attempting to effect change among the GAA clubs as well as the individual players. Community mobilisation is a capacity building process through which local individuals, groups or organisations identify needs, plan, carry out and evaluate activities on a participatory and sustained basis, so as to improve health and other needs, either on their own initiative or stimulated by others.² Community mobilisation empowers individuals and groups to take some level of action to facilitate change.¹⁴³ Unlike other education-based alcohol interventions that are tasked with changing individual behaviours, the community mobilisation approach focuses on changing the environment in which a person consumes alcohol as well as the behaviour of the individual drinker. Many community mobilisation projects employing a community wide approach to the prevention of alcohol related harms have been carried out.^{68 144 70} They differ from individual intervention approaches as they focus on the community as a *system* involving numerous components, including the following: the individual drinkers, the licensed premises, local enforcement agencies and, in the case of sports clubs, the club managers and coaches. Research has shown that community mobilisation programmes can reduce alcohol related harms and reduce alcohol use among young people.^{68 144}

As mentioned in section 1.56, a community mobilisation programme in sporting clubs in Australia was implemented but although the results were positive, there were no control clubs that did not have the programme implemented; therefore the programme itself was not rigorously evaluated.⁷³ The GAA study has been designed as a cluster randomised controlled trial so that the effect of the intervention can be rigorously evaluated.

2.7 *Components of the intervention*

The intervention included: (1) alcohol education for players; (2) alcohol education for coaches; (3) alcohol policy training for club managers and other GAA personnel; and (4) an alcohol media campaign. In order to make the intervention more attractive to the GAA, a nutrition education programme for players was also included in the intervention. The data from the nutrition component does not constitute part of this thesis and will be analysed and reported on elsewhere.

The alcohol intervention programme was delivered by two health promotion personnel (including SK) who were trained in the delivery of health promotion education. The material was developed from a health promotion perspective and based on the programme that was implemented among amateur sporting clubs in Australia.⁷³ A nutritionist (SK) designed and administered the nutrition and lifestyle session. An outline of each component of the programme is given below.

2.7.1 *Alcohol education for players*

The alcohol education training session for the GAA playing members comprised one 10 minute introductory presentation outlining the programme and a 40 minute alcohol education power-point presentation. The presentation included a summary of the levels of alcohol use and alcohol related harm reported by the players at baseline survey for the club in question. There was also a 10 minute question and answer session at the end of the presentation. Evidence-based educational materials were handed out to the attendees on the night of the presentation.

2.7.2 Nutrition education for players

The nutrition and lifestyle training session for the GAA playing members comprised an hour long education session. This session included a power-point presentation based on evidence-based practice with regard to sport nutrition and hydration.

2.7.3 Alcohol education for coaches

The alcohol awareness/education training session for the coaches comprised one 40 minute power-point presentation. The presentation included information on how to deal with alcohol related problems among team players and how to promote a healthy attitude towards alcohol within the club. Evidence-based materials were handed out to the attendees on the night of the presentation.

2.7.4 Alcohol policy training for club managers and other GAA personnel

The alcohol policy training session comprised one 40 minute presentation to GAA senior personnel. The policy session included material on how to construct an alcohol policy together with a copy of a sample alcohol policy for reference. The session included workshops given by the GAA National Coordinator of the Alcohol & Substance Abuse Prevention Programme (ASAP) programme. An ASAP manual and an ASAP DVD were given to attendees on the night and also given to all intervention clubs.

2.7.5 Media campaign

Details about the intervention and contact details for further information were put up on the GAA intervention county website (www.meath.gaa.ie). The official GAA programmes at games of those clubs participating in the intervention were used to promote the intervention and disseminate information about alcohol use and sport participation. Posters regarding alcohol use and its effect on health and on sport performance were placed in the intervention club houses and bars where bars were present in the club.

Further details about the components of the intervention sessions are outlined in Table 2.1 and a CD is enclosed in the Appendix.

Table 2.1 Description of intervention.

Module	Module Contents/Description	Delivered by:	Anticipated Outcomes
Alcohol education for players	<p>Alcohol awareness education programme</p> <p>Awareness of daily and weekly alcohol recommendations, standard drink calculations etc.</p> <p>Alcohol education on:</p> <ul style="list-style-type: none"> - what constitutes harmful drinking - alcohol harm reduction - effect of problem alcohol use on sport performance 	<p>Susan Kenny, Alcohol Misuse Prevention Officer</p> <p>Michelle Kerrigan, Alcohol Misuse Prevention Officer</p>	<p>Reduced binge drinking</p> <p>Reduced overall alcohol consumption</p> <p>Reduced alcohol related harms reported</p> <p>Reduction in AUDIT scores where appropriate</p> <p>Increased awareness about effect of alcohol on sport performance</p>
Nutrition education for players	<p>Nutrition education programme based on food pyramid</p> <p>Information on:</p> <ul style="list-style-type: none"> - optimal protein/ carbohydrate etc. intake to enhance sport injury recovery - dehydration and rehydration and sport performance - effect of alcohol on diet, body weight and sport performance. - education of coaches on importance of availability of water and isotonic drinks at each training session and each match. 	<p>Susan Kenny, (Human nutrition and dietetics)</p>	<p>Increased awareness of role of diet in sports performance</p> <p>Improved rehydration among GAA players</p> <p>Improved dietary habits of players</p> <p>Provision of appropriate fluids at club training and games.</p> <p>Reduced alcohol intake</p>
Alcohol education for coaches	<p>Alcohol awareness education programme based on evidence-based practice</p> <p>Education on:</p> <ul style="list-style-type: none"> - how to identify alcohol related problems among GAA players - how to tackle alcohol related problems at club and player level. - responsible serving of alcohol at club bars. 	<p>Susan Kenny, Alcohol Misuse Prevention Officer</p> <p>Michelle Kerrigan, Alcohol Misuse Prevention Officer</p>	<p>Increased awareness about alcohol issues among coaches.</p> <p>Decrease in promotion of alcohol related culture in club.</p> <p>Improvement in attitude and behaviour with respect to alcohol among club members</p> <p>Changes in attitudes/traditions re: alcohol in clubs</p>

	<ul style="list-style-type: none"> - alcohol harm minimisation strategies - reducing alcohol related culture within club 		
Alcohol policy for senior GAA personnel (managers)	<p>Education and workshop evening on how to develop an alcohol policy for their club.</p> <p>Education regarding current alcohol licensing laws.</p> <p>Information from the GAA Alcohol & Substance Abuse Prevention Programme (ASAP).</p>	<p>Susan Kenny, Alcohol Misuse Prevention Officer</p> <p>Brendan Murphy, National Co-ordinator GAA ASAP Programme</p>	<p>Club alcohol related policy in place or in progress</p> <p>Improved compliance with alcohol laws in clubs.</p>
Media for all GAA club personnel	<p>Use of the GAA county website to promote the project and to increase knowledge on the effect of life-style related factors (e.g., alcohol and smoking) on sports performance and health.</p> <p>Use of:</p> <ul style="list-style-type: none"> - advertisements in GAA match programmes. - posters in club dressing rooms and GAA bars. 	<p>Susan Kenny Alcohol Misuse Prevention Officer</p> <p>Michelle Kerrigan, Alcohol Misuse Prevention Officer</p>	<p>Advertisements promoting the benefits of study intervention in local press.</p> <p>Presence of educational posters regarding alcohol and sport in clubs.</p> <p>Details about intervention and contact details for further information on GAA county website.</p>

3 Methodology

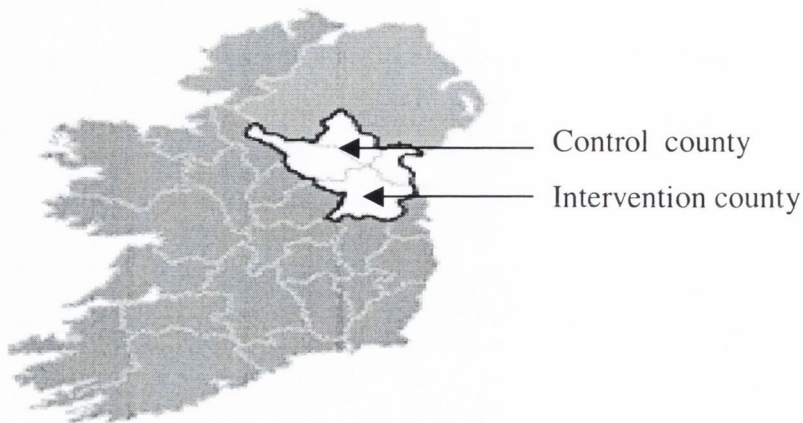
The methodology section is described as recommended in the Consort statement on “Improving the reporting of pragmatic trials”.¹⁴⁵ The methodology is presented in ten sections as follows:

- 3.1 Study location
- 3.2 Sample size calculation
- 3.3 Study population
- 3.4 Sample population
- 3.5 Data collection
- 3.6 Survey instruments
- 3.7 Outcome measures
- 3.8 Statistical analyses
- 3.9 Ethical approval
- 3.10 Funding

3.1 Study location

This study was designed as a community based cluster randomised controlled trial for the reasons outlined in chapter two, section 2.1. For logistical reasons, the study was located in the Health Service Executive – North East (HSE-NE) formerly known as the North Eastern Health Board (NEHB). As described previously, this region was chosen because the HSE-NE Health Promotion Department had an alcohol use prevention service employing a full-time health promotion team consisting of a specialist alcohol prevention officer, addiction counsellors and general health promotion staff and also because the Department already had strong links to the GAA clubs in the region. The study was carried out in two of the four counties in the HSE-NE region. See Figure 3.1.

Figure 3.1 Geographical area of the study.



As the intervention required several visits to each club, the county nearest to the Health Promotion department in Navan, i.e. Co. Meath, was chosen as the intervention county in order to minimise travel time. So as to reduce contamination, the county that was most geographically separate from Co. Meath was selected as control, i.e. Co. Monaghan. The county board of each county was contacted and invited to participate in the project. Both county boards gave permission for their clubs to participate. The GAA club chairman made available the name of each club, contact details and approximate size of the clubs in their county.

3.2 *Sample size calculation*

It was decided that the most important alcohol outcome measure was regular binge drinking. Therefore, calculation of sample size was based on this principal outcome measure i.e. the baseline prevalence of binge drinking among the GAA club players. The baseline prevalence of binge drinking once a week was estimated to be around 48% based on a survey carried out among the Irish drinking population in Ireland in 2002.²⁷ On a simple random sample assumption, it was calculated that to attain a power of 80% and for a two-sided significance level of 5%, 760 subjects (i.e. 380 in control and 380 in intervention group) would be needed to detect a 10% reduction in binge drinking; to detect a 15% reduction in binge drinking, 328 subjects (i.e. 164 in control and 164 in intervention group) would be needed.

However, due to the clustering effect, to achieve the equivalent power of individual level randomisation, standard sample size calculations need to be inflated by a factor of $1 + (n-1) \rho$ where n = average cluster size and ρ is an estimate of ICC.¹³⁷ The intra-cluster correlation coefficient (ICC) can be obtained either from previously published studies or from pilot data. There were no directly comparable published studies available. However, a study on UK data sets¹³⁵ suggested that the ICCs for process outcomes are of the order of 0.5-0.15 whereas ICCs for outcome variables were generally lower than 0.05. Given that our ICC is based on an outcome variable, an ICC of 0.01 was selected. Therefore assuming $n = 25$ (the average number of playing members per club) and $\rho = 0.01$, the standard sample size calculation needed to be inflated by:

$$1 + (n-1) \rho = (1 + (25-1) * 0.01) = 1.24.$$

Our sample size requirement therefore increased from 760 to 942 (471 in control and 471 in intervention) in order to detect **a reduction of 10%** in prevalence of regular binge drinking (i.e. binge drinking at least once a week) between control and intervention. It was also estimated that 38 clusters of an average of 25 people in total were needed.¹⁴⁶

3.3 Study population

There are 29 clubs in Co. Monaghan and 60 clubs in Co. Meath. The precise number of playing members in each club was unknown. However, based on GAA official figures, it was estimated that only between 15 and 25 playing members per club could be expected in Co. Monaghan. Therefore it was decided that in order to recruit 471 players, **all** the clubs in Co. Monaghan would need to be invited to participate in the study. Due to budget and personnel constraints in the Health Promotion Department, it was estimated that the intervention could be delivered to a maximum of 12 clubs. As many of the clubs in Co. Meath are quite large (ranging in size from 15-50 players), it was estimated that 12 clubs would yield the required sample size of 471. As this yields 41 clusters (i.e. 29 clubs in control and 12 clubs in intervention), a sample size of 942 should be sufficient to detect a 10% reduction in prevalence of regular binge drinking.

The study population consisted of all club players aged 16 years and over who played in the selected clubs in Co. Monaghan and Co. Meath. It was decided that only active playing members would be invited to participate. This was to ensure ease of contact and because it was assumed that active playing members would be most likely to be exposed to club interventions during the study period.

3.4 *Sample Population*

Identifying and recruiting members

As soon as a club agreed to participate, the club was contacted and, where possible, a list of all playing members aged 16 years and over was obtained from the club manager or club coach.

Inclusion and exclusion criteria

All playing members aged 16 years or over were eligible to participate. There was no upper age limit but playing members did not usually exceed 40 years of age. Any playing member under 16 years of age and playing members who were injured (and therefore not available to fill out the questionnaires) were excluded.

3.5 *Data collection*

Baseline (pre-intervention) data were collected by questionnaire from GAA club players, club coaches and club managers in both the control and intervention clubs at commencement of the study. The intervention (community mobilisation) was carried out within six months to one year after collection of baseline data. Follow-up data were collected using the same questionnaires as those used at baseline. Both questionnaires have been included in the Appendix.

Delivery of the intervention and collection of the follow-up data were delayed due to personnel issues in the HSE-NE. To enhance comparability between intervention and control areas, and in particular to account for secular trends, it was decided to match the timing of the control follow-up as closely as possible to the collection of the

intervention area follow-up. This meant that there was a gap of 12-24 months from collection of baseline data to collection of follow-up data in the control clubs compared to a gap of 16-20 months from collection of baseline to follow-up data in the intervention clubs. Table 3.1 outlines the timeline of the study.

Table 3.1 Time-line of study.

	Control clubs	Intervention clubs
Baseline questionnaires	April 2006-October 2007	February 2007-February 2008
Intervention	Not applicable	March 2008-June 2008
Follow-up questionnaires	May 2008-October 2008	June 2008-October 2008

3.6 Survey instruments

The survey instruments were self-administered questionnaires. The questionnaires were handed out to groups of players after a training session. A standardised introductory talk of 10 minutes was given before the participants started filling in the questionnaire. At least two people were present to answer any queries the participants may have had regarding the questionnaire. In order to identify participants also present at follow-up, a separate sheet was attached to the questionnaire seeking their name, address and telephone numbers. In the follow-up survey a tick box was also added to this sheet for each participant to indicate permission to contact them if they had very high AUDIT scores. Once the sheets and questionnaires had been assigned the same identification number, the sheet was detached and stored separately.

3.6.1 Questionnaire for playing members

A self-administered questionnaire was used to collect baseline and follow-up data from the club players. The questionnaire included closed demographic questions such as age, living situation, marital status, employment, level of game played and education attainment. Questions about diet, smoking, alcohol use and alcohol related harms, alcohol awareness and alcohol education were also included. Alcohol use was estimated using the World Health Organization (WHO) Alcohol Use Disorder Identification Test (AUDIT)¹⁴⁷ and the Quantity Frequency questionnaire (QF).¹⁴⁸

3.6.1.1 *AUDIT questionnaire*

The AUDIT questionnaire was used to measure alcohol use, abuse, dependency and harms. It has been shown to provide an accurate measure of alcohol risk across gender, age and culture.¹⁴⁹ It is a brief, rapid and flexible questionnaire that can be self-administered. It consists of ten questions about recent alcohol use, alcohol dependence symptoms and alcohol related problems. The lowest score obtainable is zero and the highest score is forty. The sum of the scores assigned by the respondent to each question is easily calculated to produce total scores and scores for each of the three subsets: hazardous alcohol use (a score of one or more on any of questions 2-3); dependence symptoms (a score of one or more on any of questions 4-6); harmful alcohol use (a score of one or more on any of questions 7-10). A total AUDIT score of 8 or more is indicative of hazardous and harmful alcohol use.¹⁴⁷ The AUDIT score can also be used to place respondents into four specific zones which dictate the type of treatment that should be offered. Zone I (scores between 0 and 7) is indicative of safe drinking and no treatment needs to be offered. Zone II (scores between 8 and 15) represents a medium level of alcohol problems and advice focussing on the reduction of hazardous drinking should be offered. Zone III (scores between 16 and 19) represents a high level of alcohol problems and brief counselling should be offered. Zone IV (scores of between 20 and 40) represents very high levels of alcohol problems and warrant further diagnostic evaluation for alcohol dependence.¹⁴⁷

Items in the AUDIT were derived from data collected from a large multinational sample. The emphasis is on identification of hazardous drinking rather than long-term dependence and it focuses mainly on symptoms occurring during the recent past rather than “ever”.¹⁵⁰ Several studies have reported on the reliability of the AUDIT.¹⁵¹⁻¹⁵² A test re-test reliability study indicated that it had high reliability ($r=0.86$) and high consistency in a sample of non-hazardous drinkers, cocaine abusers and alcoholics.¹⁵³ Furthermore, two studies have shown that total AUDIT scores can be used as future indicators of alcohol related problems and life functioning.^{154 155}

3.6.1.2 *Quantity-Frequency questionnaire*

In order to measure the amount of alcohol the respondents were consuming, the questionnaire included a modified version of the Quantity-Frequency scale (QF-scale)¹⁴⁸ that had been used by Ramstedt and Hope on a representative sample of adults aged 18 years and over in Ireland in 2005.²⁷ This measurement instrument consisted of the following questions for each beverage (wine, beer/cider and spirits) separately:

“During the past 12 months how often did you usually drink any beer/cider/wine/spirits?” There were eight responses to choose from including: “Every day”, “4-5 times per week”, “2-3 times per week”, “Once a week”, “2-3 times per month”, “Once a month”, “Less often than once a month”, “Never”. These frequencies represent 365, 234, 130, 52, 30, 12, 6 and 0 drinking occasions per year respectively.

These questions on frequency were followed by questions on quantity “When you drink beer/cider/wine/spirits, how much do you usually drink? The responses to choose from for beers/ciders included “Half pints”, “Pints” “Small cans” “Large cans”. For wine the responses to choose from were “Glasses” “Quarter bottles” and “Bottles”; and for spirits the responses to choose from included “Single measure of spirit”, “Single shot (e.g., Aftershock)”, “Bottle of pre-mixed spirits (e.g., Smirnoff Ice). These measures for each type of drink were converted to grams of pure alcohol assuming 4.5% for beer, 12.5% for wine and 33% for spirits and multiplied by the frequency code.

In order to calculate the number of litres of pure alcohol consumed annually (‘quantity/frequency’), the quantity of each type of alcohol consumed in grams was multiplied by the reported frequency of consumption in days and divided by 1000 and added together for each of the types of alcohol consumed i.e. beer, wine and/or spirits. For example, the amount consumed annually (‘quantity/frequency’) by someone who drinks 3 pints of beer once a week = $(76.8\text{g} \times 52/1000 = 3.99$ litres pure alcohol per year. In order to calculate the number of standard drinks consumed annually, the number of grams of alcohol is divided by 12. As per the example, 3 pints of beer once a week is equivalent to 76.8 grams of pure alcohol; this divided by 12 gives 6.4 standard drinks per week or 332.8 standard drinks per year.

3.6.1.3 Measurement of binge drinking prevalence and frequency

Binge drinking was defined for the players of this study as drinking six or more standard drinks in one sitting. This definition is the same as that used in the SLAN survey.⁸² The following question was used to measure binge drinking. “During the last month, how many times have you had six or more standard drinks in a row? (A drink was defined as 1 glass beer/ lager /cider, a glass of wine, a measure of spirits. A pint of beer/ lager or stout is 2 drinks). There were six responses to choose from including: “Never”, “Once a month”, “Twice a month”, “3-5 times per month”, “6 to nine times per month”, “10 or more times per month”.

3.6.2 Questionnaire for managers

A questionnaire was administered to the GAA manager on duty at the club on the night of the survey. The questionnaire comprised mainly open-ended questions about the club alcohol policy and the club bar (if present). The questionnaire was administered by the researcher (AOF) or other study personnel who were present.

3.6.3 Questionnaire for coaches

A self-administered questionnaire was given to the coaches who attended the coach training sessions. The questionnaire comprised closed questions regarding their alcohol knowledge and alcohol awareness and perceived ability to deal with alcohol related issues among their players.

3.7 Outcome measures

To assess the effectiveness of the intervention, combinations of outcomes have been measured in order to reflect improvements both at the individual level (i.e. the GAA playing member) and at the organisational level (i.e. the GAA club). As stated previously, outcome measures were collected by questionnaire several months after the intervention was completed. Principal outcome measures for players, process and impact outcomes for the clubs are listed below.

3.7.1 *Player level outcomes*

Reduced prevalence of binge drinking and reduced frequency of regular binge drinking (i.e. drinking six or more drinks per occasion at least once a week)

Reduction in AUDIT score, if appropriate.

Reduced total alcohol consumption.

Reduced number of alcohol related harms reported.

Increased alcohol knowledge.

3.7.2 *Club level process outcomes*

Percentage of clubs compliant with intervention; for example presence of a written alcohol policy in place in clubs.

3.7.3 *Club level impact outcomes*

Improved attendance at training sessions.

Improved perceived attitude of players at club training/matches.

3.8 *Statistical Analysis*

The data were double-entered into Excel worksheets by data entry personnel from an outside company. The data were then cleaned by the researcher (AOF) and transferred into statistical software packages JMP7¹⁵⁶ and STATA10 SE.¹⁵⁷ A statistician (AK) used the R statistical software package version 2.9 library lmer4 to carry out the more sophisticated multi-level generalised linear modelling. Statistical significance was set at the 5% level for primary outcomes. Given the increased risk of Type I errors (or false-positive findings) associated with multiple analyses of the same data¹⁵⁸, for secondary outcomes statistical significance was set at the 1% level. Pearson χ^2 test and Fisher's exact test were used to compare proportions. Exact 95% confidence intervals were calculated for proportions of binomial variables and for regression adjusted odds ratios. For data that were approximately normally distributed, the two sample t test was used to compare means in independent groups. For data that were not normally distributed, non-parametric tests were used.

Multiple logistic regression models were developed to determine which variables best explained the observed alcohol outcome measures. The analysis sequence was to run a series of univariate analyses, then to examine the bivariate associations of each alcohol outcome with each variable and finally to develop the multivariate models. Logistic regression models were used when the outcome variables were binary and linear regression models were used when the outcome variables were continuous.

3.8.1 Selection of variables for models

Models were derived by discretionary backward elimination. Univariate logistic regression models were also run to calculate individual odds ratios with confidence limits.

The following criteria were used for variable selection. Variables were first examined individually. Groups of similar variables and alternative versions of the same variables were then examined to assess which were more strongly associated with each outcome. If two related variables (e.g., age left school and highest educational attainment level), both remained significant ($p < 0.05$) in the presence of the other, both terms were retained in the model. Biologically relevant variables and variables with bivariate test of p value > 0.1 were put into the model; only those that remained significant at $p > 0.1$ were retained. Age and education were retained in the models even if not significant as it is standard practice in epidemiological analyses to retain these biologically important confounders.

3.8.2 Organisation of variables

The data comprised continuous, categorical and binary outcome and explanatory variables. The following sections outline how the outcome variables and the explanatory variables were organised.

3.8.3 Outcome variables

The outcome variables included four main and one secondary alcohol outcome measures as detailed below.

The main outcome measures included:

- Regular binge drinking (drinking six or more standard drinks in one sitting) at least once per week.
- AUDIT score
- Alcohol consumption in litres pure alcohol
- Drinking over the recommended weekly limit of 21 units per week
- Alcohol related harms

The secondary outcome measure was

- Alcohol related knowledge.

Binge drinking was recorded on a six point scale ranging from “never to 10 or more times per month”. This variable was used as an ordinal variable. A new binary variable labelled “regular binge drinking” was created: “regular binge drinking” was defined as drinking six or more standard drinks in one sitting, at least once a week (“binge drinking at least 3-5 times per month or more” was coded 1; “less than 3 times a month or never” was coded 0).

Total AUDIT score is a continuous variable on a 0-40 point scale. This variable was used both as a continuous variable and also transformed into a binary variable called “high AUDIT score” with an AUDIT score of ≥ 8 coded as 1 and AUDIT score < 8 coded as 0.

Total alcohol consumption in litres of pure alcohol is a continuous variable. This variable was used as a continuous variable.

Total alcohol related harm score is a continuous variable on a 13 point scale. This variable was used as a continuous variable and also transformed into a binary variable called “high alcohol harm score” with a total alcohol related harm score ≥ 6 coded as 1 and total alcohol related harm score of < 6 coded as 0.

Total alcohol knowledge score is a continuous variable ranging from 0 to 10. This variable was used as a continuous variable and also transformed into a binary variable

called “high alcohol knowledge score” with a total alcohol knowledge score of ≥ 6 coded as 1 and a total alcohol knowledge score of <6 coded as 0.

3.8.4 Explanatory variables

Age was available as a continuous variable. A binary variable was produced with age < 18 coded as 1 and age ≥ 18 coded as 0.

Level of playing was available in 14 categories and was transformed into playing skill level and playing age level categories. Playing skill level category included “Junior players”, “Intermediate players” and “Senior players (including inter-county players)”. Playing age level category included “Minor (i.e. players aged under 18 years)”, “Players Under 21 (i.e. players aged 18 to 21)” and “Players aged 21 years and over”.

Living arrangements were available in five categories and where appropriate this was transformed into a binary variable with “living with parent” yes = coded as 1 and no coded as 0.

Marital status was recorded in five categories including “single”, “married”, “separated/divorced”, “widowed”, “other”. This variable had very few responses in the last three categories and so the data were dichotomised into “single”, coded as 1 and “not single” coded as 0.

Educational status was available in eight categories and as there were few numbers in some categories “educational status” was grouped to form two categories for the regression analysis i.e. educated to Leaving Certificate level or above coded as 1 and below Leaving Certificate level coded as 0.

3.8.5 Baseline data analysis

As randomisation was at the club level, baseline data were analysed to check whether there were significant differences between control and intervention clubs.

Tests of normal distribution of continuous variables included both visually examining distribution of the data through use of histograms and box plots and statistical tests including the Shapiro Wilk test.

In order to describe the sample, frequencies, means, medians and standard deviations were calculated for all continuous variables and exact 95% confidence intervals were calculated for proportions. In order to establish the equivalence of groups at baseline, variables were compared between sites (control area vs. intervention area) using independent t-tests for normally distributed variables or Wilcoxon for non-normally distributed continuous variables. Where appropriate, chi-square tests were used for categorical variables. Baseline differences were adjusted for when evaluating the effect of the intervention.

The prevalence of each of the alcohol outcome measures (i.e. binge drinking, total AUDIT score, quantity of alcohol consumed and alcohol harms) was reported. Total alcohol consumption and AUDIT scores by playing skill and playing age level were also explored. Univariate analysis to explore factors associated with the alcohol outcomes was carried out. The relationship between alcohol consumption and reporting adverse effects was also explored. Finally, multiple logistic regression analyses were performed on the baseline data in order to assess the independent effects of the selected variable(s) on the alcohol outcome measures (i.e. regular binge drinking, total AUDIT scores, quantity of alcohol consumed and alcohol harms).

This baseline analysis provides a profile of current drinking consumption levels and drinking patterns, alcohol harm prevalence among GAA players. Data on current smoking prevalence was also collected and this allowed for the prevalence of current smoking among the players to be determined.

3.8.6 Analysis of the impact of the intervention programme

As discussed in Section 2.4, the analysis of a community based trial is complex as the intervention was given at the cluster level (i.e. the GAA club). Therefore the intervention effect must be assessed against the between-group (i.e. GAA club) variance

rather than the within-group variance (i.e. at the individual level). Given that this study was a community based intervention conducted over a two year period from baseline to follow-up, little overlap was expected between the samples selected from each community (i.e. GAA club) at the baseline and follow-up surveys. Therefore, before and after individual level data were expected to be available only on a minority of participants; paired analyses were performed on this subset (see section 3.8). Instead we had a repeated “cross-sectional design” where a new sample of individuals was taken from each cluster at each measurement occasion (i.e. before and after intervention).¹⁵⁹ This design differs from the traditional experimental design for two reasons: firstly communities rather than individual respondents were randomised to “conditions” (i.e. control group or intervention group) and secondly a (mostly) new sample of individuals was taken from the clusters before and after the intervention. As a result, the community must be used as the unit of analysis and treated as a nested random effect. There are two main approaches to the analysis of cluster randomised trials: analysis at the cluster level or analysis at the individual level. Analysis of the data at the end of the intervention was performed in five steps with the simplest analysis presented first.

1. The first approach was a simple cross-sectional analysis comparing the intervention and control players at baseline and at follow-up, firstly at the individual player level and then at the cluster (club) level (Section 4.3.3). A summary statistic (mean) was calculated for each cluster (club). For continuous outcome variables, the mean of the club means for the intervention clubs was compared to the mean of the control club means using a standard two sample t-test for the difference in means with 95% confidence intervals. For outcome measures based on proportions, the mean proportions across clusters were calculated and compared also using a standard two sample t-test. This approach does not control for any differences at baseline between control and intervention.
2. The second approach was to examine changes in alcohol outcomes over time (i.e. from baseline to follow-up) between control and intervention. This was done at player level and at club level (cluster). The cluster level analysis involved calculating the differences in the club differences (Section 4.3.4). This approach controls for differences at baseline. A sub-analysis on comparison of

changes in outcomes over time on those with very high AUDIT scores at baseline was also carried out (Section 4.3.5)

3. The third approach (Section 4.3.6) was to carry out analysis at the individual player level using modelling techniques in STATA statistical software that allowed for weighting of co-variates at cluster and individual player level.
4. The fourth approach was the use of a multi-level generalised linear mixed model with site (i.e. club) clustered within round (round 0= before intervention, round 1=after intervention). This model allows for variations in means or proportions at the individual level to be assessed against variations in means or proportions at the group level; the degrees of freedom are based on the number of groups or clusters where the unit of randomisation/cluster (i.e. GAA club) is included as a nested random effect.(Section 4.3.7).
5. The fifth approach was the analysis on the paired data i.e. on those participants who were present at both baseline and follow-up surveys (Section 4.3.8).

Additional analyses included analysis by programme component (Section 4.3.9) and analysis of process outcomes from questionnaires administered to managers and coaches (Section 4.4).

3.9 Ethical approval

Participation in this study was on a voluntary basis and confidentiality was assured. Ethical approval was obtained from the Research Ethics Committee of the Faculty of Public Health Medicine of Ireland. The study was restricted to players aged 16 years and over because under Irish law, until the age of 16, the consent of the child's parents or guardians must be obtained and this would make collection of data from under 16 year olds more difficult.¹⁶⁰ Furthermore, given that baseline survey data could have identified some problem drinkers, there could be some conflict between assurance of anonymity and duty of care to follow up problem drinkers, especially those aged less than 18 years. To deal with the situation where problem drinkers were identified, the following statement was included in the questionnaire: "*If you are concerned about*

your own or someone else's alcohol use, you can contact the Health Service Executive (HSE) helpline on freephone 1850 24 1850 for advice on how to contact local alcohol counselling services in your area. Alcohol counsellors are professionally trained to support individuals who wish to change their alcohol use. Alternatively you can contact your GP". A question was also added to the follow-up questionnaire asking the subject's permission to contact them if the questionnaire results indicated that their level of alcohol use was putting their health at risk. As part of the intervention, access to a free and confidential alcohol counselling service was available to participants and their families. An addiction counsellor was also part of the intervention team and was on hand to offer support and advice.

3.10 Funding

The Health Research Board (HRB) funded the evaluation of the intervention (i.e. the community based control trial over a three year study period. The Health Service Executive Dublin North East (HSE-NE) Department of Health Promotion provided the personnel and the materials (hand-outs, power point presentations, media advertisements and leaflets etc.) to carry out the intervention.

4 Results

This chapter is divided into three sections. The first section (4.1) presents the study outline with respect to GAA club recruitment, study time-line, and information about the clubs (cluster level data). The second section (4.2) presents demographic characteristics of the participants (including age, marital status, education, playing level etc.), information of the main outcome measures, binge drinking, total alcohol consumption and AUDIT scores, and factors associated with these outcome measures. The third section (4.3) presents the results on the follow-up data.

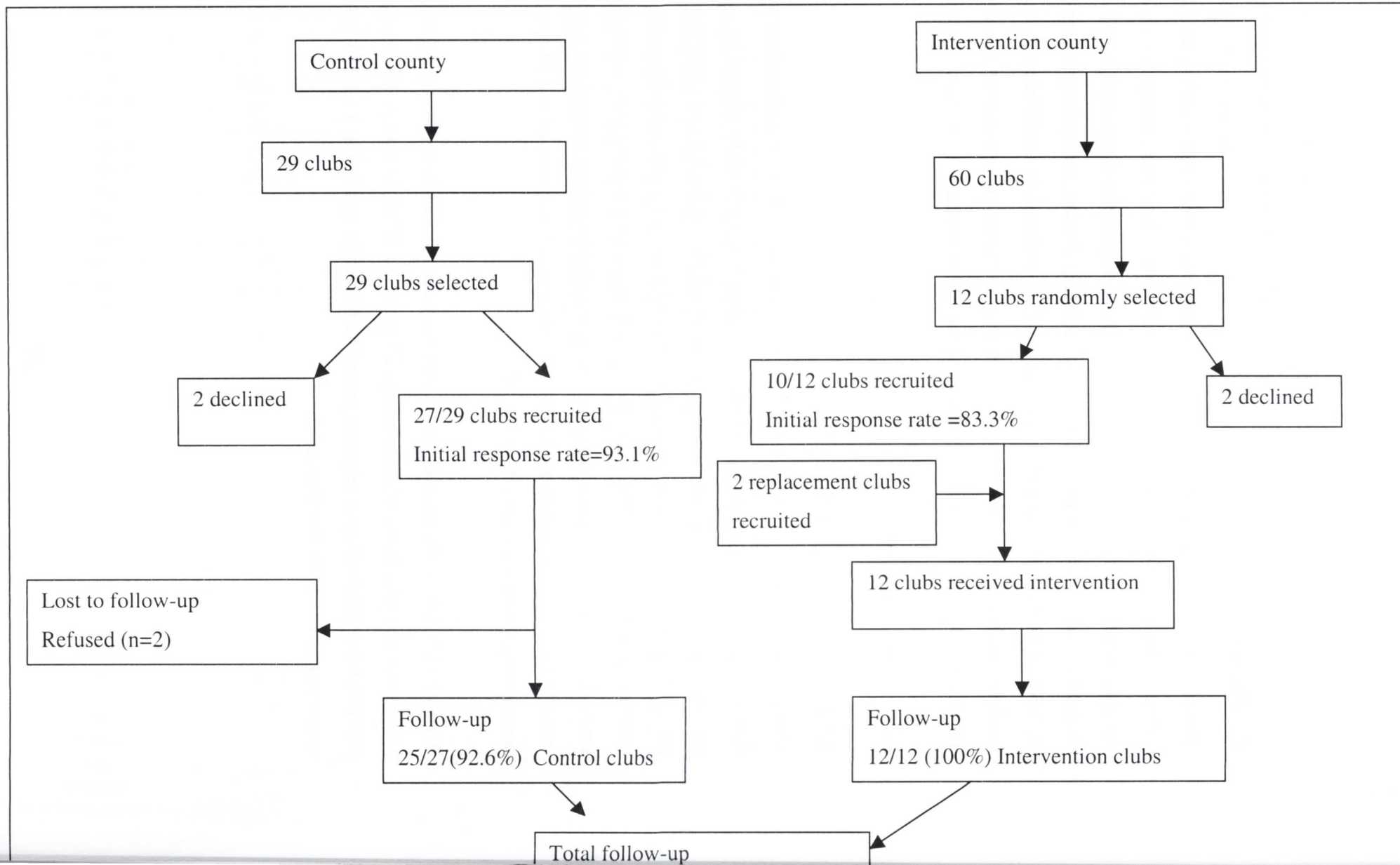
4.1 Study outline

4.1.1 Recruitment of GAA clubs

There were 60 clubs in the intervention county and of these, 12 were randomly selected to receive the intervention. Of the 12 clubs selected, two of the clubs refused to participate, representing an initial response rate of 83.3%. A further two clubs were randomly selected from the remaining 48 clubs and these two clubs agreed to participate in the project. There were 29 clubs in the control county and as these were generally small clubs with relatively few members, it was decided that all of these clubs would be invited to participate in the study. Of the 29 clubs invited, two refused and 27 agreed to participate giving a response rate of 93.1%

All of the 12 clubs in the intervention county were enrolled in the follow-up survey, a 100% response rate. In the control county, 25 out of the 27 clubs who participated at baseline were followed up, a response rate of 92.6%. This resulted in a total follow-up response rate of 94.9%. See figure 4.1.

Figure 4.1 Flow chart of recruitment and follow up of GAA clubs in control and intervention counties.



4.1.2 Study time-line

The baseline survey was carried out between April 2006 and October 2007 in the control clubs and during February 2007 and February 2008 in the intervention clubs. The intervention was administered to the intervention clubs between March and June 2008. Follow-up data collection took place between May and October 2008 in the control clubs and June and October 2008 in the intervention clubs. See Table 3.1, section 3.5, page 52.

4.1.3 Characteristics of clubs participating in the project

As shown in Table 4.1, gaelic football was played at all the clubs. Hurling was also played at 7/12 (58.3%) of the intervention clubs and at 5/27 (18.5%) of the control clubs. Club managers were asked to provide the number of playing members in their club aged 16 years or over. The estimated numbers ranged from 25 to 60. The overall approximate player response rate was 72.5% (based on managers' estimates of player numbers). The majority of the clubs were rural with just 9/39 (23%) being urban clubs. Five of the nine urban clubs were clubs from the intervention county. Six of the 12 intervention clubs (50%) had a club bar and 13 of the 27 control clubs (48.1%).

Table 4.1 Characteristics of the clubs participating in the study.

Club I.D	Club type	Number of playing members 16+ years*	Number completing questionnaire at baseline	% completing questionnaire at baseline	Urban club	Licensed bar	Hurling played at club	Senior team present at club	Gaelic football played at club
C1	Control	30	21	70.0%	No	Yes	No	Yes	Yes
C2	Control	35	26	74.3%	No	Yes	No	No	Yes
C3	Control	30	18	60.0%	No	Yes	No	No	Yes
C4	Control	60	43	71.7%	Yes	Yes	Yes	Yes	Yes
C5	Control	30	16	53.3%	Yes	No	No	Yes	Yes
C6	Control	50	35	70.0%	Yes	Yes	No	Yes	Yes
C7	Control	50	30	60.0%	No	Yes	Yes	Yes	Yes
C8	Control	30	20	66.7%	No	No	No	No	Yes
C9	Control	25	16	64.0%	No	Yes	No	No	Yes
C10	Control	35	19	54.3%	No	No	No	No	Yes
C11	Control	35	31	88.6%	No	No	No	Yes	Yes
C12	Control	30	24	80.0%	No	No	No	No	Yes
C13	Control	25	18	72.0%	No	No	No	Yes	Yes
C14	Control	25	15	60.0%	No	No	No	Yes	Yes
C15	Control	25	21	84.0%	Yes	No	No	No	Yes
C16	Control	50	39	78.0%	No	Yes	No	Yes	Yes
C17	Control	30	20	66.7%	No	No	No	No	Yes
C18	Control	25	17	68.0%	No	Yes	No	No	Yes
C19	Control	25	19	76.0%	No	Yes	Yes	Yes	Yes
C20	Control	25	15	60.0%	No	No	No	Yes	Yes
C21	Control	50	37	74.0%	Yes	Yes	Yes	Yes	Yes
C22	Control	25	19	76.0%	No	No	Yes	No	Yes
C23	Control	25	17	68.0%	No	No	No	No	Yes
C24	Control	45	35	87.5%	No	Yes	No	Yes	Yes
C25	Control	30	20	66.7%	No	Yes	No	No	Yes
C26	Control	25	17	68.0%	No	No	No	No	Yes
C27	Control	25	20	80.0%	No	No	No	No	Yes
I1	Intervention	32	26	81.3%	No	No	No	No	Yes
I2	Intervention	60	51	85.0%	Yes	Yes	Yes	Yes	Yes
I3	Intervention	40	31	77.5%	No	No	Yes	No	Yes
I4	Intervention	45	30	75.0%	Yes	No	No	Yes	Yes
I5	Intervention	30	24	80.0%	No	Yes	Yes	No	Yes
I6	Intervention	25	18	72.0%	No	No	No	Yes	Yes
I7	Intervention	28	19	67.9%	No	Yes	Yes	No	Yes
I8	Intervention	30	26	86.7%	No	No	No	No	Yes
I9	Intervention	50	37	74.0%	Yes	Yes	Yes	Yes	Yes
I10	Intervention	35	29	82.9%	Yes	Yes	Yes	No	Yes
I11	Intervention	25	19	76.0%	No	Yes	No	Yes	Yes
I12	Intervention	30	22	73.3%	No	No	Yes	Yes	Yes

*approximate number

4.2 Baseline results

4.2.1 Demographic and playing profile of participants from control and intervention areas at baseline

Table 4.2 presents the demographic profile of the participants from the control and intervention areas. The control and intervention participants were similar in baseline characteristics. The average age of the participants was 24 years (S.D. 5.3). The majority were single (777, 80.9%) and lived with their parents (649, 67.6%).

Significantly more of the participants from the control area lived with their parents (70.2% vs. 62.6%, $p<0.01$). Over half of the respondents were employed (565, 58.8%). Smoking prevalence was low among all participants; 70 (8.2%) reported that they were current smokers with significantly more of the participants in the control area reporting that they were current smokers (9.4% vs. 6.0%, $p=0.04$). There were significantly more of those aged 18 years and over with Leaving Certificate or higher education among the participants in the intervention area (88.0% vs. 79.8%, $p<0.01$).

Table 4.2 Demographic profile of study participants at baseline.

	Total N=960 No. (%)	Control N=628 No. (%)	Intervention N=332 No. (%)	p-value*
Mean age	24.0 yrs (S.D. 5.2)	23.9 yrs (S.D. 5.3)	24.3 yrs (S.D. 5.2)	p=0.85
Single	777 (80.9%)	501 (79.8%)	276 (83.1%)	p=0.49
Living with parents	649 (67.6%)	441 (70.2%)	208 (62.6%)	p<0.01
Employed	565 (58.8%)	356 (56.7%)	209 (62.9%)	p=0.06
With medical card	129 (13.4%)	83 (13.2%)	46 (13.9%)	p=0.49
18 year olds and older with Leaving Certificate or higher education	684/827 (75.4%)	428/536 (79.8%)	256/291 (88.0%)	p<0.01
Regular smokers	79 (8.2%)	59 (9.4%)	20 (6.0%)	p=0.04
Occasional smokers	129 (13.4%)	75 (11.9%)	54 (16.3%)	p=0.06

* Pearson's chi-square test

Table 4.3 outlines the playing level of the participants. The majority of the players were gaelic football players (892, 92.9%) with hurling being more common in the intervention county compared to control (53.5% vs. 33.3% < p<0.001). Over one third of the players were senior players (333, 34.7%). Minor players (i.e. players under 18 years) accounted for 105 (10.9%) of the players with the proportion of minor players being significantly higher in the intervention county (16.0% vs. 8.3%, p<0.01). Percentages in Table 4.4 may add to more or less than 100% as players may play at several levels, may not be eligible to play in certain categories, may not have their age recorded or may not have answered all questions.

Table 4.3 Playing code, age level and skill level of the study participants at baseline.

Playing skill and age level	Total N=960	Control N=628	Intervention N=332	p-value*
	N (% of 960)	N (% of 628)	N (% of 332)	
Hurling	387 (40.3%)	209 (33.3%)	178 (53.6%)	p<0.001
Gaelic football	892 (92.9%)	597 (95.1%)	295 (88.9%)	p=0.04
Dual players	327 (34.0%)	185 (29.5%)	142 (42.8%)	p<0.001
Minor players (Under 18s)	93 (9.7%)	66 (10.5%)	27 (8.1%)	p=0.23
Under 21 players	83 (8.6%)	56 (8.9%)	27 (8.1%)	p=0.71
Adult teams over 21	637 (66.3%)	404 (64.3%)	233 (70.1%)	p=0.12
Junior players	242 (25.2%)	148 (23.6%)	94 (28.3%)	p=0.10
Intermediate players	176 (18.3%)	135 (21.5%)	41 (12.3%)	p<0.001
Senior players (including Inter-County players)	359 (37.4%)	217 (34.6%)	142 (42.8%)	p<0.05
No playing level recorded	7 (0.7%)	6 (0.9%)	1 (0.3%)	p=0.25

* Pearson's chi-square test for differences between control and intervention participants.

4.2.2 Alcohol consumption characteristics of study participants at baseline

Table 4.4 outlines the baseline findings with respect to alcohol use and alcohol related harms among the study participants from the control and intervention areas. The majority of the players were drinkers (864, 90%). The average age at which participants reported consuming their first alcoholic drink was 15.2 (S.D. 2.8) years. Over half (53.1%) reported having their first alcoholic drink aged 15 years or younger, with just one tenth (10.6%) having their first alcoholic drink aged 18 years or over. Binge drinking status was available for 932/960 (97.1%) of the participants. The proportions reporting regular binge drinking (i.e. having six or more standard drinks on at least one occasion per week) were similar in the control and intervention clubs (49.3% vs. 53.4%, $p=0.24$). Eleven per cent (11%) reported that they always drank alcohol after matches with slightly more players drinking after matches in the intervention area (11.5% vs. 10.7%, $p=0.06$). Over half (589/926, 63.6%) reported that they binge drink at least once a month after matches. Only 14/933 (1.5%) reported that they always drink after training; the proportion being significantly higher in the control players (1.9% vs. 0.6%, $p=0.01$). The mean yearly alcohol consumption in litres of pure alcohol (calculated using data from the quantity-frequency questions (see Section 3.6.1.2)) was 12.5 (SD 16.8). This figure was similar for the participants from the control and intervention clubs. Thirty per cent of participants reported that they consumed over the recommended weekly limit of 21 units; the proportions were similar in those from control and intervention clubs ($p=0.42$).

Table 4.4 Alcohol consumption characteristics of study participants at baseline.

Alcohol consumption characteristics	Total	Control	Intervention	p-value*
No. (%) current drinkers	864/960 (90%)	563/ 628 (89.6%)	301/332 (90.7%)	p=0.54
Average age when first full alcoholic drink was consumed (N=853)	15.2 years (S.D. 2.8)	15.3 years (S.D. 2.9)	15.0 years (S.D. 2.5)	p=0.07
Age having first alcoholic drink				
No. (%) aged ≤ 15 years	540/847 (53.1%)	275/548 (50.2%)	175/299 (58.5%)	p=0.06
No. (%) aged 16-17 years	307/847 (36.3%)	209/548 (38.1%)	98/299 (32.8%)	p=0.12
No. (%) aged 18+ years	90/847 (10.6%)	64/548 (11.7%)	26/299 (8.7%)	p=0.18
Binge drinking				
No. (%) never binger	133/932 (14.3%)	92/606 (15.2%)	41/326 (12.6%)	p=0.27
No. (%) irregular binger (once a month or less)	326/932 (35.0%)	215/606 (35.5%)	111/326 (34.0%)	P=0.66
No. (%) regular binger (at least once per week)	473/932 (50.7%)	299/606 (49.3%)	174/326 (53.4%)	p=0.24
No. (%) who always drink after matches	105/933 (10.9%)	67/605 (11.1%)	38/328 (11.6%)	p=0.06
No. (%) who always drink after training	14/926 (1.5%)	12/601 (1.9%)	2/325 (0.6%)	p=0.01
No. (%) binge drinking at least once a month after matches	589/933 (63.1%)	380/605 (62.8%)	209/328 (63.7%)	p=0.78
No. (%) binge drink at least once a month after training	301/926 (32.5%)	203/601 (33.8%)	98/325 (30.2%)	p=0.26
Mean (S.D) yearly consumption of alcohol (litres of pure alcohol)	12.5 (S.D. 16.8)	12.4 (S.D. 16.7)	12.7 (S.D. 17.4)	p=0.82
No. (%) with > recommended weekly limit of 21 units per week (N=909)	270/909 (29.7%)	170/590 (28.8%)	100/319 (31.4%)	p=0.42

* Pearson's chi-square test or t-test for differences between control and intervention participants. Denominators vary as not all respondents answered all of the AUDIT questions.

4.2.3 AUDIT scores of study participants at baseline

As shown in Table 4.5, AUDIT scores were available for 932 of the participants of whom 835 completed the full AUDIT (i.e. answered all of the 10 questions). To calculate the AUDIT zones, the participants needed to complete all the AUDIT questions so the scores are based on 835 participants. The mean AUDIT score was also based on 835 participants. However, to calculate the other AUDIT categories (i.e. hazardous and harmful alcohol use and dependence symptoms, only some of the questions needed to be completed; therefore they are based on a different number of participants. The mean AUDIT score was 11.9 (S.D. 6.1) for all participants, with little difference between the control and intervention areas. A high proportion (74.7%) of the participants had a high AUDIT score (≥ 8) indicating increased risk of alcohol problems. Almost half (49.2%) were in AUDIT Zone II, 14% were in Zone III category and over one tenth (11.5%) were in the Zone IV category. These results indicate that almost three quarters of the participants warrant some intervention; simple advice focused on the reduction of hazardous drinking recommended for almost half (Zone II); 14% warranting brief counselling and continued monitoring (Zone III); and 11.5% warranting referral to a specialist for diagnostic evaluation and treatment (Zone IV).

Examining which questions had non-zero scores showed that all participants reported potentially hazardous alcohol use (868, 94.5%) and three quarters were at risk of harmful alcohol use (686, 74.5%) and over half (60.5%) had an AUDIT score indicative of dependence symptoms. The pattern was similar in control and intervention respondents (Table 4.5).

Table 4.5 AUDIT scores of participants at baseline.

AUDIT scores	All participants N=932	Control N=606	Intervention N=326	p-value*
Mean AUDIT score N=835	11.9 (S.D.6.1)	12.0 (S.D. 6.1)	11.8 (S.D. 6.2)	p=0.66
No. (%) High AUDIT score (AUDIT score ≥ 20)	624/835 (74.7%)	407/538 (75.6%)	217/297 (73.1%)	p=0.41
AUDIT zone I	211/835 (25.3%)	131/538 (24.4%)	80/297 (26.9%)	p=0.25
AUDIT zone II	411/835 (49.2%)	268/538 (49.8%)	143/297 (48.2%)	p=0.91
AUDIT zone III	117/835 (14.0%)	76/538 (14.1%)	41/297 (13.8%)	p=0.91
AUDIT zone IV	96/835 (11.5%)	63/538 (11.7%)	33/297 (11.1%)	p=0.96
No. (%) Hazardous alcohol use	868/918 (94.5%)	564/595 (94.8%)	304/323 (94.1%)	p=0.65
No. (%) Harmful alcohol use	686/921 (74.5%)	452/598 (75.6%)	234/323 (72.4%)	p=0.29
No. (%) Dependence symptoms	554/915 (60.5%)	357/593 (60.2%)	197/322 (61.2%)	p=0.77

* Pearson's chi-square test/t test for differences between control and intervention participants.

4.2.4 Alcohol related harms of participants at baseline

The proportion of respondents reporting alcohol related harms during the past 12 months was high, particularly for acute alcohol related harms such as being in a fight (29.5%), in an accident (18.2%) and attending an Accident and Emergency Department (10.8%) (Table 4.6). The majority of the respondents reported at least one alcohol harm (81.0%) with over half reporting at least three harms and almost a third reporting at least six harms. Proportions reporting alcohol related harms were not significantly different in the control and intervention players except for reporting being in a fight and reporting that drinking harmed their friendship/social life (both higher in control players).

Table 4.6 Alcohol related harms at baseline.

	Total N=960	Control N=628	Intervention N=332	P-value*
In the last 12 months:				
in a fight due to drinking	283 (29.5%)	206 (32.8%)	77 (23.2%)	p<0.01
in accident due to drinking	175 (18.2%)	109 (17.4%)	66 (19.9%)	p=0.15
attended A&E due to drinking	104 (10.8%)	71 (11.3%)	33 (9.9%)	p=0.21
missed time from work/college due to drinking	374 (38.9%)	251 (39.9%)	351 (55.9%)	p=0.21
felt they should cut down on their drinking	343 (35.7%)	230 (36.6%)	113 (34.0%)	p=0.17
regretted something said or done due to their drinking	601 (62.6%)	396 (36.1%)	205 (61.7%)	p=0.17
felt that drinking harmed their home life/marriage/ relationship	146 (15.2%)	104 (16.6%)	42 (12.6%)	p=0.07
felt that drinking harmed their work/studies	269 (28.0%)	179 (28.5%)	90 (27.1%)	p=0.10
felt that drinking harmed your friendship/social life	145 (15.1%)	109 (17.6%)	36 (10.8%)	p<0.01
felt that drinking harmed your health	326 (33.9%)	209 (33.3%)	117 (35.2%)	p=0.13
felt that they were verbally abusive due to their drinking	264 (27.5%)	187 (29.8%)	77 (23.2%)	p=0.13
damaged public property because of their drinking	190 (19.7%)	119 (18.9%)	71 (21.4%)	p=0.15
been physically sick because of their drinking	583 (60.7%)	366 (58.3%)	217 (65.4%)	p=0.07
In last 12 months reported:				
at least one alcohol related harm	778 (81.0%)	508 (80.9%)	270 (81.3%)	p=0.87
at least three alcohol related harms	584 (60.8%)	379 (60.4%)	205 (61.7%)	p=0.67
at least six alcohol related harms	300 (31.3%)	205 (32.6%)	95 (28.6%)	p=0.20

* Pearson's chi-square test for differences between control and intervention.

4.2.5 AUDIT scores by playing level

Playing level was categorised into two categories, playing skill level and playing age level. Playing skill level included the following categories “Junior”, “Intermediate” and “Senior”. Junior level is the lowest skill level and senior level is the highest skill level. Playing age level included “Minor” “Under 21” and “Players aged 21+” categories. The minor players are players aged under 18 years (i.e. 16 to 18 years), the under 21

players are aged 18 years to 21 years inclusive and the players aged 21+ are aged 21 years and over.

4.2.5.1 AUDIT scores by playing skill level

Table 4.7 shows that the mean AUDIT scores were highest in the junior players and lowest in intermediate players. Analysis of variance was conducted to assess differences between playing skill levels and mean AUDIT score and no significant difference was found.

Table 4.7 Mean AUDIT score by playing skill level.

Playing Skill level	No.	Mean AUDIT	Std Error	Lower 95% CI	Upper 95% CI
Junior	242	12.6	0.4	11.8	13.4
Intermediate	176	11.6	0.5	10.7	12.6
Senior	359	11.8	0.3	11.1	12.4

Analysis of variance, F ratio 1.55, p=0.21

4.2.5.2 AUDIT scores by playing age level

There was a significant difference in AUDIT by age level with mean AUDIT lowest in minor players (i.e. <18 years old) and highest in U21 players (Table 4.8).

Table 4.8 Mean AUDIT score by age-group playing level.

Age-group playing level	No.	Mean AUDIT	Std Error	Lower 95% CI	Upper 95% CI
Players aged under 18 (Minors)	83	8.6	0.6	7.3	9.8
Players aged 18 to 20 (Under 21)	56	13.3	0.8	11.7	14.8
Players aged 21+	576	11.9	0.2	11.4	12.4

Analysis of variance, F ratio 14.1, p<0.001

4.2.6 Alcohol consumption in litres of pure alcohol by playing level

The mean alcohol consumption in litres of pure alcohol was calculated by playing level.

4.2.6.1 Alcohol consumption in litres of pure alcohol by playing skill level

Table 4.9 outlines the mean alcohol consumption level per year in litres of pure alcohol (via the Quantity Frequency measure) by playing skill level. The intermediate players had the highest and the seniors had the lowest mean alcohol consumption level in litres of pure alcohol. Analysis of variance showed that these findings were almost statistically significant at the 5% level ($p=0.06$).

Table 4.9 Mean yearly alcohol consumption in litres of pure alcohol by playing skill level.

Playing skill level	No.	Mean yearly alcohol consumption (litres of pure alcohol)	Std Error	Lower 95% CI	Upper 95% CI
Junior	231	12.5	1.1	10.3	14.6
Intermediate	167	15.4	1.3	12.9	18.0
Senior	341	11.7	0.9	9.9	13.5

Analysis of Variance, F ratio 2.91, $p=0.06$

4.2.6.2 Alcohol consumption in litres of pure alcohol by playing age level

The minor players (under 18 years) had the lowest mean yearly alcohol consumption of 6.0 litres of pure alcohol and this was significantly lower than the other two age groups (Table 4.10). This differs from the finding in Table 4.8 where the highest mean AUDIT score was found in the 18-20 year old players. This difference may be reflecting the fact that the AUDIT score measures problem alcohol use whereas the yearly alcohol consumption only measures quantity of alcohol consumed.

Table 4.10 Mean yearly alcohol consumption in litres of pure alcohol by age-group playing level.

Age-group playing level	No.	Mean yearly alcohol consumption (litres of pure alcohol)	Std Error	Lower 95% CI	Upper 95% CI
Players aged under 18 (minors)	110	6.0	1.5	3.0	8.9
Players aged 18 to 20	60	10.7	2.0	6.6	14.7

(under 21)					
Players aged 21+	616	13.4	0.6	12.1	14.7

Analysis of variance, F ratio 10.5, $p < 0.001$

4.2.7 Factors associated with alcohol consumption outcomes

In order to identify factors associated with alcohol consumption outcomes a series of univariate logistic and linear regression analyses were carried out. Factors included in the analysis included club level factors (for example, having a club bar present and size of club) and individual level factors (for example, age, education level, living arrangements, playing skill and playing age level, age having first alcoholic drink). When factors were identified as significantly associated with the outcome measure, they were then included into a multivariate regression analysis. Table 4.11 shows the results of the univariate logistic regression models for the association of the various predictor variables with the main binary alcohol consumption outcome measures at baseline i.e. regular binge drinking, drinking over recommended weekly limit and having a high AUDIT (≥ 8) score and reporting at least six alcohol harms.

Table 4.11 Factors associated with regular binge drinking, reporting drinking over recommended weekly alcohol limit and having high AUDIT (≥ 8) score (univariate logistic regression analysis).

	Regular binge drinking (\geq at least once a week)		Over recommended weekly alcohol limit of 21 units		High AUDIT score ≥ 8		Reporting at least 6 alcohol harms	
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value
Age (over 18 yrs)	2.66 (1.74-4.07)	P<0.001	2.33 (1.37-3.94)	P<0.001	3.72 (2.34-5.91)	P<0.001	1.48 (0.95-2.32)	P=0.09
Education (having Leaving Certificate or higher)	1.97 (1.44-2.69)	P<0.001	1.37 (1.15-2.38)	P<0.001	1.13 (0.99-1.46)	P<0.22	1.21 (0.8-1.67)	P=0.25
Employed	1.17 (0.88-1.55)	P=0.27	1.30 (0.95-1.78)	P=0.10	1.27 (0.91-1.78)	P=0.15	0.68 (0.50-0.91)	P=0.01
Living with parents	1.19 (0.90-1.57)	P=0.21	0.78 (0.58-1.06)	P=0.12	1.74 (1.26-2.41)	P<0.01	1.93 (1.40-2.64)	P<0.01

Marital status (not being single)	0.97 (0.81-1.16)	P=0.76	0.88 (0.71-1.10)	P=0.28	0.84 (0.68-1.03)	P=0.11	0.89 (0.73-1.09)	P=0.28
Medical card holder	0.94 (0.61-1.26)	P=0.68	1.01 (0.69-1.34)	P=0.94	1.11 (0.96-1.47)	P=0.67	0.81 (0.59-1.10)	P=0.19
Playing level	1.03 (0.98-1.19)	P=0.10	1.08 (0.97-1.20)	P=0.16	1.04 (0.93-1.18)	P=0.46	0.99 (0.89-1.10)	P=0.91
Large club	0.97 (0.73-1.27)	P=0.82	0.91 (0.68-1.24)	P=0.58	1.07 (0.77-1.50)	P=0.67	0.94 (0.70-1.26)	P=0.71
Club bar present	1.07 (0.83-1.39)	P=0.56	0.98 (0.83-1.30)	P=0.90	1.02 (0.75-1.39)	P=0.89	1.09 (0.82-1.43)	P=0.53
Age having 1 st drink								
<=15 years	1.00				1.00		1.00	
16-17 years	0.55 (0.41-0.74)	P<0.001	0.65 (0.47-0.89)	P<0.01	0.47 (0.34-0.71)	P<0.001	0.56 (0.40-0.76)	P<0.001
18+ years	0.34 (0.21-0.55)	P<0.001	0.35 (0.19-0.64)	P<0.001	0.13 (0.11-0.32)	P<0.001	0.16 (0.07-0.31)	P<0.001
Comparing trend all ages with <=15 years	0.57* (0.46-0.70)	P<0.001	0.62* (0.49-0.78)	P<0.001	0.41* (0.35-0.58)	P<0.001	0.47* (0.37-0.60)	P<0.001

Regular binge drinking (\geq at least once a week)

Age, education and age having first alcoholic drink were significantly associated with regular binge drinking. Age and education were positively associated with binge drinking; those aged over 18 years were 2.7 times more likely to be regular binge drinkers and those with a Leaving Certificate or higher education were almost twice as likely. There was a significant negative linear trend for age at having first alcoholic drink and reporting regular binge drinking ($p < 0.001$). Those who had their first alcoholic drink at 18 years or over were 66% less likely to report regular binge drinking

than those who had their first alcoholic drink at 15 years or younger ($p < 0.001$) (Table 4.12).

Reporting drinking over recommended weekly alcohol limit of 21 units

Age, education and age having first alcoholic drink were again significantly associated with reporting drinking over the recommended weekly alcohol limit of 21 units per week. Those aged over 18 years were 2.3 times more likely to report drinking over the recommended weekly limit and those with a Leaving Certificate or higher education were almost 1.4 times more likely. There was also a significant negative linear trend with age at having first alcoholic drink ($p < 0.001$). Those who were older i.e. aged 18 years or over when having their first alcoholic drink were 65% less likely to report drinking over recommended weekly limit of 21 units than those who had their first alcoholic drink at 15 years or younger ($p < 0.001$) (Table 4.12).

High AUDIT score (≥ 8)

Age, living with parents and age having first alcoholic drink were significantly associated with a having a high AUDIT score. Those aged over 18 years were almost four times (3.7 times) more likely to have a high AUDIT score than those aged under 18 years and those living with their parents were 1.7 times more likely to have a high AUDIT score than those living elsewhere. There was a significant negative linear trend for age at having first alcoholic drink ($p < 0.001$). Those who were older, i.e. aged 18 years or over when having their first alcoholic drink, were 87% less likely to have a high AUDIT score than those who had their first alcoholic drink at 15 years or younger (Table 4.11).

Reporting at least six alcohol harms

Age, living with parents, being employed and age having first alcoholic drink were significantly associated with reporting at least six alcohol harms. Those in employment were 32% less likely to report at least six harms than those not in employment. There was a significant negative linear trend for age at having first alcoholic drink and reporting having at least six alcohol harms ($p < 0.001$). Those who were older i.e. aged 18 years or over when having their first alcoholic drink were 84%

less likely to report having at least six alcohol harms than those who had their first alcoholic drink at 15 years or younger (Table 4.11).

There was a significant negative linear trend with age having first alcoholic drink and all of the outcome measures. Those aged 18 years or older having first alcoholic drink were significantly less likely to be regular binge drinkers, less likely to have a high AUDIT score, less likely to report drinking over the recommended weekly alcohol limit and less likely to report at least six alcohol harms than those who were aged 15 years or younger having their first alcoholic drink (Table 4.11).

Multivariate logistic regression analysis was then carried out retaining variables with p values ≤ 0.1 for all models. The results of the multivariate logistic regression models for each of the categorical alcohol outcome measures are presented in Table 4.12.

Regular binge drinking (\geq at least once a week)

Age, education and age having first alcoholic drink remained significantly associated with regular binge drinking in the multivariate model (Table 4.12).

Reporting drinking over recommended weekly alcohol limit of 21 units

When all of the three significant variables for drinking over the recommended weekly alcohol limit of 21 units per week were put into the model, only education and age having first alcoholic drink remained significant (Table 4.12).

High AUDIT score (≥ 8)

Age, living with parents and age having first alcoholic drink remained significantly associated with a high AUDIT score when the multivariate analysis was performed (Table 4.12).

Reporting at least six alcohol harms

When the four significant variables for this outcome were put into the model together, all four variables remained significant and the linear trend with age first alcoholic drink remained significant (Table 4.12).

Table 4.12 Factors associated regular binge drinking, % over recommended weekly alcohol limit and % with high AUDIT score (multivariate logistic regression analysis).

	Regular binge drinking (≥ at least once a week)		Over recommended weekly alcohol limit of 21 units		High AUDIT score ≥ 8		Reporting at least 6 alcohol harms	
	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value	Odds ratio (95% CI)	p-value
Age (over 18 yrs)	1.72 (1.04-2.76)	p=0.04	1.62 (0.91-3.09)	p=0.11	3.70 (2.40-6.07)	p<0.001	1.81 (1.05-3.13)	p=0.03
Education (having Leaving Certificate or higher)	1.26 (1.08-2.16)	p=0.03	1.23 (0.95-1.97)	p=0.06				
Living with parent					2.21 (1.52-3.22)	p<0.001	1.74 (1.22-2.50)	p=0.02
Employed							0.67 (0.48-0.95)	p=0.02
Age having first alcoholic drink (being older)	0.54* (0.44-0.67)	p=0.001	0.58* (0.46-0.78)	p<0.001	0.42 (0.33-0.54)	p<0.001	0.46* (0.35-0.59)	p<0.001

*significant linear trend

Multiple linear regression an analysis was performed for the two continuous alcohol outcome measures: alcohol consumption in litres of pure alcohol and total AUDIT score. Table 4.13 shows the results of the univariate linear regression models for the association of the various predictor variables with the two continuous alcohol outcome measures.

Total alcohol consumption in litres of pure alcohol

Education, marital status, playing skill level and age having first alcoholic drink were associated with total alcohol consumption. For example, those educated to Leaving Certificate level or higher had significantly higher total alcohol consumption than those with a lower educational level. Those playing at senior level had higher alcohol consumption than those at a more junior level (see Table 4.14). Not being single and older age having first alcoholic drink were negatively associated with total alcohol consumption with a significant linear trend for age at first drink ($p < 0.001$).

Total AUDIT score

Age, living with parents, and age having first alcoholic drink were associated with total AUDIT score (see Table 4.13). There was a significant downward linear trend for age having first alcoholic drink and total AUDIT score ($p < 0.001$). Not being single was also negatively associated with total AUDIT score ($p < 0.06$).

Table 4.13 Factors associated with total alcohol consumption and total AUDIT score (univariate linear regression analysis).

	Total alcohol consumption in litres of pure alcohol			AUDIT score		
	Co-efficient	Standard error	p-value	Co-efficient	Standard error	p-value
Age over 18	5.50	0.10	p=0.82	4.02	0.45	p<0.001
Education (having Leaving Certificate or higher)	1.83	0.74	p=0.01	0.12	0.28	p=0.66
Employed	1.13	1.23	p=0.36	0.22	0.46	p=0.63
Living with parent	-0.16	1.2	p=0.82	1.82	0.44	p<0.001
Marital status (not being single)	-1.60	0.80	p=0.04	-0.58	0.29	p=0.06
Medical card holder	-0.96	1.65	p=0.56	0.52	0.63	p=0.41
Playing level (senior)	4.02	1.99	p=0.04	1.36	0.70	p=0.05
Large club	0.59	1.18	p=0.50	0.20	0.44	p=0.96
Club bar present	0.15	1.12	p=0.89	0.07	0.42	p=0.85
Age having first alcoholic drink	-4.62	1.26		-2.61	0.44	p<0.001
<=15 years	-8.29	1.98		-5.49	0.69	p<0.001
16-17 years						
18+ years						
Comparing trend all ages with <=15 years	-4.31*	0.87	p<0.001	-2.70*	0.30	p<0.001

*significant linear trend.

Variables with p values ≤ 0.1 were retained for all multivariate models. The results for each of the outcome measures are presented in Table 4.14.

Total alcohol consumption in litres of pure alcohol

When all three significant explanatory variables for total alcohol consumption as the outcome measure were put into a model together, only age and age having first alcoholic drink remained significant (see Table 4.14).

Total AUDIT score

When the five significant explanatory variables for total AUDIT score were put into the model, only age and age having first alcoholic drink remained significant (see Table 4.14).

The significant linear trend for age having first alcoholic drink remained significant in the multivariate linear regression models ($p < 0.001$) for both total alcohol consumption and total AUDIT score.

Table 4.14 Factors associated total alcohol consumption and total AUDIT score (multivariate linear regression analysis).

	Total alcohol consumption in litres of pure alcohol			AUDIT score		
	Co-efficient	Std error	p-value	Co-efficient	Std error	p-value
Age (being over 18)				3.09	0.47	p<0.001
Education (having Leaving Certificate or higher)	1.55	0.81	p=0.06	0.77	0.44	p=0.08
Living with parents	n/a	n/a	n/a	1.11	0.44	p=0.30
Marital status (not being single)	-1.60	0.85	p=0.06			
Playing level	0.21	0.48	p=0.65	0.25	0.17	p=0.12
Age having first alcoholic drink (being older >15 years)	-4.47	0.88	p<0.001	-2.32	0.30	p<0.001

4.2.8 Relationship between regular binge drinking and reporting of adverse effects

Table 4.15 shows that regular binge drinking was significantly associated with increased odds of reporting all of the adverse outcomes except for attending an A&E department. For example, those who regularly binge drink were 2.5 times more likely to be in a fight than those who either binge drink less often or do not binge drink at all. This association remained highly significant (OR 2.00, p<0.001) even when controlling for age, education, age having first drink and volume of alcohol consumed. The associations with regular binge drinking and all of the outcome measures were little affected by controlling for volume of alcohol consumed which suggests that regular binge drinking is independently associated with all of the alcohol outcome measures.

Table 4.15 Regular binge drinking and reporting adverse outcomes in the last 12 months.

Adverse outcome in last 12 months	Crude Odds Ratio (95% CI)	Adjusted Odds ratio* (95% CI)	p-value for adjusted OR
In a fight because of drinking	2.51 (1.87-3.37)	2.00 (1.41-2.83)	p<0.001
In an accident because of drinking	2.30 (1.61-3.27)	1.90 (1.26-2.86)	p<0.01
Attended A&E because of drinking	1.54 (1.01-2.34)	1.06 (0.66-1.72)	p=0.78
Missed time from work/college because of drinking	2.60 (1.98-3.41)	1.51 (1.10-2.08)	p<0.01
Felt should cut down on drinking	2.67 (2.01-3.54)	1.64 (1.19-2.26)	p<0.01
Regretted something said when drinking	2.32 (1.75-3.07)	1.46 (1.09-2.09)	p<0.01
Felt that drinking harmed home life/marriage or relationship	2.13 (1.46-3.12)	1.73 (1.12-2.68)	p<0.01
Felt that drinking harmed work/studies	2.83 (2.09-3.84)	1.99 (1.40-2.83)	p<0.001
Felt that drinking harmed their friendship/social life	1.97 (1.35-2.86)	1.67 (1.09-2.57)	p=0.02
Felt that drinking harmed health	1.68 (1.27-2.22)	1.37 (1.08-1.85)	p=0.04
Verbally abuse when drinking	2.15 (1.60-2.90)	1.62 (1.22-2.26)	p<0.01
Damaged public property when drinking	2.54 (1.80-3.59)	1.58 (1.12-2.26)	p<0.001
Been physically sick because of drinking	2.46 (1.86-3.24)	1.62 (1.16-2.24)	p<0.01

* controlled for age, age having first alcoholic drink, education and volume of alcohol consumed.

4.2.9 Summary of baseline findings

The findings in this baseline survey of 960 GAA players showed the following:

- The majority of the players are gaelic footballers with fewer than half playing hurling.
- The majority were young (mean age 24 years), single, employed, educated to Leaving Certificate or higher and live with their parents.
- Almost all (90%) were current drinkers with over half (50.7%) reporting that they binge drinking at least once a week.
- The average age of having a first full alcoholic drink was 15.2 years.
- The average yearly consumption of alcohol among the players was 12.5 litres and almost one-third (30%) reported that they drink over the recommended weekly limit of 21 units per week.
- One in ten of the players reported that they always drink after matches and a small proportion 1.5% reported that they always drink after training.
- The mean AUDIT score was 11.9 with the majority (74.7%) reporting a high AUDIT score (≥ 8).
- The mean AUDIT score was highest in those playing at U21 level and lowest in those playing at Minor (i.e. under 18 years) level.
- The mean AUDIT score was similar in each playing skill level but slightly higher in those playing at Junior level.
- Almost all players (94.5%) had an AUDIT score indicative of hazardous alcohol use; the majority had levels indicative of harmful alcohol use (74.5%) and dependence symptoms (60.5%).
- One in ten (11.5%) had AUDIT scores that warranted referral to a specialist for treatment for their problem alcohol use.
- The majority (81%) reported experiencing at least one harm due to their drinking.
- Multivariate regression analysis showed that age having first alcoholic drink was significantly associated with all of the alcohol outcome measures i.e. volume of alcohol consumed, regular binge drinking, total AUDIT score, consuming over the recommended weekly limit and alcohol related harms.

- The relationship with age having first alcoholic drink and the alcohol measures showed a significant downward linear trend; older age at having a first alcoholic drink was protective against high total alcohol consumption, regular binge drinking, high AUDIT score and reporting alcohol related harms.
- Regular binge drinking was significantly associated with increasing odds of reporting all alcohol harms except for attending A&E which did not reach significance. This association remained after controlling for volume of alcohol consumed.
- There was also a significant association between volume of alcohol consumed and ten of the 13 alcohol harms and this association remained significant after controlling for pattern of drinking (i.e. binge drinking).
- Multivariate regression analysis found that none of the club level factors such as having a club bar present and size of club had an effect on any of the alcohol outcome measures.

4.3 Results of follow-up survey

This section presents the results at follow up. Attendance levels and the demographic profile of players at follow-up are presented first (Sections 4.3.1 and 4.3.2) followed by the five-step approach taken to the data analysis outlined in Section 3.8.6 (Sections 4.3.3 to 4.3.8).

The first approach was a simple cross-sectional analysis comparing the intervention and control players at baseline and at follow-up, firstly at the individual player level and then at the cluster (club) level (Section 4.3.3). A summary statistic (mean) was calculated for each cluster (club). For continuous outcome variables, the mean of the club means for the intervention clubs was compared to the mean of the control club means using a standard two sample t-test for the difference in means with 95% confidence intervals. For outcome measures based on proportions, the mean proportions across clusters were compared also using a standard two sample t-test. This approach does not control for any differences at baseline between control and intervention.

The second approach was to examine changes in alcohol outcomes over time (i.e. from baseline to follow-up) between control and intervention. This was done at player level and at club level (cluster). The cluster level analysis involved calculating the mean differences of the club differences (Section 4.3.4). This approach controls for differences at baseline. Sub-analysis on comparison of changes in outcomes over time in those with very high AUDIT scores at baseline was also carried out (Section 4.3.5).

The third approach (Section 4.3.6) was to carry out analysis at the individual player level using modelling techniques in STATA statistical software that allowed for weighting of co-variants at cluster and individual player level.

The fourth approach was the use of a multi-level generalised linear mixed model with site (i.e. GAA club) clustered within round (round 0 = before intervention, round 1= after intervention) where variations in means or proportions at the individual level were

assessed against variations of means or proportions at the group level. The degrees of freedom are based on the number of groups or clusters where the unit of randomisation/cluster (i.e. GAA club) is included as a nested random effect. (Section 4.3.7).

The fifth approach was the analysis on the paired data i.e. on those participants who were present at both baseline and follow-up surveys (Section 4.3.8).

Additional analysis included analysis by programme component (Section 4.3.9) and analysis of process outcomes from questionnaires administered to managers and coaches (Section 4.4).

4.3.1 Attendance rate at intervention programme

Although this programme was a community intervention and therefore provided at the club level, players were asked at the follow-up survey about their individual attendance (Table 4.16). Awareness of the alcohol programme at the club was high at 68.3% although awareness of the media campaign component of the programme was low at 14.2%. Of the players surveyed, just over half, (52.7%) had attended the alcohol training session at their club; 63 (28.9%) had attended the alcohol policy session. The nutrition training session was attended by 147 (67.4%) of the players surveyed.

Table 4.16 Attendance of intervention players at the community intervention programme.

	No N=218	%
Attendance at alcohol training session	115	52.7
Attendance at nutrition training session	147	67.4
Attendance at alcohol policy session	63	28.9
Aware of alcohol programme at club	149	68.3
Aware of media campaign	31	14.2

4.3.2 Demographic profile of participants at follow-up

Data were available on 659 players at follow-up with 441 (66.9%) from 25 of the 27 control clubs and 218 (33.1%) from the 12 intervention clubs. Table 4.17 outlines the demographic profile of the participants at follow-up. The average age of the participants was 24.8 years (S.D. 5.1). The majority were single (498, 75.6%) and lived with their parents (421, 63.9%). Significantly more of the participants from the control area lived with their parents (67.6% vs. 56.5%, $p<0.01$). Over half of the respondents were employed (407, 61.8%). Smoking prevalence was low among all participants at follow-up; 40 (6.1%) reported that they were current smokers with significantly more of the participants in the control area reporting that they were current smokers (7.3% vs. 3.7%, $p<0.01$). Occasional smoking prevalence was also low at just over 10%. There were significantly more of those aged 18 years and over with Leaving Certificate or higher education among the participants in the intervention area (86.3% vs. 75.6%, $p<0.01$). Most of the characteristics at follow-up were similar to those reported at baseline.

Table 4.17 Demographic profile of study participants at follow-up.

	Total N=659 No. (%)	Control N=441 No. (%)	Intervention N=218 No. (%)	p-value*
Mean age	24.8 (S.D. 5.1)	24.4 (S.D. 5.1)	25.0 (S.D.5.8)	p=0.51
Single	498 (75.6%)	339 (76.8%)	159 (72.9%)	p=0.14
Living with parents	421 (63.9%)	298 (67.6%)	123 (56.4%)	p<0.01
Employed	407 (61.8%)	261 (59.2%)	146 (67.0%)	p=0.08
With medical card	95 (14.4%)	55 (12.5%)	40 (18.3%)	p=0.08
18 year olds and older with Leaving Certificate or higher education	418/533 (78.4%)	298/394 (75.6%)	120/139 (86.3%)	p<0.01
Regular smokers	40 (6.1%)	32 (7.3%)	8 (3.7%)	p<0.01
Occasional smokers	68 (10.3%)	45 (10.2%)	23 (10.6%)	p=0.16

*Pearson's chi-squared test or t-test for differences between control and intervention participants.

4.3.3 Comparison of main alcohol outcomes at follow-up in control and intervention

A cross-sectional analysis of the main outcome measures for intervention and control at player level is presented in Table 4.18 with cluster analysis of the outcomes at club level presented in Table 4.19. The only significant differences between control and intervention players at follow-up was percentage drinking greater than the recommended weekly limit of 21 units and mean alcohol knowledge score (Table 4.18). At follow-up, those in the intervention group had a significantly lower proportion drinking greater than the recommended weekly limit of 21 units than the control group (18.9% vs. 28.1%, $p=0.01$). Those in the intervention group had a lower mean alcohol consumption than those in the control group (8.8 vs. 11.2 litres, $p=0.08$); they also had a significantly higher mean alcohol knowledge score (6.0 vs. 5.5, $p<0.05$) and lower mean alcohol harm score (2.6 vs. 3.1, $p=0.06$) than those in the control group. The AUDIT scores were similar in the two groups of players at follow up.

Table 4.18 Main alcohol outcome measures at follow-up survey (individual level analysis)

	Control group N=441	Intervention group N=218	p-value*
Mean (95% CI) yearly consumption of alcohol in litres of pure alcohol	11.2 (9.5-12.8)	8.8 (6.5-10.9)	$p=0.08$
No. (%) drinking > recommended weekly limit of 21 units	103/366 (28.1%)	41/216 (18.9%)	$p=0.01$
No. (%) regular binger (i.e. at least once per week)	164/351 (46.7%)	103/212 (48.6%)	$p=0.67$
Mean AUDIT score	10.9 (S.D. 5.6)	11.1 (S.D. 5.7)	$p=0.97$
% High AUDIT score (AUDIT score ≥ 8)	246/350 (70.3%)	135/185 (72.9%)	$p=0.51$
% Hazardous alcohol use	388/409 (94.9%)	197/207 (95.2%)	$p=0.87$
% Harmful alcohol use	277/401 (69.1%)	155/207 (74.9%)	$p=0.13$
% Dependence symptoms	242/404 (59.9%)	124/207 (59.9%)	$p=1.0$

Mean alcohol knowledge score	5.5 (5.3-5.6)	6.0 (5.7-6.3)	p<0.05
Mean alcohol harm score	3.1 (2.8-3.4)	2.6 (2.2-3.0)	p=0.06

*t-test for differences between control and intervention participants.

However, when the cluster analysis was carried out the differences between intervention and control clubs were in the same direction as in the player analysis but were no longer statistically significant (Table 4.19)

Table 4.19 Main alcohol outcome measures at follow-up survey (clustered analysis).

	Control group N=441	Intervention group N=218	p-value*
Mean (95% CI) yearly consumption of alcohol in litres of pure alcohol	11.6 (9.2-14.2)	8.8 (5.6-12.1)	p=0.17
No. (%) drinking > recommended weekly limit of 21 units	28.5 (21.4-35.7)	20.1 (10.6-29.5)	p=0.15
No. (%) regular binger (i.e. at least once per week)	43.5 (35.2-51.8)	49.1 (37.8-60.3)	p=0.42
Mean AUDIT score	11.0 (10.4-11.7)	11.0 (10.0-11.4)	p=0.94
% High AUDIT score (AUDIT score \geq 8)	69.9 (64.1-76.8)	72.2 (63.7-80.6)	p=0.66
% Hazardous alcohol use	95.1 (92.6-97.6)	95.0 (91.5-98.6)	p=0.97
% Harmful alcohol use	68.5 (63.1-73.8)	74.8 (67.1-85.6)	p=0.17
% Dependence symptoms	60.5 (53.2-67.8)	59.7 (49.2-70.1)	p=0.90
Mean alcohol knowledge score	5.5 (5.1-5.8)	6.0 (5.4-6.5)	p=0.13
Mean alcohol harm score	3.0 (2.5-3.6)	2.5 (1.7-3.3)	p=0.26

*t-test for differences between control and intervention participants.

4.3.4 Comparison of changes in alcohol outcomes over time in control and intervention

Although there were no statistically significant differences in the outcome measures in the control and intervention groups at baseline, non-significant differences between the two may have influenced outcomes at study completion. This analysis therefore examined the changes in means or proportions between baseline and follow-up and allows for a comparison in changes over time between the control and intervention group at both the participant and at the club level (i.e. cluster). Table 4.20 (individual level comparisons) shows that there was a significant reduction in mean alcohol consumption level in both control (-3.5) and intervention groups (-6.5) but this effect was lost when controlled for cluster (see Table 4.21). There was also a significant reduction of 15.4% in the proportion of players drinking greater than the recommended weekly limit of 21 units per week in the intervention group (Table 4.20) but this effect was also lost after controlling for cluster (see Table 4.21). There were also significant decreases in mean AUDIT score and in mean alcohol knowledge score in the control group (Table 4.20) but again these decreases were non-significant after controlling for cluster (Table 4.21).

Table 4.20 Comparison of changes over time in main alcohol outcome measures between intervention and control players (individual analysis).

Outcome variable	Group	Mean change between baseline and follow-up	p-value*
Mean (95% CI) yearly consumption of alcohol in litres of pure alcohol	I	-6.5	p<0.0001
	C	-3.5	p<0.01
% drinking > recommended weekly limit of 21 units	I	-15.4%	p<0.001
	C	-5.2%	p=0.09
% regular binger (i.e. at least once per week)	I	-5.1%	p=0.25
	C	-3.9%	p=0.24
Mean AUDIT score	I	-0.63	p=0.26
	C	-1.0	p=0.02
% High AUDIT score (AUDIT score \geq 8)	I	-0.1%	p=0.97
	C	-5.7%	p=0.06
% Hazardous alcohol use	I	0.1	p=0.60
	C	0.2	p=0.88
% Harmful alcohol use	I	2.4%	p=0.53
	C	-6.3%	p=0.03
% Dependence symptoms	I	-1.28%	p=0.77
	C	-0.01%	p=0.99
Mean alcohol knowledge score	I	-0.04	p=0.78
	C	-0.46	p<0.001
Mean alcohol harm score	I	-1.2	p<0.001
	C	-1.0	p<0.001

* t-test comparison of baseline and follow-up in (I) intervention and in (C) control players.

Table 4.21 Comparison of changes over time in main alcohol outcome measures between intervention and control clubs (cluster analysis).

Outcome variable	Group	Mean change between baseline and follow-up (clubs)	p-value*
Mean (95% CI) yearly consumption of alcohol in litres of pure alcohol	I	-6.5	p=0.17
	C	-3.6	
% drinking > recommended weekly limit of 21 units	I	-13.0%	p=0.18
	C	-7.2%	
% regular binger (i.e. at least once per week)	I	-9.0%	p=0.71
	C	-6.0%	
Mean AUDIT score	I	-0.83	p=0.83
	C	-0.99	
% High AUDIT score (AUDIT score \geq 8)	I	-0.3%	p=0.25
	C	-2.7%	
% Hazardous alcohol use	I	0.05%	p=0.92
	C	0.08%	
% Harmful alcohol use	I	2.4%	p=0.06
	C	-5.3%	
% Dependence symptoms	I	-1.26	p=0.72
	C	-0.01	
Mean alcohol knowledge score	I	-0.02	p=0.14
	C	-0.46	
Mean alcohol harm score	I	-1.0	p=0.50
	C	-1.3	

* t-test for comparison of baseline and follow-up values in (I) Intervention and in (C) control clubs (mean of club means).

4.3.5 Comparison of changes in alcohol outcomes over time in those with high AUDIT scores at baseline in control and intervention

Further analyses were carried out in order to see if the change in main outcome measures over time (i.e. percentage regular binge drinking and mean AUDIT score)

differed in the control and intervention participants who had very high AUDIT scores at baseline. In order to do this, the data were dichotomised into two blocks according to their baseline AUDIT scores. Group 1 are those with an AUDIT score of 16 or more at baseline (N=206) and Group 2 are those with an AUDIT score of between 0 and 15 at baseline (N=605). Table 4.22 presents the baseline and follow-up mean percentage regular binge drinking in each of these blocks, by 'treatment group' i.e. intervention or control. Although there was a big difference (-14% in intervention vs. -4% in control) in mean percentage regular binge drinking between baseline and follow-up in those with very high and less high AUDIT scores, the differences were not significant when controlling for clustering. The same was done looking at mean AUDIT score as the outcome measure and as shown in Table 4.23 there were no significant reduction in either groups at follow-up. The effect of the intervention was no different in those with very high AUDIT scores at baseline.

Table 4.22 Comparison of changes over time in percentage of regular binge drinkers between intervention and control clubs (individual and cluster analyses) in participants with very high AUDIT score (16+, Group 1) and lower AUDIT score (<16, Group 2).

	Group	Mean % regular binge drinkers (Baseline)	Mean % regular binge drinkers (Follow- up)	Difference	p-value*	p- value†
Group 1 Very High AUDIT (≥ 16) at baseline (N=206)	C (N=132)	80.7	76.7	-4.0	p=0.08	p=0.60
	I (N=74)	91.9	77.8	-14.0		
Group 2 Lower AUDIT (<16) at baseline (N=605)	C (N=381)	44.5	43.3	-1.2	p=0.98	p=0.63
	I (N=224)	44.3	43.2	-1.1		

*t-test (non-clustered analysis) and †t-test (clustered analysis) for comparison of baseline and follow up values in (I) intervention and (C) control clubs (mean of club means) in those with high and lower AUDIT scores. C=control, I=intervention

Table 4.23 Comparison of changes over time in mean AUDIT score between intervention and control clubs (individual and cluster analyses) in participants with very high AUDIT score (16+, Group 1) and lower AUDIT score (<16, Group 2).

	Group	Mean AUDIT Baseline	Mean AUDIT Follow-up	Difference	p-value*	p-value†
Group 1 Very high AUDIT (≥ 16) at baseline (N=206)	C (N=132)	20.1	19.9	-0.2	p=0.96	p=0.44
	I (N=74)	20.2	19.9	-0.3		
Group 2 Lower AUDIT (≤ 16) at baseline (N=605)	C (N=381)	9.2	8.9	-0.3	p=0.69	p=0.66
	I (N=224)	9.0	8.9	-0.1		

t-test (non-clustered analysis) and †t-test (clustered analysis) for comparison of baseline and follow up values in (I) intervention and (C) control clubs (mean of club means) in those with high and lower AUDIT scores. C=control, I=intervention

4.3.6 Player level model

A player level regression model was constructed using STATA statistical software. A mixed regression model was used to determine whether individual factors such as age, education, playing level, living arrangements (i.e. living with parents), marital status, medical card status and age having first alcoholic drink etc. had an effect on alcohol outcome measures at follow-up. The model also included club level factors which may also have had an effect on the outcome measures; club level factors were size of club, whether club was urban or rural and whether there was a club bar present. After controlling for clustering, the only factor associated with any of the alcohol outcome measures at follow-up was age having first alcoholic drink. This factor remained significant after controlling for all the other factors in the individual models. For example after controlling for clustering and with all other factors in the model, those who had their first alcoholic drink aged 16-17 years old and aged 18 years and over were 38% and 68% *less* likely to regularly binge drink at follow-up than those who had their first alcoholic drink at 15 years or younger (see Table 4.24).

Table 4.24 Player level model of alcohol outcomes at follow-up.

	Total AUDIT score		% regular binge drinking		Total yearly alcohol consumption		% over recommended weekly limit of 21 units	
	β Co-efficient	p-value*	Odds ratio (95% CI)	p-value*	β Co-efficient	p-value*	Odds ratio (95% CI)	p-value*
Age first alcoholic drink † (age 16 -17 years)	-2.65	p<0.001	0.62 (0.48-0.77)	p<0.01	-2.97	p<0.01	0.80 (0.57-0.94)	p=0.04
Age first alcoholic drink † (age 18 years or over)	-5.09	p<0.001	0.32 (0.23-0.49)	p<0.001	-6.2	p<0.001	0.54 (0.33-0.76)	p=0.02

*controlling for cluster and other significant factors

†compared to having first alcoholic drink at age ≤ 15 years.

4.3.7 Multi-level generalised linear mixed model

A multi-level generalised linear mixed modelling with site (club) clustered within round (0=before intervention, 1=after intervention) was constructed by AK (statistician) using R software. The only alcohol outcome measure that showed any significant difference in intervention group at follow-up compared with control at follow-up was “percentage drinking over recommended weekly alcohol limit”. Of primary interest is the interaction of condition (i.e. 1=received intervention 0= no intervention received) by round as this reflects the differential effect of the intervention at follow-up compared with the control at follow-up, adjusting for baseline.

A series of these models was calculated for the important predictor variables i.e., age, playing age level, player skill level, employment status, age first drink, marital status, club bar present, urban/rural status of club and living with parents. All these models showed reductions in proportion drinking over the recommended weekly limit in the intervention group at follow-up. However, they were all non-significant although some were close to significance. By way of example, the model including age as a predictor

variable is shown in Table 4.25. For this model the odds ratio for the interaction term by age was calculated by adding all the estimates in the model (including the age term to show the effect in players aged 18+ years and excluding the age term to show the effect in players less than 18 years) and calculating the exponent. The estimate for the differential effect of the intervention at follow-up compared with the control at follow-up, adjusting for baseline (for condition by round interaction) was not significant. The odds ratio for those aged over 18 years was 0.15 indicating an 85% greater reduction in proportion drinking over recommended weekly limit at follow-up in those intervention players aged over 18 years compared to the controls. The odds ratio for those aged 18 years or younger was 0.27 indicating a 73% greater reduction in the proportion drinking over recommended weekly limit at follow-up in the intervention players aged 18 years or younger compared to the controls.

Table 4.25 Multi-level generalised linear mixed model for proportion drinking over recommended weekly limit.

	Estimate	Std. error	Z value	Pr(>z)	Odds ratio
Intercept	-0.59	0.10	-6.16	7.08e-10	
Age	-0.56	0.18	-3.20	0.0013	0.15 (18+ yrs) 0.27 (under 18 yrs)
Condition (Intervention vs. Control)	0.03	0.15	0.26	0.79	
Round (Baseline vs. Follow-up)	-0.27	0.18	-1.46	0.14	
Condition:round	-0.46	0.33	-1.4	0.15	

4.3.8 Analysis of paired data

Both baseline data and follow-up data were available on 284/659 (43.1%) of the participants from 35/37 (94.5%) of the clubs (clusters) that were surveyed at the end of the programme. All 12/12 (100%) of the clubs from the intervention area and 23/25 (92%) of the clubs from the control area had baseline and follow-up data. Simple paired analysis on the paired data was carried out. As shown in Table 4.26, there were reductions in all of the outcome measures at follow-up in both the control and intervention group except for mean AUDIT score which was non-significantly higher in the control at follow-up compared to baseline. Although there was a reduction in all of

the alcohol outcome measures in the intervention group at follow-up the only outcome that almost reached significance was percentage drinking over weekly alcohol limit (p=0.09). The results suggest that the intervention did not have a significant impact on alcohol outcome measures at follow-up. These data were not controlled for clustering as there were too few in each cluster to allow for cluster analysis to be performed. Controlling for cluster would have increased the p values.

Table 4.26 Change in alcohol outcome measures from baseline to follow-up in control and intervention players (paired data).

	Baseline	Follow-up	Difference (95% CI)	P-value
Total alcohol consumption (intervention) N=105	10.2	8.4	-1.8 (-5.4 to 1.8)	p=0.33
Total alcohol consumption (control) N=179	12.6	11.1	-1.5 (-4.1 to 1.1)	p=0.25
Total AUDIT score (intervention)	11.6	10.7	-0.9 (-2.1 to 0.35)	p=0.16
Total AUDIT score (control)	11.3	12.4	+1.1 (-0.2 to 1.9)	p=0.10
% over weekly alcohol limit (intervention)	27%	18%	-9.0% (-19.5 to 15.8)	p=0.09
% over weekly alcohol limit (control)	34.9%	29.4%	-5.5% (-15.0 to 4.0)	P=0.26
% regular binge drinkers (intervention)	47.5%	45.5%	-2.0% (-0.13 to 0.09)	p=0.72
% regular binge drinkers (control)	52.5%	50.6%	-4.8% (-11.4 to 7.5%)	p=0.69

4.3.9 Analysis by programme component

Additional analysis was carried out in order to ascertain if a single component of the intervention had an effect on the outcome. As shown in Tables 4.27, none of the

components of the intervention (i.e. present for alcohol talk, alcohol policy in place, awareness of/exposure to media campaign) was significantly associated with the main outcome measures i.e. regular binge drinker, total AUDIT score and total yearly alcohol consumption in litres of pure alcohol.

Table 4.27 Effect of individual programme components on main alcohol outcome measures.

	Regular Binge drinking (i.e. at least once a week)		Total AUDIT score		Total yearly alcohol consumption in litres pure alcohol	
	Odds ratio (95% CI)	p-value*	β Co-efficient	p-value*	β Co-efficient	p-value*
Awareness of programme	0.93 (0.52-1.68)	p=0.83	-0.26	p=0.82	1.22	p=0.59
Aware of/Exposed to Media	1.06 (0.93-2.78)	p=0.81	0.47	p=0.76	3.59	p=0.26
Attended alcohol talk	1.61 (0.93-2.78)	p=0.09	1.05	p=0.22	2.07	p=0.39
Club alcohol policy in place	0.56 (0.38-1.17)	p=0.10	-0.05	p=0.93	-0.60	p=0.85

*analysis at cluster level

4.4 Process measures

4.4.1 Findings from managers' questionnaires after intervention

In order to evaluate some of the process measures, a questionnaire was administered to all of the club managers from the 12 clubs that received the intervention programme. Table 4.28 shows that all 12 (100%) of the managers were aware of the alcohol programme taking place at their club; eight out of 12 (66.6%) managers had attended the alcohol training session, six (50%) attended the alcohol policy session and eight (66.6%) had attended the nutrition training session. One-third (4/12) of the club managers developed and had a written alcohol policy in place after the intervention programme whereas none had an alcohol policy before the programme. Further analysis on those clubs which had an alcohol policy in place showed that they were no different

from those clubs which had no alcohol policy in place although one of the clubs which had a policy in place was the club that won the senior championship. The majority (83.3%) found the alcohol programme effective and believed that player attitudes towards alcohol and nutrition had improved since implementation of the programme. Over half (58.3%) of the managers stated they believed that there was an improvement in player performance and player attendance and that alcohol related incidents had reduced since the programme.

Table 4.28 Attendance at community intervention by club managers, process outcomes and managers' opinions on the effectiveness of the programme.

	No N=12	%
Aware of alcohol programme at club	12	100.0
Attendance at alcohol training session	8	66.6
Attendance at alcohol policy session	6	50.0
Attendance at nutrition training session	8	66.6
Development of an alcohol policy	4	33.3
Written alcohol policy in place	4	33.3
Found alcohol programme effective	10	83.3
Believed there was an improvement in player performance since implementation of the programme	7	58.3
Believed player attitude towards alcohol use improved since programme	10	83.3
Believed player attitude towards sport nutrition improved since programme	10	83.3
Number who believed player attendance at training and games improved since programme	7	58.3
Number who believed alcohol related incidents reduced since programme	7	58.3

4.4.2 Findings from coaches' questionnaires after coaching session

Table 4.29 presents the findings from questionnaires that were handed out to the coaches who attended the coaching alcohol education session. Thirteen coaches representing 3/12 (25%) of the clubs attended the training session. The majority of these coaches stated that they found the alcohol education session useful and all of them would recommend the session to other coaches. Most agreed that after the alcohol

training session they would be more likely to be able to recognise signs of alcohol problems (76.9%), to approach a person about their alcohol use (84.6%) and to consider becoming involved in developing an alcohol policy for their club.

Table 4.29 Attendance at alcohol education training for coaches, coaches' attitudes and perceived learning from the alcohol education training for coaches.

	No N=13	%
No. of coaches who attended session	13	
No. of clubs represented at session	3	25.0
No. who felt coach training session useful	11	84.6
No. who would recommend coach training sessions to other coaches	13	100.0
No. of coaches who felt that they would be more likely to:		
- Recognise signs of alcohol problems	10	76.9
- Approach a person about their alcohol use	11	84.6
- Able to give more specific information about alcohol use	13	100.0
- Consider becoming involved in developing a club alcohol policy	11	84.6

4.5 Summary of follow-up findings

The preliminary analysis showed a significant difference in two alcohol outcome measures in the control and intervention group at follow up, i.e. drinking over the recommended weekly limit and mean alcohol knowledge score. At follow-up the percentage drinking more than the recommended weekly intake was significantly lower in the intervention group (18.9% vs. 28.1%, $p < 0.01$) but this effect was lost when cluster analysis was performed. At follow-up the mean alcohol knowledge score was significantly higher in the intervention group (6.0 vs. 5.5, $p < 0.05$) but this increase in knowledge was no also longer significant when cluster analysis was performed.

Comparison of change over time (i.e. baseline intervention vs. follow-up intervention and baseline control vs. follow-up control) showed significant differences in three alcohol outcome measures: mean yearly alcohol consumption, percentage drinking over recommended weekly limit and mean alcohol harm score. There was a significant reduction in mean yearly alcohol consumption (-6.5, -3.5) and the percentage drinking

over the recommended weekly limit of 21 units (-15.4%, -5.2%) and mean alcohol harm score (-1.2, -1.0) in both intervention and control but these reductions no longer remained significant when cluster analysis was performed. There was a large reduction (-14%) in percentage binge drinking at follow-up in the intervention group with high AUDIT scores at baseline but the numbers were small and this reduction was not significant when controlling for clustering.

Multiple regression analysis at the player level showed that after controlling for clustering, the only factor associated with any of the alcohol outcome measures was age having first alcoholic drink. For example, those who had their first alcoholic drink aged 16-17 years old and aged 18 years and over were 38% and 68% *less* likely to regularly binge drink compared to those who had their first alcoholic drink at 15 years or younger.

The multi-level generalised mixed models showed no significant differences in alcohol outcome measures in intervention compared to control at follow-up.

Analysis of the paired data showed non-significant reductions in almost all of the alcohol outcome measures at follow-up in both control and intervention although total AUDIT score increased non-significantly in the control group.

Analysis of the process measures showed that a third of the clubs had a written alcohol policy now in place and a high proportion of the club managers believed that the programme was effective in improving player performance; improving player attendance at training and games; improving player attitude to alcohol use and reducing alcohol related incidents.

Analysis of the coaches' questionnaires suggest that a high proportion of the coaches who attended the alcohol training session believed that it was effective in helping them recognize alcohol problems; making them more likely to approach a person about their alcohol use; and enabling them to be able to give more specific information about alcohol use.

5 *Discussion*

This chapter discusses the results of the research and places them in the context of the relevant literature. It is divided into six sections.

- 5.1 Important findings and original aspects
- 5.2 Comparison of findings with the national and international literature
- 5.3 Strength and limitations of the study design and their implications
- 5.4 Policy implications and future research
- 5.5 Recommendations
- 5.6 Conclusions

5.1 *Important findings and original aspects*

The research presented in this thesis is important in that it is the first time that alcohol use has been measured in a representative sample of amateur sport club players in Ireland and therefore it is the first study to determine alcohol use characteristics among amateur sports club players in Ireland. This study presented a unique opportunity to ascertain baseline prevalence of alcohol use, alcohol harms and alcohol knowledge among GAA players. Although community based alcohol intervention programmes have been carried out in sports setting previously⁷³, they have been few and none of them were controlled.¹²⁸ Therefore, this study was the first controlled community based intervention programme to be carried out in a sports setting not only in Ireland but also anywhere in the world. The important findings in this study include the following:

- first ever prevalence survey of alcohol use and alcohol related harms among GAA players in Ireland;
- impact of a controlled community based trial in the GAA sports setting on drinking behaviour among GAA players
- club manager and coaches' perceptions on the effect of a community based trial on the GAA players and club.

5.1.1 *Baseline findings*

5.1.1.1 *Regular Binge drinking*

Over half (50.7%) of the GAA players were regular binge drinkers (i.e. drank six or more standard drinks per occasion at least once a week). As stated previously binge drinking is likely to lead to intoxication and is therefore associated with acute physical and social harms. This study found that those reporting regular binge drinking (i.e. drinking six or more standard drinks at least once a week) were more likely to experience alcohol related harms including being in a fight or accident, missing time from work/college or damaging public property than those not reporting regular binge drinking. The increased likelihood of harms among regular binge drinkers was independent of volume consumed which suggests that it is the pattern of drinking as well as volume of drinking that is leading to increased harms among the GAA players. This corresponds with the literature which shows that the extent of alcohol related harm depends not only on the amount of alcohol consumed (and volume of alcohol consumed was also found to be associated with alcohol-harms in this study) but also on the manner in which it is consumed.¹³ Regular binge drinking and drinking to intoxication are linked to an increased risk of acute harms including accidents, injuries and violence.⁴ The high prevalence of binge drinking among the GAA players is therefore of great concern and has important policy implications that are discussed later in section 5.4.

As mentioned in section 1.8, those involved in sport are more likely to regularly binge drink than the rest of the population.^{109 110 112} Research also suggests that binge drinking may be related to the level of involvement in sports.¹⁶¹ In a national study of college students Wechler *et al.* (1997) found that students heavily involved in sports engaged in more binge drinking than students only partly involved in sport. Similarly, Leichter *et al.* (1998) found higher rates of binge drinking among the leaders of sports teams than in sport team members themselves.¹¹⁰ A study in New Zealand found that elite-provincial players had the highest level of hazardous drinking followed by club/social players and elite-international players.¹¹² However our study did not find that playing level was significantly associated with regular binge drinking among the GAA players. The factors associated with regular binge drinkers among this cohort of GAA players were age, age having first alcoholic drink and education. Those aged 18

years and over were almost three times more likely to be regular binge drinkers than those aged less than 18 years; those educated to Leaving Certificate or higher were more likely to regularly binge drink than those with lower education; and those who had their first alcoholic drink at 18 years or over were 66% less likely to report regular binge drinking than those who had their first alcoholic drink at 15 years or younger. This association with regular binge drinking and age having first alcoholic drink showed a strong significant downward linear trend. The high prevalence of regular binge drinking found among this cohort of players has important policy implications that will be discussed later in section 5.4.

5.1.1.2 Drinking over the recommended weekly limit of 21 units per week

Almost a third (30%) of the GAA players reported that they drink over the recommended weekly limit of 21 units per week. Drinking over the recommended limit of 21 units per week is linked to long-term chronic harm such as cancer, cirrhosis of the liver and high blood pressure.¹⁶² Therefore, almost one-third of the GAA players are putting themselves at increased risk of health-related problems in the future. Similar to the association with regular binge drinking, age, age having first alcoholic drink and education were significantly associated with drinking over the recommended weekly limit and as expected there was a strong correlation between regular binge drinking and drinking over the recommended weekly limit.

It should be noted that the associated acute and chronic effects of excessive alcohol consumption are not only observed in drinkers who are alcohol dependent but also among non-dependent drinkers. Indeed it has been shown that non-dependent drinkers account for most of the morbidity and mortality that is attributed to drinking.¹⁶³

Combating patterns of harmful alcohol consumption such as binge drinking and drinking over the recommended weekly limit of 21 units per week should be a major public health priority in Ireland.

5.1.1.3 AUDIT scores

The mean AUDIT score among this cohort of GAA players was 11.9 and three quarters (74.7%) of the players reported an AUDIT score of eight or more. As previously mentioned in section 3.6.1.1, a total AUDIT score of eight or more is indicative of harmful alcohol use.¹⁴⁹ This study has found that almost three-quarters of the GAA players were drinking to such an extent that it was harmful to their health. Responses to the AUDIT questionnaire indicated that almost all of the players reported hazardous alcohol use (94.5%), three-quarters reported harmful alcohol used (74.5%) and over half had an AUDIT score indicative of dependence symptoms (60.5%). These high scores indicate that almost three quarters of the participants warrant some intervention. For example, as previously mentioned in section 3.6.1.1, the AUDIT can be used to place respondents into four specific zones which dictate the type of treatment that should be offered. We found that almost half (49.2%) were in Zone II which recommends that they need simple advice focused on the reduction of hazardous drinking, fourteen per cent were in Zone III category which indicates that they require brief counselling and continued monitoring. Of great concern are the one in ten players (11.5%) in the Zone IV category who warrant referral to a specialist for diagnostic evaluation and treatment. The high proportion of players exhibiting dependence symptoms (60.5%) is also of concern given that these players are young men who are putting themselves at increased risk of chronic health outcomes related to dependence to alcohol including, cancer, cirrhosis of the liver and elevated blood pressure. According to the National Institute of Alcohol Abuse and Alcoholism, alcohol dependence symptoms include a physical dependence on alcohol and an inability to stop despite severe physical and psychological consequences.¹⁶⁴ The findings from the AUDIT suggest that the GAA players are drinking to such an extent that it is likely to have both short-term (i.e. for those with hazardous alcohol use) and long-term (i.e. those with harmful alcohol use and dependence symptoms) consequences.

This study found that AUDIT scores were associated with playing skill level whereby junior players had a higher mean AUDIT score than players at intermediate or senior level. AUDIT score was also associated with playing age level with minor players (i.e. players aged under 18 years) having a lower mean AUDIT score than the older players.

The study of New Zealand athletes also found that mean AUDIT score was associated with playing level: the mean AUDIT score was higher in the elite-provincial players than in the elite-international or club/social players.¹¹²

5.1.1.4 Alcohol related harms

The majority of the players (81%) had reported experiencing at least one alcohol related harm due to their drinking with over half (61%) experiencing at least three alcohol related harms and almost a third (31.3%) experiencing at least six alcohol related harms due to their drinking. These harms included acute harms such as being in a fight (reported by almost a third of respondents, 29.5%); being in an accident (reported by almost one in five of the respondents 18.2%) and attending an Accident or Emergency department (reported by a tenth of the respondents, 10.8%). It is perhaps not surprising that such a high proportion of this cohort reported experiencing alcohol related harms given that the majority of the players regularly drink in a hazardous and risky manner. The extra burden of these players on the health services (i.e. the busy Accident and Emergency departments) during a time of limited resources is of concern. There were also social harms experienced by the respondents due to their drinking, including missing time from college/work and experiencing harm in their home-life/relationship and/or friendships. These harms were significantly more likely to be experienced by those who were regular binge drinkers than those who were not regular binge drinkers. For example regular binge drinkers were over two times more likely to be in a fight due to their drinking than non-regular binge drinkers.

5.1.1.5 Total alcohol consumption

This study found that the yearly alcohol consumption level in litres of pure alcohol among the GAA players was 12.5 litres which is lower than the national average of 13.8 litres per adult aged 15 years and over.¹⁶⁵ This finding supports the contention in Section 5.1.1.1, that it is not volume of alcohol consumed that is an issue among the players but rather it is the pattern or drinking that is the issue. The level of consumption is still high and is of concern as these drinkers drinking on average 12.5 litres of alcohol on all adults aged 15 years and over and so the average age is likely to be higher.

5.1.1.6 Age consuming first alcoholic drink

The average age of players having their first full alcoholic drink was 15 years. Over half (53.1%) of the players were 15 years or younger when they had their first drink, over a third (36.3%) were aged between 16 and 17 years having their first drink and just over one in ten (10.6%) were aged 18 years or over. This finding suggests that the majority of these players were able to access alcohol before the legal age and has important alcohol policy implications that will be discussed in more detail later in section 5.4. There was a significant linear association between age having first alcoholic drink and all of the adverse alcohol outcome measures. For example, there was a significant negative linear trend for age at having first full alcoholic drink and reporting regular binge drinking; those who had their first alcoholic drink at aged 18 years or over were 66% less likely to report regular binge drinking than those who had their first alcoholic drink at 15 years or younger. Similarly those aged 18 years having their first alcoholic drink were also 65% less likely to report that they drink over the recommended weekly limit. The effect was more pronounced on AUDIT scores; those aged 18 years or over were 87% less likely to have a high AUDIT score than those who had their first alcoholic drink at 15 years or younger. Reporting of at least six alcohol related harms was also 84% less likely among those who delayed having their first alcoholic drink to 18 years and over compared to those who had their first alcoholic drink aged 15 years or younger. There is ample evidence that the early initiation of alcohol use is a risk factor for the development of later alcohol related problems.^{166 86} People who reported starting to drink before the age of 15 were four times more likely to also report meeting the criteria for alcohol dependence at some point in their lives.⁸⁷ This finding that the majority of these players had their first alcoholic drink before the age of 18 years is a cause for concern and suggests that some of these players could experience difficulties with alcohol in the future. One approach to this problem might be to educate parents about this evidence and to encourage parents to do all in their power to delay teenage drinking.

5.1.2 Effect of a community based education programme in the GAA sports setting on drinking behaviour among GAA players

This study found that, after controlling for the clustered nature of the data, the community based education programme did not have a significant impact on any of the alcohol outcome measures. For example, there was a significant reduction in mean yearly alcohol consumption in both intervention and control groups at follow-up with a reduction of 6.5 litres in the intervention group compared to a reduction of 3.5 litres in the control group. However, after controlling for clustering, these reductions no longer remained significant. There was also a significantly larger decrease in the proportion drinking over the recommended weekly limit in the intervention group than in the control at follow-up (-15.4% vs. -5.2%) but after controlling for clustering this effect was also lost. Furthermore, multiple regression analysis at the player level showed that, after controlling for clustering, none of the factors associated with the programme had an impact on alcohol outcome measures. And neither the more sophisticated multi-level model nor the analysis of the paired data yielded any significant effect of the intervention programme on any of the alcohol outcome measures at follow-up.

However, it should be noted that the intervention may have had a positive impact on process outcomes. For example, a third of the clubs in the intervention group had put a written alcohol policy in place. This may have a positive impact on alcohol use among the club members in the longer-term since the written alcohol policy includes information on the responsible serving of alcohol and how to minimise alcohol related incidents among players. Although no difference in alcohol outcomes was found between the clubs who put an alcohol policy and those who did not, one of the four clubs that did put a policy in place included the club that won the senior championship. A high proportion of the managers believed that the programme was effective in improving player attitude (83.3%) and player performance (58.3%). Over half (58.3%) believed that alcohol related incidents reduced since the intervention programme. Another positive aspect of the intervention was that the majority of the coaches who attended the coaches' education session found it useful (84.6%) with the majority of the coaches stating that they would now be able to recognise signs of alcohol problems

among their players (76.9%) and would now approach a person about their alcohol use (84.6%).

After the intervention, regular binge drinking, total alcohol consumed, drinking over the recommended weekly limit and mean audit score were reduced in both the control and intervention clubs. However, these reductions were not due to the effect of the intervention since some of the reductions, for example, the reduction in mean AUDIT score was (non-significantly) higher in the control clubs and furthermore it should be noted that during the period of this study, per capita alcohol consumption decreased from 13.8 litres in 2007 to 12.4 litres in 2008. The level of alcohol related harm in a population derives from the pattern of that population's drinking as well as the overall level of consumption. The single population theory, as propounded by Skog and Rose, states that the distribution of alcohol consumption moves up or down as a whole and that drinking behaviour is under "collective influence" which suggests that any decrease in mean population consumption is likely to lead to a decrease in the prevalence of heavy drinking.^{167 168} Therefore, any decreases in alcohol outcome measures seen in this study could be due to the temporal effect of a reduction in overall total alcohol consumption. The fact that some of the reductions in outcomes were higher in the control clubs compared to the intervention clubs suggests that this is the case.

5.2 Comparison of GAA player alcohol use with the national and international literature

The findings in the study suggested that regular binge drinking prevalence, drinking over weekly recommended alcohol limit, high AUDIT scores and the prevalence of alcohol related harms are higher in GAA players than among the national population as estimated from the SLAN survey. Although the proportion of current drinkers at 90% was similar to that found in the SLAN national survey for 18-29 year old males (89%), the prevalence of regular binge drinking was higher. In the SLAN survey, 40% of males aged 18-29 years regularly binge drink compared to just over 50% in the GAA players.⁸² Similar to the findings in this study, the SLAN survey also found that regular

binge drinkers experience more alcohol related harms than non-regular binge drinkers. The prevalence rate of 30% drinking over the weekly recommended limit of 21 units per week found among the GAA players was double that of the 15% prevalence rate found among 18-29 year old males in the SLAN survey.⁸²

As stated in section 5.1.1.5, the volume of alcohol consumed in litres of pure alcohol was slightly lower among the GAA players at 12.5 litres compared to the national figure of 13.8 litres for that study time period.¹⁶⁵ This indicates that it is not the volume of alcohol consumed that is higher among the GAA players but rather the prevalence of binge drinking that is higher among the GAA players suggesting that GAA players are more likely to partake in riskier drinking habits (i.e. regular binge drinking and drinking over the recommended weekly limit) than the rest of the national population.

Comparison with the SLAN survey is appropriate from a temporal point of view since the data for SLAN were collected in 2007 whereas our baseline data were collected in 2006-2007. However, the SLAN survey used face-to-face interviews whereas our survey method was self-reported questionnaire and so there should be some caution in comparing the findings. There is substantial evidence that self-reports of drug use, alcohol use and other stigmatized behaviours vary by mode of interview. Face-to face interviews may be more prone to response bias, which can occur as a result of respondents' desire to present themselves in a more favourable light than self-reported questionnaires.¹⁶⁹

Comparison with the international literature suggests that binge drinking prevalence is higher in Ireland than in other EU countries. A recent study on binge drinking in Europe showed that weekly binge drinking among all drinkers aged 15 years and over was highest in Ireland at 37% compared to an EU average of 15%.¹⁷⁰ As mentioned in the Introduction, section 1.6.2, the European School Survey Project on Alcohol and Other Drugs (ESPAD) study found that students aged 16 from Ireland reported the highest average intoxication scores among the 35 countries surveyed.²⁸

Since binge drinking prevalence has not been measured in any other sports people in Ireland, no national comparison to other sports people can be made although a recent

study by Morgan *et al.* on the SLAN survey found that highly physically active people were more likely to binge drink than those who are physically active at low or moderate levels (Dr. Karen Morgan, personal communication). Comparison of binge drinking among the GAA players with other international sports people suggests that binge drinking is higher among the GAA players. A US study of college athletes found that the prevalence of fortnightly binge drinking was 57% for athletes and 48% for non-athletes.¹⁷¹ Fortnightly binge drinking was not measured in this study but given that over 50% of the GAA players binge drink weekly it is likely that the prevalence of fortnightly binge drinking among GAA players is a great deal higher. Similar to this study, the athletes who binge drink were more likely to experience alcohol related harms than those who did not binge drink and non-athletes. A study of New Zealand rugby players found that 60% of the male rugby players and 38% of the female rugby players consumed six or more drinks in a session at least weekly.¹⁷² It would be interesting to do similar surveys amongst other sports groups in Ireland to assess whether the GAA drinking patterns are unique to the GAA or represent drinking patterns of sportsmen in general.

It would appear that level of sports participation is associated with binge drinking although, as mentioned previously, this association was not found in this study. Studies of non-professional elite sports people generally show that they have higher rates of hazardous drinking than non-elite sports people and non-sports people.^{173 174} These authors suggested that those at lower levels of sporting participation are not exposed to the drinking culture of sport to the same extent as those more involved in sport, and have less opportunity and experience less pressure to drink while those at the highest levels of sporting participation may reduce their consumption of alcohol in order to avoid the performance decrements or sanctions from their coach/manger and/or team mates. There is also evidence to suggest that it is not only sports people who are more likely to be binge drinkers but also sports fans are more likely to binge drink than non-sports fans.¹⁶¹ It was suggested that a possible link to account for the increased use of alcohol by sports fans is through the marketing and promotion targeted at sports fans and that sport fans are more likely to take advantage of special low-price alcohol promotions offered at local alcohol outlets. Nelson *et al.* went on to say that although their study did not ask respondents to report on the content of the television they

watched, it might be reasonable to assume that a portion of their viewing was sports-related and a previous analysis of advertising content on television programming showed the alcohol advertisements were more frequent during sports programming than during other television programming.¹⁷⁵ Watching sports programmes with a higher rate of alcohol advertisements may “prime” viewers for heavy alcohol use. This may also explain why some of the players also have high alcohol use since it would be reasonable to assume that those involved in sports are more likely than those not involved in sports to watch sports programmes. Indeed a study carried out in New Zealand on the effect of alcohol industry sponsorship in sport found that it is associated with hazardous drinking.⁹⁴ The study found that sports people receiving direct alcohol industry sponsorship of any kind (including payment of competition fees, costs for uniforms and the provision of alcoholic beverages) had higher AUDIT scores than those not receiving sponsorship. Sports people receiving alcohol industry sponsorship at multiple levels of sports participation (individual, team and club) had the highest AUDIT scores.⁹⁴ Evidence such as this suggests that alcohol sponsorship of sport should be discouraged or banned.

A study of New Zealand sports people asked about drinking motives. This study found that elite-international sports people put more emphasis on drinking as a way of coping with the stresses of participating in their sports and the elite-provincial players placed a greater emphasis on drinking as a reward for participating in their sport. Those sports people who placed a greater emphasis on drinking as a reward for participating in their sports tended to display more hazardous drinking behaviours.¹¹² A study of US athletes found that athletes were more likely than non-athletes to report that they were surrounded by the type of environment (i.e. highly social organisations) that is associated with binge drinking.¹⁷¹ The athletes in this study also were more likely to say that most of their friends were binge drinkers. Although the GAA study did not ask about drinking motives, a small qualitative study carried out by another researcher on the GAA players after the intervention programme found that the participants perceived their drinking patterns to be part of an inherited culture within the GAA. As one participant said “Like everyone, we are in the club, friends, our family are all involvedyou are always going to get someone to go out with...” The data from the qualitative research suggest that the GAA is a highly social environment and this may

have an impact on drinking behaviours. (The data from this qualitative study on 30 players and six coaches from the intervention clubs is not part of this thesis and will be published separately; personal communication, Catherine Darker).

The sociability factor associated with both the GAA and binge drinking is borne out by findings from an Irish study carried out by researchers from the ESRI on the social and economic value of sport in Ireland. The authors found that members of what they defined as “social” team sport clubs (i.e. soccer and GAA) were more likely to drink more than those involved in non-social non-team sport clubs.¹²⁵

The evidence about the sociability link with binge drinking suggests that clubs need to be aware of their role in encouraging problem alcohol use and to work in combating this, for example by alcohol policies.

Although a mean AUDIT score was not calculated for the national population in the SLAN survey, a shorter version known as the AUDIT-C was calculated. The AUDIT-C is an abbreviated version of the WHO AUDIT¹⁷⁶ consisting of three items of the ten item original AUDIT questionnaire.¹⁴⁷ The AUDIT-C examines frequency of drinking, volume consumed and binge drinking and is similar to the measure of hazardous drinking in the larger WHO AUDIT survey. Comparison of the AUDIT-C on the national population with the corresponding questions on the larger WHO AUDIT shows that the proportion of GAA players scoring positive on AUDIT-C was higher than the national population. The majority of the GAA players (86%) scored positive on the equivalent to the AUDIT-C compared to 74% of 18-29 year old males in the national population. There are few studies which have measured the mean AUDIT score among general populations. One small study on 60 young men in a deprived area of London found a mean AUDIT score of 14.6 for 18-21 year olds.¹⁷⁷ This figure is higher than found in our study but these findings should be viewed with caution since this study was based on just 24 men in this particular age group.

There is evidence to suggest that AUDIT scores may also be high among sports people. The previously mentioned study of New Zealand rugby players found that the mean AUDIT score was 11.2.¹⁷² It would appear that, similar to the association with binge

drinking, level of sports participation may also have an impact on AUDIT scores. Studies on non-professional elite sports people generally show that they have higher rates of hazardous drinking than non-elite sports people and non-sports people.^{173 174} The New Zealand study on sports people found that the mean AUDIT score was highest among elite-provincial players at 11.1, and lowest among elite-international players at 8 and it was 9.3 among club/social players.¹¹² In contrast this study on the GAA players did not find higher AUDIT scores among the more senior (and perhaps the more involved) teams but rather the mean AUDIT score was slightly higher among the junior GAA players. The mean AUDIT score was also highest in those players who played under 21 and lowest in those who player at minor (under 18) level. The mean AUDIT score for all of the GAA players in this study was 11.9 was similar to that found among elite-provincial players in New Zealand. However, a study on professional Australian football league players found a mean AUDIT score of 8.8 which is lower than that found among the GAA players.¹⁷⁸ The Australian study on the professional football league players also found that drinking among the players was related to time of year with high risk drinking more prevalent at end of season and vacation periods and it was also found that formal club rules on alcohol consumption had little effect on alcohol outcome measures. The GAA study did not find a seasonal effect on drinking levels with no difference found among the GAA players who were surveyed in April or October. However, results from the previously mentioned qualitative study carried out on the GAA players found that abstaining from alcohol prior to a big game was common. Similar to the findings in the Australian study, findings from the qualitative study suggest that formal club rules had little effect on alcohol consumption and they believed that the GAA “had no right to tell the players when or how they should drink” but instead the players themselves should decide when to drink and when not to drink. The players felt that the amateur nature of the sport meant that alcohol consumption was “a personal decision rather than a matter for the club”. However, in one of the focus groups there was an acceptance of pre-game abstinence from alcohol when the coaches advocated for such a ban to take place.

5.3 *Strengths and limitations of the study and their implications*

This study was a cluster randomised controlled community intervention trial carried out at the club (cluster) level within the GAA organisation and has many strengths

associated with it. The setting (i.e. GAA sports clubs) and the community-based approach of this intervention also has many advantages. The sport club setting within the GAA was an ideal setting for a community based intervention programme since GAA sport participation is an integral part of the Irish community. As mentioned in section 1.9, there are over 3,000 GAA clubs in Ireland with a club generally based in every parish. Basing this intervention at the GAA club level ensured that there was local and community involvement. The fact that this was a community-based intervention trial also meant that a community-wide approach to the prevention of alcohol harms was taken. It differed from individual based interventions in that it focussed on changing the community and environment as a whole and not just the individual. Community based programmes empower individuals and groups to take some level of action to facilitate change.¹⁴³ As mentioned in section 1.5.6, the major vehicle by which change is facilitated in a community intervention trial is the adoption of appropriate practices and policy development by all stakeholders in that community. Unlike individual level interventions that focus on changing individual behaviour, in this study, GAA players, GAA managers and GAA coaches and other GAA senior personnel (for example, club secretaries and club chairmen) were involved. As mentioned previously, community based interventions that focus on changing the local environment have the potential to effect structural changes in the community drinking environment that could have long-lasting impacts on drinking behaviour.^{68,69} However, it has been argued that the traditional randomised controlled trial (albeit with cluster randomisation) may not be appropriate to evaluate a complex intervention of this nature and a more holistic approach incorporating the RE-AIM framework¹⁷⁹ should be considered. The RE-AIM framework is a set of guidelines that is designed to expand the assessment of an intervention programme beyond efficacy to multiple criteria that may better identify the translatability and public health impact of health promotion interventions. RE-AIM is an acronym that stands for Reach (participation rate and representativeness of participants); Effectiveness (on both primary outcomes and quality-of-life/negative consequences); Adoption (participation rate and representativeness among settings and staff that begin or attempt a programme); Implementation or program delivery, and Maintenance or sustainability at both individual and setting levels. According to the framework, each dimension is important for determining the eventual population-based impact of a program, and different

interventions probably have different patterns of results across these 5 dimensions. Thus a limitation of this study is that although this study did describe the methods used as recommended in the Consort statement on “Improving the reporting of pragmatic trials”¹⁴⁵ it, did not use the RE-AIM framework. It is possible that had the intervention been allowed to evolve over time, for example, the outcome may have been more positive. It is possible that not allowing this has led to a Type II error.

Another strength of this intervention was the fact that it had more than just an alcohol education component to it. It has been shown that alcohol education policies alone have limited impact on reducing alcohol related harms.⁵⁹ This intervention programme included (a) alcohol education for the players (b) alcohol education for coaches (c) alcohol policy training for club manager and other senior GAA personnel and (d) an alcohol media campaign at the local level. The alcohol education programmes were given by qualified and experienced health promotion personnel. The alcohol media campaign was also designed and implemented by health promotion staff experienced in media campaigns. The alcohol policy training was carried out by an official from the GAA who has had a lot of experience in running alcohol policy training sessions. Another strength of the study was that the materials for the training sessions were standardised and the intervention was given primarily by one main health promotion officer. Therefore it was unlikely that proficiency bias was introduced to the study. (Proficiency bias occurs when the interventions or treatments are not applied equally to subjects and may be due to skill or training differences among personnel and/or differences in resources or procedures used at different sites).

Another strength of the study was that the survey questionnaires included standardised questions including the AUDIT questionnaire and the quantity-frequency questionnaire. As mentioned previously in section 3.6.1.1, the AUDIT questionnaire has high reliability ($r=0.86$) and high consistency.¹⁵³ and the quantity frequency questionnaire had a high correlation with a metabolic marker of alcohol intake.¹⁸⁰ Our questionnaire was piloted among a group of players from a GAA club outside the area and was modified to ensure that it was user-friendly and accurate. As the questionnaire also included questions that were used by SLAN on the national population and questions that were used on another national sample of the Irish drinking population,²⁷ it allowed

for a direct comparison to be made to the findings in these studies. Questionnaires that had extreme values recorded were re-examined and where appropriate, a few extreme outliers were excluded from the analysis.

Another strength of this study is that although some community based trials have been carried out in the sports-club setting, they have been few and none have used controls. Therefore evaluation of the effectiveness of the programmes has not been sufficient to allow conclusions to be drawn on their impact. The Cochrane systematic review on “Policy interventions implemented through sporting organisations for promoting healthy behaviour change” was unable to include any studies because none of the studies had used controls.¹²⁸ Thus, this study is likely to be the first controlled community based trial to be carried out in the sports club setting. This study was also the first study carried out on alcohol use among amateur sporting players in Ireland. It has allowed us to establish the first baseline data on alcohol consumption and alcohol harms among GAA club players. This study was large, including almost 1000 players from 37 clubs at baseline. As the study was randomised at the club level and response rates at the club level were high, this suggests that the study is likely to be representative of GAA players nationally.

The fact that the counties were not randomly assigned to control or intervention is a weakness but the random selection at the club level and the fact that all clubs in the control county were included means that the study is likely to be representative and generalisable.

Another weakness of the study could be a lack of power. The lack of an effect of the intervention programme on alcohol outcome measures on those players who received the intervention could be due to a lack of power in the study to detect a difference. However, the sample size was inflated to ensure that the reduction in power due to the intra-class correlation (ICC) among observations of members of the same club was accounted for adequately. As mentioned in the methods section in chapter 3, the ICC is usually obtained either from previously published studies or from pilot data. As mentioned previously, there were no directly comparable published studies available but a study on UK data sets¹³⁵ found that ICCs for outcome variables were generally lower

than 0.05. Given that our ICC was based on an outcome variable, an ICC of 0.01 was selected. Given the attenuation of the statistical significance observed when analyses were controlled for cluster suggests a strong clustering effect. Therefore, the intra-cluster correlation coefficient (ICC) of 0.01 may have been too low for this study.

Another weakness of the study could be that the programme was that the programme was not sufficiently intensive enough to achieve a reduction in the alcohol outcome measures. As shown in Table 4.16, only 52.7% of the players in the intervention group had attended the alcohol training session, and only 14.2% reported that they were aware of the media campaign component of the intervention. Furthermore, analysis of the process outcomes showed that although a majority of the managers (83.3%) reported that they found the intervention programme useful, only 4 of the 12 clubs had a written alcohol policy in place at the end of the programme. Thus, the lack of an effect could be due to a lack of intensity of the programme. However, alcohol outcome measures were not improved significantly in those who had been exposed to the media, had attended the alcohol education session or had a written alcohol policy in their club. This suggests that the components of the intervention may not have been strong enough to have an affect on alcohol outcomes among this cohort. Findings from the qualitative study (which was not part of this PhD thesis) found that the players believed that the GAA as an organisation had no place in dictating alcohol use among the players as they were amateur players and not professional players. However, the qualitative study did find that the players would be amenable to taking advice from the coaches with regard to alcohol use. This study found that attendance at the coach training session was low with only 13 coaches representing 3 clubs attending the training session. Although the coaches found the alcohol training session useful, higher uptake among the clubs may have had more impact on alcohol outcome measures.

The improvement in the control group in some of the alcohol outcome measures could be due to the Hawthorne effect whereby subjects improve an aspect of their behavior being experimentally measured simply in response to the fact that they are being studied and not in response to any particular experimental manipulation.¹⁸¹ However, the study was rigorously evaluated, included controls and was implemented and evaluated at both player and cluster level.

A limitation of the survey methodology was that the questionnaire was by self-report and there may have been either under-representing or even exaggerating of alcohol use among by respondents. However, self-report surveys are commonly used in examining alcohol use and are generally considered to be valid.¹⁸² Furthermore, the high internal correlation between all of the alcohol outcome measures (for example, regular binge drinking prevalence was strongly correlated with both drinking over the recommended weekly limit and AUDIT score) suggests internal consistency.

There may have been some contamination bias whereby members of the control group may inadvertently have been exposed to part of the intervention (for example to the media campaign), potentially lessening the difference in outcomes between the two groups. As stated in section 3.1, for logistical reasons, the county that was closest to the health promotion team was chosen as the intervention county. However, in order to reduce contamination, the county that was most geographically separate from this county was selected as the control county.

Due to personnel constraints within the health promotion department, there were a number of delays in the collection of the data. Firstly, there was a delay of six months in the collection of intervention club baseline data although there was some overlap between data collection in control and intervention counties. However, analysis of the baseline data found no difference between the data collected in the earlier and later time periods. There was also a delay in the delivery of the intervention and the subsequent collection of the follow-up data and therefore the comparability of the data at a temporal level was compromised. However, as mentioned in section 3.5, in order to enhance comparability between control and intervention areas and to take into account secular trends, the collection of the control and intervention follow-up surveys were carried out as close in time as possible. Nevertheless, this delay in giving the intervention may have introduced a bias in the results.

Another timing bias may have been introduced because the time-period between implementation of the intervention and collection of the follow-up data was short (3-6 months) and therefore the lack of effect of the intervention could be due to the short

time period between the administration of the intervention and the collection of follow-up data, as there was not a long enough time period for the intervention to have an effect.

5.4 Policy implications and future research

Implications of the short-term and long-term effect of problem alcohol use

We found that GAA players were more likely to regularly binge drink, have high AUDIT scores, report more alcohol related harms and drink more than the recommended weekly alcohol limit than the rest of the population. Despite the perception of sports clubs being health promoting environments, international research suggests that sports people are more likely to engage in risky drinking behaviour than non sports people.^{112 109} The findings from this study are consistent with these findings and suggest that sports organisations need to be aware that those engaged in sports are likely to have higher alcohol consumption and engage in more harmful alcohol use than the rest of the population.

Regular binge drinking implications –short term and long term

As mentioned previously, the short-term acute consequences of regular binge drinking include an increased likelihood of reporting harm and this was found in this study. The high level of alcohol related harm reported by the GAA players is a concern and is likely to be having a negative impact on civil society (e.g. increased fights, public disorder, drunkenness in public) and on the health service (e.g. increased alcohol related visits to A&E and alcohol related hospital admissions). Thus effective alcohol policy must include measures to tackle binge drinking. The banning of happy hour, two for three offers and any forms of alcohol promotion that encourage the consumption of large quantities of alcohol per occasion need to be strictly enforced. Sports organisations must ensure that their members are actively discouraged from binge drinking and that the sport environment must ensure that it is not encouraging the practice of drinking large amounts of alcohol over short time periods. The government must ensure that educational advice includes the fact that not only is the quantity of alcohol consumed per week important but that the pattern of drinking that amount of alcohol per week is also very important.

High AUDIT score implications- short-term and long-term

The finding from this study that over half (60%) of the respondents had an AUDIT score indicative of dependence symptoms and that one in ten of the respondents had an AUDIT score that indicated that they required referral to a specialist for diagnostic evaluation and treatment is of great concern and has policy implications for the future.

Age first drink policy implications

The finding that age having first alcoholic drink was very young in this cohort and that was strongly associated with all of the adverse alcohol outcome measures is of great importance for alcohol policy. The findings in this study suggest that delaying age having first alcoholic drink is protective against binge drinking, high AUDIT scores, drinking over the weekly recommended limit and reporting alcohol related harms. These results challenge the belief amongst some people that giving youngsters small amounts of alcohol at home will enable them to grow up with a more mature attitude to drink. The average age at having first alcoholic drink among this cohort of GAA players was very young at 15.2 years and only one in ten of the participants had delayed having their first alcoholic drink until they were aged 18 years or over. Therefore, alcohol policy should include recommendations for delaying age at first drink. Policy approach for this would be to tackle availability of alcohol to younger people. Although this study did not ask the participants where they obtained their first alcoholic drink, research in the US found that parents were the primary source of alcohol for those aged less than 16 years.¹⁸³ A recent Irish study on parental attitudes and behaviours regarding underage drinking found no evidence of widespread permissive attitudes and behaviours among Irish parents. The authors found that the majority of parents disagreed with the practice of introducing children to alcohol at home although a small minority of parents reported that they had given a drink to their child at home.¹⁸⁴ A UK study on alcohol and young people found that parents and alcohol's representation in the media have the strongest influence on drinking habits. The study found that young people tend to copy what their parents do rather than what they say and higher levels of family support tended to decrease excessive use of alcohol.¹⁸⁵

Future research

It is clear that a great deal of research into the area of problem alcohol use among GAA players needs to be carried out on, for example, the following areas:

1. How to tackle the immediate problem of problem alcohol use among the GAA players.
2. The reasons why GAA players have such high levels of problem alcohol use.
3. Whether GAA drinking patterns are unique to the GAA or represent sports people in general.
4. Research (qualitative and quantitative) into what are best intervention approaches to reduce problem alcohol use in the young and what intervention approaches are acceptable to the young.
5. How to delay age at having first alcoholic drink.
6. Parents' attitudes to teenage drinking.

Tackling the immediate problem of problem alcohol use among GAA players

It has been shown that brief interventions are effective in reducing problem alcohol use.¹⁸⁶ However, this cohort (GAA players) is unlikely to be offered or exposed to any form of brief intervention since they are unlikely to go for help about their drinking.

The Working Group on Alcohol recommendation that pilot screening and brief interventions programmes in healthcare setting such as Accident and Emergency departments, out-patient clinics and third levels colleges, is very welcome and may have some impact on hazardous drinking among this cohort of the population. Further qualitative research to identify more effective ways to target this cohort needs to be carried out among the players themselves and the service providers.

Reasons why GAA players have such high levels of problem alcohol use and related harms.

Further research needs to be carried out into the reasons why the majority of the GAA players engage in hazardous drinking behaviour. A more in-depth study including qualitative research to explore the motives and reasons behind the risky alcohol behaviours among GAA players would be of great benefit. A similar study needs to be carried out among non-GAA players to determine whether the motives for drinking among the general population of young males is similar or if there are some motives

that are particular to GAA players. More information is needed to determine how aware people are that their drinking behaviour may be harmful to their health. The qualitative study could also explore what are the causes of, and perceptions of the risks of, excessive alcohol consumption.

Whether GAA drinking patterns are unique to the GAA or represent sports people in general.

Further research on other sports players such as rugby and soccer players, team sports players versus individual sports players would allow for comparisons with other sports disciplines to be made. A pilot study of female camogie and female gaelic football players was carried out by another member of the research team using the same survey instrument. High levels of binge drinking, similar to the male GAA players were reported suggesting similar problems among female GAA players. However, this study was small and a larger more representative study is required in order to confirm or refute the findings from the pilot study. Research into alcohol use among women who participate in various team and non-team sports would therefore be of considerable interest.

Research (qualitative and quantitative) into what are best intervention approaches to reduce problem alcohol use in the young and what intervention approaches are more acceptable to the young.

A review of the literature from the Joseph Rowntree Foundation on alcohol intervention programmes for young people (aged 11-15 years) found that interventions based on the family have the best evidence for their efficacy and that family based programmes were the only primary alcohol prevention programmes to show longer-term results in the alcohol field. The review found that family-based prevention approaches have effect sizes two to nine times greater than those that were child focused (eg, school-based, peer-based or individual-based).¹⁸⁷

How to delay age at having first alcoholic drink and parents attitudes to teenage drinking.

Evidence-based prevention efforts to delay drinking in young people are required. Several Cochrane Systematic Reviews have identified the importance of developing appropriate social norms and skills, and the role of parents in supporting this.^{188 189 190} More information is also needed to determine whether parents are aware of the strong negative association between alcohol use at younger ages and subsequent harms.

Parents attitude to teenage drinking.

Research is needed to find out what parents of young people perceive to be acceptable in terms of quantity and frequency of drinking at different ages. The reasons why some parents and family members provide alcohol to their children needs to be explored further.

5.5 Recommendations

Based on the findings from this study that binge drinking and drinking over the weekly recommended limit are more common in the GAA players than in the national population and that a high proportion of GAA players report that they experience alcohol related harms, recommendations that include impact at the population level as a whole as well as recommendations that impact specifically at GAA player level need to be considered. The finding that age having first alcoholic drink was very young in this cohort and the fact that this factor was strongly associated with all of the alcohol outcome measures suggests that this issue needs to be included in alcohol policy.

Population-level recommendations

The fact that this study found that binge drinking and drinking over the weekly recommended limit declined in both the control and intervention group of GAA players at the end of the study period when the general per capita consumption of alcohol also reduced over the study period suggests that population drinking volume has had an

effect on the GAA players. Although there was a reduction in the per capita alcohol consumption levels over the study time period, the Irish still remain amongst the highest drinkers in Europe. Population wide policies are needed to tackle the culture of binge drinking among the GAA players as well as population wide policies to reduce the overall per capita consumption. Population wide policies that include reduction in supply of alcohol have an impact on both volume and pattern of alcohol consumption.

Pricing and availability

As stated previously, research shows that the best population approaches to reduce alcohol consumption are policies that tackle pricing and availability. Raising alcohol taxes and regulating the physical availability of alcohol (minimum age, limiting the number of outlets that sell alcohol and limiting the time of alcohol sales) are the policy measures that are most effective in influencing alcohol consumption and related harms.^{29 30 33} Increases in price of alcohol reduce alcohol consumption in younger people and have a greater impact on more frequent and heavier drinkers than on less frequent and light drinkers.³⁰ Therefore in order to reduce binge drinking in general and in the GAA in particular, the government needs to consider raising taxes on alcohol.

However, in the recent budget the Minister for Finance chose to reduce excise duty on beer, spirits and wine. The reduction will see the price of a pint of beer or cider being reduced by 12 cent, a glass of spirits reduced by 15 cent and a reduction of 60 cent in the price of a bottle of wine. This corresponds to an overall reduction of about 20% in excise duty. By taking this regressive step, the Government rejected the advice of the scientific and public health community that was based on accumulated international research that price of alcohol is the most important factor in influencing alcohol consumption and harm. A recent illustration of the link between alcohol taxes and health is provided by Finland where in 2004 the Finnish government reduced alcohol excise duty by 33% in order to reduce the number of cheap imports from abroad. The result of this action was an immediate 17% increase in alcohol related mortality equivalent to approximately eight additional alcohol deaths per week.¹⁹¹ As mentioned in section 1.6.4, de-regulation of the licensing laws has led to increased availability of alcohol in Ireland in recent years.

However, there is some hope that change may be on the way. As mentioned in section 1.7, the Intoxicating Liquor Act 2008 was passed. Implementation of the measures in this Act should have an impact on alcohol consumption in the future. However, increasing tax on alcohol products should be seriously considered as well as it is the policy with the greatest impact on alcohol consumption.

A comparative analysis of alcohol control policies in 2007¹⁹² found that the strength of alcohol control policies varied widely among 30 European countries and found a clear inverse relationship between alcohol control policy strength and alcohol consumption. The study generated scores based on five regulatory domains: physical availability of alcohol, drinking context, alcohol prices, alcohol advertising and drink driving policies. Ireland ranked in the middle and in terms of domains Ireland scores well in relation to alcohol context (i.e. having programmes to increase awareness of and prevent alcohol problems etc.) but scored poorly in three other domains including alcohol advertising, alcohol availability and drink driving. Since publication of this report random breath testing was introduced in Ireland in July 2006 and Ireland should now score better in the drink driving domain. However, although as mentioned in section 1.7, much has been achieved in Ireland with respect to alcohol policy with many of the recommendations of the Strategic Taskforce on Alcohol Interim Report 2002 being met, this comparative study on alcohol control policies clearly indicates that there are areas for improvement for Ireland in terms of alcohol related policy, namely alcohol availability and alcohol advertising. These areas have been highlighted by the Strategic Taskforce on Alcohol (STFA) and by the Working Group on Alcohol Misuse.^{76,193} and are outlined in the ten recommendations made in the strategic taskforce on alcohol 2004 report listed below.

1. Regulate availability
2. Control promotion of alcohol
3. Enhance society's capacity to respond to alcohol related harm
4. Protect public, private and working environments
5. Responsibility of the alcohol beverage industry
6. Provide information and education
7. Put in place effective treatment services
8. Support non-governmental organisations
9. Research and monitor progress

10. Prevent drink driving

Some progress has been made in each of these ten areas, particularly with respect to drink driving measures. Based on the findings from the GAA study research we can conclude that something needs to be done to reduce total alcohol consumption per capita and as stated previously evidence-based research shows that the best way to achieve this is for the government to raise alcohol taxes and implement laws that reduce availability (e.g. reducing opening times and restricting access). The government needs to re-consider its stance on reducing the excise duty on alcohol if it wants to tackle the issue of problem alcohol use in Ireland.

Recommendations for the GAA and other sporting organisations

Effective programmes and alcohol policies must be developed by sports organisations, including the GAA, to address the hazardous drinking behaviours of those involved in sport. The fact that this community intervention programme did not have an impact on hazardous drinking suggests that more effective policy measures need to be developed.

At least 10% of the GAA players surveyed had an AUDIT score in Zone IV which indicates that their problem alcohol use warranted referral to a specialist. These players require help to deal with their problem alcohol use and they may benefit from brief intervention programmes. Although the introduction of brief intervention programmes in areas such as A&E departments and colleges are very welcome, more effective ways to target this cohort need to be considered. The GAA should be encouraged to consider carrying out a feasibility study into the introduction of a brief intervention programme being offered to GAA players who may be concerned about their drinking.

The GAA as an organisation also needs to take some responsibility and action to reduce the level of hazardous drinking and alcohol related harms among their players. One of the ways the GAA can tackle this issue with immediate effect would be to ban all alcohol industry sponsorship of GAA championships. The sponsorship of the GAA by the alcohol industry is not compatible with promoting sport participation as a healthy

pursuit. Alcohol advertising and alcohol sponsorship is one of the many factors that have the potential to encourage young people to drink and is an inexpensive form of advertising for the alcohol industry to reach their target audience, i.e. young men who are both the keenest players and fans and the heaviest drinkers. As stated in section 1.6.5, the alcohol marketing communications and sponsorship body (AMCS) have agreed a revised code of conduct so as to reduce the exposure of young people to alcohol advertisements. The code dictates that there can be no sponsorship of sports broadcasts by alcohol products. However, although this code came into effect on 1st October 2008 it is not legally binding and continuation of sponsorship of sport by alcohol companies is occurring with the GAA renewing its contract with Guinness to sponsor the all-Ireland hurling championship. This renewal of the sponsorship with Guinness has come at a time when the GAA has faced criticism of its relationship with Guinness and after a time period when the GAA had given a commitment to end alcohol sponsorship within the association.

The GAA needs to take heed of its own taskforce recommendations with regard to what is needed to tackle problem alcohol use among its players. The taskforce recommended to the GAA that all alcohol sponsorship should be phased out. The GAA must reconsider its stance on the alcohol sponsorship of GAA championships. Another of the recommendations of the GAA taskforce was the implementation of the alcohol and substance abuse education programme (ASAP) in all GAA clubs. While this programme is now up and running, it will have little effect if the issue of alcohol sponsorship is not tackled. Table 5.1 summarises the recommendations that have arisen from the findings from this study and the key actors that need to ensure their implementation.

Table 5.1 Recommendations arising from the study

Recommendations	Key Actors
Increase taxes on alcohol beverages	Government
Reduce availability by limiting opening hours (including off-licences)	Government
Voluntary code of Advertising agreed by the Alcohol Marketing and Communications Sponsorship body (AMCS) be made legally binding	Government

Ban all alcohol sponsorship of sport including sponsorship of GAA	Government and GAA
Establish brief intervention programmes for health-care and social settings that will target young men	HSE
Carry out a feasibility study into whether a brief intervention programme could be established within the GAA clubs for GAA players	GAA and HSE
Qualitative research into why GAA players drink more than rest of the population	Academic departments and GAA
Carry out research into alcohol use in other sporting organisations	HSE/Academic Departments
Carry out research into effective policies to delay age having first alcoholic drink	HSE/Academic Departments

5.6 *Conclusions*

To conclude, this study has shown that problem alcohol use and alcohol related harms are higher among GAA players than similarly aged males in the national population. Age having first alcoholic drink was associated with all of the alcohol outcome measures, with those having their first drink at a younger age having more adverse alcohol outcomes compared to those who delayed having their first alcohol drink to an older age. The community based intervention programme did not have an impact on alcohol outcomes among the GAA players although the alcohol outcome measures declined in both control and intervention players to a similar extent over the study time period.

This reduction in problem alcohol use corresponded to the reduction in per capita consumption observed over the time period suggesting that population alcohol consumption levels had more of an impact than the intervention programme. This suggests that a population wide approach needs to be taken to tackle the problem of problem alcohol use and alcohol related harms among GAA players. Therefore, the recommendations of the Strategic Taskforce on Alcohol should be implemented without further delay with particular emphasis being placed on the control (taxing and pricing) and availability of alcohol.

The GAA as an organisation also needs to consider what it can do to change the culture of problem alcohol use among its players and members. In particular the GAA needs to tackle the issue of alcohol advertising. The sponsorship of the GAA by the alcohol industry should be stopped and the revised code of conduct agreed by the Alcohol Marketing, Communications and Sponsorship (AMCS) body and the Department of Health and Children be made legally binding.

More in-depth research is needed to examine the reasons why the GAA players drink more than the national population and what can be done to bring about a change in alcohol use among GAA players. Ongoing monitoring of problem alcohol use among GAA players should be carried out by the GAA organisation and research into other sports should be carried out in order to see if other sports clubs have high levels of problem alcohol use amongst its members. It will take time for change in alcohol consumption patterns and behaviours to occur but it can be achieved if both a population approach and local community approach are taken. Ireland has had success with the workplace smoking ban by taking a population approach which led to a change in public attitude. A similar approach for problem alcohol use in Ireland may lead to binge drinking and problem alcohol use becoming less acceptable. This cannot be achieved unless the government is serious about tackling the problem of problem alcohol use in Ireland and unless it rescinds its decision to lower excise duty.

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7 APPENDICES

The Appendix section of this thesis contains the following:

Appendix A. A copy of the questionnaire that was given to the players at baseline and at follow-up.

Appendix B. A copy of the questionnaire that was given to the coaches at the coaches training session.

Appendix C. A copy of the Questionnaire given to the club managers.

Appendix D. A copy of the media campaign comprising of the information placed placed on the GAA website.

Appendix E. A copy of the media campaign comprising of the advertisement placed in club match booklets.

Appendix F. A copy of the media campaign comprising of posters placed in club houses and in changing rooms.

Appendix G. A copy of the powerpoint presentation on alcohol given to players.

Appendix H. A copy of the powerpoint presentation given to coaches at the coach training session.

Appendix I. A copy of the powerpoint presentation on alcohol policy given to club officials at the policy training session.

The Appendix also contains a DVD of all of the presentations and handouts that were given to the players and managers.

Appendix A. Questionnaire for players.

**GAA Less Pints, More Points Alcohol Education
Programme**

Questionnaire I.D. No.: **C**

Date Questionnaire Completed _____

Name: _____

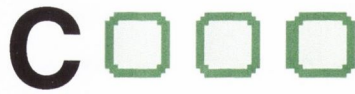
Address: _____

Email: _____

Tel No. (H): _____ Tel. No. (W) _____

Mobile Tel. No.: _____

G.A.A. Club Name: _____



GAA Less Pints, More Points Alcohol Education Programme

CONFIDENTIAL QUESTIONNAIRE

This survey is part of the “Less Pints, More Points” alcohol education programme developed by the Health Promotion Department of the Health Service Executive (HSE-North East) in association with the Monaghan County Board and Trinity College Dublin. There are six sections to the survey.

A Demographics

B Smoking and dietary habits

C Knowledge about alcohol

D Alcohol use

E Harms caused by alcohol use

F Attitudes to changing alcohol use


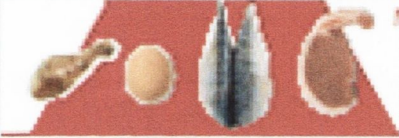
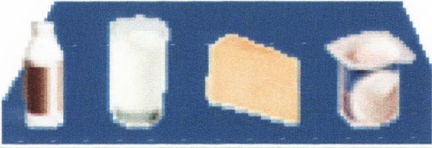
The main aim of this survey is to assess trends in diet and alcohol use based on a survey of over 1000 playing GAA members. All information is confidential and no questionnaire will be viewed by other GAA members.




SECTION A: ABOUT YOU

Q1	What age were you last birthday? _____				
Q2	Date of Birth: <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> / <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> DD / MM / YYYY				
Q3	What is your occupation (if still at school/college, please state level e.g., secondary school student, college student, university student, apprentice). _____				
Q4	Which level of gaelic games do you currently play at? (You may tick ✓ more than one box)				
	Minor Hurling <input type="checkbox"/>	Junior Football <input type="checkbox"/>	County Hurling <input type="checkbox"/>		
	Minor Football <input type="checkbox"/>	Intermediate Hurling <input type="checkbox"/>	County Football <input type="checkbox"/>		
	U21 Hurling <input type="checkbox"/>	Intermediate Football <input type="checkbox"/>	Australian Rules <input type="checkbox"/>		
	U21 Football <input type="checkbox"/>	Senior Hurling <input type="checkbox"/>	Do not play at all <input type="checkbox"/>		
	Junior Hurling <input type="checkbox"/>	Senior Football <input type="checkbox"/>			
Q5	Are you (please ✓ appropriate box)?				
	Single <input type="checkbox"/>	Married <input type="checkbox"/>	Separated / Divorced <input type="checkbox"/>	Widowed <input type="checkbox"/>	Other <input type="checkbox"/>
Q6	Who do you live with?				
	Parents/ guardian <input type="checkbox"/>	Wife/partner <input type="checkbox"/>			Alone <input type="checkbox"/>
	Friends <input type="checkbox"/>	Other (eg, boarding school, army barracks, hospital). Please specify _____			
Q7	Do you have a medical card?				
	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Don't know <input type="checkbox"/>		
Q8	Have you finished your full-time education?				
	Yes <input type="checkbox"/>	No <input type="checkbox"/>			

Q9	If finished, what age were you when you finished full-time education? _____ years		
Q10	What is the highest level of education you have achieved to date (✓ tick one box)?		
	Primary Level:		
	No formal education	<input type="checkbox"/>	
	Primary education	<input type="checkbox"/>	
	Second Level:		
	Lower second level (e.g. Junior/Intermediate/Group Certificate or equivalent)	<input type="checkbox"/>	
	Upper second level (e.g. Leaving certificate/A levels or equivalent)	<input type="checkbox"/>	
	Technical or vocational qualification (e.g. Completed apprenticeship)	<input type="checkbox"/>	
	Both upper secondary and technical/vocational qualification (e.g. Leaving Certificate and apprenticeship)	<input type="checkbox"/>	
	3rd Level:		
	Third level Degree (e.g. BSc, BA)	<input type="checkbox"/>	
	Postgraduate Degree (e.g. MSc, PhD)	<input type="checkbox"/>	
SECTION B: YOUR DIET & CIGARETTE USE			
Q11	What is your current smoking status?		
	Regular smoker <input type="checkbox"/>	Occasional smoker <input type="checkbox"/>	Ex-smoker <input type="checkbox"/>
			Never smoked <input type="checkbox"/>
Q12	If you have ever smoked, what age were you when you first smoked a full cigarette? _____ years		
Q13a	In the last <u>month</u> , how many cigarettes on average, did you smoke?		
	None <input type="checkbox"/>	I smoked 1-2 cigarettes per day <input type="checkbox"/>	I smoked 11-20 cigarettes per day <input type="checkbox"/>
	Only smoked a few, not every day <input type="checkbox"/>	I smoked 3-10 cigarettes per day <input type="checkbox"/>	I smoked more than 20 cigarettes per day <input type="checkbox"/>
Q13b	Do you think you have smoked more than 100 cigarettes in your lifetime?		

Q14	How many days per week do you usually have something to eat for breakfast?		
	Never <input type="checkbox"/>	3 to 4 days <input type="checkbox"/>	7 Days <input type="checkbox"/>
	1 to 2 days <input type="checkbox"/>	5 to 6 days <input type="checkbox"/>	Don't know <input type="checkbox"/>
Q15	How many meals, including snacks do you usually have to eat in a day?		
	One <input type="checkbox"/>	5 to 6 <input type="checkbox"/>	Don't know <input type="checkbox"/>
	2 to 4 <input type="checkbox"/>	7 or more <input type="checkbox"/>	
Q16	How many servings of bread, cereal, potatoes rice or pasta do you usually eat each day?		
	<p>One serving is </p>		
	None <input type="checkbox"/>	3-4 servings <input type="checkbox"/>	7 or more servings <input type="checkbox"/>
	1-2 servings <input type="checkbox"/>	5-6 servings <input type="checkbox"/>	Don't know <input type="checkbox"/>
Q17	How many servings of meat, fish, chicken or eggs do you usually eat each day?		
	<p>One serving is </p>		
	None <input type="checkbox"/>	2-3 servings <input type="checkbox"/>	6 or more servings <input type="checkbox"/>
	1 serving <input type="checkbox"/>	4-5 servings <input type="checkbox"/>	Don't know <input type="checkbox"/>
Q18	How many servings of milk, cheese or yoghurts do you usually eat each day?		
	<p>One serving is </p>		
	None <input type="checkbox"/>	2-3 servings <input type="checkbox"/>	6 or more servings <input type="checkbox"/>
	1 serving <input type="checkbox"/>	4-5 servings <input type="checkbox"/>	Don't know <input type="checkbox"/>

Q19	How many servings of fruit or vegetables do you usually eat each day?			
	One Serving is 			
	None <input type="checkbox"/>	2-3 servings <input type="checkbox"/>	6 or more servings <input type="checkbox"/>	
	1 serving <input type="checkbox"/>	4-5 servings <input type="checkbox"/>	Don't know <input type="checkbox"/>	
Q20	How often do you usually have a packet of crisps, bar of chocolate, sweets or biscuits?			
	Never <input type="checkbox"/>	1-3 times per week <input type="checkbox"/>	Once a day <input type="checkbox"/>	4 or more times per day <input type="checkbox"/>
	Less than once a week <input type="checkbox"/>	4 to 6 times per week <input type="checkbox"/>	2 to 3 times per day <input type="checkbox"/>	Don't know <input type="checkbox"/>
Q21	Please state the number of cups/glasses /bottles you drink of the following drinks daily?			
	Tea <input type="checkbox"/>	Milk <input type="checkbox"/>	Carbonated drinks <input type="checkbox"/>	Other <input type="checkbox"/> please specify _____
	Coffee <input type="checkbox"/>	Water <input type="checkbox"/>	Sports Drinks <input type="checkbox"/>	
Q22	Do you use dietary supplements? (iron tablets, vitamins, protein supplements, creatine sports drinks)			
	Yes <input type="checkbox"/> Please specify _____		No <input type="checkbox"/>	
Q23	How long before training do you eat?			
	Less than 1 hour <input type="checkbox"/>		3-4 hours <input type="checkbox"/>	
	1-2 hours <input type="checkbox"/>		5 hours or more <input type="checkbox"/>	
Q24	How long after training do you eat?			
	Less than 1 hour <input type="checkbox"/>		3-4 hours <input type="checkbox"/>	
	1-2 hours <input type="checkbox"/>		5 hours or more <input type="checkbox"/>	
Q25	How long before a match do you eat?			
	Less than 1 hour <input type="checkbox"/>		3-4 hours <input type="checkbox"/>	
	1-2 hours <input type="checkbox"/>		5 hours or more <input type="checkbox"/>	
Q26	How long after a match do you eat?			
	Less than 1 hour <input type="checkbox"/>		3-4 hours <input type="checkbox"/>	
	1-2 hours <input type="checkbox"/>		5 hours or more <input type="checkbox"/>	

SECTION C: KNOWLEDGE ABOUT ALCOHOL

This section is designed to gain insight into your knowledge about alcohol. Please attempt all questions.

Circle correct response

Respond either: True (T) Don't Know(DK) False (F)

Example question only.





Dublin is the capital of Ireland

T DK F

Q27	Alcohol is a drug	T	DK	F
Q28	Most Irish males under 18 are regular drinkers	T	DK	F
Q29	A can of regular strength beer contains 2 standard drinks	T	DK	F
Q30	Drinking black coffee helps the sobering up process	T	DK	F
Q31	It takes about four hours for the body to metabolise two pints	T	DK	F
Q32	6 pints of beer contains 12 standard drinks	T	DK	F
Q33	The recommended maximum for low risk drinking level for men is no more than 21 standard drinks in a week	T	DK	F
Q34	Females digest and metabolise alcohol differently from males	T	DK	F
Q35	All alcohol consumed will eventually reach the bloodstream	T	DK	F
Q36	You can do things to sober up more quickly	T	DK	F

SECTION D: ALCOHOL USE

This section is designed to allow researchers to gain insight into use or non-use of alcohol. This section asks questions about how much and how often you drink alcohol. There are no right or wrong answers to these questions. In this survey a "standard drink" is:

	1 Half Pint of beer 	1 Pub measure 	1 Small glass wine 	1 shot e.g. whiskey 
Q37	What is your current drinking status?			
	Current drinker <input type="checkbox"/>	Ex-drinker <input type="checkbox"/>	Never drank alcohol <input type="checkbox"/>	
Q38	What age did you have your first full drink containing alcohol? ____ years			
Q39	During the past 12 months, how often did you usually drink any BEER or CIDER?			
	Every day <input type="checkbox"/>	2-3 times a month <input type="checkbox"/>		
	4-5 times a week <input type="checkbox"/>	Once a month <input type="checkbox"/>		
	2-3 times a week <input type="checkbox"/>	Less often than once a month <input type="checkbox"/>		
	Once a week <input type="checkbox"/>	Never <input type="checkbox"/>		
Q40	When you drink BEER or CIDER, how much do you usually drink? Please insert number in relevant box(es)			
	Half Pints	<input type="checkbox"/>		
	Pints	<input type="checkbox"/>		
	Small Cans (330ml)	<input type="checkbox"/>		
	Large Cans (500ml)	<input type="checkbox"/>		
Q41	During the past 12 months, how often did you usually drink WINE, including fortified wine such as sherry, port or Buckfast®?			
	Every day <input type="checkbox"/>	2-3 times a month <input type="checkbox"/>		
	4-5 times a week <input type="checkbox"/>	Once a month <input type="checkbox"/>		
	2-3 times a week <input type="checkbox"/>	Less often than once a month <input type="checkbox"/>		
	Once a week <input type="checkbox"/>	Never <input type="checkbox"/>		
Q42	When you drink WINE, how much do you usually drink? Please insert number in relevant box(es)			
	Glasses	<input type="checkbox"/>		
	Quarter Bottles	<input type="checkbox"/>		
	Bottles	<input type="checkbox"/>		

Q43	During the past 12 months, how often did you usually drink any SPIRITS. either neat, with a mixer, or a pre-mixed drink in a bottle?	
	Every day <input type="checkbox"/>	2-3 times a month <input type="checkbox"/>
	4-5 times a week <input type="checkbox"/>	Once a month <input type="checkbox"/>
	2-3 times a week <input type="checkbox"/>	Less often than once a month <input type="checkbox"/>
	Once a week <input type="checkbox"/>	Never <input type="checkbox"/>
Q44	When you drink SPIRITS, how much do you usually drink? Please insert number in relevant box(es)	
	Single measures of spirit	<input type="checkbox"/>
	Single shot e.g. Aftershock®	<input type="checkbox"/>
	Bottles of pre-mixed spirits (e.g. Bacardi Breezer®, Smirnoff Ice®)	<input type="checkbox"/>
Q45	During the last <u>month</u>, how many times have you had <u>six</u> or more drinks in a row? (A drink is defined as 1 glass of beer/lager/cider, a glass of wine, a measure of spirits. A pint of beer/lager/stout is 2 drinks.)	
	Never <input type="checkbox"/>	3 to 5 times <input type="checkbox"/>
	Once <input type="checkbox"/>	6 to nine times <input type="checkbox"/>
	Twice <input type="checkbox"/>	10 or more times <input type="checkbox"/>

QUESTIONS 46-51 REFER TO THE CURRENT GAA SEASON	
Q46	On average, how many times per week do you train? (Put 0 in box if less than once a week.) <input type="text"/>
Q47	How often do you drink alcohol after a training session? Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never <input type="checkbox"/>
Q48	During the last <u>month</u> , how many times after a training session have you had <u>six</u> or more drinks in a row? (A drink is defined as 1 glass of beer/lager/cider, a glass of wine, a measure of spirits. A pint of beer/lager/stout is 2 drinks.)
	Never <input type="checkbox"/> 4 to 7 times (at least once a week) <input type="checkbox"/>
	Once <input type="checkbox"/> 8 to 12 times (at least twice a week) <input type="checkbox"/>
	2 to 3 times a month <input type="checkbox"/> Every time we have a training session <input type="checkbox"/>
Q49	On average, how many times per month do you have a match? (Put 0 in box if less than once a month.) <input type="text"/>
Q50	How often do you drink alcohol after a match? Always <input type="checkbox"/> Sometimes <input type="checkbox"/> Never <input type="checkbox"/>
Q51	Q 51 During the last <u>month</u> , how many times after a match have you had <u>six</u> or more drinks in a row? (A drink is defined as 1 glass of beer/lager/cider, a glass of wine, a measure of spirits. A pint of beer/lager/stout is 2 drinks).
	Never <input type="checkbox"/> 4 to 7 times (at least once a week) <input type="checkbox"/>
	Once <input type="checkbox"/> 8 to 12 times (at least twice a week) <input type="checkbox"/>
	2 to 3 times a month <input type="checkbox"/> Every time we have a match <input type="checkbox"/>

YOUR ALCOHOL USE HISTORY

Because alcohol use can affect your health, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest.
Place a tick ✓ in the one box that best describes your answer to each question.

Questions	0	1	2	3	4
Q52					
How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week
How many drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more
How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily
Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year
Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year

SECTION F: ALCOHOL RELATED HARMS

During the last 12 months have you? (Please answer each question by √ ticking one of the boxes.)

Q53	Got into a fight when you have been drinking?	Yes	No
Q54	Been in an accident of any kind when you have been drinking?	Yes	No
Q55	Ever attended A&E department because of your drinking?	Yes	No
Q56	Missed time from work/college because of your drinking?	Yes	No
Q57	Ever felt that you should cut down on your drinking?	Yes	No
Q58	Regretted something you said or did after drinking?	Yes	No
Q59	Felt that your drinking harmed your home life or marriage/relationship?	Yes	No
Q60	Felt that your drinking harmed your work or studies?	Yes	No
Q61	Felt that your drinking harmed your friendship or social life?	Yes	No
Q62	Felt that your drinking harmed your health?	Yes	No
Q63	Felt that you were verbally abusive because you were affected by alcohol?	Yes	No
Q64	Ever damaged public property because you were affected by alcohol?	Yes	No
Q65	Ever been physically sick after drinking alcohol?	Yes	No
Q66	Do you drive?		
	Yes <input type="checkbox"/>		No <input type="checkbox"/>
Q67	In the past month, how often did you drive after consuming 2 or more standard drinks?		
	0 (never) <input type="checkbox"/>	4-6 times (at least once a week) <input type="checkbox"/>	
	1-3 times <input type="checkbox"/>	>6 times <input type="checkbox"/>	

SECTION G: ATTITUDES CONCERNING ALCOHOL

This section is designed to allow the researchers of the "Less Pints More Points" study to gain insight into your attitudes about alcohol. There are no right or wrong answers to these questions.

Instructions: Please tick (✓) the **letter** that best corresponds to your response.

		SA	A	U	D	SD
		Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree
Q68	"I don't think I drink too much"	SA	A	U	D	SD
Q69	"I am trying to drink less than I used too"	SA	A	U	D	SD
Q70	"I enjoy my drinking, but sometimes I drink too much"	SA	A	U	D	SD
Q71	"Sometimes I think I should cut down on my drinking"	SA	A	U	D	SD
Q72	"It's a waste of time thinking about my drinking"	SA	A	U	D	SD
Q73	"I have just recently changed my drinking habits"	SA	A	U	D	SD
Q74	"Anyone can talk about wanting to do something about drinking, but I am actually doing something about it"	SA	A	U	D	SD
Q75	"I am at the stage where I should think about drinking less alcohol"	SA	A	U	D	SD
Q76	"My drinking is a problem sometimes"	SA	A	U	D	SD
Q77	"There is no need for me to think about changing my drinking"	SA	A	U	D	SD
Q78	"I am actually changing my drinking habits right now"	SA	A	U	D	SD
Q79	"Drinking less alcohol would be pointless for me"	SA	A	U	D	SD

**THANK YOU FOR TAKING THE TIME TO COMPLETE THIS
QUESTIONNAIRE.**

Please Note:

If you are concerned about your own or someone else's alcohol use, you can contact the Health Service Executive (HSE) helpline on freephone **1850242424** for advice on how to contact local alcohol counselling services in your area. Alcohol counsellors are professionally trained to support individuals who wish to change their alcohol use. Alternatively you can contact your GP.

Appendix B. Questionnaire for coaches

**GAA Less Pints, More Points Alcohol Education
Programme**

QUESTIONNAIRE FOR COACHES

Questionnaire I.D. No.:

Date Questionnaire Completed _____

Name: _____

Address: _____

Email: _____

Tel No. (H): _____ Tel. No. (W) _____

Mobile Tel. No.: _____

G.A.A. Club Name: _____

Date attended coach training session _____

Location of coach training session _____

SECTION A: ABOUT YOU

Q1 What age were you last birthday? _____

Q2 What age range do you currently coach?
(you can tick (✓) more than one box)

Under 12's <input type="checkbox"/>	Under 16's <input type="checkbox"/>	Under 18's <input type="checkbox"/>	Over 18's <input type="checkbox"/>
-------------------------------------	-------------------------------------	-------------------------------------	------------------------------------

Q3 How long (in years) have you been involved in coaching Gaelic games _____ yrs

Q4 What training in alcohol awareness had you had before today's session?

None <input type="checkbox"/>	1-3 hours <input type="checkbox"/>	1-2 days <input type="checkbox"/>	Longer course(s) <input type="checkbox"/>
-------------------------------	------------------------------------	-----------------------------------	---

Q5 In the last 6 months, how many times have you talked directly and openly to a person about changing their alcohol use?

Never <input type="checkbox"/>	Once <input type="checkbox"/>	2-5 times <input type="checkbox"/>	6-20 times <input type="checkbox"/>	> 20 times <input type="checkbox"/>
--------------------------------	-------------------------------	------------------------------------	-------------------------------------	-------------------------------------

Compared to before the training I feel,

(Q6) I will now recognize signs of alcohol problems.

Much more likely More likely About the same Less likely

(Q7) I will now approach a person about their alcohol use.

Much more likely More likely About the same Less likely

(Q8) I will now be able to give more specific information about alcohol use

Much more likely More likely About the same Less likely

(Q9) I will consider becoming involved in developing an alcohol policy with my club

Much more likely More likely About the same Less likely

Q10 How useful did you find the coach training session?

Very useful <input type="checkbox"/>	Fairly useful <input type="checkbox"/>	A little useful <input type="checkbox"/>	Not at all useful <input type="checkbox"/>
--------------------------------------	--	--	--

SECTION B: KNOWLEDGE ABOUT ALCOHOL

This section is designed to gain insight into your knowledge about alcohol. Please attempt all questions.

Circle correct response

Respond either: True (T) Don't Know(DK) False (F)

Q11	Alcohol is a drug	T	DK	F
Q12	Most Irish adult males under 18 are regular drinkers	T	DK	F
Q13	A can of regular strength beer contains 2 standard drinks	T	DK	F
Q14	Drinking black coffee helps the sobering up process	T	DK	F
Q15	It takes about four hours for the body to metabolise two pints	T	DK	F
Q16	6 pints of beer contains 12 standard drinks	T	DK	F
Q17	The recommended maximum for low risk drinking level for men is no more than 21 standard drinks in a week	T	DK	F
Q18	Females digest and metabolise alcohol differently from males	T	DK	F
Q19	All alcohol consumed will eventually reach the bloodstream	T	DK	F
Q20	You can do things to sober up more quickly	T	DK	F

Q21 Would you recommend the coach training sessions to other coaches?		
Yes <input type="checkbox"/>	No <input type="checkbox"/>	Unsure <input type="checkbox"/>
Q22 Other comments?		
<p>My comments may be quoted to promote the “Less Pints More Points, Programme: yes _____ no _____</p>		

Thank you for your time in completing the questionnaire

Appendix C. Questionnaire for club managers

Club Questionnaire

The purpose of this section is to gather information about your club so we can evaluate the effectiveness of the “*Less Pints, More Points*”. Please answer all the questions on this form **accurately**. **All the information you provide is confidential.**

SECTION 1: CLUB DETAILS

Q1 Club Name:

Q2 Club Address:.....
.....

Q3 Contact person at club for *Less Pints More Points*

Q4 Position held:

Q5 Postal Address:

Q6 Phone:..... **Q7** Mobile No:

Q8 Fax:

Q9 Email address:.....

Q10 Club website address:.....

Q11 Sport/s played by club.....

Q12 No. of club members (total)

Q13 Please indicate if your club has the following facilities:

	Yes	No
(a) Kitchen/cooking facilities	<input type="checkbox"/>	<input type="checkbox"/>
(b) Social/function rooms	<input type="checkbox"/>	<input type="checkbox"/>
(c) Licenced Bar	<input type="checkbox"/>	<input type="checkbox"/>
(d) Pool Table	<input type="checkbox"/>	<input type="checkbox"/>
(e) Meeting Rooms	<input type="checkbox"/>	<input type="checkbox"/>

Q14 Are club facilities hired out to the public for functions? Yes No

Q15 Does club advertise/have club notes in local newspaper? Yes No

Q15a If yes, what local paper?.....

Q16 Does club have own newsletter:.....

Q17 If club has various levels of membership, please indicate for each level of membership the number of members at that level. eg. Full, associate, social, life etc.

.....

Q18 Age range of club members (approximate)

Q18(a) Please give an approximate breakdown (percentage) for each age group listed below.

Under 5 years	%
05 - 14 years	%
15 - 24 years	%
25 - 44 years	%
45 - 64 years	%
65 + years	%

Q19 Please indicate percentage of club members in each gender (approximate)
Male % Female %

Q20 Date season commenced .../...../..... Date season ends/..../.....

Q21 Is alcohol regularly consumed at the clubhouse? Yes No

Q22 Is alcohol regularly consumed at club activities? Yes No

Q23 Is the club licensed to serve alcohol? Yes No

Q24 If club has no licence is there a specific local public house that is used by GAA members:

Q25 Name:.....Address:

Q26 Have any of the team coaches/managers received training on alcohol and drug awareness? Yes No Don't know

Q27 Have any of the teams received any alcohol awareness training/talks in the last twelve months? Yes No Don't know

Q28 Type of alcohol licence (Please tick as many as appropriate)

Restricted
Limited
Full
None
Other Please state licence type.....

Q29 Licencee of the club

Licensee's Name

Address.....

PhoneFax:

Q30 Does the club arrange training for the people who serve behind the bar i.e. Responsible Serving of Alcohol (RSA) training course accredited by CERT?

Always Sometimes Never

If yes, how many members of your club are RSA trained?.....

Q31 How often is a RSA trained person present when alcohol is being served?

Always Usually Sometimes Never

Q32 Is a committee member on duty when alcohol is being served?

Always Usually Sometimes Never

Q33 How often do untrained people serve behind the bar?

Always Usually Sometimes Never

Q34 How often are Low strength and non-alcoholic beverages made available at a cheaper price than full strength drinks to members?

Always Usually Sometimes Never

Q35 How often do people under the age of 18 consume alcohol at the club?

Always Usually Sometimes Never

Q36 Is alcohol allowed to be brought into the home grounds/ venue during competitions?

Yes No

If yes, are there any restrictions?

Q37 Please describe safe transport strategies (eg. designated driver programs, club bus etc.)

.....

Q38 Are phone numbers for the local Taxi service displayed by the phone in the clubrooms?

Yes No

Q39 What food is available at your club when alcohol is being served?.....

Q40 In the last twelve months has any of the following events occur at the club?

Drinking competitions	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Alcohol as raffle prizes	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Alcohol as player prizes (over 18)	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Alcohol as player prizes (under18)	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Alcohol free social functions	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Under 18 alcohol free functions	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Alcohol served in trophies/cups won by club members at any playing level?	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Alcohol served to intoxicated persons?	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Cheap Drinks promotions e.g. 2 for 1, happy hour?	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Free alcohol provided to teams by clubs?	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Matches/Training sessions being cancelled due to players being hungover?	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>

Q41 What alternative ways of fundraising, besides bar profits, does the club have?
Please describe briefly

.....

.....

Q42 Please indicate the approximate annual **turnover** from the sale of alcohol at your club?

Up to €2500	<input type="checkbox"/>	€20001-€30000	<input type="checkbox"/>
€2501 - €5000	<input type="checkbox"/>	€30001-€40000	<input type="checkbox"/>
€5001 - €10000	<input type="checkbox"/>	€40001-€50000	<input type="checkbox"/>
€10001-€20000	<input type="checkbox"/>	€50001-€100000	<input type="checkbox"/>

Q43 Does your club have a written policy on how alcohol is managed at the club?

Yes No

If yes, please attach a copy?

Q44 How serious or not do you consider the following problems to be in **Ireland**?

Very serious Fairly Serious Not very serious Not at all serious Don't Know

Alcohol related violence
Teenage drinking
Drinking and driving
Drunkenness in public places

Q45 How serious or not do you consider the following problems to be among **GAA members**?

Very serious Fairly Serious Not very serious Not at all serious Don't Know

Alcohol related violence
Teenage drinking
Drinking and driving
Drunkenness in public places

Q46 In the last twelve months, do you think alcohol related problems have increased, decreased or remained the same in your club?

Increased Decreased Remained the same

Q47 Are there any current concerns about the management of alcohol at the club?

Yes No

Q47a If yes, please describe

Q47b Can cigarettes be purchased at your club? Yes No

Q48 Do you have a designated smoking area? Yes No

Q49 Do you adhere to the strict no-smoking policy? Yes No

Form completed by:

Name..... Signature.....

Position Phone.....

Thank you for your time completing this form. Please return to: Health Promotion Department St Brigid's Complex, Ardee Co. Louth

Appendix D. Media Campaign. Information on programme that appeared on the Internet.

A copy of the information on the programme that appeared on the Meath GAA website.

Website: <http://meath,gaa.ie/news.htm>

LESS PINTS MORE POINTS

- Less Pints More Points

Meath County Board and HSE join forces to Support Player's Health and Team Performance

An innovative health promotion programme designed specifically for GAA clubs continues to be rolled out across county Meath over the forthcoming season. The "Less Pints More Points" programme aims to promote the benefits of a healthy lifestyle in improving the sports performance & health of GAA members at an individual, team & club level.

The underlying principle of the programme is that "less alcohol" and improved lifestyle means improved sporting performance, in addition to improved individual health.

The club based programme is working both at changing club structures but also individual player lifestyle through a series of different interventions including

- team based health education programme
- multimedia awareness campaign
- substance use training seminars for coaches and managers.

Susan Kenny, of the HSE adds that 'evidence shows that there are many benefits for sports clubs in having club based healthy lifestyle programmes including lower rates of alcohol use and smoking among players, improved dietary habits and increased club membership. Most importantly clubs with similar programmes have a proven competitive advantage over other clubs on the playing field'.

Brian Carberry, Coaching officer with the Meath County Board states that 'Less pints More Points is the way forward, an excellent programme which provides a platform from which our adults of tomorrow can develop'.

The programme has been developed as a local partnership between the Departments of Health Promotion and Public Health of the HSE Dublin North East, the Department of Public Health and Primary Care, Trinity College Dublin and local representatives from the Meath County Board.

The partnership has been working in close collaboration with representatives of the GAA at a national level including the National Coordinator of the GAA'S Alcohol & Substance Abuse Prevention (ASAP) Programme Mr Brendan Murphy who states that 'the Less Pints More Points' programme is the first local based programme that will give practical assistance to clubs in implementing the GAA's own ASAP substance use prevention programme which is being rolled out nationally'.

If clubs would like more information on the programme please contact:

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**Michelle Kerrigan,
Health Promotion Department,
St. Bridgid's Complex
Ardee
0416850671 / 0879238618.**

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Appendix E. Media Campaign. Advertisement placed in club match booklets.

LESS PINTS, MORE POINTS

To improve your performance on the field after training/game you should:

Rehydrate – Up your fluid level
Remember alcohol
Dehydrates

Replace – Replace used up energy
Have a carbohydrate
snack/meal

Replace – Ensure you rest
between training
and games
Avoid alcohol if you have
been injured

Less Pints, More Points – Supporting Player
Health, improving team performance

For Further Information, please contact:
Health Promotion Department, St Brigid's Complex, Ardee, Co, Louth
Ph:041-6860712, Fax: 041-6856997
Email : lesspintsmorepoints@maile.hse.ie




Appendix F. Media Campaign, Advertisements placed in Intervention Club houses and Club bars.

**LESS PINTS,
MORE POINTS**

Fact or Myth?
Alcohol is high in calories

Fact or Myth?
Drinking Alcohol delays
recovery from exercise



Féidhmeannacht na Seirbhíse Sláinte
Health Service Executive

**LESS PINTS,
MORE POINTS**

Fact or Myth?
Eating before and while you
are drinking helps you not
get drunk

Fact or Myth?
If you are not drinking any
more than your buddies,
there's nothing to worry
about




Féidhmeannacht na Seirbhíse Sláinte
Health Service Executive

**LESS PINTS,
MORE POINTS**

Fact or Myth?
Pacing your drinking helps
prevent hangover

Fact or Myth?
Alcohol makes some people
happy and others sad

Fact or Myth?
Women can't hold their drink
as well as men



Féidhmeannacht na Seirbhíse Sláinte
Health Service Executive

LESS PINTS, MORE POINTS

Fact or Myth?
Eating before and while you are drinking helps you not get drunk

Fact or Myth?
If you are not drinking any more than your buddies, there's nothing to worry about



LESS PINTS, MORE POINTS

Fact or Myth?
Pacing your drinking helps prevent hangover

Fact or Myth?
Alcohol makes some people happy and others sad

Fact or Myth?
Women can't hold their drink as well as men.



LESS PINTS, MORE POINTS

Fact or Myth?
Alcohol delays recovery after injury

Fact or Myth?
Taking a cold shower sobers you up

Fact or Myth?
Alcohol is as fattening as chocolate



LESS PINTS, MORE POINTS

Fact or Myth?
Alcohol is high in calories

Fact or Myth?
Drinking Alcohol delays recovery from exercise

