**EPIDEMIOLOGY**

Decline in Age of Drinking Onset in Ireland, Gender and Per Capita Alcohol Consumption

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**Abstract — Aims:** We sought to examine the fall in age of first drinking in Ireland and to determine whether there were gender differences. We also aimed to determine whether there was a relationship between the per capita alcohol consumption evident when people entered later adolescence and their age of drinking onset. **Methods:** Information on age of first drinking was based on retrospective recall of 9832 interviewees from the pooled samples obtained from two population surveys. We examined the change in age of first drinking, by birth cohort and by gender, utilizing survival analysis. We utilized Pearson’s correlation to explore the relationship between median age of first drinking within each birth cohort and the mean per capita alcohol consumption when that birth cohort was aged 16 years. **Results:** The average age of first drinking fell steadily and significantly across birth cohorts from the late 1930s to the early 1990s. This change was significantly greater in females. Per capita alcohol consumption was very highly negatively correlated with the median age at which each birth cohort commenced drinking ($r = -0.96, P < 0.001$). **Conclusion:** The prevailing level of drinking in society at the point when young people enter later adolescence is very closely associated with the age at which they commence drinking. Per capita consumption may be contributing to the changes in age of onset of drinking and/or both may share a similar set of determinants. In light of this apparent relationship, it is possible that efforts to reduce per capita alcohol consumption may also reduce underage drinking.

**INTRODUCTION**

Early onset alcohol consumption is an issue of growing international concern. A recent survey of older adolescents in Ireland indicated that the age of onset of drinking typically occurred at age 13 or 14 years (Palmer and O’Reilly, 2008). There is Irish and international research indicating that early age of onset of regular drinking increases the risk of both later alcohol and later drug abuse (O’Malley et al., 1998; DeWit et al., 2000; Wells et al., 2004; Pitkanen et al., 2005; Palmer and O’Reilly, 2008). It has been suggested that alcohol is a ‘gateway’ drug, particularly in cultures where it is typically consumed in a binge type pattern by both adults and adolescents, such as Ireland (O’Malley et al., 1998). Research has also highlighted the negative impact that regular alcohol use can have on the developing adolescent brain (Monti et al., 2005). In light of this growing evidence, there have recently been calls for greater action on reducing teenage drinking in the USA and Britain (US Department of Health and Human Services, 2007; Donaldson, 2009).

Per capita alcohol consumption has increased by about 180% in Ireland over the past four decades, at a time when it was generally falling in other locations in Europe (Department of Health and Children, 2004; Hope, 2007). It doubled from about 51 of pure alcohol per person aged 15 years and over during the 1960s and early 1970s to then stabilize at about 101 over the following 15 years. It then rose quite rapidly again from the early 1990s to the turn of the century when it reached 14.3 l in 2001. This most recent period of increase in alcohol consumption coincided with a period of great economic growth in Ireland. Increased alcohol use has brought with it an increase in mortality, other health-related harms and negative social consequences, including an increase in public disorder and drink-related criminal activity (Mongan et al., 2007, 2009; Department of Justice, 2008; Martin et al., 2010).

There is good international understanding of the factors that influence per capita alcohol consumption and related harms (Babor et al., 2010). The most effective strategies include increasing cost through taxation, restricting availability, tackling drink driving, and limiting advertising and promotion.

**Alcohol policy in Ireland**

In reviewing alcohol consumption and government policy in Ireland, Walsh stated in 1989 that ‘the major trends in the Irish alcohol market have been closely linked to the country’s economic performance’. The issues influencing policy include the capacity of alcohol to generate tax revenue, maintenance of employment in the alcohol business sector, the desire of government to avoid excessive cross-border trade (importation of cheap alcohol from Northern Ireland) and the protection of vested interest groups such as the drinks industry, vintners and the wider retail sector (Walsh, 1989; McCoy, 1991; Butler, 2003; Hope and Butler, 2010).

The early part of the 20th century witnessed a tightening of licensing laws. Since the 1960s, there has been a progressive relaxation in alcohol policy, with the Intoxicating Liquor Act undergoing significant amendments in 1960, 1988 and 2000 (Butler, 2002). The net effect of these amendments was to increase days and hours of opening of pubs and also to increase the ability of other businesses, such as restaurants and grocery stores, to sell alcohol.

Prior to the 1990s, where health professionals did seek to influence policy, it was generally to promote the ‘disease model’ and to advocate for more treatment provision, typically residential and universally abstinence-orientated (Walsh, 1987; Butler, 2002). Public health approaches to alcohol have featured prominently in many reports on alcohol policy in Ireland since the late 1990s (Hope and Butler, 2010). In response to growing public concern about alcohol abuse, especially youth drinking, a Strategic Task...
Force on Alcohol (STFA) was assembled by the Department of Health and Children. The STFA produced a final report in 2004 outlining strategies consistent with a public health approach (Department of Health and Children, 2004). Unfortunately, with the exception of introducing mandatory breath testing of drivers in 2006, Government has ignored the recommendations. Revenue considerations continue to take precedence (Hope and Butler, 2010). For example, although the STFA recommended increases in alcohol excise taxes, the excise on beer remained untouched for a decade until the 2009 budget, when it was decreased in an effort to reduce the number of Irish people travelling to Northern Ireland to buy cheap alcohol.

The legal age of drinking in Ireland has remained unchanged at 18 years. The 1988 Act did increase the burden on the retailer to make efforts to establish the age of a young person before selling alcohol to them, although there is no mandatory requirement that young people carry age identity cards. Despite this change, Irish teenagers report easy access to alcohol compared with their European counterparts. For example, the 2007 ESPAD study revealed that 28% of Irish 15–16 years girls aged illegally consumed spirits in a bar or nightclub in the month before interview (Hibell et al., 2009).

As is the case internationally, the drinks industry remain a dominant influence on Ireland’s alcohol policy, having a central role on all committees where policy is discussed and they remain steadfastly opposed to any population health approach to this issue (Walsh, 1987; AMA, 2002; O’Connell et al., 2003; DMI, 2006; Hope and Butler, 2010).

Influences on drinking onset

There is good evidence that teenage drinking is influenced by peer, parental and community attitudes and behaviours towards alcohol (Wood et al., 2004; Zucker et al., 2008; Newbury-Birch et al., 2009). It is plausible that the age of first drinking could fall as drinking becomes more extensive in the wider adult society. This possibility has received relatively little attention in international research. Cook and Moore (2001) did demonstrate a relationship between falling per capita consumption and reductions in prevalence of teenage drinking in the USA. More recently, Fuhr and Gmel (2010) reported a strong correlation between per capita alcohol consumption and the prevalence of mid-teenage drinking across the world.

Although alcohol-related problems are more common in males, there is growing national and international evidence of increasing alcohol abuse in young women (Walsh, 1989; Young et al., 2005; Mongan et al., 2007). We sought to examine the reduction in age of first drinking in Ireland and to examine gender differences in this change. Our primary hypothesis in this study was that the falling age of first drinking was closely correlated with increasing alcohol consumption occurring in the wider society as children enter later adolescence.

MATERIALS AND METHODS

Participants

All interviewees from the two National drug prevalence studies conducted by the National Advisory Committee on Drugs in 2006 and in 2002 were included (NACD, 2006, 2008). Participants of these surveys aged between 15 and 64 years were randomly selected across the Irish population. They completed a face-to-face interview that examined their past as well as current drug and alcohol use. The samples were weighted by gender, age and Health Board Area to increase generalisability. The numbers interviewed in 2002 and 2006 were 4918 and 4967. The response rates were 70% (15% no contact, 13% refused and 1% other) in 2002 and 65% (18% no contact, 14% refused, 1% language problems and 2% other) in 2006. Although refusal rates did not differ by gender in 2002, men were more likely to refuse to participate in 2006. Eligible males were more likely to be uncontactable in both survey years (NACD, 2006, 2008).

The questionnaire explored past and current drug and alcohol use, as well as examining attitudes to drug and alcohol use. The full questionnaire, along with a detailed description of sampling, is available in the technical reports of the 2002 and 2006 surveys (NACD, 2006, 2008). For the purposes of this study, we examined the responses to only two specific questions on alcohol. Participants who responded yes when questioned ‘Have you ever drunk alcohol?’ were then asked ‘At what age did you first drink alcohol?’ Due to concerns about validity or meaning of response, we excluded interviewees who reported first drinking under the age of 10 years. Participants were divided into birth cohorts of 5 years from the two pooled samples—e.g. those born between 1950 and 1954, those born between 1955 and 1959, those born between 1960 and 1964, etc.

In order to examine the potential relationship between national per capita alcohol consumption and age of first drinking, we used figures on per capita alcohol consumption calculated from the VAT and Excise returns paid on alcohol sales during each year (Hope, 2007). All per capita alcohol consumption figures reported in this paper provide the mean alcohol consumed per person aged 15 years and above, this being the standard method of reporting such figures internationally. For each birth cohort, we calculated the mean per capita alcohol consumption during the years when members of that cohort were entering their later adolescent years (i.e. turning 16 years old). In other words, for the cohort born between 1950 and 1954, we utilized the mean per capita alcohol consumption from the years 1966 to 1970, and so on.

Statistical analysis

We examined the change in age of first drinking, by cohort and by gender, utilizing a Kaplan–Meier survival model. Individuals who had reported never drinking were treated as censored. The purpose of this analysis was to generate medians (i.e. age at which 50% of the cohort had commenced drinking) and their 95% confidence intervals, adjusted for cohort and gender. The log-rank test was used to test for differences in age of first drinking between cohorts. Pearson’s correlation was used to explore the relationship between the adjusted median age of first drinking and mean per capita alcohol consumption. As we did not have reliable estimates of per capita consumption prior to 1960, the birth cohorts of 1935–1944 were excluded from this correlation analysis.
RESULTS

Of the 9885 interviewees, 15 were excluded due to missing data. A further 37 were excluded as they reported first drinking under the age of 10 years. Of the 9832 participants used in our analysis, 57.9% were female.

Decline in age of first alcohol use

Drinking in early adolescence became increasingly common during the later 20th century, as demonstrated in Fig. 1. This highlights the increase in the percentage of interviewees who started to drink by the age of 15 years. The most marked phase of increase has been seen in cohorts born since the late 1960s with 13% of that cohort commencing drinking by the age of 15 years compared with 48% of those born in the early 1990s drinking by the age of 15 years.

Table 1 presents the adjusted medians by cohort and by gender, as generated by the Kaplan–Meier survival analysis. We found a substantial and statistically significant reduction in the age of first alcohol use over the past five decades in Ireland, by birth cohort (log-rank test, \(P < 0.001\)). There was a marked fall in the age of first drinking among cohorts born between 1935 and 1959 as the median age of first drinking moved from early adulthood to very late adolescence at a declining rate of 1 year per 5-year cohort. The median age was then stable across the cohorts born on 1955–1969. Age of drinking initiation then began to drop again for cohorts born over the 1970–1992 period at a rate of approximately one-third of a year per 5-year cohort.

The Kaplan–Meier survival analysis also indicated that the fall in age among females differed significantly (and more sharply) from that observed among males (log-rank test, \(P < 0.001\)). As shown in Table 1, from the birth cohort between 1975 and 1979 and thereafter, the Kaplan–Meier estimated median age of first drinking for females was found to be equal to that for males.

The correlation between the adjusted median age of drinking commencement and per capita alcohol consumption at the time the cohort reached 16 years of age was \(-0.96 (P < 0.001)\), as demonstrated in Fig. 2.

DISCUSSION

At the population level, Ireland’s alcohol consumption has increased greatly over the past 50 years. Our results indicate that this has coincided with a decline in the age at which young people in Ireland commenced drinking. There appear to have been three broad phases to these changes. Between 1960 and 1975, the adults in Ireland doubled their alcohol consumption. This followed a relaxation of the Intoxicating Liquor Act in 1960, a period of economic...
growth, increased drinking among females and a fall in the high proportion of abstainers (Walsh, 1989). The young people who were entering later adolescence (i.e. reaching their 16th birthday) during this time were born between 1944 and 1959. Our results indicate a rapid decline in the age of first alcohol use among these youth. However, while age of initiation into drinking dropped, it remained a feature of the transition into adulthood for the majority of people. This was followed by a period of relative stability both in age of first drinking and in per capita consumption, for cohorts born between 1960 and 1969 and exposed to the rather stable population drinking between 1976 and 1985 when they were aged 16 years. This coincided with a period of economic recession and there was no further liberalization of alcohol legislation until the 1988 Act. After 1990, we entered the ‘Celtic Tiger’ years characterized by a rapid economic growth, an enthusiasm for ‘light touch’ regulation and further liberalization of alcohol licensing laws (Hope and Butler, 2010). During this time, alcohol consumption increased rapidly again among adults and there was a resumption in the decline in the age of drinking initiation among the cohorts who arrived into later adolescence during this period.

A study of Irish university graduates by O’Connor et al. (2008) found a decline in the age of first drinking of 3.5 years over a 20-year period up to 2003. We found a slightly smaller drop in the age of first drinking of around 2 years between those born in the late 1960’s and those born in the late 1980’s. The sampling in our study is more reflective of the general population than the earlier study.

Some suggest that parents might provide alcohol for their children as a way to reduce teenage harm from alcohol (Bellis et al., 2009). A recent survey of Irish parents of teenagers found that only 11% had given alcohol to their children at home, with only 2% doing so before the age of 15 years (Smyth et al., 2010). Hence, widespread provision of alcohol to Irish children by their parents cannot explain the large fall in age of first drinking in recent decades. Nevertheless, in view of the substantial evidence indicating the influence that parents exert on drinking initiation by children (Hayes et al., 2004; Zucker et al., 2008; Newbury-Birch et al., 2009; NACD, 2010), it seems unlikely that the age of first drinking could have fallen so much in recent decades without there being increasing acceptance of this behaviour by parents. Morgan and Grube (1994) reported a substantial increase in drinking by Irish school children in 1991, noting that these children were less likely to perceive their parents and peers as disapproving of this behaviour compared with a group surveyed in 1983.

Irish teenagers’ approach to alcohol is similar to that of Irish adults. The majority of Irish adult drinkers display harmful patterns of drinking (Morgan et al., 2009). Irish adults binge drink more than adults in any other European country, with 44% reporting binge drinking at least weekly against a European average of 29% (TNS Opinion and Social, 2010). Binge drinking and drunkenness are also common among adolescent drinkers. Twenty-six per cent of Irish adolescent aged 15–16 years aged report past month drunkenness in comparison with a European average of 17% in this age range (Hibell et al., 2009).

Our findings demonstrate that the fall in drinking age has been even more marked in females than males. The fall in female age of drinking during the 1960s and 1970s reflects changes in gender equality at a broad social level, and also changes in how pubs operated. The pub had traditionally
been a male environment, with women either excluded altogether or restricted to certain areas within the premises. The age of onset of drinking merged in the mid-1990s. The trend of increasing drinking by young women in Ireland was noted before this time (Walsh, 1987). Indeed there is recent evidence indicating that drinking among girls is now surpassing that in boys, as they report higher rates of past month drunkenness than boys (Hibell et al., 2009).

As stated, we found a robust association between per capita alcohol consumption and age of onset of drinking over time in Ireland. Cook and Moore (2001) also found a close correlation over time between reducing youth drinking and declining per capita consumption within the USA. Fuhr and Gmel (2010) explored this association using a different methodology, but reached a similar conclusion. They demonstrated a highly significant relationship between per capita consumption and adolescent drinking across 68 countries at a single time point.

Evidence of an association does not indicate causality. There appear to be two possible explanations for our finding. Firstly, children’s commencement of drinking may be influenced by wider alcohol use in society. This is supported by findings from Bloebaum and Anderson (2006). As teenagers view drinking as increasingly pervasive and normalized, they are more likely to commence drinking themselves (Epstein et al., 2008).

Secondly, the same factors that cause increases in per capita alcohol consumption (greater affordability, easier access and greater alcohol advertising) may also, independently, lead to falls in age of first drinking within the same population (Paschall et al., 2009). With increasing wealth in Ireland over recent decades combined with a failure to increase excise duty at anywhere near the rate of inflation, the relative cost of alcohol has dropped greatly (Rabinovich et al., 2009). While cost has an impact on alcohol consumption in all age ranges, teenagers may be particularly sensitive to this relative drop in price (Booth et al., 2008). As mentioned earlier, numerous changes have been made to the Intoxicating Liquor Act since the 1960s, the net effect of which has been to greatly increase the opening hours and number of premises selling alcohol in Ireland (Butler, 2002). Teenagers are influenced by and increasingly becoming targets of alcohol advertising (Gordon et al., 2010; Hastings et al., 2010). Irish research has proved that alcohol adverts are very popular among children and adolescents (Dring and Hope, 2001). Teenagers are more likely than adults to access alcohol advertising on new media such as the internet (Hope and McCrea, 2009). Youth are increasingly becoming targets of drinks promotion campaigns (Hastings et al., 2010). In Ireland the alcohol industry is the main or prominent sponsor of the sports with highest youth participation (Department of Health and Children, 2010).

These two possible explanations of the close link between per capita consumption and falling age of first drinking are not mutually exclusive. They may both be occurring simultaneously. Indeed, we suggest that this is the most likely explanation.

This study has some limitations. Estimates of per capita consumption are based on VAT and excise returns. As such they may underestimate consumption as they do not include alcohol that has been imported from Northern Ireland or elsewhere. Such importation was common in the 1980s in particular (Walsh, 1989).

The response rates from the two population surveys were 70% and 65%. While these are quite typical of such surveys, it is possible that non-respondents may have earlier onset drinking. Therefore, the poorer response rate in the more recent survey, especially among males, may result in an overestimation of drinking age in males and the most recent cohorts. The refusal rate was just 13% in 2002 and 14% in 2006. While the correlation between per capita alcohol consumption and age of drinking initiation was very strong, close correlations can be expected to occur in the analysis of highly aggregated data such as this, as discussed in papers on the issue of ecological fallacy (Schwartz, 1994). Our study examined a period when alcohol consumption and age of first drinking were each moving in a single direction, albeit with a plateau period in the middle. It remains to be seen whether the relationship will decouple as alcohol consumption makes its first substantial move downwards since 2008, associated with a new economic recession in Ireland. The study by Cook and Moore (2001) suggests that the relationship persists when consumption is falling.

Increases in the proportion of the population who drink and escalations in average alcohol consumption by drinkers each contribute to increases in per capita consumption. As more young people commence drinking under the age of 16, this results in an increase in per capita consumption, even if drinking by adults remains unchanged. Hence, there is an element of circular causality in the detected correlation. This methodological weakness also applies to the two other studies that have examined this relationship (Cook and Moore, 2001; Fuhr and Gmel, 2010). In any case, we estimate that increased drinking by people aged under 16 years accounted for less than 2% of the overall increase in per capita consumption over the period studied and is therefore negligible (data used in calculation of these estimates are available from the authors on request). Finally, forward telescoping may have caused older interviewees to overestimate the age at which they commenced drinking, introducing a source of recall bias to this parameter (Johnson et al., 1998).

In light of the growing evidence linking early alcohol use to neuro-cognitive impairment, greater criminality, poorer social and emotional development and to later drug and alcohol dependence, it would seem necessary for Ireland to follow the lead given by the USA and to seek to delay dramatically the age at which our teenagers start to drink. Alcohol-related harm in Ireland is very substantial and warrants a population health approach to reduce per capita consumption. In view of this apparent link between per capita alcohol consumption and the declining age of onset of drinking, a population health approach focusing on per capita consumption may also result in the additional health and social benefit of reversing the trend of steadily falling age of first drinking in Ireland.

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REFERENCES


