

glyndŵr

PRIFYSGOL GLYNDŴR WRECSAM
GLYNDŴR UNIVERSITY WREXHAM



PRIFYSGOL
BANGOR
UNIVERSITY

Achieving Positive Change in the Drinking Culture of Wales

30th June 2011

John Bailey¹

Rob Poole^{1,2}

Fiona Zinovieff³

Catherine A Robinson³

Odette Parry¹

Karen Tocque¹

Lynne Kennedy¹

¹ Glyndwr University

² Principle investigator and guarantor

³ Bangor University

CONTENTS

Executive summary	iv
INTRODUCTION	1
RESEARCH STRATEGY	2
Collation and weighting of evidence	2
FINDINGS	4
Method issues and gaps	4
Relative effectiveness of different strategies	4
CONTROL	5
Pricing and taxation	6
Enforcement of existing policies and legislation	16
Lowering Blood Alcohol Limits for Driving	18
Availability	18
HARM REDUCTION	19
Brief interventions	20
Drink driving interventions	29
ATTITUDES	31
Labelling	32
Media, Advertising and Alcohol Promotion	33
DISENGAGING THE ALCOHOL INDUSTRY FROM POLICY	48
YOUNG PEOPLE	51
Minimum legal drinking age	51
THE WELSH CONTEXT	52
Implications of international policies for alcohol control	52
World trade law	53
Regional Policies	54
CONSULTATION	56

CONCLUSION AND KEY FINDINGS	60
Appendix 1. Electronic Search Strategy	63
Appendix 2. Consultation.....	68

RESEARCH TEAM

John Bailey, Researcher in Mental Health, Glyndŵr University.

Lynne Kennedy, Principle Lecturer in Public Health, Glyndŵr University.

Odette Parry, Director of Social Inclusion Research Unit, Glyndŵr University.

Rob Poole, Professor of Mental Health, Glyndŵr University.

Catherine A. Robinson, Director of Centre for Applied Research and Evaluation Sciences, School of Social Sciences, Bangor University.

Karen Tocque, Visiting Professor of Health Intelligence, Glyndŵr University.

Fiona Zinovieff, Research Fellow, Centre for Applied Research and Evaluation Sciences, School of Social Sciences, Bangor University.

EXECUTIVE SUMMARY

1. This report is based upon research that was commissioned by Alcohol Concern Wales. The project was focused upon achieving positive change in the drinking culture in Wales. The major objective was to collate the best available evidence to inform the development of effective alcohol policy
2. The project involved a review and synthesis of existing literature, together with a broad-based consultation process, in order to generate findings that are both evidence-based and of relevance to Wales.
3. The findings presented here are not the result of either a Cochrane systematic review method or a meta-analysis (though findings from studies using these methods have been included). These methods are not appropriate to an overview of the best available evidence across a wide range of issues. However, the approach used to reach the conclusions set out below is rigorous and replicable, and includes an appraisal of the strength of the evidence for each conclusion.
4. There are significant difficulties in evaluating the impact of some of the factors that could reasonably be expected to influence drinking culture (for example, some types of government policy or the effects of advertising). Most studies of drinking behaviour depend upon self report of alcohol consumption, which is known to be problematic. Natural experiments, where only one factor changes at a time, are rare. Some important variables are hard to measure, and for practical purposes can only be measured through proxy measures.
5. Drinking culture is a conceptually diffuse term. It refers to attitudes, beliefs and patterns of behaviour with regard to alcohol that are widespread in the population. Whilst drinking culture is tangible from subjective experience, objective changes in it can only be measured through consequences such as the overall level of alcohol consumption and changes in the frequency of social and medical harm related to alcohol.
6. Despite the challenges, we reviewed a large body of relevant literature and found that the most robust findings within it have been replicated using different methods in different countries.
7. In order to present the evidence we have collated, we have grouped findings into three broad themes: *Control*, *Harm Reduction* and *Attitudes*. The themes are interconnected and do not have clear boundaries; their imposition on the knowledge base is somewhat arbitrary but we suggest that this is useful way to understand the literature.
8. A fourth theme in the literature, *Young People and Alcohol*, is interwoven across the other three themes. It arises recurrently in this report.

9. The findings set out below are based upon seminal studies and research reviews published in the past 10 years.

CONTROL

Control refers to measures to restrict the public availability and consumption of alcohol. These measures are usually taken by national or local governments. Regional alcohol control policies are complicated by national and supra-national (e.g. European) policies and by international trade obligations.

10. Within the international literature on reducing alcohol consumption and the harm related to alcohol, the finding with the strongest evidence base is that consumption of alcohol is highly sensitive to changes in price (or, to be more accurate, affordability). When the price of alcohol drops, more is consumed; when alcohol becomes more expensive, less is consumed. This effect is seen across the entire population that drinks alcohol, and is not confined to any sub group of drinkers. When alcohol becomes cheaper, there is an increase in consumption amongst non-dependant drinkers. The effect on some of these individuals is to shift their consumption into the range where harm is likely to occur.

Key finding: It is well established that the price and affordability of alcohol is the key determinant of the overall level of consumption amongst all groups in the general population. This is the strongest finding in the international literature.

11. Notwithstanding this consistent general finding, the impact of price change has some complexities. The relationship between percentage change in price and percentage change in consumption shows variation between countries studied. There is some evidence that price changes can affect drinking patterns as well as overall consumption. Young drinkers are more affected by price than older drinkers. The impact of higher price is cumulative over time. It appears that where higher prices are sustained over long periods there is likely to be an increasing positive impact on population health and social well being.
12. Most of the evidence with regard to price is based on studies of the effect of changes in alcohol duty, which are usually applied differentially according to

the alcoholic strength of products. There has been considerable interest recently in minimum pricing, a measure that is much less well researched than increases in duty. Interest in minimum pricing has arisen largely as a consequence of concern over supermarkets and licensed premises selling alcohol at below cost price (as a loss leader). Sophisticated mathematical modeling has shown that minimum pricing is likely to lead to a reduction in alcohol consumption across the whole population, with the greatest effect (and cost burden) on the heaviest drinkers. The measure could be expected to have an impact on the level of consumption by dependant drinkers. Whilst this, on its own, is unlikely to move significant numbers into abstinence or non-dependent drinking, it might be realistically expected that reduced consumption might slow or reduce alcohol related harm. A larger impact could be expected amongst non-dependent drinkers whose consumption is in the range associated with harm. Despite the fact that there is limited international experience of minimum pricing (and hence little empirical data), there is credible evidence to support minimum pricing as a measure that would be likely to be effective.

Key finding: Most of the evidence on the impact of price changes on alcohol consumption is based upon the effects of alterations in taxation or duties. Although international experience of minimum pricing is limited, there is good reason to believe that it would be effective in controlling alcohol consumption amongst at-risk groups such as young people.

13. In order to see population level benefits (i.e. reduced social and health harms), price manipulation measures must be sustained for substantial periods, with maintenance of relative price through inflation linked increases.

Key finding: Where alcohol consumption is controlled through manipulation of price, the full benefits in terms of reduction of alcohol-related harm will only be seen where price increases are sustained and index linked against inflation.

14. Some other measures that reduce the availability of alcohol also have a good evidence base. It is clear that the degree to which alcohol regulations are enforced has a significant impact. The willingness of people to drink when under age, or to drive a motor vehicle when over the drink-drive limit is affected by their perception of the chances of detection and the

consequences for them. This is true both with regard to existing regulations (where these are poorly enforced) and new regulations. Examples include age restrictions on the purchase of alcohol; obligations on drinking establishments not serve people who are intoxicated; and assertive policing of drink driving limits. There is strong evidence that random road side breath-testing is effective in reducing rates of driving when intoxicated. However, it is manpower intensive and thus relatively expensive to implement.

15. Raising the minimum age for the purchase of alcohol (for example, to 21 years) is effective in reducing alcohol consumption amongst young people, providing that the chances of detection of illegal drinking are perceived to be high.
16. Reduction of the maximum permissible blood alcohol level for driving a motor vehicle is known to be effective in reducing the number of intoxicated drivers and to reduce accident rates. The UK has a relatively high limit (80mg/100ml) by European standards. Most EU countries have a limit of 50mg/100ml.
17. Limiting the availability of alcohol through controlling the density of retail outlets or restrictions on hours of sale is known to have an impact on population level consumption and on alcohol related harm. Progressive relaxations of such restrictions have been introduced in the UK until quite recently. Together with relative price reduction, this has probably been a major factor in the steady increase in alcohol consumption per capita over the past 10 years. Irrespective of the political difficulty of reversal of these policies, there can be little doubt from the research evidence that this is likely to be effective in reducing consumption and harm.

Key finding: Reducing the availability of alcohol by restricting the number of retail outlets is effective in reducing alcohol consumption and alcohol related harm.

18. The evidence with regard to the effects of local measures to increase the price and reduce the availability of alcohol contains some ambiguities. There is evidence that a proportion of people are willing to travel across regional or national boundaries in order to purchase alcohol. However, there is also evidence that local measures can be effective at a population level. It would appear that local initiatives are not futile. However, local geography (e.g. proximity to borders) is likely to have an effect on the impact on consumption in some parts of the population.

Key finding: Local measures on price and availability of alcohol can be effective, although a proportion of the population is prepared to travel to purchase at a lower price.

HARM REDUCTION

Harm reduction in this report refers to the attempts to limit the damage which results from the drinking of alcohol, whether to drinkers themselves or to the social environment in which drinking takes place. This relates to both the social cost of alcohol consumption and to alcohol related morbidity and mortality. Harm reduction is also a treatment strategy in substance misuse, which is not examined in detail here.

19. There is an extensive literature which describes and evaluates harm reduction strategies and their effectiveness. Much of the harm identified and investigated in this way is harm to health. This is to be expected, as there are extensive mechanisms in place for the detection and treatment of health problems. However, there is also research into social harms resulting from alcohol, such as road traffic and other accidents and interpersonal violence following the consumption of alcohol.
20. Measures to control the availability of alcohol in general or to specific groups such as the young are relevant to harm reduction, and have been set out above.
21. The approach to harm reduction with the most extensive and persuasive evidence base is 'brief interventions'. These involve identifying individuals with a high risk pattern of drinking (e.g. through screening for the amount of alcohol consumed) and the delivery of brief, medically-related advice and information. There are a large number of studies which have shown this to be an effective means of reducing levels of drinking and of potentially harmful drinking in non-dependent alcohol consumers, at least in the short- to medium-term. This type of intervention was developed and initially delivered in the context of general health delivery, either as part of general health screening in primary health care or in the care and treatment of specific patient groups for whom alcohol poses a particular risk, such as patients treated for minor injuries in Accident and Emergency departments or pregnant women. However, there is a considerable amount of research into ways of broadening the delivery of this type of intervention from a health base. Examples of this include workplace brief interventions; police arrest or court diversionary schemes; innovative

methods of delivery, such as the internet or by telephone; and the targeting of specifically identifiable social groups, such as university students. The difficulty with this evidence is assessing the extent to which the effects of such interventions are likely to persist, and whether they could eventually have an impact on the wider drinking culture.

Key finding: The strength of the evidence on brief interventions is sufficient to conclude that they are an effective means of reducing harm, and that they are an important component to the overall strategy to limit the health and social harm caused by alcohol.

22. Drink-driving legislation is a harm reduction strategy of known effectiveness in reducing road traffic accidents and fatalities involving alcohol. This continues to be true where permissible limits are reduced to a very low level (for example 20mg/100ml in Sweden). It is less certain that lowering drink driving limits has a positive effect on overall drinking patterns. Very low limits might be expected to deter drinking in general (for example, to avoid persistent illegal blood levels of alcohol the next day). It is not clear that this is necessarily the case. The evidence on designated driver schemes tends to show a positive effect on the rate of driving when intoxicated, but a pattern of increased consumption amongst passengers who are not the designated driver.
23. Overall, the evidence on the effectiveness of designated driver (and other 'safe ride') schemes is not strong, and they cannot be recommended as a key policy.
24. Ignition interlocks are devices that will only allow a car's ignition to activate after the driver's breath has tested below a particular alcohol level. They have been shown to reduce re-offending amongst people convicted of driving when intoxicated, but the effect is lost when the device is removed. Such devices have proved acceptable to prevent drink-driving amongst professional drivers. However, their applicability is very limited.
25. Health education is a harm reduction strategy that overlaps with cultural attitudes. There is reasonably large number of studies, many of which target school children. Some are intended to reduce alcohol consumption, others to reduce drink-driving and yet others to discourage travelling in vehicles driven by intoxicated drivers. Higher education students are another population who have frequently been studied with regard to the effect of health education.
26. Overall, the demonstrable effect of health campaigns is disappointing. Positive changes tend to diminish over time. Successful campaigns involve

more than simple provision of information. The inclusion of social or 'refusal' skills workshops, for example, enhance the positive effects.

27. It is still more difficult to identify positive effects from health education campaigns aimed at the general population, although this is partially due to the lack of available methods to evaluate their impact. Labels on bottles or cans setting out the alcoholic strength of the beverage may have a neutral effect overall, leading moderate drinkers to seek out weaker drinks and heavier drinkers to seek out stronger ones.
28. Some experts suggest that it would be wrong to take the lack of evidence for the effectiveness of health education campaigns to mean that they are a waste of effort. It is at least logical to believe that a comprehensive strategy to reduce the social and health harms associated with alcohol consumption should be backed by campaigns that provide a rationale for other measures. Provision of accurate information about alcohol can be regarded as a worthwhile end in itself, regardless of the specific impact that this has on drinking behaviour.

Key finding: There is little evidence that health education campaigns on their own are effective in influencing the population's drinking behaviour. Nonetheless, many experts consider that it is an essential component to an overall strategy to limit alcohol related harm.

ATTITUDES

Attitudes to alcohol and intoxication are formed through complex mechanisms. It is possible to identify predominant cultural attitudes within a particular population, but there are also sub-cultural attitudes that can vary widely between different sub-groups. Religious belief, ethnicity, family influences, the implicit values of authority, and attitudes to authority all have an impact.

29. Efforts to change cultural attitudes through governmental policy have had mixed results. Persistent efforts to reduce the social acceptability of smoking have ultimately succeeded. Liberalisation of alcohol policy in order to encourage a healthier 'Southern European' drinking culture has palpably failed.

30. Some changes in cultural attitudes to alcohol occur in ways that suggests that they have their origins in factors unrelated to alcohol policy. For example, common experience suggests that the strong social taboo against public displays of intoxication amongst women has greatly weakened in recent decades, which is probably as much a result of changes in attitudes to female social roles as changes in attitudes to alcohol per se.
31. In contrast, common experience suggests that there has been a steady increase in the social opprobrium attached to drink-driving since the law was strengthened in the 1960s. Cultural attitudes can be influenced, but this must be understood in a broad way. For example, measures to increase the price of alcohol and restrict availability of alcohol would signal a change in the attitude of government or society. Provided this was not grossly in conflict with public opinion, over time this is likely to have an impact on cultural attitudes.
32. There are significant benefits when cultural attitudes change in a desired way, as the resultant changes in behaviour can become pervasive and self-sustaining.
33. The most extensively researched area with regard to attitudes to alcohol is advertising and promotion. This issue is controversial, as alcohol advertising is subject to a degree of regulation, but is under the control of the alcohol industry. UK government policy has emphasised the role of the industry in encouraging 'responsible drinking'. The imperatives of maximising sales and encouraging responsible drinking are in conflict with each other, and this has been subject of a great deal of attention in the literature.
34. The older evidence suggests that advertising has little impact on overall levels of alcohol consumption. This has been used by the industry to support their claim that advertising seeks to persuade consumers to change product rather than increase consumption. The same argument was used by the tobacco industry to resist restrictions on cigarette advertising.
35. The more recent literature has cast doubt on the methods and findings of these earlier studies. It is argued that total population alcohol consumption is a poor measure of the impact of advertising, partly because overall consumption is more strongly affected by other factors, and partly because the purpose of advertising is to increase consumption in particular groups or market niches (such as young people, who represent not just a present market, but a future one as well). Large changes in consumption amongst a relatively small proportion of drinkers are unlikely to be evident in gross population consumption statistics.
36. Increasingly sophisticated methods have been developed to measure the impact of advertising and media depictions of drinking on individuals, both in experimental and naturalistic settings. There is a great deal of controversy within the literature with regard to the most appropriate methods of

understanding their impact (e.g. whether advertising campaigns can be understood in isolation or whether the cumulative effect of many types of advertising and media depiction are more relevant).

37. Both experimental and naturalistic studies tend to suggest that exposure to advertising has an impact on individual attitudes to alcohol, and that this may be particularly true of younger people. However, there is considerable ambiguity as to the size of the effect.
38. There are doubts with regard to the effectiveness of regulation of advertising. Firstly, there is some evidence that advertisers have circumvented regulations prohibiting, for example, promotion of alcoholic beverages to young people by choosing media, imagery, humour or music that have a particular resonance for children and adolescents. Secondly, the available media have proliferated in recent years beyond traditional billboards, and print and broadcast media. The internet creates particular difficulties in regulating promotional content within a single jurisdiction.
39. There is little evidence that providing children or young people with health information (independent of industry sponsorship) about drinking has an effect on their later behaviour.
40. There is little research on industry sponsorship of sporting and other events, but there is a consensus that this is unhelpful especially with regard to impact of brand familiarity on young people.
41. Whilst there can be little doubt from the available evidence that advertising and media depictions of alcohol do have a measurable effect on attitudes and drinking behaviour, it is difficult to draw firm conclusions with regard to the feasibility or likely impact of tighter regulation. Nonetheless, as a matter of expert opinion, many authorities in the field strongly assert that regulation is an important component of overall alcohol policy. Many draw attention the role of bans on cigarette advertising in the overall effort to reduce tobacco use.

Key finding: Although alcohol advertising is known to influence some sections of the population, such as young people, there is little evidence that advertising restrictions or bans have a significant impact. However, as is the case with health education, expert opinion suggests that it may be an important component to overall alcohol strategy.

42. There is a body of evidence with regard to the impact of responsible drinking campaigns that are sponsored by the alcohol industry. There is sufficient evidence to confidently say that these are ineffective. There is some evidence, mainly from individual level or qualitative studies, that whilst these

campaigns identify specific undesirable behaviours such as drink-driving, they serve to normalise and promote drinking in general. Those exposed to such materials do not gain a clear understanding of the nature of responsible drinking and the option of abstinence is not promoted at all. There is at least a suspicion, and some evidence, that industry sponsored campaigns promoting healthy drinking actually promotes drinking in general. This is one of the reasons for the assertion from a number of credible authorities, including the World Health Organisation (WHO), that the industry should not be engaged as a partner in efforts to reduce alcohol related harm.

Key finding: There is evidence that alcohol industry sponsored campaigns to promote responsible drinking are ineffective or counter-productive. There is a strong body of international opinion that suggests that the industry should not be engaged as a partner in efforts to reduce alcohol related harm.

43. Our consultation with stakeholders in Wales suggests that there is considerable concern over current levels of alcohol consumption and drinking patterns. There is particular concern that young people have developed a heavy drinking culture that is distinct from that of previous generations and the adult population. Parents are seen as colluding with this. Although some special aspects of drinking culture in Wales were identified, there was general agreement that, overall, drinking patterns in Wales are similar to those in the rest of the UK.
44. Opinion with regard to measures that were likely to be helpful closely matched our findings from the research literature. There was general support for the development of separate alcohol policies in Wales, though there was also recognition that there are limitations to this owing to the long border with England and other factors. Attention was drawn to the importance of provision of information and services through the medium of the Welsh language, and to the particular needs of small rural communities.
45. Finally, it is recognised that international and UK policies, laws and trade agreements effect the degree to which Wales can act in isolation to influence drinking culture. The evidence does not suggest that local measures are futile. However, local geography and demography are relevant. There is a strong consensus within the research literature that piecemeal measures are unlikely to be effective, and that alcohol policy should be thought of as a long term, integrated strategy.

Key finding: Although alcohol policy in Wales has to take European and UK factors in to account, regional initiatives can have an impact. Alcohol policy should be part of a long term, integrated strategy.

INTRODUCTION

Alcohol is one of the major preventable causes of ill health and death in Wales, contributing to a significant reduction in individual and societal wellbeing (Wales Centre for Health, 2009). Alcohol-related mortality almost doubled between 1991-1993 and 2004-2006 and there are now around 1,000 deaths a year in Wales attributable to alcohol. In Wales, over 50% of men and 35% of women aged 25-54 drink above the recommended guidelines in an average week. Alcohol use increases the risk for many chronic diseases and acute injury and, on average there are 8,400 alcohol-related hospital admissions in men and 4,500 in women each year. This amounts to 1.5% of all admissions in Wales, and alcohol complicates a much larger number of conditions leading to hospital treatment (Institute of Alcohol Studies, 2009).

The level and pattern of alcohol consumption by children and young people is of particular concern with its consequences on health, crime, violence and anti-social behaviour (Chief Medical Officer for Wales, 2009). Two in every five Welsh 15-year-olds say they drink alcohol weekly and half have been drunk at least twice in their lifetime. The individual, social and economic burden of alcohol use is substantial.

A key element of the remit of Alcohol Concern is to inform the development of effective alcohol policy and improved services for people whose lives are affected by alcohol-related problems. To this end Alcohol Concern Wales has funded this research project, to review the evidence on measures to achieve positive change in the drinking culture in Wales.

The project has involved a review and synthesis of the existing research literature in order to inform evidence-based policy and practice in Wales. This has been complemented by a consultation process on the main findings with a limited number of individual stakeholders across Wales.

The aim of the review is: to collate international evidence about the effectiveness of policy implementation (by government and other statutory and non-statutory agencies) in shifting the culture of alcohol use; to examine the interaction and interdependence between different measures; and to assess applicability of interventions that have been successful in other countries to the Welsh context.

The review focuses on the effectiveness of interventions on alcohol-related beliefs and practices and behavioural change. Key aspects of the review include an examination of the evidence on:

the effects of legislation and regulation (in different countries)

the effectiveness of health education campaigns, information and ‘nudge’ interventions

the targeting of interventions (by age, drinking pattern and demographic factors)

the interplay between the various factors that may affect drinking culture

the implications for the implementation of a strategy to change drinking culture in the particular linguistic, cultural and geographical context of Wales.

RESEARCH STRATEGY

The knowledge base relevant to this review is large and diverse. In order to address a range of policy and practice questions, it has been necessary to review and synthesise different types of evidence (for example: policy briefings, academic research findings, quantitative and qualitative studies). A *mixed methods synthesis* approach has been used, drawing upon the extensive and broad-based experience of members of the multi-disciplinary research team. Mixed methods reviews specifically attempt to address the shortcomings of the traditional systematic review approach, which often generate conclusions that the evidence base is lacking or report on the insufficiency of rigour or power to inform policy or practice (Harden & Thomas, 2005).

There were two main stages to the process used in this piece of work. Firstly, the identification, collation, review and synthesis of relevant policy, practice and research literatures and secondly, brief semi-structured interviews with a range of stakeholders within Wales. The topic areas were derived from preliminary findings. The consultation was multi-sector and involved representatives from statutory and voluntary sector service providers, and service user and community groups. The two phases allowed a thematic understanding of the challenges in implementing evidence based interventions in Wales.

COLLATION AND WEIGHTING OF EVIDENCE

We identified a large volume of research evidence and policy guidance using electronic and manual sources (including electronic databases, the Cochrane Library, policy reports, and professional guidelines). We concentrated on reviewing recent national and international policy, practice and research literature, particularly drawing on existing systematic reviews and meta-analyses. The review included

seminal work published over the past 30 years, but systematic searches were restricted to English Language documents published in the last 10 years.

A rigorous, replicable protocol for the cross-disciplinary review method was followed. The search strategies used are summarised in Appendix 1.

The approach adopted for review was determined by the scope of the study. A full (Cochrane) systematic review was neither feasible nor appropriate. However, we drew upon established guidelines and procedures. Evidence identified was subject to quality assessment, and systematic criteria for identification, screening and retrieval were employed. This was informed by SCIE Guidelines for conducting reviews in social care, including the quality criteria for assessing evidence (Coren & Fisher, 2006); CASP (Critical Appraisal Skills Programme) guidelines for undertaking critical reviews; and accepted methods for synthesising qualitative research (Sandelowski & Barroso, 2007).

For *quantitative studies*, the following hierarchy of evidence was used: large randomized controlled trials (RCTs); systematic reviews of RCTs; individual RCTs; controlled trials without randomization; cohort studies; case-control studies; reports of expert committees. The review considered: clarity of methods; sample appropriateness, generalisability of the data; appropriateness of statistical methods and sufficiency of response rates.

For *qualitative studies and policy reports* the approach adopted for synthesising qualitative research findings, particularly relevant to policy literature, is the qualitative meta-summary (Sandelowski & Barroso, 2007). The terms considered were: clarity of the research question; appropriateness and transparency of sampling techniques; and whether issues of subjectivity were addressed satisfactorily.

The review included *mixed-methods studies*, following the guidance developed by the Evidence for Policy and Practice Information and Coordinating Centre (EPPI-Centre, 2007). The review included outcome evaluation data on effectiveness, and process evaluation findings.

During the first stage of the analysis of the results of our literature searches we made an overview of the *topics* researched in the studies we identified, rather than the results of the studies themselves. We identified three broad themes running through the research and policy literature we searched. We have labelled these themes *Control, Harm Reduction* and *Attitudes*. The themes are interconnected and do not have clear boundaries; their imposition on the knowledge base that we have

identified is, in some areas, somewhat arbitrary. However, we have found that this approach is a useful way to understand the literature. A fourth theme, *Young People and Alcohol* is interwoven across the literature, and arises repeatedly throughout our findings. In addition to its intrinsic importance, it provides a unifying viewpoint.

FINDINGS

METHOD ISSUES AND GAPS

In taking an overview of the research evidence, it is important to recognise that there are limitations within the available body of research findings. There are significant difficulties in evaluating the impact of some of the factors that may influence drinking culture (for example, some types of government policy or the effects of advertising). Most studies of drinking behaviour depend upon self report of alcohol consumption, which may not be accurate. In epidemiological studies, natural experiments (where only one factor changes at a time) are rare. Some variables are hard to measure, and for practical purposes can only be measured through proxy measures. Drinking culture is a conceptually diffuse term. The term refers to attitudes, beliefs and patterns of behaviour with regard to alcohol that are widespread in the population. Whilst drinking culture is tangible from subjective experience, objective changes in it can only be measured through consequences such as the overall level of alcohol consumption and changes in the frequency of social and medical harm related to alcohol.

Despite the challenges, the relevant literature is large, and the most robust findings within it have been replicated using different methods in different countries. There are gaps in the literature and we cannot provide clear answers to some questions of interest. For example, the literature on social class, deprivation and drinking is too small to report clear findings here. In the interests of clarity, we have not set out all the gaps and unknowns below but have confined ourselves to positive findings.

RELATIVE EFFECTIVENESS OF DIFFERENT STRATEGIES

According to a recent review, the most effective strategies to reduce alcohol related harm from a public health perspective include, in rank order, taxation that increases price, restrictions on the physical availability of alcohol, drink-driving countermeasures, brief interventions with at-risk drinkers and treatment of drinkers with alcohol dependence (Babor et al., 2010).

A recent study of the cost-effectiveness of interventions to reduce alcohol-related harm in Australia suggests that policymakers could achieve an improvement of over 10 times the health gain if they reallocated current investment. The optimal package of interventions identified in the study comprised, in order of cost-effectiveness, volumetric taxation, advertising bans, an increase in the minimum legal drinking age to 21 years, brief intervention by primary care practitioners, licensing controls, a drink-driving mass media campaign, and random breath testing (Doran et al., 2010).

A review of global policies for reducing alcohol related harm concludes that regulatory approaches (including those that manage the price, availability, and marketing of alcohol) reduce the risk of and the experience of alcohol-related harm, whereas educational approaches (including school-based education and public education campaigns) do not. Indeed, it is suggested that alcohol education that is funded by the alcohol industry might increase the risk of harm (Anderson, 2009a).

As would be expected, these findings on relative effectiveness are evident in our own review of the literature.

CONTROL

This refers to measures to restrict the public availability (and thus consumption) of alcohol. These measures are usually taken by national governments, but this is not always the case. Examples of measures taken at regional or intra-national levels include the recent attempts to introduce unit pricing of alcohol in Scotland and the differences in legal and other regulations of alcohol availability between individual states in the USA. In addition, there have been evaluations of the effects of the actions of supra-national organisations, such as the European Union (EU), on the availability and consumption of alcohol.

The method of restricting the availability of alcohol which has been most intensively researched in recent years is price control. This can be achieved by the imposition of a minimum price for alcoholic beverages, by setting a minimum price per unit of alcohol, by increasing taxation of alcoholic drinks in general or by increasing taxation for different types of beverage. In recent times, the international trend has been to loosen restrictions on the availability and price of alcohol, and much research has been concerned with the effects of this. Research on tightening restrictions often draws on predictions about the effects of possible changes or extrapolations from mathematical models. Nonetheless, there is a strong consensus that manipulating

the price of alcohol is an effective means of reducing alcohol consumption and alcohol related harm.

Amongst the other means of restricting the availability of alcohol which have been evaluated are age restrictions on the purchase of alcohol; restrictions on drinking alcohol and driving motor vehicles; limiting the physical availability of alcohol (either by limiting the number of outlets from which it can be obtained or the times at which it can be purchased) and increasing the efforts to enforce restrictions which are already in place.

The existence of boundaries and politico-economic borders has an impact on control measures. This is relevant to Wales, with its long border with England. For example, there are findings in US literature suggesting that a significant section of the population may be willing to travel to purchase liquor, including across the border with Mexico. On the other hand, there is also some evidence with regard to the impact of the number of local retail outlets on alcohol consumption, which together with Scandinavian evidence regarding the impact of lifting restrictions on the import of alcohol, tend to suggest that local control is not futile.

PRICING AND TAXATION

What follows is an overview of the extensive literature on the effects of changing alcohol prices and taxation on both the consumption of alcohol and the harm resulting from that consumption. However, we must first provide an explanation of a commonly used term in this literature. Economists use the term *elasticity* to describe the degree of effect that a change in one economic factor has on another economic factor or activity. Elasticities are given a value which represents the amount by which factor 2 would change following a change of 1% in factor 1. So an elasticity of 0.75 would indicate that a change of 10% in one factor would lead to a change of 7.5% in the second. When the factors move in the same direction (both rise or both fall), the elasticity is given a positive value and when they change in opposite directions (one rises and the other falls) they are given a negative value. The factor we are discussing here is price, so these are *price elasticities* and, as might be expected, when the price of alcohol rises demand (or consumption) falls, so price elasticities for alcohol consumption have negative values. If the calculated price elasticity is zero or between zero and 1 (or -1), then the factor would be said to be *price inelastic* and if the values are greater than 1 (or -1) then it would be said to be *price elastic*. If the price elasticity calculated for beer were -0.3, it would be said to be price inelastic and if the elasticity for spirits were -1.3, spirits would price elastic.

As well as consumption, price elasticities are calculated for other factors such as alcohol-related diseases or hospital admissions, crime rates or drink driving offences.

In a review of the research on alcohol pricing and taxation, (Osterberg, 2001) concluded that price elasticities for alcoholic beverages in different studies consistently show that, when other factors remain unchanged, a rise in the price of alcohol leads to a drop in alcohol consumption. Studies in the UK showed that (in the 1990s) beer was relatively price inelastic, although still responsive to price changes, and that demand for wines and spirits was more responsive to prices than beer. American studies in the 1990s suggested that increases in taxes on beer would have resulted in a reduction in overall crime rates and for a number of serious offence rates, including rape, homicide and domestic violence.

Pacula & Chaloupka (2001) reviewed the economic literature on addictive substances (tobacco, alcohol and illicit drugs) and examined the effects of macro-level interventions to control consumption. For alcohol and tobacco this largely consisted of measures to increase economic cost. They concluded that the research shows a clear inverse relationship between price and addictive consumption and that policies which either increase the price or reduce the availability of alcohol will be effective in reducing drinking. In addition, recent models which take into account the addictive nature of all these substances suggest that demand may be more sensitive to changes in price than previously believed. These economic studies also suggest that the impact of price on consumption will be greater in the long term than in the short term because of the interdependence of consumption over time which is characteristic of addictions. Thus a single increase in alcohol tax, for example, will not have as large an impact on consumption in the long run as one that is indexed for inflation. The reason for this is that the latter is sustained in real terms while the effect of the former decays as the real value of money declines. Pacula and Chaloupka (ibid) also point to the consistent finding that the consumption of young people is more sensitive to changes in price than consumption by adults. Therefore policies which increase the real price of alcohol and consequently significantly reduce the drinking of young people may be the most effective means of achieving large long term reductions in alcohol consumption throughout the population.

The cost-effectiveness of interventions for reducing hazardous use of alcohol is dependent on the scale of the national problem. A meta-analysis identified population-wide measures, such as taxation, as the most cost-effective response in

populations with moderate or high levels of drinking such as Europe and Northern America (Chisholm, et al., 2004).

In a review of reviews Anderson, Chisholm, and Fuhr (2009) concluded that alcohol price rises lead to reduced overall consumption and the tendencies of consumers to switch to cheaper beverages and heavier drinkers to buy cheaper products in their preferred beverage type. Price increases reduce the harms caused by alcohol and alcohol dependence and the effects tend to be stronger in the long term than the short term. In young people, alcohol price increases delay the start of drinking, slow progress towards drinking large amounts, reduces heavy drinking and the amount of alcohol consumed per occasion. Price increases or setting a minimum price per unit of alcohol have both been predicted to reduce consumption and alcohol related harm and to have a greater effect on heavier than on lighter drinkers.

A systematic review by Elder et al., (2010) specifically examined the research evidence on alcohol prices and taxes and excessive drinking and alcohol harm. They found consistent evidence that higher alcohol prices are associated with reductions in both excessive alcohol drinking and related harms. These effects were found in different countries at different times using different study designs, methods of analysis and measures of outcome. The studies provided strong evidence that raising alcohol taxes is an effective strategy for reducing consumption and harm. Harms for which good evidence was provided included alcohol-impaired driving, motor vehicle accidents, various measures of violence and liver cirrhosis. Most of the estimates of price elasticity fell in the range of -0.30 to -1.00 for overall levels of alcohol consumption. The results suggest that alcohol consumption is responsive to price and that the effect of any tax increase is likely to be proportional to its size.

The remainder of this section is given over to a description of two major projects which between them effectively summarise the current state of knowledge on the effects of alcohol prices and taxation. The first of these is the work of Wagenaar and his colleagues (Wagenaar et al., 2009) who carried out two very large reviews and meta-analyses of the research literature. The second is the University of Sheffield team led by Meier (Booth et al., 2008; Brennan, et al., 2008; Meier et al., 2010b; Purshouse et al., 2010a), which surveyed the literature and carried out a policy evaluation exercise in which mathematical models were produced which estimated the likely effects of a range of alcohol tax and pricing policies.

The first part of the work of Wagenaar and his colleagues is a meta-analysis of the effects of alcohol prices and taxes on drinking reported in the research literature

(Wagenaar et al., 2009) (meta-analysis is a method of statistically combining the results of different research studies to provide overall results which are more powerful). They reported analysing the results of 112 different studies of price effects and noted that some studies used tax level as a proxy for price although some research suggests that there may not be a one-for-one correspondence between a tax increase and the resulting price increase.

When the authors analysed the results of studies of the effects of price or taxes on general alcohol consumption, the combined result of 91 elasticity estimates is a mean of -0.51. For technical statistical reasons, they examined the results of studies which measured alcohol consumption at an aggregate population level and those which measured consumption at an individual level separately. Both the aggregate-level studies and the individual-level studies had a combined probability level (P) of less than 0.01 (that is, the probability of these results occurring by chance was less than 1 in 100). The combined elasticity for beer from 105 reported estimates was -0.46. The aggregate-level studies had $P < 0.01$, while the individual level-studies had $P = 0.02$. Thirty-two studies examined the effects of price or tax on wine consumption had a combined elasticity estimate of -0.69 and both aggregate-level and individual-level studies had $P < 0.01$. The studies of spirits consumption reported 103 estimates of elasticities which produced a combined elasticity of -0.80. Both the aggregate-level and individual-level studies had $P < 0.01$. There were 10 studies of the effects of taxes or prices on indicators of heavy drinking. All of these were individual-level studies and the combined elasticity was -0.28 and $P < 0.01$.

These results represent statistically overwhelming evidence of effects of alcohol prices on drinking. Wagenaar and his colleagues conclude that: *“Price affects drinking of all types of beverages, and across the population of drinkers from light drinkers to heavy drinkers. We know of no other preventive intervention to reduce drinking that has the numbers of studies and consistency of effects seen in the literature on alcohol taxes and prices”* (Wagenaar et al., 2009; p 187).

The second of Wagenaar and colleagues reports was of a systematic review and meta-analysis of the effects of alcohol tax and price policies on harm (Wagenaar et al, 2010). They examined 50 studies with 340 estimates of correlation between price and harm. The combined results from this set of studies showed clearly that alcohol prices and taxes were significantly and inversely related to the following outcome categories: alcohol related morbidity and mortality, violence, road traffic accident fatalities and drunk driving, rates of sexually transmitted diseases (STDs) and risky sexual behaviour, other drug use, and crime. The only outcome examined

which did not demonstrate a statistically significant relationship with prices or taxes was suicide.

The largest effect reported was that for alcohol-related morbidity and mortality. This is not surprising because all the cases were essentially related to drinking alcohol. In contrast, the outcomes in other categories had substantial proportions related to alcohol but also included cases with no alcohol involvement. Wagenaar and his colleagues point out that this measurement error is built into most of the outcome measures in this literature and that the consistency of the findings of relationship between prices or taxes and the outcomes is noteworthy. The consequence of measurement error is an underestimate of size of the relationships investigated; Wagenaar et al. suggest that this is likely to have led to the results for violence, suicide, STDs and crime outcomes to be substantial underestimates because the epidemiological literature suggests that only about a quarter of these outcomes are caused by alcohol.

As with their previous study, this analysis included both aggregate-level and individual-level studies; there were also differences in outcome measures, settings, time, statistical methods used, independent variable measure (alcohol prices or taxes) and population (adults or youths or both). The estimate of the effect across all studies for all outcomes; for aggregate level studies; for individual –level studies; for studies with alcohol price as the independent variable measure; for studies with alcohol tax as a surrogate measure for price; for studies of adults; and for studies of youths were all statistically significant with $P < 0.001$.

Thirteen studies examined the effects of prices or taxes on alcohol related disease or injury and provided 29 estimates of the relationship with an overall $P < 0.001$. Ten studies examined the effects on various measures of violence with 70 individual estimates of the relationship with an overall $P < 0.001$. Twenty-one studies examined the effects on traffic safety outcomes with 34 independent estimates of the relationship and an overall $P < 0.001$. Four studies examined the effects on STDs or risky sexual behaviour with 37 individual estimates of the relationship and an overall $P < 0.001$. Two studies, containing 10 estimates, examined the effect on other drug use (tobacco or marijuana) with a combined $P = 0.045$. Five studies examined the effects on various indicators of crime and misbehaviour, providing 27 estimates of the relationship and overall $P = 0.003$.

As an alternative way of estimating the public health significance of their findings. Wagenaar and his colleagues examined those studies which were carried out in the

USA and concluded that a doubling of alcohol taxes would be associated with an average reduction of 35% in alcohol-related mortality, an 11% reduction in traffic crash deaths, a 6% reduction in STDs, a 2% in violence, and a 1.2% reduction in crime.

Taking the results of both of their studies together, they concluded that “*hundreds of studies over the past four decades reveal the basic mechanism of effect: sales and excise taxes are a major determinant of variation in retail prices of alcohol across jurisdictions and across time, price of alcoholic beverages affects sales and drinking patterns, and tax policy–induced changes in drinking are in turn reflected in rates of a range of disease, injury, and other harm indicators*” (Wagenaar et al., 2010; p 2276).

As part of the University of Sheffield study of alcohol price and taxation policy effects, the researchers carried out an extensive review of the research literature (Booth et al., 2008) which included the following findings:

Alcohol price and consumption. They concurred with other studies that, when other factors remain unchanged, an increase in price has generally led to a decrease in alcohol consumption. Findings from a meta-analysis econometric studies show median price elasticities as -0.36 for beer, -0.70 for wine, -0.68 for spirits, and -0.50 for all alcohol. UK elasticities are reported as -0.48 for beer consumed on premises, -1.03 for beer off-sales, -0.75 for wine, and -1.31 for spirits. Natural experiments also show that increases or decreases in price are likely to be associated with sharp decreases or increases, respectively, in per capita alcohol consumption. For example, when Swiss taxation of spirits was reformed, bringing about substantial reduction in the price of imported spirits, consumption increases significantly in total and especially in young males and people who had previously been low volume drinkers. Price increases reduce consumption in young people with greater impact on more frequent and heavier drinkers than less frequent and lighter drinkers (Heeb et al., 2003). Young people are particularly likely to be affected by price and the price of beer is important when targeting young people, especially males. Price rises also reduce drinking to intoxication. Drinkers with access to large supplies of inexpensive alcohol drink more often and drink more overall; increasing the price of alcohol reduces heavy drinking. There is strong evidence that hazardous drinkers tend to choose cheaper drinks. It is suggested that in the UK approximately 30% of drinkers consume approximately 80% of alcohol sold; raising the price of the cheapest drinks has a larger impact than increasing prices of expensive drinks. The

effects of price changes on alcohol consumption are significant and of a substantially larger size than other alcohol interventions.

Minimum pricing. The recent interest in minimum pricing is driven largely by supermarket practices of using alcohol products as loss leaders. There are very few examples of minimum pricing policies which have been carried out; support for them comes by analogy with taxation and pricing studies. A locally imposed minimum pricing restriction in Australia resulted in a 19.4% reduction in alcohol consumption, fewer hospital admissions for alcohol related illnesses and fewer arrests (Gray et al., 2000). The evidence that heavy and problem drinkers are more likely to drink cheaper alcohol products means that raising floor prices will have disproportionate effects on the drinkers most at risk.

Taxation and pricing studies linked to harm. Booth et al. (2008) suggest that these studies are valuable because they examine the link likely to be most useful for decision-makers, that is, between the policy or pricing decision and subsequent harm. They examined 24 taxation studies and 22 pricing studies. The majority of studies showed a clear link between taxation and harm. Increasing the price of alcohol and beer reduces road traffic accidents and fatalities, especially among younger drivers. Increases in alcohol prices reduced cirrhosis death rates, intentional and unintentional injuries, workplace injuries and sexually transmitted diseases. Higher beer prices lead to reductions in rapes and robberies, homicides, crime, child abuse, partner abuse, violence at universities, and violence related injuries. In the UK, there are estimates that a 10% rise in alcohol prices would reduce male (7.0%) and female (8.3%) cirrhosis deaths, male (5.0%) and female (7.1%) victims of homicide and reduce by 28.8% (male) and 37.4% (female) the number of deaths from alcohol involved causes (dependence, poisoning, etc.). There are limitations to these studies; many use time series data and some do not include control comparisons or control for confounding variables. However, a number of studies include multiple jurisdictions within the same country (in the USA, Canada or Australia, for example) so evaluating tax and price changes in otherwise similar settings. There is also the need to differentiate between acute and chronic harms. They conclude that a “*large number of studies consistently suggest evidence for an association between increases in taxation or pricing of alcohol and reductions in harm*” (Booth et al., 2008; p 36).

When commissioning the project, the UK government had requested that the researchers pay particular attention to three priority groups:

Underage drinkers. It was suggested that young people may be particularly sensitive to alcohol price because of a lack of money of their own. Young people who are heavy drinkers may not be as dependent as older drinkers and may therefore be more sensitive to price changes. A UK study found a strong relationship between teenagers' disposable income and binge drinking (Bellis et al., 2007). Some studies have suggested that raising beer prices would reduce both the number of young drinkers and the number who drink heavily.

Binge drinkers aged 18-24. Studies have found that binge drinking in young people is sensitive to taxation and availability. There are suggestions that those who prefer beer or spirits over wine are more likely to binge drink and alcohol promotions (short term price reductions) also encouraged binge drinking.

Harmful drinkers. An addiction model of drinking would suggest that the heaviest drinkers would be least sensitive to price but some studies have found that heavy drinkers may be more affected by price increases than moderate or occasional drinkers. This may be explained by the idea that price increases are more important to those who drink large quantities out of necessity than to those who drink occasionally as a luxury. One meta-analysis showed that taxes and prices significantly affected heavy drinking but to a lesser degree than overall drinking (Wagenaar et al., 2008).

Booth et al., summarised their findings with the statement that: "*An increase in the price of alcohol has been found to reduce alcohol consumption, hazardous and harmful alcohol consumption, alcohol dependence, the harm done by alcohol, and the harm done by alcohol to others than the drinker. There is strong evidence for the effectiveness of alcohol taxes in targeting young people, heavy drinkers and the harmful effects of alcohol*" (Booth et al., 2008; p 38). They put forward the following policy options as being likely to be effective:

- Increasing alcohol duty and linking alcohol taxes to inflation.
- Linking the levels of taxation to alcohol strength and including the introduction of tax incentives for low-alcohol alternatives.
- Introducing minimum pricing.
- Targeting price-based promotions.

Petra Meier, the principal investigator of this project, and her colleagues have described how they were commissioned by the UK government to systematically review the existing evidence on the effects of pricing and promotion on alcohol

consumption and related harm. By putting the information gathered from the research literature together with officially collected individual level data on alcohol purchasing and consumption they were able to examine population subgroups by age, gender and three levels of alcohol consumption and consider their preferences in types of alcohol consumed, prices paid and purchasing locations. This fine grained analysis allowed the construction of mathematical models which were able to predict the effects of a large range of potential policy options and to show that policies which seem similar at a whole population level were likely to affect different groups in different ways. For example they showed that minimum pricing policies tend to affect harmful drinkers more than general price increases, but young hazardous drinkers are affected less than drinkers in general. This is the first study to answer specific questions around complex pricing and promotion policies and their effects on harms in terms of health, crime and employment. Its authors suggest that such studies are essential if policy decisions are to be well considered, proportionate, effective and cost-effective (Meier et al., 2010b). What is particularly important for this paper is that the study was carried out in the UK using specifically UK data and made predictions about UK populations.

The research group published the details of the data used to create their mathematical models and the methods used to calculate their predictions about the outcomes of the numerous policy options (Brennan et al., 2008). As an example of the breadth of detail they were able to model, we include the predictions from just one of their policy analyses, that for the setting of a minimum price of 40p for each unit of alcohol (10mls of ethanol) sold. They predicted that overall weekly consumption would be reduced by 2.6%, amounting to an average of 22 units per person per year. Consumption changes would be greatest for harmful drinkers (-3.15 units per week). Population groups would be impacted upon differently: consumption reducing for 11-18-year-olds by -4.0% for 18-24 year old hazardous drinkers by -0.7%. Hazardous drinkers would have smaller reductions (-1.8%) but the absolute scale would be larger (-0.47 units per week). It was estimated that deaths would be reduced by 157 in the first year and a full effect after 10 years of 1381. Deaths would be differentially distributed across groups, with 2 death prevented in year 1 for 11-18s but 14 for hazardous, 98 for harmful and 12 for moderate drinkers. Illness would decrease by an estimated 1,500 for acute illnesses and 2,900 for chronic illnesses in year 1. Hospital admissions would be reduced by 6,300 in year 1 with a full effect of 40,800 fewer admissions after 10 years. Healthcare service costs were estimated to change by £25m in year 1, with a quality of life gain for those who would otherwise have suffered from illness valued at £63m.

Crime was estimated to fall by 16,000 offences overall, with a very different distribution across groups than for health. For 11-18s it was estimated there would be a reduction of 9,600, 18-24 hazardous drinkers 700, moderate drinkers 40, all hazardous drinkers 6,100, and harmful drinkers 9,100. The harm avoided in terms of crime victim quality of life was valued at £21m and the direct costs of crime were estimated to be reduced by £17m. Workplace harms were predicted to be reduced by 12,400 fewer unemployed people and 100,000 fewer sick days. These effects were calculated for the population of England.

In a further summary of the findings from their mathematical modelling (Purshouse et al., 2010), the University of Sheffield team reiterate their finding that harmful drinker subgroups would have the largest health gains and spending burden from pricing policies. Minimum price policies especially target heavy drinkers and policies affecting on-trade prices would be most effective for hazardous drinkers aged 18-24 years. The analysis of the size of effects and the distribution of consumer spending and other economic outcomes between moderate, hazardous and harmful drinker subgroups helps to identify those who are advantaged and disadvantaged by the different policy options.

Achieving a balance between reduction in harm to health and consumer spending is likely to be important for policy makers and this study suggests that minimum pricing would help to achieve this. For example, in the Sheffield model, a general 10% price rise was estimated to reduce consumption by 4.4% and alcohol-related harm by £3.5 billion over 10 years (this figure is arrived at, in part, by estimating the value of the improved quality of life of those who would have fallen ill or been the victim of crime in Quality Adjusted Life Years (QALYs) which are given a monetary value). A minimum price of 45p per unit of alcohol would produce a similar effect on consumption but would achieve greater reduction in harm and redistribute the spending effect away from moderate drinkers towards heavier drinkers. Low minimum prices would have little impact, but the effectiveness accelerates rapidly between minimum prices of 40p and 70p. Prohibiting large price discounts (for example, buy-one-get-one-free offers) alone has little effect, but tight restrictions or total bans of off-trade discounting would have effects similar to minimum prices of 30p-40p. For young adults who are hazardous drinkers, policies that raise the price of cheaper alcohol in the **on**-trade sector would be most effective for reducing harm.

An interesting adjunct to the work of Meier and her colleagues is that of Record and Day (2009). They point out that, when supermarkets sell alcohol for as little as 11p per unit during promotions or sell own brand spirits for less than the excise duty and

value added tax payable, the only way that the losses made on alcohol can be recouped is by charging more for the food and non-alcoholic drinks they sell. Using the same data sources as the Sheffield study, which show that the 80% of alcohol is consumed by 30% of the population and that the bottom 30% consumes only 2% of alcohol and assuming a 50p per unit minimum price, the bottom 30% of consumers would spend 10p per week more on alcohol, the middle 40% £1.09 and the top 30% £4.16, if consumption remained the same. If supermarkets maintained the same profit margins and continued the practice of loss-leader discounting, then it is possible to calculate the amount by which non-alcohol products would fall in price. Averaging this across the population groups would lead to a fall in weekly expenditure of £1.38 for the bottom 30%, of 28p for the middle 40% and an increase of £3.15 for the top 30%. An alternative way of framing this information is to say, as Record and Day suggest, that the rest of the population is effectively subsidising the alcohol consumption of the 25% of the population who are drinking at hazardous or harmful levels.

Record and Day also suggest that an effect of minimum pricing might be to encourage alcohol producers to reduce the alcoholic content of their products. Wine usually has an alcohol content of 12%, meaning that a standard bottle contains 9 units of alcohol. A bottle selling at a price of three bottles for £10 would currently cost £3.33 and a minimum price of 50p per unit would increase this to £4.50; however, by reducing the alcohol content to 9%, the price could still be £3.38. Minimum pricing could be a way of reversing the current trend of the increasing strength of alcohol products.

ENFORCEMENT OF EXISTING POLICIES AND LEGISLATION

There is evidence that increasing the rigour with which existing legislation is enforced can have an impact on drinking behaviour. Conversely, failure to enforce legislation is associated with higher levels of consumption in the target population. This effect has been shown in the following areas.

AGE

A repeated cross-sectional survey of 16,694 students in the USA found a clear correlation between the volume of illegal alcohol sales (violating age restrictions) and alcohol use in young people (measured by frequency of alcohol use, binge drinking, use of alcohol at school, and drinking and driving). A large study compared alcohol consumption by students across several US states with different alcohol

control legislation. This allowed evaluation of the effects of controlling legal purchase and possession of alcohol by minors (under 21years). The degree to which these controls were enforced was also considered. More rigorous enforcement was associated with reduced alcohol use in the relevant age group (Dent et al., 2005).

SERVER RESPONSIBILITY

In many jurisdictions it is illegal to serve alcohol to intoxicated customers. Enforcement of these laws is more frequent following an incident resulting in harm rather than from routine enforcement activity. Introducing plain clothed enforcement officers resulted in a threefold increase in the numbers of people refused alcohol and a 25% decrease in the number of people arrested for driving under the influence of alcohol when leaving these establishments. Focusing on establishments known to violate these laws is also effective. Routine questioning of people arrested for alcohol offences can be used to identify businesses that persistently offend (Anderson & Baumberg, 2006). In the US, and to a limited extent Australia and Canada, bar owners and their staff have been found to have a civil liability for serving alcohol to an intoxicated customer who has gone on to cause injury or fatality through driving. Training programmes for servers and bartenders which are aimed at preventing customers from driving while impaired by alcohol have had some positive effects in discouraging excessive drinking and encouraging the consumption of non-alcoholic beverages. The effect of server training initiatives is enhanced if they are combined with licensing conditions as part of a wider community campaign (Anderson & Baumberg, 2006). In 2010 the UK government announced that the Home Office will seek to overhaul the Licensing Act to give local authorities and police stronger powers to remove licences from, or refuse licences to, any clubs, bars and pubs that are causing problems, close any shop or bar found to be persistently selling alcohol to children and charge more for late-night licences (Department of Health, 2010).

DRINK DRIVING

A large US study found that there was a lower incidence of drink-driving in states that had greater restrictions on underage drinking and that devoted more resources to enforcing drink-driving laws (Escoffery et al., 2005). A review of mass media campaigns to reduce alcohol impaired driving found that well-planned and executed campaigns which achieve adequate audience exposure reduce alcohol impaired driving by a median of 13%. The campaigns in the review were conducted in

conjunction with high visibility enforcement (Elder et al., 2004). Publicity is important and can double the impact of introducing new laws and new enforcement initiatives. Random breath testing has good research support showing it to be effective but cost efficiency is poor (Anderson & Baumberg, 2006).

LOWERING BLOOD ALCOHOL LIMITS FOR DRIVING

Studies measuring the effects of lowering blood alcohol concentration (BAC) limits for driving have been reviewed (Anderson & Baumberg, 2006), particularly the effect on road traffic accidents (RTAs) resulting in death or serious injury. The introduction of a BAC limit of 80mg/100ml in the US produced a 15% reduction in fatal RTAs. A further 13% reduction was achieved by lowering the BAC limit to 20mg/100ml for young and inexperienced drivers. In Australia the BAC limit was reduced from 80mg/100ml to 50g/100ml which resulted in an 8% reduction in fatal crashes and 11% reduction in crashes resulting in hospital admission. Similar findings were reported in Sweden, where the BAC was lowered from 50mg/100ml to 20mg/100ml, resulting in a 9% reduction in alcohol related fatal accidents. It appears that the impact of reduced BAC limits is gradually lost if drivers believe that the chances of detection are low. Frequent check points increase compliance but unrestricted random breath tests are twice as effective (Anderson & Baumberg, 2006).

AVAILABILITY

A review of 44 studies of alcohol retail outlet density and 15 studies of hours restrictions for alcohol sales found that these measures can have an impact (Popova et al., 2009). Control of alcohol retail outlet density and hours and days of sale has positive effects on one or more of three important variables: overall alcohol consumption; drinking patterns; and alcohol related damage.

There is evidence that introducing restrictions on availability can have a positive effect, and that, conversely, relaxing restrictions can have a negative effect. The effects of introducing restrictions in some communities have been studied (Berman et al., 2000). Population and community-specific death rates under different levels of alcohol control for 97 Alaskan Native American communities that passed restrictions between 1980 & 1993 were compared with the death rates in the same communities during periods when no restrictions were in place. Injury death rates were generally lower during periods when alcohol sales, importation or possession were restricted than when no restrictions were in place. More restrictive controls significantly reduced homicides: less restrictive control options reduced suicides. A

control group of 61 small communities that did not change control status showed no significant changes over time in accident or homicide death rates. The isolated nature of these villages may explain why alcohol control had more effect than has been found in studies of Native Americans living in other states.

Alcohol consumption in Canada has increased since 1996. This corresponds with increased access to alcohol. Increases in consumption were steeper in some jurisdictions undergoing partial or full privatization of retail alcohol sales. It is suggested that increased access to alcohol, combined with intensive marketing, represent a major public health challenge in Canada (Giesbrecht & Thomas, 2010).

Other restriction measures have included prohibition (which reduces alcohol related harm but may encourage illicit supply with high associations of violence). Rationing schemes in Northern Europe successfully reduced alcohol related violence, harm and mortality and other problems (Anderson, 2007).

Overall, the evidence on availability does not uniformly suggest that reducing availability in one area simply leads to people travelling to less restrictive areas.

HARM REDUCTION

In this report harm reduction refers attempts to limit the damage which results from the drinking of alcohol, whether to the drinkers themselves or to the social environment in which the drinking takes place. Harm reduction is also a treatment strategy in substance misuse, which is not examined in detail here.

Harm reduction can involve strategies to reduce high risk drinking patterns in the population. It can also involve identification of those at risk from alcohol and targeting interventions at them. There is an extensive literature which describes such strategies and evaluates their effectiveness in reducing harm. One such strategy, that of increasing the economic cost of alcohol to the consumer, has already been discussed. Much of the harm identified and investigated in this way is harm to health: this is to be expected, there are, after all, extensive mechanisms in place for the detection and treatment of harm to health. However, there is research into social harms resulting from alcohol, such as road traffic and other accidents and interpersonal violence following the consumption of alcohol.

One intervention which has been very heavily researched in recent years is that of individual screening for the levels of alcohol consumed and the delivery of brief, medically-related advice and information. There are a large number of studies which

have shown this to be an effective means of reducing levels of drinking and of potentially harmful drinking in non-dependent alcohol consumers, at least in the short- to medium-term. This type of intervention was developed and initially delivered in the context of general health care, either as part of general health screening in primary health care or in the care and treatment of specific patient groups for whom alcohol poses a particular risk, such as patients treated for minor injuries in Accident and Emergency departments or pregnant women. However, there is a considerable amount of research into ways of broadening out the delivery of this type of intervention from an initial health base. Examples of this include workplace brief interventions and police arrest or court diversionary schemes; innovative methods of delivery, such as the internet or by telephone; and the targeting of specific social groups, such as university students. The difficulty with this literature is assessing the extent to which the effects of such interventions are likely to persist, and whether they could eventually have an impact on the wider drinking culture.

BRIEF INTERVENTIONS

Until the 1970s the medical view of alcohol problems was a dichotomous one; there were a relatively small number of people who were heavily dependent on alcohol – “alcoholics” – and the rest of the population who were not “alcoholics”. Opinion began to shift away from this view to that of alcohol problems being a continuum, with those with alcohol dependency problems at one end and moderate drinkers at the other and people experiencing a range of difficulties, of increasing severity, related to the consumption of alcohol, in between. The term “alcohol use disorders” was introduced as a term for those at risk of or experiencing alcohol-related difficulties. In part, this view was driven by the increasing realisation of the social and health problems which were developing as alcohol consumption increased steadily with increasing prosperity, particularly in the developed world. In the field of public health there was an increasing awareness of the so-called “prevention paradox”. This is essentially the idea that, where a factor harmful to health is very widespread, simple and moderately successful interventions with low risk groups will give an overall much greater public health benefit than complex and expensively intensive treatments for high risk groups (Aasland et al., 2008).

In response to these health and social concerns, the World Health Organisation (WHO) developed initiatives to investigate health aspects of these problems and medical contributions to their alleviation. One contribution was the development of

the concepts of hazardous and harmful drinking. Hazardous drinkers were seen as those whose alcohol consumption had exceeded safe limits and were therefore putting themselves at risk of experiencing alcohol-related harm in the future. Harmful drinkers were those whose consumption was higher still and were likely to be experiencing some physical or psychological consequences of their drinking but were not yet dependent on alcohol or suffering the chronic harm to health of sustained heavy drinking. (In the UK hazardous drinkers are usually defined as those who are regularly drinking more than the recommended “safe” limits of 21 units of alcohol per week for men and 14 units for women; those drinking more than 50 units (men) or 35 units (women) are defined as harmful drinkers).

One important development from the WHO initiatives was the finding that it was possible to bring about changes in the drinking of hazardous and harmful drinkers without carrying out the lengthy and costly procedures used to treat more dependent drinkers. It was found that information about the likely consequences of continued alcohol consumption at current rates, coupled with advice about how to cut back on drinking and encouragement and support to do so, could bring about significant reductions in consumption in a proportion of people drinking at unsafe levels. At the same time, assessment tools were developed which could rapidly and easily identify hazardous and harmful drinkers (Aasland et al., 2008). Since around 1990, a large amount of research has been carried out into the effectiveness of what became known as “brief interventions” and the means of delivering them to the large proportion of the population who drink at hazardous and harmful levels. In 2006, according to the Welsh Health Survey, 47% of men and 32% of women reported drinking at levels above health guidelines and 25% of men and 13% of women reported binge drinking at least once in the past week; very similar figures were obtained from the General Household Survey (Wales Centre for Health, 2009).

A review by Fleming (2003) summarised what was known about brief interventions at that time:

- Brief intervention counselling delivered by primary care providers, therapists and research staff can decrease alcohol use for at least 1 year in nondependent drinkers in primary care clinics, managed care settings, hospitals and research settings. In positive trials, reductions in alcohol use varied from 10-30% between the experimental and control groups.
- The effect size for men and women is similar.
- The effect size for persons over the age of 18 is similar for all age groups including older adults.

- Brief intervention can reduce health care use.
- Brief intervention can reduce alcohol-related harm.
- Brief intervention may reduce mortality. There are studies with twice as many deaths in control as in experimental groups.
- Brief intervention may reduce health care and societal costs.

Among the things which he identified as **not** being known were:

- Which aspects of content are important in producing effects?
- Is number of provider contacts important?
- Is length and complexity of intervention important?
- Are interventions more successful when delivered by member of patient's personal health care team?
- Do brief interventions work with alcohol dependent patients?
- Are some groups of patients more likely to respond to brief interventions than others?
- How to implement brief interventions widely in the health care system.

Bertholet et al. (2005) carried out a systematic review and meta-analysis of studies of brief interventions in primary care settings for patients not seeking treatment for alcohol problems. They concluded that brief interventions were effective in reducing alcohol consumption in both men and women at 6 and 12 months after delivery. They found that clear effects were shown in studies of high quality and that effects were also reported at 3 and 4 year follow-ups where these had been carried out. They reported that the studies they included approximated usual primary care practice and that typically effective brief interventions took no more than 15 minutes, were accompanied by written material and offered the patient the opportunity of a follow up appointment.

A review of the provision of brief interventions to young adults (aged 18-25) found that most had been shown to be effective (Monti, et al., 2005). However, most studies had been carried out with college students and there was little evidence for non-student populations. The authors suggest that people in this age group tend not to identify themselves as having alcohol problems and that this indicates the need for opportunistic interventions.

A technique that has found wide application in substance misuse interventions and is frequently used in brief interventions is known as motivational interviewing (MI). Vasilaki et al.,(2006) carried out a systematic review and meta-analysis of brief interventions using this method. Their analysis of 15 randomised control trials showed that MI was effective in reducing alcohol consumption compared to no treatment control groups and was also more effective than a diverse set of comparison alternative treatments. The studies showed that the size of the effect in favour of MI was largest at the first follow up point, suggesting that the effect of motivational interviewing may decay over time. It was also found that MI was more effective with young adults who were heavy drinkers than with older drinkers or those with more severe drinking problems and that low-dependent drinkers who voluntarily seek help seem to benefit the most from MI.

Kaner and her colleagues carried out a systematic review and meta-analysis of brief alcohol interventions in primary care settings (Kaner et al., 2009; Kaner et al., 2007). They analysed 22 studies which assessed outcomes in almost 6,000 patients and that, in comparison to control conditions, brief interventions reduced the quantity of alcohol drunk by approximately 4-5 UK alcohol units per week. The results were robust; sensitivity analyses showed a statistically significant benefit of brief intervention and there was no evidence of a publication bias. Kaner and her colleagues concluded that brief interventions are effective at reducing excessive drinking in primary care settings. Whilst unable to carry out a meta-analysis because different definitions were used in different studies, they also found that the 9 trials which studied heavy or binge drinking reported a significant decrease in the brief intervention group. However they did include the caveat that the published literature did not provide definitive evidence of the impact of brief interventions on women.

One other finding by Kaner and her colleagues was that several studies showed a decrease in alcohol consumption in control groups (that is, those who did not receive the brief intervention) at the follow up assessment. This effect has been found elsewhere in the literature (Jenkins et al.,2009; McCambridge & Kypri, 2009) and a likely explanation is that both the brief intervention group and the control group are given the same assessment to determine their levels of alcohol consumption. This consists of a series of questions about the frequency of the person's drinking and the amount of alcohol regularly consumed. It is likely that this alone may be sufficient to focus the attention of people on their drinking and bring about a reduction in the level of consumption. Indeed the shortest brief interventions consist

of the assessment, an interpretation of its findings and advice to cut down on drinking; in other words, assessment is an important and effective part of the brief intervention. This may be further evidence of the effectiveness of brief interventions, but it complicates the task of those who seek to evaluate that effectiveness.

Wachtel & Staniford (2010) reviewed studies of brief interventions with adolescents and found that most had indicated effectiveness in reducing frequency of drinking and the amount consumed and that two studies had specifically reported a decrease in binge drinking. All the successful studies had used motivational interviewing techniques. However it was not possible to draw conclusions about the effectiveness of MI procedures in comparison with other types of brief intervention as only two of the 14 studies reviewed had not used MI techniques. Several interventions had also used short follow up periods to investigate effectiveness which leads to reservations about the strength of the effects reported.

Saitz (2010) carried out a systematic review of the research literature on brief interventions for people who were very heavy drinkers or were alcohol dependent. Only two such studies were found and neither demonstrated effectiveness of brief interventions with these patient groups. Saitz questioned the utility of screening all patients in primary care settings if no effective treatment is to be given to those not seeking alcohol treatment but found to be most severely at risk. According to Saitz, these patients tend not to act on referrals to specialist alcohol treatment services.

In a systematic review of the research literature up to September 2010, Coulton reported that, in treating hazardous or harmful drinkers in primary care, single or multiple sessions of brief intervention were more effective than usual care and that adding universal screening to this was likely to be more effective than brief intervention alone. He also found that single session brief intervention was more effective than usual care in people presenting to emergency departments with injuries related to alcohol consumption (Coulton, 2010).

There are remaining ambiguities as to the length of time that the effects of brief interventions last. As some of the research reviewed above has indicated, a number of studies suggest that the effects of brief intervention begin to decay about a year after the intervention and can only be expected to be short-term gains. However, Ockene et al. (2009) found some of the significant differences between their intervention group and controls which were present at 6 month and 12 month follow up were still present after 4 years and that the brief intervention group were still at lower risk status than the control group. In a study of the effectiveness of brief

intervention for non-dependent hazardous and harmful drinkers, Wutzke et al., (2002) found significant differences in consumption and unsafe drinking from controls after 9 months. However, a 10 year follow-up found the intervention group to be indistinguishable from controls on any measure of effectiveness, leading to the conclusion that there was no evidence of a sustained effect over 10 years. Nilssen (2004) followed up the participants in a study of at risk alcohol drinkers, which showed significant intervention effects after a year. Nine years later tests for the presence of raised GGT (gamma-glutamyl transpeptidase, a biological marker for heavy alcohol use) were carried out and the intervention group showed significantly lower levels; other positive effects were also present in the intervention group.

In 2008, the Welsh Assembly Government announced its intention to instigate a programme to promote brief interventions for alcohol misuse in both primary and secondary health care settings. It also announced that it would pilot a community based brief intervention and counselling service for those who drink alcohol at harmful levels but do not require specialist treatment for alcohol addiction (Welsh Assembly Government, 2008). Similar policy initiatives have been announced in Scotland (Graham & MacKinnon, 2010) and England (Lavoie, 2010). The Screening and Intervention Programme for Sensible Drinking (SIPS) has also been set up in England to address the following questions:

1. *“Implementation. What are the barriers to implementation and how can they best be overcome?”*
2. *Screening approach. What are the best screening tools and what is the most effective way to target screening?*
3. *Intervention approach. What are the most clinically effective and cost effective interventions?*
4. *Common measures. What are the best measures to allow comparison?*
5. *Roll-out. What would be the best methods to facilitate roll-out nationally?”*
(Lavoie, 2010; p 610)

The National Institute for Health and Clinical Excellence (Kaner, 2010) has issued guidance for the implementation of screening and brief intervention to prevent hazardous and harmful drinking. The recommendation is for screening to be followed by short form, brief structured advice for relevant patients, with referral for further treatment for those who do not respond or are indicated as likely to be dependent by screening.

In an overview of the current literature on brief alcohol intervention, (Nilsen, 2009a) suggested that the agenda for brief intervention investigations, in primary care at least, has moved on from demonstrating effectiveness. The task has become to identify barriers to implementation and to develop and evaluate methods for achieving wider implementation in various settings. The rest of this section will be devoted to the implementation of brief interventions in settings other than primary health care and using alternative methods of delivery.

We begin by examining the use of brief interventions to address unsafe alcohol use in other health settings or with specific patient groups whose condition makes them particularly vulnerable to alcohol-related harm.

EMERGENCY DEPARTMENTS

A review by Dill et al. (2004) found that in almost all studies patients given brief interventions showed reduced drinking levels or a reduced number of further accidents or other driving incidents or both. In addition, one multi-centre randomised control trial (RCT) (Academic ED SBIRT Research Collaborative, 2007) and two other RCTs (Mello et al., 2008)(Neighbors et al., 2010) of brief interventions have been shown to be effective.

GENERAL MEDICAL HOSPITAL WARDS

A UK study (Mcmanus et al., 2003) found some evidence of effectiveness. A systematic review of 11 studies (McQueen et al., 2009) found some evidence for effectiveness in a meta-analysis of 3 of the studies but, based on the rest of the studies, their findings were inconclusive.

PREGNANCY

Two RCTs (Chang et al., 2005; O'Connor & Whaley, 2007) found brief interventions to be effective in reducing alcohol consumption in pregnant women; the second study also found that the intervention group had healthier babies than the control group and fewer foetal deaths. Another RCT (Fleming et al., 2008) found that brief interventions reduced alcohol consumption in women when provided post partum. A further analysis of the data from this study suggests that the brief intervention for alcohol use may also have reduced post partum depression (Wilton et al., 2009).

PSYCHIATRIC PATIENTS

Two RCT studies of brief interventions for alcohol use in psychiatric in-patients have shown reductions in psychiatric and general hospital admissions over five years compared to a control group and increased survival time to first readmission (Hulse & Tait, 2003) and reduced consumption compared to a control group after 6 months and improved psychiatric status (Hulse & Tait, 2002). An RCT study showed that brief intervention for non-psychotic psychiatric out-patients with hazardous levels of drinking reduced consumption compared to a control group after 6 months (Eberhard et al., 2009).

INTRAVENOUS DRUG USERS

Two RCT studies of brief interventions for alcohol use in intravenous drug users showed a significant reduction in HIV risk behaviour (needle sharing) compared to a control group after 6 months (Stein et al., 2002) and a reduction in drinking compared to controls at 6 month follow up (Nyamathi et al., 2010).

PATIENTS WITH HEPATITIS C

Significant success rates have been found in the use of brief interventions to reduce alcohol consumption in patients with hepatitis C (Dieperink et al., 2010). People with hepatitis C are especially vulnerable to the hepatotoxic effects of alcohol.

DIABETES AND/OR HYPERTENSION

Brief interventions have been found to be effective in reducing alcohol consumption in patients being treated for type II diabetes or hypertension after a year compared to a control group (Fleming et al., 2004). Patients in this study were also given feedback about blood levels of a biological marker for heavy alcohol use.

FACIAL SURGERY PATIENTS

A large proportion of patients treated in maxillofacial surgery clinics have received injuries following episodes of drinking (Smith et al., 1998). In an RCT study of brief intervention for alcohol misuse in young men following alcohol-related facial injuries, a 12 month follow up showed a significant reduction in the proportion of hazardous drinkers compared to a control group (Smith et al., 2003).

WORKPLACE

A few recent studies have begun to investigate the possibilities of delivering brief interventions to at risk drinkers outside the health care system. Employee Assistance Programs (EAPs) are employee benefit programmes offered by some employers and are intended to help employees deal with personal problems which might affect their work performance. There is some weak evidence that the provision of brief interventions for excessive alcohol use by EAPs is effective (Chan, 2007; Osilla et al., 2010). A cost benefit analysis has suggested that they could be of considerable benefit to employers in reducing absenteeism and improving productivity (Quanbeck et al., 2010).

POLICE CUSTODY

There have been studies in the UK of the feasibility of carrying out brief interventions for excessive alcohol consumption for people in police custody following arrest for minor alcohol related offences (Brown et al., 2010; Barton, 2011). These studies have shown brief interventions to be a practical possibility in this setting but, as yet, no indications of effectiveness are available. However, an RCT study of brief interventions for offenders convicted of violent offences showed no advantages for the treatment group on measures of alcohol use or reoffending compared to a control group (Watt et al., 2008).

METHODS OF DELIVERY

There have been investigations of alternative methods of delivering brief interventions, other than in face to face interviews with health workers, counsellors and so on. Telephone brief interventions have been shown to be a practical method of treating those who may have difficulty in accessing face-to-face services (Beers et al., 2009). RCT studies have shown telephone brief interventions to be effective in reducing various alcohol-related measures compared to control groups (Bischof et al., 2008; Brown et al., 2007; Mello et al., 2008). Interactive voice response technology has also been shown to be a feasible method of delivery (Rose et al., 2010).

There have been a number of studies of the delivery of brief interventions by means of stand-alone computer programs. Khadjesari et al. (2011) carried out a systematic review of 24 such studies and a meta-analysis of 19 of them. The authors suggest that the results of this analysis should be viewed with caution because of possible

statistical problems with some of the data included; however their analysis suggests that computer based brief interventions lead to reductions in consumption compared to control groups which are of a similar magnitude to those found in a review of standard brief interventions in primary care (see the discussion of Kaner et al., above). Bilingual versions of computer delivered brief interventions have been found to be feasible (Vaca et al., 2010).

Studies have also been carried out into the delivery of brief interventions via the internet. A systematic review by Bewick et al. (2008) found only weak evidence for the effectiveness of these interventions. However, since that review was carried out, two RCT studies have shown internet brief interventions to be effective in reducing consumption compared to control groups and to produce effects similar to those obtained in primary care based interventions (Kypri et al., 2008; Kypri et al., 2009). These two studies, along with many others, were carried out with student populations. Students provide a very useful population for the investigation of internet-based interventions because they have high levels of internet use and are an easily identifiable and locatable group. However, when brief intervention programs are made generally available on the internet, there are obvious problems in following up respondents who may be anywhere in the world. As yet, there have been no effectiveness reports for brief interventions carried out in this way but there are studies which report their feasibility and their use by large numbers of people, many of whom appear to fall into at risk groups (Rodriguez-Martos & Castellano, 2009; Saitz et al., 2004). There is research currently under way in the UK on internet based brief interventions (Linke et al., 2011).

DRINK DRIVING INTERVENTIONS

DESIGNATED DRIVER

Incentive programmes to promote a designated driver for each group of drinkers have had some small success in increasing the numbers of designated drivers, but there is a need for better methodology for assessing the impact of these community schemes on public health and alcohol related road traffic accidents. Ditter et al. (2005) concluded that not enough is known about the influences of designated driver programmes on decisions about using a designated driver or driving under the influence of alcohol.

Anderson and Baumberg (2006) point out that there is no common definition for 'designated driver' and some studies include a driver designated after drinking has

started. Designated driver interventions have been found to result in an increase in the amount of alcohol consumed by passengers.

“Safe ride” programmes have had some effect in reducing the number of people who drink and drive. However, some studies report a reluctance of some people to leave their cars and they would require that their cars are also transported. A suggested alternative is to provide transport to drinking establishments and leave drinkers to make their own arrangements to get home (Anderson & Baumberg, 2006).

IGNITION INTERLOCKS

Ignition interlocks, devices which require the driver to breathe into a device that analyses blood alcohol levels and will only allow the ignition to be activated if the levels is below a predetermined value, have been effective in reducing alcohol impaired driving (Elder et al., 2011). The studies included in this review focused on interventions for previous offenders. The device proved effective in terms of reductions in reoffending, although there the evidence suggests that this effect is not maintained once the device is removed.

Alcohol locks have proved acceptable to professional drivers, their employers and passengers in preventive trials carried out in Sweden (Anderson & Baumberg, 2006).

EDUCATION PROGRAMMES

A review of school based programmes for reducing drinking and driving found little or no effect of most of the programmes. Only social norming programmes appeared effective in reducing drink driving and increasing the use of designated drivers (Anderson & Baumberg, 2006).

School based education programmes have not proved effective in reducing the incidence of drink driving, but have found a reduction in riding with drinking drivers based on self report. Anderson and Baumberg (2006) argue that although school based alcohol education programmes do not provide a direct means of reducing alcohol consumption they have an important role in informing young people of the risks and dangers associated with alcohol use.

An Australian intervention which included a series of skills based activities following an educational programme found significantly less alcohol consumption in the intervention group compared with a control group following the onset of the programme. The difference between the groups slowly closed, with the intervention

group consuming only 4% less than the control group at a 32 month follow up. However significant reductions in reported alcohol related harm were maintained (McBride et al., 2004).

A systematic review comparing the long term effects (1 year or longer) of school based alcohol and marijuana prevention programmes (children aged 10-15) found that comprehensive programmes were more effective than ones that only provided information (Lemstra et al., 2010). Comprehensive programmes included social skills training, refusal skills and self management training as well as information.

The use of reminders and feedback is effective in reducing the gap between research and clinical practice relating to alcohol and other drugs, including the delivery of education, screening and counselling (Bywood et al., 2008).

Anderson & Baumberg (2006) report media literacy initiatives within schools have been effective in teaching young people to resist alcohol advertising and are associated with reduction in drinking and reduced attendance at high risk social environments. However, in their major overview of alcohol research and policy, Babor et al. (2010) concluded that, compared with other interventions and strategies, educational programmes are expensive and appear to have little long term effect on alcohol consumption levels and drinking-related problems. In some instances, where the interventions go far beyond providing information and include different components, there is some evidence of impact. However, these are not features of the bulk of universal education programmes. Their popularity seems not to be a function of either their demonstrated long term impact or their potential for reducing alcohol-related harms. It is likely that even with adequate resources, strategies which try to use education to prevent alcohol-related harm are unlikely to deliver large or sustained benefits. Education alone is too weak a strategy to counteract other forces that pervade the environment.

ATTITUDES

This theme involves the identification and measurement of social attitudes to alcohol and the exploration and understanding of the mechanisms which form these attitudes and the ways in which attitudes change over time. The obvious reason for researching this area, apart from that of simply understanding, is to identify ways in which attitudes can be changed in a desired direction. Whilst the mechanisms by which attitudes are formed and changed are very complex and difficult to identify and understand, the pay-offs for achieving change in this way are likely to be

greater. Changes in behaviour as a result of changes in attitude will be more pervasive and longer-lasting and are likely to become self-sustaining.

Whilst, at first sight, it would appear that research in the area of social attitudes towards alcohol should be the sole focus of a review on the topic of achieving cultural change, we suggest that there are three main reasons for spreading our searches into other areas. Firstly, to draw an analogy with the case of tobacco use (an analogy that we advise against taking too far), restrictions in smoking, together with health education justifying this (active and passive medical harm resulting from tobacco use) led to cultural changes. Secondly, many policy makers, particularly in first world countries, have identified culture change as a specific aim of control and harm-reduction policies. A third reason is that intervention which might be seen as most likely to produce cultural change, such as public information and education programmes (for example, “sensible drinking” campaigns) appear to be amongst the least effective interventions in changing levels and patterns of alcohol use.

The most relevant research topics which we have found in the literature are the role of the media (in the portrayal of the use of alcohol) and the role of education (in the school system) and in health education campaigns (providing the wider public with information about the dangers involved in drinking alcohol and guidance as to its safe use). An example of the last of these is the labelling of alcohol products, both with health warnings and with information about alcohol content.

LABELLING

Much of the evidence on the effectiveness of warning labels on alcohol comes from the USA, where warning labels became mandatory in 1989. Whilst there is evidence that these labels increase awareness of the information that they contain, and that a significant proportion of the population has seen them, there is little or no evidence that they have any effect on alcohol consumption (Babor et al., 2010). Wilkinson & Room (2009) support this finding but draw attention to the fact that warning labels on tobacco have been effective in reducing consumption. They suggest that this difference may be due to the flawed nature of warning notices on alcohol. They point out the differences between tobacco and alcohol on such factors as social acceptance. There is some evidence that labels indicating the volume of alcohol contained may be used to select the strongest drinks for the lowest cost (by some consumers at least) and therefore encourage heavy drinking (Jones & Gregory, 2009).

An area which has been particularly well researched is that of the advertising and promotion of alcohol. Numerous studies have investigated its role in encouraging the use of alcohol and increasing levels of consumption, both in the general population and specifically in young people, who have been shown to be consistently the target for much alcohol advertising. There has been research into the effects of advertising on the attitudes of young people towards alcohol and in particular the attitudes of young children below the legal age of alcohol purchase and consumption. Restrictions on the advertising of alcohol have frequently been identified as a means of reducing alcohol consumption and harm.

MEDIA, ADVERTISING AND ALCOHOL PROMOTION

Over the last hundred years citizens of the developed world have been exposed to an ever-growing range and quantity of entertainment and information media. Concerns have been frequently raised about the effects of this media exposure on those who make up the audience. Unsurprisingly, there have been concerns about the effects of exposure to media portrayals of alcohol and drinking and, as with wider worries about media exposure, the effects on children, adolescents and young people have been the focus.

Much recent research into the effects of alcohol advertising and promotion has been part of one of two separate streams. The first of these is econometric studies which, as the name suggests, attempt to measure the effects of the totality of advertising, using overall advertising expenditure as a proxy, on the total alcohol consumption of whole populations. Changes in advertising expenditure and alcohol consumption are measured over various periods of time and statistical tests of correlation are carried out. Different studies made different attempts at statistical control of other (“confounding”) factors which may have affected consumption of alcohol. Many of these studies, particularly earlier ones, found either no effect of advertising on consumption or very small increases in consumption related to advertising expenditure. These studies are the basis of alcohol industry assertions that the aim of advertising is to encourage consumers to switch their preferences from one brand to another rather than to increase the amount they drink. A variation of this method is to compare alcohol consumption in different jurisdictions which have regulation of advertising or partial or total advertising bans.

These studies have been criticised on a number of grounds. One is that, by concentrating on expenditure on more traditional advertising media, such as TV, radio, print media, and billboards, the researchers have ignored expenditure on

newer media (internet, mobile phones, etc.) and other promotional activities (sponsorship, point-of-sale promotions, etc.) which, by general consent, account for over half the total expenditure on alcohol promotion (for example, Anderson et al., 2009). Another criticism is that these studies do not reflect the way business works: it is suggested that if it is true, as these studies indicate, that a 10% increase in advertising expenditure would produce an increase in consumption of around 0.5%, no business would invest the very large amounts of money which are expended on alcohol advertising for such a small return. In 2007 the UK alcohol industry is estimated to have spent between £163m and £198m on mass media advertising of alcohol (Booth et al., 2008). A third criticism is that these studies do not reflect the way advertising works. Much advertising is not intended to have an effect on the alcohol consumption of the whole population but rather on the drinking behaviour of much smaller, carefully identified and targeted sections of the population (so-called “niche” marketing). A very large increase in the drinking of, say, 2% of the population as a result of such a campaign would not show up in an analysis of population levels of alcohol consumption (Meier et al., 2010b).

The second stream of research, partly as a reaction to the failure of econometric studies to demonstrate an effect of advertising on drinking, has attempted to identify effects of advertising on individual drinking behaviour. Here a cohort of research participants are surveyed on some measure of advertising exposure and some measure of alcohol related behaviour and the group measures statistically tested for correlation.

These studies too have been open to a number of criticisms. Early studies have been criticised for using simplistic measures of advertising exposure (such as total number of hours of television watched as an estimate of exposure to TV advertising) or drinking behaviour (such as “intention to drink”). Later studies addressed this by using more meaningful measurements (such as recall of or liking for advertisements or initiation of drinking or number of drinking occasions in schoolchildren). Studies which measured advertising exposure and drinking behaviour or attitude to alcohol at the same time (cross-sectional studies) are open to criticism because they cannot indicate which of the factors measured has caused the other. This is addressed by carrying out longitudinal studies where advertising exposure is measured at one point in time and alcohol related behaviour or attitude is measured at a later time. Some earlier studies have been criticised for failure to take into account other factors which may have affected drinking related behaviour whilst later studies have

introduced statistical controls for such confounding variables. However, cohort studies are open to the introduction of undetected bias.

One recent critic (Nelson, 2010a) has suggested that studies which compare rates of alcohol consumption in jurisdictions which have different alcohol advertising restrictions or bans are technically flawed and do not measure an effect of advertising. He has also suggested that the results of longitudinal studies of alcohol advertising effects have been contaminated by systematic bias (Nelson, 2010b). It is difficult to believe that the consistent results of so many studies which have examined a number of advertising media or other media influences using such a range of different methods, measurements and analyses have **all** been the consequence of systematic bias. One counter to his argument that the studies fail to demonstrate that alcohol advertising affects the drinking behaviour of children and adolescents is that that appears to be what the advertisers themselves think they are doing (Hastings et al., 2010).

In a general review of the literature in 2001, Hill and Casswell concluded that alcohol advertising has a small but contributory effect on individual drinking behaviour and levels of alcohol related harm, such as road fatalities. They suggested that the future profitability of the alcohol industry logically requires the continual recruitment of a new generation of young heavy drinkers and, therefore, studies of the responses of children and young people are of particular interest. They also drew attention to the cumulative effect of advertising in shaping public perceptions of alcohol and the climate in which policy decisions are made. Hill and Casswell suggest that alcohol advertising contributes to negative responses to health promotion and that the evidence supports policy action to restrict alcohol promotion. They suggest that there are parallels with tobacco advertising, where one justification for advertising bans was the removal of a powerful influence acting against measures to improve health. They discuss the ineffectiveness of self-regulatory codes, which are frequently ignored, subverted or under-enforced and stress the need for international cooperation and policies to counteract the international nature of the alcohol industry and modern communications (Hill & Casswell, 2001).

Saffer (2002) reviewed the literature on alcohol advertising in relation to young people. He criticised the econometric studies which compared aggregated advertising expenditure and overall population consumption as being methodologically insensitive to the effects of advertising. He concluded that studies which examined the media placement and content of alcohol advertising provided

some evidence that this advertising is targeted at youth. He also suggested that those studies which attempted to correlate various attitudinal data with alcohol advertising found some evidence that alcohol advertising increased adolescents' intention to drink. Although one study of international time series data showed an effect of advertising bans (and price) on alcohol misuse. He concluded that studies of counter advertising were equivocal about its effectiveness.

Finally he warned that, although there is enough evidence to conclude that advertising increases total alcohol consumption and misuse, advertising bans are only effective under certain conditions. A ban on one or two media, such as television and radio, would result in substitution to available alternative media. Alcohol companies could seek to compensate for loss of sales by increasing total outlays on advertising of existing brands or by advertising new brands. It was also possible that they try to compensate with other forms of promotion, such as retailer discounting or couponing (Saffer, 2002).

As part of an overview of policy interventions for alcohol-related problems, Giesbrecht and Greenfield (2003) reviewed some of the literature on alcohol advertising. They concluded that the literature did not provide an answer to the question of the contribution of advertising to overall consumption or harm and that if there were effects they were likely to be small compared to those of other environmental factors. They considered that research in the 1990s did suggest that young people were influenced by media portrayals of alcohol and they concluded the rationale for imposing restrictions on alcohol advertising was based more on its effects on social climate rather than direct effects on consumption (Giesbrecht & Greenfield, 2003).

Grube and Waiters (2005) carried out a literature review on the portrayal of alcohol in the media and its effects on drinking beliefs and behaviour in young people. They decided that the evidence about the influence of television portrayals of alcohol was inconclusive with the strongest evidence coming from a single longitudinal study. They stated that further studies with more sophisticated research designs and analytic techniques were necessary to give a more definitive answer to this question. They reported that portrayals of alcohol use were common in films, even in ones where the ratings indicated that they were intended to be viewed by children and adolescents. Portrayals were usually positive or neutral and drinking was associated with desirable outcomes and characteristics. Although research results are mixed, they report some evidence that these portrayals can have effects on drinking attitudes and intentions in young people (Grube & Waiters, 2005).

Grube and Waiters' report estimates that television alcohol advertising reaches 89% of the (US) youth audience and that the average underage TV viewer is exposed to up to 245 alcohol advertisements in a year, whilst the 30% who watch most TV are exposed to as many as 780 alcohol advertisements per year. The minimum legal drinking age is 21 throughout the USA. Although advertising with celebrity endorsers, humour, animation and popular music is particularly appealing to children and adolescents, Grube and Waiters conclude that there is only limited evidence from experimental studies that alcohol advertising promotes positive attitudes to alcohol or increases consumption. They suggest, however, that it is intrinsically unlikely that the brief exposures to advertising which are typical of experimental studies would produce large effects on beliefs or behaviours against the background rates of advertising to which the respondents are routinely exposed. They report that the available research provides little support for a relationship between aggregate advertising expenditure and aggregate alcohol sales, consumption or problems. Whilst there is some evidence that advertising restrictions may decrease consumption and problems, the studies rarely included findings specifically relevant to young people.

Survey studies generally find significant associations between exposure to, attention to, and recall of alcohol advertising and drinking beliefs and behaviour in young people. However, these relationships tend to be modest and Grube and Waiters conclude that, because most of the studies have a cross-sectional design and some of the longitudinal studies fail to control for previous drinking, it is difficult to make statements about causality.

Hastings and his colleagues (2005) carried out a review of the literature on alcohol marketing and young people's drinking. They concluded that there were large problems with econometric studies which delivered crude models of advertising and its effects by concentrating on advertising alone, using crude expenditure data, and ignoring other marketing activities, resulting in the small or non-existent effects found in these studies. The use of population consumption levels as a measure ignores effects on population groups; advertising and marketing is clearly aimed at some population groups, particularly young people. They suggested that consumer studies, and especially the more sophisticated recent ones, do support the idea of a link between advertising and young people's drinking. Essentially, the more familiar and appreciative young people are of advertising, the more likely they are to drink, both now and in the future (Hastings et al., 2005).

The authors note the subjective and multifactorial complexities of the subject studied here. It is subjective in that there is a fluid and interactive relationship between consumers and marketers, with the latter continually attempting to refine and enhance their offering to strengthen their influence on the former. It is multifactorial because advertising is one element of marketing of which the aim is to get the right product at the right price in the right place. The research suggests that each of these variables also has an impact on young people. To take the example of product development, Hastings and his colleagues report that there are numerous studies which show how drinks have been created to meet the needs of various parts of the youth market, and are sometimes more popular with young people than with adult drinkers. Wine coolers, designer drinks or alcopops are often the drinks of choice of young people and can contribute both to heavier drinking and lowering the age of onset of drinking. They report that the evidence shows that young people's alcohol consumption is particularly sensitive to price manipulation and that point-of-sale price promotions (happy hours, etc.) are effective marketing strategies with young people and are specifically targeted at them.

They conclude that much research has concentrated on advertising in traditional print and broadcast media and there is a need to examine marketing more widely and in the new media, especially the internet. They finish by saying that "*[t]here is now sufficient research evidence on the constituent elements of marketing to say that the balance of probabilities now favours the conclusion that [alcohol marketing] is having an effect. The fact that exactly the same conclusions have been drawn for tobacco and food marketing suggests that plausibility is moving to veracity*" (Hastings et al., 2005; p 306).

Research demonstrates that in the US young people are more likely to be exposed to alcohol advertising than adults due to the way that adverts are targeted including 45% more beer advertising, 12% more spirit advertising and 65% more low-alcohol refresher advertising. There is also a positive correlation between the number of youth readers of a magazine and the number of alcohol advertisements it contains (Anderson & Baumberg, 2006).

A longitudinal study of attitudes towards alcohol control policy in Canada looked at national surveys carried out in 1989, 1994 and 2004 and found generally less support for alcohol control policies over time (Giesbrecht, 2008). Policies that have been found to be effective in reducing alcohol consumption such as price control and restricting sales outlet were among the least popular. The authors suggest that changing public attitudes reflect aggressive advertising and marketing of alcohol.

As part of the large scale project (Brennan et al., 2008; Meier et al., 2010a; Meier et al., 2010b; Purshouse et al., 2010) commissioned by the UK government, to investigate the likely effects of a range of possible policy initiatives, particularly pricing regulation and taxation, on alcohol consumption, harm and costs for various sections of the population, Booth and his colleagues carried a large systematic review of the research literature on alcohol promotion (Booth et al., 2008). On the impact of advertising in general they concluded that there is conclusive evidence of a small but consistent association of advertising with consumption at a population level and also of a small but consistent effect of advertising on consumption of alcohol by young people at an individual level. They cite the continuing methodological debate on how advertising effects can and should be investigated as evidence of the need for further research and methodological developments for establishing definite causal relationships. They also point out the limitations of some of the most frequently used research designs, such as the tendency of cohort studies to introduce undetected confounding variables and the discrepancy between econometric study findings and likely business practice.

On point-of-sale promotions Booth and colleagues state that there is moderate but consistent evidence that these are likely to affect the overall consumption of underage drinkers, binge drinkers and regular drinkers. Whilst heterogeneous studies make inferences of causality and comparisons difficult, they suggest that point-of-sale promotions are likely to become increasingly influential on young drinkers.

Booth and his colleagues conclude that there is consistent evidence to suggest that exposure to outdoor advertising, or advertisements in magazines and newspapers may increase the likelihood of young people starting to drink, the amount they drink and the amount they drink on any one occasion. Because studies frequently use *intention* to drink as an outcome measure, they call for further research on whether what young people say they are going to do at a particular point in time translates into actual subsequent behaviour. They also point out that much of the research on this topic consists of surveys and cross-sectional studies which cannot establish causality. There is a difficulty in extracting the influence of one medium from the background of multi-media exposure to advertising. In addition many studies are of US student populations and US ethnic minorities which make generalisation to a UK (or Welsh) population difficult.

They state that there is consistent evidence from cross-sectional studies that there are high levels of ownership of alcohol related merchandise among young people,

particularly underage drinkers and binge drinkers. They also point to evidence that ownership of such items is associated with initiation of current drinking, although this is not conclusive.

They too state that there is consistent evidence from longitudinal studies that exposure to TV and other broadcast media is associated with the inception of and levels of drinking, whilst the evidence on the effect of watching videos is equivocal. Again, many of the studies here are cross-sectional and thus limited in establishing causality. In longitudinal studies it is inherently difficult to isolate the effects of one medium from those of other media and marketing and promotional activities.

Amongst the possible policy initiatives which the research project, of which Booth and colleagues' systematic review was a part, was asked to evaluate was restrictions on advertising. They found inconclusive evidence that advertising bans had a positive effect in reducing consumption and that contextual factors around bans were a likely explanation of differing results from research studies. They found that there is some evidence to suggest that bans have an additive effect when accompanied by other measures within a general environment of restrictive measures. They suggest that it is difficult to determine causal relationships between advertising bans and consumption because of the varying use of bans in different countries and the methodological challenges of controlling for confounding variables such as cultural differences and other alcohol restrictions which vary from country to country. They also suggest that the imposing of a ban on advertising would require a long period of time to demonstrate effects on alcohol consumption and longer still on alcohol harm.

On the topics of advertising industry self-regulation, counter advertising and public service advertising they found that there was little or no evidence for effectiveness or perceived effectiveness by consumers.

They summarised their findings by saying that young people, women in particular, are exposed to large numbers of alcohol promotions which affect attitudes and inclination to drink; that there is evidence that advertising seen by young people is associated with starting drinking and heavy drinking; and that the evidence suggests that there is a need for preventive measures, particularly when those affected are around the drinking age limit.

Anderson and his colleagues (Anderson, de Bruijn et al., 2009) carried out a systematic review of the impact of alcohol advertising and media exposure on adolescent alcohol use. They found consistent evidence to link alcohol advertising

with the uptake of drinking amongst non-drinking young people and increased consumption amongst their drinking peers. The evidence comes from high quality longitudinal studies and is corroborated by weaker cross-sectional studies. They point out that, because this research concentrates on mass media advertising, it almost certainly underestimates the impact of wider alcohol promotion and marketing. They also draw attention to the similarity between these findings and those from reviews of the impact of tobacco and food marketing on young people.

They point out a number of caveats which should be borne in mind when considering this research. Because these studies are heterogeneous, it cannot be clear to what extent potentially confounding variables were controlled for, although all of the studies attempted to do this. It is also possible that there may be a publication bias: research studies which show positive effects are more likely to be published and it may be possible that there were studies which did not show effects of advertising on drinking but which were not published. Finally, differences in the way exposure advertising was defined and measured in these studies makes it difficult to compare studies and draw overall conclusions.

Smith and Foxcroft (2009) carried out a systematic review of prospective cohort studies of the effects on drinking behaviour in young people of alcohol advertising, marketing and media portrayal. They reviewed seven studies with over 13000 participants and found evidence of an association between prior alcohol advertising and marketing exposure and subsequent alcohol drinking behaviour in young people. All seven studies showed significant effects across a range of different exposure variables and outcome measures, including exposure to direct advertising using broadcast and print media, and indirect methods such as point-of-sale promotions and drinking in films, music videos and TV programmes. They suggest that the consistency of effect in such a heterogeneous group of studies tends to validate the findings. Three studies showed a temporal relationship between exposure to advertising and drinking initiation. A dose response between amount of exposure and frequency of drinking was clearly demonstrated in three studies. Smith and Foxcroft also draw attention to the similarity of these effects with those for studies of tobacco and food marketing (Smith & Foxcroft, 2009).

To round off this review of the literature on the effects of alcohol advertising and marketing we report on a small number of studies which have been published since the reviews discussed above and which are of interest.

Morgenstern and his colleagues examined the relationship between exposure to TV alcohol advertisements (measured by recall) and drinking in 6th to 8th grade schoolchildren. They found evidence for a specific relationship between higher alcohol advertising exposure and various measures of alcohol use. Although this is a cross-sectional study, it is interesting for three reasons. Firstly, the study was carried out in Germany; a high proportion of the research discussed here was carried out in the US. Secondly, the study revealed a relationship between alcohol advertising exposure and binge drinking in adolescents, an association which, the authors claim, has been insufficiently considered in previous studies. Thirdly, the researchers statistically controlled for the confounding factor of exposure to advertising in general. One suggestion about the results of previous similar studies has been that exposure to alcohol advertising in particular may not be the important factor but a marker for large amounts of TV viewing and exposure to its attendant advertising in general, and that some other factor is responsible for both the TV viewing and the alcohol consumption. In this study it was found that there was no relationship between the amount of exposure to TV advertising in general and alcohol drinking behaviour (Morgenstern et al., 2011).

Engels and his colleagues carried out an experimental study which demonstrated the effects of alcohol portrayal on TV and actual drinking behaviour. Their young adult male subjects were placed in a relaxed, naturalistic setting and asked to watch one of two films, one with high alcohol use content and the other with low alcohol use content, interspersed with commercials, with or without alcohol advertisements. Both alcoholic and soft drinks were freely available to the subjects throughout the experiment. Those in the condition with alcohol portrayal in the film and commercials drank an average of 1.5 glasses of alcohol more than those in the condition with no alcohol portrayal. The authors point out that because of their experimental design, with the randomisation of conditions, differences cannot be explained by third factors as is the case with correlational and observational research (Engels et al., 2009).

Finally we examine two studies by Gordon and colleagues which are of interest because they were carried out in the UK (Scotland) and examined a wider range of marketing channels, including electronic media and sports sponsorship as well as traditional print and broadcasting media, than has been studied in previous research. In the first of these (Gordon et al., 2011), a cross-sectional survey of 12 to 14-year-olds, as in previous studies, greater awareness of and liking for alcohol advertising predicted a greater likelihood of currently drinking and of intending to

drink in the following year. In addition, similar effects were found for involvement in electronic media. The authors also reported that 10% of their respondents indicated that they had participated in alcohol price promotions despite being 4-6 years below the legal age of 18 for the purchase of alcohol. The second study (Gordon et al., 2010) consisted of a follow-up survey of respondents to the first study. As in previous research, there was found to be an association between the amount of alcohol marketing non-drinkers were involved with at baseline and the uptake of drinking at follow-up; there was also an association with the frequency of drinking at follow-up. These findings held true for involvement in electronic media as well as traditional media advertising and were consistent with findings for tobacco marketing and tobacco consumption among young people. It was also found that a high proportion of respondents was aware of sports sponsorship and owned alcohol branded clothing.

Many of the researchers whose work is surveyed here recommend banning or restricting alcohol advertising to various degrees. Anderson (2009b) is probably the strongest advocate of a comprehensive ban. Alongside international legal and policy reasons and the support of public opinion, he puts forward a number of reasons for supporting such a ban which are relevant to the work discussed above

- Advertising of tobacco products is banned. Anderson reports that the disease burden of alcohol is similar to that of tobacco as calculated by the World Health Organisation (WHO).
- Alcohol cheats the brain. As an addictive drug, alcohol disrupts the brain's reward mechanisms in favour of higher consumption.
- Alcohol advertisements increase the desire to drink alcohol. Positive portrayals of drinking in the media increase positive drinking expectancies in children and adolescents.
- Alcohol advertisements increase young people's drinking. Anderson cites his own systematic review of the literature (Anderson, de Bruijn et al., 2009).
- Self-regulation is not the answer. Research shows that voluntary systems of regulation of advertising do not affect the types of marketing which have been shown to influence young people (see below).
- Health impact assessment predicts the health impact and cost. WHO data puts advertising bans second only to tax increases in cost effectiveness in harm reduction.

He concludes by saying that alcohol advertising has been shown to have clear effects on young people and their drinking, whilst experience with tobacco has show a ban on advertising to be possible and effective (Anderson, 2009b).

However, what is not clear is the likely overall effects of an advertising ban. Drawing upon experience with the large scale policy modelling study discussed above, the project's principle investigator (Meier, 2011) has discussed gaps in the research base and their likely consequences for evaluating and predicting the effects of policies restricting alcohol advertising. Up until now, she says, studies have tended to rely on simplified models of marketing and concentrated largely on effects on young people. Little is known about the cumulative effects of exposure across multiple marketing channels, the targeting of advertising messages at particular population groups and the indirect effects of advertising on consumption. These gaps impede the appraisal of policy interventions and the lack of knowledge of how different sections of the population respond to marketing or advertising restrictions hinder the development of targeted interventions. She ends by calling for research which is anchored in theory, has well justified measures of effects and recognises the complexities of alcohol marketing efforts.

The difficulties can be illustrated from Meier's own project. An attempt was made to statistically model the effects of a total ban on advertising based on two studies which evaluated the effectiveness of advertising bans in a number of Western countries over the same time period (Brennan et al., 2008). Applying the results of the first study (Saffer & Dave, 2002) resulted in the prediction of a very large reduction in alcohol consumption, a fall of 26.9% with very high reductions in harm with a financial value after ten years of £44bn. This is a far bigger reduction than that modelled for any of the possible pricing policies examined. The second study (Nelson & Young, 2001) argued that advertising bans would lead to the alcohol companies switching to competition on the basis of price, with the resulting price reductions leading to increased consumption. The prediction based on this study suggested a 4.9% increase in consumption and a corresponding increase in alcohol related harm, with a cumulative cost over ten years of £9bn. This result is unclear (although the effects of the second prediction would be mitigated by minimum pricing restrictions). The authors suggested that a mathematical model of the effects of banning alcohol advertising must await further rigorous research.

An alternative to the outright banning of alcohol advertising which is often proposed is the placing restrictions on advertising, where regulations as to the timing, placing, content, and so on, of advertising is imposed on producers and advertisers through

codes of conduct or by tightening regulations which already exist. In several countries which have such codes, including the UK, oversight is the responsibility of self-regulatory bodies set up by the advertising industry. Two pieces of research illustrate some of the problems of these systems. The first of these consists of two studies by Jones and her colleagues of adjudications of the Australian regulatory body. In the first study (Jones & Donovan, 2002), an independent expert panel was recruited to review recent adjudications of the regulatory body. This examined 11 complaints about 9 separate advertisements and a majority judged that 7 out of 9 advertisements had breached the advertising code; all 11 complaints were rejected by the regulatory body. Following a review and the imposition of a revised code a similar exercise was carried out (Jones et al., 2008). An independent panel reviewed 14 complaints to the regulatory body under the revised code. In 8 out of the 14 cases a majority judged the advertisement to breach the code and in none of the cases did a majority of the panel perceive no breach; only one of the complaints was partially upheld by the regulatory body. The authors questioned whether the revisions of the regulatory code were effective and whether the regulatory body was capable of performing an adequate job of representing community standards or protecting the community from offensive or inappropriate advertisements.

The House of Commons Health Select Committee, as part of its deliberations on the effectiveness of advertising self regulation obtained a large number of internal marketing documents from alcohol producers and their communications agencies in order to examine the thinking and strategic planning that underpin alcohol advertising. Hastings and his colleagues (Hastings et al., 2010) were commissioned to analyse these documents and found that the advertisers clearly breached the advertising code in the following ways:

- Targeting and appealing to young people. Upcoming generations represent a key target for alcohol advertisers and although the documents mainly refer to this group as starting at the legal drinking age of 18, this distinction is sometimes lost. Market research data on 15 and 16-year-olds are used to guide development and deployment and it is clearly acknowledged that particular products appeal to children.
- Attitudes to drunkenness and potency. Advertisers are well aware that some groups drink irresponsibly. Strategy documents and campaign briefs abound with references to unwise and immoderate drinking. Instead of regretting or avoiding promotion of this behaviour, as the codes require, producers and agencies analyse it for market opportunities. Drunkenness is also linked to high alcoholic strength, any reference to which is forbidden by the codes. Advertisers have worked out ways of communicating potency

such as references to products being “ten times filtered” or “triple distilled”, noting that for consumers increased purity means increased strength.

- Association with social success. Advertisers are not allowed to suggest that alcohol can enhance the social success of an individual or an event, yet the documents are full of references to brands doing both things. They are particularly keen to sell their products to young men by suggesting that they will enhance group bonding.

Hastings and his colleagues conclude that attempts to control the content of advertising have two systemic failings. Firstly, the sophisticated communications and subtle emotional concepts such as sociability and masculinity that comprise modern advertising (and sponsorship) often defy intelligent analysis by the regulator. Secondly, producers and agencies can exploit the ambiguities in the codes and push the boundaries of both acceptability and adjudication.

A further argument against the effectiveness of advertising regulation is the fact that all the studies of the effects of advertising on young people reviewed above were carried out in countries in which advertising regulations were in place.

Another problem facing those attempting to regulate alcohol advertising can be illustrated by examining research on public service advertisements (PSAs) produced by the alcohol industry. As part of a review of alcohol counter-advertising, Agostinelli and Grube reported that, when viewers were surveyed, raters listed prevention of drunk driving third behind company image and selling beer in motives for advertising. Some advertisements were seen by viewers as promoting alcohol consumption even in risky situations because ambiguous messages left decisions about appropriate drinking levels to the audience. Direct messages often included contexts and peripheral cues promoting drinking and the advertisements were likely to increase the credibility of the sponsors by appearing to go against their interests (Agostinelli & Grube, 2002).

Smith and her colleagues (Smith et al., 2006) examined the concept of “strategic ambiguity” in industry-funded responsible drinking advertisements. This is the idea that messages are delivered in a deliberately ambiguous way so that divergent interpretations can be made by different segments of the audience and multiple messages can be conveyed simultaneously. For example, whilst purportedly encouraging safe drinking the advertisements also present positive images of brands and companies and actually promote and normalise drinking. They examined the responses of young people to American industry sponsored responsible drinking advertisements and found a wide spread of interpretations of

the aims, motives and messages being conveyed. Specifically, respondents had widely divergent interpretations of the amount of drinking which was being recommended as safe; estimates were distributed along a range of amounts from zero drinking to 5 or 6 drinks, with about 1 in 6 not being able to make an estimate at all. They concluded that the ambiguity in the “drink responsibly” advertisements enables the audience to draw pro-drinking conclusions which will not substantially reform inappropriate or unsafe drinking patterns.

Wolburg (2005) suggests that there are two current models which frame the way alcohol is viewed: the responsible decision-making model, which regards alcohol as a neutral substance which is problematic only when users make wrong decisions; and more recently the lifestyle risk reduction model, which holds that alcohol is a problematic substance in itself that causes impairment for those at risk. The responsible decision-making model blames the user for alcohol abuse, whereas the lifestyle risk reduction model blames the product. The latter is the present theory from the field of health promotion for addressing alcohol problems in society; however it is the former view which is presented by the alcohol industry in its responsible drinking advertisements. The problem of drunk driving is often the context of these messages which imply that drinking excessively can be done responsibly as long as no driving is involved. In underage drinking messages, by focusing on the age of the drinker rather than the amount consumed the problem of alcohol abuse is again situated within the drinker instead of the product. Perhaps the most problematic aspect of these messages is the fact that they encourage the drinker to shift responsibility to others. In the minds of many drinkers, the only irresponsible drinking acts are drunk driving and getting caught for underage consumption. Circumventing the age restriction and designating a driver turn people into responsible drinkers, who are free to consume as much as possible without worry about the consequences (Wolburg, 2005).

In their review of this topic, Barry and Goodson (2010) report that industry sponsored campaigns (in the US) fail to define “responsible drinking”; fail to reflect that in many circumstances **not** drinking is the responsible option, thereby fostering the view that drinking is integral to much of everyday life; and fail to recognise important public health concerns. They conclude by saying that “*by utilizing imprecise slogans and other advertising tactics, the alcohol industry has cleverly turned this former prevention message into a marketing tactic that appeases critics and consumers yet does not influence public health*” (Barry & Goodson, 2010; p 301). If the alcohol industry can achieve this degree of subversion in a context

where the original aim was to *restrict* drinking, what will they achieve within any framework of regulations which permits the *promotion* of their products?

Although it has been the subject of very little research activity, another way in which advertising regulations are circumvented is by the sponsorship of events, particularly sporting events and pop music festivals and concerts which are especially attractive to young people. The amount by which the alcohol industry gains from these activities can be seen from the report that Carlsberg's sponsorship of the 2004 European football championship resulted in a 6% growth of the brand worldwide and that, according to Carlsberg's report to shareholders, its name and logo had been in view for 16 minutes of every match of the championship (Babor et al., 2010). Sponsorship clearly allows the alcohol industry to circumvent restrictions which disallow the promotion of alcohol to young people and time-of-day restrictions on television alcohol advertising (Munro & de Wever, 2008).

The section of the population which drinks most alcohol per capita is young adults (particularly young men, although this may be changing as more young women appear to be drinking heavily) and the alcohol industry relies heavily on this group to maintain its profitability. However, as this group matures, most of them cut down on their drinking although some continue to drink heavily and remain problem drinkers for the rest of their lives. Logically, therefore, the alcohol industry must continually recruit new young members of this heavy drinking group in order to maintain its profits (Casswell, 1997). In light of this and in the context of thinking about cultural change where the long term aim is to significantly reduce the amount of alcohol consumption, perhaps the most persuasive argument for a ban on alcohol advertising and promotion is the removal of a pervasive and powerfully persuasive voice actively promoting positive images of alcohol and drinking (Casswell, 1995; Hill & Casswell, 2001).

DISENGAGING THE ALCOHOL INDUSTRY FROM POLICY

A review of commercial interests in policies to reduce alcohol related harm in North America (US and Canada) concludes "*Greatest attention and resources should be directed to interventions that are most likely to have the greatest impact in reducing drinking-related problems, and funding for prevention from alcohol industries should involve arms-length arrangements*" (Giesbrecht, 2000; p 581). The mission of alcohol industries is commercial, to expand their market and to maximise profits. Consequently they oppose policy restrictions on access to alcohol, tax increases, controls on marketing and some counter-advertising campaigns (Giesbrecht, 2000).

The WHO has set out several initiatives to reduce alcohol related harm, including European Alcohol Action Plan and the European Charter on Alcohol both of which identify a need for the public health policies that are independent of economic and commercial interest (Anderson & Baumberg, 2006).

In an overview of the alcohol industry's marketing strategies from a public health point of view, Munro and de Wever (2008) point out that the principal aim for producers and traders of alcohol, as for other commodities, is the return to shareholders by gaining the greatest possible share of the market and maximising consumption. They identify ways in which pursuit of these aims has put the alcohol industry completely at odds with those whose concern is public health.

Harm reduction measures encourage the use of drugs in forms that are likely to result in fewer adverse outcomes, such as promoting the use of low-alcohol beverages over higher strength variants, but this principle is offended by the introduction of 'premium strength' premixed spirits (alcopops). These are acknowledged to have been developed with young drinkers as a target market. Since their introduction their strength has been increased and container size changed so that individual packages, which originally contained 1 alcohol unit, now contain 2 to 2.5 units. Alcohol retailers have developed policies of regularly discounting the price of alcohol purchases, particularly for purchases in bulk. This has the effect of increasing consumption, facilitating opportunistic drinking and enabling access to large amounts of alcohol to young people with limited financial resources. There has been a large scale expansion in the number of outlets for the sale of alcohol, particularly in retail off-sales (and, in the UK, increasing hours of availability to almost 24hrs a day for 6 days of the week) thereby increasing the normalisation of the purchase and consumption of alcohol.

The alcohol industry has undermined or ignored codes for the self-regulation of alcohol advertising and failed to enforce these codes when challenged to do so. The industry has also used sponsorship of sporting and cultural events which circumvents restrictions on the time of day of broadcast promotions and promotions aimed at young people. It is suggested that the alcohol industry has consistently taken actions that increase rather than reduce alcohol consumption and the harm related to it.

Monro and de Wever conclude that the industry's practice does not support the goal of developing healthier and safer drinking cultures. Accepting that the industry and public health ultimately have separate and conflicting interests and aims is an

essential step towards developing policies and programmes that might impact on the customs, values, images and norms that contribute to unsafe drinking cultures.

Anderson (2009a) surveyed stakeholders of the European Commission's alcohol and health working group (23 government officials, 22 nongovernmental organization representatives, and 30 representatives of the alcohol beverage industry) for their views on the potential impact of 35 interventions across 12 alcohol policy domains in reducing the harm done by alcohol. He then compared the responses obtained from the alcohol industry representatives with findings from a review of the research literature. The industry reported that there was limited evidence for the effectiveness of regulatory approaches to reducing the harm done by alcohol; the research literature showed that these were the most clearly effective policies for reducing alcohol-related harm. The industry stated that there was evidence for a large impact of educational approaches in reducing alcohol harm; in fact, they are almost entirely ineffective. The approaches which included enforcement of legislation (such as minimum age of purchase) and treatment provision are found to be effective, whereas industry self-regulation is ineffective. He concluded that the alcohol industry should not be involved in making alcohol policy. Its involvement in implementing policy should be restricted to its role as a producer, distributor, and marketer of alcohol. In particular, the alcohol industry should not be involved in educational programmes, as such involvement could actually lead to an increase in harm.

In light of the literature reviewed here and the work of Jones and her colleagues (Jones & Donovan, 2002; Jones et al., 2008), Hastings and his colleagues (Hastings et al., 2010) and the work on industry sponsored public service advertising (all reviewed above), we concur with Anderson that the alcohol industry should not be involved in making alcohol policy.

This is also the policy of a number of internationally respected organisations. It is currently the policy of the World Health Organisation not to collaborate with any of the sectors of the alcohol industry (WHO, 2007).

In 2001 the American Academy of Pediatrics Committee on Substance Abuse called for the control of alcohol promotions through the media and sports sponsorship to be controlled, and for punitive action to be taken against purveyors of alcohol to minors (American Academy of Pediatrics: Committee on Substance Abuse, 2001). A decade later they report 'Alcohol use continues to be a major problem from preadolescence through young adulthood in the United States' (American Academy

of Pediatrics: Committee on Substance Abuse, 2010; p 1078). They call for clinicians to support drives for the media to portray the consequences of alcohol consumption.

YOUNG PEOPLE

Research about young people pervades most areas of the alcohol literature we have identified. Frequently the reasons given by policy makers for the actions and the justifications given by those proposing policy changes are that there will be specific effects on the behaviour of young people. For example, it is frequently suggested that a reason for restricting physical access to alcohol and increasing alcohol prices is that this will make it more difficult for children and young people to obtain alcohol. Reviews of alcohol harm often specifically focus on harm to young people and many harm-reduction interventions also are particularly devised for and delivered to children and young people. This age group also has more statistics about its alcohol-related behaviour collected than any other group.

One group of people which has been the focus of a large amount of alcohol-related research is students, constituting, as they do, a distinct, easily-identifiable, easily accessible social group. As well as concerns about the effects of and targeting of alcohol advertising on young people, much of the research on the effects of media portrayals of alcohol is concerned with the effects on young people and their attitudes. It makes sense, particularly if the aim is cultural change, to concentrate efforts on those who are in the process of being initiated into the drinking culture. Some work has looked in particular at the effects of changing the minimum legal drinking age (MLDA).

MINIMUM LEGAL DRINKING AGE

USA policy change has provided useful natural experiments to assess the effects of changes to the minimum legal drinking age. After Prohibition most states in the USA set a MLDA of 21 years; this was lowered in a number of states during the 1970s. The suggestion that lowering the MLDA was associated with an increase in traffic accidents involving young people led to campaigns to return it to 21 years. By 1987 the federal government imposed a MLDA of 21 throughout the USA (Wagenaar & Toomey, 2002). Recent research suggests that increasing the MDLA led to reductions in: the prevalence of drink driving; road traffic accidents (and fatalities); alcohol-related injuries leading to hospital admission; fatal injuries; and overall mortality, all of these amongst young people (Babor et al., 2010). A systematic

review by Wagenaar and Toomey (op. cit.) found that, compared to other efforts, increasing the MLDA to 21 years was the most effective method of reducing alcohol consumption among teenagers. They reported that a large proportion of studies showed an inverse relationship between MLDA on the one hand, and alcohol consumption and alcohol-related problems on the other; that is, when MLDA was increased consumption and problems decreased and *vice versa*. They point out that, although some studies suggest that the effect sizes are small, when modest effects are applied to the entire population of young people they can result in large social benefits. They cite an estimate that a MLDA of 21 had resulted in 17,359 fewer road traffic deaths between 1975 and 1997. Babor et al. report similar findings from other countries. However, they point out that underage drinkers still manage to obtain alcohol and that studies have shown that stricter enforcement of regulations has an effect in reducing this. Wagenaar and Toomey found that studies of factors mediating the effects of raising MLDA on alcohol consumption by underage drinkers identified clear means of increasing the effectiveness of the policy, most notably stricter enforcement of alcohol sales regulations.

THE WELSH CONTEXT

Wales is part of the United Kingdom and the European Union. Although the Welsh Assembly Government can develop distinctive Welsh policies, it is also bound by some external constraints.

IMPLICATIONS OF INTERNATIONAL POLICIES FOR ALCOHOL CONTROL

When considering national policies for controlling alcohol consumption, it is necessary to take obligations imposed by European and international law into account (including trade agreements where alcohol is treated as an economic commodity).

Anderson and Baumberg (2006) wrote an extensive report for the European Commission evaluating evidence on interventions, strategies and policies to reduce alcohol related harm. The following is a brief summary of their findings relating to international trade agreements and international health in initiatives to reduce the harm caused by alcohol.

EUROPEAN POLICY

The principle objective of the European Union was to create a single market with free movement of people, commodities and services between member states with

common trade policies, and one of these commodities is alcohol. As such the trade law dictates that member states face restrictions when designing tax control policies so that they cannot discriminate directly or indirectly against goods from other states, nor can they control alcohol through national monopolies. Nordic alcohol monopolies were removed as a result of European trade laws.

European taxation policies aim to introduce standard excise duties as a means of reducing the market effects of cross-border shopping. Substantial amounts of tax revenue are lost to the high-tax government, and large differences can produce pressure to reduce the tax levied on alcohol (Anderson & Baumberg, 2006).

The Common Agricultural Policy provides subsidies to wine growers, and the political and economic importance of these present problems to public health initiatives to reduce alcohol consumption.

Health policies lie outside the EU remit, and each member state retains legislative autonomy, although the European strategy to reduce alcohol related harm has identified priority themes and targets for 'reducing the problems related to harmful and hazardous alcohol consumption' (Europa, 2008). This strategy targets reducing harmful consumption of alcohol and hazardous behaviours rather than targeting alcohol directly. It highlights good practices implemented in some member states across five priority areas:

- Protecting children and young people
- Prevention of drink driving
- Reducing alcohol related harm among adults
- Raising Awareness
- Collecting reliable data

WORLD TRADE LAW

International trade agreements have prioritised economic and commercial goals over and above considerations of public health agreements for example:

General Agreement on Tariffs and Trade (GATT) dealing with goods

General Agreement on Trade in Services (GATS)

Alcohol is included within both these treaties as a 'good'. New public health policies are restrained by GATT. The 'Service' commitments of GATS extend to production, wholesale, distribution, retail and advertising (Gould & Schacter, 2002; Gould, 2005).

“the promise of trade liberalization under the WTO is to reduce costs, increase choice, and expand the availability of consumer products in its 143 member countries. However, to varying extents members also pursue policies to restrict choice, reduce the availability, and increase the price of alcohol, with a view to reducing consumption—particularly among young people” (Gould & Schacter, 2002; p 120).

Although these treaties both state that they contain nothing that should be construed as preventing the enforcement or adoption of measures necessary for protecting human health, the onus is on each individual country to prove that there is no alternative that would produce the same effect without restricting trade.

The following are some examples of the impact of European and international policy on alcohol control taken from Anderson and Baumberg (2006).

- For variable tax bands for different types of alcoholic drinks (beers wines spirits) it has been ruled that there is no protectionist effect if a significant proportion of home produced drinks fall into each tax band. A different ruling would be expected if a beer producing country were to tax wine at a higher rate than beer.
- Minimum pricing agreements may be ruled illegal if they stop low priced competition from abroad (for instance, gin in the Netherlands in the 1970s).
- It is possible that fixed minimum prices would contravene European competition legislation on cartels.
- Large parts of the alcohol monopolies in Finland, Norway and Sweden were removed to comply with EU agreements leaving only the off premise retail monopolies.
- EFTA Court ruled against the Norwegian restriction on (foreign-produced) alcopops being sold outside monopoly stores when (domestically-produced) beer of the same strength could be bought from grocery stores.

REGIONAL POLICIES

We have made reference to evidence that regional policies can have positive effects on alcohol consumption. Whilst this international evidence has some relevance to Wales, it mainly comes from much larger countries than the UK, such as Australia or the USA. Support for the suggestion that Wales-only alcohol policies could be effective is largely based on inference and extrapolation. For example, the evidence that density of retail outlets effects population level consumption tends to suggest that a significant proportion of the population choose to drink less rather than to

travel to purchase alcohol. However, we have found no direct evidence as to how people behave if a region with a low density of off-sale retail outlets adjoins a region with a higher density.

Wales is a long, narrow country with a lengthy border with England. Its major urban area is relatively close to an English urban area. In contrast, Scotland is a long narrow country with a short border with England. Scotland's major urban areas are relatively distant from the nearest English city. Geographical as well as cultural factors have to be taken into account in assessing the likely impact of interventions to change drinking behaviour in Wales (although uniform alcohol and licensing policies within the UK are a relatively recent development, and prior to this there do not appear to have been major problems with people travelling to drink). There are also some general principles that can be derived from the literature.

Taken as a whole, the evidence strongly suggests that reducing alcohol related harm requires a sustained strategy involving several different elements (the exception is pricing, which appears to have a significant impact in isolation from other measures). For example, a review of four policy initiatives to reduce alcohol consumption in South Africa between 1994 and 2009 (which included restrictions on advertising, sales regulations, controls on packaging and taxation) found that clear recognition of the problem was essential to effective policy implementation combined with alignment of political forces (Parry, 2010). Parry discussed the role of non-government organisations (NGOs), the media and the alcohol industry, concluding that *“Alcohol policy development in South Africa takes place in a piecemeal fashion and is the product of various competing influences. Having a comprehensive national alcohol strategy cutting across different sectors may be a better way for other developing countries to proceed”* (Parry, 2010; p 1340). The international evidence suggests that these recommendations should not be confined to developing nations.

We have drawn attention to a number of warnings from the literature that isolated measures might have unforeseen consequences (for example, the suggestion from a mathematical model that a total ban on advertising would lead to price cuts and an increase in consumption, Nelson and Young, 2001). Similarly, there is evidence that under some circumstances, alcohol policies introduced in one province, state or country can have repercussions for adjoining regions that have more relaxed policies. For instance Mexico has more liberal alcohol control than adjoining Southern California (lower minimum age restrictions, cheaper pricing and fewer point of sales controls). As a consequence, large numbers of young Americans cross the

border with the intention of drinking (Romano et al., 2004). Although there is some financial benefit within Mexico, the presence of intoxicated young foreigners is seen as a social problem and a deterrent to preferred types of customers. An education programme produced in South California in consultation with Mexican officials was shown to reduce the number of Americans arrested for alcohol related crimes and misdemeanours.

Efforts to change drinking culture intrinsically involve altering public attitudes, but policies that are far removed from the centre of gravity of public opinion are rarely successful. There is a fine judgment as to how much change (and how fast) will carry general support. Anderson & Baumberg, (2006) reviewed work measuring public attitudes to governments' duty to control alcohol consumption. An opinion poll found that British people were ambivalent about the notion that "*the government has a responsibility to minimize how much people drink*". A separate poll found that the British public strongly agreed that the government should reduce alcohol abuse. Age restrictions for purchasing of alcohol are widely supported, and several studies have reported consensus on the need for greater enforcement of age restrictions in the UK. Strong support has been found for drink driving policy and 75% of those polled agreed that the maximum blood alcohol concentration should be reduced to 50mg/100ml. An overwhelming majority felt that there should be a complete ban on alcohol for newly qualified drivers. Public opinion is not necessarily consistent or coherent, and the relationship between policy and public opinion is far from straight forward. Policy is more likely to be effective where it resonates with existing attitudes. This is not an argument for inaction; it was widely anticipated that the 2007 Welsh ban on smoking in public buildings (implemented three months before the English ban) would be routinely defied, but it has been seen as highly successful.

CONSULTATION

In the original protocol we proposed to form a small multi-sector reference group, comprising individuals from statutory and voluntary sector organisations and service user groups. Due to a number of practical considerations, we agreed with Alcohol Concern Wales that we would instead conduct brief telephone or face-to-face discussions with individual participants in place of a single reference group event. The discussion was framed by the key findings from the review of the evidence. We formulated a topic guide which served as an aide memoir for the researcher team members. The initial email to participants and the topic guide are set out in Appendix 2.

This exercise provided the opportunity to discuss the professional, contextual, organizational and infrastructural implications of the review findings and to consider the challenges to policy and practice in Wales. The participants were asked to consider their response in the context of their experience and not as a representative of an organization or profession. All responses have been anonymised and we do not delineate the source of the response. We included individuals with direct experience of providing services for alcohol dependency and individuals who deal indirectly with some of the more general effects of the misuse of alcohol. We also spoke to a small number of young people.

The discussions were not recorded; the interviewers took contemporaneous notes. Twelve individuals participated in the discussions and the resulting material was subject to a thematic analysis.

There was overwhelming agreement that harmful and hazardous drinking is a growing problem in Wales and elsewhere. The normalisation of heavy drinking, particularly among groups of young people, was thought to be of particular concern. The perception is that drinking alcohol is embedded in social and cultural activities. Unlike many recreational drugs, drinking alcohol contravenes the law only in a limited number of specific circumstances. Its use is widespread.

Some of participants pointed to difficulties which they considered to be particular to Wales, but most thought that the problems of harmful and hazardous drinking were universal and widespread within the UK. The comments about Wales's particular difficulties related in the most part to problems of rurality and to the more negative aspects of being part of a close knit community with shared values and language. Traditional valley communities were perceived to have a strong drinking culture with leisure time centred around rugby and the associated social clubs. Indeed, sporting events were considered by some to be particularly problematic. Chapel culture too was cited as problematic, as it might inhibit help seeking behaviours. Chapel attenders were perceived as being more than usually inclined to hide or deny alcohol dependency.

Drinking culture was compared to drug taking culture by most of the participants and to smoking culture by a smaller number of participants. A repeated comment was that heavy drinking carries less social stigma than drug taking. One person pointed to the absence of passive health implications that were regarded as a persuasive and prominent feature of anti smoking campaigns. Most participants talked about other *passive* factors associated with heavy drinking culture, such as littering of

public spaces, damage to people and property and antisocial behaviour induced by alcohol intoxication. In some places these difficulties were perceived to be seasonal, particularly in places with an influx of holiday makers. In other places the passive adverse social effects of drinking were a regular part of the night-time economy.

Harmful and hazardous drinking in young people was noted with worrying concern by all of the participants. Disruption to education, as well as the long term health impacts, were discussed. Risky sexual behaviour was of particular concern. The trend of pre-loading with alcohol was raised by many participants; those too young to purchase alcohol legally using it to avoid alcohol being confiscated at house parties or venues, and those old enough to purchase alcohol using it to avoid the high prices paid at venues. Both groups drink to excess in a short space of time, and are intoxicated throughout the evening rather than just at the end, increasing risk exposure. Hospitalisation for alcohol intoxication was reported to be something that was boasted about by some young people. Severe intoxication is not seen as shameful. It was suggested by a number of participants that the vast majority of young people in their mid teens have experienced intoxication, that some are intoxicated every weekend and a small number are intoxicated every day. Engaging young people with treatment services, including brief interventions, is seen as difficult and problematic.

The contemporary patterns of drinking in young people was thought by most of the participants to be different from that of previous generations, including their own. There was concern over parental collusion with teenagers' drinking. Parental purchase of alcohol on behalf of their under aged children was considered to be wide spread and a relatively new phenomenon. Similarly, comment was made that adults supervising teenagers parties seem more inclined to drink themselves than was previously the case.

Educational campaigns, particularly those aimed at children and young people were discussed. Many participants suggested that information needed to be more focussed on the physiological effects and long term health effects of alcohol; their perception was of an over emphasis on the social effects of being intoxicated and on the risks of associated with drink spiking (with drugs or spirits). One participant commented that it is unlikely that a young person would suffer life threatening harm from consuming a £10 purchase of street drugs, but that this was entirely possible on consuming a £10 purchase of spirits. It was suggested by one participant that

recovering dependant drinkers are under utilised within education campaigns, as their experience might give a special credibility to the information they provide.

The current availability of alcohol was considered to be an area where a change in policy would be helpful. The number of retail outlets was seen to be excessive, and long licencing hours was considered problematic. The removal of alcohol from mainstream supermarket sales areas was suggested by several participants, drawing a comparison between alcohol on shelves in aisles and special areas for tobacco sales. Some participants felt that there was excessive promotion of drinking in the media, and they advocated limiting or banning advertisements for alcohol. A very small number of participants felt it would be appropriate to raise the age of legal purchase. Preventing promotional events for students where alcohol is cheap or free was suggested.

Alcohol was seen by many participants to commonly exacerbate other problems and vulnerabilities, for example, for people with mental health problems. The role of alcohol in domestic abuse, where both perpetrator and victim are likely to drink to excess, was raised. People with complex or multiple problems that include alcohol misuse were perceived to be difficult to help. For this reason, some participants emphasised the importance of reducing alcohol consumption in the whole population.

For most of the participants with knowledge of service interventions, brief interventions with at-risk groups were seen as important. The difficulties in engaging people and maintaining engagement were raised. Reticence in disclosing harmful drinking habits or alcohol dependency was highlighted by some. The need to have widespread availability of brief interventions in a variety of settings was posited by a number of participants.

Treatment and support for dependent drinkers was commented on by some of the participants. For example, one suggested that integrated drug and alcohol services inhibit some dependent drinkers and prevent them from seeking help. Although drug and alcohol users are overlapping populations, many drinkers perceive themselves to have nothing in common with drug users. The absence of wet houses, where intractable drinkers can be supervised in order to prevent them coming to harm, was regarded as a gap in service provision. The need for more detailed and appropriate treatment pathways during general and psychiatric hospital admissions due to (or complicated by) alcohol misuse was suggested by one participant.

The importance of inclusive services, particularly in terms of the language of delivery was considered important in bilingual communities; failing to work with people in their first language was regarded as a barrier to help seeking behaviour, making it more difficult to overcome denial of harmful drinking. Accessible information was considered to be important by many participants. The use of alcohol unit labelling as a way of encouraging safe drinking patterns was thought to be problematic by many participants. The system was regarded as difficult to interpret, and there were fears that it drew many people to stronger drinks rather than weaker ones.

There were some differences of view regarding enforcement of existing legislation. Some participants felt very strongly that the criminalisation of behaviour associated with drinking should be avoided. Others noted the lack of enforcement related to young people found intoxicated in public areas. It was suggested that alcohol is often not confiscated, arrests are rarely made and that young people are generally dealt with informally without the involvement of parents. Most, but not all, participants thought that lowering the blood alcohol limits for driving was acceptable.

There was a uniform high level of concern regarding alcohol consumption in Wales and the rest of the UK. There was a strong consensus that there is a need for action. Whilst participants recognised that there are limitations to what can be achieved through specifically Welsh initiatives, there was general support for these.

This consultation provides some contextual information about drinking culture in Wales, and gives an indication of the opinions of those affected by it. A comprehensive account of Welsh opinion is beyond the scope of this project. Nonetheless, the information is of interest. Many of the comments resonate very closely with our findings in the review of the literature. A number of participants felt that there was a need to better understand drinking behaviour.

CONCLUSION AND KEY FINDINGS

- Changes to drinking culture can and do occur, sometimes over relatively short time scales. The research evidence indicates that a positive change in drinking culture in Wales could be achieved through implementation of a range of measures.
- The greatest benefit to the population in terms of health and social well being can be achieved through measures that reduce alcohol consumption in the whole population, rather than targeting 'problem' drinkers. However, measures that target drinkers who are 'at-risk' (rather than alcohol dependant) are known to be of value.

- There appears to be a high level of concern about alcohol in Wales, with particular worries about the emergence of a new heavy drinking sub-culture amongst young people. There is little to suggest major differences in drinking culture between Wales and the rest of the UK, though rates of alcohol related harm are known to be particularly high in Wales.
- Wales has particular circumstances with regard to national culture, geography, language and government. There appears to be general qualified support for Wales only initiatives to improve drinking culture.
- *Control* refers to measures to restrict the public availability and consumption of alcohol. These measures are usually taken by national or local governments. Regional alcohol control policies are complicated by national and supra-national (e.g. European) policies and by international trade obligations.
- It is well established that the price and affordability of alcohol is the key determinant of the overall level of consumption amongst all groups in the general population. This is the strongest finding in the international literature.
- Most of the evidence on the impact of price changes on alcohol consumption is based upon the effects of alterations in taxation or duties. Although international experience of minimum pricing is limited, there is good reason to believe that it would be effective in controlling alcohol consumption amongst at-risk groups such as some young people.
- Where alcohol consumption is controlled through manipulation of price, the full benefits in terms of reduction of alcohol-related harm will only be seen where price increases are sustained and index linked against inflation.
- Reducing the availability of alcohol by restricting the number of retail outlets is effective in reducing alcohol consumption and alcohol related harm.
- Local measures on price and availability of alcohol can be effective, although a proportion of the population are prepared to travel to purchase at a lower price.
- *Harm reduction* here refers to the attempts to limit the damage which results from the drinking of alcohol, whether to drinkers themselves or to the social environment in which drinking takes place. This relates to both the social cost of alcohol consumption and to alcohol related morbidity and mortality.
- The strength of the evidence on brief interventions is sufficient to conclude that they are an effective means of reducing harm, and that they are an

important component to the overall strategy to limit the health and social harm caused by alcohol.

- There is little evidence that health education campaigns on their own are effective in influencing the population's drinking behaviour. Nonetheless, many experts consider that it is a useful component to an overall strategy to limit alcohol related harm.
- *Attitudes* to alcohol and intoxication are formed through complex mechanisms. It is possible to identify predominant cultural attitudes within a particular population, but there are also sub-cultural attitudes that can vary widely between different sub-groups. Religious belief, ethnicity, family influences, the implicit values of authority, and attitudes to authority all have an impact.
- Although alcohol advertising is known to influence some sections of the population, such as young people, there is little evidence that advertising restrictions or bans have a significant impact. However, expert opinion suggests that it may be an important component to overall alcohol strategy.
- There is evidence that alcohol industry sponsored campaigns to promote responsible drinking are ineffective or counter-productive. There is a strong body of international opinion that suggests that the industry should not be engaged as a partner in efforts to reduce alcohol related harm.
- Although alcohol policy in Wales has to take European and UK factors in to account, regional initiatives can have an impact. Alcohol policy should be part of a long term, integrated strategy.

APPENDIX 1. ELECTRONIC SEARCH STRATEGY

Researcher 1 (JB)

Alcohol pricing

Medline

[(alcohol/) or (alcoholism/) or (alcohol induces disorders/)]

and

[(price.mp) or (pricing.mp)]

= 205 hits

PsycINFO

[(alcohol withdrawal/) or (alcohol intoxication/) or (underage drinking/) or (alcoholism/) or (alcohol drinking attitudes/) or (alcohol drinking patterns) or (binge drinking/)]

[(price.mp) or (pricing.mp)]

= 169 hits

Combined results – 16 systematic reviews; 131 papers of interest.

Brief interventions

Medline

Term 1 = alcohol drinking/ae,pc (adverse effects, prevention and control)

[(Term 1) and (Counseling)]

or

[(Term 1) and (brief intervention.mp)]

= 217 hits

psycINFO

[(alcohol abuse/) and (brief intervention.mp)] limit (English language) and (yr = 2000 – current)

Combined results – 31 systematic reviews; 138 papers of interest.

Media and alcohol

Medline

{{(alcohol drinking/) or (alcoholism)}}

And

(Mass Media/)} limit (English language) and (yr = 2000 – current)

= 63 hits

psycINFO

(mass media/)

and

[(exp Alcohol abuse/) or (Alcohol drinking patterns/) or (exp Alcoholism/)]

= 63 hits

Wiley Online Library

[(alcohol) in Abstract] and [(media) in Keywords]

= 86 hits; 3 papers of interest

Oxford Journals online

[(media) and (alcohol)] in Title/Abstract

= 6 hits; 0 of interest

ScienceDirect

{{(media) and (alcohol)} in Title/Keyword/Abstract} limit [(yr = 1990-2011) and (Social Science) and (article)]

= 97 hits; 2 of interest

Combine results = 6 systematic reviews; 19 papers of interest.

Advertising and alcohol

Medline

{{(alcohol drinking/) or (alcoholism/)}}

and

(Advertising as Topic/) limit (English language) and (yr = 2000 – current)

= 148 hits

PsycINFO

{{(exp Alcohol abuse/) or (alcohol drinking patterns/) or (exp Alcoholism/)}}

and

(exp Advertising/) or (advertising.mp)} (English language) and (yr = 2000 – current)

= 146 hits

Wiley Online Library

[(alcohol) in Abstract] and [(advertising) in Keywords]

= 22 hits; 5 of interest

Oxford Journals online

[(advertising) and (alcohol)] in Title/Abstract

= 36 hits; 3 of interest

ScienceDirect

{{(advertising) and (alcohol)] in Title/Keywords/Abstract} limit [(yr = 1990-2011) and (Social Science) and (article)]

= 18 hits; 2 of interest

Combined results = 11 systematic reviews; 38 papers of interest

Researcher 2 (FZ)

Social control of alcohol

Search topic: Social changes / controls over the drinking culture, in reports / research published since 2000, especially systematic review papers.

Initial keywords: Alcohol / drinking, Social change / social control / regulation / culture change / restriction / control / age control / price control

Later key words: Policy/media

CINAHL

(alcohol) and (control) or (restriction) in Title

=1019 hits

Reduced date range to 2000-2011

=50

Search set to "abstract" Language "English" and dates 2000-2011

=186; 54 of interest

(alcohol) and (review), search set to "title" Language "English" and dates 2000-2011

=159; 24 additional papers of interest.

CSA Social Sciences Database Package

(alcohol control), Search set to Social Sciences Subject Area, "title"

=333 hits

TI=((alcohol control) or (alcohol restriction)) Search set to Social Sciences Subject Area

"title only" and dates 2000-2011

=48; 20 additional papers of interest.

(alcohol) and (review) and (systematic) Search set to Social Sciences Subject Area, , "title" only and dates 2000-2011

=100

(alcohol) and (review) and (literature). Search set to Social Sciences Subject Area, , "title" only and dates 2000-2011

=46

Search Query #2 TI=(alcohol) and TI=(systematic review) Social Sciences Subject Area

dates 2000-2011

=94, 15 additional papers of interest

TI=(alcohol) and TI=(media) or (television) or (advert*) Social Sciences Subject Area

=18, 6 additional papers of interest

Web of science

Title=(alcohol) AND Title=(systematic review), Databases=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH.
Timespan=2000-2011.

=64, 21 of interest, all duplicates

Web of Knowledge

Title=(alcohol) AND Title=(systematic review), Timespan=2000-2011.

=143, 32 of interest, all but 5 duplicates

Science Direct

TITLE(alcohol) and TITLE(systematic review)[All Sources(Psychology,Social Sciences)], pub-date > 1999

=13, 5 additional papers of interest

Google

"alcohol control" "systematic review"

=6840

"systematic-review" "alcohol control " filetype:pdf (set file format to pdf in advanced search google)

=2630

Whilst these searches were being carried out, papers relevant to the project but not the current search topic were identified and saved. Older seminal papers, recent books, policy papers and guidelines were also accessed.

APPENDIX 2. CONSULTATION

Purpose.

To consult with individuals within Wales who either have an interest in alcohol problems or have an interest in groups within the community where alcohol misuse might be of concern. Target consultees included:

- Community groups.
- Voluntary Sector.
- Statutory services.
- Policy makers
- Research groups.
- Welsh language and cultural groups
- Individuals known to have an interest.

Email to potential consultees

Dear Colleague,

We have been funded by Alcohol Concern Wales to carry out a literature synthesis to help inform efforts to influence the drinking culture in Wales. We have identified policies and interventions that have been shown to have an effect on drinking behaviour and culture across the world. We are particularly interested in non-dependent drinkers.

We are seeking views from a range of individuals to help us to consider the implications of our findings for Wales. This is an informal consultation process. We are interested in your views as someone with relevant expertise or experience.

We will contact you by telephone within the next couple of weeks. We will be particularly interested in discussing the following topics that have emerged from the evidence base:

Population level measures

- Rigorous enforcement of existing regulations
- Reduction of blood alcohol limits for driving
- Reduction in off-sales availability
- Reduction of on-premises availability
- Restriction of advertising and other alcohol promotion
- Increasing alcohol duty or minimum pricing

Individual level interventions

- Availability of brief interventions
- Availability of treatment for dependent drinkers

Welsh context

- Gauging the consequences of the problem in Wales
- The nature of Welsh drinking culture
- The opportunity to have Wales only policies
- 'Ideal world' policies.
- Priorities for future service development

Thank you in advance for any help you can offer. If you would like further information, please contact Dr Catherine Robinson

catherine.robinson@bangor.ac.uk

Prof Rob Poole

Prof Odette Parry

Dr Lynne Kennedy

Prof Karen Tocque

Glyndŵr University, Wrexham

Dr Catherine Robinson

Bangor University

Consultation prompts

The discussion is confidential and consultees will not be identified. We will identify key themes.

Welsh language issues need to be raised repeatedly, rather than as an isolated question

1. Engagement with alcohol as a problem –
 - What do you think about the issue of alcohol as a problem in Wales?
 - How big a problem is it in Wales?
 - What sorts of consequences are there?
 - Are there particular groups of concern?
2. In an ideal world how might this be changed?
3. Enforcement –
 - What do you think about increasing enforcement of existing regulations?
4. What do you think about reducing the blood alcohol limits from 80 mg/100ml to 50mg/100ml in line with most other European countries?
5. What do you think about the effect of increasing the cost of alcohol in Wales?
6. What do you think about reducing off-sales availability of alcohol? What about licensed premises?
7. Have you thoughts about controlling alcohol advertising and other marketing promotion?
8. Have you any comment about the availability of brief interventions?
9. What do you think about the availability of treatment for dependent drinkers?
10. How would you characterise Welsh drinking culture?

11. What do you think about introducing alcohol policies specific to Wales? (rather than waiting for a Westminster lead or initiative?)
12. What extra or different things are there to consider in changing the drinking culture in Wales?
13. Where could future developments to address alcohol misuse in Wales be most usefully directed (for example: alcohol dependency services, research, statutory services, the voluntary sector etc)?
14. Any other thoughts/reflections/ideas.

REFERENCES

- Aasland, O. G., Nygaard, P., & Nilsen, P. (2008). The long and winding road to widespread implementation of screening and brief intervention for alcohol problems: A historical overview with special attention to the WHO initiatives. *Nordic Studies on Alcohol and Drugs*, 25(6), 469-476.
- Academic ED SBIRT Research Collaborative. (2007). The impact of screening, brief intervention, and referral for treatment on emergency department patients' alcohol use. *Annals of Emergency Medicine*, 50(6), 699; e-710.
- Agostinelli, G., & Grube, J. W. (2002). Alcohol counter-advertising and the media. A review of recent research. *Alcohol Research & Health: The Journal of the National Institute on Alcohol Abuse & Alcoholism*, 26(1), 15-21.
- American Academy of Pediatrics: Committee on Substance Abuse. (2001). Alcohol use and abuse: A pediatric concern. *Pediatrics*, 108(1), 185-189.
- American Academy of Pediatrics: Committee on Substance Abuse. (2010). Alcohol use by youth and adolescents: A pediatric concern. *Pediatrics*, 125(5), 1078-1087.
- Anderson, P. (2007). A safe, sensible and social AHRSE: New labour and alcohol policy. *Addiction*, 102(10), 1515-1521.
- Anderson, P. (2009a). Global alcohol policy and the alcohol industry. *Current Opinion in Psychiatry*, 22(3), 253-257.
- Anderson, P. (2009b). Is it time to ban alcohol advertising?. *Clinical Medicine*, 9(2), 121-124.
- Anderson, P., & Baumberg, B. (2006). *Alcohol in europe: A public health perspective*. London: Institute of Alcohol Studies.
- Anderson, P., Chisholm, D., & Fuhr, D. C. (2009). Effectiveness and cost-effectiveness of policies and programmes to reduce the harm caused by alcohol. *Lancet*, 373(9682), 2234-2246.
- Anderson, P., de Bruijn, A., Angus, K., Gordon, R., & Hastings, G. (2009). Impact of alcohol advertising and media exposure on adolescent alcohol use. *Alcohol and Alcoholism*, 44(3), 229-243.
- Babor, T., Caetano, R., Casswell, S., Edwards, G., Giesbrecht, N., Graham, K., Rossow, I. (2010). *Alcohol: No ordinary commodity*. (2nd ed.). Oxford: Oxford University Press.

- Barry, A. E., & Goodson, P. (2010). Use (and misuse) of the responsible drinking message in public health and alcohol advertising: A review. *Health Education & Behavior, 37*(2), 288-303.
- Barton, A. (2011). Screening and brief intervention of detainees for alcohol use: A social crime prevention approach to combating alcohol-related crime? *Howard Journal of Criminal Justice, 50*(1), 62-74.
- Beers, T., Hohman, M., Slack, K., Sisneros, D., & Woodruff, S. I. (2009). Brief telephone-based interventions for clients with alcohol and other drug abuse problems. In A. Browne-Miller (Ed.), *The Praeger international collection on addictions, vol 3: Characteristics and treatment perspectives.* (pp. 289-304). xxviii, 446 pp. Santa Barbara, CA, US: Praeger/ABC-CLIO; US.
- Bellis, M. A., Hughes, K., Morleo, M., Tocque, K., Hughes, S., Allen, T., Harrison, D., & Fe-Rodriguez, E. (2007). Predictors of risky alcohol consumption in schoolchildren and their implications for preventing alcohol-related harm. *Substance Abuse Treatment, Prevention, and Policy, 2*, 15.
- Berman, M., Hull, T., & May, P. (2000). Alcohol control and injury death in Alaska native communities: Wet, damp and dry under Alaska's local option law. *Journal of Studies on Alcohol, 61*(2), 311-319.
- Bertholet, N., Daepfen, J., Wietlisbach, V., Fleming, M., & Burnand, B. (2005). Reduction of alcohol consumption by brief alcohol intervention in primary care: Systematic review and meta-analysis. *Archives of Internal Medicine, 165*(9), 986-995.
- Bewick, B. M., Trusler, K., Barkham, M., Hill, A. J., Cahill, J., & Mulhern, B. (2008). The effectiveness of web-based interventions designed to decrease alcohol consumption--a systematic review. *Preventive Medicine, 47*(1), 17-26.
- Bischof, G., Grothues, J. M., Reinhardt, S., Meyer, C., John, U., & Rumpf, H. (2008). Evaluation of a telephone-based stepped care intervention for alcohol-related disorders: A randomized controlled trial. *Drug and Alcohol Dependence, 93*(3), 244-251.
- Booth, A., Meier, P., Stockwell, T., Sutton, A., Wilkinson, A., Wong, R., Taylor, K. (2008). Independent review of the effects of alcohol pricing and promotion. part A: Systematic reviews. Sheffield: School of Health and Related Research, University of Sheffield.
- Brennan, A., Purshouse, R., Rafia, R., Taylor, K., & Meier, P. (2008). Independent review of the effects of alcohol pricing and promotion. part B: Modelling the potential impact of pricing and promotion policies for alcohol in England:

Results from the sheffield alcohol policy model. Sheffield: School of Health and Related Research, University of Sheffield.

- Brown, N., Newbury-Birch, D., McGovern, R., Phinn, E., & Kaner, E. (2010). Alcohol screening and brief intervention in a policing context: A mixed methods feasibility study. *Drug and Alcohol Review*, 29(6), 647-654.
- Brown, R. L., Saunders, L. A., Bobula, J. A., Mundt, M. P., & Koch, P. E. (2007). Randomized-controlled trial of a telephone and mail intervention for alcohol use disorders: Three-month drinking outcomes. *Alcoholism: Clinical and Experimental Research*, 31(8), 1372-1379.
- Bywood, P. T., Lunnay, B., & Roche, A. M. (2008). Strategies for facilitating change in alcohol and other drugs (AOD) professional practice: A systematic review of the effectiveness of reminders and feedback. *Drug and Alcohol Review*, 27(5), 548-558. doi:10.1080/09595230802245535
- Casswell, S. (1995). Does alcohol advertising have an impact on the public health? *Drug and Alcohol Review*, 14(4), 395-404.
- Casswell, S. (1997). Public discourse on alcohol. *Health Promotion International*, 12(3), 251-257.
- Chan, K. K. (2007). A brief intervention for screened problem drinking in an employee assistance program. (Dissertation Abstract: 2007-99002-097) .
- Chang, G., McNamara, T. K., Orav, E. J., Koby, D., Lavigne, A., Ludman, B., Wilkins-Haug, L. (2005). Brief intervention for prenatal alcohol use: A randomized trial. *Obstetrics & Gynecology*, 105(5 Pt 1), 991-998.
- Chief Medical Officer for Wales (2009). You, Your Child, and Alcohol. Cardiff, Health Challenge Wales.
<http://wales.gov.uk/topics/health/ocmo/publications/position/alcohol/;jsessionid=C1w7TLWVj14C9qd07mD1FsT> Accessed 27th June 2011.
- Chisholm, D., Rehm, J., Van Ommeren, M., & Monteiro, M. (2004). Reducing the global burden of hazardous alcohol use: A comparative cost-effectiveness analysis. *Journal of Studies on Alcohol*, 65(6), 782-793.
- Coren, E., & Fisher, M. (2006). The conduct of systematic research reviews for SCIE knowledge reviews. London: Social Care Institute for Excellence.
- Coulton, S (2010): Alcohol misuse. *Clinical Evidence*.
<http://clinicalevidence.bmj.com/cweb/conditions/conditions.jsp> Accessed 27th.

- Dent, C. W., Grube, J. W., & Biglan, A. (2005). Community level alcohol availability and enforcement of possession laws as predictors of youth drinking. *Preventive Medicine, 40*(3), 355-362.
- Department of Health. (2010). *Healthy lives, healthy people: Our strategy for public health in England*. London: The Stationary Office.
- Dieperink, E., Ho, S. B., Heit, S., Durfee, J. M., Thuras, P., & Willenbring, M. L. (2010). Significant reductions in drinking following brief alcohol treatment provided in a hepatitis C clinic. *Psychosomatics, 51*(2), 149-156.
- Dill, P. L., Wells-Parker, E., & Soderstrom, C. A. (2004). The emergency care setting for screening and intervention for alcohol use problems among injured and high-risk drivers: A review. *Traffic Injury Prevention, 5*(3), 278-291.
- Ditter, S. M., Elder, R. W., Shults, R. A., Sleet, D. A., Compton, R., Nichols, J. L., & Task Force on Community Preventive Services. (2005). Effectiveness of designated driver programs for reducing alcohol-impaired driving: A systematic review. *American Journal of Preventive Medicine, 28*(5 Suppl), 280-287.
- Doran, C. M., Hall, W. D., Shakeshaft, A. P., Vos, T., & Cobiac, L. J. (2010). Alcohol policy reform in Australia: What can we learn from the evidence?. *Medical Journal of Australia, 192*(8), 468-470.
- Eberhard, S., Nordstrom, G., Hoglund, P., & Ojehagen, A. (2009). Secondary prevention of hazardous alcohol consumption in psychiatric out-patients: A randomised controlled study. *Social Psychiatry and Psychiatric Epidemiology, 44*(12), 1013-1021.
- Elder, R. W., Lawrence, B., Ferguson, A., Naimi, T. S., Brewer, R. D., Chattopadhyay, S. K., Task Force on Community Preventive Services. (2010). The effectiveness of tax policy interventions for reducing excessive alcohol consumption and related harms. *American Journal of Preventive Medicine, 38*(2), 217-229.
- Elder, R. W., Shults, R. A., Sleet, D. A., Nichols, J. L., Thompson, R. S., Rajab, W., & Task Force on Community Preventive Services. (2004). Effectiveness of mass media campaigns for reducing drinking and driving and alcohol-involved crashes: A systematic review. *American Journal of Preventive Medicine, 27*(1), 57-65.
- Elder, R. W., Voas, R., Beirness, D., Shults, R. A., Sleet, D. A., Nichols, J. L., Compton, R. and Task Force on Community Preventive Services (2011). Effectiveness of ignition interlocks for preventing alcohol-impaired driving and

- alcohol-related crashes A Community Guide systematic review. *American Journal of Preventive Medicine*, 40(3), 362-376.
- Engels, R. C., Hermans, R., van Baaren, R. B., Hollenstein, T., & Bot, S. M. (2009). Alcohol portrayal on television affects actual drinking behaviour. *Alcohol & Alcoholism*, 44(3), 244-249.
- EPPI-Centre (2007) EPPI-Centre methods for conducting systematic reviews. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London. <http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=89> Accessed 27th June 2011.
- Escoffery, C., Miner, K. R., Adame, D. D., Butler, S., & McCormick, L. (2005). Drinking and driving among college students: The influence of alcohol-control policies. *Journal of American College Health*, 53(4), 192.
- Europa (2008). *An EU strategy to support Member States in reducing alcohol-related harm*. COM(2006) 625. http://europa.eu/legislation_summaries/public_health/health_determinants_life_style/c11564b_en.htm . Accessed 28th June 2011.
- Fleming, M. F. (2003). Brief interventions and the treatment of alcohol use disorders: Current evidence. In M.. Galanter (Ed.), *Recent developments in alcoholism*, volume 16: Research on alcoholism treatment (pp. 375-390). New York, NY, US: Kluwer Academic/Plenum Publishers; US.
- Fleming, M. F., Lund, M. R., Wilton, G., Landry, M., & Scheets, D. (2008). The healthy moms study: The efficacy of brief alcohol intervention in postpartum women. *Alcoholism: Clinical & Experimental Research*, 32(9), 1600-1606.
- Fleming, M., Brown, R., & Brown, D. (2004). The efficacy of a brief alcohol intervention combined with %CDT feedback in patients being treated for type 2 diabetes and/or hypertension. *Journal of Studies on Alcohol*, 65(5), 631-637.
- Giesbrecht, N. (2000). Roles of commercial interests in alcohol policies: Recent developments in north america. *Addiction*, 95 Suppl 4(Suppl 4), S581-95.
- Giesbrecht, N. (2008). Recent developments in overall alcohol consumption and high risk drinking: A case for effective population level interventions in canada. *Adicciones*, 20(3), 207-219.
- Giesbrecht, N., & Greenfield, T. K. (2003). Preventing alcohol-related problems in the US through policy: Media campaigns, regulatory approaches and environmental interventions. *The Journal of Primary Prevention*, 24(1), 63-104.

- Giesbrecht, N., & Thomas, G. (2010). A complex picture: Trends in alcohol consumption, harms and policy: Canada 1990-2010. *Nordic Studies on Alcohol and Drugs*, 27(5), 515-538.
- Gordon, R., Harris, F., Mackintosh, A. M., & Moodie, C. (2011). Assessing the cumulative impact of alcohol marketing on young people's drinking: Cross-sectional data findings. *Addiction Research & Theory*, 19(1), 66-75.
- Gordon, R., MacKintosh, A. M., & Moodie, C. (2010). The impact of alcohol marketing on youth drinking behaviour: A two-stage cohort study. *Alcohol and Alcoholism*,
- Gould, E. (2005). Trade treaties and alcohol advertising policies. *Journal of Public Health Policy*, 26, 359-376.
- Gould, E., & Schacter, N. (2002). Trade liberalisation and its impact on alcohol policy. *SAIS Review*, 12(1), 119-139.
- Graham, L. J., & MacKinnon, D. (2010). Grasping the thistle: The role of alcohol brief interventions in Scottish alcohol policy. *Drug and Alcohol Review*, 29(6), 603-607.
- Gray, D., Siggers, S., Atkinson, D., Sputore, B., & Bourbon, D. (2000). Beating the grog: An evaluation of the Tennant Creek liquor licensing restrictions. *Australian and New Zealand Journal of Public Health*, 24(1), 39-44.
- Grube, J. W., & Waiters, E. (2005). Alcohol in the media: Content and effects on drinking beliefs and behaviors among youth. *Adolescent Medicine Clinics*, 16(2), 327-343.
- Harden, A., & Thomas, J. (2005). Methodological issues in combining diverse study types in systematic reviews. *International Journal of Social Research Methodology*, 8(3), 257-271.
- Hastings, G., Anderson, S., Cooke, E., & Gordon, R. (2005). Alcohol marketing and young people's drinking: A review of the research. *Journal of Public Health Policy*, 26(3), 296-311.
- Hastings, G., Brooks, O., Stead, M., Angus, K., Anker, T., & Farrell, T. (2010). Failure of self regulation of UK alcohol advertising. *BMJ*, 340, b5650.
- Heeb, J. L., Gmel, G., Zurbrugg, C., Kuo, M., & Rehm, J. (2003). Changes in alcohol consumption following a reduction in the price of spirits: A natural experiment in Switzerland. *Addiction*, 98(10), 1433-1446.
- Hill, L., & Casswell, S. (2001). Alcohol advertising and sponsorship: Commercial freedom or control in the public interest? In N. Heather, T. J. Peters & T.

- Stockwell (Eds.), *International handbook of alcohol dependence and problems* (pp. 823-846). New York: John Wiley.
- Hulse, G. K., & Tait, R. J. (2002). Six-month outcomes associated with a brief alcohol intervention for adult in-patients with psychiatric disorders. *Drug and Alcohol Review*, 21(2), 105-112.
- Hulse, G. K., & Tait, R. J. (2003). Five-year outcomes of a brief alcohol intervention for adult in-patients with psychiatric disorders. *Addiction*, 98(8), 1061-1068.
- Institute for Alcohol Studies (2009). *The Impact of Alcohol on the NHS*. IAS Fact sheet. Cambridge: IAS. <http://www.ias.org.uk/resources/factsheets/nhs.pdf> Accessed 24th June 2011.
- Jenkins, R. J., McAlaney, J., & McCambridge, J. (2009). Change over time in alcohol consumption in control groups in brief intervention studies: Systematic review and meta-regression study. *Drug & Alcohol Dependence*, 100(1-2), 107-114.
- Jones, S. C., & Donovan, R. J. (2002). Self-regulation of advertising; is it working for Australia? *Journal of Public Affairs*, 2(3), 153-165.
- Jones, S. C., & Gregory, P. (2009). The impact of more visible standard drink labelling on youth alcohol consumption: Helping young people drink (ir)responsibly? *Drug and Alcohol Review*, 28(3), 230-234.
doi:<http://dx.doi.org/10.1111/j.1465-3362.2008.00020.x>
- Jones, S. C., Hall, D., & Munro, G. (2008). How effective is the revised regulatory code for alcohol advertising in Australia? *Drug and Alcohol Review*, 27(1), 29-38.
- Kaner, E. (2010). NICE work if you can get it: Development of national guidance incorporating screening and brief intervention to prevent hazardous and harmful drinking in England. *Drug and Alcohol Review*, 29(6), 589-595.
- Kaner, E. F. S., Dickinson, H. O., Beyer, F. R., Campbell, F., Schlesinger, C., Heather, N., Pienaar, E. D. (2007). Effectiveness of brief alcohol interventions in primary care populations. *Cochrane Database of Systematic Reviews*, (2)
- Kaner, E. F., Dickinson, H. O., Beyer, F., Pienaar, E., Schlesinger, C., Campbell, F., Heather, N. (2009). The effectiveness of brief alcohol interventions in primary care settings: A systematic review. *Drug and Alcohol Review*, 28(3), 301-323.
- Khadjesari, Z., Murray, E., Hewitt, C., Hartley, S., & Godfrey, C. (2011). Can stand-alone computer-based interventions reduce alcohol consumption? A systematic review. *Addiction*, 106(2), 267-282.

- Kypri, K., Hallett, J., Howat, P., McManus, A., Maycock, B., Bowe, S., & Horton, N. J. (2009). Randomized controlled trial of proactive web-based alcohol screening and brief intervention for university students. *Archives of Internal Medicine*, 169(16), 1508-1514.
- Kypri, K., Langlely, J. D., Saunders, J. B., Cashell-Smith, M. L., & Herbison, P. (2008). Randomized controlled trial of web-based alcohol screening and brief intervention in primary care. *Archives of Internal Medicine*, 168(5), 530-536.
- Lavoie, D. (2010). Alcohol identification and brief advice in England: A major plank in alcohol harm reduction policy. *Drug and Alcohol Review*, 29(6), 608-611.
- Lemstra, M., Bennett, N., Nannapaneni, U., Neudorf, C., Warren, L., Kershaw, T., & Scott, C. (2010). A systematic review of school-based marijuana and alcohol prevention programs targeting adolescents aged 10–15. *Addiction Research & Theory*, 18(1), 84-96.
- Linke, S., McCambridge, J., Khadjesari, Z., Wallace, P., Murray, E. & Shenker, D. (2011) *downyourdrink* <http://www.downyourdrink.org.uk/index.jsp> Accessed 27th June 2011.
- McBride, N., Farrington, F., Midford, R., Meuleners, L., & Phillips, M. (2004). Harm minimization in school drug education: Final results of the school health and alcohol harm reduction project (SHAHRP). *Addiction*, 99(3), 278-291.
- McCambridge, J., & Kypri, K. (2009). Does simply asking questions change behavior? a systematic review of brief alcohol intervention trial data. *Alcoholism-Clinical and Experimental Research*, 33(6), 275A-275A.
- Mcmanus, S., Hipkins, J., Haddad, P., Guthrie, E., & Creed, F. (2003). Implementing an effective intervention for problem drinkers on medical wards. *General Hospital Psychiatry*, 25(5), 332-337.
- McQueen, J., Howe, T. E., Allan, L., & Mains, D. (2009). Brief interventions for heavy alcohol users admitted to general hospital wards. *Cochrane Database of Systematic Reviews*, (3)
- Meier, P. S. (2011). Alcohol marketing research: The need for a new agenda. *Addiction*, 106(3), 466-471.
- Meier, P. S., Purshouse, R., & Brennan, A. (2010a). Policy options for alcohol price regulation: Response to the commentaries. *Addiction*, 105(3), 400-401.
- Meier, P. S., Purshouse, R., & Brennan, A. (2010b). Policy options for alcohol price regulation: The importance of modelling population heterogeneity. *Addiction*, 105(3), 383-393.

- Mello, M. J., Longabaugh, R., Baird, J., Nirenberg, T., & Woolard, R. (2008). DIAL: A telephone brief intervention for high-risk alcohol use with injured emergency department patients. *Annals of Emergency Medicine*, 51(6), 755-764.
- Monti, P. M., Tevyaw, T. O., & Borsari, B. (2005). Drinking among young adults: Screening, brief intervention, and outcome. *Alcohol Research & Health*, 28(4), 236-244.
- Morgenstern, M., Isensee, B., Sargent, J. D., & Hanewinkel, R. (2011). Exposure to alcohol advertising and teen drinking. *Preventive Medicine: An International Journal Devoted to Practice and Theory*, 52(2), 146-151.
- Munro, G., & de Wever, J. (2008). Culture clash: Alcohol marketing and public health aspirations. *Drug and Alcohol Review*, 27(2), 204-211.
- Neighbors, C. J., Barnett, N. P., Rohsenow, D. J., Colby, S. M., & Monti, P. M. (2010). Cost-effectiveness of a motivational intervention for alcohol-involved youth in a hospital emergency department. *Journal of Studies on Alcohol & Drugs*, 71(3), 384-394.
- Nelson, J. P. (2010a). Alcohol advertising bans, consumption, and control policies in seventeen OECD countries, 1975-2000. *Applied Economics*, 42(7), 803-823.
- Nelson, J. P. (2010b). What is learned from longitudinal studies of advertising and youth drinking and smoking? A critical assessment. *International Journal of Environmental Research & Public Health [Electronic Resource]*, 7(3), 870-926.
- Nelson, J. P., & Young, D. J. (2001). Do advertising bans work? an international comparison. *International Journal of Advertising*, 20, 273-296.
- Nilsen, P. (2009). Brief alcohol intervention—where to from here? challenges remain for research and practice. *Addiction*, 105, 954-959.
- Nilssen, O. (2004). Long-term effect of brief intervention in at-risk alcohol drinkers: A 9-year follow-up study. *Alcohol and Alcoholism*, 39(6), 548-551.
- Nyamathi, A., Shoptaw, S., Cohen, A., Greengold, B., Nyamathi, K., Marfisee, M., . . . Leake, B. (2010). Effect of motivational interviewing on reduction of alcohol use. *Drug & Alcohol Dependence*, 107(1), 23-30.
- O'Connor, M. J., & Whaley, S. E. (2007). Brief intervention for alcohol use by pregnant women. *American Journal of Public Health*, 97(2), 252-258.
- Ockene, J. K., Reed, G. W., & Reiff-Hekking, S. (2009). Brief patient-centered clinician-delivered counseling for high-risk drinking: 4-year results. *Annals of Behavioral Medicine*, 37(3), 335-342.

- Osilla, K. C., dela Cruz, E., Miles, J. N. V., Zellmer, S., Watkins, K., Larimer, M. E., & Marlatt, G. A. (2010). Exploring productivity outcomes from a brief intervention for at-risk drinking in an employee assistance program. *Addictive Behaviors*, 35(3), 194-200.
- Osterberg, E. (2001). Effects of price and taxation. In N. Heather, T. J. Peters & T. Stockwell (Eds.), *International handbook of alcohol dependence and problems* (pp. 685-698). New York, NY, US: John Wiley & Sons Ltd; US.
- Pacula, R. L., & Chaloupka, F. J. (2001). The effects of macro-level interventions on addictive behavior. *Substance use & Misuse*, 36(13), 1901-1922.
- Parry, C. (2010). Alcohol policy in South Africa: A review of policy development processes between 1994 and 2009. *Addiction*, 105(8), 1340-1345.
- Popova, S., Giesbrecht, N., Bekmuradov, D., & Patra, J. (2009). Hours and days of sale and density of alcohol outlets: Impacts on alcohol consumption and damage: A systematic review. *Alcohol and Alcoholism*, 44(5), 500-516.
- Purshouse, R. C., Meier, P. S., Brennan, A., Taylor, K. B., & Rafia, R. (2010). Estimated effect of alcohol pricing policies on health and health economic outcomes in England: An epidemiological model. *The Lancet*, 375(9723), 1355-1364.
- Quanbeck, A., Lang, K., Enami, K., & Brown, R. L. (2010). A cost-benefit analysis of wisconsin's screening, brief intervention, and referral to treatment program: Adding the employer's perspective. *WMJ*, 109(1), 9-14.
- Record, C., & Day, C. (2009). Britain's alcohol market: How minimum alcohol prices could stop moderate drinkers subsidising those drinking at hazardous and harmful levels. *Clinical Medicine*, 9(5), 421-425.
- Rodriguez-Martos, A., & Castellano, Y. (2009). Web-based screening and advice for hazardous drinkers: Use of a Spanish site. *Drug and Alcohol Review*, 28(1), 54-59.
- Romano, E., Cano, S., Lauer, E., Jiménez, A., Voas, R. B., & Lange, J. E. (2004). Tijuana alcohol control policies: A response to cross-border high-risk drinking by young Americans. *Prevention Science*, 5(2), 127-134.
- Rose, G. L., MacLean, C. D., Skelly, J., Badger, G. J., Ferraro, T. A., & Helzer, J. E. (2010). Interactive voice response technology can deliver alcohol screening and brief intervention in primary care. *Journal of General Internal Medicine*, 25(4), 340-344.

- Saffer, H. (2002). Alcohol advertising and youth. *Journal of Studies on Alcohol - Supplement*, (14), 173-181.
- Saffer, H., & Dave, D. (2002). Alcohol consumption and advertising bans. *Applied Economics*, 34(11), 1325-1334.
- Saitz, R. (2010). Alcohol screening and brief intervention in primary care: Absence of evidence for efficacy in people with dependence or very heavy drinking. *Drug and Alcohol Review*, 29(6), 631-640.
- Saitz, R., Helmuth, E. D., Aromaa, S. E., Guard, A., Belanger, M., & Rosenbloom, D. L. (2004). Web-based screening and brief intervention for the spectrum of alcohol problems. *Preventive Medicine: An International Journal Devoted to Practice and Theory*, 39(5), 969-975.
- Sandelowski, M., & Barroso, J. (2007). *Handbook for synthesizing qualitative research*. New York, NY: Springer Publishing Co.
- Smith, A. J., Hodgson, R. J., Bridgeman, K., & Shepherd, J. P. (2003). A randomized controlled trial of a brief intervention after alcohol-related facial injury. *Addiction*, 98(1), 43-52.
- Smith, A. J., Shepherd, J. P., & Hodgson, R. J. (1998). Brief interventions for patients with alcohol-related trauma. *British Journal of Oral & Maxillofacial Surgery*, 36(6), 408-415.
- Smith, L. A., & Foxcroft, D. R. (2009). The effect of alcohol advertising, marketing and portrayal on drinking behaviour in young people: Systematic review of prospective cohort studies. *BMC Public Health*, 9, 51.
- Smith, S. W., Atkin, C. K., & Roznowski, J. (2006). Are "drink responsibly" alcohol campaigns strategically ambiguous?. *Health Communication*, 20(1), 1-11.
- Stein, M. D., Anderson, B., Charuvastra, A., Maksad, J., & Friedmann, P. D. (2002). A brief intervention for hazardous drinkers in a needle exchange program. *Journal of Substance Abuse Treatment*, 22(1), 23-31.
- Vaca, F., Winn, D., Anderson, C., Kim, D., & Arcila, M. (2010). Feasibility of emergency department bilingual computerized alcohol screening, brief intervention, and referral to treatment. *Substance Abuse*, 31(4), 264-269.
- Vasilaki, E. I., Hosier, S. G., & Cox, W. M. (2006). The efficacy of motivational interviewing as a brief intervention for excessive drinking: A meta-analytic review. *Alcohol and Alcoholism*, 41(3), 328-335.

- Wachtel, T., & Staniford, M. (2010). The effectiveness of brief interventions in the clinical setting in reducing alcohol misuse and binge drinking in adolescents: A critical review of the literature. *Journal of Clinical Nursing*, 19(5-6), 605-620.
- Wagenaar, A. C., & Toomey, T. L. (2002). Effects of minimum drinking age laws: Review and analyses of the literature from 1960 to 2000. *Journal of Studies on Alcohol*, 14(14), 206-225.
- Wagenaar, A. C., Salois, M. J., & Komro, K. A. (2008). Effects of beverage alcohol price and tax levels on drinking: A meta-analysis of 1003 estimates from 112 studies. Presented at the 34th Annual Alcohol Epidemiology Symposium of the Kettil Bruun Society for Social and Epidemiological Research on Alcohol. Victoria, British Columbia. June 2-6, 2008.
- Wagenaar, A. C., Salois, M. J., & Komro, K. A. (2009). Effects of beverage alcohol price and tax levels on drinking: A meta-analysis of 1003 estimates from 112 studies. *Addiction*, 104(2), 179-190.
- Wagenaar, A. C., Tobler, A. L., & Komro, K. A. (2010). Effects of alcohol tax and price policies on morbidity and mortality: A systematic review. *American Journal of Public Health*, 100(11), 2270-2278.
- Wales Centre for Health (2009). A profile of alcohol and health in Wales. Cardiff: Wales Centre for Health.
- Watt, K., Shepherd, J., & Newcombe, R. (2008). Drunk and dangerous: A randomised controlled trial of alcohol brief intervention for violent offenders. *Journal of Experimental Criminology*, 4(1), 1-19.
- Welsh Assembly Government (2008) Working Together to Reduce Harm: The Substance Misuse Strategy for Wales, 2008-2018. Cardiff, Health Challenge Wales.
<http://wales.gov.uk/topics/housingandcommunity/safety/publications/strategy0818/?lang=en> Accessed 27th June 2011.
- WHO (2007). WHO Expert Committee on problems related to alcohol consumption. WHO Technical Report Series. 2nd report. Geneva; World Health Organization.
http://www.who.int/substance_abuse/expert_committee_alcohol_trs944.pdf Accessed 27th June 2011.
- Wilkinson, C., & Room, R. (2009). Warnings on alcohol containers and advertisements: International experience and evidence on effects. *Drug & Alcohol Review*, 28(4), 426-435. Retrieved from
<http://ovidsp.ovid.com/ovidweb.cgi?T=JS&CSC=Y&NEWS=N&PAGE=fulltext&D=medl&AN=19594797>

- Wilton, G., Moberg, D. P., & Fleming, M. F. (2009). The effect of brief alcohol intervention on postpartum depression. *MCN: The American Journal of Maternal/Child Nursing*, 34(5), 297-302.
- Wolburg, J. M. (2005). How responsible are "responsible" drinking campaigns for preventing alcohol abuse? *Journal of Consumer Marketing*, 22(4), 176-177.
- Wutzke, S. E., Conigrave, K. M., Saunders, J. B., & Hall, W. D. (2002). The long-term effectiveness of brief interventions for unsafe alcohol consumption: A 10-year follow-up. *Addiction*, 97(6), 665-675.