MENTAL HEALTH IN NEW ZEALAND FROM A PUBLIC HEALTH PERSPECTIVE

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CHAPTER 14:  
ALCOHOL DEPENDENCE

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Use of alcohol can result in harmful mental health consequences for individuals, their families, friends and colleagues. These consequences include not only alcohol dependence, but also dementia, cognitive dysfunction, hallucinations, paranoid states and delirium tremens, anxiety, depression and phobias also associated with heavy chronic or dependent drinking (Ritson 1991). Some people use alcohol to lessen symptoms of their mental illness with further consequences for their mental health, and it may be combined with dependence on other drugs.

This chapter examines what strategies are available to reduce the impact of alcohol consumption on the mental health status of the New Zealand population. Emphasis is on alcohol dependence, but the strategies to reduce its antecedents are likely to have an effect on alleviating other alcohol-related mental health problems.

RISK AND PROTECTIVE FACTORS FOR ALCOHOL DEPENDENCE

Several factors increase the risk of a person experiencing alcohol dependence at some time during their drinking career.

DRINKING LARGE QUANTITIES

The major risk factor for alcohol-associated problems is quantity and frequency of alcohol consumed, with a dose-response relationship for many conditions. Research has consistently shown higher alcohol dependence rates for heavier drinkers, or for higher average consumption (Babor et al 1987; Midanik 1995). Acute consequences, such as drunkenness or alcohol-related assault, are associated with consumption of large amounts in a particular session.

There is some evidence for a threshold effect for the effects of physical dependence; this occurs above about 40 grams of absolute alcohol a day (four standard drinks) for women, and 60 grams (six standard drinks) for men (Wyllie et al 1993a). There is no evidence of a threshold effect for phenomena related to psychological dependence, such as getting drunk when there is an important reason to stay sober (Edwards et al 1994). At a consumption level of an average 20 grams a day, 10 percent of drinkers surveyed in the United States reported dependence on alcohol (Midanik 1995).

Patterns of drinking are considered important predictors of problems, particularly the frequency of drinking large amounts and experience of intoxication (Midanik 1995). For any given volume of drinking, problems are strongly related to the proportion of occasions at which five or more drinks are
consumed. This is after controlling for demographics, family history of alcohol problems and age at first drink (Dawson and Archer 1993). Therefore, the most significant protective factor is for the individual to reduce drinking. However, there is variation in what is considered to constitute low-risk drinking.

**GENETICS**

An intergenerational effect is clear in developing a diagnosis of alcohol dependence: being a child of a parent experiencing such problems is a significant risk factor. A causal role for genetics is supported through human twin and adoption studies and other research. However, not every individual who inherits the genes will develop alcohol dependence. The extent to which genetic, environmental and learned behaviours in the family interact to increase the risk, is the subject of considerable research (Butterworth 1993). Some predisposing biological markers have been identified and educational strategies suggested to allow high-risk subjects to adapt their lifestyle (Couzigou et al 1993).

**SOCIODEMOGRAPHIC**

Factors significantly increasing vulnerability include being male, young and of low socioeconomic status (SES). In a 1978 survey in New Zealand, higher socioeconomic status drinkers drank more frequently, but smaller amounts on a drinking occasion, compared with lower SES drinkers (Casswell and Gordon 1984). Heavy drinking and alcohol-related problems have also been found to be more common among lower SES respondents in the US (Fillmore and Caetano 1982; Parker and Harford 1987). Drinking can be an escape from depressing financial and employment circumstances and from a sense of cultural dispossession (Awatere et al 1984; Durie 1994). Major life stress events, such as divorce and other loss, can increase vulnerability to heavy drinking for men and women. Problematic substance use for women has also been found to be associated with having a partner who also uses substances heavily, and having been sexually abused (Wisnack 1982; Chetwynd and Pearson 1983; Blume 1986). Men’s drinking also causes problems for women: there is an increased risk of assault from male partners who meet criteria for alcohol dependence (Leonard et al 1985). Reducing problematic drinking among men will have a positive effect not only for them, but also for women and children.

**RISK FACTORS FOR CHILDREN AND ADOLESCENTS**

Parental alcohol problems have been found to increase the risk of alcohol problems in their children (eg, Parker and Harford 1987). Children of parents with severe alcohol problems have been found to display higher levels of problem behaviour than other children (Connolly et al 1993). Emotional and behavioural problems include poor school performance, learning and reading difficulties, aggressive behaviour and psychological and emotional problems (Romelsjö 1995). Peer and family influences, rather than personality characteristics, are considered influential in the onset of substance use for adolescents (Bry 1983; Miller and Ware 1989). Being male, experiencing family breakdown, having childhood conduct disorder symptoms, leaving school early and having early adolescent experiences of drunkenness are predictors of alcohol disorders (Wells et al 1991). Early childhood exposure to alcohol (before age six) and favourable parental attitudes to alcohol are also considered to increase vulnerability to frequent and heavy drinking in adolescence (Fergusson et al 1994).
Heavy drinking during pregnancy by alcohol-dependent women can increase risk of foetal alcohol syndrome (FAS), one characteristic of which is mental retardation in the child. However, most children born to alcohol-dependent mothers do not have the condition. Low socioeconomic status, poverty, poor diet and general health, heavy use of tobacco, illicit drug use, previous obstetric difficulties and possibly paternal heavy drinking are other risk factors (Plant et al 1993). The incidence of FAS in New Zealand is difficult to determine. Less serious, but possibly more prevalent, foetal alcohol effects (FAE) may occur at lower levels of drinking (Romelsjö 1995).

AGE OF ONSET OF DRINKING

The age at which people start to drink has been shown to predict their experience of alcohol-related problems later in life (Chou and Pickering 1992). Adolescents who report drinking in their early teens tend to consume more than those who start drinking later (Gonzalez 1983; Friedman and Humphrey 1985). People who drink large amounts when young are more likely to be heavy drinkers when older (Friedman and Humphrey 1985; Barnes and Welte 1986). Other sociodemographic variables such as sex, ethnicity, marital status and education are not important mediators in drinking experience (Casswell et al 1993; Fergusson et al 1994).

THE ENVIRONMENT SURROUNDING DRINKING

The environment surrounding an individual’s drinking is considered a determinant of risk (Skog 1991). An individual living in a fairly ‘dry’ environment tends to become a light drinker or abstainer. The same individual could become a heavy drinker in a ‘wet’ environment, where alcohol is cheap, easy to come by and an integrated part of daily life (Skog 1985, 1991). Environment is defined broadly, to include not only physical availability of alcohol, but also the cultural, social, political and economic arena within which alcohol consumption and alcohol problems take place (Mosher and Jernigan 1989). Studies indicate that availability, location of drinking, alcohol advertising and social norms around drunkenness may contribute to increased risk.

ALCOHOL AVAILABILITY

When alcohol is more available, more convenient to purchase or more accessible, consumption and alcohol-related problems are usually higher (Bruun et al 1975; Edwards et al 1994). Examination of experimental or other increases or decreases in hours of sale have shown corresponding increases or decreases in problems such as drunkenness and violence (Olsson and Wikstrom 1982; Nordlund 1985; Smith 1987). Drinkers taking advantage of earlier opening hours have been found to consume more than patrons from later-opening hotels (Smith 1986). Since 1990 when the Sale of Liquor Act was passed in New Zealand, police have reported dealing with more drunkenness and other problems in the early morning through to early daytime hours. Some public health representatives have received reports of heavy drinking, including in some cases continuous drinking, by people for close to 48 hours (Hill and Stewart 1996).

Recent studies on outlet density have noted geographical density does have a significant effect on alcohol sales (Wilkinson 1987; Godfrey 1988; Gruenwald et al 1993) and also on traffic injuries (Smith 1989; van Oers and Garretsen 1993). In New Zealand, the number of outlets has increased from around 6200 to over 1100 since 1990. The increase in outlets, combined with longer hours of opening, is considered by some licensing system administrators to be contributing to a change in
drinking patterns. Patrons visit several premises and drink over a longer period of time on each occasion (Hill and Stewart 1996).

The availability of particular beverages is also relevant. When strong beer was experimentally introduced into bars and grocery stores in Sweden, Lenke (1990) found consumption, violence and drunkenness increased among 15–17-year-olds. The experiment was discontinued. The introduction of medium-strength beer into outlets in other North European countries resulted in increased beer consumption and an increase in occasions on which higher blood alcohol levels were reached (Holder 1994).

Alcohol-related traffic fatalities, drunkenness and offending have been found to increase when the minimum drinking age has been lowered (General Accounting Office 1987; O’Malley and Wagenaar 1991). In New Zealand, the legal drinking age is 20, but exemptions and a general lack of enforcement mean the de facto drinking age is 18. Adolescents’ access to alcohol has been shown to have a strong effect on the quantity consumed and on favourable attitudes towards drunkenness. The Dunedin longitudinal study showed 22 percent of 15-year-olds had purchased alcohol themselves, most buying directly from licensed premises (Casswell and Zhang in press). The ability to purchase alcohol and perceived ease of access at age 15 were significant predictors of quantities consumed and related problems at age 18.

PLACE OF DRINKING

The overall frequency of drinking relatively large amounts and the typical quantity drunk in licensed premises (hotels, taverns, and clubs) predict experience of problems (Casswell et al 1993). Sixty-nine percent of those experiencing at least five drinking-related problems in a 12-month period typically drink 40 millilitres or more of absolute alcohol in licensed premises. Of those reporting no problems in the last 12 months, only 18 percent typically consumed that amount. The amount drunk in other people’s homes is also a predictor of problems, but drinking in restaurants and own homes is not (Casswell et al 1993). These figures are similar to findings from Australia and North America (O’Donnell 1985; Hilton 1987, 1989; Single and McKenzie 1989; Perbedy 1991; Lang 1991).

ALCOHOL ADVERTISING

The influence and control of alcohol advertising are controversial and contested (Casswell 1995a). Careful conceptual and methodological critiques on its influence (Atkin 1995; Saffer 1995) have led to a conclusion that advertising has a small contributory impact on drinking behaviour (Edwards et al 1994).

Several studies suggest the influence of alcohol advertising has important implications for young people thinking about drinking alcohol or entering their drinking career. Children and adolescents who respond positively to alcohol advertising intend to drink more frequently as adults (Grube and Wallack 1994; Wyllie et al 1994). Adolescents who recall more advertisements at age 15 tend to drink more at age 18 (Connolly et al 1994).

Individuals trying to stop drinking feel television advertising impedes their recovery, except when in supportive treatment environments (Thomson et al 1994). The sight and sound cues, intrusion of alcohol images into their living-rooms and the association of alcohol with good social times were all considered difficult. People drinking heavily and experiencing problems may be more responsive than non-problem drinkers to such environmental stimuli (Buck 1979; Matthew et al 1979; Sobell et al 1993).
SOCIAL NORMS OF DRINKING AND DRUNKENNESS

Favourable attitudes towards drunkenness are characteristic of many young New Zealanders. In one study, about half of Dunedin 15-year-olds agreed it was ‘OK to get drunk now and again’. Sixty-eight percent indicated they would definitely, or probably, get drunk in the future (Connolly et al 1992). Other studies have confirmed this norm (Awatere et al 1984; Wyllie and Casswell 1987). Not drinking and driving is one of the few acceptable reasons for moderating consumption that young men feel able to give to their peer group (Wyllie and Casswell 1987).

COMORBIDITY AND INFLUENCE ON OTHER MENTAL HEALTH PROBLEMS

Problematic alcohol use is considered to have a high comorbidity with other mental health conditions, although the prevalence is difficult to estimate (Peace and Mellsop 1987; US Department of Health 1990). Depression and alcohol are considered significantly associated. Depression is the leading complicating factor for increased risk of suicide in alcoholics (Murphy and Wetzel 1990). Alcohol and other substance abuse is one of the most common risk factors for suicide. Twenty to 36 percent of suicide victims have been estimated to have a history of alcohol problems, or to be drinking when they suicided (Romelsjö 1995). Alcohol may be used to ameliorate symptoms of other mental health conditions, including obsessive-compulsive and anxiety disorders. Women alcoholics report more depression, panic disorders and phobias than male alcoholics, who are more likely to have antisocial personality disorders (US Department of Health 1990).

ALCOHOL USE COMBINED WITH OTHER DRUGS

Multiple drug use in New Zealand usually involves alcohol, tobacco and marijuana, with the most common combination being alcohol and marijuana (Black and Casswell 1992). Frequent marijuana users are more likely to be heavier users of alcohol, and report higher levels of both alcohol- and marijuana-related problems (Black and Casswell 1992). Treatment agencies have noted an increase in clients seeking help with alcohol and combinations of prescription or illegal drug use (Hughes 1992).

ALCOHOL CONSUMPTION, PROBLEMS AND ALCOHOL DEPENDENCE IN NEW ZEALAND

CONSUMPTION

New Zealand ranks about sixteenth of 31 OECD countries in alcohol consumption. Consumption has decreased from 11.8 litres of absolute alcohol per person aged 15 and over in 1980 to 9.0 litres in 1995 (Statistics New Zealand 1996). Econometric analyses indicate the economic recession and alcohol pricing policy have had a strong effect over these years (Zhang and Casswell, unpublished data). Survey respondents’ reasons for reducing consumption included having less money available. However, more respondents mentioned not wanting to drink and drive, concerns about health and fitness and being more acceptable to drink less as reasons (Wyllie et al 1993b). These factors may be counterbalancing the greater access to alcohol that is occurring through longer licensing hours and an increase in licensed outlets.
As in many other countries, the majority of the New Zealand population drinks relatively little, with a small minority drinking a disproportionately large share. The 1995 national drinking survey of people aged 14 to 65 revealed that 73 percent of the alcohol was consumed by men and 27 percent by women (Wyllie et al 1996). Beer was the most popular beverage for men, and wine for women. Low-alcohol beer and home-brew have accounted for less than 4 percent of consumption in surveys (Wyllie et al 1993b). The median annual level of consumption for the drinking population was 4.2 litres of absolute alcohol per year (men 7.4 litres or a little more than nine drinks/week; women 2.1 litres or just under three drinks/week). The top 10 percent of drinkers drank almost half of the alcohol consumed, or the equivalent of 24 litres of absolute alcohol per year. The top 5 percent of drinkers drank over a third, or 49 litres a year, the equivalent of at least 63 cans of beer per week.

There are different patterns of consumption for Pākehā, Māori and Pacific people. A greater proportion of Māori (27 percent) and Pacific people (53 percent) are abstainers compared to Pākehā (21 percent) (Statistics New Zealand and Ministry of Health 1993). Overall, Māori and Pacific people report drinking less frequently than Pākehā, but drinking more on drinking occasions (Casswell 1980; Statistics New Zealand and Ministry of Health 1993).

Those drinking disproportionately more alcohol are young men aged 18–24 years. It is this group that experiences the most problems (Wyllie et al 1993b; Wyllie et al 1996). Those aged 16–24 years were also the heaviest consumers among women and in accord with this, report the most problems (among women) resulting from their own drinking (Wyllie et al 1993b). However, although young people may be drinking heavily and experiencing problems, general and longitudinal population studies have shown heavy drinking and alcohol problems decrease with age (Fillmore 1987).

Some estimate of the level of alcohol dependence in the general population can be inferred from the frequency of certain symptoms: 5 to 9 percent of men and 1 to 2 percent of women ‘take an alcoholic drink first thing in the morning’ and ‘have hands shake after drinking’ (Wyllie and Casswell 1989; Wyllie et al 1993b; Wyllie et al 1996). Thirty-two percent of men and 6 percent of women, or 19 percent of the population, have been found to meet lifetime criteria for alcohol dependence or abuse in a Christchurch study (Wells et al 1991).

ALCOHOL DEPENDENCE ADMISSIONS

Clinical diagnosis of alcohol dependence is based on criteria that have emerged over the past 20 years (Edwards and Gross 1976; Caetano 1988; Jaffe 1993). Diagnosis is inferred from the presence of behavioural changes in the individual, as well as the presence of tolerance and withdrawal phenomena (Mattick and Jarvis 1993). The diagnostic criteria for dependence are at least three of the following in a 12-month period: tolerance; withdrawal; prolonged and heavy consumption; failure to cut down; excessive time spent related to drinking; reduction in other activities; and continued use despite knowledge of problems being caused, or exacerbated, by the use of the substance (APA 1994). The criteria for alcohol abuse are recurring use that results in a failure or inability to fulfil major obligations at work, school or home; and use when it is physically hazardous or which results in legal or interpersonal problems (APA 1994).

Most people suffering from alcohol dependence do not obtain help, therefore admission rates account for only a proportion of the problem. The continuing trend of out-patient rather than in-patient treatment must be taken into account. Between 1980 and 1993, there was an overall steady decline in first admissions to psychiatric institutions for alcohol dependence and abuse from 31.8 per 100000 to 18.6 (NZHIS 1994). Age-standardised rates for men declined by just under half during this period, from 50
to 26.6 per 100 000 and for women from 13.5 to 10.7 per 100 000. Over this time period, the category of alcohol dependence or abuse averaged 20 percent of first admissions for all causes. From 1990 it showed a decline to 16 percent in 1993 but remained the leading cause for male admissions (NZHIS 1994).

For Māori, alcohol-related admissions to psychiatric institutions increased fourfold between 1970 and 1984, but by 1992 they had fallen by over half for men (Pomare et al 1995). Alcohol dependence or abuse is the leading cause of admission to psychiatric institutions for Māori (24 percent) and non-Māori men (22 percent). It is the second most common cause of admission for Māori women. The Māori rate of admission per 10 000 is twice the non-Māori rate for men and 2.6 times the rate for women. Increases in drug abuse admissions and suicide for Māori, both associated with alcohol problems, have been noted with concern (Pomare et al 1995). Higher alcohol-related morbidity and mortality rates for Māori may reflect differences in patterns of drinking, less access to early intervention services, increased identification as Māori showing in statistics; or an actual increase in alcohol-related mental health conditions (Durie 1994; Te Puni Kōkiri and Kaunihera Whakatupato Waipiro o Aotearoa 1995). Stresses arising from unemployment, low-paid unsatisfying jobs, poverty, racial discrimination and alienation from tikanga Māori have been cited as reasons for heavy consumption among Māori (Awatere et al 1984; Durie 1994).

Alcohol and drug dependence or abuse accounted for 26 percent of all Pacific male admissions for the period 1987 to 1991 (Bathgate et al 1994), and they were the most common reasons for admission for men and, at 14 percent, the third most common reason for Pacific women’s hospital admissions. A rise in problems with alcohol and other drug abuse may occur for a number of reasons. These include low socioeconomic status; stress from high levels of unemployment, overcrowding and lack of money; breakdown of family ties; greater access to alcohol; and stress from trying to live in two cultures, especially for young people (Bridgman 1993; Bathgate et al 1994).

The highest rates of new admissions to out-patient alcohol and drug treatment centres are from the 20–24 years age group at 64 per 10 000, and 59 per 10 000 in the 25–29 years age group. This is consistent with their heavy drinking patterns and self-reported experience of problems in surveys. These rates compare with 26 per 10 000 for the population as a whole (Hughes 1992). These age groups also feature prominently in psychiatric first admissions. Seventy-four percent of new-to-agency alcohol/drug out-patients in 1990 were male. A third of new-to-alcohol and drug-treatment-agency out-patients were unemployed, and nearly 50 percent on a benefit. However, cause and effect is unclear: it is not known if the person’s drinking has led to loss of their job (Hughes 1992).

**REDUCING ALCOHOL DEPENDENCE AND OTHER ALCOHOL-RELATED MENTAL HEALTH PROBLEMS: STRATEGIES FOR PREVENTION**

The evidence shows that all sections of the drinking population increase or decrease their consumption more or less in concert (Bruun et al 1975; Skog 1985; Lemmens et al 1990). To reduce alcohol dependence, heavy drinking levels therefore need to be reduced by the drinking population as a whole, as well as by individual heavy drinkers reducing episodes of intoxication. Intervention strategies can be focused on the host or individual drinker; the environment that surrounds the drinking context; and the agent (alcohol). However, there is overlap in the strategies.
Early Intervention

Only a small percentage of people who meet criteria for alcohol-related problems receive any form of treatment (Wells et al 1991). A review of early intervention research concluded that relatively simple, low-cost screening and intervention procedures in health and other service settings can identify and help a substantial number of drinkers at risk, resulting in long-term reduction in morbidity and health care costs (Bien et al 1993). Screening has been successful in New Zealand (Elvy and Wells 1984; McMenamin 1994). Controlled trials have shown that low-cost simple interventions undertaken by general practitioners or other primary health care staff can achieve modest but reliable effects, especially with the less serious drinker (Babor 1995). Those trials have used self-help manuals, simple advice, brief counselling sessions and discussion of medical diagnostic tests. Findings include significantly less alcohol consumption, reduction in heavy drinking days, improvements in absenteeism, fewer sick and hospitalised days and reductions in mortality. General practitioner treatment can be at least as effective as a specialist treatment with respect to improvements in drinking behaviour and alcohol-related problems (Drummond et al 1990). Prenatal screening and intervention programmes are likely to reduce foetal alcohol effects (Weiner and Larsson 1987; Weiner et al 1989; Waterson and Murray-Lyon 1990; Babor 1995). Supportive educational, self-care and counselling programmes are also required for partners and family.

School-based Education Programmes

Most school-based alcohol education programmes have been based on at least one of three behavioural change models: knowledge/attitudes; values/decision making; and more recently, social competency. The knowledge/attitudes model has been used most widely. It assumes increased knowledge about the consequences of drinking too much alcohol will lead to less drinking. The values/decision making model emphasises the role of alcohol, or other drugs, in fulfilling personal needs and attempts to improve self-esteem, through focusing on personal worth and encouraging responsible decision making. The social competency model assumes individuals abuse substances because they lack appropriate psychosocial skills. The emphasis is on modifying inappropriate behaviour, improving general life skills and providing assertiveness training, to provide the social skills necessary to refuse invitations to use drugs (Moskowitz 1989).

Reviews of programmes using these models have noted methodological shortcomings in evaluations. However, they have concluded that while many were successful in increasing knowledge, very few influenced attitudes and even fewer resulted in any consistent, measurable impact on consumption (Moskowitz 1989; Gerstein and Green 1993). Despite these findings, considerable funding and support in New Zealand and other countries have gone towards programmes such as Life Education, which is based on the first two models. A recent evaluation of Life Education in Australia indicated it was largely ineffective in its aims (Hawthorne et al 1995).

It has been suggested that these models tend to be ineffective because they ignore, or are unable to substantially influence, the known predictors of drug experimentation and use (Hawthorne et al 1995). These include availability, positive parental attitudes to alcohol, experimenting with adult roles, friendship, curiosity, relaxation and enjoyment. Peer pressure, socioeconomic status, delinquent...
behaviour, home environment and coping strategies have been identified as factors that also influence adolescents trying out drugs (Connolly et al 1992; Hawthorne et al 1995). It is also difficult for education programmes to effectively communicate their message in a social climate that supports alcohol use.

Another approach is that of Healthy Schools, promoted by the World Health Organization since 1984 and enjoying increasing attention in many countries. Schools are seen as important settings for the development of health. In New Zealand, the framework for this has been based on the Ottawa Charter’s principles of health promotion (PHC 1994, 1995). The programme encourages the school to provide not only health education and skills development but also a healthy social and physical environment. School health, support and counselling services; school and community projects and outreach; nutrition and food programmes; and physical exercise and recreation opportunities are also part of the approach (WHO 1995). In relation to alcohol, this might include having a school policy to control alcohol supply and promotion at school functions and on the sports ground. It is a broader and more integrated approach, but will have more chance of success if the policy and social environment support drinking less.

Controls on Alcohol Advertising

Options for control range from legislative bans to self-regulated industry codes. Self-regulation is promoted strongly by alcohol, media and advertising industries, but has been criticised for lacking credibility (Blakeney and Barnes 1982; Saunders and Yap 1991). A study of the impact of bans on alcohol advertising compared pooled data from 17 countries over 14 years. After controlling for factors such as price, it concluded that countries with bans had lower levels of consumption, liver cirrhosis and motor vehicle fatalities than countries with no bans (Saffer 1991). However, it is unlikely that the bans were introduced without other supportive policies that would also reduce alcohol consumption and problems. From a public health perspective, controls on advertising signal societal concern and encourage a social climate supportive of other policy changes, such as price rises, that will have an impact on drinking decisions.

Financial resources allow alcohol companies’ promotional messages to be screened much more frequently than health-related messages (Casswell et al 1994). Alcohol advertising creates a hostile environment for health-related messages, because of its uncritical and normalising portrayal of alcohol (Wallack 1983; Casswell 1995a). This is an important reason to expect that few, if any, changes can be achieved by mass media educational campaigns used in isolation (Wallack 1980, 1990).

Warning Labels on Alcohol Containers

Alcohol beverage containers may be labelled with warnings about adverse consequences of alcohol. One evaluation found increased awareness of such labels in heavy drinking target groups and some self-reported changes in deciding not to drive after drinking (Greenfield et al 1993). Most of the evidence from other studies has suggested no change in the public’s perception of risk. Only a few results suggest behaviour change that might be attributed to the warning labels (Hilton 1992). However, a recent study testing response to warnings that followed beer advertisements suggested repeated exposure to warnings influenced beliefs about risks and benefits of alcohol. Confidence was eroded in positive beliefs about beer, after the warnings were seen. Further attention to warnings was considered warranted (Slater and Domenech 1995).
**Drink and Driving Laws**

In Australia, random breath testing has been shown to be particularly successful in reducing the alcohol-related road toll. Essential components are high police visibility and ongoing media publicity (Homel 1988). Recidivist drink-drive offenders are likely to be problem drinkers, and may be required to enter treatment programmes. Evaluations of such programmes suggest modest effects (Babor 1995), but show more promise when loss of driver’s licence is combined with a treatment or rehabilitation programme (Hingson 1993; Mann et al 1994).

**Safer Drinking Guidelines**

In New Zealand, recently released guidelines for ‘upper limits for responsible drinking’ suggest no more than 21 standard drinks for men and 14 for women per week. These amounts are similar to those advised in the UK, where ‘lower risk’ drinking is the term used rather than ‘safe’ drinking (British Medical Association 1995). The New Zealand guidelines have the added proviso that no single drinking occasion should exceed six drinks for men and four for women (ALAC 1995b). Most of the population drinks below the minimum guidelines. There is concern about the difficulty in effectively communicating messages about limits, outside the clinical context, so that the majority of drinkers do not increase their drinking (Casswell 1996). One suggestion is to undertake research to increase understanding of the communication process (Rehm et al 1996). Guidelines are unlikely to significantly reduce the number of people drinking above the lower risk limits, or change the binge drinking of heavy-drinking young males (Casswell 1996). Daily, rather than weekly, limits are suggested by some as more important to counter problems associated with binge drinking and intoxication (Rehm et al 1996). It has been suggested that drinking at the upper end of the lower risk levels places individuals at serious risk of alcohol dependence (Anderson 1996).

**Use of Mass Media**

Mass media educational programmes directed at individual drinkers have promoted moderate alcohol use and portrayed the negative effects of intoxication or chronic use. Reviews on the evaluations of such campaigns have indicated limited effects on the recipients’ beliefs and attitudes and no impact on self-reported drinking (Moskowitz 1989; Edwards et al 1994). An exception is the combination of television campaigns to reinforce other measures, such as face-to-face instruction on the use of blood-alcohol level calculators (Worden et al 1989) and random breath testing (Homel 1988). Drink-driving media campaigns are probably more successful, because they have a clear message and also resonate with societal concern about drinking and driving (Moskowitz 1989). Mass media campaigns, combined with initiatives by community organisations, have been found to encourage support for alcohol policies on availability, pricing and advertising (Casswell et al 1989).

Use of mass media can have an effect on the social climate surrounding alcohol use, and contribute, along with other influences, to a change in social norms about drinking. Coverage in the media about alcohol issues and policy options and the use of media advocacy to strategically disseminate research and information about alcohol issues can affect public behaviour (Wallack et al 1993). For example, decreases in fatal traffic crashes in the early 1980s in the US have been partially attributed to a dramatic increase in news media coverage of drinking and driving (Hingson et al 1988). Such public discourse also influences policy-making decisions on alcohol issues (Casswell 1995b).
STRATEGIES AFFECTING THE ENVIRONMENT
(DRINKING CONTEXT)

Price

The price of alcohol is determined primarily through the level of taxation, which is usually passed on to the drinker. Several studies have shown heavy and dependent drinkers are at least as responsive to price as are more moderate consumers. Reductions in problems such as alcohol-related cirrhosis and motor vehicle crashes have been associated with price increases (Cook and Tauchen 1982; Kendell et al 1983; Cook 1987; Grossman et al 1987; Coate and Grossman 1988). Maintaining excise tax and linking it to the consumer price index is a cost-effective strategy and one recognised internationally as an important tool in primary prevention (Edwards et al 1994).

Controls on discount pricing in drinking locations are also worthy of attention. One study found casual and heavy drinkers both consumed more in ‘happy hour’ situations, but heavy drinkers drank proportionately more. Regular happy-hour drinkers also consumed more than non-regular patrons (Babor et al 1981).

Controls on Availability

Restrictions on availability, such as a sudden disruption to alcohol supply through strikes, or experimental restrictions on opening hours, decrease acute problems such as drunkenness, alcohol-related assaults, traffic crashes and other drink-driving offences (Brown 1978; Olsson and Wikstrom 1982; Lenke 1984, 1990). Decreases in alcohol admissions to treatment clinics have also been noted (Wald et al 1986; Osterberg and Sails 1991). National prohibition in the US saw cirrhosis mortality dropping by 50 percent and other alcohol-related problems declining significantly (Prendergast 1987).

Lack of popular support and the risk of an increase in illegal sales and other crime mean that prohibition is not a viable option in most countries. However, there are examples where small societies or communities have introduced local prohibition, or other restrictions, because of concern about drinking problems. Truk, Micronesia (Marshall and Marshall 1990), and the Northern Territory of Australia (d’Abbs 1989) are two examples. A drop in consumption and drunkenness was measured in some of the Aboriginal communities in the Northern Territory after they brought in restrictions on hours of availability (d’Abbs 1989).

State retail monopolies aim to control and discourage demand for alcohol, through eliminating competition, and stimulation of availability and convenience (Holder 1993). In North America, studies of changes from monopolistic situations to private enterprise have generally found an increase in consumption (McDonald 1986; Holder and Wagenaar 1990; Wagenaar and Holder 1991). This has not always been found to be the case (Smart 1986). Investigations into restrictions imposed by monopolies in Nordic countries indicate they have reduced problems (Olsson and Wikstrom 1982; Nordlund 1985).

In New Zealand, the viable options to limiting sales of alcohol through the private enterprise system include legislative limits on hours of sale, and restrictions on outlets permitted to sell alcohol. Statutory agencies have attempted to restrict hours of opening through licensing decisions and planning regulations in an effort to reduce problems and enable better control (Hill and Stewart 1996). In the US, increasing attention is being paid to regulating densities of alcohol outlets (Holder 1994).
A minimum legal drinking age of 18 with no exceptions, use of identification cards, and better enforcement have been suggested as an alternative to the current New Zealand age of 20 with exemptions (ALAC 1995a). However, poor enforcement and circumvention of the drinking-age law by servers and minors have been reported in several studies (Preusser and Williams 1992; Wagenaar et al 1993; Forster et al 1994; Wagenaar and Wolfson 1994; Wolfson et al 1996). These findings suggest legal age limits are difficult to maintain consistently. An age limit of 18 may mean a de facto age limit of 16 to 17 years. O’Malley and Wagenaar (1991) found higher age limits led to lower drinking rates for youths into their mid-twenties, even after they had attained the legal age of 21. Raising the age to 21 in the US was estimated to produce a 12 percent decline in teenage fatal crashes (Hingson 1993).

Server Intervention/Host Responsibility and Enforcement of Licensing Laws

Evaluations of server intervention in the US show some success for server practices changing intoxication in patrons (Saltz 1987). Mandatory training of servers was found to lead to a 50 percent drop in blood alcohol levels in patrons (Holder and Wagenaar 1994). An evaluation of server intervention and police enforcement found the latter was necessary to reinforce staff legal responsibilities to not serve intoxicated patrons (McKnight and Streff 1994). A control study of low-key but visible police enforcement policy on licensed premises showed it led to a 20 percent reduction in drunkenness and assaults (Jeffs and Saunders 1983). Swift and easy revocation of liquor licences is another important sanction cited by licensing administrators (Hill and Stewart 1996). In the same study, co-operation between statutory agencies responsible for licensing was also seen to help control licensed drinking environments (Hill and Stewart 1996).

Host responsibility includes staff training, promoting food and non-alcoholic beverages and alternative transport such as taxis, courtesy vans and designated driver or lifesaver schemes. However, designated driver schemes have been reported to encourage heavy consumption by passengers. This has sometimes led to fatal crashes through distraction of drivers or intoxicated passengers insisting on driving (Blyth et al 1995). Furthermore, a study found such schemes may lead young people to equate responsible drinking with not driving after drinking: as long as they are not driving, they can consume as much as they like (Divers and Zipursky 1993). This illustrates a difficulty in emphasising action on one alcohol-related problem, without considering other alcohol-related harm.

Community Action

Community action on alcohol has been the focus of increasing research attention in recent years. Symposia have reported on a range of initiatives in several countries (Giesbrecht et al 1990; Greenfield and Zimmerman 1993). There is considerable scope in geographical and cultural community settings for effective action to reduce alcohol-related harm. Community participation in health issues is an important tool in efforts to influence norms, values and behaviour, and an important goal of health promotion (Bracht and Tsouros 1990). Community action enables greater community ownership and control over issues, which is in itself enhancing of health (Milio 1992). Often community initiatives involve alliances between several sectors within the community, including local government, police, health, social agencies and local advocacy groups. Involving individuals and families who are in treatment, in community-based activities has also been undertaken successfully in a social model recovery movement. This was in recognition of the problem of alcohol dependence being located in both the individual and the community (Matthews and Weiss 1984).
A community action project in the US was directed at reducing drink-driving, high-risk driving behaviours, traffic deaths and injuries (Hingson et al 1996). School-based education, public information campaigns, increased enforcement of drink-driving and other traffic laws and server intervention training was included. A 20 percent greater decline in fatal crashes occurred in the intervention cities compared with the rest of the state.

In New Zealand, community action, supported by mass media campaigns to reinforce policy initiatives and pricing policy, has been found to encourage support for effective alcohol policy measures like pricing. Community opinion leaders have shifted their perceptions from viewing alcohol problems as an individual’s responsibility, to one in which communities have a significant role (Casswell and Gilmore 1989; Casswell et al 1989).

Formative evaluation and community participation, working in a partnership to reduce drinking and driving injuries among Mäori, have seen a range of initiatives developed in Mäori settings. These have included use of Mäori media to highlight the issues, marae-based driver licensing education programmes run in conjunction with police, and a mobile ‘Lost Generations’ display on the effect of fatalities on whänau. Alcohol policies for Mäori rugby league and marae, a manakitia host responsibility competition in licensed premises, the use of billboards and buses for drive sober advertising, and successful action stopping a brewery advertising billboard have also occurred. A Students Against Driving Drunk (SADD) group, and a Brothers Against Drunk Driving (BADD) group formed by young men, have been developing their own programmes (Stanley and Casswell 1993, 1994a, 1994b, 1995, 1996; Moewaka-Barnes 1995).

An important ingredient of effective community action is a focus on longer-term structural change, such as improvement of drinking environment enforcement. This is more useful than putting too much emphasis on intensive, highly visible campaigns that have limited short-term impact. Community control over decision-making and resources is also essential.

**STRATEGIES AFFECTING THE AGENT ALCOHOL**

**Fortification of Alcohol or Flour with Thiamine**

Fortification of flour and alcohol with the vitamin thiamine is used to counteract vitamin deficiency related disorders (such as peripheral neuropathy, cognitive impairment and Wernicke’s encephalopathy) induced by chronic and heavy alcohol consumption (Wodak et al 1990). Thiamine replacement can be given to the individual patient during treatment although there are medical risks associated with this (Ritson 1991). Alcohol fortification has been suggested by some, because it is considered that heavy drinkers, who tend to have poor eating habits, are more likely to obtain thiamine from their alcohol diet than from flour-based products. However there is concern this will lead to increased drinking. Drinkers may see the addition of thiamine as a protective device, making alcohol safer, or it may be marketed as a health drink because it is vitamin enriched. Partly for these reasons, flour fortification is more favoured (Binns et al 1989; Wodak et al 1990).

**Low or No-Alcohol Beverages**

Low or no-alcohol beverages have been promoted to reduce consumption levels of absolute alcohol and lower the incidence of intoxication. They are often taxed at lower levels to produce lower prices than those of higher strength beverages. In New Zealand, low-strength beers under 1.5 percent alcohol
may be sold in supermarkets. A rise in low-alcohol beer sales to 4 percent of the market, following the introduction of compulsory breath testing, has not been sustained (Statistics New Zealand 1996). Low alcohol now accounts for about 1 percent of sales. Improved promotion and increased price differential between low-alcohol and high-alcohol content beverages could help encourage more consumption of these beverages.

CONCLUSIONS

Alcohol dependence is directly related to the quantity and frequency of drinking. Some within a drinking population may be more susceptible to experiencing problems of dependence through genetic, physiological or social psychological factors. However, environmental access to alcohol is a major factor for drinkers’ experience of problems, for both the individual’s drinking and the population of drinkers as a whole. From a public health point of view, there is no research evidence at present that supports initiatives such as education programmes, warning labels or drinking guidelines as priority policy choices (Edwards et al 1994). Mass media campaigns are more effective when placed in a broader context of community action and to reinforce other policy objectives, such as random breath testing.

Young people in their late teens and early twenties are drinking the most and experiencing the most problems, including the need to be treated for alcohol dependence. Interventions that affect their access to alcohol and that shape social norms to drink less are warranted. These include controls on availability through an enforceable minimum drinking age of 20, restrictions on hours of sale and type of outlet selling alcohol, and increased excise taxes. A ban on advertising in the broadcast media is also worthy of careful consideration in deciding the mix of policy and other interventions. Enforcement of driving and licensing laws and the range of activities under the umbrella of community action are also important to encourage. Early interventions through screening and giving simple advice are strategies that will assist heavy drinkers to cut back on their drinking.

REFERENCES


Zhang JF and Casswell S. The Effects of Real Price and a Change in the Distribution System of Alcohol Consumption. Unpublished data.