Reducing alcohol-related harm in the workplace

An evidence review: full report

Dr Rina Cercarelli, Professor Steve Allsop, Dr Michaela Evans & Dr Fredrik Velander

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Dr Rina Cercarelli, Professor Steve Allsop, Dr Michaela Evans & Dr Fredrik Velander
National Drug Research Institute
Curtin University of Technology

national drug research institute

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Introduction

The aim of this report was to review national and international published and 'grey' literature to identify and describe evidence that informs the development of best practice interventions in the workplace that can prevent and reduce alcohol-related harm within and outside the workplace.

The review process included a search and critical analysis of published and unpublished Australian and international literature.

Scope and nature of the issue

Interest has been increasing in identifying and responding to alcohol-related harm in a range of settings, including in the workplace. It has been suggested that hazardous and harmful alcohol use can result in a loss of workplace productivity due to absenteeism, poor decision-making and increased morbidity and mortality.

Benefits to the workplace

Despite a limited evidence base, it is increasingly apparent that alcohol can contribute to significant costs in the workplace. The range of impacts suggests that economic, safety and health gains can be achieved by preventing and reducing alcohol-related harm in the workplace. Some commentators have suggested that the workplace is a potential site to implement interventions that have relevance for the broad community – the majority of the population works, at least part-time, and so work settings may be a good location to 'capture' a large proportion of the population in health promotion activities. It is argued that such approaches will assist employers and employees to comply with occupational safety and health, and related, legislation.

Best practice workplace interventions

A. *Prevalence papers*

The prevalence literature shows that alcohol use is widespread in many countries, in particular across Australia, and that consumption and related harm vary by age and sex and among occupations and industries. Some Australian and overseas evidence indicates that workplace factors and structures contribute to high-risk alcohol consumption.

B. *Policy papers*

WorkSafe Western Australia identified alcohol policy (accompanied by supporting procedures) as an integral part of workplace 'risk management', suggesting that such policies substantiate employers'

'duty of care' obligations, prevent procedural uncertainty, demonstrate commitment to safety and education, and facilitate 'peer support' that potentially positively informs workplace behaviour and culture. It has been suggested that workplaces should develop policies on a collaborative and consultative basis and they should be clearly communicated to all staff once developed.

C. *Intervention papers*

a. **Health promotion programs**

Rather than being specifically, or uniquely, concerned with minimising the impact of harms associated with alcohol consumption, health promotion programs are more broadly concerned with improving or promoting the general 'health' and 'wellbeing' of the workforce through education aimed at behavioural change, risk or harm prevention, and changes to the workplace environment. Although there is much 'promising work' and some clear guidance, quality evidence about effective health promotions to prevent and reduce alcohol-related harm in the workplace is limited. Where supporting evidence is available, one common theme appears to be the use of brief intervention approaches that have been clearly demonstrated to have an impact in other settings.

b. **Employee assistance programs**

Employee assistance programs (EAPs) have primarily involved the assessment and identification of employees with alcohol-related problems and their referral to treatment. Although EAPs are among the most commonly used strategies in Australia, and overseas, to reduce alcohol problems in the workplace, these programs are seldom evaluated, and little is known about their effectiveness. Many studies have indicated that a large proportion of EAP attendees are self-referrals, so perhaps the key element should be an approach that gives employees in need greater access to a service in an environment where they spend much of their waking life: at work.

c. **Alcohol testing**

Drug and alcohol testing in the workplace is a complex and contentious issue. However, testing for alcohol alone is less contentious, particularly in safety-sensitive jobs – alcohol testing directly assesses breath/alcohol levels and these levels have been associated with given risk of impairment. However, the evidence base remains scant. In recent years, some employers have adopted an approach that incorporates the opportunity to self-test along with random testing and for-cause testing. For example, an employee will have access to hand-held breath-testing machines. If they privately test themselves and record a positive, they simply report sick. Usual procedures for sick leave are employed (e.g. frequent regular sick leave will be investigated and/or require a medical certificate). Although the approach seems to have some merit, no analysis has been reported.

d. Web-based interventions

Recent research (typically well-conducted, randomised controlled trials) all points to the potential effectiveness of web-based technology for improving health outcomes in the workplace. Interestingly, it is consistent with research in other settings (e.g. university students or as part of a general health intervention) that web-based brief interventions are acceptable, have good penetration into target groups, and have an impact on drinking behaviour. It is important to note that the impact on drinking is small and generalisability across workplaces is unclear.

e. Other interventions

A review of 'other interventions' found that carefully targeted resources, developed in consultation and with support, appear to have impact. 'New' systems of intervention delivery (web-based approaches) appear to be acceptable, even attractive, and have reasonable penetration into the workforces where they have been trialled. When they are coupled with evidence-based brief interventions, they appear to have some impact.

f. Kits

Various kits have been developed to assist employers and employees to develop effective responses. Typically these are not evaluated, although a small evidence base does exist. It appears that various 'kits' have been used with varying levels of acceptance and success for promoting and implementing alcohol-related policies in the workplace.

Conclusions

Effective responses to alcohol-related harm in the workplace are likely to commence with the recognition that there is no single reason for risky alcohol use, no single alcohol problem and no single effective response. Many factors shape alcohol use and alcohol-related problems, and these include the availability of alcohol, the nature of work and the work culture, the pattern and context of alcohol use (in the broad community and at work) and individual characteristics. Individual, community and workplace factors increase and decrease risk. Responses to alcohol problems in the workplace will therefore need to be tailored and multifaceted. For example, approaches to prevent intoxication may be distinct from, but complement, those that aim to reduce absenteeism related to regular heavy use. Responding to problems in a remote area where work is safety-sensitive may have different characteristics to strategies used in a lower risk office environment. Given the consistent evidence about the important influence of alcohol access, it may be important to prioritise initial interventions to high-risk occupations and workplaces where alcohol is more readily available.

1.   Introduction

Prior to the industrial revolution in the western world, alcohol was often consumed during the working day, not infrequently provided by the employer, used as a wage substitute and as incentive to work in otherwise intolerable conditions. Harvests successfully gathered often signalled celebration and sometimes intoxication. Conditions of work in some work settings, such as the alcohol industry or the navy, might have included an allowance of free or heavily subsidised alcohol. Even today, formal and informal pressures might encourage weekly after-work team building and relaxation around alcohol consumption. However, current jobs have higher demands on judgement, decision making and reaction time, and unforgiving technology. This raises new concerns about alcohol (and other drug) use and safety and health at work. Ten years ago, Roman and colleagues (2000, p. 122) neatly summed this up:

> *Machines can keep up a pace of activity that does not parallel human capability … most machine activity does not detect or react to boredom or inattention among human operators … when work becomes organised around machine activity, the tolerance for impairment of human operators by psychoactive substance use disappears.*

Responses to the challenge of alcohol problems have often been limited in focus to those who are alcohol dependent or 'alcoholics'. Addressing the needs of those who are severely dependent may be important, but this is insufficient and indeed effort might be misplaced. For example, the number of alcohol-dependent employees may be comparatively small, but a significant proportion might occasionally drink in a risky way. Allsop and Pidd (2001) suggested that Thorley's (1982) model of alcohol-related harm could provide a broader focus, identifying three areas:

- problems related to intoxication

- problems related to regular use

- problems related to dependence.

Intoxication problems are a result of the acute effects of consumption (including those of a hangover). In the workplace, these problems include the risk of accidents, reduced productivity or poor work relations from intoxication or hangover effects. Problems related to regular alcohol consumption include long-term health consequences, resulting absenteeism or financial problems. In the workplace, dependence problems may occur as an individual begins to devote more time to alcohol use, and work may seem to them less important.

Allsop and Pidd (2001) discussed factors that might increase and decrease the risk of alcohol-related harm in the workplace. The first set of factors, social and structural control, was identified from the observation that structural features of the work environment can restrict or encourage alcohol availability and consumption. This could include formal (e.g. clear rules and regulations) and informal (e.g. work culture expectations that someone does not come to work alcohol affected) objective controls and subjective perceptions of the norms around alcohol use.

The work of Greenberg and Grunberg (1995) and Trice and Sonnenstuhl (1990) found that work alienation and stress may be important. The basic argument is that rewarding and supportive work environments have a positive impact on the overall wellbeing of individual employees, while alienation and stress can have a negative impact. Boring, monotonous tasks and a perceived lack of control over the pace or planning of work have both been alleged to cause employees to feel alienated from the workplace. Purportedly this can create a sense of dissatisfaction or powerlessness that is relieved by alcohol and drugs.

Greenberg and Grunberg (1995) found that alienating workplaces did increase problem drinking, although the effect of alienation on drinking was indirect. Alienation influenced job satisfaction, which in turn influenced a set of beliefs about drinking. Similarly, Seeman and Seeman (1992) examined the effect of chronic stressors from current work circumstances and the intermittent stressors from life events on alcohol use. They found that subjective perceptions of powerlessness were consistently associated with alcohol use and alcohol-related harm and a combination of stress experience and high powerlessness typified those most vulnerable drinking problems. However, this is not a direct relationship – after all, not all employees exposed to stress respond by drinking heavily.

A recent report indicates that longer working hours may be associated with alcohol consumption, and they hypothesized that this may be related to stress. Gibb and colleagues' study (Gibb et al., 2011) involved a longitudinal study of a birth cohort of over 1200 individuals born in 1977 in Christchurch, New Zealand. This carefully controlled study involved data gathered at birth and then following participants up at ages 4 months, yearly to age 16, thereafter at ages 18, 21, 25 and 30. Just over 1000 individuals were followed up at age 25 (81.3 per cent of the surviving cohort) and 987 individuals at age 30 (80.2 per cent of the surviving cohort). Even when they controlled for a wide range of confounding factors, longer working hours were significantly associated with higher rates of alcohol use and related problems. For both men and women, working more than 50 hours per week was associated with 1.8 to 3.3 times higher rates of problems compared to than those who were not employed. The authors noted that their study did not provide an explanation of why this might be the case but proposed hypotheses such as alcohol being used to cope with stress associated with

long hours, and longer working hours being associated with workplaces more socially conducive to drinking. Similarly, in a Canadian report, Marchand and colleagues (2011) also noted that longer working hours was linked to an increased likelihood of being identified as a risky drinker.

Work norms and expectations may have a role, as illustrated by Delaney and Ames (1995). They investigated the relationship between work team attitudes, drinking norms and workplace drinking. Results indicated that positive team attitudes significantly predicted less permissive drinking norms and that drinking norms significantly predicted workplace drinking. Similarly, Bennett and Lehman (1998, 1999) found that the workplace could create a climate that encouraged alcohol use. However, group membership and cohesion moderated the extent of this drinking climate. Groups with low cohesion and a drinking culture, as well as groups with higher job risk (e.g. working with machines) and a drinking culture, were the most vulnerable to workplace problems such as job stress, health problems, absences and accidents.

Ames and colleagues (2000) reported on a study of workplace norms and drinking at work. They examined how mechanisms for controlling alcohol behaviour at work are strengthened or weakened by the overall organisational culture and, thereafter, influence workplace drinking norms and employee drinking patterns. They reported that the factors that put people at risk were high mobility during working hours, isolated working patterns, low supervision and low visibility of work and employee. Their research method was diverse, including interviews with key informants, participant observation and formal surveys, with almost 1,800 staff across two workplaces engaged in the same type of industry. One plant was considered 'traditional', employing standard United States management and workplace practices, and the other used Japanese management practices. The researchers found differences in drinking behaviour across the two plants (3 per cent workplace drinking in the Japanese-managed industry and 25 per cent workplace drinking in the traditional setting). They concluded that drinking behaviour was influenced by formal and informal social control variables. These included the perceived availability of alcohol and perceived norms surrounding drinking, including peer approval/disapproval and drinking at work. In addition, enforcement of rules regarding workplace drinking and likelihood of discipline and degree of encouragement to utilise the employee assistance program were all associated with consumption.

The researchers noted that the plant managed along 'Japanese lines' emphasised team work and high levels of peer accountability for safety and performance, coupled with low tolerance from peers for drug-affected safety and performance levels – this is an important implication. A workplace that adheres to quality practice in relation to general occupational safety and health may be lower risk for drinking-related problems. Importantly, all of these factors only accounted for a modest amount of variance in analysis, indicating that other, as yet unidentified, factors are important in understanding

drug use in the workplace (e.g. quality of staff selection processes). Their study indicates the influence of overlapping factors: the workplace contains stressors, controls, and subcultures that can contribute to an overall culture that either supports or discourages risky alcohol use. Whether this overall 'culture' or 'climate' results in risky alcohol use may be mediated by individual differences, including perceptions and beliefs regarding use, and resilience or vulnerability.

To summarise, the existing limited evidence suggests that the development and maintenance of alcohol use that has an impact in the workplace is the outcome of interactions among diverse factors such as individual resilience and vulnerability, cultural and subcultural influences (in and outside of work) and the way in which work is structured, supervised and rewarded.

This report presents a review of evidence that can inform the development of best-practice interventions in the workplace that prevent and reduce alcohol-related harm within and outside the workplace. The review included national and international published and 'grey' literature.

The review process included a search and critical analysis of published and unpublished Australian and international literature. (See the appendix for details of the search strategy.)

The following categories of papers were examined:

Prevalence papers – discussions/reporting of research into the extent of alcohol use, the extent of related problems and the consequences of risky alcohol use for individuals at work and for organisations and communities.

Policy papers – discussions of a definite course of action developed by, or suggested for, an organisation to address actual or potential alcohol-related problems in the workplace. This includes papers discussing the process of policy development and implementation, and the preparation of related documentation.

Intervention papers – discussions/reporting of research on the implementation of a course of action for preventing or otherwise intervening in alcohol-related problems in the workplace. This includes health promotion activities, organisational processes and structures, alcohol controls, alcohol testing and disciplinary actions.

Kits – any physical resource used to address alcohol-related problems in the workplace. Items include pamphlets, booklets, manuals, videos, films and slides.

Gaps in the literature and areas for further research were identified.

2. Scope and nature of alcohol-related harm in the workplace

Alcohol has a complex position in Australian society. Socially, its consumption is tied to diverse traditions, and many Australians use alcohol to socialise, celebrate, relax and commemorate. Conversely, alcohol plays a part in a range of harms such as road crashes, the onset of various cancers, suicide, public and domestic violence, deterioration in public amenity, domestic abuse and workplace absenteeism. This highlights that alcohol not only imparts harm to the individual drinker but also to the wider community as well. Harmful alcohol consumption generates considerable economic and social costs (Collins & Lapsley 2008), and in Australia it is a significant contributor to injury, disease, disability and death. In the 10 years from 1996 to 2005, for example, 32,696 Australians aged 15 and over died from injuries and diseases attributable to risky and high-risk drinking. A further 813,072 Australians aged 15 years and over were hospitalised between 1995–96 and 2004–05 because of alcohol-caused injury and disease (Pascal, Chikritzhs & Jones 2009). Harms related to alcohol consumption are attributable to both short-term and long-term consumption behaviours.

Interest has been increasing in identifying and responding to alcohol-related harm in a range of settings, including in the workplace. Although a 'workplace' is relatively simply defined as a setting within which work is performed by a 'worker' or people conducting business or other undertakings, workplaces are diverse, as are 'workers'.

Types of work, the conditions within which workers are employed, the hours individuals work (full-time, flexi-time, shift work), remuneration, the mechanisms (or inputs) required to perform, as well as the outputs generated as a consequence of working, vary greatly.

The physical settings of workplaces also differ, including office buildings, ships, farms, a street corner, a football field and individual homes. Patterns of work differ by industry: for example, individuals employed in hospitality and retail industries are more likely to work on weekends than those employed in the finance industry (Australian Bureau of Statistics 2009).

Workplace size as well as the gender, age and ethnic composition of staff can vary substantially.

Employment and workplace trends relating to such issues as levels of unemployment, migrant participation rates and unpaid household work differ over time. Over the past 30 years in Australia, for example, the proportion of Australian workers employed on a part-time basis has almost doubled (Australian Bureau of Statistics 2009). Workplaces are cultural settings structured by both formal and informal regulations and practices.

Further, workplaces (and the workforce) are inherently tied to and influenced by wider social, economic, political, legal and cultural forces. Largely due to the average length of time that people spend in the workforce over their lifetime, health professionals, policy makers and governments have identified the workplace as an important arena within which attitudes and behaviours associated with alcohol consumption can potentially be valuably altered. However, the nature and extent of alcohol use and related harm and its role in the workplace are not well understood. There is some evidence that workplace factors such as stress, work culture, low-level supervision, the availability of alcohol in the workplace and work conditions (such as shift work) contribute to hazardous and harmful alcohol use (Allsop, Phillips & Calogero 2001; Pidd et al. 2006a).

Work-related alcohol consumption refers to consumption that takes place immediately before or during working hours. More broadly, it incorporates drinking that is informed or influenced by workplace norms or structures. Workplace and alcohol consumption are connected in other ways. Consumption that occurs outside of normal work hours potentially affects workplace productivity, for example because of hangover effects, short-term absenteeism, long-term illness and impairment (e.g. cognitive impairment). Pidd and colleagues (2006a) suggested that the general pattern of drinking in Australia is one wherein the majority of drinking takes place after the completion of a working day, or indeed on days off, with comparatively little being consumed before or during work hours. They reported that 90 per cent of the Australian workforce consumed alcohol.

It has been suggested that high risk alcohol use can result in a loss of workplace productivity because of absenteeism, poor decision making and increased morbidity. Using data from the 2001 National Drug Strategy Household Survey, Roche and colleagues (2008) found the relationship between workers' alcohol consumption patterns and absenteeism was more substantial than previously documented, and was not restricted to the small number of chronic drinkers. It included the much larger number of risky non-dependent drinkers who drink less frequently. The size of the available workforce, staff turnover and early retirement are also assumed to be influenced by alcohol-attributable morbidity and mortality rates (Collins & Lapsley 2008). Safety may be at risk because coordination is impaired, reaction times slowed, and judgement affected – not just while intoxicated but even with a zero blood alcohol level, due to hangover effects. Additionally, high risk alcohol use can produce long-term economic burden in the form of compensation and employer liabilities (Fernber 1998). Within the workplace itself, the costs and harms associated with alcohol use are not only imparted to the individual drinker (or staff member), but potentially impact on co-workers and employers (Dale & Livingston 2010; Laslett et al. 2010). Diminished workplace productivity and attrition in the workforce attributable to alcohol can also potentially have a multiplying effect outside

of the workplace in terms of the costs of consumer items, services and tax revenue (Collins & Lapsley 2008).

In addition to the impact that alcohol consumption potentially has on the workplace, a body of evidence indicates that workplace factors can contribute to risky alcohol use. That is, alcohol problems are not randomly distributed among workplaces – some have higher risk than others (see, for example, Allsop, Phillips & Calogero 2001; Pidd et al. 2006a). There are therefore many benefits of addressing alcohol consumption in the workplace, which will be discussed further in this review.

The above discussion draws our attention to a critical issue. Questions arise as to the goal or goals of workplace interventions. The goals might variously involve reducing:

- drinking at work
- alcohol-related harm at work that can arise from drinking at work or outside work (e.g. at lunchtime or the evening before)
- hazardous drinking in the community that might have relevance for the workplace
- workplace factors (e.g. stress, boredom, cultures that support heavy drinking, easy access to alcohol) that increase the risk of harm at work and in the community.

An overarching analysis would suggest that these goals are interrelated and an effective approach would address each and all of them. However, the issue is complex. Each goal might demand a distinct approach. Importantly, there are likely to be diverse perspectives that influence the acceptability or prioritisation of different goals. Some might see that the primary aim is to cut risks and costs for individual employees and the employer, whereas others might emphasise that the workplace is a convenient place to reach a large proportion of the population for broader health outcomes. These issues are not without contention.

As will be seen, the literature does not lead to a clear consensus about the aims of policies and interventions. Public health staff might be strongly motivated by the opportunity and importance of using the workplace as a location to address harmful alcohol consumption both within the workplace and in the broader community, and to reduce workplace factors that might increase risk in the community. On the other hand, employers and labour organisations might argue that their concern is only with workplace alcohol use or related harm, and not be concerned, even actively resist, strategies that aim to have a broader public health impact. Public health advocates may be keen to focus on the broad range of alcohol harms, whereas workplace interests might lie with issues that directly affect performance or safety. There is no easy resolution of this tension, but the different perspectives will influence the kinds of issue addressed and the nature of programs implemented. As such, a critical element of developing new approaches will be the involvement of key stakeholders in negotiating and agreeing on approach aims, followed by appropriate program design and evaluation.

3.   The benefits of reducing alcohol-related harm

It has been proposed that alcohol has a significant negative impact on the Australian workplace. An early study (Hocking, Grain & Gordon 1994) estimated that employee illness attributed to alcohol and other drug use incurs a loss in Australian workplaces of A\$2 billion each year. Although this figure could be disputed, because (as discussed below) there is limited evidence on the nature and extent of the problem, it is widely accepted that alcohol consumption is a potential and existing problem.

Collins and Lapsley (1991, 1996) estimated the cost of lost production caused by alcohol and other drug use in the form of absenteeism. The cost of absenteeism was estimated by taking into account the number of absent days spent in either a hospital or healthcare service. The cost of lost production was examined for alcohol, tobacco and other drugs, and also by gender. They found that the total avoidable cost of alcohol and other drug use was A\$8 billion in 1988 and nearly A\$10 billion in 1992. Tobacco accounted for 58 per cent of the total cost, while alcohol accounted for 38 per cent and other drugs 4 per cent. Males incurred a greater amount of the cost than females across all categories of drugs, as well as across time.

In estimating the tangible social costs of alcohol problems in 2004–05, Collins and Lapsley (2008) suggested that alcohol consumption generated an avoidable cost of A\$3,2107.2 million due to reductions in the workforce and A\$367.9 million in costs associated with workforce absenteeism. Using 2004–2005 data, their total estimate of the cost of alcohol to production in the workforce was A\$3.5 billion, which they deemed conservative. Productivity costs are based on absenteeism (due to alcohol-attributable illness or injury resulting in an absence from work) and workforce attrition (due to illness, injury, death and early retirement). Alcohol-attributable reductions in the male labour force accounted for approximately 77 per cent of this total. Compared to their earlier reports, the estimated costs of risky alcohol use to workforce productivity have continued to increase: from A\$1,211.9 million in 1988 (Collins & Lapsley 1991), to A\$1,524 million in 1992 (Collins & Lapsley 1996), and A\$1,949.9 million in 1998–99 (Collins & Lapsley 2008). Collins and Lapsley's (2008) latest report used updated alcohol-attributable aetiologic fractions and absenteeism estimates and, as such, the authors suggested that their previously reported figures were significant underestimates.

As in past years, Collins and Lapsley's (2008) most recent quantification of the cost of alcohol consumption in Australia did not estimate 'on-the-job productivity'; however, they suggested that these costs were likely to be substantial. These latest cost estimates are also likely to be underestimated as they do not include costs associated with absenteeism, reductions in job productivity, staff turnover and premature mortality. The estimates were developed on the

assumption that there is an established causal connection between alcohol use and work productivity as well as absenteeism; however, research described later in this report suggests findings are inconclusive.

Another estimate, by Pidd and colleagues (2006b), was that alcohol-related absenteeism cost Australia between A$437 million (calculated on the basis of 2.5 million work days missed) and A$1.2 billion (calculated on the basis of 7.5 million work days missed) annually. The first estimate was based on self-reported absenteeism data due to illness and injury recorded in the 2001 National Drug Strategy Household Survey. The second estimate, based on the same survey, was calculated by applying an alcohol-attributable fraction to self-reported absenteeism. Alcohol-attributable fractions correspond to the proportion of a population's chronic and acute medical conditions as well as deaths that can be attributed, either wholly (as in the case of alcoholic liver cirrhosis) or in part (e.g. liver cancer or injuries) to a particular drinking level (e.g. low-risk, risky, high-risk).[1] Pidd and colleagues reported that a considerable proportion of these estimated costs were attributable to low-risk drinkers and people who 'infrequently drink heavily'. This is a critical point – historically the focus of workplace (and community) responses has been on alcohol dependence (Allsop & Pidd 2001). Increasingly the evidence, such as that provided by Pidd and colleagues, illustrates that significant harm can occur to those who occasionally drink heavily, indicating that effective responses will need to have a broader focus than just dependence.

Until relatively recently, alcohol's impact on others has been inadequately assessed. Using data sourced from the 2001 National Drug Strategy Household Survey, Pidd and colleagues (2006a) reported that co-workers' alcohol consumption influences the physical and verbal abuse experienced by co-workers in the workplace. They noted that problems may arise not only from co-workers; customers and clients under the influence of alcohol may abuse members of the workforce, depending on the nature of the job. More recently, Dale and Livingston (2010; see also Bennett & Lehman 1998; Laslett et al. 2010) also investigated the impact that an individual's alcohol consumption imparts on co-workers. These researchers aimed to estimate the Australian costs that additional work associated with alcohol-related absence and diminished productivity generates for co-workers, as well as the costs associated with workplace accidents caused by intoxicated colleagues or co-workers operating sub-optimally as a consequence of drinking. As indicated by Dale

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[1] The 2007 National Drug Strategy Household Survey used the National Health and Medical Research Council's 2001 Australian alcohol guidelines to assess 'low-risk', 'risky' and 'high-risk' drinking (see National Health and Medical Research Council 2001 (p. 5) for definitions of these terms).

and Livingstone, household-based, cross-sectional data were obtained from the Range and Magnitude of Alcohol's Harm to Others survey conducted in 2008. Dale and Livingston (2010) found that just under one-third of all respondents reported working with co-workers who drank heavily, 8 per cent reported being negatively affected by a co-worker's drinking, and 3.5 per cent reported having to work extra hours as a consequence of the alcohol-consumption habits of co-workers. Further, they estimated that the cost of additional hours worked as a consequence of having a heavy-drinking colleague was A$453 million annually. The response rate for this survey was very low (35.2 per cent), indicating the need for caution in interpretation.

It is possible that hangovers from alcohol consumption affect workplaces. In an international review of research on alcohol-induced hangovers, Wiese and colleagues (2000) reported that hangovers (a condition defined as entailing at least two of the symptoms: headache, poor sense of overall wellbeing, diarrhoea, depressed appetite, tremulousness, fatigue and nausea; but can also include such symptoms as tachycardia (faster than normal heart rate) and cognitive, visual and spatial impairment) create considerable occupational consequences, particularly in relation to productivity and safety (see also Moore 1998).

Despite a limited evidence base, it is possible to conclude that alcohol can contribute to significant costs in the workplace, not just to the drinker but to his or her co-workers, and downstream in the broader community. The range of impacts suggests that there are potential economic, safety and health gains to be had by preventing and reducing alcohol-related harm in the workplace. As noted earlier, some commentators have suggested that the workplace is also a potential site to implement interventions that have relevance for the broad community – the majority of the adult population works, at least part-time, and so work settings may be a good location to 'capture' a large proportion of the population in health promotion activities. Proponents argue that such approaches will assist employers and employees to comply with occupational safety and health, and related, legislation.

4.   Best practice: workplace interventions

The literature on best practice workplace interventions was divided into four categories: prevalence papers, policy papers, intervention papers and kits.

Prevalence papers

Prevalence refers to the total number of people with a particular disease or condition in a given population at a specific time. It is a measure of the burden of harm within the community. In the context of this review, it is the frequency of alcohol use and harm within the workplace, as well as the frequency of alcohol use and harm within the workforce.

Papers examining prevalence of alcohol use within workplaces usually involve surveys of workers within communities, or surveys of workers within a particular occupation, industry or organisation. They might also employ measures such as measuring breath- or blood-alcohol levels of employees, or generalising population estimates (e.g. from national household surveys) to the workplace.

Other than caffeine, alcohol is the most commonly consumed psychoactive drug in Australia. The commonplace status of alcohol consumption in Australia is substantiated by the *2007 National Drug Strategy Household Survey: First results* (Australian Institute of Health and Welfare 2008), which showed that 89.9 per cent of Australians aged 14 or older had tried alcohol in their lifetime, with 82.9 per cent (14.2 million Australians) having done so in the 12 months preceding the survey. Moreover, it reported (p. 20) that in 2007 in Australia, 'drinking alcohol (daily, weekly or less than weekly) was more prevalent than not drinking alcohol'. While the majority of Australians reported consuming alcohol at levels considered 'low-risk' both for long-term (over 72.6 per cent) and short-term (48.3 per cent) harm, over one-third engaged in risky or high-risk drinking in the 12 months preceding the 2007 survey and 10.3 per cent consumed alcohol in a manner considered harmful in the long term. Men accounted for a higher proportion of those consumers who engaged in drinking patterns that put them at risk of both chronic (long-term) and acute (short-term) harm. Younger Australians tend to drink more than older Australians, and most surveys suggest that those in the age ranges of 19–29 are the heaviest consumers. The National Drug Strategy Household surveys have found that since 1993 between 8 and 9 per cent of the Australian population drinks daily, with men more likely to drink at this frequency than women.

Overall, the findings from the 2007 survey are relatively consistent with National Drug Strategy Household surveys conducted since 1991. Such surveys generally underestimate population level alcohol consumption. This might be because of sampling bias (those not included in the survey may

consist of higher risk drinkers) or because of underreporting by respondents (e.g. poor recollection, poor understanding of alcohol measures, deliberate underreporting).

The National Health and Medical Research Council (NHMRC 2001, 2009) has released two reports in the last decade – the first in 2001, which was superseded in 2009 – that outline national drinking guidelines about low-risk levels of alcohol consumption. Both reports emphasised that there are no definitive 'safe' or 'no risk' consumption levels over a lifetime. The most recent guidelines define low-risk drinking as no more than two standard drinks per day for healthy adults and no more than four standard drinks on a single occasion (NHMRC 2009). While remaining the same for women, recommendations in the 2009 guidelines were revised for men, with the number of standard drinks reduced from six in the 2001 guidelines. Such changes make comparison of Australian prevalence studies difficult. The risk levels discussed below are based on the 2001 report.

Based on prevalence estimates from the 2001 National Drug Strategy Household Survey, Pidd and colleagues (2006a) reported that 90 per cent of the Australian workforce consumes alcohol, with young workers (aged between 14 and 29) being most likely to display patterns of drinking defined in 2001 as 'risky'. Research conducted by Berry and colleagues (2007) and Pidd and colleagues (2006a) highlighted differences in drinking prevalence across occupations and industries. Specifically, Berry and colleagues (2007) estimated that 8 per cent of the Australian workforce consumed alcohol at levels that put them at risk of short-term harm at least weekly. Specific groups identified as 'at risk' of both short- and long-term harm included 'blue collar' workers, young employees, and individuals employed in agriculture, retail, hospitality, manufacturing and construction industries. In contrast, people employed in the education sector had the lowest risk of short-term harm.

More recently, Pidd and colleagues (2011) explored the prevalence of alcohol and other drug use at work and, importantly, examined intoxication at work. In an examination of reports from almost 10,000 Australian workers, drawn from data gathered as part of the 2007 National Drug Strategy Household Survey, they found that some 8.7 per cent reported that they "usually drank alcohol at work" (compared to 0.9 per cent who used other drugs) and 5.6 per cent attended work under the influence of alcohol (2.0 per cent reported attending work under the influence of other drugs). Such behaviour was more commonly reported by respondents who were young, male, never married, and who had no dependent children. As noted in other studies, alcohol use was influenced by occupation. Thus, drinking at work was more likely in occupations such as construction, financial services, trades and unskilled staff. The highest prevalence was among hospitality staff, who were 3.5 times more likely to drink alcohol at work or attend work under the influence.

Overseas reports indicate similar observations. For example, in a recent report of data gathered in 2003 from over 76,000 Canadian employees, Marchand and colleagues (2011) reported that 8.1 per cent of workers engaged in weekly alcohol consumption (10 drinks or more for women, 15 drinks or more for men on a weekly basis – this equates to over 13 Australian standard drinks for women and over 20 standard drinks for men). They noted that longer work hours and job insecurity were associated with increased likelihood of risky drinking, as were factors such as being a smoker, while being older, female, married and living with children was associated with lower risk.

Other occupations examined in the research on prevalence of drinking in the workplace include police officers (McNeill & Wilson 1993; O'Brien & Reznik 1988 – prevalence 15–31 per cent; Davey, Obst & Sheehan, 2000; 2001; Richmond et al. 1998) and transport workers such as long-distance bus and truck drivers as well as train drivers (Bush, Smith & Dawes 1992; Cox 1988; Smith & Dawes 1993; Williamson et al. 1992 – prevalence 0.0–27.3 per cent). Studies have also been done of workers in the telecommunications industry (Hocking 1992 – prevalence 2.3–13.1 per cent; Hocking & Soares 1993 – prevalence 80 per cent), the mining industry (Midford 1996; Midford et al. 1997 – prevalence 10–43 per cent; Neil 1989 – prevalence 11–20 per cent), the health industry (Dudley, Langeluddecke & Tennant 1988 – prevalence 86 per cent; Hagen 1992 – prevalence 10–16 per cent), the Royal Navy (Hendersen, Langston & Greenberg 2008 – prevalence of heavy drinking and very heavy drinking being reported at 40 per cent and 27 per cent respectively; 48 per cent reporting binge drinking at least once per week), the construction/building industry (Banwell et al. 2006) and the liquor and hospitality industry (Bush & Sirenko 1993 – prevalence 6.3 per cent; Hagen 1992 – prevalence 10–16 per cent). There is an apparent bias in the industries and occupations and industries studied – they are typically industries with a strong and traditional interest in occupational safety and health. In addition, armed forces, especially in the United States, have figured strongly in historical and more recent research (e.g. Ames, et al. 2007; Foran, Slep & Hayman 2011). More recently, alcohol consumption among UK and Australian defence force personnel has been examined (e.g. Fear et al. 2007; Henderson et al. 2008; McKenzie et al. 2006).

The research is not restricted to Australia. International studies have investigated prevalence among army personnel (Fisher et al. 2000); female flight attendants, nurses and teachers (Gunnarsdottir et al. 2006); hospital staff (Hope, Kelleher & O'Connor 1998; Spencer-Strachan 1990; Tountas et al. 2007; Trinkoff et al. 2000); managerial staff (Howland et al. 1996; Moore, Grunberg & Greenberg 1999; Tomiak, Gentleman & Jette 1997); male and female attorneys (Shore, 1997, 2001; Shore & Pieri 1993); pilots, aircrew and air-safety staff (Cook 1997a, b and c); and manufacturing employees (Ames & Grube, 1999; Ames, Grube & Moore 1997). A 1998 United States study reported that in every company in America, between 15 and 17 per cent of employees 'abuse substances' (Fernerg

1998) while a 2006 study (Frone 2006) specifically investigated alcohol use during the work day, finding that 1.83 per cent of the United States workforce drink before attending work, 7.06 per cent drink during the work day, 1.68 per cent work while intoxicated, and 9.23 per cent attend work with a hangover.

Consistent with Pidd and colleagues (2011) one earlier Australian report has highlighted the particular risk of drinking for young workers. Examining responses from just over 300 young workers, Lindsay (2001) found a significant proportion drank at risky or harmful levels. She also noted that harm was higher in some occupations compared to others. However, although she found that the building, manufacturing and hairdressing industry employees reported high levels of harmful drinking, the hospitality and food industry employees reported much lower levels of risk. It is unclear why this might be the case, especially in the context of other reports illustrating the comparatively high risk for employees in these industries.

A key message that emerges from this research is that risk is not evenly distributed among occupations and workplaces, and access to alcohol, which might be influenced through diverse means, is a critical influence. Access might be through direct exposure (e.g. working in the hospitality industry) price subsidy (e.g. by allowing access to alcohol through expense accounts or the provision of subsidised or free alcohol as part of working conditions), poor controls that allow heavy alcohol consumption in the workplace and work cultures that revolve around drinking as team building or collective solidarity or celebration. This is a critical, but perhaps not surprising, point. Various general population studies have demonstrated that availability of or access to alcohol is associated with harmful consumption (see, for example, Babor et al. 2010). It appears that the workplace is similarly influenced.

The difficulty with prevalence estimates presented in both Australian and international literature is that they cannot be compared as the type of prevalence points vary in each study from 'current drinkers', 'problem drinkers', 'harmful drinking', '>4 standard drinks per day', 'binge drinking', and 'daily consumption'. In addition, as noted earlier, there is reason to believe that estimates based on self-report may indeed be underestimates, and cultural factors may influence self-report biases in different studies.

Prevalence papers examining alcohol-related consequences have suggested an association between risky alcohol consumption and absence from work. However, this relationship is not clear. Bush and Wooden (1994) found that the association between alcohol use and work absence was an artefact of the confounding influence of other variables such as smoking (see also Vasse, Nijhuis & Kok, 1998). Alcohol was only predictive of absence when consumption was at a very high level. In

contrast, Upmark, Möller and Romelsjö's (1999) findings suggested an increased relative risk of heavy drinking and work absence even when controlling for socioeconomic-, smoking- and health status. Pidd and colleagues (2006a) have also found that risky and high-risk consumption in Australia was associated with higher rates of self-reported work absences and poor work practices. In their project with Australian small businesses, Williams, Bush and Harmoni (1996) found that approximately 40 per cent of managers 'suspected' that a worker in the last year had been performing poorly because of a hangover, and approximately 25 per cent said that they knew of a worker, in the last year, who had taken a sick day because of drinking. No manager reported an accident arising from drinking.

In another study, Dollard, Winefield and McQuirk (1992) examined the influence of smoking and alcohol use on the development of 'work strain' (an interesting counter-approach to the studies of work stress as a predictor of alcohol and other drug consumption). They found that alcohol and other drug consumption was unrelated to the prevalence of 'work strain'.

A number of Australian and international studies have examined the relationship between alcohol consumption and workplace injury (see for example Chau et al. 2008; Holcom, Lehman & Simpson 1993; Lothian, MacDonald & Wells 1998; Pidd et al. 2006a; Pollack 1998; Spicer, Miller & Smith 2003; Stallones & Kraus 1993; Stallones & Xiang 2003; Steenkamp, Harrison & Allsop 2002; Veazie & Smith 2000; Webb et al. 1994; Working Party of the Health Advancement Standing Committee for the National Health and Medical Research Council 1997; Zwerling et al. 1996). These studies differ methodologically, with some surveying specific work sites (e.g. postal services and manufacturing), others examining secondary household survey data and others based on literature/evidence reviews.

Although the association between alcohol use and increased risk of injury is not in doubt, most reports highlight the considerable number of factors that confound an accurate understanding of the relation between alcohol consumption and workplace accidents and injuries. Additionally, a range of methodological weaknesses limit the validity of these investigations, such as failing to control for occupational differences. Also, there has been no systematic investigation of, for example, alcohol's role in fatal workplace accidents, leading to wide variations in estimates. Thus, the role of alcohol might not be examined, or estimates made so long after an accident as to make meaningful interpretation impossible, and/or only examined when alcohol's involvement is suspected. As noted by Allsop, Phillips et al. (2001), this lack of systematic analysis of alcohol's contribution to workplace fatalities demands caution in the interpretation of estimates. In Australia, Pidd and colleagues (2006b, p. 77) reported that past reviews have estimated that 'between 3 per cent and 11 per cent of all non-fatal workplace injuries *may* be attributable to alcohol use' (emphasis added). It should also

be noted that studies specifically focusing on the Australian workplace context are limited in time and extent.

A recently published international study of mortality data (1991–2000) in the United Kingdom identified male 'seafarers' as a particular risk category for alcohol-attributable harm (Coggon et al. 2010). Similarly, hospitality industry staff had high rates of alcohol mortality. The incidents varied by sex, with alcohol-related mortality amongst publicans and bar staff having similar rates for both sexes, while being dominated by males among caterers, cooks and kitchen porters (Coggon et al. 2010). This is consistent with the earlier observation that those industries that seem to have more ready access to alcohol have some of the highest risk for alcohol-related harm, suggesting that public health responses might prioritise such occupations and workplaces.

Consumption might also be increased by particular work structures, such as shift work (see for example, Kivimäki et al. 2001). Some prevalence studies have investigated predictors of work-related alcohol consumption, including alcohol availability (physical and social) (Ames & Grube 1999), workplace culture (Pidd et al. 2006a), discrimination, bullying and harassment (Bennett & Lehman 1999; Nawyn et al. 2000; Yen et al. 1999), level of work control (Hemmingsson & Lundberg 1998, 2001), level of alienation in the workplace (Yang, Yang & Kawachi 2001), work-related stress (Davey et al. 2001; Delaney et al. 2002; Frone 1999; Grunberg et al. 1999; Hagihara, Tarumi & Nobutomo 2000; Hiro et al. 2007; Koopman et al. 2003; Landsbergis et al. 1998; Moore et al. 2007; Murphy et al. 1999); work/family conflict (Frone et al. 1997); and pay level (Zarkin et al. 1998). Overall, these studies point out the potential association between workplace culture and/or environment and the prevalence of alcohol consumption in the workforce, but they also highlight that this connection is not always straightforward. Hiro and colleagues (2007), for example, found an association between job stressors and heavy drinking, but noted that workplace stressors differed by age group.

It appears that the study of harmful alcohol use within industries and amongst occupational groups has been unsystematic, and the findings inconclusive. Due to the challenges to the quality of these studies, it is important to avoid being too bold in conclusions about the prevalence of risky alcohol use amongst workers. The challenges include:

- complex relationships, which may vary by workplace and individuals, between work and alcohol use/related harm.

- limitations in study design – most studies are cross-sectional

- sampling bias due to low response rates, which may be due to the nature of the information being collected (those that consume high levels of alcohol may refuse to participate); also, there is bias because select industries or occupations have attracted more attention than some others

- inadequate sample sizes, particularly when analyses are conducted for subgroups (e.g. young; men/women)

- use of measurement instruments that have not been tested for reliability or validity, including reliance on self-reported alcohol consumption using methods that result in demonstrable underestimates

- confounding factors not considered, which contribute to spurious associations

- inappropriate use of statistical methods (or use of only descriptive statistics).

The evidence can lead to a cautious conclusion that alcohol use is widespread in many countries, in particular across Australia, and that consumption varies by age, sex and occupation or industry. There is consistent Australian and international evidence that increased access to alcohol is associated with increased risk. Some Australian and overseas evidence suggests that other workplace factors and structures contribute to harmful alcohol consumption. Some evidence suggests that risky alcohol use leads to increased absence from work and presenteeism, where the individual may be at work but making limited contribution due to intoxication or hangover-related impairments. There is some evidence that some staff attend work while alcohol-affected and there has been some impact on workplace safety. Evidence is emerging that workers are affected by co-workers who may engage in risky drinking.

Policy papers

Literature on workplace alcohol policies aimed to define a course of action to prevent or respond to alcohol-related harm in the workplace. Policies can focus on the use of alcohol in the workplace, or can describe the rehabilitation of employees who were identified as having alcohol problems. Two significant problems associated with the development and implementation of alcohol policies in the workplace are the limited evidence about (i) a clear link between alcohol consumption and workplace productivity and (ii) the efficacy of different intervention approaches (see next section).

In their 'ten ingredients for developing and implementing a drug and alcohol policy' in the workplace, Duffy and Ask (2001) identified two types of policies: those associated with control and those associated with harm minimisation. They suggested that policies act to delineate work roles, establish objectives and how these will be achieved, outline how alcohol-related workplace issues will be handled within the workplace, and are designed to be specifically relevant to the workplace within which they are implemented.

Many government and business work settings have formulated policy positions on alcohol use. Of course, these are influenced by the relevant legislation from each country, as well as more local and occupation-based legislation and regulation. WorkSafe Western Australia, for example, along with

other state bodies, issues alcohol and drug guidance notes based on the principle that 'workers should present themselves for work and remain, while at work, capable of performing their work duties safely'. The notes describe strategies to address health and safety risks in the workplace associated with alcohol (and other drug) consumption (WorkSafe Western Australia 2008, p. 1). WorkSafe Western Australia identified alcohol policy (accompanied by supporting procedures) as an integral part of workplace 'risk management', suggesting that such policies substantiate employers' 'duty of care' obligations, prevent procedural uncertainty, demonstrate commitment to safety and education and facilitate 'peer support' that potentially positively informs workplace behaviour and culture. WorkSafe Western Australia suggested that workplaces should develop policies on a collaborative and consultative basis and be clearly communicated to all staff once developed. Policy positions are dependent upon the type of work setting to which they are targeted. For example, workplaces with a high degree of safety hazard are more likely to refer to an alcohol-free policy. Moreover, because policy is shaped by, for example, industrial relations, legal, and health and safety concerns, clear policy positions from government, business and labour organisations on these issues were found in the initial literature analysis.

A large proportion of policy papers have generally been concerned with both the status of the workplace as either a 'wet' or 'dry' site and the status of the worker as alcohol free or, more commonly, free of obvious impairment. 'Dry' workplaces refer to workplaces that prohibit alcohol use at work, while 'wet' refers to situations where alcohol use is permitted in the workplace in accordance with some limitations. Sometimes, employees have been permitted to work if they have consumed small amounts of alcohol, but supervisors have retained the right to identify employees who are alcohol impaired at work. When considering policy positions on alcohol-impaired workers, an important focus has often been on the management of such employees (see, for example, Duffy & Ask 2001).

Generally, effective policy is considered dependent on a process of consultation between those who are formulating the policy and the parties affected by the policy, although supporting evidence for this sensible proposition is lacking (see, for example, Duffy & Ask 2001). For example, a collection of position statements by the Alcohol and Other Drugs Council of Australia (1996) stated that all key stakeholders should be involved in the development of workplace alcohol policies. The Council suggested that employers, employees and their representatives, occupational health and safety professionals, researchers and others need to work collaboratively in policy development to clarify and achieve consensus on policy goals.

Various papers have described the policy process (although, unfortunately, not the impact on alcohol-related harm). For example, in an article on policy development at an Australian University, Blaze-Temple and colleagues (1989) reviewed a number of issues relating to the development of alcohol and other drugs policy and concluded that the workplace culture must be taken into consideration to develop a policy that is acceptable and effective. In a paper about a workplace (Carlton United Breweries) that had traditionally experienced high worker alcohol consumption, Stone (1991) gave a clear description of the policy development in the context of a particular workplace, emphasising the process and importance of policy consultation. Similarly, Marsh (1993) provided a rationale for addressing alcohol and other drug problems in the workplace and considered that prevention, recognition and management principles should be applied. The paper outlined a number of factors that should be considered prior to policy development, including the aims and objectives of the policy. The author also recommended that policy should be developed and introduced in well-defined stages. Marsh provided a timetable that included such issues as defining policy elements and managing employees who are identified as alcohol-impaired. Again, however, there was no evidence relating to the longevity or impact of such an approach on alcohol-related harm.

As can be seen by these few examples, in general, the literature on alcohol policy in the workplace is descriptive, providing an overview of the nature of the issues, the various contentions and the diversity of policies, with little or no evidence supporting statements of good practice. It is also evident, in the absence of quality evidence and the context of industrial relations, that no clear employer and employee consensus exists on these issues. The focus is almost universally on alcohol-related harm in the workplace, not in the broad community. Alcohol at work has been variously portrayed as an impediment to safety, a symptom of more comprehensive workplace environmental problems, as well as the right of the worker. Although the literature does not provide a specific evidence base, some reviewers, such as Duffy and Ask (2001) have critically examined key steps in the policy process, illustrating that each workplace, indeed each work site, is unique, demanding a tailored policy developed through a process of consultation, bringing key personnel on-side. These reviews, however, acknowledge that the relationship of particular approaches to consumption and harm remains to be demonstrated, although they suggest that consultative approaches appear to be more enduring. The various guidance notes from Australian authorities (e.g. WorkSafe WA) have emerged from a process of consultation among employers, employee and government bodies.

Intervention papers

This section is an examination of interventions that have been used in workplaces and, where available, an assessment of their efficacy across occupations and industries.

Five broad categories of interventions used in workplaces are examined:

• health promotion programs – education, prevention and environmental changes

• EAPs – occupational drug and alcohol programs and employee assistance services

• alcohol testing – testing for current alcohol consumption

• web-based interventions

• other interventions, such as counselling and 'new technology' interventions.

Health promotion programs

Rather than being specifically concerned with minimising the impact of harms associated with alcohol consumption, health promotion programs have been more broadly concerned with improving or promoting the general health and wellbeing of the workforce, using education aimed at behavioural change, risk or harm prevention and changes to the workplace environment.

Blaze-Temple (1992a) noted that evaluating the effectiveness of health programs required a focus not only on the impact of programs on employee knowledge, attitudes, consumption and problems, but also on measures that would interest employers, such as productivity and cost-effectiveness.

Throughout the 1980s and 1990s, health promotion programs were commonly advocated by researchers, government bodies and public health groups under the rhetoric that they would be beneficial to employee wellbeing, health, occupational safety and productivity. For example, the Australian College of Occupational Medicine (1983) published a report for business leaders, managers, union leaders and employees. The document, endorsed by the college in 1982, arose out of workshops and meetings involving the Health Commission of Victoria, the National Heart Foundation, the Cancer Council and medical staff. They included a number of health promotion recommendations including the need to develop alcohol education programs for staff, and alcohol and smoking policies and measures such as no-smoking rules and access to smoking-cessation programs, without showing any evidence for the effectiveness of these programs. The document is really of historical rather than practical interest: the membership of the working parties and the fact that it was endorsed by the college made the document, at the time of its publication, influential and credible.

Similarly, Atkinson (1985) and Blewett and Shaw (1995) wrote about the importance of health promotion in Australian industry. They argued that health promotion is consistent with occupational safety and health legislation and practice, although they did not provide evidential support. A community health model was employed by Keenan (1992) as a rationale for the implementation of prevention and education programs in the workplace. In the absence of quality data, she advocated health promotion on the grounds that it would be beneficial to employee wellbeing, health, occupational safety and productivity. Despite such advocacy, these various recommendations were rarely supported by the development of related programs (Corry 2001; Richmond et al. 1992), and where they were described, as illustrated below, they were rarely accompanied by supporting evidence of impact.

Arguing from a different perspective, Williams (1991) proposed that workplaces reflect broader society and it is therefore inevitable that problems such as harmful alcohol use are manifest at work. He described health promotion in the workplace as involving educational, organisational or economic activities, designed to improve the health of workers and thereby the community at large. Drawing on earlier work, he identified four key principles for health promotion in the workplace: prevention (desirable and cost-effective for employers, employees and the community), participation (i.e. the involvement of all parties – unions, employers and management), equity and access (available to all at convenient times and places) and responsibility (consultation and participation). Although the paper was clear and logical, and the author referred to the relevant descriptive literature, no evidence was provided to support the recommendations made (e.g. the need for education on alcohol and other drugs for employees).

Hocking (1988) critically reviewed workplace health promotion programs, arguing that most were money-making ventures and generally did little to fulfil their claims of improving the health of staff and thus reduce absenteeism, premature retirement, deaths and compensation costs. He argued that employers should introduce a non-smoking policy and an alcohol and other drug assistance program for employees. However, following a common thread in the health promotion literature, no evidence of the effectiveness of these recommendations was provided.

A heath promotion program that sought to provide a program for broad utilisation in Australian workplaces, an initiative of the Alcohol and Drug Foundation (Queensland) was reviewed by Dolan (1995). This program was based on a harm reduction philosophy and designed on the basis that alcohol consumption was caused by the interplay of factors such as organisational (e.g. work culture and environment) and individual variables. The project acknowledged that workplaces varied immensely and that health promotion programs should be tailored to the specific environment within which they were implemented. The program had five stages: a needs assessment (i.e.

identifying the needs of a particular workplace, through focus groups, and planning strategies to address alcohol and drug issues), training programs, program development (i.e. EAP), policy development and health lifestyle assessments. As such, it is probably broader than a straightforward health promotion program. Although the paper described a promising approach, no evaluation has been identified. Nicholas (1994) advocated a similarly intensive project for the South Australian Police. Again, no evaluation was reported.

A small body of evidence on the impact of health promotion programs has been reported. For example, Lean (1987) conducted a health promotion program on small businesses, using a two-stage approach. The first part examined the hindrances and facilitators of adopting health promotion programs on smoking, alcohol, diet, blood pressure, exercise and women's cancers. Lean found that the major hindrances to the development of a health promotion program included a lack of time and resources. The second stage was an evaluation of the participants' satisfaction levels and the perceived utility of the program. Lean employed a proportionate stratified random sample of small businesses so that a range of industries were represented (e.g. manufacturing, construction, wholesale/retail trade, community services). A total of 398 businesses were selected from a population of 1,041, of which 29 were randomly selected for the intervention stage. A good description of those who did not take part in the various stages of the program was provided. However, no reason was given to explain why only 29 businesses received the intervention. (Practical and resource limitations may have had a role here.) The second stage resulted in a poor 22 per cent response rate. Therefore, there is a strong possibility of response bias and the generalisability of the findings are unknown. There was no description of the reliability or validity of the questionnaires used in the study, and Lean's conclusion did not take into account the unrepresentativeness of the sample.

Dietze and colleagues (1996) reported on other Australian programs. The first was by the Australian Drug Foundation, which conducted an intervention at Ericsson Australia and the Victoria Police. The second was implemented by the National Drug and Alcohol Research Centre, which conducted a project with Australia Post (Richmond et al. 2000).

The study conducted by Dietze et al. (1996) was a potentially important project. Focus groups were conducted to examine whether alcohol consumption was an issue in both workplaces and to assess the viability of the project. Following this initial stage, where it was identified that risky alcohol use was a problem in both environments, a brief intervention was introduced that entailed a number of separate components: an education program, training of health staff or occupational health and safety officers, and the training of general staff, such as bar workers at Victoria Police. An evaluation following this brief intervention revealed a number of positive project outcomes. The intervention

was well received by the general staff and most respondents thought it was a good idea. However, the evaluation also revealed that only 50 per cent of the respondents thought the intervention was useful and there was little change in employees' attitudes and beliefs regarding alcohol use. Not only did the intervention seem to have little impact, but there were serious limitations. For example, even though 80 per cent of respondents stated that they saw the toilet cubicle advertisement, less than 50 per cent stated that they saw other elements of the program/promotions. Only four employees in the police sample attended the education program, the response rate at the evaluation stage was low (<30 per cent), and there was no control group.

The study conducted by the National Drug and Alcohol Research Centre (Richmond et al. 2000), also described by Dietze and colleagues (1996), had similar methodological limitations and illustrated the very practical challenges of conducting controlled investigations in workplaces. Eight Australia Post 'networks' (10 work sites per network) were randomly assigned to either a control or experimental condition. Both groups were administered a survey (with questions relating to general health and fitness, work environment and alcohol consumption), which acted as the baseline measure. The experimental group was then given a health assessment (i.e. a number of physiological tests) as well as a brief intervention called Drinking Detective, coupled with motivational interviewing. A follow-up survey was administered to both conditions after a 3-month interval from the start of the project. Like the Australian Drug Foundation project, the results of this study initially appeared encouraging. The experimental condition showed a significant reduction in alcohol consumption, while the control condition showed no change at all. However, the analysis had a number of problems. For example, the two conditions differed on the baseline measurement with the experimental subjects reporting that they drank more than the controls. Dietze and colleagues suggested that the positive finding could have been the artefact of a 'floor effect' among the control condition (i.e. the control subjects were drinking at a level so low that a further reduction would not have taken place). These criticisms are further supported by the findings that there were no observed differences in the two conditions on the physiological measures of drinking behaviour.

Outside the Australian workplace context, Addley and colleagues (2001) investigated a lifestyle and physical activity assessment program in Northern Ireland. Before implementation, on the basis of self-report measures, 8 per cent of the study group were considered 'excessive drinkers'. The study findings suggest that the program had a degree of effectiveness in modifying behaviour; however, the researchers were limited in their capacity to outline the impact of these modifications on absenteeism and productivity. In the United States, Bennett et al. (2004) evaluated the impact of a municipal social health promotion program on alcohol outcomes. Employees were randomly assigned to one of three groups: a group attending a training course on workplace health promotion

(involving team building, peer referral and stress management), a group attending a training course (involving a review of policy, employee assistance programs and drug testing) and a control group. Both intervention groups showed a decline in problematic drinking, compared to the control group (which showed no change over the study period). Other research conducted in the United States has suggested that health promotion programs can effectively modify behaviour and attitudes associated with alcohol consumption when brief interventions focus on alcohol-related harm (see Cook et al. 2003; Heirich & Sieck 2000; Heirich & Sieck 2003).

Despite much "promising work" and some clear guidance, quality evidence about effective health promotions to prevent and reduce alcohol-related harm in the workplace is limited. Where supporting evidence is available, one common theme appears to be the use of brief intervention approaches (see below) that have been clearly demonstrated to have an impact in other settings.

Problems with the research on health promotion programs arise from either a failure to evaluate proposed programs or, where evaluations are reported:

• failure to use a control group to account for confounding factors

• small sample sizes

• failure to report the validity and reliability of instruments used

• lack of detail on the methodology

• lack of detail on methods of analysis

• use of short-term evaluation of impact

• potential contamination across intervention and control groups.

Employee assistance programs

At the other end of the intervention spectrum, EAPs have primarily involved the assessment and identification of employees with alcohol-related problems and their referral to treatment. This intervention arose from United States literature and is one of the most commonly adopted strategies in overseas and Australian workplaces (Calogero, Midford & Towers 2001; Loxley et al. 2004). Thomas (1996) identified three types of EAP: internal programs, externally provided programs and peer-/co-worker-based programs. Although EAPs vary substantially across organisations and industries, Cagney (1999) identified a number of central components including key personnel (supervisors and managers) training to identify and manage problems, confidential and ongoing employee assessments, brief and constructive intervention (often entailing 'motivation and confrontation') into problems affecting performance, referral, ongoing consultation and evaluation.

A sustained criticism of EAPs is that they focus on individual employees, and they do not address other workplace issues that may impact on risky alcohol consumption, such as the workplace environment, alcohol availability and cultural influences on alcohol use.

Despite the vast EAP literature, with much of it from the United States, the majority of papers are descriptive, and few report scientific investigations on the effectiveness of EAPs. Some reviewers have commented that they are often published by those with a vested interest (see, for example, Calogero, Midford & Towers 2001). Although EAP papers have tended not to focus on a specific occupation, many had an industry focus. A wide range of industries have been covered in the literature, including government services, banking, community services, transport, manufacturing, mining, media, finance, property and business, defence services and communication industries.

Some authors have provided guidelines on the ideal EAP referral process (e.g. Larkins 1981; Mapstone 1981); others have emphasised the need for supervisor training (e.g. Thomas 1981; Wykman 1981). However, such approaches rarely resort to quality evidence to support proposed process. Existing evidence is most commonly based on staff receptiveness to programs and exploration with the aim of improving processes (Bennett & Lehman 2001; Bennett & Lehman 2002; French et al. 1997; Schneider, Casey & Kohn 2000). Becker and colleagues (2000) suggested a range of methods to effectively evaluate EAPs (and other intervention programs) to assess impacts on absenteeism, staff turnover, injury and disability rates and cost–benefit analyses. Unfortunately, such considered reporting is the exception, not the rule.

The main conclusion from the literature is that, across Australia and in many other countries, EAPs are the most commonly endorsed approach. However, the quality of the evidence is poor, and the description papers are limited. The main weaknesses in papers examining EAPs are lack of detail or clarity of argument, making replication difficult, and lack of an evidence base, instead relying on an argued case or opinion.

Examples of some of the evidence-based papers are provided here. Parmeter and Walsh (1985) administered a questionnaire to 24 clients who had been referred to a counselling service. The follow-up study (for which clients were sent a questionnaire months after the end of counselling) indicated some positive impact: the work performance of 12 of the 24 clients was successfully rehabilitated. However, the absence of a control group did not permit an assessment of the efficacy of the treatment relative to alternative services or historical factors. Other problems with this study included its underrepresentation of females (only one female was included in the sample), baseline measures of work performance were not taken and 'work performance' was not well defined.

In other Australian studies, Berkhout and Tsouvallas (1989) provided evidence regarding 225 clients who had attended an EAP service. In a second report they focused on the effectiveness of a short-term intervention (Tsouvallas & Frankel 1991). In the first study, participants were asked to complete a questionnaire three months after their last contact with the program. The questionnaire measured respondents' opinions about whether their problem had been resolved by using the service and their satisfaction with the service. Ninety per cent of respondents said that the service helped and 89 per cent said that they were satisfied with the service. However, response rates were low (only 107 clients returned the questionnaire – less than 50 per cent), there was no control condition, and a description of the validity or reliability of the questionnaire was absent. The report of Tsouvallas and Frankel (1991) had similar methodological limitations.

Carney (1991) reported on a study implemented in an Australian public administration. Ninety per cent of staff had heard of the EAP service provided to their department and 70 per cent had accurate knowledge of it. Seventy per cent of individuals who had used the service thought it was useful and were satisfied with it. Although the questionnaire had a reasonable response rate (78 per cent, 1,559 respondents), its reliability and validity were not reported and the responses were about self-reported satisfaction, not impact on work performance or drinking.

Smith, Rotem and Krass (1987) conducted a process evaluation of an EAP in the Public Transport Authority of New South Wales. The authors examined only the process indicators of the EAP but then extended their conclusions to suggest that an EAP is a desirable intervention. The methodology included the review of case records of the EAP and interviews with clients and workers at a variety of levels and responsibilities in the organisation (senior managers, supervisors, union delegates, employees, clients and referral agencies). However, participation in some of these groups was quite low (e.g. 10 clients, 4 referral agencies, 7 union delegates). Non-random sampling and unvalidated and unstructured interview schedules threatened the validity of the study. In terms of the existence of alcohol-related problems, the authors examined the inter-rater reliability of classification which reached an acceptable level of 84 per cent. However, this was based on a sample of five clients. The report claimed that alcohol (and other drug) problems were significant in the population but provided no estimate of the prevalence or impact of such problems on the agency or of the degree of harm occurring among the target group. The claim that the EAP reduced alcohol and other drug problems was not supported by any evidence.

Terry (1981) attempted to evaluate the economic value of EAPs. The study was conducted in a small company of 350 staff; no information was given about the type of industry. Terry claimed that the introduction of a company policy and EAP reduced the absenteeism rate by 34 per cent, saving the company more than $47,000 in one year. He then used these data to claim that the program was a

success. However, he noted that no referrals to the program occurred during the study, which could be taken to indicate program failure. No attempts were made to control the influence of extraneous factors that may provide alternative explanations of the data, nor was there any attempt to provide alternative interpretations of the results.

Terry (1984a, 1984b) later reported on perceptions of the necessity, adequacy, accessibility, credibility, expertness and confidentiality of EAPs. A questionnaire was administered within six industries. The findings suggested that most employees (67 per cent) knew of the program, although supervisors (95 per cent) were more knowledgeable of the program's existence than other employees. Referral rates in a given year were less than 1 per cent. Barriers to referral among supervisors included a perception that the employees did not have a problem, and a lack of support from management. A limitation of this study is that subjective perceptions of EAPs do not permit judgements on the effectiveness of the program. Also, the large variation in response rates across the industries (29–83 per cent) does not permit accurate generalisations.

Blaze-Temple and Tsouvallas (1994) examined the coverage of EAPs in Western Australia. An estimation of the spread of EAPs in WA was measured by interviewing counsellors from five major EAP providers. The investigators found that 20 per cent of the WA workforce was covered by some type of EAP service in late 1991; when organisations with more than 20 employees were considered, 34 per cent of the workforce was covered. Overall, government employees (72 per cent) were more likely to be covered than non-government employees (4 per cent) (for international EAP prevalence studies see Kenkel 1997). The authors concluded that the high prevalence of mental health problems in the community (20 per cent) signalled a need to make EAPs more widely available. Although the findings are unremarkable, the study's conclusions were problematic: the authors assumed that EAPs are effective although no sound empirical evidence was provided in support.

Schmidenberg and Cordery (1990) employed a qualitative evaluative approach to examine the implementation of an EAP in a large banking organisation. Problems and difficulties experienced by managers and supervisors (20 branch managers and 20 branch accountants) in implementing the EAP were examined. In-depth semi-structured interviews were conducted with the subjects. These were taped and the transcripts examined for persistent themes. The major finding was that managers were capable of identifying poor work performance but had difficulty identifying the cause(s) of a decline in work performance (there is no evidence that this is in fact a desirable attribute or not). Like the criticisms already given, the findings may be useful as a descriptive study of the function of an EAP, but the authors provided no information about the EAP's effectiveness.

Hocking (1983) conducted a controlled trial to evaluate the effectiveness of supervisor training in an alcohol program. Two intervention groups were established (light and heavy input) and compared to a control group. A large, representative sample was obtained and these were randomly assigned to a treatment group. The findings were negative: no difference in referral rates was found across the three groups. Supervisor and general staff training did not appear to increase referral rates to an EAP. Schwarzenholz and colleagues (1984) suggested that the Hocking study was far from 'controlled' because a basic repeated-measures design was not employed as the methodology. No detailed explanation of the training program was given, leaving the reader to assume that the program was useful and relevant to supervisors. Schwarzenholz and colleagues (1984) concluded that the trial failed to produce anything of significance due to a faulty methodology and poor control of the variables involved.

The EAP studies and reports have a number of common problems:

- Many reports were descriptions, with claims of success often left unsupported by other than descriptive data.

- Most did not detail the reliability or validity of questionnaires, when used. Samples were often small, unrepresentative and/or compromised by poor response rates.

- There was low or no control of confounders or attempts to explore threats to study design and incorporate these into the interpretation of data.

- Outcome measures, such as 'work performance', were often poorly defined and inadequately measured.

- Controls were rarely used and sample sizes were too small to use sophisticated analyses. When controls were used, it was unclear whether attempts to avoid contamination were successful (e.g. participants in control groups being aware of or receiving intervention).

Although EAPs are among the most commonly used strategies, in Australia and overseas, to reduce alcohol problems in the workplace, little evaluation has been done on these programs, and little is known about their effectiveness. Perhaps their greatest advantage, given that many studies indicate a large proportion of self-referrals (see, for example, Calogero, Midford & Towers 2001), is that they allow greater access to a service in an environment where employees spend much of their waking life – at work. It has been argued that, in the broad community, enhancing access to treatment is an important ingredient of treatment engagement, retention and impact. In light of this, some commentators (e.g. Allsop et al. 2001) have suggested that increased access to a range of treatment options, depending on need and personal preference, is more appropriate than a focus on EAPs.

They also suggest that judgement of success be based on a return to satisfactory work performance, rather than on adherence to a particular treatment philosophy or regime.

Alcohol testing

Drug testing in the workplace is a complex and contentious issue (Nolan 2001; Holland, Pyman & Teicher 2005). Advocates support the implementation of testing based primarily on the argument that employees who work under the influence of alcohol and other drugs (which have been shown to have deleterious effects on psycho-motor performance (see Macdonald, 1997)) are a risk to themselves, to others and to workplace productivity. They suggest that drug testing is part of a suite of preventive measures to ensure that employers meet their 'duty of care' responsibilities (Nolan 2001). Critics suggest that testing is needlessly intrusive, can lead to unnecessary and costly workplace disputes, is not a cost-effective means of reducing workplace harm, and that few available testing methods can adequately detect or measure impairment.

For a variety of reasons the contention about alcohol testing is less than that surrounding illicit drug use. First, testing for alcohol is usually by breath analysis, which some perceive as less invasive than urine analysis, a common method used to detect illicit drug use. Second, there is good evidence about the impact of alcohol on performance, with more limited evidence about some illicit drugs. Third, breath testing detects levels of alcohol, with good evidence linking this to likely impairment. Similar analysis and conclusions are not possible for other drugs because testing detects only the presence or absence of metabolites (in urine) or active drug (in saliva) – neither method allows determination of level of intoxication or impairment. Fourth, prevalence of alcohol use is much higher than prevalence of illicit drug use.

Alcohol testing is not without limitations. For example, if poor or poorly maintained equipment is used, alcohol testing may be inaccurate. Alcohol testing cannot detect impairment that may arise from a hangover, where an individual may return a zero reading yet still be severely impaired. Despite the various debates, since the late 1980s and early 1990s, in Australia and overseas, especially in the United States, the number of workplaces conducting alcohol and drug testing on employees has increased considerably (Allsop et al. 2001; Heiler 2003; Richmond et al. 1992).

In the past decade or so, one response to some of the criticisms has been the promotion of 'impairment-monitoring systems', which test, for example, reaction times and hand–eye coordination to assess alcohol and drug-related impairment as well as impairment associated with fatigue (Nolan 2001). However, the practical utility, validity and reliability of these methods are still

(almost a decade later) in the relatively early stages of development and they are not widely embraced – no reports of their adoption or impact were found from this period of review.

As well as differences in the mode of testing, alcohol and other testing programs differ in their temporal or context application, with some organisations adopting pre-employment testing, others testing employees randomly and some testing employees after an occupational 'incident' such as an accident or 'near miss', and often a combination of all approaches (Allsop, Phillips & Calogero 2001; Pidd et al. 2006b).

For a number of reasons, some authors have advocated workplace alcohol and other drug testing. These include the observed link between alcohol and other drug use and impaired work performance (Blaze-Temple 1991, 1992b), reductions in productivity, increases in absenteeism, occupational accidents (Terrell 1988, 1991), and sick leave (Wallace 1989). Drug and alcohol testing has been forwarded as a means of reducing economic costs by identifying employees (or potential employees, in the case of pre-employment testing) who use alcohol or other drugs during work hours, and various reports have claimed a positive correlation between drug testing in the workplace and declining injury rates (see, for example, Gerber and Yacoubian (2002) for an analysis of this relation in the construction industry; see also Miller, Zaloshnja & Spicer 2007). However, Allsop and colleagues (2001) and others (e.g. Allsop & Phillips 1992, 1996; Webb & Fresta 1994) have consistently drawn attention to the lack of quality evidence on the effectiveness of alcohol and other drug testing. Much of the evidence is based on poorly conducted studies, including opinions expressed in reports based on poor response rates. These authors have outlined a number of costs unaccounted for by advocates of testing, such as the personal trauma of false positives and potential litigation, and the financial costs of implementing testing programs.

Importantly, the criticisms of drug testing have largely been directed at testing for illicit drugs for which, as noted above, the evidence of the impact of drug use on performance is more limited, prevalence of use is lower and the most commonly used methods detect metabolites of drug use, which cannot be used to determine likely degree of impairment. Alcohol testing is conducted in a context of higher prevalence of use and directly assesses level of intoxication for which there is a strong body of evidence regarding likely impairment. For specific occupations (for example those involving driving) criteria and legislation exist to inform guidelines and practice (see, for example, Allsop et al. 2001). Nevertheless, evidence arising directly from workplace implementation of drug testing and regarding unintended adverse outcomes is limited.

In recent years, some employers have adopted an approach that incorporates the opportunity to self-test along with random testing and for-cause testing (see, for example, Allsop et al. 2001). For

example, an employee will have access to hand-held breath testing machines. If they privately test themselves and record a positive, they simply report as being sick. Usual procedures for sick leave are employed (e.g. frequent regular sick leave will be investigated and/or require a medical certificate). Although the approach seems to have merit, no analysis has been reported.

Web-based interventions

A promising and relatively new development is web-based technologies to intervene in alcohol-related harm. In the United States, Billings and colleagues (2008) examined a web-based approach to reducing workplace stress, anxiety, depression and 'substance abuse'. Participants from a major technology company were randomly selected for the study, including a control group. Pre- and post-test results were recorded. The researchers found a degree of improvement in attitudes towards alcohol consumption and treatment after the intervention, and concluded that a brief and easily adaptable web-based stress management program can improve alcohol-related health problems.

Doumas and Hannah (2008) focused on modifying drinking behaviours of young adults using a web-based intervention program. Participants were randomly allocated into three groups: a web-based feedback group, a group that participated in web-based feedback and underwent a motivational interviewing session, and a control group. Compared to the control group, both intervention groups reported lower levels of consumption after a 30-day follow-up period, and declines were particularly apparent among high-risk drinkers. The authors did not find any significant differences between the intervention groups, indicating that the addition of the motivational interviewing session did not increase the efficacy of the web-based feedback program. These findings support the use of web-based feedback as a stand-alone alcohol prevention program for young adults in the workplace.

A study of male workers at a manufacturing plant in Japan examined the efficacy of face-to-face counselling compared to email correspondence on modifying drinking behaviour. Araki and colleagues (2006) found face-to-face counselling to be more effective but noted that more work was needed to identify the effect of health education using email and other network tools.

This recent research (typically well-conducted, randomised controlled trials) points to the potential effectiveness of web-based technology for improving health outcomes in the workplace. It is consistent with research in other settings, for example among university students (Hallett et al. 2009) or as part of a general health intervention (Simpson et al. 2000) that web-based brief interventions are acceptable, have good penetration into target groups, and have a small but significant impact on drinking behaviour. However, some caution is indicated. The impact is small, sometimes follow-ups

have been brief, and the generalisability of these interventions to challenging settings (e.g. where a strong workplace culture supports heavy drinking) is unclear.

Other interventions

Interventions described here did not fall into the previous categories. In general, these reports did not specify an industry or occupation. Those that did included mining, the public service, defence, manufacturing and community service.

Brady (1994) summarised the Workwell Project, the development and distribution of a kit to assist workplaces in dealing with alcohol and other drug problems. She described the content and distribution of the kit, and the workplaces that had received it. A total of 38 manuals were sold nationwide. She noted that the manual was distributed evenly among small, medium and large companies, and that most of the companies were already substantially involved in workplace health programs. Most were likely to have a smoking policy and fewer had alcohol policies. Brady stated that the manual was reaching companies who otherwise had not received such information in the past and that the manual was well received. She noted that, although alcohol education was reasonably common, few of the respondents were involved in looking at and responding to environmental/structural issues, such as the nature of work and work stressors, the availability of alcohol and so on. No impact evaluation was provided.

Reid (1993) discussed the role of the chaplain as a primary caregiver in the workplace. Much of the paper was based on the disease model of addiction behaviour. He encouraged a process of intervention that centred on withdrawal management and involvement of an intervention similar to that of Alcoholics Anonymous. The paper was based more on the opinion of the author than on a sound rationale or empirical argument; he did not draw on extensive supporting literature. Poliness (1990) presented a similar paper with similar weaknesses.

Krivanek (1993) reviewed models of 'addiction behaviour' and counselling with reference to their application in the workplace. She argued that responses to alcohol (and other) drug problems should be part of an overall strategy for health and safety procedures. She made a number of recommendations including education about the link between safety, health, and alcohol and other drug use; a range of interventions to be available to individuals; consultation and commitment from all levels of staff; and installation of competent educators.

Rollnick and Gold (1990) described a range of responses to alcohol and other drug-related problems in the workplace in Australia and the United States. They described brief intervention as a general strategy, providing sound empirical support, and then explored how this might apply to the

workplace. The methods they described were generalisable to a wide range of workplaces, although they presented no empirical data on workplace application, a weakness the authors acknowledged. As previously noted, however, some recent evidence suggests that brief interventions may have a role, at least in some workplaces, including when delivered in a web-based format.

Notes by Bush, de Crespigny and Nicholas (1993) from a training workshop have been published. The workshop aimed to introduce participants to the idea that the workplace is an occupational community and that responding to alcohol problems may involve changing the drinking culture. The authors proposed that most interventions developed for the workplace have not drawn upon models that link alcohol and drug use to the work environment. They placed particular importance on the complex inter-relationships in the workplace between stakeholders (management, unions etc.), organisational history, management structures, and on a range of other issues. They described the strategies they employed in a remote mining community to prevent and respond to hazardous drug use. This included a description of the program, the various components (health promotion and environmental change, working alongside management, supervisor training, education strategies and evaluation methods). Although presented in brief note form, the paper is a useful description of how one program was conceived, delivered and evaluated.

The focus on workplace culture and environment has garnered greater attention in recent years (see, for example, Davey, Obst & Sheehan 2001; Pidd 2005; Schweitzer & Kerr 2000; Yang, Yang & Kawachi 2001). In a review of work-related drug and alcohol use, Smith (2007) suggested that evidence exists supporting 'good general management practices' in enhancing workplace productivity, increasing safety, reducing turnover and minimising absenteeism. Pidd and colleagues (2006a) suggested workplace culture (defined as the shared and learned norms, values and practices that distinguish social groups) plays an important role in influencing alcohol consumption. They noted that workplace management and supervision play a crucial role in regulating workers' alcohol consumption that may directly affect workplace safety.

Spehr (1993) reported an investigation of the comparative effects of two programs – behavioural self-control and factual information – on alcohol consumption. These were compared to a no-treatment control. The sample consisted of 119 new recruits to an Australian military establishment. Seventy-four per cent of the sample was male, with an average age of 18 years. Alcohol consumption was assessed on the second day during recruitment training and thereafter at weekly intervals. Participants were randomly assigned to a treatment group. An analysis of the data suggested that the three groups did not differ on alcohol consumption, implying that the treatments had no effect. However, there were a number of threats to the study design. Data were available for only 67 participants during the follow-up and there was no explanation for this. The characteristics of

contacts and drop-outs were not described. Participants in different interventions shared accommodation, so contamination across groups may have occurred.

McDonald (1993) described the impact of a supervisor workshop on referrals to a police counselling service. The workshops incorporated concepts of mateship and loyalty. The author reported 73 new referrals in the 6 months after the workshops. Although promising, the study was limited, with no control group and little detail in the report on the nature of the training program or the attendance rates.

Another example of an intervention that had impact was reported in a well-conducted study by Williams, Bush and Harmoni (1996). They conducted a demonstration project involving a multifaceted action–research approach in small businesses. The aim of the project was to develop, implement and evaluate strategies for use in small businesses that prevent and reduce problems related to alcohol and other drug use. Fifty randomly selected small businesses agreed to be in the project. The demonstration project involved a meeting of an advisory committee to get a range of perspectives on the issues and plausible interventions to tackle them; network building, including raising awareness within small businesses about alcohol and other drug issues; development of fact sheets for distribution in the businesses; and an evaluation of the fact sheets, among professionals, and their effectiveness within the small businesses themselves.

Overall, the intervention seemed to have had impact. Compared with a well-matched control group of 50 small businesses, 100 per cent of managers from the experimental group had consulted and reviewed alcohol and other drug information in the two years after the dissemination of the fact sheets, while only 2 per cent of the control group had consulted and reviewed such information, and 76 per cent of the experimental group had increased their awareness of alcohol and other drugs in the workplace, demonstrated by only 20 per cent of the control group. However, the effects of the intervention (i.e. the fact sheets) on employees' alcohol and other drug use in the workplace were not measured. Subsequently, these authors produced a series of resources for small businesses, a resource that was recently updated (see 'Kits').

A recent, well conducted, study involving 235 restaurant employees (125 in an intervention condition, 110 in a control condition) illustrates how prevention and early intervention, targeted at young people in an at-risk industry, can have impact on heavy drinking. Broome and Bennett (2011) noted that restaurant workers in the United States are at high risk for alcohol-related harm, a finding consistent with the higher risk for Australian hospitality staff (Pidd et al., 2011). They designed a specific intervention that involved teaching stress coping skills, challenging social climate factors that might encourage drinking, peer referral for staff who develop alcohol problems, and building team

cohesiveness. Engagement in three 2-hour workshops over three days, using discussion and practical exercises, was associated with a reduction in heavy drinking (having five or more drinks on five or more occasions in a month) and a reduction in workplace alcohol related problems.

Many of the reports described here have critical weaknesses. Problems included insufficient detail on sample selection and small sample sizes, poor or no follow-up and insufficient or poor description of interventions.

On the other hand, there is evidence that carefully targeted interventions and resources, developed in consultation and with support, appear to have impact. Also, 'new' systems of intervention delivery (web-based approaches) appear to be acceptable, even attractive, and have reasonable penetration into the workforces where they have been trialled. When they are coupled with evidence-based brief interventions they appear to have some impact, albeit, as noted earlier, modest and with unclear potential for generalisation.

Kits

For the purpose of this review, kits used as a vehicle for promoting and implementing policies were examined separately. Over the past few decades, many kits have been produced in Australia, and overseas, in diverse forms, including print only and, more recently, electronic resources. Most do not remain in circulation for long, and few are accompanied by impact and outcome evaluations. The following is not a comprehensive review of all kits.

The Australian Drug Foundation kit (1991), *Alcohol and the Workplace: Issues for Options and Action*, was a video cassette that aimed to address the issue of alcohol and other drugs in the workplace in a realistic manner. Hence the emphasis of the kit was on harm minimisation of alcohol-related harm in the workplace rather than elimination of its use. Strategies suggested included alcohol availability reduction, health education programs, the introduction of a clear concise policy, the provision of healthy alternatives to drinking, and ways to improve the work environment.

In the United Kingdom, Murgraff and colleagues (2007) examined a pamphlet intervention designed to modify drinking behaviour, in this case reducing Friday and Saturday night alcohol consumption. The pamphlet informed staff of the recommended daily intake of alcohol. The authors found a reduction in Friday drinking among female drinkers who consumed alcohol at moderate levels, but found no change in men. It is unclear why this difference may have been identified.

In 2006, the Australian National Centre for Education and Training on Addiction developed a resource and information package on alcohol and other drug issues in the workplace, which was based on an

update of earlier work (see Williams et al. 1996). The package comprised a training kit and a resource and information package that provided background information into alcohol and drugs and their potential impact on the workforce, and the various positions that workplaces can take in relation to alcohol-harm prevention. The training kit comprised a training course (in Microsoft PowerPoint) and follow-up questionnaire.

The Australian Building Trades Group Drug and Alcohol Safety and Rehabilitation Program (see, for example, Milne 1995) developed a program and kit that aimed to address workplace culture and attitudes and to suggest preventive and rehabilitative responses. The policy, guidelines and educational materials of this program advocated a responsibility by all employees and management for workplace drug-related hazard (drinking in a manner that might result in harm) and harm. Whether an individual used alcohol (or other drugs) was not considered a central concern of the workplace. However, alcohol use impacting on the safety and functioning of the workplace was seen as a safety issue, to be dealt with as such by the union and management. The kit used a video to illustrate strategies to develop peer intolerance for alcohol and other drug-related hazard in the workplace while providing the opportunity for remedial action and rehabilitative care. The kit was well disseminated in the building industry and, in some jurisdictions, project officers were appointed to provide consultancy, education and training, and support. Although a controlled impact evaluation is lacking, the program has received many accolades and awards.

5.   Case studies

A dearth of case study material about effective responses is not surprising. The quality of much of the evidence and reporting is poor, and sufficient detail about the context or the nature of interventions is lacking. Allsop and colleagues (2001) provided a number of brief illustrations, drawn from Australian and overseas examples. Three of these examples are provided here.

1. A mining company: Risk identification, reducing alcohol availability and creating a workplace intolerant of risky drinking

A mining company with a large workforce used a variety of methods to identify risk. They employed a consultant who visited the work sites. Activities included observation of work practices and of drinking behaviour (the remote sites each had a 'wet mess'). The consultant subsequently had individual meetings with health and safety and medical staff, senior management, union representatives and supervisors. Records of alcohol and drug-related incidents for the previous three years were reviewed. However, there were very few specifically identified incidents. Health staff were interviewed for their expert opinion on the contribution of alcohol and other drug use to safety, health and welfare concerns in the agency. These data were reviewed in the context of the profile of staff at the sites (age, gender, years of work with the company, recruitment location etc.). This information was used to build a picture of risk of hazardous and harmful alcohol and drug use on the site. Staff and management were invited, at a series of seminars, to comment on and adjust interpretation of the data. Although there are threats to such a design, methodological rigour had to be balanced with practical considerations.

Most employees had been with the company for over five years, many over 10 years, and the modal age was 40+ years. Illegal drug use was not considered a current threat, while occasional alcohol intoxication was.

All key stakeholders helped to develop a rationale for responding to problems and there was substantial agreement about the nature of risk in the workplace. It was agreed that the major concern was related to infrequent intoxication from alcohol use during times of high stress at the workplace, or on occasions of celebration. Some employees may have used illegal drugs, but there was no evidence that this had threatened to impact on the workplace.

Consequently, the strategy focused on ensuring that when alcohol was made available, it was done in a manner that encouraged lower risk drinking practices. This included removal of a price subsidy on alcoholic beverages, bar staff trained in responsible service, management practices clarifying that low-risk drinking practices were essential, free spring water on the bar at all times, availability of attractive price-subsidised non-alcoholic beverages, refusal of service to intoxicated customers and no bulk sales. Clear guidelines were developed and communicated about the risk and unacceptability of any drug intoxication at work and consequences of breaches agreed and communicated. Staff were provided with access to breathalysers in several locations to self-test for breath alcohol levels. An education program was mounted to reinforce the cultural and legal unacceptability of being drug impaired while at work. Referral to professional counselling/medical services was maintained as an option for those who required such services. However, the company did not specify any particular kind of intervention or service – they ensured access to relevant sick and other leave. Previously, the company had provided an EAP that offered counselling to drug-dependent staff. In the previous eight years of operation, one employee (out of over 2,000 employees) had used this service for drug-related problems.

2. An engineering company: Tackling a workplace culture that supported heavy alcohol consumption

A consultant was contracted to advise on a counselling response to alcohol problems. This was to be based around a model of coerced entry into a counselling program, with the alternative being disciplinary action. Apparently, a significant number of employees had been cautioned about excessive and unexplained sick leave, appearing to be hung over or intoxicated on the job, and two minor accidents in the previous 12 months had involved people who were intoxicated with alcohol. Despite an identified need for counselling, the organisation initially had no intention about reviewing the way in which substantially subsidised alcohol was made available in the staff bar. Also, until intensive negotiation, there was no perceived need to improve the quality of supervision regarding work safety, nor a perceived need to address a prevailing work culture that viewed lunchtime drinking, at hazardous levels, as a reasonable and acceptable midday break. Supervisors, who took part in purchasing large rounds of drinks, frequently attended such drinking sessions.

It was some time before the singular and likely ineffective focus on individuals in need of counselling broadened to include strategies to address other risk factors. Strategies included removal of the alcohol subsidy (and using these funds to provide free water in the wet mess), a rule that disallowed buying rounds in the staff bar, a 30 per cent reduction in the hours the staff bar operated and a focus

on providing quality, low-price food in the canteen. Staff were educated about occupational risk factors, and supervisors' skills in performance management, particularly around safety, were enhanced through training. After discussion with union representatives, clear rules and guidelines regarding the unacceptability of being alcohol affected, as a safety issue, were communicated.

3. A public transport company: Health promotion combined with clear policy expectations about alcohol impairment

A transport company was concerned about the drinking behaviour of a small number of long-serving employees. There was anxiety that targeting this group with any intervention may result in costly industrial action and the loss of otherwise highly valued staff. Consequently, an across-organisation approach was adopted. All employees were reminded of their obligations under health and safety requirements, and alcohol consumption was considered in this context. Legal obligations, outside of health and safety legislation (e.g. driving under the influence) were also addressed. The responsibilities of employers and employees were discussed and agreed, as were the consequences of not meeting these obligations. Finally, a broad health and wellbeing program was developed and implemented for all staff. This had a substantial, but not exclusive, focus on alcohol consumption. For example, included in sessions on stress management were strategies to facilitate enjoyment of alcohol for those who chose to drink (i.e. alcohol was not suggested as a means to respond to or cope with stress) while reducing risk, and teaching all staff practical strategies to monitor consumption and reduce hazardous drinking practices. There was widespread support for the overall program and reported changes in the work culture in terms of the acceptability of hazardous drinking and its consequences at work.

6. Conclusions

The literature on harmful alcohol use in the workplace provides an overview of both the contentious nature of the issues and the diversity of policy on the use of alcohol in the context of work and the treatment of alcohol-impaired employees. An analysis of the various policy positions shows that no clear consensus exists on these issues. Risky alcohol use is variously seen as an impediment to safety, a symptom of more comprehensive workplace environmental problems, not a priority issue, and (in some cases) a right of individual employees, albeit with limitations. Clearly, such diversity in opinion is accompanied by a broad range of policy positions.

There is no clear consensus of the aims of policies and approaches, and the perspectives of key stakeholders may differ. The literature provides little guidance in this domain – most focuses on impact in the workplace, not in the broader community. Health promotion staff might see the workplace as a location to address alcohol consumption and related harm both within the workplace and in the broader community. Employers and labour organisations might argue that their concern is only with workplace alcohol use or related harm, and not be concerned, even actively resist, strategies that aim to have a broader public health impact. Public health advocates may be keen to focus on the broad range of alcohol harms, whereas workplace interests might be issues that directly affect performance or safety. As noted, there is no easy resolution of this tension and diverse perspectives will influence support for one kind of an approach over another. As such, it will be critical for key stakeholders to negotiate and agree on the aims of any approach, and design a program and its evaluation accordingly.

The challenge of conducting research in this domain has resulted in a dearth of international and Australian literature that can provide strong evidence about patterns of harmful alcohol use in the workplace. However, the evidence does show that alcohol use is highly prevalent in many developed countries, including Australia, that there is some evidence that the majority of people who drink also work, and that alcohol use does at least occasionally occur in the workplace. There is evidence, albeit limited, that alcohol problems are manifest in the workplace. It is also apparent that alcohol use and related harm are not randomly distributed among workplaces – some workplaces are associated with higher rates of use and harm than others. This may be influenced by workplace factors, such as recruitment practices and working conditions, and factors that drive consumption and harm in the broad community.

Effective responses to alcohol-related harm in the workplace are likely to commence with the recognition that there is no single reason for risky alcohol use, no single alcohol problem and no

single effective response. Many factors shape use and diverse alcohol-related problems, and these include the availability of alcohol, the nature of work and the work culture, job security, working conditions and working hours, the pattern and context of alcohol use (in the broad community and at work) and individual characteristics. Some of the most consistent evidence directs attention to the critical role of access to alcohol, noting that access may be influenced by various factors and work practices, from the provision of wet canteens, subsidised or free alcohol to ingrained work cultures and associated practices. Individual, community and workplace factors increase and decrease risk. Responses to alcohol problems in the workplace will therefore need to be tailored and multifaceted. For example, approaches to prevent intoxication may be distinct from, but complement, those that aim to reduce absenteeism related to regular heavy use. Responding to problems in a remote area where work is safety-sensitive, where the workforce is dominated by young males who regularly celebrate the end of the working day by drinking, may have different characteristics to strategies used in a lower risk office environment with an older age group who are more regular heavy drinkers.

As with other occupational safety and health issues, this diversity demands that we be specific in identifying the factors that increase the probability of, or maintain, risky alcohol use and in accordance with these design a tailored response. This means that an ideal scenario will involve, in each work site, careful assessment of risk and contributing factors. Various methods might be used, from formal research, qualitative interviews with key stakeholders (such as employees and supervisors) or inference based on patterns of use in the broader community and employment pool. Thus, if an employer recruits young males from a heavy drinking community/region, there may be grounds to consider an increased risk for harmful drinking; conversely, employees may moderate drinking when in a work environment with a strong safety culture, where policy is clearly communicated and observed. Unfortunately, rigorous research approaches to determine risk (e.g. face-to-face interviews about alcohol use, combined with physiological testing) may be impractical and/or unacceptable to employers and employees, and carry high industrial and financial costs. There is likely to be some tension between practical considerations and the rigour demanded from the research community. This potentially, at least in part, explains the dearth of quality international and Australian information about risk factors, prevalence of and responses to alcohol-related harm in the workplace.

The multifaceted nature of alcohol use and related harm and evidence from outside and within the workplace suggest that diverse and multifaceted interventions will be needed. A focus on one approach, such as educating individual employees about risk and the consequences of policy breaches, will be insufficient. If the risk of alcohol-related harm is increased by a context where

alcohol is easily available, where work is stressful and boring, where supervision is poor and there is a cultural norm of heavy use, an effective response will likely address all these issues. Interventions have included policy approaches, broad and alcohol-focused health promotion activities, specific EAPs and more general counselling options and, more recently, brief interventions delivered through web-based media.

Alcohol policies can help clarify procedures related to alcohol consumption in the workplace as well as the management of such a practice, and in these terms can be useful to workplaces. However, they are not always sufficient, nor essential (Allsop, Phillips & Calogero 2001). Some companies have developed excellent policies, on paper at least, but experience high levels of harm. Other organisations have no specific policy but have low levels of risk or harm. For example, companies that have a good occupational safety and health culture, enjoyable and rewarding working conditions, quality supervision, low access to alcohol and work cultures that do not support hazardous alcohol use are likely to have reduced the risk of alcohol-related harm, irrespective of any specific alcohol policy.

Policies can be useful and provide a context for implementing effective responses to potential and actual harm. Allsop and colleagues (2001) suggested that the *process* of developing a policy is potentially critical – effective policies are likely to involve consultation with the workforce and other key stakeholders. This indicates that effective polices cannot be purchased 'off-the-shelf'; they need to emerge from and be refreshed by regular consultation. They are likely to:

- be written in explicit terms, describing the procedures to be followed in responding to hazardous use

- identify the responsibilities of the broad workforce and individual officers

- ensure that the workforce is informed about and supportive of the rationale for the policy and implementation procedures

- ensure universal and equitable application

- ensure that the consequences of any breach are agreed, reasonably graduated (i.e. consistent with the seriousness of the breach), explicit and clearly communicated

- be consistent with relevant legislation

- include evaluation and review.

Effective implementation is likely to involve an approach that attracts employees to change, not simply having to accept an unpopular imposition. This means explaining, providing a rationale for action and responding to concerns expressed by staff. As already noted, interventions will need to be

tailored to individual work contexts, including considering specific responses in different locations in one organisation (e.g. procedures in a remote mine site may have some distinction from a city-based administrative section). It may be useful, or more attractive, to integrate an alcohol policy into an overall approach to manage other safety and health issues, such as sedentary behaviour, stress management and workplace safety. The rationale for workplace alcohol policies and strategies may be enhanced by challenges to the view that alcohol use is a private right and matter by providing evidence that other people's drinking has relevance for and potential impact on the safety, wellbeing and productivity of the entire workforce. It is pertinent to remember that the issue of passive smoking gave significant momentum to workplace and broad community tobacco interventions.

Some of the more robust research, especially from the United States, suggests that while interventions focused on individuals have a place (such as health education and rehabilitation responses) it is important to address the structural factors (actual and perceived availability; degree of management and peer acceptability of drinking and alcohol affected behaviour; working conditions; visibility and quality of supervision) that might contribute to low- and high-risk drinking. Although EAPs have been among the more common approaches to workplace alcohol-related problems, the evidence on their effectiveness is poor, and they have generally appeared to be targeted at the more visible and severely affected problem drinkers, while having more limited relevance for the larger number of occasional at-risk drinkers. Evidence is emerging from quality studies that brief interventions, including those delivered by web-based media, are accessible, acceptable and have impact on a broad range of employees – that is, those who are drinking at risky levels, not just those who are easily identifiable as being dependent on alcohol, who might appropriately be referred to more intensive counselling services.

Finally, it is arguable that an effective response will not just focus on the workplace. Employees bring to work their experiences from the broader community. If community alcohol consumption and related harms increase (as indeed they appear to be in Australia – see Chikritzhs et al. 2010), it is reasonable to propose that this could translate to costs in the workplace. Employer and employee organisations can bring substantial influence to bear on governments to address alcohol availability, use and harm in the broad community, which can have broad public health and workplace benefits. Such considerations in the United Kingdom during the First World War resulted in action to reduce the hours of sale of alcohol (see, for example, Higgs 1984).

7.   Appendix: Search strategy

Electronic searches

Key literature databases were searched including:

MEDLINE (1980 to June 2010)

EMBASE (1980 to June 2010)

CINAHL (1980 to June 2010)

PsycINFO (1980 to June 2010)

Cochrane Drug and Alcohol Group Trials Register (June 2010)

Work produced prior to 1980 was only included if it was considered to be a 'key text' (that is, it was consistently cited in later work). This commencement year was selected because previous experience by the authors in conducting such reviews has indicated that there are few quality research reports in this domain prior to this date.

Searching other resources

Reference lists of retrieved studies and reviews were also searched, as well as the PhD thesis of Velander (2008). Velander had engaged in a thorough international literature search informed by a substantial number of key informants from around the world. Experts in the field from peak alcohol and other drug and work safety organisations (e.g. WorkSafe) were also contacted for any potential missing studies, including unpublished studies. These key informants ensured that publications 'in press' were included.

8.   References

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