Anecdotal evidence highlights issues of alcohol and other drugs (AODs) and its association with safety risk on construction sites. Information is limited however regarding the prevalence of AODs in the workplace and there is limited evidential guidance regarding how to effectively address it. This research aimed to scientifically evaluate the use of AODs within the Australian construction industry in order to reduce the potential resulting safety and performance impacts and engender a cultural change in the workforce. A national qualitative and quantitative evaluation of the use of AODs was conducted with approximately 500 employees. Results indicate that as in the general population, a proportion of those sampled in the construction sector may be at risk of hazardous alcohol consumption and support the need for evidence-based, tailored responses. This is the first known study to scientifically evaluate the use of AODs and potential workplace safety impacts in the construction sector.  

Introduction

While it is estimated that 640,700 persons suffered a work-related injury or illness in 2009-2010 (ABS, 2010), and 444 persons lost their lives as a result of a work-related traumatic injury in 2008-2009 in Australia (Safe Work Australia, 2011a), very little is known about what proportion of such accidents are directly attributable to the effects of alcohol and other drugs (AODs). This is despite AOD consumption being relatively prevalent within the Australian community (Holland, Pyman & Teicher, 2005) and the clear link between such consumption and subsequent declines in cognitive and behavioural performance (Elliot & Shelley, 2006). Nevertheless, the impact of employees’ AOD consumption on workplace safety and performance is an on-going issue for Australian employees, particularly within the construction industry (Berry, Pidd, Roche & Harrison, 2007). This documented concern is reflected in the increasing array of workplace policies being developed to improve construction site safety through addressing the issue of employee impairment. Improving workplace health and safety is particularly important for this arena given the current size, economic value and expanding nature of the Australian construction industry. It is proposed that the development of such initiatives should firstly be grounded in an accurate understanding of the aetiology, impact and consequences of AOD within the construction sector.
workplace. This should then be followed by the development and implementation of tailored and effective interventions designed to specifically target the extent and severity of the problem within the cultural and operating context of the construction industry. It is argued that developing a nationally consistent, contemporary and collaborative approach across the construction workforce is needed to engender a cultural change in the workforce. Such an approach may take a similar form to the on-going initiative in securing a cultural change to drink-driving in our society where peer intervention and support is encouraged and appears integral to maintaining such change (Ferguson, Schonfeld, Sheehan & Siskind, 2001).

The current research aims to scientifically evaluate the relationship between the use of AOD and the safety impacts within the Australian construction industry to engender a cultural change in the workforce- to render it unacceptable to arrive at a construction workplace with impaired judgement from AODs. A nationally consistent and collaborative approach across the construction workforce- involving government representatives; employers and employees; unions; and other key industry stakeholders and experts has been adopted. An evaluation of the extent and nature of the problem, through an AOD consumption and behaviour assessment and a series of semi-structured interviews, will inform the development of an appropriate industry policy and cultural change management program. The study builds on the credibility and networks developed through the CRC for Construction Innovation’s landmark achievements in safety including the Construction Safety Competency Framework (Dingsdag, Biggs, Sheahan & Cipolla, 2006), Guide to Best Practice for Safer Construction (Fleming, Lingard & Wakefield, 2007), A Practical Guide to Safety Leadership (Biggs, Dingsdag & Roos, 2008) and the Safety Effectiveness Indicators (Cipolla, Biggs, Dingsdag & Kirk, 2009; Biggs, Dingsdag, Kirk & Cipolla, 2010).

**AOD in the workplace: the Australian context**

In addition to the personal and social costs, the economic costs associated with workplace fatalities and injuries continue to be substantial. For example, the total economic cost of work-related illnesses and injuries in Australia is estimated to be approximately $75.1 billion, based on the number of work-related injuries for the 2008/9 financial year (Safe Work Australia, 2011b). Substance abuse and the potential dangers it poses in the workplace are well documented with links to absenteeism, interpersonal problems, disciplinary problems and poor job performance and productivity. It is associated with impaired coordination, judgement and the ability to perceive and respond to hazards (Miller, Zaloshnja & Spicer, 2007; Gee, Curbow, Ensminger, Griffin, Laflamme, McDonnell, LeGrande & Agnew, 2005; Seijts, Sclarlicki & Gilliland, 2002; Wickizer, Kopjar, Franklin & Joesch, 2004). There may also be increased staff turnover and the associated costs of training replacement workers, increased incidence of lateness for work, machinery damage and litigation costs (Banwell, Dance, Quinn, Davies & Hall, 2006). The prevalence, patterns and nature of AOD consumption in the Australian workplace however are not reliably or accurately understood.
There are several studies that offer consumption rates and patterns in various industry and occupational groups (Pidd, Boeckmann & Morris, 2006; Banwell, Dance, Quinn, Davies & Hall, 2006; Evans, Tait, Harvey & Newbury, 2005; Davey, Obst & Sheehan, 2000). While useful, such industry-specific information is limited for a number of reasons (including small sample sizes with specific groups, when they were conducted and the amount of time that has elapsed since the research and methodological factors such as measurement variation). Such factors limit the degree to which these findings can be generalised across industries (including our sample) and the wider workforce (Pidd & Roche, 2011). In addition, any data derived from our current research is likely to be exploratory and should only be compared to incidence levels across the general population rather than specific occupational groups. Such limitations have clear implications for the development of effective programs and highlight the need to gather accurate and reliable data on AOD use in the workplace. A range of questions remain regarding how interventions should be developed and implemented, and the corresponding effectiveness of the initiatives on key safety performance indicators e.g., accidents and “near misses”. Importantly, there appears considerable merit in examining the feasibility and effectiveness of more contemporary approaches that extend beyond traditional workshops and education-based methods and embrace techniques similar to internet e-therapy which have demonstrated positive preliminary results (Klein, Meyer, Austin & Kyrios, 2011).

The Australian construction industry

The construction industry is high-risk for work-related death, injury and illness (Kines, Andersen, Spangenberg, Mikkelsen, Dyreborg & Zohar, 2010; Laitinen & Paivarinta, 2010; Lingard, Cooke & Blismas, 2009; Choudhry & Fang, 2008). It is highly transport dependent both in delivering workers to and from sites, some being quite remote, and in supply chain matters of construction material delivery and removal. The industry is governed by state-based workplace health and safety legislation that places a ‘duty of care’ on the employer. As such, the adoption of an AOD management program is at the discretion of the employer, and is not prescribed under any specific legislation. While many companies do maintain an AOD policy and associated procedures, questions remain as to what is the best approach. Currently, there is no clear evidence on the prevalence and risk of AOD use among Australian construction workers. With a continued reliance on an educative approach to this topic, there is now a national need to develop sound scientific research, based on a safety culture framework, to assist the industry in delivering appropriate, up to date, soundly researched and evaluated strategies and materials targeted at the unique needs and characteristics of the construction industry. A call for new innovations in construction site safety management and a general shift away from the traditional ‘reactive approach’ to risk management is apparent. This paper will provide an analysis and discussion of data collected in phase 1 of the research, as outlined below.

Methodology

This research will make an evidence-based evaluation of the extent of AOD use in the Australian construction workforce and will enable future research to determine policy and practise and develop a cultural change management program to improve the safety of
Australian construction sites. This project was approved by the QUT Human Research Ethics Committee and led by an Academic Project Leader in partnership with a senior Industry Project Leader from a major Australian construction company. The project team collaborated with academic leaders and experts in applied research in the area and was guided strategically by an Industry Steering Committee with membership comprising representatives from key government, industry and union groups. The project is to be achieved through four phases:

**National qualitative and quantitative assessment of the use of AOD**

**Participants**

The survey was distributed to approximately 500 employees at selected construction sites across Australia. Operational sites were selected by the Industry Project Leader, in consultation with the respective regional and safety management team. All employees at the selected sites and corporate headquarters were invited to participate. Employees across a number of roles were also invited to participate in an interview or focus group to identify major issues and themes. These interviews were arranged by the relevant project managers at the selected sites and were largely dependent on the availability of employees on the day.

**Measures**

The World Health Organisation Alcohol Use Disorders Identification Test (AUDIT) was administered. There are 10 items on the AUDIT which are classified into three domains. The first domain (Q1-3) measures the quantity and frequency of alcohol consumption and screens for possible risk of hazardous consumption. The second domain (Q4-6) examines abnormal drinking behavior, which may indicate early or established alcohol dependence. The third domain (Q7-10) probes for negative consequences related to alcohol consumption. Each question is scored from 0 to 4, with a cumulative range of 0-40. A score of 8-15 indicates a risk of harmful consumption, a score of 16 or more indicates a high risk of alcohol problems and a score of 20 or above warrants further diagnostic evaluation for alcohol dependence. Although these thresholds were established on the basis of a study on a clinical population, they have also been widely used and validated in non-clinical populations, including those listed above (Babor, Higgins-Biddle, Saunders & Monteiro, 2001). Four additional questions were developed by the research team for the purpose of this study and included in the survey. These related to readiness to change (e.g. “do you think that you presently have a problem with drinking?” and “in the next 3 months, how difficult would you find it to cut down or stop drinking?”) and ‘other drug’ consumption (e.g. “when have you most recently used marijuana/cannabis” and “when have you most recently used ecstasy or meth/amphetamine type substances”). Demographic details were also included.

Interview questions focused on perceptions towards AOD use in the workplace (including perceived prevalence in the industry, how it affects you, your safety, performance and
productivity, as well as that of your co-workers) and attitudes and perceptions towards existing AOD workplace policies (including knowledge of, perceived effectiveness and attitudes towards them as well as what could be improved).

Procedure

Corporate headquarters and operational sites of the industry partner organisation were visited to distribute the AUDIT survey and conduct interviews. The AUDIT survey was distributed in hard copy to employees on-site along with the Participant Information Sheet and a plain envelope to seal the completed survey in, before returning to the researcher. The researchers clearly communicated to employees that participation was entirely voluntary, that no names are recorded and that the data remains with the researchers, not the construction company. The interviews took place at both corporate headquarters and operational sites in private rooms. Detailed notes were recorded by hand during the interviews and later thematically analysed.

*Future development of an appropriate industry policy*

After analysis of the quantitative and qualitative data collected from both management and employees, a just culture, non-punitive and rehabilitative approach will be developed in consultation with employers, employees, and unions across the infrastructure and building sectors, with the aim being that the program will be adopted nationally for construction workplaces. Integral to this process will be a number of workshops designed to inform all stakeholders as to current research and best practice in the domain. This is essential so as all players in the policy development process have factual information and a similar content knowledge base to work from.

*Future development of a cultural change management program*

Together with the Australian Government, lead industry associations and key stakeholder groups, the research team will initiate an industry-wide nationally consistent collaborative approach to reducing the risk of impaired performance on construction sites and increasing workers’ commitment to AOD safety. Previous work by Biggs, Dingsdag & Roos, 2008; Biggs, Dingsdag & Kirk, 2009; Cipolla, Biggs, Dingsdag & Kirk, 2009 and Dingsdag, Biggs, Sheahan & Cipolla, 2006 provide a significant starting point for the developing a cultural change management program that is directly tailored to the construction industry. It is also anticipated that partnership arrangements with industry education and skills organisations may be developed to disseminate the outcomes of this research and cultural change program.
**Future development of an implementation plan**

An implementation plan will be designed and developed stemming from the initial data collected from both managers and construction employees. This process will include the development of clear recommendations of this research for industry use e.g., the form, content and process of implementing contemporary and targeted interventions. The implementation plan would be educative in focus and will develop a range of comprehensive stepped interventions for use in the corporate organisational environment, including face-to-face delivery of work site programs and web-based programs.

**Results**

**Participants**

Final survey results are based on the completion of 494 surveys. The majority of respondents (n=464) were male, with a mean age of 35.7 years (SD=11.4). Most (398) were employees; with the remaining 85 employed as a contractor. The survey was distributed across all roles within the company with the majority classifying themselves as a tradesperson (155), labourer (117), and plant operator (68), administration/engineering (53) or a supervisor (47). Surveys were collected in Victoria, South Australia and Northern Territory. Semi-structured interviews were conducted with ten employees across several roles in the company, including safety management. Several less formal conversations were also had with employees on-site.

**Survey: AUDIT results**

Of a possible maximum cumulative score of 40, the 494 respondents recorded a mean score of 9.98. Scores ranged from 0 to 40 with a median score of 9. A total of 286 respondents (58%) scored above the cut-off cumulative score for risky or hazardous alcohol use of ≥ 8, with 185 respondents (65%) falling into the 8-15 scoring group, 58 respondents (20%) in the 16-19 scoring group and 43 respondents (15%) scoring 20 and above. Subsequent analysis focused on the three individual AUDIT domains, as presented in table 2.

<table>
<thead>
<tr>
<th>Mean total score</th>
<th>9.98</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median score</td>
<td>9</td>
</tr>
<tr>
<td>Range</td>
<td>0-40</td>
</tr>
<tr>
<td>Above the cut off of ≥ 8</td>
<td>286 (58%)</td>
</tr>
<tr>
<td>8-15</td>
<td>185 (65%)</td>
</tr>
</tbody>
</table>
Table 1: Total AUDIT summary results

<table>
<thead>
<tr>
<th>AUDIT Domain</th>
<th>Mean score (SD)</th>
<th>No. of respondents (and %) who scored at or above the cut off</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domain 1: Consumption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum possible score = 12 (scores ≥ 6 indicating a risk of alcohol related harm)</td>
<td>6.17 (SD=3.1)</td>
<td>300 (61%)</td>
</tr>
<tr>
<td>Domain 2: Dependency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum possible score = 12 (scores ≥ 4 indicating possible alcohol dependence)</td>
<td>1.38 (SD=2.1)</td>
<td>79 (16%)</td>
</tr>
<tr>
<td>Domain 3: Alcohol-related problems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any scoring warranting further investigation</td>
<td>2.48 (SD=3.1)</td>
<td>291 (59%)</td>
</tr>
</tbody>
</table>

Table 2: Mean AUDIT scores for each domain

Survey: Additional questions

Four additional questions were included in the survey regarding self-rated dependency and past other drug use:

Thirty-three participants reported that they either possibly or definitely had a problem with drinking. A further 19 reported that they were unsure. Over the next 3 months, 71 respondents reported that it would be either fairly difficult, or very difficult to cut down or stop drinking. Of those who scored above the cumulative score for hazardous alcohol use (n=286), 212 respondents (74%) reported that they do not have a problem with drinking and 157 respondents (55%) reported that it would be either very easy or fairly easy to cut down or stop drinking. A total of 292 (59%) respondents had used marijuana/cannabis, with 46 in the last year (15.8%). A total of 196 (40%) respondents had used ecstasy or meth/amphetamine type substances, with 62 in the last year (31.6%).

Structured interviews

The semi-structured interviews identified a number of important issues. Firstly, links to reduced safety and productivity levels were confirmed by those in safety advisory positions. Across the board, there was a general lack of understanding and knowledge surrounding the physical and psychological effects of AOD use and how these effects might impair performance. This was despite the overall attitude that the use of AOD is detrimental to workplace productivity and safety. In terms of prevalence, AOD use was perceived as a major issue that is only getting worse, particularly drugs because they are harder to detect.
While current policies were generally seen as effective, there was overall support for more comprehensive and tailored educational initiatives for employees and contractors within the construction workforce. In particular, the need for educational preventative programs – rather than simply dealing with AOD after the fact (i.e. testing and dealing with positive results). Specifically identified was the need to educate younger employees about how to cope with the general lifestyle that can accompany a high-salary, project-to-project, transient type job and ‘getting in early before we have to deal with the aftermath’. Acknowledging the differentiation between the ‘career workers’ vs. the ‘it’s just a job workers’ was also identified as an important consideration. The use of a mentoring type initiative was suggested as one way of contributing towards this. Suggestions and feedback were offered for the more effective communication of AOD education to employees including the need for clear and simple visual hard copy brochures, fact sheets or posters, as well as videos about the physical and psychological effects and impacts of AOD. Training sessions (separate from the tool box talks and pre-starts) were identified as a good opportunity to focus on a particular safety issue in some depth. There was also a positive response to the proposed development of a web-based resource – which would assist those who may find it difficult to seek help or advice about AOD at work. Indeed, job security was highlighted as a common fear regarding seeking help or advice about AOD at work. Other issues included the importance of management support, maintaining a strong supervisor relationship and with a strong commitment to AOD, and the consistent communication of policies and expectations from the start of the project. Related to this was the importance of ensuring that sub-contractors are subject to the same policies and practices that employees are subject to in their regular pre-start and tool box talks. Finally, consideration of the culture of specific occupational groups offers great value in that the nature and pressures of a job (with specific skills and hazards) have a major effect on employees’ lives and relationships.

Conclusion

Together, these objectives are designed to contribute to a change in culture towards improving safety, both within the industry partner’s workforce and more broadly among the general infrastructure and building construction workforce. As highlighted above, no known study has scientifically examined the strength of the relationship between the use of AODs and corresponding safety impacts in the construction sector. As a result, there has been only limited adoption of nationally coordinated strategies that are supported by both employers and employees to render it socially unacceptable to arrive at a construction workplace with impaired judgement from AODs.

Results from this national assessment indicate that as in the general population, a proportion of those sampled in the construction sector may be at risk of hazardous alcohol consumption. Consistent with the assumption that general AOD use does not necessarily translate into workplace AOD use and impairment, results do not tell us about when those in the ‘at risk’ group are drinking. A proportion of those ‘at risk’ will consume alcohol in private, in their own time, whereby their behaviour has no relevance to their performance at work. For others, of course alcohol risk will translate into workplace risk. This evidence does not allow any accurate indication of what this risk might be. These results do, however, suggest that those who may be
at risk are unaware that a problem may exist, further highlighting the need for tailored educational programs to increase knowledge and awareness of the effects of AOD.

This study is of major significance for Australia within the context of harmonisation of industrial legislation in occupational health and safety and Federal and State Government investment to improving workplace safety and overall population health. As well as enhancing safety outcomes for construction workers, it is anticipated that the project, through an educational and web-based support intervention, would lead to a reduction in the economic, health and social costs associated with injuries to workers, not only within the industry partner and the industry as a whole, but also in other industrial sectors as information and intervention programs developed in this project will be made available to other sectors with much of the anticipated outcomes being highly applicable across the workforce. This project will fundamentally contribute to a greater understanding of the impact of AODs in the Australian infrastructure and building industry and, critically, bring together the employer and employee groups nationally.

References


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