Workplace injury and alcohol use in a major state rail organisation

Abstract
Within the railway industry, alcohol misuse has the potential to affect productivity and also to endanger the lives of the public and employees. This paper will outline the findings of a survey of 4979 railway employees and their use of alcohol and perceptions of alcohol as a problem in the workplace. Of the sample, 13% reported having seen an alcohol related accident and 84% felt that alcohol affected the railway workplace. Issues associated with workplace problem drinking will be discussed along with employee opinions on how to address this major workplace health and safety issue.

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While alcohol consumption is part of the Australian way of life, society and industry pay a high price for alcohol misuse, through lowered productivity, and increased absenteeism, accidents, health and welfare costs, crime and social dislocation (1). Within the railway industry, alcohol misuse has the potential to affect productivity and also to endanger the lives of the public and employees. Statistics and accident reports suggest that alcohol use is likely to be associated with railway accidents and injuries (2-5).

Despite this, statistics regarding alcohol use by railway employees are hard to come by. Only the US appears to have accessible national figures, due to the regulatory environment. Prior to legislation initiating mandatory random substance testing, US studies revealed much higher rates of drinking in railway staff than in the general population. Up to 20% of respondents in some studies (2,6) reported having come to work feeling the effects of alcohol, and up to 50% felt that alcohol use by railway workers had at some time compromised job safety.

Australian and overseas studies reveal a large number of work environment risk factors for alcohol use. These include work overload/underload, boredom, poor job security and/or satisfaction, shiftwork, unskilled jobs, work requiring time away from home, under- or over-supervision, long working hours, high levels of heat, light, or noise, male dominated industries, availability of alcohol at the worksite, and lack of rules relating to alcohol consumption (7-10). It appears that many of these factors come together in railway jobs (11).

Since the 1980s, railway employee drinking in the US, Canada, and Australia appears to have decreased to rates similar to those of the general population, paralleling the general decline in drinking levels over this time (4,12,13). However, drinking rates similar to those of the general population are still of major concern, given the often safety-critical nature of railway employees' duties. In addition, the railway industry may still have a culture of drinking, requiring specific workplace intervention programs. Research reveals that workers' support is essential if such programs are to have a positive impact upon harmful drinking (14-16).

The present study aimed to gain up-to-date information on the drinking situation within one Australian railway. It examined respondents' perception of alcohol as a problem in the workplace, and preferred interventions for dealing with the problem. Furthermore, it asked respondents to report their drinking frequency, to allow an examination of how drinking frequency was related to problem perception and intervention preference.

Methods
Participants
Participants were 4,979 employees of an Australian state railway, of whom 89% were male and 11% female. While the ratio of males to females in the organisation was 93:7, the sample ratio was 89:11, indicating that the sample was representative of the organisation in terms of gender. The age profile of the sample, compared to that of the organisation, suggests that the present study adequately sampled across the range of ages within the organisation, with all age groups showing a response rate of around 30% except for those under 20, who had a response rate of 19%. The response rate was highest in the more administrative areas of business and corporate sectors.

Of the sample, 25% worked in administration/management (n=1,223), 25% as professionals such as engineers (n=1,255), 10% in Infrastructure (n=501), 7% as station staff

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(n=347), 12% in operations (n = 601), and 15% as train crew (n=770). Forty-nine per cent of the sample resided in cities, 24% in regional towns, and 22% in rural areas.

**Procedure**

Surveys were mailed to all 14,616 employees of the railway through its internal mail system. Included with the survey was an addressed reply-paid envelope, and a cover letter signed by both the organisation's chief executive officer and a major union figure, explaining the purposes of the survey and assuring respondent confidentiality and anonymity of responses. There was an overall response rate of 34%.

**Survey instrument**

Section 1 of the questionnaire measured respondents' gender, age, region lived in, workstream, job security (very secure to not secure) and job satisfaction (very satisfied to very dissatisfied). Section 2 asked respondents to indicate how frequently they drank alcohol (never to every day), who they drank with, and whether they had a drinking problem (don't drink/no/possibly/definitely). Measures of quantity and type of alcohol were removed from the survey during pre-approval negotiations with railway management and other stakeholders. Section 3 asked whether participants said they have seen an alcohol-related accident or near miss in the workplace (yes/no), whether alcohol was perceived to affect the workplace (generally/in some sections/not at all), what problems they felt were caused by alcohol in the organisation, and their self-reported knowledge of the organisation's drug and alcohol policy (no policy exists/don't know policy/don't fully know policy/know policy). Section 4 examined from whom within the organisation had sought help for drinking problems, what they felt should happen if a colleague arrived drunk or hungover at work, and what they felt the railway should do about alcohol in the workplace. Possible answers to these questions were provided in a list format, from which respondents could choose any number of responses. However, the option of breath testing was removed from the survey during consultation with stakeholders.

**Results**

Table 1 shows that male employees reported drinking more frequently than did female employees (χ² (3) = 52.30, p<0.001). Railway men tended to report drinking slightly less frequently than did the average Australian man (17), while railway women reported drinking more frequently than did the average Australian woman.

Table 2 shows that older workers reported being the most likely nondrinkers, while younger workers were more likely to be occasional drinkers (χ² (6) = 103.82, p<0.001). When compared with those of the same age in the general Australian male population, 15-19 year old employees were more likely to be regular drinkers. However, men in all other age groups were less likely to be regular drinkers than in the general population. While younger women (χ² (6) = 28.53, p<0.001) reported drinking more frequently than did older women, 15-19 and over-55 year olds were over-represented in the regular drinking category in comparison to the general female population.

Table 3 shows that workers in different workstreams differed in self-reported frequency of drinking (χ² (15) = 87.24, p<0.001). Staff in Administration/Management and Infrastructure reported drinking more frequently than did those in other workstreams. Station Staff reported less frequent drinking than did other workstreams. Follow-up analyses showed that Administration/Management was the most likely workstream to report drinking with workmates, while Station Staff were the most likely to report drinking alone (χ² (20) = 77.36, p<0.001).

Station staff were also more likely than those in other workstreams to state that they definitely had a drinking problem (χ² (10) = 26.28, p<0.01). Employees in administration/management, operations and Infrastructure were more likely than those in other workstreams to state that they possibly had a drinking problem. Further analysis revealed that those reporting drinking 5-7 days per week were over-represented in the ‘Possibly’ and ‘Definitely’ have a drinking problem categories (χ² (15) = 5144.02, p<0.001). Overall, 12% of respondents admitted to possibly or definitely having a drinking problem. No regional differences emerged in drinking frequency or problem drinking.

Of the total sample, 13.5% had witnessed an alcohol related accident or near miss. Field staff (Train Crew, Operations, Station Staff, Infrastructure) were more likely to have witnessed an accident than were office-based staff (Administration/Management, Professionals) (χ² (5) = 16.79, p<0.01). Analyses by region did not produce any significant differences. Analyses by drinking frequency revealed that those reporting drinking alcohol 5-7 days a week (18.2%) were more likely to have seen an alcohol related accident (χ² (3) = 32.48, p<0.001) than were those drinking less frequently (11.9%).

Only 9.6% of the sample did not think that alcohol affected the organisation. Those who reported higher drinking frequency (see Table 4) were more likely to report that alcohol did not affect the workplace.
Table 3: Self-reported drinking frequency and problem drinking by workstream.

<table>
<thead>
<tr>
<th>Workstream</th>
<th>Drinking frequency (row %)</th>
<th>Problem drinking (row %)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Never</td>
<td>&gt;4 nights/ mth</td>
</tr>
<tr>
<td>Admin./management</td>
<td>10.3*</td>
<td>33.3</td>
</tr>
<tr>
<td>Professionals</td>
<td>12.4</td>
<td>34.8</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>17.0*</td>
<td>28.7*</td>
</tr>
<tr>
<td>Station staff</td>
<td>21.7*</td>
<td>34.0</td>
</tr>
<tr>
<td>Operations</td>
<td>13.8</td>
<td>35.0</td>
</tr>
<tr>
<td>Train crew</td>
<td>14.9</td>
<td>38.6</td>
</tr>
<tr>
<td>% of total</td>
<td>13.9</td>
<td>34.2</td>
</tr>
</tbody>
</table>

Note: * Significantly (p<0.05) different from expected frequency by analysis of residuals.

(χ²(3) = 15.14, p<0.01). Absenteeism (86.6%) and health problems (81.5%) were the most frequently reported workplace problems caused by alcohol. Poor quality work (76.1%) and safety (74.5%) were rated next highest, with conflict (68.8%), driving (67.1%), and bad publicity (65%) the lowest rated alcohol related problems. Those reporting drinking 5-7 days a week were the least likely to indicate alcohol caused problems in all these categories, and the most likely to indicate that alcohol caused no problems (χ²(3) = 26.94, p<0.01). Thirteen per cent of 5-7 day week drinkers, compared to 9% of each of the lower drinking categories, reported that alcohol caused no work related problems.

Only 38.2% of respondents reported knowing the organisation’s drug and alcohol policy. Approximately 65% of administration/management did not know or fully understand the policy. Those reporting that no policy existed were more likely to be drinking more than once a week (62%) than they were to be drinking less than once a week (χ²(9) = 32.89, p<0.001). Of those claiming no policy existed, 21.7% reported having a drinking problem, while 10.6% of those claiming to know the policy reported having a drinking problem (χ²(6) = 48.0, p<0.001).

Of respondents who had sought help within the organisation for a drinking problem, most had discussed it with a workmate (70%) or Employee Assistance Program (EAP) counsellor (49%), as opposed to a supervisor/manager (28%), union representative (7.7%), or occupational health nurse (28%). This was consistent for all workstreams and reported drinking frequencies. Ninety per cent of respondents stated that they had actually helped a workmate with a drinking problem. However, 78% of the sample stated that they would not talk to anyone within the organisation about a drinking problem.

Table 5 shows that discussion with supervisor and sending the workmate to EAP counselling were the most popular choices for dealing with a workmate who arrived to work drunk or hungover. The greater the reported drinking frequency, the less the support for any of the suggested ways of dealing with workmates drunk or hungover at work, and the greater the support for doing nothing about the situation. This pattern also emerged when analyses were conducted by knowledge of the organisation’s alcohol and drug policy, with those reporting that there was no policy showing the lowest levels of support for any intervention.

Table 6 shows that 97% of respondents felt that the railway should deal with alcohol in the workplace by providing information on its alcohol and drug policy. The least popular intervention was training workers to help fellow workmates with alcohol problems. This pattern was consistent across workstream and drinking frequency. Those drinking 5-7 days a week showed the least support for any intervention, and the most support for doing nothing. This pattern also emerged when analyses were conducted by knowledge of the organisation’s alcohol and drug policy, with those reporting that there was no policy showing the lowest levels of support for any intervention.

Conclusions

Within this railway organisation, results indicated that male railway employees were more likely to report being high frequency drinkers than were female employees, consistent with previous literature (12). Reported drinking frequency of men was lower than for the general male population (17), while for women it was higher than the general female population. For men, this parallels recent overseas studies showing drinking within railway employees has come into line with general population drinking levels (4,13). The result for women may be a consequence of working within a male dominated industry, and is of concern, as women do not need to drink as much as men for their drinking to be harmful or hazardous to their health.

Younger employees were more likely to report higher frequency drinking than were older employees. Of 15-19 year old males, 43% reported regular drinking, in comparison to 22% of the national male population of the same age. A worrying 67% of 14-19 year old female railway employees reported regular drinking, in comparison to 18% of the general female population of the same age. Again, this may be linked to employment in a male dominated industry. It appears young workers in the railway industry may be at risk of harmful drinking. Further study and interventions targeted at this group are urgently needed.

There was also a group of over-55 year old women who reported much higher rates of regular drinking than in the same age group in the general female population. Further analysis revealed that 54% of these women were professionals or in administration/management. This is consistent with Hagen et al. (12), who found older professional women reported disproportionately high drinking levels, and suggested such drinking may be a result of higher stress levels in these women than in the general female population.

Unexpectedly, region did not emerge as a significant predictor of
### Table 5: Action that should be taken if colleague arrives drunk/hungover to work, by drinking frequency.

<table>
<thead>
<tr>
<th>Drinking frequency</th>
<th>What should happen if workmate drunk at work (row %)</th>
<th>What should happen if workmate hungover at work (row %)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Supervisor discussion</td>
<td>Disciplined</td>
</tr>
<tr>
<td>Never</td>
<td>91.8</td>
<td>85.3</td>
</tr>
<tr>
<td>1 to 4 times/mth</td>
<td>94.8</td>
<td>81.4</td>
</tr>
<tr>
<td>1 to 4 days/week</td>
<td>94.4</td>
<td>77.0</td>
</tr>
<tr>
<td>5 to 7 days/week</td>
<td>87.4</td>
<td>66.1</td>
</tr>
<tr>
<td>Total %</td>
<td>93.2</td>
<td>78.1*</td>
</tr>
</tbody>
</table>

Note: * Significant chi square (p<0.001).

drinking frequency or problem drinking. Instead, it appears risky drinking occurs in particular workstreams. Employees in administration/management and infrastructure tended to drink more frequently than did those in other workstreams. Administration/management, infrastructure and operations were also the most likely to report possibly having a drinking problem. These employees were also the most likely to drink with workmates, suggesting a stronger culture or norm of drinking than in other streams, and consistent with research showing that such a norm can facilitate problem drinking (16).

Station staff were the most likely workstream to report definitely having a drinking problem and to report drinking alone. In comparison to other workstreams, Station staff are often required to spend a large amount of work time without contact with other employees, particularly at rural and regional stations. They were also the workstream most likely to report low levels of job security and job satisfaction, possibly due to the isolation and fear of possible automation of their jobs. These factors may lead to them using drinking as a coping mechanism.

Examining safety critical employees (train crew and operations), train crew did not report high drinking frequency. However, 15% of operations staff reported drinking 5-7 days a week, and 14% reported possibly having a drinking problem. Within the organisation, legal obligation and organisational policy have led to intensive education programs and random breath testing of train drivers. Our results suggest that such interventions have a positive impact. However, they also suggest the need for organisation-wide education and intervention programs, to counter in other workstreams the drinking culture of railways (18).

Looking at the perception of alcohol as a problem, most respondents thought that alcohol affected the organisation, and a number had seen an alcohol-related accident in the workplace in the previous 12 months. Field staff (train crew, operations, station staff, infrastructure), who also tended to report more frequent drinking, were more likely to have witnessed an accident. This may be due to norms of drinking in these workstreams. However, perceptions of the extent to which alcohol was a problem also varied with self-reported drinking.

More frequent drinkers were most likely to claim that alcohol did not affect the workplace, and to report that it caused no problems for the organisation, despite the fact that they were more likely to have seen an alcohol related accident.

When it came to dealing with a workmate who arrived at work still drunk or hungover, respondents preferred more formal, organisational policy-based strategies. Greatest support was found for discussion with the supervisor or manager and encouraging the workmate to go to the EAP. Workers appeared to prefer not to deal with drunk or hungover co-workers, seeing this as more appropriately the supervisor's role. This provides support for the training of supervisors as first line of contact for dealing with employees with alcohol problems. The EAP was also considered an appropriate resource to which to turn.

More than 90% of respondents felt that the organisation should deal generally with alcohol in the workplace by providing information on its alcohol and drug policy, and by encouraging the use of the EAP. The preference for more information about the policy was interesting in the light of the fact that only around a third of respondents claimed to know the policy. This finding attests to the importance of a clear unambiguous policy. This finding shows that the mere existence of a policy is insufficient; the policy must be clear and unambiguous, and promoted to all employees. Organisational policy provides employees with knowledge of their rights and obligations, and of appropriate channels for assistance. It is interesting to note that a majority of managers and administration did not know or fully understand the policy, which is of concern as they play a crucial role in the design, development, and implementation of the policy.

An important part of the organisation's policy is the use by supervisors of a formalised employee management system (EMS) to deal with workers performing poorly or unsafely because of alcohol or other drugs. However, the EMS was less preferred by employees than either the EAP or provision of policy and alcohol information, perhaps because the EMS may lead to discipline or even dismissal of the affected employee.

### Table 6: What the organisation should do to deal with alcohol in the workplace, by drinking frequency.

<table>
<thead>
<tr>
<th>Drinking frequency</th>
<th>What organisations should do to deal with alcohol in workplace (row %)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Provide information on alcohol</td>
</tr>
<tr>
<td>Don't drink alcohol</td>
<td>90.6</td>
</tr>
<tr>
<td>1 to 4 times/mth</td>
<td>87.7</td>
</tr>
<tr>
<td>1 to 4 days/week</td>
<td>87.1</td>
</tr>
<tr>
<td>5 to 7 days/week</td>
<td>81.5</td>
</tr>
<tr>
<td>Total %</td>
<td>87.0</td>
</tr>
</tbody>
</table>

Note: All chi squares significant at p<0.001.
The least popular organisational intervention was training other workers to help fellow workmates with alcohol problems, despite the fact that a number of respondents had actually asked for or provided help with alcohol problems. While peers are used as informal support mechanisms, there appears to be resistance to making this support network into a formal organisational strategy.

As already mentioned, respondent drinking appeared related to perception of alcohol as a workplace problem, and strategies for dealing with this problem. High frequency drinkers were the least likely to perceive alcohol as a problem in the workplace and to see a need for any kind of intervention, despite having seen more alcohol related accidents. Yet these may well be the employees for whom intervention is most needed. Those drinking at more problematic levels may be reluctant to endorse organisational interventions, lest such interventions lead to discipline or dismissal for themselves. Yet it may also be that frequent drinkers may not perceive (or may deny) that behaviour such as their own could be problematic or in any way impact negatively on the workplace. Unfortunately, the fact that no drinking quantity or type measures could be included in the survey limit the conclusions that can be drawn about the relationship between drinking and support for organisational interventions.

The responses to this survey suggest that provision with information about organisational alcohol and drug policy, together with encouragement to use the EAP, would form a sound basis for an alcohol intervention program within this particular organisation. These strategies could easily be combined in an alcohol education program, which could also include general alcohol information and supervisor training in implementation of the policy.

While respondents were less favourable towards peer intervention, the fact that many of them considering turning to workmates for assistance suggests an additional need for information and training about strategies that can be used to help co-workers with alcohol problems. As in previous organisational programs (2,14,15,19), such information may be most appropriately disseminated by unions or the EAP rather than through management, to avoid portraying informal support networks as a replacement for formal management responses. Programs such as these reveal that workplace norms, while they can encourage harmful drinking patterns (16), can also be an effective way of reducing alcohol-related harm in the workplace.

References
5. Kolstad, J.L. Alcohol, drugs and transportation. Alcohol, Drugs and Driving 1992; 8: 177-84.