

RESEARCH REPORT

Quantitative and qualitative evaluations of brief interventions to change excessive drinking, smoking and stress in the police force

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Abstract

Aims. To evaluate the effects of a brief intervention to reduce excessive drinking, smoking and stress among police. **Design.** (1) Controlled intervention trial with pre and post-intervention assessment approximately 8 months apart; (2) focus group identification of relevant factors). **Setting, participants.** Assessment was carried out of 954 NSW (Australia) police at 19 stations within two matched districts in the Sydney metropolitan area. Five focus groups were carried out with 43 randomly selected police from the matched districts. **Measurements.** Weekly alcohol consumption and binge drinking, smoking and symptoms of stress were measured by a self-administered Health and Fitness Questionnaire. Recorded responses to set questions provided qualitative data. **Results.** Participation was high (89%) at both quantitative assessments. Alcohol consumption, particularly among men, was high at both baseline and follow-up assessments, although comparisons between groups across occasions showed no significant intervention effects. Excessive drinkers and those reporting moderate to severe stress levels reported more sick leave days ($p < 0.05$, $p < 0.05$). A significant increase in awareness of alcohol policies in the work-place showed in both experimental and control groups over time ($p < 0.01$). The percentage of smokers declined significantly in both intervention and control groups. Overall, women had significantly more symptoms of stress than men. Only 20% of police thought they would seek advice from work-place staff about alcohol consumption, 14% for smoking and 61% for stress. In the qualitative study, employees generally distrusted their organization's involvement in health unless work performance was affected. Seeking professional assistance for life-style issues was viewed as a sign of weakness. Alcohol use was seen as a way of obtaining information or group membership, self-medication and socializing. **Conclusions.** The brief interventions did not produce significant improvements in three life-style factors beyond positive trends in alcohol consumption among women and general reductions in smoking among both study groups. Combining quantitative and qualitative approaches helped identify interactive individual and organizational factors which influence behavioural and cultural norms.

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Introduction

The work-place is a convenient location to attempt to change unhealthy life-style behaviours in a large population of adults.^{1,2} It enables identification and intervention with individuals who are often more difficult to reach in other settings. In particular, young men visit their family doctor less frequently than women.³ As 76% of respondents in our screening study were men, and 75% were aged 18–39 years, conducting health promotion in selected work-places enables high-risk individuals to have access to effective interventions.⁴

Police consume alcohol at hazardous and harmful levels more commonly than the general population.^{4–7} The National Health and Medical Research Council (NHMRC) have defined regular excessive drinking as weekly alcohol consumption exceeding 28 drinks for men and 14 drinks for women, while binge drinking is defined as more than eight drinks for men and six drinks for women in a row, two or more times a month.⁸ In our baseline screening study we found that 48% of policemen and 40% of women were drinking alcohol excessively (that is, hazardous + harmful + binge) with even greater proportions at risk among those aged 18–39 years (52% and 43%, respectively).⁴ This was far higher than for the Australian community (men 10.5%; women 7%)⁷ at that time.

Police are at high risk from medical conditions related to unhealthy life-style habits. Police are twice as likely to die from alcoholic liver disease than the general population. Lung cancer deaths are also more common among police (7%) than the general population (5.4%).⁹ Further, decreased work productivity, increased absenteeism and strained work-place relations are related to excessive alcohol consumption.^{2,5,6}

In an earlier study, we reported that the prevalence of smoking among male and female police (27%, 32%)⁴ was higher than in general population surveys (24%, 21%),¹⁰ (27%, 20%),⁷ particularly among policewomen. Almost half the policewomen 50 years and over were smokers, nearly double the smoking prevalence in the 18–29 years age group.⁴

The Depression, Anxiety and Stress Scale (DASS) used in our earlier study measures five symptoms of stress: difficulty relaxing, nervous arousal, agitation, irritability and over-reaction.^{11,12} We reported that one in eight police suffered moderate to severe symptoms of

stress, with policewomen aged 30–39 years more likely to report stress symptoms.⁴

Approaches are required which reduce the prevalence of life-style factors associated with excess morbidity and mortality looking beyond the individual to organizational factors which might inadvertently encourage risk behaviours. There have been several large, comprehensive work-place health promotion studies that have attempted at an organizational level to reduce smoking prevalence.^{13–18} The Working Well trial in the US conducted among 20 801 employees working in 114 work-sites conducted an intervention over 2 years and reported reduction in cigarette consumption^{13,14} and the US COMMIT trial among 16 000 employees in 2300 work sites in 22 communities conducted over a 4-year intervention period found prevalence of tobacco use decreased among the light to moderate smokers.¹⁵ However, significant reductions in smoking prevalence did not occur in those studies where the intervention period was less, such as in the US Take Heart study, which had 18 months of intervention,¹⁶ nor in the US Well-works trial,¹⁷ nor in the Australian study in the Ambulance Service in which participants had three sessions of intervention.¹⁸ No studies have attempted to reduce stress in the work-place. Although many studies have evaluated the impact of work-site alcohol interventions on individual employees,¹⁹ only one study assessed the effectiveness of a brief intervention to reduce excessive alcohol consumption at the organizational level. This was a study conducted in Australia Post in 67 among 1206 employees working in 67 work-sites, and although there was not a significant change in excessive alcohol use at the organizational level, among those women for whom there were data at baseline and at follow-up, there was a significant reduction in excessive alcohol consumption compared with control.²⁰

The aim of this study was to evaluate the effectiveness of brief interventions to reduce excessive drinking, smoking and stress among at risk police. The primary focus of this study is alcohol.

Method

Research setting

The project was conducted within two districts of the New South Wales Police Service located within metropolitan Sydney. The two districts

were selected because of similarities in the number of stations, staffing and general work requirements.

Design and hypotheses

The study design was a controlled intervention trial with repeat surveys of employees before and after an intervention. The Police Service were only prepared to commit two districts to the study. Due to the high mobility of police who move stations according to need and staffing levels, we were unable to randomized stations within districts because of the problem of contamination between study groups.

The experimental and control groups were run parallel in time, both receiving baseline and follow-up screening approximately 8 months apart, with only the experimental group receiving the health assessment and brief intervention within 2 months of baseline screening. The main hypotheses tested were: (i) implementation of the health assessment and brief intervention would result in significantly lower alcohol consumption at follow-up among subjects in the intervention compared to the control group; and (ii) implementation of the health assessment and brief intervention would result in a significantly greater reduction from baseline to follow-up in the number of employees drinking above NHMRC guidelines⁸ in the intervention compared to the control group. A secondary hypothesis was that implementation of minimal interventions would significantly reduce smoking and symptoms of stress at follow-up among those in the intervention compared to the control group.

Selection of districts

Two of the 10 Sydney metropolitan districts were selected for recruitment in the project. Each district has about 10 police stations and one district management office, with individual work-sites varying from 40 to 160 employees. Experimental and control districts were selected to be distant to minimize possible movement between districts, thereby reducing possible contamination across intervention and non-intervention groups. Police officers moved regularly from station to station, but tended to stay within one district. Selection of the two police districts included consideration of: geographical location; number of individual stations; number of em-

ployees; range of job classifications and type of work required. The Sydney City District containing eight work-sites with approximately 763 employees was the experimental site. The Mid Western District was the control site containing 11 work-sites with approximately 661 employees.

Preliminary health promotion and awareness

Prior to commencement, posters promoting the project were displayed at all participating police stations. A pamphlet summarizing the project was distributed to the chief superintendents or commanders of participating stations to enlist their support and indirectly encourage employee participation. All superintendents were then contacted to enhance their support.

Phase I: baseline screening

Baseline screening recorded alcohol consumption, smoking and symptoms of stress, and identified aspects of the working environment considered to contribute to heavy drinking. All subjects at experimental and control work-sites were told that the NSWPS was co-operating in a study to identify factors influencing employees' health. Assurances were provided to subjects that all data was anonymous and would remain confidential.

A Health and Fitness Questionnaire (HFQ) adapted from previous brief intervention studies in general practice^{3,21,22} was used for screening. This self-administered questionnaire enquired about alcohol consumption, smoking, symptoms of stress, exercise and weight gain/loss. Alcohol intake was measured by a quantity/frequency index of average weekly consumption and binge drinking as defined by NHMRC. Regular excessive drinking is defined as weekly alcohol consumption exceeding 28 drinks for men and 14 drinks for women, while binge drinking is defined as more than eight drinks for men and six drinks for women in a row, two or more times a month.⁸ Stress was assessed using the Depression Anxiety Stress Scales (DASS).^{11,12} The HFQ took approximately 20 minutes to complete and was administered during working hours.

Phase II: focus groups

Following baseline screening, five focus groups were conducted to explore attitudes toward work

environment issues related to alcohol consumption. The 43 participants were selected randomly from Sydney District Stations. Initial contact was made by telephone, followed by a letter. Participants were assured of anonymity and confidentiality of data.

Each focus group was attended by officers of only one occupational designation (commander, detective, general duty sergeant, general duty constable and parking patrol officer). The ratio of men to women (77:23) was representative of the wider survey population.

Focus groups were conducted during working hours. The duration was approximately 90 minutes. All groups were asked the same 11 open-ended questions in order to determine attitudes toward: the appropriateness of organizational interest in health and alcohol consumption; the effects of alcohol consumption on the work environment; the effects of the work environment and police culture on alcohol consumption; informal and formal strategies adopted to deal with alcohol-related problems in the work-place; attitudes to organizational involvement in life-style education.

Phase III: health assessment and brief intervention in the experimental group

The brief interventions were presented in the context of a comprehensive health assessment and promotion programme. The incentives to attend were sample bags containing such items as cereal, fruit juice, skin lotion and soap, and information on health and life-style factors; and measurement of cholesterol and blood pressure.

Assessments were conducted on-site at each work-place. After providing signed consent, employees completed a Health Screening Questionnaire, which was a shortened (15-item) version of the HFQ completed at baseline (approximately 15 minutes). The following measures were obtained: average weekly alcohol consumption (in standard drinks of 10 g ethanol); number of cigarettes smoked per day; number of stress-related symptoms; weight loss or gain; weekly exercise levels; gender and age.

Brief advice and self-help materials were provided to subjects consuming excessive alcohol (approximately 15 minutes), smoking (5–10 minutes) and reporting symptoms of stress (5–10 minutes). During the intervention phase, when more than one intervention was indicated, the

following priorities were followed: excessive drinking (research focus), smoking and stress. Subjects found to have high blood pressure or high cholesterol levels were advised to consult their medical practitioner.

Inclusion criteria for the brief alcohol intervention were taken from NHMRC guidelines.⁸ Before the intervention began, employees classified as regular excessive drinkers were asked to complete the Short Alcohol Dependence Data Questionnaire.²³ No subjects were excluded due to high levels of dependence (20+). All regular excessive drinkers with low or moderate levels of dependence and those classified as binge drinkers were offered a brief intervention.

The intervention was centred on the Drinking Detective flipover²⁴ developed specifically for the work-place. Based on motivational interviewing principles, the flipover contains illustrations and information including: discussion of the pros and cons of heavy drinking; the health effects of excessive alcohol consumption; comparing personal level of drinking with Australian norms; and hints for cutting down drinking. Subjects were given a Drinking Detective kit consisting of a booklet and an audio-cassette of a radio play set in the work-place.

Phase IV: follow-up screening

In order to assess changes in high risk life-style behaviours among subjects, risk behaviour was assessed 6 months after the initial health assessments had been completed. The same screening questionnaire at baseline was used and it was distributed throughout the entire work-places that had participated at baseline.

All questionnaires at baseline, health assessment and follow-up stages were coded by means of subjects using a combination of their birthdate and the first three letters of their mother's maiden name. This code maintained anonymity but allowed matching of subjects' data enabling repeated measures analysis.

Data analysis

The following outcome measures were of primary interest: mean weekly alcohol consumption; percentage of employees drinking above NHMRC recommended levels for weekly alcohol consumption; percentage of employees

drinking above recommended levels for binge drinking; percentage of employees smoking cigarettes; and mean level of stress symptoms. The total number of alcohol drinks per week was determined for each subject and then log arithmetically transformed to more closely approximate a normal distribution. (Means and standard deviations of raw consumption data are presented in tables). A total stress symptoms score was computed for each subject and then logarithmically transformed.

Cross-sectional organization-wide analyses were performed comparing mean alcohol consumption, at-risk drinking (regular excessive or binge), smoking prevalence and mean DASS stress symptoms. In these analyses, changes over time were examined by comparing all subjects who completed baseline screening with all subjects who completed follow-up screening. The baseline and follow-up subjects were considered independent samples, despite a 30% overlap of subjects who had completed both assessments. This approach is the most conservative for testing differences over time.

Three-factor analysis of variance was used to assess change in the number of drinks per week and mean stress levels among employees. Factors were treatment group (intervention vs. control), screening occasion (baseline vs. follow-up) and gender. The major interactions of interest was group by screening occasion and group by occasion by gender.

The percentage change within each group of subjects consuming above/below recommended levels for regular excessive and binge alcohol consumption and the percentage of employees smoking cigarettes were tested by log linear analysis with four factors (consumption level, intervention group, screening occasion and gender).

A two-tailed test with a 5% significance level was used for all analyses.

Results

Quantitative study

Participation rates. At the time of baseline screening, 1424 individuals were employed in the two chosen districts, of whom 954 (67%) were invited to participate. Although research staff allowed for a variety of recruitment times in all shifts for each work-site, some employees were unavailable for recruitment at the time research

staff were present, due to variable hours of shift work, holiday and sick leave and temporary secondments to other stations within the district. Of those invited, 852 (89%) completed screening. In the experimental group, 454/494 (92%) invited completed screening, while in the control group, 398/460 (87%) invited completed screening.

At follow-up screening, 1269 were employed in the two police districts of whom 950 (75%) were invited to participate. Screening rates were 445/487 (91%) in the experimental group, and 402/463 (87%) in the control group. There were 355 subjects, 152 in the experimental and 203 in the control group, who completed both baseline and follow-up assessments.

During the health assessment and intervention phase, all subjects in the experimental district were invited to participate and 423 (61%) agreed. Of these, 60 (14%) were judged to be regular excessive drinkers, 82 (19%) binge drinkers and 109 (26%) were at risk either because of regular excessive or binge drinking or both. All at risk were offered a brief alcohol intervention and 94 (86%) accepted the offer.

Sample characteristics. At baseline screening, there were 645 men (76%) and 203 women (24%) (missing = 4). Mean age was 33.2 years (SD = 9.4, range 19–61) with no significant differences between experimental and control groups. Most subjects (60%) had worked in the Police Service for more than 5 years and 91% were members of a trade union. A majority (62%) had completed years 11 or 12 of high school, with 19% holding a tertiary diploma or degree. At follow-up screening, there were 634 (75%) men and 210 women (25%) (missing = 3). Mean age was 33.7 years (SD = 9.4, range 17–62, missing = 17), with no significant difference between experimental and control group subjects.

Primary outcome measure: alcohol consumption. Table 1 shows weekly consumption for experimental and control group subjects at baseline and follow-up for each sex. Female subjects reported consuming significantly fewer drinks per week overall than men, regardless of treatment group or screening occasion ($F(1,1561) = 140.9$; $p < 0.001$). Although alcohol consumption in the intervention group, particularly among women, appears to have declined to a greater extent than

Table 1. Means and standard deviations of alcohol consumption and proportion of employees "at risk" under two criteria

	Mean number of standard drinks/week (SD)			Regular excessive (%)			Binge (%)		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
Experimental									
Baseline	15.1 (22.8)	17.7 (25.3)	7.6 (10.0)	16.9	16.8	17.1	40.4	43.6	30.9
Follow-up	14.7 (22.1)	18.1 (23.8)	5.7 (7.2)	17.5	21.1	7.9	44.4	50.7	28.2
Control									
Baseline	16.2 (23.8)	18.1 (24.9)	9.0 (17.4)	18.8	18.8	18.7	40.8	41.9	36.7
Follow-up	18.7 (39.7)	21.7 (44.1)	8.4 (13.4)	19.5	20.4	16.5	42.3	43.5	38.1

in the control group, this failed to be supported by the treatment group by screening occasion interaction or the treatment group by occasion by sex interaction.

Table 1 also shows the percentages of subjects in each group and at each screening occasion classified as regular excessive drinkers or as binge drinkers. Results again showed an effect of sex; that is, women were less likely to be either regular excessive drinkers ($Z = -1.96, p < 0.05$) or binge drinkers ($Z = -3.92, p < 0.05$). For regular excessive drinking, women showed a significant drop in consumption over screening occasion compared to an increase in consumption for men ($Z = 2.12, p > 0.05$), although this occurred in both intervention and control groups. The apparent greater reduction in consumption among women in the experimental group compared to the control group was not supported by the three-way interaction of treatment group by screening occasion by sex.

Secondary outcome measures

Stress symptom levels. Table 2 shows the means and standard deviations of DASS stress symptom scores for experimental and control group subjects at baseline and follow-up by sex. Overall, women show significantly higher stress symptom scores than men ($F(1,1684) = 6.00; p < 0.05$). Although the data show that, for men in particular, stress symptoms declined slightly in the intervention group, but increased in the control group, this finding was not supported by the interaction terms of interest.

Cigarette smoking. Table 2 shows the percentages of subjects in each group and at each screening occasion classified as current smokers. Overall, the proportion of smokers declined from the pre- to the post-assessment ($Z = 2.15; p < 0.05$) although this decline was similar for both intervention and control groups.

Additional analyses were conducted to examine all outcome variables among subjects for whom there were both baseline and follow-up screening data. There were no significant changes for excessive drinking, smoking and stress symptoms. There was a trend for women in the experimental group to show a decline in both regular excessive and binge consumption, compared to women in the control group and compared to men in both intervention and control groups. The data for stress show that for both men and women, stress symptoms tend to decline in the intervention group over time but increase in the control group. Trends in reductions in percentages of smokers were observed among women police.

Additional findings

Willingness to seek advice about life-style behaviours. Table 3 shows the percentages of subjects at baseline screening who: (1) considered that the NSW Police Service, as an employer, should be interested in their life-style behaviours, and (2) indicated a willingness to seek advice from the work-place about these behaviours. A majority of police view smoking, drinking and feelings of stress as appropriate sources of interest for their

Table 2. Means and standard deviations of stress symptom scores and proportion of employees smoking cigarettes

Organization-wide (<i>n</i> = 1697)	Mean stress symptom scores (SD)			Currently smoking (%)		
	Total	Males	Females	Total	Males	Females
Experimental						
Baseline	9.2 (8.3)	9.1 (8.3)	9.3 (8.3)	26.2	25.4	28.3
Follow-up	8.6 (8.1)	8.3 (7.7)	9.5 (9.2)	21.0	20.2	23.1
Control						
Baseline	8.2 (7.6)	7.9 (7.6)	9.3 (7.3)	30.5	28.6	37.3
Follow-up	9.2 (8.7)	8.8 (8.5)	10.7 (9.5)	26.8	26.5	28.1

Table 3. Percentage of police men and women at pre-intervention assessment who: (1) thought their employer should be interested in their lifestyle behaviours, and (2) among those who scored at-risk for each life-style behaviour, those who said they would seek advice from the work-place staff about these behaviours

Employees' views	Men		Women		Total	
	%	(<i>n</i>)	%	(<i>n</i>)	%	(<i>n</i>)
(1) Employer should be interested in my:						
Smoking	66	(645)	51	(203)	62	(852)
Drinking	78	(645)	70	(203)	76	(852)
Stress	95	(645)	93	(203)	94	(852)
(2) Among those who scored at-risk, who would seek advice from workplace staff about my:						
Smoking	37	(174)	29	(65)	35	(242)
Drinking	24	(300)	21	(73)	23	(375)
Stress	72	(125)	81	(45)	74	(171)

employer. However, the percentage willing to seek advice from the work-place for smoking and alcohol was small. Men and women did not differ significantly in their views.

Excessive alcohol consumption, stress and sick leave. For the organization as a whole, there was a significant positive relationship between regular excessive alcohol consumption and the reported time off work due to illness during the previous 12 months, both at baseline ($F(1,787) = 4.12$; $p < 0.05$) and at follow-up assessment ($F(1,775) = 4.84$; $p < 0.05$). Subjects who exceeded the recommended NHMRC limits for weekly consumption reported more days of sick leave. On the other hand, binge consumption was not found to be significantly related to sick leave. Stress among police was also significantly

associated with time taken for sick leave ($F(1,846) = 6.00$; $p < 0.05$). That is, police reporting moderate to severe stress levels also tended to report a greater number of days taking sick leave. Smoking was not associated with sick leave.

Awareness of personal alcohol consumption level. To assess awareness of personal alcohol consumption level, police were asked to indicate whether they considered they were "light", "moderate" or "heavy" drinkers. Individual self-rating and reported alcohol consumption were closely correlated for both regular weekly or binge consumption. For example, police who exceeded recommended limits for weekly consumption were most likely to say they were "moderate" (60%) or "heavy" (29%) drinkers.

Only 11% of regular excessive drinkers viewed themselves as "light" drinkers. This relationship was highly significant ($\chi^2 = 96.5$; $p < 0.001$).

Awareness of work-place alcohol consumption policies. The screening questionnaire contained two items that were designed to assess police knowledge of work-place policies regarding alcohol consumption. When asked if the NSWPS had a clear policy on alcohol use in the work-place, most (94%) responded "yes" with a further significant increase with response at follow-up of 97% ($\chi^2 = 10.8$; $p < 0.01$). Similarly, when asked if the NSWPS forbids alcohol consumption at work, the proportion of subjects who agreed increased from 86% at pre-intervention to 96% at follow-up ($\chi^2 = 58.6$; $p < 0.001$). Improvements occurred in both experimental and control groups.

Job satisfaction and security. The screening questionnaire contained several items designed to assess job satisfaction and related issues such as pressure at work and job security. Overall, a majority (74%) of police reported satisfaction with their job, although 64% often felt pressured at work. There were 28% who considered quitting their jobs, while 33% reported having too few opportunities for promotion. Although most felt secure in their jobs (79%), most (81%) indicated that their pay was not fair for the amount and type of work they did. When follow-up responses were compared to baseline, police were significantly less likely to report feeling secure in their job ($\chi^2 = 18.6$; $p < 0.001$) or to indicate satisfaction with their pay ($\chi^2 = 28.7$; $p < 0.001$).

Qualitative study

Several strong themes emerged consistently from the focus groups.

Attitudes to organizational interest in health. The interest of the NSWPS in employee health including alcohol consumption was viewed by many participants as positive although an underlying ulterior motive was suspected. The climate of distrust coloured officers' attitudes to organizational involvement in health. Comments included:

I think it all comes back to the Department

being worried about their own backs.

It depends on why they are interested.

... everyone seems to be wanting to paint a picture that Police are alcoholics.

We don't trust the Department at all.

There was also a strong tendency to view health and alcohol consumption as private matters, beyond the concern of an employing organization. For example,

I find it an intrusion, to be quite honest; they should mind their own business.

Organizational involvement was considered appropriate when work performance was affected by alcohol consumption. Several indicators of declining work performance were identified including absenteeism, lateness, decreased productivity and waning motivation.

Effect of the work environment on alcohol consumption. The work environment was seen as both discouraging and promoting alcohol consumption. Increased shift length and longer distances travelling to work-sites appear to have limited opportunities for socialization and thereby discouraged alcohol consumption. Other work environment factors were identified as stressors. While no specific claims were made of a direct correlation with alcohol consumption, participants identified major stressors in their discussions, such as: promotion; traumatic incidents; the need to make decisions instantly with subsequent detailed scrutiny; unachievable expectations arising from the community generally and the Royal Commission specifically; and the repetitive nature of certain aspects of the work. Typical comments included:

Promotion is a very stressful area ... I'm obviously not going anywhere so why worry ...

... quite often you don't recognise the symptoms [of stress] until it's too late ... you've just been to a fatal ... it might be three or four days down the line when it does affect you ...

There's a lot of stress because you're making instant decisions ... to arrest somebody ... to take their liberty away ... and down the track you're under the microscope whether you've done the right thing ... it's a lonely place that witness box ...

Effect of police culture on alcohol consumption. Reliance on alcohol for relief of stress and for

socializing was considered a central part of police culture. Historically, alcohol has played an important role on pay day, night shift, as part of "mateship", time out and the everyday exchange of information. From the commencement of training in the Police Academy there was pressure to consume alcohol, initially as a means of escape.

Yeah, when you first go down to the Academy ... it's (the pub/club) hit pretty hard.

Detectives considered alcohol played an important role when obtaining new information, at both internal and external levels.

Police culture. It's a very masculine culture. Solidarity, mateship, that sort of thing.

You could make any number of visitations to local premises and one of the best ways to get your information was to have a glass of beer.

Alcohol also appeared to serve an indirect role in bonding members in a group, and this compensated for the loss of non-police friends. This resulted not only from shiftwork but also the nature of shared experiences, into which non-police could not enter.

The only way that I'm going to get into that group is to be one of them, so I've got to start drinking alcohol whether I like it or dislike it, so it can have a massive effect on the work-place because it can be a cancerous growth where everyone is in this group ...

Seeking professional assistance for life-style problems was regarded as a sign of weakness. Alcohol was used as a "self-medicating device". Use of alcohol as a psychological crutch was not seen negatively as an inability to cope.

I'm not sure that Police at this stage are all ready to admit they need counselling. I think that some may see it as a sign of weakness.

It is apparent that the long held tradition of de-briefing during a drinking session still continues, although its form may vary.

That's the way [debriefing] has historically been done and still being done like that ... I don't think too many of us could go home and talk to our respective spouses.

While excessive alcohol consumption continues, sustained by the strong police culture, increasing

accountability and the climate of surveillance, have seen a shift in the "mateship ethic". Problematic behaviours are no longer inherently "covered" by the culture.

... when police turn up drunk for work ... in the old days they were covered for by the culture ...

However, the pressure to socialize and consume alcohol to excess remains.

Yeah we have drinks after night work. Even if you don't really feel like going, you make an effort to go, send offs ... that comes back to the social side of things.

The effect of alcohol consumption on the work environment. Subjects reported little alcohol consumption during working hours. Increased accountability, greater work-loads and specific work-place policies were considered responsible. Some ambivalence about alcohol persisted as demonstrated in the comments:

... I mean it is almost applauded at times—at least he turned up for work ...

You do realize you're letting the team down by not going in ...

Sometimes shifts were reorganized or duties reallocated for safety reasons. These represent informal strategies for preventing alcohol-related problems. Some individuals with alcohol problems were offered help while others were simply moved from station to station with underlying problems ignored.

It always happens you know—they always transfer their bad wood.

There was a clear understanding of the NSWPS prohibition of alcohol in the work-place and the benefits of a formal approach to alcohol-related problems.

... today it is just about a non-event because it is just not tolerated ...

There is a structured framework that you deal within ... you identify the problem, you really just can't bury your head in the sand ... now you are more accountable.

A few additional strategies to reduce alcohol-related problems in the work-place were proposed. Confidentiality of sensitive health

information was a concern. Assistance on health issues would only be sought away from the Service, in order not to jeopardize promotional prospects.

Health education strategies in work-place intervention. Alcohol education in the work-place had little support, especially if presented in isolation.

I think a range of health issues would be better, not just targeting alcohol ...

I think you would be booed off stage.

Participants considered that final responsibility about health rested with the individual. Broad health programmes and the opportunity for developing physical fitness were viewed positively, if these programmes were delivered outside the police service.

Discussion

This study did not find evidence to support the stated hypotheses that implementation of the health assessment and brief intervention would result in lower alcohol consumption, smoking and symptoms of stress among the NSWPS. Attempting to influence the police service by working with management and staff at different levels of the organization did not achieve a significant decrease in excessive alcohol consumption, smoking and stress symptoms in the intervention group. Other large comprehensive work-place health promotion studies attempting to modify life-styles have had varying success. Only two¹³⁻¹⁵ of five¹⁶⁻¹⁸ previous studies reduced smoking. None of the two studies designed to reduce serum cholesterol were successful.^{16,18} The only study attempting to reduce body weight was unsuccessful.¹⁸ Two of three studies examining changes in dietary intake were effective.¹³⁻¹⁷ The study aiming to reduce blood pressure produced significant changes,¹⁸ but it did not achieve an increase in aerobic activity among employees.¹⁸ Our previous study to reduce excessive alcohol consumption was only successful among those women for whom there were data at baseline and follow-up but was not among workers in the organization-wide analysis.²⁰

A number of contextual and cultural factors in aggregate appear to have increased the likelihood that our interventions were unsuccessful in the NSWPS.

Contextual factors

In the work-place, several factors appear to have interfered with the efficacy of our interventions. The impact of the then current Royal Commission profoundly affected the NSWPS. Police in the focus groups spoke of feeling "under siege" and unsupported by the Service. The motivation of the NSWPS to take up health issues was viewed with some suspicion. Job satisfaction declined in both study groups over time, possibly because of the Royal Commission. Some were concerned that confidential health and personnel records might be made available to internal investigations. Distrust of the employer and lack of confidentiality emerged as paramount issues in both quantitative and qualitative studies. Brief interventions may have been inadequate in an environment where other factors were so strong. The project team's assurances of confidentiality may have been undermined by the suspicion generated by the Royal Commission. The encoding system used in our surveys may have inadvertently added to subjects' suspicions as birth dates are a common method of tracking individuals.

Alcohol consumption (for women) and smoking (among women and men) declined in both experimental and control groups but did not reach statistical significance. Completing the screening questionnaires may have raised awareness of health issues but not sufficiently to change life-style behaviours. The distribution of questionnaires and dissemination of information by researchers may also have heightened individual awareness of work-place alcohol policies without changing life-style behaviours.

Cultural factors

Male predominance, stoic refusal to admit difficulties with alcohol use as this would have indicated weakness, and resistance to change were some of the cultural issues raised.

you don't go and admit there's anything wrong with you.

we are a male dominated culture.

we shouldn't be seen to be the ones cracking up or needing assistance.

... counselling. I think that some may see it as a sign of weakness.

The effectiveness of any intervention designed to reduce alcohol consumption and related problems among police is undermined by deeply en-

trenched police attitudes, features of the work-place and police culture. We reported in the screening study that 48% of the men and 40% of the women were drinking at levels considered excessive⁴ by NHMRC guidelines.⁸ This compares with 10.5% of men and 7.0% of women in the general community.⁷ Police who were excessive drinkers rated themselves as heavy (29%) or moderate (60%) drinkers. Drinking has some important positive functions in police work—it assists collection of information and socialization with colleagues.

The factors responsible for heavy drinking among police are complex and include the male-dominated nature of the work-place, which has been found to be a factor related to excessive drinking in another study.²⁵ In order to fit in, female police copy their male colleagues, and consequently many also drink heavily.^{5,26} The NSW Police Service (NSWPS) has a hierarchical structure stressing conformity. Additionally, shift work is an integral part of police work, with drinking frequently occurring at the end of shifts.⁵ Police believe that alcohol makes them more assertive, aiding relaxation and cognition.⁵ Work-place culture has been shown to significantly promote heavy drinking among less satisfied workers and members of job-based drinking networks who were more likely to become problem drinkers.²⁷⁻²⁹

Only 20% of police reported symptoms of stress in the DASS, while 71% reported that their work was stressful. This might suggest a reluctance to accept issues at a personal level with a preference to identify the job as the problem. Police work is extremely stressful due to shifts, courtroom appearances, physical danger and conflict⁶ and negative community expectations.³⁰ Some additional stress may have been due to a Royal Commission into police corruption³¹ which commenced after we started the screening phase of the project. Rapid organizational change and internal investigations have also been identified as stressful.⁵ Police from minority groups such as women, homosexuals or people from non-English-speaking backgrounds have been reported to experience greater stress.³² Alcohol problems have been linked to high stress levels in police forces in the United States,³³ Australia⁵ and Scotland.³⁴

Police who drink to avoid negative consequences are reluctant to admit to personal problems. Admitting to drinking to relieve work

pressure or when "feeling down" is seen as a weakness. Although most police expected their employer organization to be interested in their smoking, alcohol consumption and stress, few were prepared to seek advice in the work-place for excessive alcohol consumption (20%) or smoking (14%). However, we found those police who reported excessive alcohol consumption or moderate to severe symptoms of stress took a greater number of days sick leave. Police are not used to being confronted about health issues or personal habits, such as drinking at work. In the focus groups, admission of having a "problem" was seen as "weak", and this prevented many from seeking help. A disinclination to engage "professional assistance" for problems is part of a culture strongly resistant to even brief health interventions. Admission of weakness was perceived as jeopardizing promotion. This may explain why only 26% were identified as high-risk drinkers during the health assessment and brief intervention phase of this study.

Strengths and limitations

A strength of this study is that we evaluated the impact of health promotion activities on one work-force on an organizational basis, rather than restricting analyses to self-selected participants in a range of different industries. Conducting quantitative and qualitative studies enables insights to emerge into individual and organisational variables that interact and influence lifestyle behaviours and cultural norms. Other strengths are the very high participation rates for the baseline (98%) and follow-up screening (89%), although participation in the health assessment phase was moderate (61%). These participation rates may reflect the strong culture of complying with a superior's directives.

The study design has limitations. The absence of a randomized sites design complicates attribution of any results to interventions, some characteristic of the group (e.g. commitment of management may be stronger in one area), or an external event occurring during the same period (e.g. the Royal Commission).

The complexity of the quantity/frequency measure of alcohol consumption often produced incomplete information as the success of the measure relies on individuals completing all items of the questionnaire. If items are missed, then the level of alcohol consumption is difficult

to determine. In contrast, assessment of smoking relies on the completion of only two items.

Conclusion

A public health approach to work-site health promotion was adopted consisting of working with management and staff, offering a variety of interventions with incentives to participate, and providing programmes which were available at the work-place during work hours. However, the difficulty in influencing the police culture should not be underestimated: "It would take years, if not decades, to clean up the NSWPS and change its culture which had allowed corruption to flourish".³⁵

Our interventions were not strong enough to change life-style habits given the substantial social, contextual and cultural factors in the NSWPS. The entrenched police service culture strongly reinforces alcohol consumption. Any change will take many years even if it starts with management and filters down through the organization. More intensive and longer-term interventions involving repeated contacts with police may be necessary. Only a small proportion of motivated employees participate in intensive behaviour-change programmes that require considerable commitment,^{16,36,37} and such programmes are costly. Future research should focus on strengthening policy and building upon changes made in the work environment.

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