



SUBSTANCE USE & MISUSE
An International Interdisciplinary Forum

Substance Use & Misuse

ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/ism20>


Flying below the Radar: Psychoactive Drug Use among Young Male Construction Workers in Sydney, Australia

Ann M. Roche, Janine Chapman, Vinita Duraisingam, Brooke Phillips, Jim Finnane & Ken Pidd

To cite this article: Ann M. Roche, Janine Chapman, Vinita Duraisingam, Brooke Phillips, Jim Finnane & Ken Pidd (2021): Flying below the Radar: Psychoactive Drug Use among Young Male Construction Workers in Sydney, Australia, Substance Use & Misuse, DOI: [10.1080/10826084.2021.1892139](https://doi.org/10.1080/10826084.2021.1892139)


To link to this article: <https://doi.org/10.1080/10826084.2021.1892139>

 View supplementary material [↗](#)

 Published online: 23 Mar 2021.

 Submit your article to this journal [↗](#)

 Article views: 15

 View related articles [↗](#)

 View Crossmark data [↗](#)

Flying below the Radar: Psychoactive Drug Use among Young Male Construction Workers in Sydney, Australia

Ann M. Roche^a, Janine Chapman^a, Vinita Duraisingam^a, Brooke Phillips^{a,b}, Jim Finnane^b and Ken Pidd^a

^aNational Centre for Education and Training on Addiction (NCETA), Flinders University, Adelaide, Australia; ^bBuilding Trades Group Drug and Alcohol Program, Rozelle, New South Wales, Australia

ABSTRACT

Background: Globally, there is growing concern regarding workers' illicit drug use and its implications for health and workplace safety. Young workers in male-dominated industries, such as construction, may be more susceptible to illicit drug use, risky drinking and its associated harms. **Purpose/objectives:** To investigate drug use and perceptions of risk among male construction workers, drawing comparisons between workers under 25 years with older age groups. **Methods:** Workers in Sydney, Australia (N=511) completed a survey measuring past year illicit drug and alcohol use, psychological distress and perceptions of drug-related risks to health and safety. Prevalence in the total sample was compared with national estimates, and differences between younger and older survey respondents were examined using logistic regression models. **Results:** Survey respondents' cocaine, meth/amphetamine and cannabis use was significantly higher than estimates of male employees nationally (OR=6.60, 3.58, 1.61, respectively). Young workers ≤ 24 were more likely to frequently use illicit drugs, drink heavily, and report psychological distress than those aged 35+. Workers ≤ 24 were least likely to perceive that drug use posed high risks to health or safety when compared with 25-34 and 35+ age groups. **Conclusions/importance:** The findings highlight the high prevalence of illicit drug use amongst young construction workers, representing threats to workplace safety even if used outside work hours. Greater emphasis on potential adverse effects of alcohol and drug use and closer examination of contributory workplace factors are required. These findings have practical implications to inform occupational health and safety programs and interventions in high-risk workplaces.

KEYWORDS

Construction workers; drug use; alcohol; psychological distress; risk perception; work safety; young workers

Introduction

The use of psychoactive drugs can cause a range of harms and are major contributors to the global burden of disease (Degenhardt et al., 2018). Potential for drug-related harm is especially evident among workers. Drug use may impact workplace safety, worker and community wellbeing, and workplace relations (Banwell et al., 2006; Frone, 2013; Gates et al., 2013). It can also affect productivity, increase absenteeism (Roche et al., 2016) and compromise a workplace's duty of care requirements.

Illicit drug use can affect workplace performance and impact productivity through drug-related illness and absenteeism, compromised work quality, reduced work rate and increased errors (Roche et al., 2016). Poor concentration, impaired judgment and slowed/altered reaction times can undermine the health and safety of all employees and increase risk of injury, both on- and off-site (Pidd et al., 2019).

Prevalence of illicit drug use vary by gender, age and across different work groups. For example, young employed males have been found to be more likely to have used illicit drugs in the past 12 months compared to their older

counterparts (National Center for Education and Training on Addiction (NCETA), 2020). Younger workers are also more likely to use drugs in the workplace (Pidd et al., 2017), compromising workplace safety (Frone, 2013) and increasing their risk of occupational accidents and injuries (Pidd et al., 2017).

For young people, the initial transition into the workforce can prove challenging, particularly if confronted with stressful working conditions, demanding workloads, workplace bullying, harassment and conflict (Alexander et al., 2012; Frone, 2000; Hanvold et al., 2019; Pidd et al., 2017). Such psychosocial stressors, coupled with the challenges of the school-to-work transition period, may increase susceptibility to mental health and drug and alcohol problems (LaMontagne et al., 2013; Pidd et al., 2017). Young workers are particularly vulnerable if they work in male-dominated industries (i.e. where more than 70% employed are male) and blue-collar occupations, which have high rates of drug use (Pidd et al., 2011) and psychological distress (Battams et al., 2014).

Construction, both in Australia and overseas, is one such male-dominated industry where high levels of drug use occur (Banwell et al., 2006; Bush & Lipari, 2015; Cook et al., 2004; Lingard & Turner, 2015; Pidd et al., 2006). The construction

industry is recognized as inherently dangerous with a myriad of occupational health and safety risks (Lingard, 2019). It is characterized as demanding, dangerous and stressful: factors which may contribute to higher levels of alcohol and drug use and mental health problems (Du Plessis et al., 2014; Pidd et al., 2006, 2017; Roche et al., 2016), including high rates of male suicide (Milner et al., 2014).

High prevalence of drug use may be influenced by the industry's workplace culture and environment (Frone, 2013), where alcohol and drug use is permitted, accepted and accessible (Frone, 2009, 2013; Pidd & Roche, 2008). Construction worksites also generally uphold traditional masculine group norms and celebrate mateship culture (Du Plessis et al., 2013; Powell et al., 2018), where alcohol and drug consumption might be encouraged, overtly or otherwise. A permissive alcohol and drug use climate may also impact young workers' perceptions of health and safety risks associated with drug and alcohol consumption (Frone, 2009, 2012).

With growing evidence that new and young male workers are at increased risk of incurring work-related injuries and developing mental health problems (e.g. Pidd et al., 2017), exposure to illicit drugs becomes even more important. Equally important is the implementation of potential strategies to minimize risk of harm from illicit drug use (Breslin et al., 2019). To date, however, limited research has focused on young, male construction workers and examined their illicit drug and alcohol use, mental health, and perceptions of drug-related risks on workplace health and safety.

Understanding the prevalence and patterns of illicit drug use among this particularly vulnerable group, as well as their perceptions of drug-related risk, is of critical importance to workplace safety. Moreover, it is vital to have detailed knowledge of the patterns and prevalence of use in specific industry and occupational groups to inform tailored interventions, policy and prevention options. Thus, the aims of the current study were to:

1. Examine the prevalence of cannabis, methamphetamine and cocaine use in male construction workers from Sydney, Australia, and compare with national estimates
2. Compare young (≤ 24 years) workers' drug use with that of older workers, alone and in combination with risky drinking and psychological distress
3. Determine the extent to which young (≤ 24 years) workers perceived drug use to pose a high risk to personal health and workplace safety, in comparison to older workers.

Materials and methods

Participants

A convenience sample of construction workers in New South Wales (NSW), Australia was obtained through collaboration with the NSW Building Trades Group Drug and Alcohol Program (BTGDAP) and were recruited prior to attending a workplace alcohol and drug impairment training program.

Data were collected between September 2018 and January 2019. A pen- and paper-based questionnaire was administered to all participants and took approximately 15 min to complete. The survey was developed and administered by the National Centre for Education and Training on Addiction (NCETA) (a copy of the survey tool is available on request from the authors). Confidentiality and anonymity were assured, and workers were free to withdraw from participation at any time. Ethics approval was obtained from Flinders University's Social and Behavioral Research Committee: ethics approval #7932.

Measures

Drug use

Recent drug use was measured by three items: In the past 12 months, how often have you used: (1) cannabis, (2) cocaine, (3) meth/amphetamine? Response options for each drug were: never/every day/once a week or more/once a month/less often. In order to compare the sample's drug use with national estimates, yearly drug use prevalence was dichotomized into 0 = not used over the past 12 months (response option 'never') and 1 = used over the past 12 months (all other response options).

Frequent use of cannabis, meth/amphetamine and cocaine was determined by reported monthly or more use over the past 12 months for each drug (i.e. frequent use = 'once a month/once a week or more/every day/once a week or more'). For logistic regression analyses, frequent use for each drug type was dichotomized into 0 = non-use, 1 = use.

'Any drug' use was also calculated to encompass participants who used at least one type of drug (either cannabis, meth/amphetamine or cocaine). For comparison with the national estimates, 'yearly use of any drug' was calculated (0 = not used any drug over the past 12 months vs. 1 = used any drug over the past 12 months). For comparison by age group, 'frequent use of any drug' (e.g. monthly or more use of any drug in the past 12 months) was also calculated.

Perception of drug-related risks to health and workplace safety

Perception of drug-related health risk was assessed by three single item measures asking participants to estimate the level of risk to health from regularly using each drug (cannabis, meth/amphetamine, cocaine) at least once per week (1 = no risk, 2 = low risk, 3 = moderate risk, 4 = high risk).

Perception of drug-related risk to workplace safety was measured by three items assessing the degree of risk associated with: (1) using the drug just before starting work, (2) using the drug during work hours, and (3) using the drug the night before work (1 = no risk, 2 = low risk, 3 = moderate risk, 4 = high risk). Each item was asked separately for the three drug types, with the exception of 'using cocaine during work hours', which was missing from the survey.

For all health and workplace safety risk perception measures, responses were dichotomized into perceptions of 'high risk' (response option 4, coded '1') vs 'not high risk' (response options 1-3, coded '0').

Risky drinking

The 3-item Alcohol Use Disorder Identification Test - Concise (AUDIT-C) (Bradley et al., 2007) was used to assess risky drinking. Total scores ranged from 0-12, with scores ≥ 4 indicating at-risk drinking. Responses to this variable were dichotomized as 0=no risky drinking, 1=risky drinking.

Psychological distress

Psychological distress was assessed to investigate the association with frequent drug use. The 10-items from the Kessler Psychological Distress Scale (K10; Kessler et al., 2002) (e.g. 'In the past four weeks, how often did you feel hopeless?') were scored 1 (none of the time) to 5 (all of the time) and scores were summed to provide a score ranging from 10-50. Total scores were dichotomized whereby scores ≤ 15 indicated low psychological distress (coded '0'), and scores of 16 or over indicated psychological distress (ranging from moderate - very high) (coded '1') (Australian Bureau of Statistics (ABS), 2012).

Combined variables

Two additional variables were created to determine the prevalence of frequent use of any drug in combination with risky drinking and psychological distress. Dichotomized responses for 'frequent use of any drug' and 'risky drinking' were summed. Scores of 0-1=no combined use+risky drinking (coded '0'), and scores of 2=combined use+risky drinking (coded '1'). The same approach was used for the second variable. Dichotomized responses for 'frequent use of any drug' and 'psychological distress' were summed. Scores of 0-1=no combined use+psychological distress (coded '0'), and scores of 2=combined use+psychological distress (coded '1').

Comparison data

Data from the 2016 National Drug Strategy Household Survey (NDSHS), a triennial, nationally representative survey of awareness, attitudes and behavior concerning alcohol, tobacco and other drugs, were subjected to secondary analysis for comparison purposes. Full sampling and weighting procedure details are available elsewhere (Australian Institute of Health and Welfare (AIHW), 2017). The 2016 iteration of the NDSHS was conducted between June - November 2016 and contained a sample of 23,772 complete and useable surveys, which represented a cooperation rate of 51.1% (using the total number of dwellings where contact was made as the denominator), or a response rate of 34.7% (where eligible reporting units included cases of non-contact). The 2016 NDSHS included work-related data and industry of employment. Limiting the data to those aged 15 years and older and employed, the NDSHS represented $n=6,556$ males and $n=487$ male construction workers nationally, with all proportion estimates and analyses calculated with probability weighted data to be representative of the Australian population.

Statistical analysis

Data were analyzed using SPSS version 25. Descriptive analyses were conducted to determine sample characteristics. To address Aim 1, yearly drug use prevalence was compared with data from the 2016 NDSHS (Australian Institute of Health and Welfare (AIHW), 2017). Specifically, past year drug use (cannabis, meth/amphetamine and cocaine use) among all male workers nationally and all male workers in the construction industry nationally were compared with survey respondents (odds ratios and confidence intervals). Participant responses to frequent drug use and all other variables were then presented by five age groups (≤ 24 ; 25-34, 35-44, 45-54, 55+) to visualize differences across ages. To address Aims 2 and 3, univariate logistic regression models compared young worker (≤ 24 years) responses to workers aged 25-34 years and workers aged 35 and over, on measures of frequent drug use and perceptions of drug-related health and workplace safety risk. Missing data ($n=4$ for age and $< 5\%$ on other variables) was low and was excluded for the purpose of univariate analyses.

Results

Sample characteristics

The full sample comprised $N=511$ male construction workers from NSW. Four respondents did not provide data for age, leaving $n=507$ for age-based analyses. The average age of the sample was 35.1 years ($sd = 11.8$, range 15-68 years). Compared with population data from the 2016 NDSHS, workers in the current sample were younger than male construction workers nationally (40.8 years, $SEM = 0.8$). In relation to age group categories, 18.5% ($n=94$) of the sample were aged ≤ 24 years; 39.1% ($n=198$) 25-34 years; 19.7% ($n=100$) 35-44 years; 15.0% ($n=76$) aged 45-54 years, and 7.7% ($n=39$) ≥ 55 years. Most of the sample (47%, $n=239$) had worked in the construction industry for over 10 years; others had worked in construction for variable periods of time: 6.9% < 12 months; 13.0% 1-2 years; 19.4% 3-5 years; 13.8% 6-10 years.

Yearly drug use prevalence and comparison with national data

Prevalence of use over the past 12 months for each drug type is shown in Table 1.¹ Twenty-one per cent of the sample reported using cannabis over the past 12 months; 6% meth/amphetamine; 23% cocaine, and 31% any drug. The prevalence of cannabis use in the current sample was not significantly different to national estimates for construction workers ($OR = 1.18$, $p = .287$). However, in comparison to national construction workers and all male workers, cocaine use in the sample was significantly higher ($OR = 3.90$, $p < .001$ and $OR = 6.60$, $p < .001$, respectively). Yearly meth/amphetamine use in construction workers nationally was not compared due to unreliable standard errors, but comparison with male workers nationally showed a significantly higher prevalence among

Table 1. Yearly drug use prevalence among survey respondents compared to national male construction workers and national male workers (2016 NDSHS data).

Drug Type	Survey Respondents % (n)	National Construction Workers % (n)	Odds Ratio1 (CI), p	National Workers % (n)	Odds Ratio2 (CI), p
Cannabis	21.4 (107)	18.6 (91)	OR=1.18 (0.87-1.62), <i>p</i> = .287	14.5 (947)	OR=1.61 (1.29-2.02), <i>p</i> < .001
Meth/amphetamine ³	6.0 (30)	1.3 (6) [†]	–	1.8 (115)	OR=3.58 (2.37-5.41), <i>p</i> < .001
Cocaine	23.2 (116)	7.3 (35)	OR=3.90 (2.61-5.83), <i>p</i> < .001	4.4 (287)	OR=6.60 (5.20-8.38), <i>p</i> < .001
Any drug ⁴	31.4 (157)	21.7 (105)	OR=1.67 (1.25-2.22), <i>p</i> = .001	16.3 (1069)	OR=2.35 (1.92-2.87), <i>p</i> < .001

Note: [†]Estimate has a relative standard error of 25% to 50%. Statistical comparison not performed.

Odds Ratio (OR), confidence intervals (CI) and *p*-value to compare survey respondents with ¹National construction workers, ²National workers, based on relative person weighted data.

³The sample survey item asked about general meth/amphetamine use whereas the NDSHS item specified use for non-medical purposes. Hence, figures may not be directly comparable and should be interpreted with caution.

⁴Any drug=used at least one of the following in the past 12months: cannabis, meth/amphetamine or cocaine.

Table 2. Survey respondents' prevalence of frequent drug use¹, risky drinking and psychological distress in the past 12months, total and by age group.

Drug / Risk Type	Total % (n)	Age group (%)				
		≤ 24 (n=94)	25-34 (n=198)	35-44 (n=100)	45-54 (n=76)	≥ 55 (n=39)
Cannabis						
Frequent use	10.4 (52)	20.4	11.4	5.2	6.8	2.6 [†]
Monthly	3.7 (19)	7.5	5.7	0 [†]	1.4 [†]	0 [†]
Weekly / daily	6.7 (33)	12.9	5.7	5.2	5.4 [†]	2.6 [†]
Infrequent use	11.0 (54)	20.4	11.9	7.2	5.4 [†]	2.6 [†]
Non-use	78.6 (390)	59.1	76.7	87.6	87.8	94.9
Meth/amphetamine						
Frequent use	1.8 (9)	5.4	1.0 [†]	1.0 [†]	1.4 [†]	0 [†]
Monthly	0.8 (4)	1.1 [†]	1.0 [†]	1.0 [†]	0 [†]	0 [†]
Weekly / daily	1.0 (5)	4.3 [†]	0 [†]	0 [†]	1.4 [†]	0 [†]
Infrequent use	4.2 (21)	4.3 [†]	4.7	6.2	1.4 [†]	2.6 [†]
Non-use	94.0 (465)	90.3	94.3	92.8	97.3	97.4
Cocaine						
Frequent use	8.4 (41)	12.9	8.8	10.3	2.7 [†]	0 [†]
Monthly	4.6 (23)	5.4	5.2	6.2	2.7 [†]	0 [†]
Weekly / daily	3.8 (18)	6.5	3.6	4.1 [†]	0	0 [†]
Infrequent use	14.8 (74)	19.4	18.1	10.3	12.2	5.1 [†]
Non-use	76.8 (381)	67.7	73.1	79.4	85.1	94.9
Any drug²						
Frequent use	16.0 (79)	23.7	17.6	15.5	9.5	2.6 [†]
Monthly	6.9 (34)	7.6	9.3	6.2	4.1 [†]	0 [†]
Weekly / daily	9.1 (45)	16.1	8.3	9.3	5.4 [†]	2.6 [†]
Infrequent use	15.5 (77)	21.5	17.6	10.3	13.5	7.7 [†]
Non-use	68.5 (340)	54.8	64.8	74.2	77.0	89.7
Risky drinking³						
Frequent use of any drug + risky drinking ³	15.0 (72)	23.1	17.2	12.5	9.7	0 [†]
Psychological distress⁴						
Frequent use of any drug + psychological distress ⁴	9.2 (44)	13.6	10.6	11.5	1.4 [†]	0 [†]

Note: ¹frequent drug use=monthly or more in the past 12months; infrequent use=at least once in the past year but not monthly.

²Any drug=used at least one of the following: cannabis, meth/amphetamine or cocaine.

³Risky drinking=AUDIT-C score ≥ 4.

⁴K10 score ≥16, indicating moderate-very high psychological distress.

[†]signifies cell size <5 cases.

the current sample (OR = 3.58, *p* < .001). In relation to yearly use of any drug, survey respondents again reported significantly higher use over the past 12months than national estimates of construction workers (OR = 1.67, *p* = .001) and male workers (OR = 2.35, *p* < .001) (Table 1).

Prevalence of frequent drug use across the sample and by age group

A breakdown of frequent drug use among the sample is shown in Table 2. Cocaine was consumed frequently (either on a monthly, weekly or daily basis) by 8% of

workers. Cannabis was the substance most likely to be used on a weekly/daily basis (7%), while meth/amphetamine was used by 1% of the sample on a weekly/daily basis. Frequent use of any drug was reported by 16% of the sample.

When comparing frequent drug use by age group, frequent use (i.e. more than monthly) was most common among young workers aged ≤24years for cannabis (20%), cocaine (13%) and meth/amphetamine (5%). Respondents aged below 25 years were also five times more likely to use meth/amphetamines on a monthly or more frequent basis than workers aged 25-45 years.

Cocaine was used across a wider range of age groups. While frequent use (i.e. monthly or more often) was highest among ≤ 24 year olds (13%), it was also used by 10% of 35-44 year olds. Infrequent cocaine use (i.e. within the past 12 months but less than monthly), was more prevalent among ≤ 24 year olds and 25-34 year olds (19% and 18% respectively), and reported by 12% of 45-55 year olds.

The proportion of the sample that reported drinking at risky levels was 69% in total and was high across all age groups, ranging from 79% in 45-54 year olds to 43% in workers aged 55 and over. Frequent use of any drug in combination with risky drinking was highest in young workers (23%) and decreased with age.

Psychological distress was highest among workers aged ≤ 24 years (46%). Similar figures were reported by 25-34 and 35-44 year olds, decreasing to 26% in 45-54-year olds and 17% in workers aged 55 years and over. The proportion of workers with psychological distress and frequent use of any drug was relatively low at between 12-14% across those aged ≤ 44 and 0-1% in workers aged 45 and above (Table 2), suggesting that psychological problems were not key drivers of AOD use.

Young workers' frequent drug use, risky drinking and psychological distress compared to older age groups

Univariate logistic regressions were performed to assess the strength of the association between age (3 levels: young worker ≤ 24 years; 25-34 years; 35+ years) and frequent cannabis use; frequent cocaine use; frequent use of any drug; risky drinking; psychological distress, and combination drug use with drinking and with distress variables. Analyses on frequent meth/amphetamine use were not performed due to low cell counts for this drug type. All results are shown in Table 3.

For cannabis, workers aged 25-34 and workers aged 35+ were significantly less likely to frequently use than young workers (OR = 0.50, $p = .044$ and OR = 0.22, $p < .001$, respectively). On all other variables, no statistically significant differences were found between responses from young workers and those aged 25-34 years (ORs ranging from 0.66–0.94 and p values ranging from $p = .107$ to $p = .818$). Workers aged 35+ were significantly less likely than young workers to frequently use cocaine (OR = 0.41, $p = .037$); frequently use any drug (OR = 0.34, $p < .001$); report risky drinking (OR = 0.57, $p = .050$) and a combination of frequent drug use and risky drinking (OR = 0.34, $p = .002$); report psychological distress (OR = 0.56, $p = .025$) and report frequent use of any drug in combination with psychological distress (OR = 0.40, $p = .032$) (Table 3).

Young workers' perceptions of drug-related health and safety risks compared to older age groups

Figure 1 shows the proportion of high risk responses for all drug-related risk perception items, broken down by all age groups. With the exception of meth/amphetamine, which was high and relatively consistent across ages, the general

Table 3. Young workers' frequent drug use¹, risky drinking³ and psychological distress⁴ compared to 25-34 and 35+ age groups.

	B (SE)	p	95% CI for Odds Ratio (OR)		
			Lower	OR	Upper
Cannabis					
Age 25-34 years	-0.69 (0.34)	.044	0.26	0.50	0.98
Age 35+ years	-1.54 (0.40)	<.001	0.10	0.22	0.47
Cocaine					
Age 25-34 years	-0.43 (0.40)	.285	0.30	0.65	1.43
Age 35+ years	-0.89 (0.43)	.037	0.18	0.41	0.95
Any drug²					
Age 25-34 years	-0.42 (0.27)	.107	0.40	0.66	1.09
Age 35+ years	-1.08 (0.28)	<.001	0.20	0.34	0.58
Risky drinking³					
Age 25-34 years	-0.31 (0.29)	.287	0.41	0.73	1.30
Age 35+ years	-0.56 (0.29)	.050	0.33	0.57	1.00
Frequent use of any drug²+ risky drinking³					
Age 25-34 years	-0.37 (0.32)	.245	0.37	0.69	1.29
Age 35+ years	-1.07 (0.35)	.002	0.18	0.34	0.68
Psychological distress⁴					
Age 25-34 years	-0.06 (0.26)	.818	0.57	0.94	1.57
Age 35+ years	-0.59 (0.26)	.025	0.33	0.56	0.93
Frequent use of any drug²+ psychological distress⁴					
Age 25-34 years	-0.29 (0.39)	.460	0.35	0.75	1.61
Age 35+ years	-0.92 (0.43)	.032	0.17	0.40	0.93

Note: For all analyses, age < 24 years = 0, reference category.

¹Frequent drug use = monthly or more in the past 12 months, 0 = non-use; 1 = use.

²Any drug = used at least one of the following monthly or more in the past 12 months: cannabis, meth/amphetamine or cocaine.

³Risky drinking = AUDIT-C score ≥ 4 . 0 = not risky drinking; 1 = risky drinking.

⁴0 = low psychological distress; 1 = moderate-very high psychological distress (K10 score ≥ 16).

Frequent meth/amphetamine not included in analysis due to low cell size.

pattern was a lower proportion of perceived risk among young workers aged ≤ 24 years. Overall perceptions of drug-related risk were high across all age groups; the lowest was risk to health and workplace safety from using cannabis the night before work.

The logistic regression procedure was repeated with the three-level predictor of age (3 levels: young worker ≤ 24 years; 25-34 years; 35+ years) and the perceptions of drug-related risk to health and workplace safety variables as outcomes (Table 4).

In relation to cannabis, workers aged 25-34 and workers aged 35+ were significantly more likely than young workers to perceive high risk to health from regular cannabis use (OR = 2.07, $p = .010$ and OR = 3.01, $p < .001$, respectively). Those aged 25-34 and 35+ were also significantly more likely than young workers to perceive high risk to workplace safety on all cannabis-related safety risk variables (ORs ranging from 1.85–2.94 and p values $\leq .049$).

For cocaine, high risk to health was significantly more likely to be perceived by 25-34 and 35+ age groups than young workers (OR = 2.03, $p = .014$ and OR = 2.37, $p = .003$, respectively). The 25-34 and 35+ age groups were also more likely to perceive high risk to safety from using cocaine before work than young workers (OR = 2.52, $p = .016$ and OR = 2.38, $p = .021$, respectively). Workers aged 25-34 were significantly more likely to perceive high risk from using cocaine the night before work than young workers (OR = 1.84, $p = .026$); the difference between those

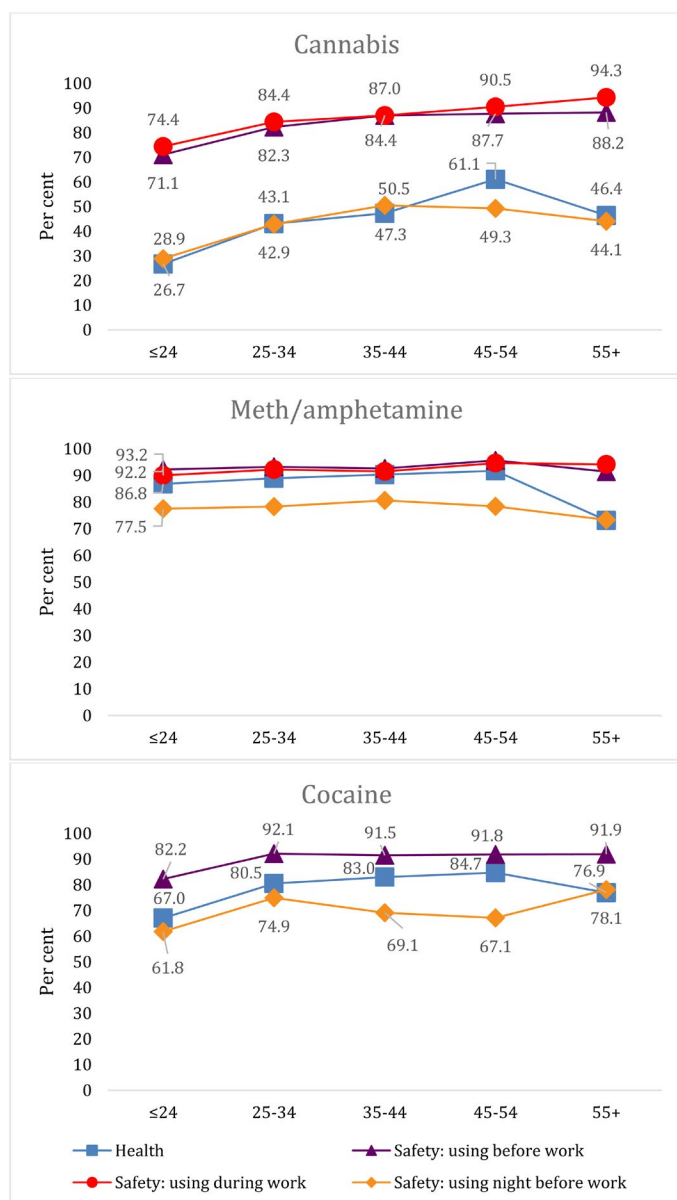


Figure 1. Survey respondents' perception of risk to health and workplace safety from the use of cannabis, meth/amphetamine and cocaine, by age group.

Note: Per cent refers to proportion of workers selecting 'high risk' for each question 'Safety: using during work' data not available for cocaine To be reproduced in color for online purposes only.

aged 35+ and young workers on this variable was non-significant (OR = 1.43, $p = .179$) (Table 4).

Analyses were also performed for meth/amphetamine, but no statistically significant differences by age group were found for any risk perception variable (ORs ranging from 1.49–1.05 and p values ranging from $p = .371$ to $p = .884$) (data available in Supplementary Table 5).

Discussion

Threats to workers' safety and wellbeing from the use of illicit drugs have been an area of concern for some time.

Occupations such as construction have been identified as high risk but largely based on anecdotal reports with limited empirical data available. Findings from the current study provide a detailed contemporary insight into Australian male construction workers' drug using behaviors and indicate very high levels of drug use overall, with important implications for workplace safety interventions, policy and education programs.

While the prevalence of cannabis use was not significantly different in the current sample to national construction worker estimates, a higher prevalence of meth/amphetamine use was apparent. The high prevalence of meth/amphetamine use in the study sample, compared to construction workers nationally, may reflect the location of the sample drawn from a major capital city where access and availability to illicit drugs was known to be freely available (Swanton et al., 2019); it may also reflect the younger age of the study sample compared to the national workforce average. There was also an exceptionally high level of cocaine use among the study sample which was almost four times more prevalent than yearly use of methamphetamine in the sample and not just restricted to the younger workers. Approximately one in 10 male construction workers used cocaine at least monthly and approximately 4% used daily/weekly (a proxy indicator of dependence), outstripping national usage levels by a factor of 5–10 times (2.5% national average past 12 months) (Australian Institute of Health and Welfare (AIHW), 2017). Such high levels of use are a basis for serious concern, particularly given that heavy stimulant use is associated with a range of erratic and unpredictable forms of behaviors and health problems. Stimulants users are also often reluctant to engage with treatment services (Arunogiri et al., 2017).

Moreover, cocaine has received relatively little attention to-date in relation to workplace safety concerns, being largely overshadowed by a current pre-occupation with crystal methamphetamine (ice). However, cocaine is now recognized as the second most commonly used illicit drug in Australia (Australian Institute of Health and Welfare (AIHW), 2017; Peacock et al., 2019). Furthermore, recent reports and data from user groups (e.g. Peacock et al., 2019), waste-water analyses (Australian Criminal Intelligence Commission (ACIC), 2019), market place and costing studies (Chalmers et al., 2013), police seizures and arrest data (Australian Criminal Intelligence Commission (ACIC), 2017) and social commentary (Ferris et al., 2018) all indicate a steady increase in cocaine use in the general community, but not to the extent detected in this study. This is the first Australian study to empirically quantify high levels of cocaine use among a vulnerable workforce group, thus it provides invaluable data to inform policies, prevention and safety initiatives.

Contrary to stereotypical views of cocaine as a glamor drug of choice among celebrities, sports stars and higher SES groups, our findings indicate that its use may also be very prevalent among blue-collar workers. The serious and potentially fatal consequences associated with heavy cocaine use (Darke et al., 2019) are reflected in substantial increases in cocaine-related problems seen by treatment and support services (National Centre for Education and

Table 4. Young workers' perception of cannabis and cocaine-related risk to health and workplace safety¹ compared to 25-34 and 35+ age groups.³

	<i>B</i> (SE)	<i>p</i>	95% CI for Odds Ratio (OR)		
			Lower	OR	Upper
Cannabis					
Risk to health (using > once per week)					
Age 25-34 years	-0.73 (0.29)	.010	1.19	2.07	3.62
Age 35+	1.10 (0.28)	<.001	1.72	3.01	5.25
Risk to safety: using before work					
Age 25-34 years	-0.64 (0.30)	.034	1.05	1.89	3.40
Age 35+	1.04 (0.32)	.001	1.52	2.83	5.25
Risk to safety: using during work hours					
Age 25-34 years	0.62 (0.31)	.049	1.00	1.85	3.42
Age 35+	1.08 (0.33)	.001	1.53	2.94	5.66
Risk to safety: using night before work					
Age 25-34 years	0.61 (0.27)	.026	1.08	1.85	3.17
Age 35+	0.86 (0.27)	.002	1.39	2.36	4.03
Cocaine					
Risk to health (using > once per week)					
Age 25-34 years	0.71 (0.29)	.014	1.16	2.03	3.58
Age 35+	0.86 (0.29)	.003	1.33	2.37	4.22
Risk to safety: using before work					
Age 25-34 years	0.93 (0.39)	.016	1.19	2.52	5.37
Age 35+	0.87 (0.37)	.021	1.14	2.38	4.95
Risk to safety: using night before work					
Age 25-34 years	0.61 (0.28)	.026	1.08	1.84	3.16
Age 35+	0.36 (0.27)	.179	0.85	1.43	2.42

Note: For all analyses, age <24 years = 0, reference category.

¹Perception of risk for all health and safety variables, 0 = did not select high risk.

1 = selected high risk.

³Safety: using during work hours' data not available for cocaine.

Training on Addiction (NCETA), 2019). In addition, cocaine use represents a substantial threat to workplace safety and productivity. While drug-testing regimes have been introduced into many blue-collar workplaces throughout Australia and globally, the extent to which they are programmed to detect cocaine is unclear given the priority that has been placed on other drugs to-date. Moreover, the shorter half-life of cocaine may make it more difficult to detect even though its effects may still impact a worker's performance and workplace safety (Pidd & Roche, 2014).

The current study offers particularly important findings in relation to young workers. In addition to very heavy frequent use of all illicit drugs, workers aged 24 years and under were the most likely to be frequent users of cannabis compared to older workers. Risky drinking was also high in workers under 25, which stands in contrast to national and international downward trends in alcohol consumption of young people (Kraus et al., 2020). Direct comparison between age groups, however, revealed similar concerning reports of frequent drug use, drinking and psychological distress between young workers and those aged between 25-34, demonstrating that construction workers are at high risk into their mid-thirties. In addition, frequent use of any drug in combination with risky drinking was high among all workers under 35 years; such patterns of poly drug use are especially concerning. These findings warrant close attention given the serious implications for younger people's health and for safety on construction worksites.

A further key finding is that workers under 25 years were significantly less likely to perceive that drug use during or

before work posed a high risk to health or workplace safety. This was the case for all cannabis and cocaine-related risk. In relation to the broader study sample, it is interesting to note that while 79% of all respondents considered weekly cocaine use a high risk to health, it was not as high as the risk that meth/amphetamine was perceived to represent (88%). Meth/amphetamine was perceived to pose the highest risk in all domains by respondents of all ages. Clearly, scope exists to increase workers' understanding of the health and safety risks and other potential harms associated with cocaine use. Although previous interventions have shown promising results in terms of reducing illicit drug use and alcohol consumption in blue-collar workplaces (Pidd et al., 2015, 2016), the present findings underscore the imperative for workplace education programs to focus on increasing awareness of the serious risks associated with drug use; not just on individual health but also on all workers' safety. These findings also indicate that such programs should be specifically tailored toward vulnerable new and young workers on entry to the industry and during their early years of training.

Psychological distress among construction workers was also found to be very high and more prevalent in workers in the younger age groups. This notwithstanding, only a small proportion of younger workers (<14%) reported moderate to high levels of psychological distress in combination with frequent use of drugs. This suggests that drug use in this sample is not primarily taken for self-medication or coping purposes, and aligns with previous work which found no association between psychological distress and drug use in young construction apprentices (Pidd et al., 2017), suggesting that the motivation for use is pro-social. This finding

can usefully inform safety and prevention efforts designed to target these specific workforce groups. Nonetheless, young people are generally less likely to recognize the potential for serious consequences from their drug consumption or mental health problems and may be less likely to seek help for addiction or mental health problems (Reavley & Jorm, 2010). In male-dominated industries, such as construction, traditional concepts of masculinity can also discourage young workers from seeking help and confiding in others about personal struggles. Unsupportive workplaces and poor safety culture in conjunction with tough working conditions are significant risk factors for substance misuse and poor mental health. Targeted attention in this area has potential to improve both safety and worker wellbeing (Battams et al., 2014; Hanvold et al., 2019; Pidd et al., 2017; Pidd & Roche, 2008; Pieper et al., 2019).

Limitations

The current study sample of male construction workers were younger than a comparable representative sample of male construction workers (i.e. from the 2016 NDSHS). It is therefore not unexpected that their levels of illicit drug use may be higher than their peers, as illicit drug use tends to peak in younger age groups (Australian Institute of Health and Welfare (AIHW), 2019). As self-reports of drug use are typically subject to social desirability response bias (Latkin et al., 2017), prevalence of drug use in the current study may be conservative. In addition, most people who use illicit drugs tend to use more than one type of drug; using a combination of substances increases the potential for harm. Among cocaine users, a combination of heavy alcohol use or methamphetamine use will likely increase their risk profile and is the subject of further investigation. It is further noted that the study reported univariate analyses with unadjusted odds ratios, which should be considered when interpreting the findings. Finally, the current findings would benefit from replication in a larger, representative sample, to identify potential differences in illicit drug use by location and setting, as well as reducing the potential for selection bias.

Conclusion

The current study found exceptionally, and unexpectedly high levels of cocaine use among male construction workers. Workers aged less than 35 years were particularly at-risk of illicit drug use and concurrent drug and risky alcohol use. Australia has recently placed a heavy focus on crystal methamphetamine, a drug widely used among blue-collar male workers (Pidd & Roche, 2008, 2015) with use among this study sample found to be higher than the national average. However, the present study also confirmed an elevated prevalence of illicit drug use overall and of cocaine use in particular; thus, highlighting the need for appropriate tailored, and evidence based workplace policy and programs (Pieper et al., 2019) to address these issues in the construction industry. Specifically, prevention and intervention programs

are required that address the needs of young workers with effective strategies developed to increase awareness of drug-related risks to workplace safety and health. Such measures will help ensure that the wellbeing of young, vulnerable workers is protected, whilst workplace safety standards and duty of care obligations are fulfilled by workplaces in the construction industry.

Note

1. Due to the low prevalence of reported drug use in the national sample, frequent drug use (e.g., monthly or more) in the current sample could not be reliably compared with national estimate data.

Declaration of interest

All authors have no conflicts of interest to declare.

Funding

This work was supported in part by New South Wales Health and by the Australian Government Department of Health.

References

- Alexander, M., MacLaren, A., O’Gorman, K., & Taheri, B. (2012). “He just didn’t seem to understand the banter”: Bullying or simply establishing social cohesion? *Tourism Management*, 33(5), 1245–1255. <https://doi.org/10.1016/j.tourman.2011.11.001>
- Arunogiri, S., Petrie, M., Sharkey, M., & Lubman, D. I. (2017). Key differences in treatment-seeking stimulant users attending a specialised treatment service: A means of early intervention? *Australasian Psychiatry : Bulletin of Royal Australian and New Zealand College of Psychiatrists*, 25(3), 246–249. <https://doi.org/10.1177/1039856216684737>
- Australian Bureau of Statistics (ABS). (2012). *Use of the Kessler psychological distress scale in ABS Health Surveys, Australia, 2007–08*. Retrieved October 16, 2019, from <https://www.abs.gov.au/ausstats/abs@.nsf/lookup/4817.0.55.001Chapter92007-08>
- Australian Criminal Intelligence Commission (ACIC) (2019). *National Wastewater Drug Monitoring Program*. Australian Criminal Intelligence Commission.
- Australian Criminal Intelligence Commission (ACIC). (2017). *Illicit Drug Data Report 2015–16*. Australian Criminal Intelligence Commission.
- Australian Institute of Health and Welfare (AIHW) (2017). *National Drug Strategy Household Survey 2016: Detailed findings*. Australian Institute of Health and Welfare.
- Australian Institute of Health and Welfare (AIHW) (2019). *Alcohol, tobacco & other drugs in Australia*. Retrieved October 16, 2019, from <https://www.aihw.gov.au/reports/alcohol/alcohol-tobacco-other-drugs-australia>.
- Banwell, C., Dance, P., Quinn, C., Davies, R., & Hall, D. (2006). Alcohol, other drug use, and gambling among Australian Capital Territory (ACT) workers in the building and related industries. *Drugs: Education, Prevention and Policy*, 13(2), 167–178. <https://doi.org/10.1080/09687630600577550>
- Battams, S., Roche, A. M., Fischer, J. A., Lee, N. K., Cameron, J., & Kostadinov, V. (2014). Workplace risk factors for anxiety and depression in male-dominated industries: A systematic review. *Health Psychology and Behavioral Medicine*, 2(1), 983–1008. <https://doi.org/10.1080/21642850.2014.954579>

- Bradley, K. A., DeBenedetti, A. F., Volk, R. J., Williams, E. C., Frank, D., & Kivlahan, D. R. (2007). AUDIT-C as a brief screen for alcohol misuse in primary care. *Alcoholism: Clinical and Experimental Research*, 31(7), 1208–1217. <https://doi.org/10.1111/j.1530-0277.2007.00403.x>
- Breslin, F. C., Dollack, J., Mahood, Q., Maas, E. T., Laberge, M., & Smith, P. M. (2019). Are new workers at elevated risk for work injury? A systematic review. *Occupational and Environmental Medicine*, 76(9), 694–701. <https://doi.org/10.1136/oemed-2018-105639>
- Bush, D. M., & Lipari, R. N. (2015). *Substance use and substance use disorder by industry*. The CBHSQ Report: Substance Abuse and Mental Health Services Administration (US).
- Chalmers, J., Matthew-Simmons, F., & Hughes, C. (2013). The recent expansion in the Australian cocaine market: Who are the new users and what are the harms? *Current Drug Abuse Reviews*, 6(2), 98–111. <https://doi.org/10.2174/1874473706666131205150424>
- Cook, R. F., Hersch, R. K., Back, A. S., & McPherson, T. L. (2004). The prevention of substance abuse among construction workers: A field test of a social-cognitive program. *The Journal of Primary Prevention*, 25(3), 337–357. <https://doi.org/10.1023/B:JOPP.0000048025.11036.32>
- Darke, S., Lappin, J., & Farrell, M. P. (2019). *The clinician's guide to illicit drugs and health*. Silverback.
- Degenhardt, L., Charlson, F., Ferrari, A., Santomauro, D., Erskine, H., Mantilla-Herrera, A., Whiteford, H., Leung, J., Naghavi, M., Griswold, M., Rehm, J., Hall, W., Sartorius, B., Scott, J., Vollset, S. E., Knudsen, A. K., Haro, J. M., Patton, G., Kopec, J., ... Vos, T. (2018). The global burden of disease attributable to alcohol and drug use in 195 countries and territories, 1990–2016: A systematic analysis for the Global Burden of Disease Study 2016. *The Lancet Psychiatry*, 5(12), 987–1012. [https://doi.org/10.1016/S2215-0366\(18\)30337-7](https://doi.org/10.1016/S2215-0366(18)30337-7)
- Du Plessis, K., Corney, T., Green, E., & Burnside, L. (2014). Australian construction industry apprentices' alcohol use and its relation to their experiences of alcohol-related harm. *Journal of Alcoholism & Drug Dependence*, 2(2). <https://doi.org/10.4172/2329-6488.1000154>
- Du Plessis, K., Cronin, D., Corney, T., & Green, E. (2013). Australian blue-collar men's health and well-being: Contextual issues for workplace health promotion interventions. *Health Promotion Practice*, 14(5), 715–720. <https://doi.org/10.1177/1524839912464046>
- Ferris, J., Wood, B., & Cook, S. (2018). Weekly Dose: Cocaine, the glamour drug of the '70s, is making a comeback. *The Conversation*. <https://theconversation.com/weekly-dose-cocaine-the-glamour-drug-of-the-70s-is-making-a-comeback-88639>
- Frone, M. R. (2000). Interpersonal conflict at work and psychological outcomes: Testing a model among young workers. *Journal of Occupational Health Psychology*, 5(2), 246–255. <https://doi.org/10.1037/1076-8998.5.2.246>
- Frone, M. R. (2009). Does a permissive workplace substance use climate affect employees who do not use alcohol and drugs at work? A US national study. *Psychology of Addictive Behaviors: Journal of the Society of Psychologists in Addictive Behaviors*, 23(2), 386–390. <https://doi.org/10.1037/a0015965>
- Frone, M. R. (2012). Workplace substance use climate: Prevalence and distribution in the US workforce. *Journal of Substance Use*, 17(1), 72–83. <https://doi.org/10.3109/14659891.2010.531630>
- Frone, M. R. (2013). *Alcohol and illicit drug use in the workforce and workplace*. American Psychological Association.
- Gates, P., Grove, R., & Copeland, J. (2013). Impact of substance use on the Australian workforce. *Journal of Addiction and Prevention*, 1(2), 6. <https://doi.org/10.13188/2330-2178.1000006>
- Hanvold, T. N., Kines, P., Nykänen, M., Thomée, S., Holte, K. A., Vuori, J., Waersted, M., & Veiersted, K. B. (2019). Occupational safety and health among young workers in the Nordic countries: A systematic literature review. *Safety and Health at Work*, 10(1), 3–20. <https://doi.org/10.1016/j.shaw.2018.12.003>
- Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L. T., Walters, E. E., & Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*, 32(6), 959–976. <https://doi.org/10.1017/s0033291702006074>
- Kraus, L., Room, R., Livingston, M., Pennay, A., Holmes, J., & Törrönen, J. (2020). Long waves of consumption or a unique social generation? Exploring recent declines in youth drinking. *Addiction Research & Theory*, 28(3), 183–193. <https://doi.org/10.1080/16066359.2019.1629426>
- LaMontagne, A. D., Krnjacki, L., Kavanagh, A. M., & Bentley, R. (2013). Psychosocial working conditions in a representative sample of working Australians 2001–2008: An analysis of changes in inequalities over time. *Occupational and Environmental Medicine*, 70(9), 639–647. <https://doi.org/10.1136/oemed-2012-101171>
- Latkin, C. A., Edwards, C., Davey-Rothwell, M. A., & Tobin, K. E. (2017). The relationship between social desirability bias and self-reports of health, substance use, and social network factors among urban substance users in Baltimore, Maryland. *Addictive Behaviors*, 73, 133–136. <https://doi.org/10.1016/j.addbeh.2017.05.005>
- Lingard, H. (2019). Occupational health and safety in the construction sector. In R. J. Burke & A. M. Richardsen (Eds.), *Increasing occupational health and safety in workplaces. Individual, work and organizational factors* (pp. 219–241). Edward Elgar Publishing.
- Lingard, H., & Turner, M. (2015). Improving the health of male, blue collar construction workers: A social ecological perspective. *Construction Management and Economics*, 33(1), 18–34. <https://doi.org/10.1080/01446193.2014.997259>
- Milner, A., Niven, H., & LaMontagne, A. (2014). Suicide by occupational skill level in the Australian construction industry: Data from 2001 to 2010. *Australian and New Zealand Journal of Public Health*, 38(3), 281–285. <https://doi.org/10.1111/1753-6405.12205>
- National Centre for Education and Training on Addiction (NCETA). (2019). *Secondary analysis of Alcohol and Other Drug Treatment Services in Australia 2017-18 data*. National Centre for Education and Training on Addiction (NCETA).
- National Centre for Education and Training on Addiction (NCETA). (2020). *Secondary analysis of National Drug Strategy Household Survey 2016 data*. National Centre for Education and Training on Addiction.
- Peacock, A., Gibbs, D., Karlsson, A., Uporova, J., Sutherland, R., Bruno, R., Dietze, P., Lenton, S., Alati, R., Degenhardt, L., & Farrell, M. (2019). *Australian Drug Trends 2019: Key findings from the National Ecstasy and Related Drugs Reporting System (EDRS) Interviews*. National Drug and Alcohol Research Centre, University of New South Wales (UNSW).
- Pidd, K., Duraisingam, V., Roche, A., & Trifonoff, A. (2017). Young construction workers: Substance use, mental health, and workplace psychosocial factors. *Advances in Dual Diagnosis*, 10(4), 155–168. <https://doi.org/10.1108/ADD-08-2017-0013>
- Pidd, K., Kostadinov, V., & Roche, A. (2016). Do workplace policies work? An examination of the relationship between alcohol and other drug policies and workers' substance use. *The International Journal on Drug Policy*, 28, 48–54. <https://doi.org/10.1016/j.drugpo.2015.08.017>
- Pidd, K., & Roche, A. (2008). Changing workplace culture: An integrated model for the prevention and treatment of alcohol-related problems. In D. Moore & P. Dietze (Eds.), *Drugs and public health: Australian perspectives on policy and practice*, (pp. 49–59). Oxford University Press.
- Pidd, K., & Roche, A. (2014). How effective is drug testing as a workplace safety strategy? A systematic review of the evidence. *Accident; Analysis and Prevention*, 71, 154–156. <https://doi.org/10.1016/j.aap.2014.05.012>
- Pidd, K., & Roche, A. (2015). *Ice' and the workplace*. National Centre for Education and Training on Addiction (NCETA), Flinders University.
- Pidd, K., Roche, A. M., & Buisman-Pijlman, F. (2011). Intoxicated workers: Findings from a national Australian survey. *Addiction (Abingdon, England)*, 106(9), 1623–1633. <https://doi.org/10.1111/j.1360-0443.2011.03462.x>
- Pidd, K., Roche, A., & Duraisingam, V. (2019). Drug use and workplace safety: Issues and good practice responses. In R. J. Burke & A. M. Richardsen (Eds.), *Increasing occupational health and safety in workplaces. Individual, work and organizational factors* (pp. 69–92). Edward Elgar Publishing.

- Pidd, K., Roche, A., & Fischer, J. (2015). A recipe for good mental health: A pilot randomised controlled trial of a psychological well-being and substance use intervention targeting young chefs. *Drugs: Education, Prevention and Policy*, 22(4), 352–361. <https://doi.org/10.3109/09687637.2015.1016400>
- Pidd, K., Berry, J., Harrison, J., Roche, A. M., Driscoll, T. R., & Newson, R. (2006). *Alcohol and work: Patterns of use, workplace culture and safety*. Report No.: 28 (AIHW cat no. INJCAT 82). Australian Institute of Health and Welfare.
- Pieper, C., Schröer, S., & Eilerts, A.-L. (2019). Evidence of workplace interventions—A systematic review of systematic reviews. *International Journal of Environmental Research and Public Health*, 16(19), 3553. <https://doi.org/10.3390/ijerph16193553>
- Powell, A., Galea, N., Salignac, F., Loosemore, M., & Chappell, L. (2018, September 3–5). *Masculinity and workplace wellbeing in the Australian construction industry* [Paper presentation]. Paper Presented at the Proceeding of the 34th Annual ARCOM Conference, Belfast, UK.
- Reavley, N., & Jorm, A. F. (2010). Prevention and early intervention to improve mental health in higher education students: A review. *Early Intervention in Psychiatry*, 4(2), 132–142. <https://doi.org/10.1111/j.1751-7893.2010.00167.x>
- Roche, A. M., Pidd, K., Fischer, J. A., Lee, N., Scarfe, A., & Kostadinov, V. (2016). Men, work, and mental health: A systematic review of depression in male-dominated industries and occupations. *Safety and Health at Work*, 7(4), 268–283. <https://doi.org/10.1016/j.shaw.2016.04.005>
- Roche, A., Pidd, K., & Kostadinov, V. (2016). Alcohol- and drug-related absenteeism: A costly problem. *Australian and New Zealand Journal of Public Health*, 40(3), 236–238. <https://doi.org/10.1111/1753-6405.12414>
- Swanton, R., Gibbs, D., & Peacock, A. (2019). *New South Wales Drug Trends 2019: Key findings from the Illicit Drug Reporting System (IDRS) Interviews*. National Drug and Alcohol Research Centre, University of New South Wales (UNSW).