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Reducing Cannabis Consumption

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Despite the fact that cannabis is prohibited in Australia, more than one million people aged 14 years or older use it at least once a week. These frequent users are more at risk of suffering the harms associated with cannabis use than infrequent users. This report is an exploratory investigation into factors which might encourage regular cannabis users to stop or reduce their consumption of cannabis. The study results indicate that, while being arrested or imprisoned may discourage cannabis use, such measures are less likely to reduce consumption among frequent cannabis users than among those who use cannabis only infrequently. Frequent cannabis users, on the other hand, are more likely than occasional cannabis users to say that they would seek treatment if one were available. The study also finds evidence that regular cannabis users would respond to a shortage of cannabis, or an increase in the cost of cannabis, by switching to other drugs such as tobacco.

INTRODUCTION

Considering its illegality, the prevalence of cannabis use in Australia is very high. In 1998, 39 per cent of people aged 14 years and over had used cannabis at least once in their lifetime, while 18 per cent had used it in the preceding 12 months. Over 40 per cent of these 'last year' users had used it once a week or more often in the last 12 months (Australian Institute of Health and Welfare [AIHW] 2000). This is significant given that heavy users are probably at greater risk of developing respiratory cancers and suffering subtle impairments in cognitive functioning (Hall, Johnston & Donnelly 1999; Hall, Solowij & Lemon 1994).

Perhaps the most significant psychological effect of cannabis use is the development of a dependence syndrome following chronic use of the drug. Cannabis dependence is characterised by symptoms such as withdrawal following cessation of use, developing tolerance to the effects of the drug, giving up important activities, unsuccessful efforts to control use or continuing to use despite significant personal effects. Swift, Hall and Teesson (2001) estimate that about 21 per cent of those who have used cannabis more than five times in the preceding 12 months meet the DSM-IV criteria for cannabis dependence, and a further 11 per cent meet the criteria for cannabis abuse. By way of comparison, the prevalence of alcohol use disorders among those who have had 12 or more drinks in the past year is around 8 per cent.

The major acute risk posed by cannabis use is probably the increased risk of accident while driving or operating dangerous equipment. There is no doubt that cannabis exerts a deleterious effect on motor skills and reaction time (Chesher, Dauncey, Crawford & Horn 1986) and that on-road driving performance is impaired for up to one hour after smoking cannabis (Smiley 1999). However, evidence for the degree to which cannabis actually contributes to motor vehicle accidents is equivocal at best. One of the major problems is that drugs are often detected in combination with alcohol, making it difficult to assess the degree to which cannabis is independently responsible for road death. In a South Australian study of non-fatal road accidents, Marie Longo and her associates (2000) found only a small proportion (2.8%) of 2500 drivers tested positive for recent cannabis use. On the other hand, a recent study of road fatalities in the Central Coast of New South Wales (NSW) found that 25 per cent of drivers under 45 years of age killed in road accidents between 1996 and 1999 tested positive for recent cannabis use (Tutt, Bauer, Arms & Parera 2001). While Drummer (1999) found the prevalence of recent cannabis use to be quite low in fatally injured drivers in three Australian States (2.9 %), all of those who tested positive were deemed culpable for the accident.

Although the evidence is mixed it is clearly too early to suggest that cannabis does not play a part in motor vehicle accidents. What is becoming clear is that driving while impaired by cannabis is widespread among recent users. Walsh and Mann (1999) interviewed a large representative sample of adults in the Canadian province of Ontario and asked respondents whether they had driven within an hour of smoking cannabis. The overall prevalence among the population was low (1.9%), however,

almost a quarter of 'last year' users responded affirmatively. This suggests that, in Canada at least, driving while impaired by cannabis may be commonplace among recent users.

Australian public opinion about how best to deal with the risks posed by cannabis use is sharply divided, with about 43 per cent of the population aged 14 and over preferring possession of small amounts of cannabis for personal use to be made legal and about 50 per cent preferring it to be illegal (AIHW 2000). Some argue that cannabis use should be made legal because cannabis is a relatively harmless drug and prohibition has failed to deter people from using it. Others argue that any softening of the law or reduction in police efforts to enforce it will 'send the wrong message' and encourage greater use of cannabis. In an earlier study of the effects of prohibition on cannabis use (Weatherburn & Jones 2001) we found evidence that prohibition does indeed deter some people from using the drug. However we also found that fear of arrest or imprisonment were rarely cited as factors in the decision not to use cannabis or to cease using it.

It is hardly surprising that arrest and imprisonment play little role in individual decisions to use or desist from using cannabis. The actual risks of arrest and imprisonment for cannabis use are very low. In 1999, for example, some 3,249 people appeared before NSW Local Courts charged solely with cannabis use and/or possession (NSW Bureau of Crime Statistics & Research 2000). Thirty-nine of these people received a prison sentence. In 1998 (the most recent year for which estimates are available) about 850,000 people aged 18 or over used cannabis in NSW (AIHW 2000).[2] On present estimates, then, about 1 in 260 cannabis users are arrested solely for cannabis use while about 1 in 22,000 received a prison sentence solely for this offence.

It could be argued that arrest or imprisonment would work more effectively as deterrents for cannabis use if cannabis users were more frequently arrested and imprisoned. Excessive reliance on arrest and imprisonment, however, may do more harm than good. As with all drugs, most of the risks and harms associated with cannabis use come from those who use the drug frequently (Hall, Johnston & Donnelly 1999; Hall, Solowij & Lemon 1994). Arrest and imprisonment of occasional cannabis users may serve to reduce their cannabis consumption, but any harm avoided as a result of this reduced use may be more than offset by the costs associated with enforcement. These costs include the direct costs to the State of arrest, prosecution and imprisonment. They also include the indirect costs borne by the State and the individual when, as a result of arrest and imprisonment, we reduce a person's future employment and earnings prospects (Lenton, Christie, Humeniuk, Brooks, Bennett & Heale 1998).

An alternative approach, and one presently being evaluated by the NSW Government (NSW Government 2001), is to maintain the prohibition against cannabis use but place more emphasis on getting those whose cannabis use is problematic into treatment. Treatment has the advantage over arrest of being easy to target at frequent cannabis users. At this stage, however, we simply do not know how current cannabis users would adjust their consumption in response to arrest, imprisonment or treatment. We also know little about how cannabis users might adjust their consumption in response to other factors which could potentially be manipulated by law enforcement such as changes in the price and availability of cannabis. It is possible to explore the efficacy of treatment intervention through experimental methods. Evaluating the effects of arrest, imprisonment and changes in the price or availability of cannabis is more difficult.

This report presents the results of a preliminary investigation into the extent to which factors such as law enforcement might influence cannabis users to stop or reduce their consumption of cannabis. In pursuing this issue we make no assumption about whether the harm caused by cannabis is sufficient to *warrant* arrest or imprisonment. Our interest lies mainly in the extent to which law enforcement and the availability of suitable treatment options might reduce cannabis use. Because frequent cannabis users are more at risk of suffering negative health and psychological effects from cannabis use, and arguably pose a more significant public health risk than infrequent users, our focus is on the sorts of measures which might reduce cannabis consumption among frequent users.

The general approach adopted to investigate the issue, as with our earlier study, was to conduct a representative sample survey of 18-29 year olds, the peak age group for cannabis use in Australia. Respondents to the survey were presented with a range of scenarios and asked whether they would stop or reduce their cannabis consumption under each of these scenarios. They were also asked whether they would consider trying treatment for cannabis use if it were available. An individual's stated intentions, as any political pollster will attest, are not necessarily an infallible guide to his or her future behaviour. In the absence of experiment, however, they provide a useful guide to the likely effects of a change in public policy.

The survey also had one other objective. A large proportion of those who use cannabis also use other drugs. In 1998 for example, 96 per cent of recent cannabis users had recently used alcohol, nearly three-fifths had recently smoked cigarettes and about one in five had recently used amphetamines (AIHW 2000). Policies which succeed in reducing cannabis consumption but result in an increase in the use of other drugs (licit or illicit) do not necessarily produce a reduction in drug-related harm. The risk of 'drug switching' is particularly significant where individuals are forced to reduce their consumption of a particular drug, not because they want to, but because the drug in question has become too hard or too expensive to obtain. To estimate the risk of drug switching in such circumstances, we asked individuals whether they would use more alcohol, smoke more tobacco or switch to other illicit drugs if cannabis became too hard to get or too expensive.

METHOD

DATA COLLECTION

The survey was administered by AC Nielsen, a market research company, over six consecutive days beginning on Wednesday, 6 June 2001 and ending on Monday, 11 June 2001. Phone calls were made between 5.00pm and 9.30pm from Wednesday through Friday, between 10.00am and 7.30pm on

Saturday and Sunday and from 5.00pm to 8.00pm on Monday. Each interview took approximately 5-10 minutes to complete.

Only English-speaking people aged between 18 and 29 years who reside in NSW were eligible to take part in the study. Sex and location (Sydney/rest of NSW) quotas were applied to ensure that the sample was representative of the NSW population. Age quotas were not applied because the sample was limited to people aged between 18 and 29 years.[3]

The sample of telephone numbers was randomly selected from the electronic white pages. Overall 28,772 numbers were called at least once. If the number was engaged or there was no answer, two further contact attempts were made. If contact still had not been made after three attempts, the number was discarded. If it was an inconvenient time for the respondent, an appointment was made to ring back at a more convenient time. The following is a list of phone call outcomes:

- 5,258 phone numbers were no longer connected and were discarded;
- 2,288 were engaged or there was no answer and 3 contact attempts had been made;
- 3,310 numbers were engaged or there was no answer, but 3 contact attempts had not been made at the completion of the fieldwork;
- 116 appointments had been made but not called back by the time the fieldwork had been completed;
- 1,463 were business numbers, fax numbers or paging services;
- 12,514 people were outside the target age range of 18-29 years;
- 1,939 people refused to take part;
- 142 people terminated part way through the survey;
- 294 people were of the correct age but were not available during the survey period;
- 443 did not speak English; and
- 6 were not eligible to participate because their gender quota had been met.

From a total of 16,453 phone calls where a contact was made there were 999 completed interviews.

THE QUESTIONNAIRE

Respondents were first screened to ensure that they were aged between 18 and 29. If respondents met the age criteria, they were then asked whether they had used cannabis in the last 12 months. Those who answered 'yes' were asked to complete the main body of the questionnaire. Those who answered 'no' were asked to give some basic demographic information and the interview was terminated.

Respondents who volunteered that they had used cannabis in the last 12 months were asked how old they were when they first used cannabis, and how often they had used cannabis in the preceding 12 months. The main body of the questionnaire asked respondents whether they would stop using cannabis, use less, or not change their cannabis consumption:

1. if cannabis became harder to get;
2. if cannabis became twice as expensive;
3. if they were arrested for using or possessing cannabis;
4. if they were imprisoned for using or possessing cannabis;
5. if drug testing was introduced into their workplace; and
6. if they thought using cannabis was bad for their health.

The first two scenarios were designed to assess whether measures designed to reduce the supply of cannabis (and therefore reduce its availability or increase its cost) would potentially influence cannabis use. To determine whether changes in cannabis price and availability would prompt drug switching, respondents were asked whether they would drink more alcohol, smoke more tobacco or switch to other illicit drugs if cannabis were to become too hard to get or too expensive to use. The order in which these options were presented was rotated across respondents. If they volunteered that they would switch to other illicit drugs, they were asked whether they would use amphetamines, cocaine or heroin. The order in which the listed drugs were presented to respondents was rotated but they were also given the option of nominating another drug. Finally, all respondents were asked whether they would try treatment if one were available to help them stop using cannabis. All respondents were asked to give demographic information at the end of the interview.

RESULTS

Before presenting the main body of results, we begin by describing the prevalence and frequency of cannabis use among the present sample.

PREVALENCE OF CANNABIS USE

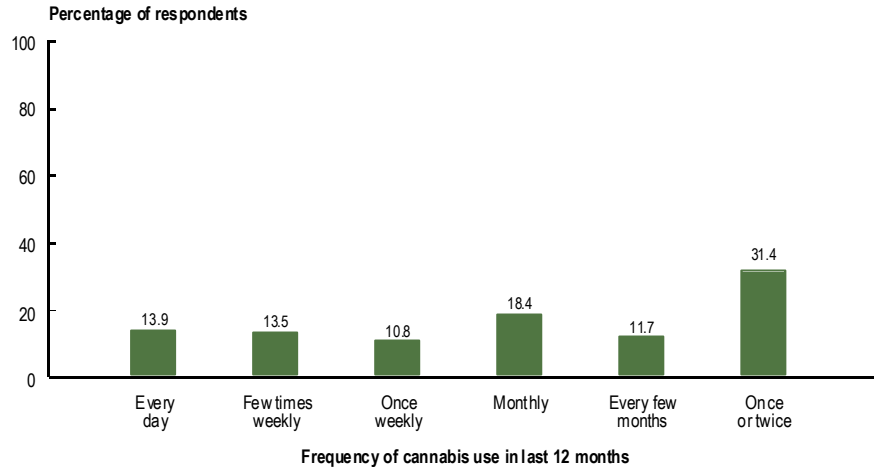
Of the 999 people interviewed, 223 had used cannabis in the last 12 months. Weighted to the 2001 NSW population, this suggests that 257,000 18-29 year olds have used cannabis in the last 12 months.

This 'last year' prevalence estimate of 22.3 per cent is well below the 37 per cent estimated for this age group by the 1998 National Drug Strategy (NDS) household survey (AIHW 2000).[4] This discrepancy is probably due to differences in survey technique. The present telephone survey required an overt vocal response to an interviewer, whereas the NDS survey used a covert written sealed section to record responses to sensitive questions about illicit drug use. It is possible that a

Table 1: Prevalence and frequency of cannabis use in the last 12 months by gender

	Used cannabis in last 12 months		*Used weekly or more often in last 12 months*	
Gender	***No.***	***%***	***No.***	***%***
Male	129	26.8	58	45.3
Female	94	18.2	27	28.7
Total (n = 999)	**223**	**22.3**	**85**	**38.1**

Figure 1: Frequency distribution of cannabis use in the last 12 months



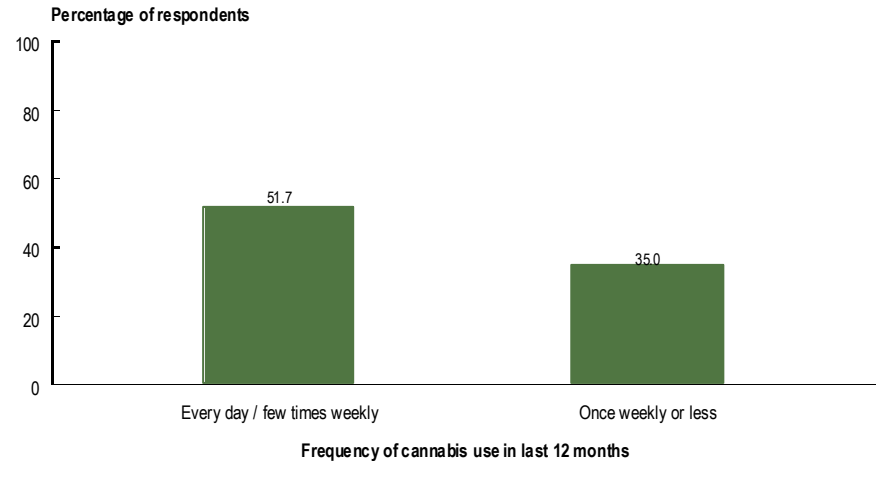
proportion of recent cannabis users refused to participate in this study or under-reported their actual drug use. Some users may have felt that they would be incriminating themselves by divulging information about their drug use over the telephone.

Table 1 shows that male respondents (27%) were more likely than female respondents (18%) to have used cannabis in the last 12 months (χ^2 = 10.6, df = 1, p = 0.001). This gender difference is consistent with trends shown by the 1998 NDS household survey (45% and 29% for men and women respectively; AIHW 2000) suggesting that the under-reporting was not gender-specific.

FREQUENCY OF CANNABIS USE

Figure 1 shows that about 14 per cent of those respondents who had used cannabis in the last 12 months had used it every day, just less than 14 per cent had used it a few times each week, while 11 per cent had used it about once each week. Thus about 38 per cent of people who had used cannabis in the prior 12 months had done so once a week or more often. The frequency of use distribution is broadly consistent with the 1998 NDS household survey, where 42 per cent of recent users had used once a week or more often (AIHW 2000).

Figure 2: Proportion of respondents willing to try treatment by frequency of cannabis use



To assess whether there were any differences between male respondents and female respondents in their frequency of cannabis use, we defined frequent users as those who had used every day, a few times a week or once a week in the last 12 months. Infrequent users were defined as those who had used monthly or less frequently. This categorisation of frequent and infrequent use is maintained for most of the remainder of the analyses. Table 1 shows that males (45%) were more likely than females (29%) to have used cannabis frequently in the last 12 months (χ^2 = 6.3, df = 1, p = 0.012). The gender difference in weekly use is also consistent with the 1998 NDS household survey (AIHW 2000).

DURATION OF CANNABIS USE

The mean age of cannabis initiation was 16 years. Of the 219 recent users who knew how old they were when they had first used cannabis, 27 per cent had used for less than five years and 73 per cent had used for five or more years. There was no difference between males and females in their duration of cannabis use (χ^2 = 0.5, df = 1, p = 0.463). Frequent users (86%) were more likely than infrequent users (66%) to have used cannabis for 5 or more years (χ^2 = 10.9, df = 1, p = 0.001).

WILLINGNESS TO TRY TREATMENT

Overall, 39 per cent of the sample indicated that they would be willing to try treatment if there were one available to help them stop using cannabis. There were no differences by gender in willingness to try treatment (χ^2 = 1.9, df = 1, p = 0.169). There were also no differences by duration of cannabis use in willingness to try treatment (χ^2 = 0.0, df = 1, p = 0.835). However, as can be seen from Figure 2, compared with those who use cannabis once weekly or less often, those who use cannabis daily or a few times weekly were more likely to say they would try treatment (χ^2 = 4.9, df = 1, p = 0.026).

RESPONSES TO SCENARIOS

Figure 3 shows the proportion of the sample who would stop, reduce or not change their cannabis consumption in response to the six scenarios presented

to them. A significant proportion of respondents suggested that they would stop or reduce their consumption of cannabis if imprisoned (64% would stop using, 8% would reduce consumption). The prevalence of affirmative responses to other scenarios, in order, were drug testing in the workplace (62% would stop using, 7% would reduce), a doubling of the price of cannabis (32% would stop using, 27% would reduce), arrest (41% would stop using, 17% would reduce), reduced availability (26% would stop using, 23% would reduce) and thinking that cannabis was 'bad for your health' (20% would stop using, 24% would reduce).

The pattern of response to the scenarios varied according to gender, frequency of cannabis use and duration of cannabis use. The figures which follow combine the data for those who said they would stop using cannabis with the data from those who said they would reduce their consumption because both outcomes are desirable in terms of public policy.

There were significant differences by gender in the response to the arrest, imprisonment and drug testing scenarios. The gender effects are shown in Figure 4. Males were less likely than females to say they would reduce their consumption of cannabis in response to arrest (51% and 68% for men and women respectively; $\chi^2 = 6.4$, df = 1, $p = 0.012$), imprisonment (63% and 85% for men and women respectively; $\chi^2 = 12.9$, df = 1, $p < 0.001$) or drug testing (64% and 78% for men and women respectively; $\chi^2 = 5.1$, df = 1, $p = 0.024$). There were no differences between men and women in their responses to the other scenarios.

As can be seen from Figure 5, frequent users were significantly less likely than infrequent users to indicate that they would stop or reduce their consumption if they were arrested for using cannabis (50% and 64% respectively; $\chi^2 = 3.9$, df = 1, $p = 0.048$) or if they were imprisoned for using cannabis (64% and 78% respectively; $\chi^2 = 4.7$, df = 1, $p = 0.029$). A higher percentage of infrequent users also indicated that they would stop using or use less cannabis if drug testing were introduced into the workplace but the difference did not quite reach significance ($\chi^2 = 3.4$, df = 1, $p = .066$). There were no differences between frequent and infrequent users in their responses to the other scenarios.

Figure 3: Anticipated effect on cannabis consumption of different cannabis reduction scenarios

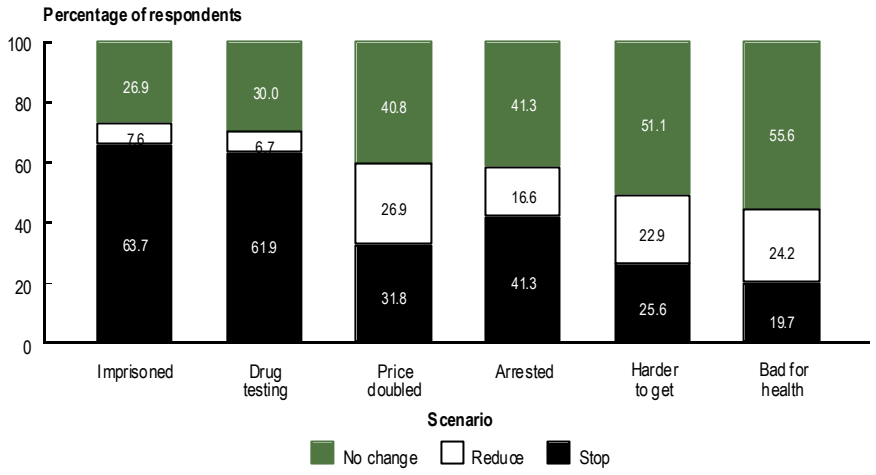


Figure 4: Proportion of respondents who would stop/reduce their cannabis consumption by gender and scenario

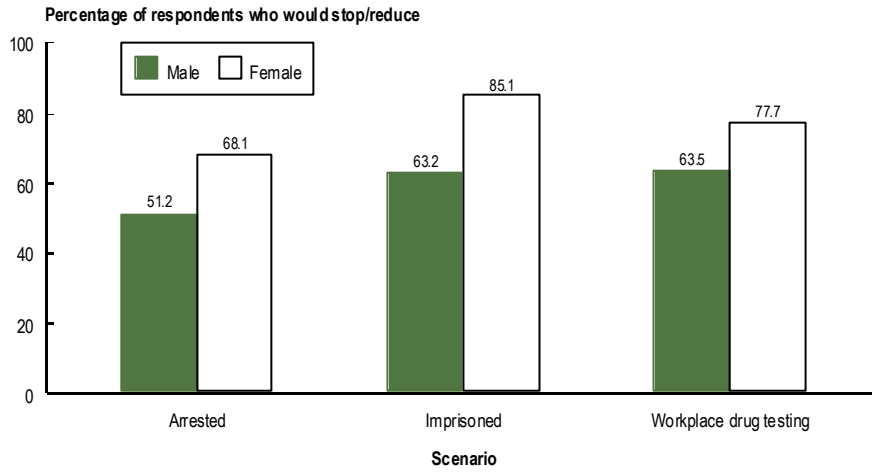


Figure 5: Proportion of respondents who would stop/reduce their cannabis consumption by frequency of use and scenario

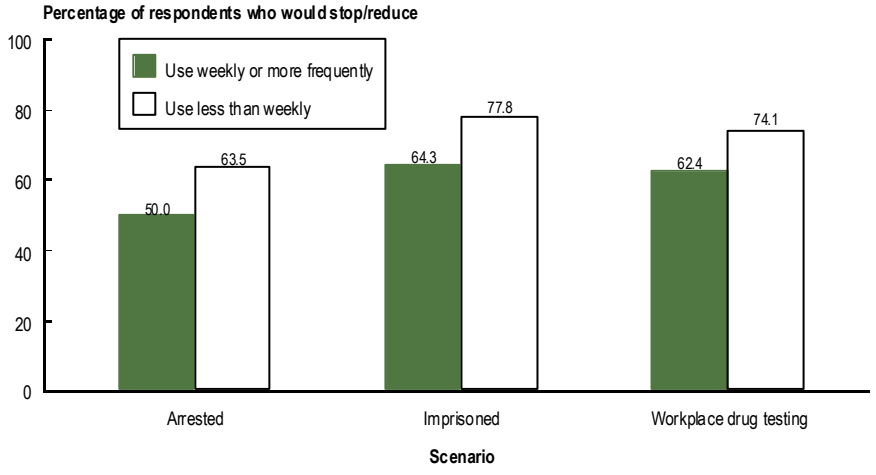


Figure 6: Proportion of respondents who would stop/reduce their cannabis consumption by length of cannabis use and scenario

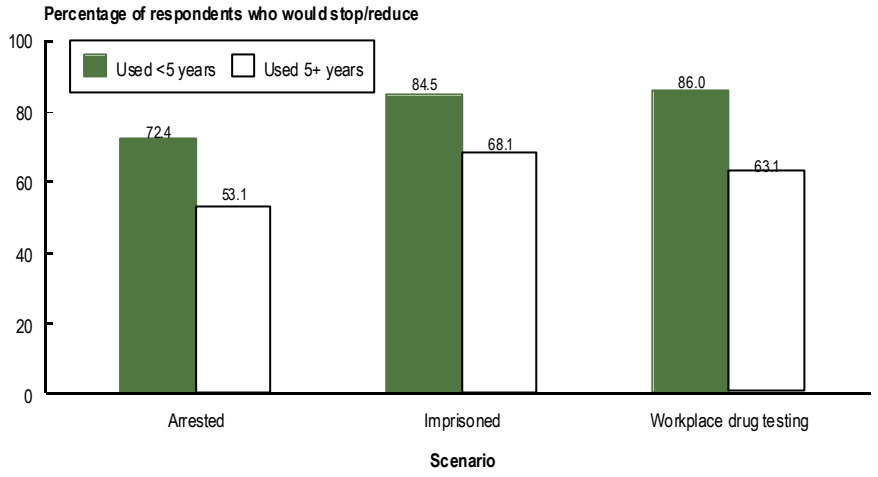


Figure 6 shows that those who had used cannabis over longer periods were less likely to say that they would stop or reduce their cannabis use in response to being arrested ($\chi^2 = 6.5$, df = 1, p = 0.011), imprisoned ($\chi^2 = 5.7$, df = 1, p = 0.017) or subjected to drug testing in the workplace ($\chi^2 = 10.3$, df = 1, p = 0.001).

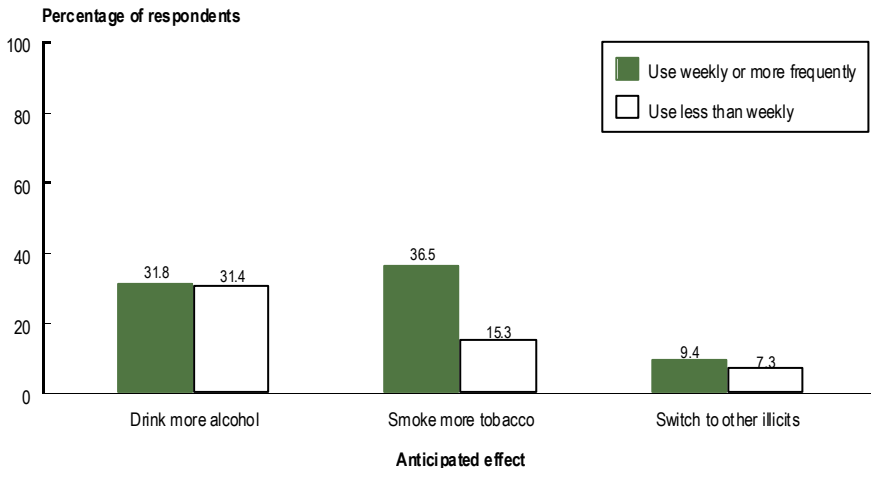
COMPENSATORY USE OF OTHER DRUGS

Thirty-one per cent of all respondents indicated they would drink more alcohol, 23 per cent indicated they would smoke more tobacco and 8 per cent suggested they would switch to other illicit drugs if cannabis became harder to get or too expensive. The small number of respondents who suggested they might switch to other illicit drugs (n = 18) precluded any analysis by drug type.[5]

Frequent and infrequent users of cannabis were generally similar in their intended use of other drugs but, as can be seen from Figure 7, frequent users (37%) were more likely than infrequent users (15%) to suggest that they would smoke more tobacco if cannabis became harder to get or too expensive ($\chi^2 = 13.1$, df = 1, $p < 0.001$).

There were no differences between males and females in the proportions who would switch to other drugs following increases in price, or reduced availability. Similarly, there were no differences between those who had used for less than 5 years and those who had used for 5 or more years in the proportions who would switch to other drugs.

Figure 7: Anticipated effect on use of other drugs if cannabis became harder to get/too expensive by frequency of cannabis use



DISCUSSION

From a sample of 999 18-29 year olds, 223 had used cannabis in the last 12 months. Almost 40 per cent of these recent users had used cannabis at least once a week or more frequently in the previous 12 months, and about three-quarters had used cannabis for a period of 5 or more years. More than 70 per cent of respondents said that they would stop using or use less cannabis if they were imprisoned. Nearly 70 per cent said they would stop using or use less cannabis if drug testing was introduced into their workplace. Nearly 60 per cent of respondents said they would stop using or use less cannabis if arrested and a similar proportion said they would stop using or use less if cannabis became twice as expensive. Smaller proportions said that they would stop using or use less cannabis if it became harder to get or if they thought using cannabis was bad for their health (48% and 44% respectively). Thirty-nine per cent of respondents said they would try treatment for cannabis use if there were one available.

It is important not too read too much into these findings. As stated in the introduction, we make no assumptions about whether the harms associated with using cannabis warrant measures such as arrest and imprisonment. Our interest lies solely in the extent to which law enforcement and the availability of treatment might reduce cannabis use.

At face value, these data suggest that law enforcement offers greater potential leverage over cannabis consumption than treatment. Law enforcement, however, appears to exert its strongest effects on those whose cannabis use is less frequent and therefore less risky. Those who use cannabis monthly or less frequently were more likely than those who use the drug at least once weekly to indicate that they would stop using or use less cannabis if arrested or

imprisoned. Those who have used cannabis for less than five years were more likely than long-standing cannabis users to indicate that they would stop using or use less cannabis if arrested, imprisoned or if drug testing were introduced into the workplace. By contrast, frequent cannabis users were *more* likely than infrequent cannabis users to say that they would seek treatment if one were available.

Law enforcement measures designed to reduce the availability or increase the cost of cannabis also appear likely to prompt drug switching. When asked whether they would use other drugs if cannabis became less readily available, 31 per cent of all respondents said they would drink more alcohol, 23 per cent said that they would smoke more tobacco and 8 per cent said that they would switch to other illicit drugs. Frequent cannabis users appear to be more likely to switch drugs. In the present study 37 per cent of those using cannabis at least once weekly and 15 per cent of those using cannabis once a month or less indicated that they would increase their consumption of tobacco. The amount of harm, if any, resulting from this drug switching depends largely on the frequency and duration of their use of other drugs. Given what we know about the harms associated with alcohol and tobacco, however, any increase in consumption of these drugs may be equally or more harmful than continued use of cannabis.

In light of the fact that cannabis users are willing to submit themselves to treatment but can hardly be expected to do the same for arrest and imprisonment, increased investment in treatment would seem to offer a better overall strategy for dealing with the risks posed by frequent cannabis use than increased investment in drug law enforcement. This is not to say, however, that increased investment in treatment is the best solution in every circumstance. About 70 per cent of 18-29 year olds in the present study, it will be recalled, said that they would stop using or use less cannabis if drug testing were introduced in the workplace. It was the second most frequently endorsed scenario in which respondents said they would reduce their consumption of cannabis. While across-the-board drug testing would probably be too expensive, and arguably too intrusive, it may be valuable in circumstances where cannabis use can pose a serious threat to public safety. The public risks posed by cannabis intoxication (or intoxication from any other drug) might be particularly acute for those who operate vehicles or who are entrusted with dangerous weapons (e.g. police, security officers). Routine drug testing of individuals employed in these occupations may provide a highly effective deterrent to cannabis use where such use really does pose a serious threat to public safety.

One final comment is in order. The high proportion of cannabis users willing to try treatment suggests that the unmet demand for treatment for cannabis dependence may be considerable. The 2001 census of Australian treatment agencies shows that the proportion of clients presenting for cannabis problems has more than doubled in the last decade, from 4.1 per cent in 1990 (Webster, Mattick & Baillie 1991) to 9.3 per cent in 2001 (Shand 2001). While cannabis-specific treatment services are becoming more common in Australia, much of this demand for treatment currently has to be met by generic drug treatment programs. Little is known about the effectiveness of these interventions for cannabis users. Research demonstrating the efficacy of cannabis-specific cognitive behavioural therapy (CBT) is providing encouraging results (Copeland, Swift, Roffman & Stephens 2001; Stephens, Roffman & Curtin 2000; Stephens, Roffman & Simpson 1994). The benefits of CBT will not be felt, however, unless more cannabis users are encouraged into treatment. One way in which this might be achieved is if front-line health care professionals provided their patients with accurate information about the harms related to cannabis use, made more referrals to appropriate treatment providers or even adopted brief CBT interventions themselves (Copeland, Rees & Swift 1999). Developing a wider range of cannabis-specific treatment options may also be necessary in order to encourage more users to seek help. Clearly, much greater investment in treatment evaluation and dissemination is needed if we are to successfully reduce the public health risks associated with cannabis consumption.

NOTES

1 We would like to acknowledge the very useful feedback provided to us by Karen Freeman, Joanne Baker, Bronwyn Lind, Dr Wendy Swift and Dr Jan Copeland on earlier drafts of this bulletin.

2 This figure is calculated on the assumption that 18 per cent of people aged 18 and over in NSW used cannabis at least once in 1998.

3 The ages of respondents were representative of a quota sample of NSW 18-29 year olds. Exact age statistics are available on request from the first author.

4 Our estimate is based on 18-29 year olds, whereas the NDS estimate is based on 20-29 year olds. When we excluded 18 and 19 year olds, we obtained an estimate of 22.2%.

5 These statistics are available from the first author.

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