



## Benzodiazepine update: alprazolam and other benzodiazepine use among people who inject drugs

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### KEY FINDINGS

- Frequency of benzodiazepine use has increased, with median use in 2011 being approximately three times a week.
- Our findings support research that among people who inject drugs those who use benzodiazepines have poorer physical and mental health and are more likely to have been involved in violent crime.
- There were no significant differences in demographic and key drug use characteristics between participants who only used alprazolam and those who only used other benzodiazepines.
- Participants who had used benzodiazepines in the previous six months were significantly more likely to use cannabis, and less likely to favour amphetamines and to inject them the most frequently.
- Our findings reinforce the need to promote non-drug strategies to lessen psychological distress amongst people who inject drugs.

### BACKGROUND

Benzodiazepines are classed as depressant drugs and are primarily prescribed to treat anxiety but also other conditions such as insomnia and withdrawal from alcohol and drugs. Reasons for using non-prescribed benzodiazepines may include self-medication, drug substitution, enhancing the effect of other drugs, and coming-down from stimulants. There is a range of benzodiazepines, each with specific characteristics (such as time until peak effect and duration of effect). For each generic type there are often a number of different brand names. (DCPC 2007; Nielsen et al. 2008; Nicholas et al. 2011)

Alprazolam (brand names include Xanax®, Kalma®, and Alprax®) is a generic type that has been increasingly prescribed in recent years and has been specifically linked with seizure, traffic accidents, and crime related harms (Nicholas et al. 2011, Nielsen et al. 2008).

### Use of benzodiazepines amongst people who inject drugs

Concern about the high levels of use amongst people who use illicit drugs has been described for some time, and there are well established negative consequences such as poorer psychological and physical health, memory loss, lowered inhibitions, lower living standards, as well as contributing to drug overdoses (e.g. Darke et al. 2010; Dietze et al. 2010; DCPC 2007; Darke 1994). Injecting benzodiazepine tablets/ capsules further increases the chance of morbidity due to injuries such as scarring/bruising and abscesses (Dwyer et al. 2009; Darke et al. 2002).

The use of benzodiazepines among people who use illicit drug is complex as reasons for use are not always straightforward and use does not necessarily infer abuse. On the other hand, higher dosing than prescribed is common among drug users (Nielsen et al. 2008) and use in combination with drugs such as heroin and alcohol is likely to promote adverse effects.

It has been argued that it is the effects of benzodiazepines per se that appear to be the primary functional factor in negative outcomes more than personal dysfunction prior to their use (Darke et al. 2010). Thus, if detrimental use is ceased or reduced, gains are likely to be made in health and wellbeing flowing on to less problematic behaviour.

### AIM

To explore differences between IDRS participants who have recently used benzodiazepines and those who have not.

To identify differences amongst those who only used alprazolam, those who only used other benzodiazepines, and those who used alprazolam and other benzodiazepines.

### METHOD

Data was collected as part of the national Illicit Drug Reporting System (IDRS) which undertakes annual monitoring in all Australian states and territories. In 2011, 870 people who regularly inject drugs participated in individual face-to-face interviews in each jurisdiction.

Participants were aged 17 years or older, had injected an illicit drug at least monthly in the six months prior to survey, and had lived in the same capital city in the previous 12 months. Participants were recruited in each city by advertising and peer referral, and confidential interviews were undertaken in a range of settings. Further details are available on the NDARC websites under Drug Trends ([www.ndarc.med.unsw.edu.au](http://www.ndarc.med.unsw.edu.au)).

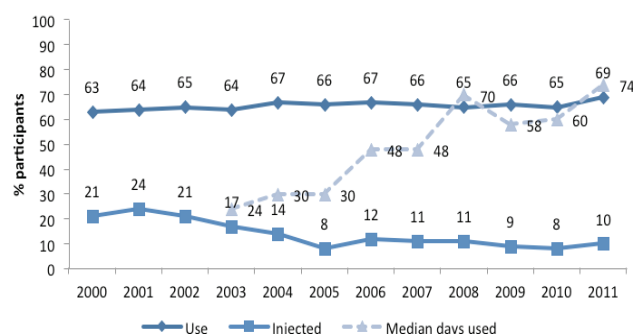
Questionnaire items included demographics, drug use history, market characteristics of the main drugs investigated by the IDRS, as well as health and law-enforcement related issues. In 2011 specific questions inquiring about use of alprazolam were asked for the first time.

Analysis was conducted using IBM® SPSS® Statistics (version 20). T-test and Anova were used for mean comparisons and  $\chi^2$  tests for differences between categorical variables. Significant differences are reported at  $p < .05$ .

## RESULTS

Over the past 12 years approximately two-thirds of participants have consistently reported using benzodiazepines (Figure 1). The proportion of participants who injected benzodiazepines has dropped from earlier years, but has been quite consistent at a relatively low proportion for the past few years. The median days used has shown the most variability with the highest number of days in 2011.

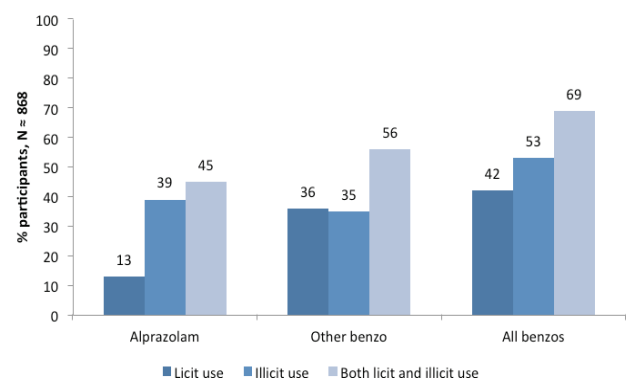
**Figure 1: Recent use and injection of benzodiazepine (licit or illicit), and median days used, 2000 to 2011**



Source: National IDRS injecting drug user interviews  
Note: Median days of use only recorded since 2003

Figure 2 shows that there was both licit (prescribed) and illicit (not prescribed) use of benzodiazepines by participants in the previous six months (42% licit and 53% illicit). Illicit use of alprazolam was high compared with licit use, but similar proportions of illicit and licit use were reported for other benzodiazepines (includes brands such as Valium®, Serapax®, and Normison®).

**Figure 2: Recent use of different types of benzodiazepines, 2011**



Source: National IDRS injecting drug user interviews

**Table 1: Characteristics of participants according to general and types of benzodiazepine use\* in preceding six months, 2011**

	Benzodiazepine use (N = 870)		Type of benzodiazepine use (N=596)		
	No (n = 271)	Yes (n = 596)	Alprazolam only (n = 111)	Other benzo only (n = 199)	Combined alprazolam & other benzos (n = 285)
Mean age	38 (SD = 9)	39 (SD = 9)	37 (SD = 9)	39 (SD = 10)	38 (SD = 8)
	%	%	%	%	%
Male	70	65	69	65	62
Single**	59	59	64	58	57
Unemployed	73	82	84	79	83
Completed year 10 or higher	74	65	60	67	66
Indigenous Australian	12	15	16	15	16
Unstable accommodation†	22	28	27	24	28
Currently in drug treatment	44	50	39	46	57
Self-rated poor physical health	11	17	14	13	20
Self-rated poor mental health	8	15	14	14	15
High/very high psychological distress (K10)	44	66	63	62	74
Involved in violent crime in previous month	2	8	7	7	10
Has been in prison	48	57	60	53	59

Source: National IDRS injecting drug user interviews

\*Licit (prescribed) and illicit use are not differentiated as prescribed benzodiazepines may not be taken as prescribed

\*\*Includes widowed, divorced, separated

† Unstable accommodation includes: boarding house/hostel, shelter/refuge, drug treatment residence, no fixed address/homeless, other

Note: Significant differences  $p < .05$  are highlighted in bold.

## Participants who used benzodiazepines

Participants who used benzodiazepines in the previous six months, compared to those who did not, were significantly more likely to be unemployed, to not have completed year 10 of schooling, to have self-rated both their mental and physical health as poor, to have scored high/very high levels of distress on the Kessler Psychological Distress Scale (K10), to have been involved in violent crime in the previous month, and to have been in prison ( $p < .05$ ) (Table 1).

When comparing participants who used different types of benzodiazepines, those using alprazolam were significantly less likely to be in drug treatment and those using a combination of alprazolam and other benzodiazepines were significantly more likely to have high/very high distress ( $p < .05$ ).

Comparison of drug use shows that participants who had recently used benzodiazepines were significantly less likely than other participants to have chosen amphetamines as their drug of choice and were significantly less likely to have injected amphetamines the most in the previous month: conversely they were significantly more likely to have used cannabis in the

previous six months (Table 2). There were no significant differences according to type of benzodiazepine use.

## Driving under the influence of benzodiazepines in previous six months

Of all participants who had recently driven after taking an illicit drug ( $n = 312$ ), 10% had used benzodiazepines the most recent time. Of participants who recently used benzodiazepines and had recently driven a vehicle ( $n = 217$ ), 20% reported driving after taking benzodiazepines in the previous six months.

## Overdosed on benzodiazepines in previous 12 months

Less than one percent of all participants (i.e. two percent of those who had used benzodiazepines in the previous six months) reported overdosing on benzodiazepines in the previous 12 months.

**Table 2: Comparison of drug use between participants with recent benzodiazepine use and those without, and between different types of recent benzodiazepine use, 2011**

	Benzodiazepine use (N=870)		Type of benzodiazepine use (n=596)		
	No (n = 271)	Yes (n = 596)	Alprazolam only (n = 111)	Other benzodiazepines only (n = 119)	Combined alprazolam & other benzos (n = 288)
Drug first injected %					
Amphetamines	53	50	58	46	50
Heroin	38	40	37	41	40
Other	9	10	5	13	10
Age first injected (years)					
Mean	21 (SD = 7)	20 (SD = 7)	19 (SD = 6)	20 (SD = 7)	19 (SD = 7)
Drug of choice %					
Heroin	49	55	55	53	55
Amphetamines	29	17	18	18	16
Cannabis	8	7	7	9	6
Benzodiazepines	-	1	1	1	2
Morphine	7	9	9	8	11
Other	6	11	10	11	10
Drug injected most in previous month %					
Heroin	41	42	43	38	44
Amphetamines	34	22	22	25	19
Morphine	13	18	18	18	17
Other	12	19	17	19	20
Use of non-injecting drug in previous 6 months %					
Cannabis	<b>52</b>	<b>73</b>	84	81	86
Injection frequency in previous month %					
At least daily	40	43	51	39	42

Source: National IDRS injecting drug user interviews  
 \*n may vary slightly due to missing data

## DISCUSSION

Although recent use and injection of benzodiazepines has remained quite consistent over the past 12 years, median days of use has risen since 2008; and in 2011 median use equated to approximately three times a week. Characteristics of those who had recently used benzodiazepines aligned with research (Darke et al. 2010; Dietze et al. 2010; DCPC 2007; Darke 1994) which linked benzodiazepine use with poor health and wellbeing, and also supported findings that linked use with crime related harms (Nielsen et al. 2008). Consequently the increased frequency of use is of concern, particularly as there is no reduction in the proportion of those using benzodiazepines.

The significantly higher use of a combination of benzodiazepines amongst those currently in treatment is to be expected as benzodiazepines are prescribed for alcohol and drug withdrawal. The significantly

higher psychological distress amongst those who use a combination of benzodiazepines needs to be further explored, but it may be consistent with the findings of Darke and colleagues (2010) which suggest that the effect of benzodiazepines themselves has important clinical implications.

As benzodiazepines are a relaxant it was to be expected that fewer participants who use benzodiazepines would nominate amphetamines as their drug of choice or inject it most often. The practice of using benzodiazepines to come down from amphetamines may partly account for their concurrent use. The significantly higher use of cannabis amongst those who use benzodiazepines is consistent with the calmative properties of both drugs. Because of these properties, both drugs may be used to lessen high psychological distress; but if used frequently together over long periods may exacerbate the distress that they are supposed to alleviate (Darke et al. 2010).



There were no significant differences between participants who had only used alprazolam in the previous six months and those who had only use other benzodiazepines. Drug driving continues to be a concern, particularly when one in five participants reported recently driving under the influence of benzodiazepines. Overdosing on benzodiazepines was uncommon in this sample but the contribution of benzodiazepines in drug overdoses needs further investigation.

These findings highlight the higher likelihood of poor physical and mental health amongst injecting drug users who use benzodiazepines. They also highlight the need for promoting non-drug strategies to lessen psychological distress and to continue monitoring benzodiazepine use amongst drug users.

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