

Impact of stimulant dependence on the mental health of New Zealand prisoners

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Executive summary

Background

The use of stimulants such as methamphetamines is associated with significant harms and increased mental illness. The 2015 New Zealand Prisoner Mental Health Comorbidity Study identified a nearly 10-fold increase in the prevalence of stimulant disorders since the 1999 New Zealand prisoner mental health study, from 4% reported in the 1999 study to 38% in 2015. International comparisons of the 12-month prevalence of stimulant abuse and dependence disorders found a lower prevalence (16%) among the 2015 New Zealand prisoners compared to 27% found in a study of 1478 Australian prisoners in 2001 using the same diagnostic instrument. The report aims to compare the mental health, comorbidity, treatment seeking and other associated factors for prisoners with and without a stimulant use disorder.

Methods

This study used the Composite International Diagnostic Interview 3.0 (CIDI 3.0) and the Personality Diagnostic Questionnaire 4+ (PDQ-4) to assess the prevalence of mental health and substance use disorders. The study sample included 1209 New Zealand prisoners across 13 prisons. This report presents the prevalence of stimulant use, abuse disorder and dependence disorder including breakdowns by gender, age, ethnicity, offending behaviours and other correlates. It also compares the prevalence of mental health disorders, other substance use disorders and mental health treatment for prisoners who were identified as having a stimulant dependence disorder. Stimulants are based on the CIDI definition which only includes methamphetamines, so does not include other psycho-stimulants such as cocaine or club drugs.

Results

1. Correlates of stimulant use and disorders

- **General use:** Over half (56%) of prisoners reported having ever used stimulants, and of these 58% indicated they had used stimulants in the past year.
- **Disorders:** Over one-third (38%) of prisoners had a lifetime stimulant abuse or dependence, while 16% were found to have a 12-month stimulant abuse or dependence disorder.
- **Gender:** Male prisoners were significantly more likely to have a lifetime stimulant abuse disorder (16% vs 6%), while female prisoners were significantly more likely to have a lifetime stimulant dependence disorder (32% vs 23%). There were no significant gender differences in age of first use, onset or persistence of stimulant use and disorders.
- **Age group:** Stimulant abuse and dependence was highest in the 25 to 44 year age group with 18% found with lifetime stimulant abuse and 30% with lifetime stimulant dependence. There was an age cohort effect where prisoners aged 17 to 24 years first used stimulants at a younger age (16.8 years) than those aged 25 to 44 years (20.8 years) and those 45 years and older (29.8 years).
- **Ethnicity:** The prevalence of stimulant use and disorders was similar for prisoners of European or Māori descent, with slightly higher proportions found among Māori prisoners such as lifetime stimulant dependence (25% vs 24%), but these differences were not statistically significant.
- **Country of birth:** Prisoners born in New Zealand were nearly twice as likely (59% vs 30%) to have ever used stimulants and were significantly more likely to have a lifetime stimulant abuse disorder (16% vs 8%) or a lifetime stimulant dependence disorder (25% vs 10%) compared to prisoners born elsewhere.
- **Current offence:** The prevalence of prisoners who had ever used stimulants was highest among those whose current offence was for drugs (70%) or burglary (67%), followed by violence (56%) or other offences (44%). Nearly one in five (19%) prisoners with a drug or burglary-related offence were found to have a 12-month stimulant dependence disorder, compared to 11% of prisoners with a violent offence and 8% with another non-violent offence type.
- **Time in custody:** Prisoners who had spent 5 or more years in custody over their lifetime had nearly twice the prevalence of a lifetime stimulant dependence disorder (35% vs 19%) as prisoners who had spent less than one year in custody.

2. Mental health comorbidities by stimulant disorders

- **Mental disorders:** Prisoners who had a stimulant dependence disorder had a significantly higher prevalence for all mental health disorders and comorbidities across both 12-month and lifetime than prisoners who did not have a stimulant disorder.
- **Comorbidity:** Prisoners with a 12-month stimulant dependence diagnosis were over three times (56% vs 15%) more likely to have a comorbidity than prisoners without stimulant dependence.
- **Anxiety disorders:** Nearly half (44%) of prisoners with a lifetime stimulant dependence disorder also had a lifetime diagnosis of an anxiety disorder. Prisoners who had stimulant dependence disorders had a significantly higher prevalence of all anxiety disorders, except generalised anxiety disorder (GAD). Among prisoners with comorbid anxiety disorders and stimulant dependence disorder, the age of onset of the anxiety disorder happened prior to the age of onset of stimulant dependence.
- **Mood disorders:** Prisoners with a lifetime stimulant dependence disorder had a significantly higher prevalence of all lifetime diagnoses of mood disorders, including twice the prevalence of bipolar disorder (18% vs 9%). Among prisoners with comorbid mood disorders and stimulant dependence disorder, the age of onset of the mood disorder happened prior to the age of onset of stimulant dependence.
- **Substance use disorders:** Prisoners with a lifetime stimulant dependence disorder were three times more likely (58% vs 18%) to have another drug dependence than prisoners who did not have stimulant dependence. Among prisoners with comorbid stimulant dependence disorder and other alcohol and drug dependence disorders, there was a variable age of onset. If the comorbidity included alcohol, hallucinogens, inhalants and marijuana then the age of onset for stimulant dependence happened after the age of onset for these substances. For all other substance dependence comorbidities (e.g. club drugs, cocaine, opiates, painkillers, sedatives and other drugs), the stimulant dependence age of onset happened first.
- **Eating disorders:** Prisoners with stimulant dependence were more than twice as likely to have a 12-month or lifetime eating disorder diagnosis than prisoners without stimulant dependence.
- **Psychosis symptoms:** There was no association between stimulant dependence and the presence of psychosis symptoms for lifetime or 12-month diagnosis. This finding should be interpreted with caution as the psychosis screener in the CIDI is not a diagnostic instrument.
- **Psychological distress:** There was a significantly higher prevalence of psychological distress in the past 30 days found for prisoners with a 12-month diagnosis of stimulant dependence (37% vs 27%) compared to prisoners without stimulant dependence.
- **Multiple disorders:** Prisoners with a lifetime stimulant dependence disorder were twice as likely to have three or more mental health or substance use disorders (58% vs 29%) as those without stimulant dependence.
- **Personality disorders:** Prisoners with a lifetime stimulant dependence disorder were twice as likely to have an antisocial personality disorder (19% vs 8%), a narcissistic personality disorder (6% vs 3%) or a schizoid personality disorder (8% vs 3%) than prisoners without stimulant dependence.
- **Suicidal behaviours:** Among prisoners with a 12-month mental disorder diagnosis, there were no significant associations between stimulant dependence and any of the suicidal behaviours (ideation, plan and attempt). However, prisoners with a lifetime stimulant dependence disorder had a significantly higher prevalence of making a suicide plan (24% vs 15%) or a suicide attempt (24% vs 18%).
- **Mental health treatment:** Prisoners with a lifetime stimulant dependence disorder had a higher prevalence (47% vs 33%) of seeking mental health treatment in the past year than prisoners without a stimulant dependence disorder. The most common practitioners seen for mental health treatment among prisoners with a lifetime stimulant dependence disorder included psychologists/counsellors (29%), followed by GP and other medical (21%), while only 7% saw a psychiatrist in the past year.

Conclusions

In summary, the prevalence of stimulant use is high among prisoners with particularly high rates among younger prisoners (see Appendix 1 for summary tables). Prisoners with a 12-month or lifetime stimulant dependence disorders had significantly higher comorbidities with other substance use disorders and other mental health disorders. All prisoners with a comorbid stimulant dependence disorder with an anxiety or mood disorder were found to have the age of onset of the mental health disorder take place prior to the age of onset of the stimulant disorder. This suggests that increased effort can be made to put in place stimulant abuse prevention strategies for young people with mental health disorders. These prisoners also had a higher prevalence of seeking mental health treatment, but less than half sought treatment in the past year suggesting some may not be seeking treatment when they need it. More research is needed to determine the treatment needs of prisoners with stimulant disorders comorbid with other disorders.

Background

The use of stimulants such as methamphetamines has increased worldwide in the past two decades and is associated with significant harms to individuals and society (Chomchai & Chomchai, 2015; Degenhardt et al, 2008; Gonzales et al, 2010; Sara et al, 2011; Wilkins et al, 2002). These harms include impacts on physical health, mental health and increased risk of mortality (Darke et al, 2008; Degenhardt et al, 2017; Sara et al, 2012). Many stimulant users are polydrug users, which complicates the attribution of harms to stimulant use but also exacerbates the risks to health and wellbeing (Butler et al, 2010).

In 1999, the New Zealand Department of Corrections commissioned an investigation into the prevalence of psychiatric disorders among prisoners (Department of Corrections, 1999). The 1999 study reported that the lifetime prevalence of abuse or dependence (combined) for amphetamines was 4.1%. This finding is consistent with a 2007 Australian study which found 3.3% of the general population had a lifetime stimulant abuse or dependence disorder (Sara et al, 2011). The 2006 New Zealand Mental Health Survey reported on substance use disorders with a breakdown by alcohol and marijuana, but did not report separately on the prevalence of stimulant disorders (Oakley Browne et al, 2006).

The 2015 New Zealand Prisoner Mental Health Comorbidity Study identified a nearly 10-fold increase in the lifetime prevalence of stimulant disorders since the 1999 prisoner mental health study, from 4% reported in the 1999 study to 38% (15% for abuse and 23% for dependence) in 2015. International comparisons of the 12-month prevalence of stimulant abuse and dependence disorders found a lower prevalence (16%) among the 2015 New Zealand prisoners compared to 27% found in a study of 1478 Australian prisoners in 2001 using the same diagnostic instrument (Butler et al, 2011).

The aim of this report is to compare the mental health, comorbidity, treatment seeking and other associated factors for prisoners with and without a stimulant use disorder.

Methods

In late 2014, the New Zealand Department of Corrections contracted the National Research Bureau to interview prisoners about substance use and mental health problems for the 2015 New Zealand Prisoner Mental Health Comorbidity Study. CGA Consulting was contracted to analyse the data collected and to produce a report summarising the findings (Indig et al, 2016). The study sample included 1209 prisoners (78% response rate) across 13 prisons. A detailed discussion of the methods is included in the full report.

The Composite International Diagnostic Interview 3.0 (CIDI 3.0) and the Personality Diagnostic Questionnaire 4+ (PDQ-4) were used to assess the prevalence of mental health and substance use disorders (see Appendix 2 for Glossary). This report focuses on the DSM-IV diagnoses, as is mostly commonly used in New Zealand. The diagnostic codes were analysed using CIDI hierarchy rules so, for example, participants with a diagnosis of stimulant dependence could not be diagnosed with stimulant abuse. The other diagnostic codes where hierarchy rules apply include: generalised anxiety disorder, dysthymia, major depressive disorder, alcohol abuse, drug abuse, bulimia and binge eating. Stimulants are based on the CIDI definition which only includes methamphetamines, so does not include other psycho-stimulants such as cocaine or club drugs.

Stimulant (or other drug) abuse includes at least one of the following symptoms in a 12-month period:

- Repeated use in situations where it would be considered hazardous;
- Interference with the individual's ability to fulfil their work, school or home obligations;
- Continued use of these substances even though it is causing interpersonal difficulties; or
- Any legal problems that occurred as a result of substance abuse.

Stimulant (or other drug) dependence includes at least three or more of the following symptoms in a 12-month period:

- Developing a tolerance for the substance, where they have to use more in order to get the same effect;
- Continues to abuse the substance despite obvious evidence that it is causing them harm;
- Experiences withdrawal symptoms when they stop taking the substance;
- Difficulty cutting down on the amount they are using;
- Lack of control over the amount they consume;
- Loss of interest in other activities that they once enjoyed; or
- Devoting increasing amounts of time to the substance abuse (obtaining, using, recovering from it).

This report presents the prevalence of stimulant use, abuse disorder and dependence disorder for the total sample including breakdowns by gender, age, ethnicity, offending behaviours and other correlates. It also reports on the age of onset for stimulant abuse and dependence in comparison to other mental health disorders. The report also compares the prevalence of mental health disorders, other substance use disorders and mental health treatment for prisoners who were identified as having a stimulant dependence disorder. This included two different samples, where any 12-month diagnosis was compared for prisoners identified to have a 12-month stimulant dependence disorder (n=174), and any lifetime diagnosis was compared for prisoners who were identified to have a lifetime stimulant dependence disorder (n=299).

Data analysis was conducted in SAS version 9.4 and included procedures which accounted for the sample weighting and complex survey design. This included basic frequencies and statistical tests (chi-squares) to determine significant differences by stimulant dependence disorder and other correlates such as gender. For each estimate, the relative standard error (RSE) was calculated to assess the reliability of the estimates. Prevalence estimates with a relative standard error of 25% or greater have been flagged in the tables to indicate that they are subject to high sampling error and should be used with caution.

Results

1. Correlates of stimulant use and disorders

Key findings:

- **Overall:** Over half (56%) of prisoners reported having ever used stimulants, and of these 58% indicated they had used stimulants in the past year. Over one-third (38%) of prisoners had a lifetime stimulant abuse disorder (15%) or lifetime stimulant dependence disorder (23%).
- The average age of first using stimulants was 21.8 years and the average age of onset of stimulant dependence was 22.9 years, indicating an average trajectory from first use to dependence of 1.1 years. Stimulant dependence persisted an average of 7.7 years among prisoners.

1.1 Gender

Key findings:

- Male prisoners were significantly more likely than females to have a lifetime stimulant abuse disorder (16% vs 6%), while female prisoners were significantly more likely than males to have lifetime stimulant dependence disorder (32% vs 23%).
- Female prisoners initiated stimulant use at the same age (21.8 years) as male prisoners but had a slower trajectory from first use to dependence (2.0 years vs 1.0 years) but this was not significant.

Figure 1.1 Stimulant disorders by gender

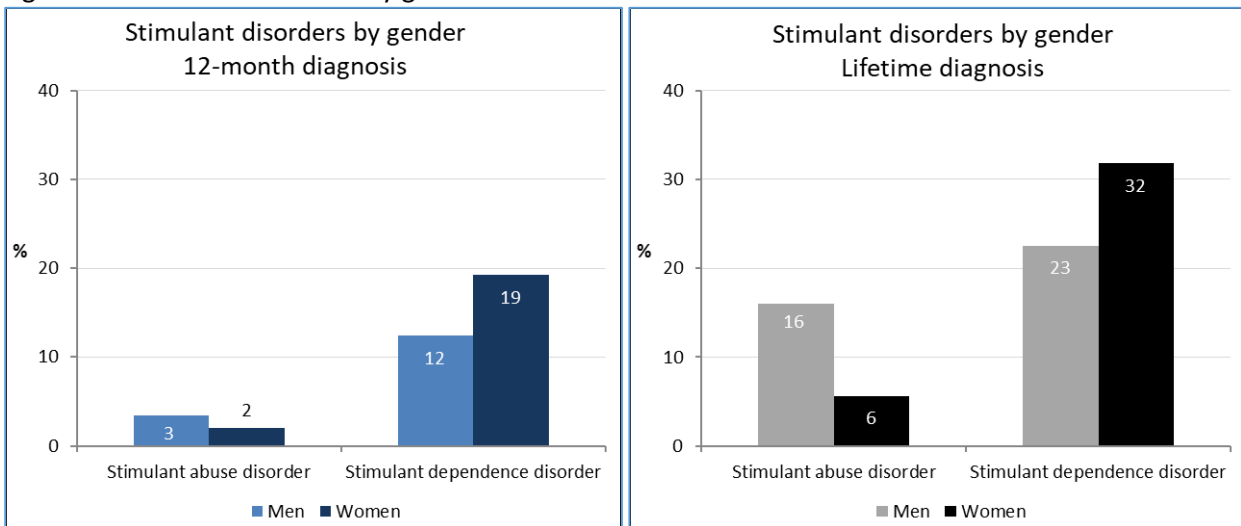


Table 1.1a Stimulant use and disorders by gender

	% ever use stimulants	% use stimulants in past year	Stimulant abuse disorder (%)		Stimulant dependence disorder (%)	
			12-month	Lifetime	12-month	Lifetime
Men (n=1096)	56.2	57.2	3.4	16.0	12.4	22.5
Women (n=113)	48.8	66.7	2.0 [†]	5.6 [†]	19.2 [†]	31.8 [†]
Total (n=1209)	55.7	57.7	3.4	15.4	12.8	23.0

[†]Statistically significant (P<0.05); [^]RSE >25% - interpret with caution

Table 1.1b Age of onset and persistence stimulant use and disorders by gender

	Mean age first used stimulants (SE)	Stimulant abuse disorder		Stimulant dependence disorder	
		Mean age onset (SE)	Mean years persistence (SE)	Mean age onset (SE)	Mean years persistence (SE)
Men (n=1096)	21.8 (0.3)	22.8 (0.4)	6.7 (0.4)	22.8 (0.4)	7.7 (0.4)
Women (n=113)	21.8 (1.3)	23.9 (1.5)	7.8 (1.3)	23.8 (1.5)	8.1 (1.3)
Total (n=1209)	21.8 (0.3)	22.9 (0.4)	6.8 (0.4)	22.9 (0.4)	7.7 (0.4)

*SE: Standard error of the mean

1.2 Age group

Key findings:

- Prisoners aged 17 to 24 years first used stimulants at a younger mean age (16.8 years) than those aged 25 to 44 years (20.8 years) and those 45 years and older (29.8 years), which may be associated with the increased availability of stimulants in recent years.
- Younger prisoners (aged less than 45 years) were more likely to have used stimulants in the past year (66%) compared to prisoners aged 45 years or more (39%).
- Stimulant abuse and dependence was highest in the 25 to 44 year age group with 18% found with lifetime stimulant abuse and 30% with lifetime stimulant dependence.
- The average trajectory from first using stimulants to stimulant dependence was faster among young prisoners aged 17 to 24 (0.8 years), compared to prisoners aged 25 to 44 (2.0 years).

Figure 1.2 Stimulant disorders by age group

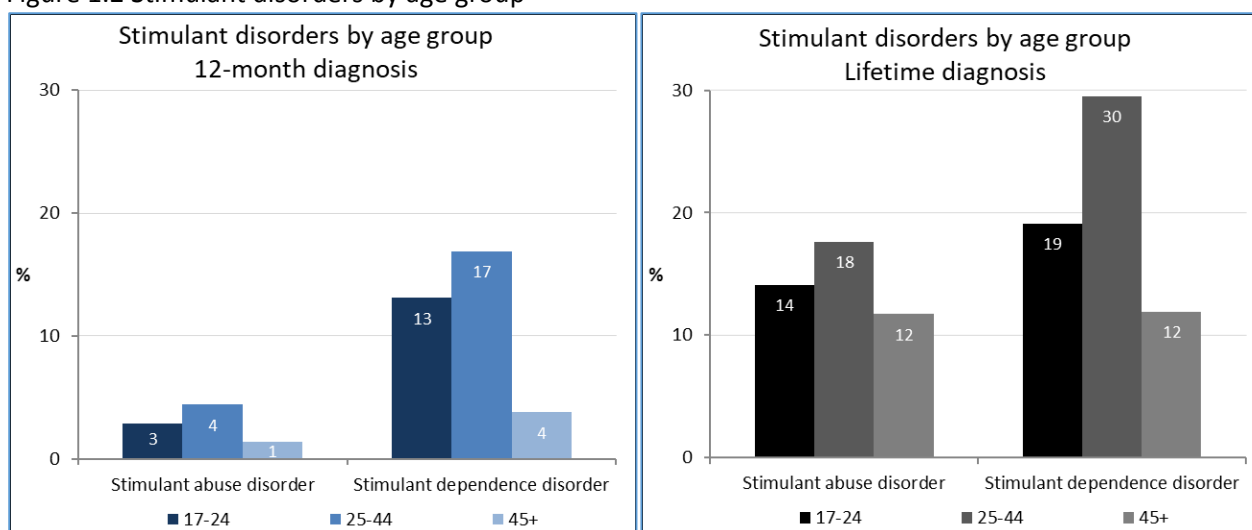


Table 1.2a Stimulant use and disorders by age group

	% ever use stimulants	% use stimulants in past year	Stimulant abuse disorder (%)		Stimulant dependence disorder (%)	
			12-month	Lifetime	12-month	Lifetime
17-24 years (n=314)	51.2	65.5	2.9 [^]	14.1	13.1	19.1
25-44 years (n=686)	64.5	61.1	4.4	17.6	16.9	29.5
45+ years (n=209)	40.4	38.8	1.4 [^]	11.7	3.8 [^]	11.9

[^]ARSE >25% - interpret with caution

Table 1.2b Age of onset and persistence stimulant use and disorders by age group

	Mean age first used stimulants (SD)	Stimulant abuse disorder		Stimulant dependence disorder	
		Mean age onset (SD)	Mean years persistence (SD)	Mean age onset (SD)	Mean years persistence (SD)
17-24 years (n=314)	16.8 (0.2)	17.0 (0.3)	3.0 (0.2)	17.6 (0.3)	3.7 (0.3)
25-44 years (n=686)	20.8 (0.3)	22.4 (0.4)	6.6 (0.3)	22.8 (0.4)	7.4 (0.4)
45+ years (n=209)	29.8 (1.4)	31.1 (2.0)	11.6 (1.9)	29.5 (1.6)	14.3 (2.1)

1.3 Ethnicity

Key findings:

- The prevalence of stimulant use and disorders was similar for prisoners of European or Māori descent, with a lifetime stimulant dependence of 24% and 25%, respectively.
- Though prisoners of Pacific descent were almost half as likely (34% vs 61%) to have ever used stimulants as prisoners of Māori descent, those who had ever used stimulants were more likely to have used stimulants in the past year (65%) than any other ethnicity.
- Prisoners of European descent had the youngest mean age of onset of stimulant abuse disorders (21.9 years) and of those that became dependent, the mean age of dependence was even younger (21.6 years) suggesting a rapid onset of dependence.

Figure 1.3 Stimulant disorders by ethnicity

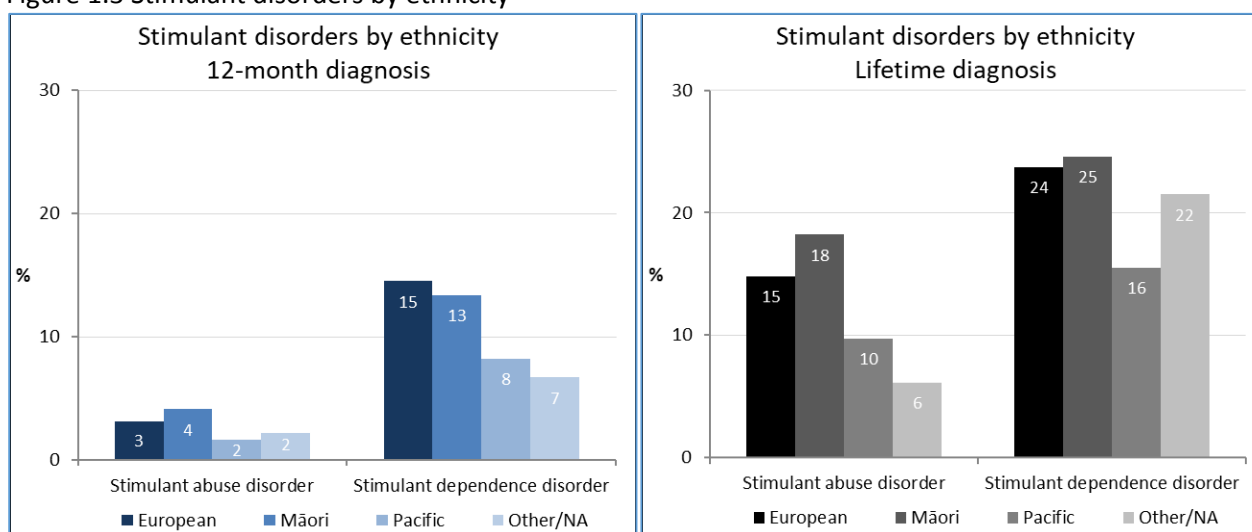


Table 1.3a Stimulant use and disorders by ethnicity

	% ever use stimulants	% use stimulants in past year	Stimulant abuse disorder (%)		Stimulant dependence disorder (%)	
			12-month	Lifetime	12-month	Lifetime
			European (n=423)	60.0	54.4	3.1 [^]
Māori (n=622)	60.5	59.8	4.1	18.2	13.4	24.6
Pacific peoples (n=119)	34.4	64.8	1.6 [^]	9.7 [^]	8.2 [^]	15.5
Other/NA (n=45)	33.8	38.6 [^]	2.2 [^]	6.1 [^]	6.7 [^]	21.5 [^]

[^]RSE >25% - interpret with caution

Table 1.3b Age of onset and persistence stimulant use and disorders by ethnicity

	Mean age first used stimulants (SD)	Stimulant abuse disorder		Stimulant dependence disorder	
		Mean age onset (SD)	Mean years persistence (SD)	Mean age onset (SD)	Mean years persistence (SD)
European (n=423)	22.1 (0.6)	21.9 (0.7)	7.6 (0.7)	21.6 (0.6)	8.2 (0.7)
Māori (n=622)	21.7 (0.4)	23.5 (0.5)	6.7 (0.5)	23.7 (0.5)	8.0 (0.5)
Pacific peoples (n=119)	22.0 (0.7)	22.5 (1.0)	4.0 (0.7)	22.5 (0.9)	4.0 (0.7)
Other/NA (n=45)	20.7 (1.0)	23.3 (1.5)	5.2 (2.0)	23.3 (1.4)	6.7 (1.7)

1.4 Other correlates

Key findings:

- **Country of birth:** Prisoners born in New Zealand were twice as likely (59% vs 30%) to have ever used stimulants and significantly more likely to have a lifetime stimulant abuse disorder (16% vs 8%) or a lifetime stimulant dependence disorder (25% vs 10%) compared to prisoners born elsewhere.
- **Secondary school:** The prevalence of stimulant use, abuse and dependence disorders were higher among prisoners who had no secondary school.
- **Other qualification:** Prisoners with no other qualification (such as a trade or technical certificate) apart from secondary school had a slightly higher prevalence of having ever used stimulants (57% vs 55%) and of having a lifetime stimulant dependence disorder (24% vs 22%) but these were not statistically significant.
- **Marital status:** Prisoners who were not married or in de facto relationships were more likely to have used stimulants in the past year (62% vs 54%) but otherwise had similar prevalence of stimulant abuse and dependence disorders.
- **Current smoker:** Prisoners who reported that they were current smokers had a higher prevalence than non-smokers for all stimulant use, abuse and dependence disorders except a slightly lower prevalence of a lifetime stimulant abuse disorder (15% vs 16%) but this was not significant.

Figure 1.4 Stimulant disorders by country of birth

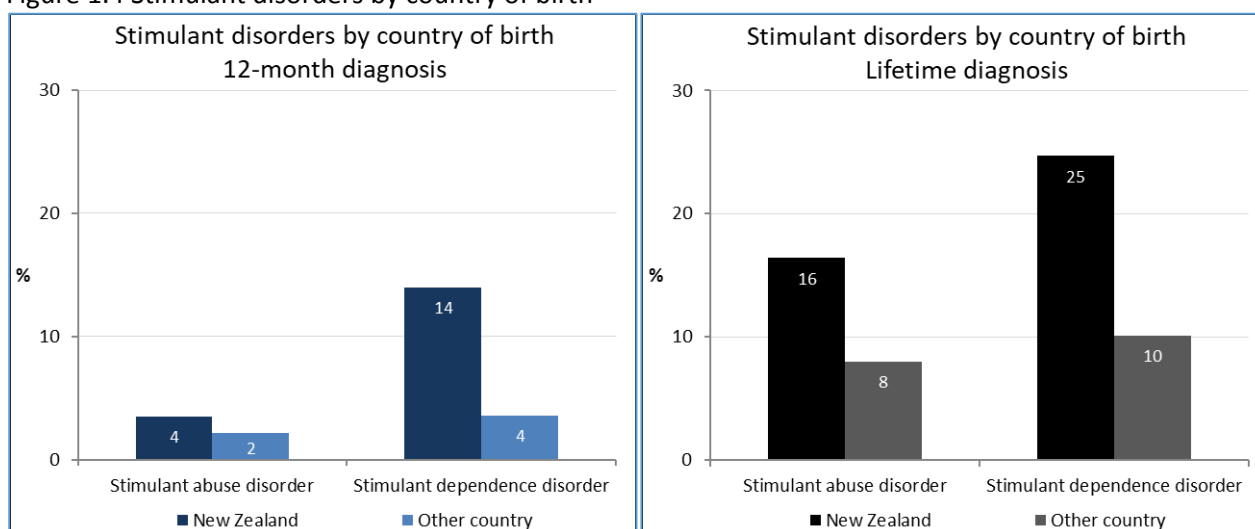


Table 1.4. Stimulant use and disorders by other correlates

Correlates		% ever use stimulants	% use stimulants in past year	Stimulant abuse disorder (%)		Stimulant dependence disorder (%)	
				12-month	Lifetime	12-month	Lifetime
Country of birth	New Zealand (n=1099)	59.1	58.8	3.5	16.4	14.0	24.7
	Other (n=110)	30.1	40.3	2.2 [^]	8.0 [^]	3.6 [^]	10.1
Any secondary school?	No (n=789)	58.9	60.1	3.8	16.3	14.2	25.4
	Yes (n=420)	49.8	52.4	2.6 [^]	13.8	10.2	18.5
Any other qualification?	No (n=649)	56.7	57.1	4.2	15.0	13.1	23.7
	Yes (n=560)	54.7	58.3	2.5 [^]	15.8	12.4	22.2
Marital status	Married/de facto (n=615)	57.0	53.7	2.9	16.0	12.4	22.7
	Other (n=594)	54.3	62.2	3.9	14.8	13.2	23.3
Current smoker	No (n=690)	52.1	54.1	3.0	15.9	10.1	20.0
	Yes (n=519)	61.0	62.0	3.9	14.7	16.6	27.3

[^]RSE >25% - interpret with caution

1.5 Current offence

Key findings:

- **Offence type:** The prevalence of prisoners who had ever used stimulants was highest among those whose current offence was for drugs (70%) or burglary (67%), followed by violence (56%) or other offences (44%). The highest prevalence of prisoners who had used stimulants in the past year was found for prisoners with a current offence of burglary (71%), suggesting an increased likelihood that the prisoner was under the influence of stimulants at the time of the offence or may have committed the offence in order to obtain stimulants. Nearly one in five (19%) prisoners with a drug or burglary-related offence were found to have a 12-month stimulant dependence disorder, compared to 11% of prisoners with a violent offence and 8% with another non-violent offence type.
- **Sentence status:** The prevalence of stimulant use, abuse and dependence disorders was higher among prisoners who were on remand.
- **Security classification:** Prisoners on a high security classification were more likely than prisoners on a low or medium security classification to have ever used stimulants (64% vs 54%) or have a lifetime stimulant abuse (21% vs 14%) or lifetime stimulant dependence disorder (25% vs 22%).

Figure 1.5 Stimulant disorders by offence type

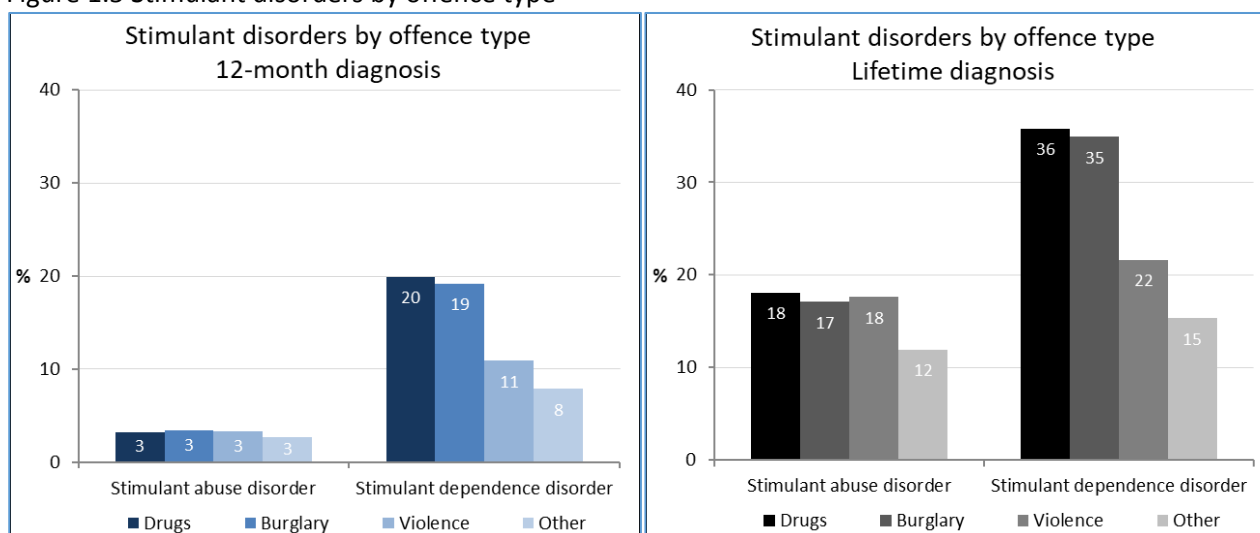


Table 1.5. Stimulant use and disorders by current offence

Correlates		% ever use stimulants	% use stimulants in past year	Stimulant abuse disorder (%)		Stimulant dependence disorder (%)	
				12-month	Lifetime	12-month	Lifetime
Offence type (if specified)	Drugs (n=101)	70.0	52.2	3.2 [^]	18.1	19.9	35.8
	Burglary (n=127)	66.9	70.8	3.4 [^]	17.1	19.2	34.9
	Violence (n=241)	56.2	53.8	3.3 [^]	17.6	10.9	21.6
	Other (n=418)	44.4	55.1	2.7 [^]	11.9	7.9	15.3
Sentence status	Remand (n=317)	62.1	60.0	4.6 [^]	17.5	16.2	26.1
	Sentenced (n=892)	53.7	56.8	3.0	14.7	11.6	22.0
Security classification	Low/medium (n=993)	53.9	60.9	3.4	14.2	12.7	22.4
	High (n=216)	63.9	45.6	3.1 [^]	20.9	13.2	25.5

[^]RSE >25% - interpret with caution

1.6 Offending history

Key findings:

- **Time in custody:** Prisoners who had spent 5 or more years in custody over their lifetime had nearly twice the prevalence of a lifetime stimulant dependence disorder (35% vs 19%) as prisoners who had spent less than one year in custody over their lifetime.
- **Age first time in custody:** Prisoners who were aged less than 20 years their first time in custody had a higher prevalence of having ever used stimulants (68%) and all stimulant abuse and dependence disorders than prisoners who were older the first time they were in custody.
- **Number of previous custodial sentences:** Over-two thirds (69%) of prisoners with 3 or more custodial sentences had ever used stimulants, compared to 43% of prisoners with no previous custodial sentences. A higher number of previous custodial sentences was associated with an increase in stimulant abuse and dependence disorders.

Figure 1.6 Stimulant disorders by time in custody

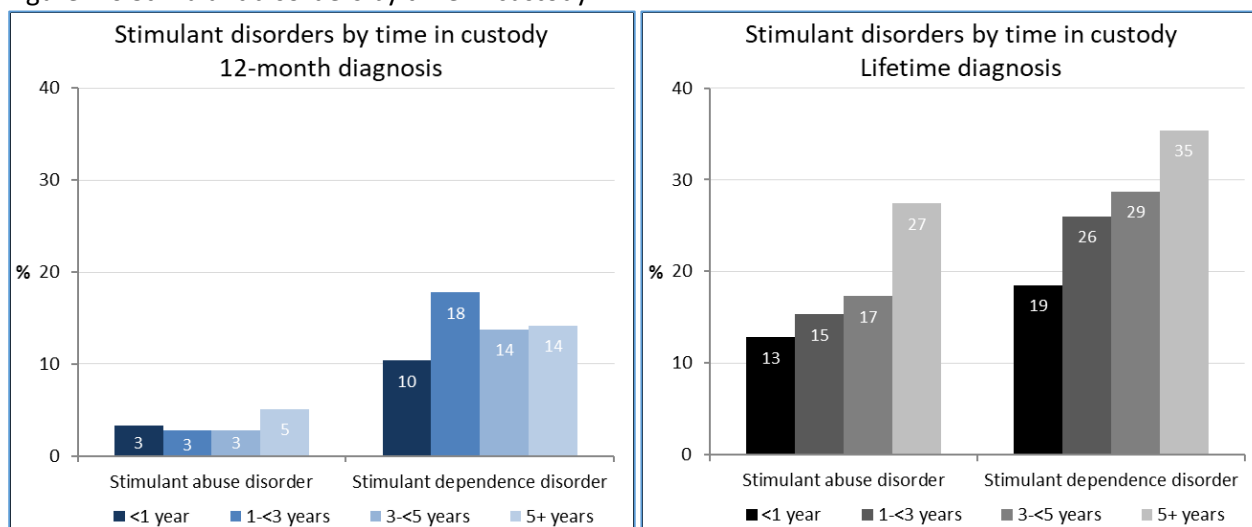


Table 1.6 Stimulant use and disorders by offending history

Correlates		% ever use stimulants	% use stimulants in past year	Stimulant abuse disorder (%)		Stimulant dependence disorder (%)	
				12-month	Lifetime	12-month	Lifetime
Time in custody (over lifetime)	<1 year (n=719)	47.9	60.5	3.3	12.8	10.4	18.5
	1-3 years (n=268)	57.9	60.3	2.8^	15.3	17.8	26.0
	3-5 years (n=99)	72.6	49.2	2.8^	17.3	13.8	28.7
	5+ years (n=123)	78.2	51.0	5.1^	27.4	14.2	35.4
Age first time in custody	<20 years (n=434)	68.2	58.8	4.5	21.1	16.2	28.9
	20-24 years (n=333)	57.6	63.3	2.4^	14.6	14.0	22.8
	25+ years (n=442)	44.9	52.1	3.0^	11.4	9.5	18.4
Number previous custodial sentences	None (n=444)	42.8	60.8	3.0^	10.8	10.4	18.3
	1-2 (n=320)	54.1	55.8	3.2^	14.3	11.6	20.1
	3+ (n=445)	68.7	56.9	3.8	20.4	15.8	29.2

^RSE >25% - interpret with caution

2. Comorbidities by stimulant disorders

2.1 Mental disorders summary

Key findings include:

- **Mental disorders:** Prisoners with a stimulant dependence disorder (both a 12-month and lifetime diagnosis) had a significantly higher prevalence of all mental health disorders and comorbidities compared to prisoners without stimulant dependence.
- **Anxiety disorders:** Women had a significantly higher prevalence of anxiety disorders compared to men regardless of whether they had a lifetime stimulant disorder.
- **Other drug dependence:** Prisoners with a stimulant dependence disorder (both a 12-month or lifetime diagnosis) were three times more likely to have another drug dependence than prisoners who did not have stimulant dependence.
- **Comorbidity:** Prisoners with a 12-month stimulant dependence diagnosis were over three times (56% vs 15%) to have a comorbidity than prisoners without stimulant dependence. Women had a significantly higher prevalence of comorbidity, regardless of whether they had a lifetime stimulant disorder.

Figure 2.1 Mental disorders summary by stimulant dependence

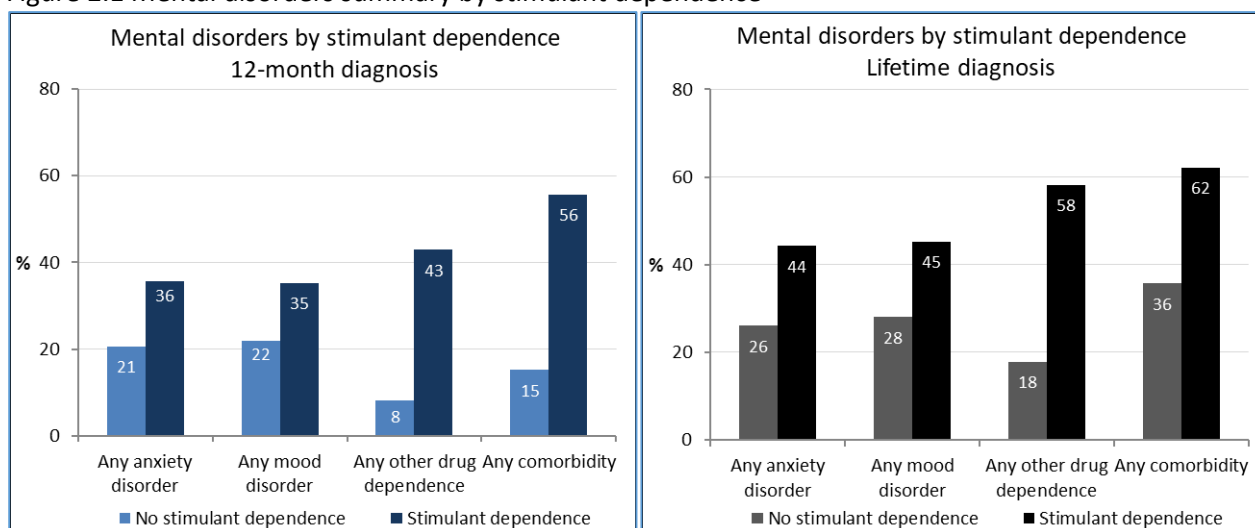


Table 2.1a Mental disorders summary by stimulant dependence

	12-month diagnosis		Lifetime diagnosis	
	No stimulant dependence % (n=1035)	Stimulant dependence % (n=174)	No stimulant dependence % (n=910)	Stimulant dependence % (n=299)
Any anxiety disorder	20.6	35.6†	26.1	44.3†
Any mood disorder	22.0	35.3†	28.0	45.3†
Other drug dependence*	8.2	42.9†	17.8	58.2†
Any comorbidity	15.2	55.7†	35.7	62.1†

†Statistically significant (P<0.05); *Excluding stimulants

Table 2.1b Mental disorders summary by lifetime stimulant dependence and gender

Lifetime diagnosis	No stimulant dependence % (n=910)		Stimulant dependence % (n=299)	
	Men (n=834) %	Women (n=76) %	Men (n=262) %	Women (n=37) %
Any anxiety disorder	24.8	51.0†	42.1	70.8†
Any mood disorder	27.7	35.5	44.8	51.4
Other drug dependence*	17.8	18.0	58.2	57.1
Any comorbidity	35.0	51.2†	60.2	85.3†

2.2 Anxiety disorders

Key findings include:

- Aside from generalised anxiety disorder (GAD), all prisoners with stimulant dependence had significantly higher prevalence of anxiety disorders including panic disorder, post-traumatic stress disorder (PTSD) and any anxiety disorder.
- Nearly half (44%) of prisoners with a lifetime stimulant dependence disorder also had a lifetime diagnosis of an anxiety disorder.
- Among prisoners with a comorbid stimulant dependence disorder and lifetime anxiety disorder, the age of onset of the anxiety disorder happened prior to the age of onset of stimulant dependence.

Figure 2.2 Anxiety disorders by stimulant dependence

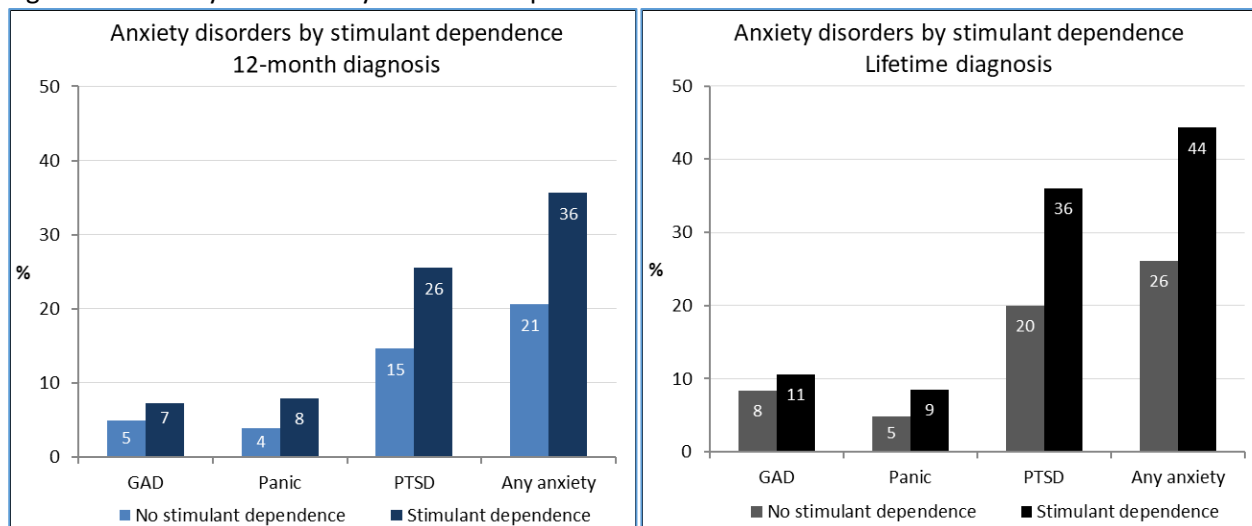


Table 2.2a Anxiety disorders by stimulant dependence

	12-month diagnosis		Lifetime diagnosis	
	No stimulant dependence % (n=1035)	Stimulant dependence % (n=174)	No stimulant dependence % (n=910)	Stimulant dependence % (n=299)
Generalised anxiety disorder	4.9	7.3 [^]	8.4	10.6
Panic disorder	3.9	7.9 ^{^†}	4.8	8.5 [†]
Post-traumatic stress disorder	14.6	25.5 [†]	20.0	36.0 [†]
Any anxiety disorder	20.6	35.6 [†]	26.1	44.3 [†]

[†]Statistically significant (P<0.05); [^]RSE >25% - interpret with caution

Table 2.2b Age of onset stimulant dependence disorder and anxiety disorders

	Comorbid Sample size*	Anxiety disorder Mean years onset (SD)	Stimulant dependence Mean age onset (SD)
Generalised anxiety disorder	33	18.0 (11.4)	22.6 (7.1)
Panic disorder	23	13.1 (4.2)	21.9 (5.3)
Post-traumatic stress disorder	111	16.6 (9.2)	21.9 (6.5)

*Comorbid lifetime stimulant dependence disorder and lifetime anxiety disorder

2.3 Mood disorders

Key findings include:

- Prisoners with a lifetime stimulant dependence disorder had a significantly higher prevalence of all lifetime diagnoses of mood disorders, including twice the prevalence of bipolar disorder (18% vs 9%).
- The only mood disorder not found to be significantly associated with stimulant disorders was a 12-month diagnosis of dysthymia which found a slightly higher (4.3% vs 3.4%) prevalence for prisoners without a 12-month stimulant dependence disorder.
- Among prisoners with a comorbid stimulant dependence disorder and lifetime mood disorder, the age of onset of the mood disorder happened prior to the age of onset of stimulant dependence.

Figure 2.3 Mood disorders by stimulant dependence

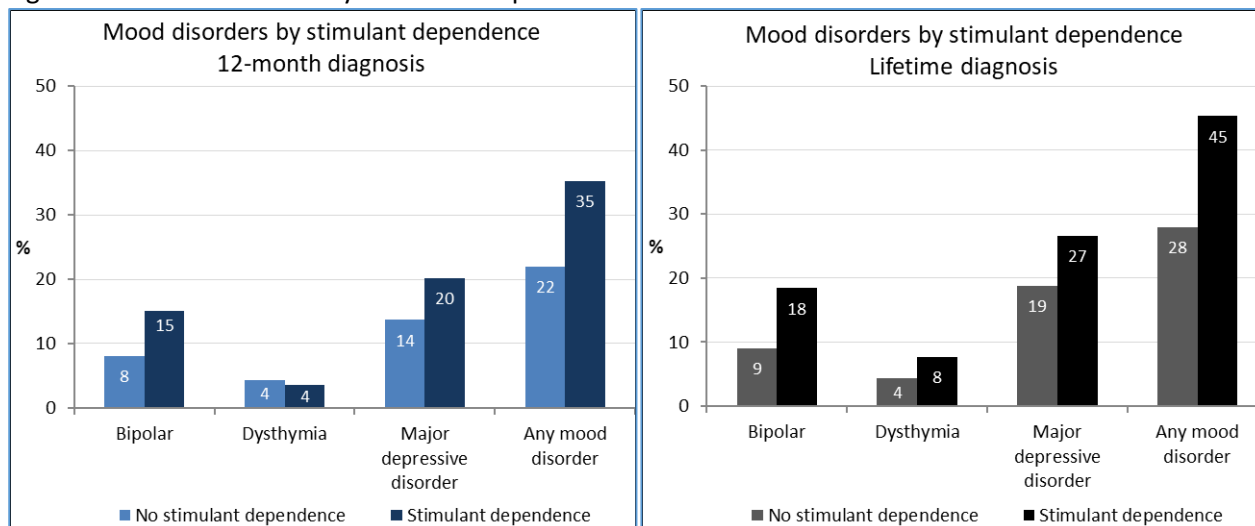


Table 2.3a Mood disorders by stimulant dependence

	12-month diagnosis		Lifetime diagnosis	
	No stimulant dependence % (n=1035)	Stimulant dependence % (n=174)	No stimulant dependence % (n=910)	Stimulant dependence % (n=299)
Bipolar disorder	8.1	15.1†	9.0	18.4†
Dysthymia	4.3	3.5^	4.3	7.7†
Major depressive disorder	13.7	20.2†	18.8	26.6†
Any mood disorder	22.0	35.3†	28.0	45.3†

†Statistically significant (P<0.05); ^RSE >25% - interpret with caution

Table 2.3b Age of onset stimulant dependence disorder and mood disorders

	Comorbid Sample size*	Mood disorder Mean years onset (SD)	Stimulant dependence Mean age onset (SD)
Bipolar disorder	54	15.7 (6.9)	20.8 (5.3)
Dysthymia	23	14.0 (5.7)	23.3 (8.2)
Major depressive disorder	80	17.0 (8.5)	23.7 (7.3)

*Comorbid lifetime stimulant dependence disorder and lifetime mood disorder

2.4 Substance use disorders

Key findings include:

- Prisoners with a lifetime stimulant dependence disorder were three times as likely (58% vs 18%) to have another drug dependence than prisoners without stimulant dependence.
- Alcohol abuse was the only substance use disorder found to be higher for prisoners without stimulant dependence disorder (46% vs 33%).
- Alcohol dependence was significantly higher (52% vs 31%) among prisoners with stimulant dependence disorder for both 12-month and lifetime diagnosis.
- The prevalence of marijuana abuse disorder was not significantly different by stimulant dependence, but prisoners with stimulant dependence had 3-5 times higher prevalence of marijuana dependence disorder than found for prisoners without stimulant dependence.

Figure 2.4 Substance use disorders by stimulant dependence

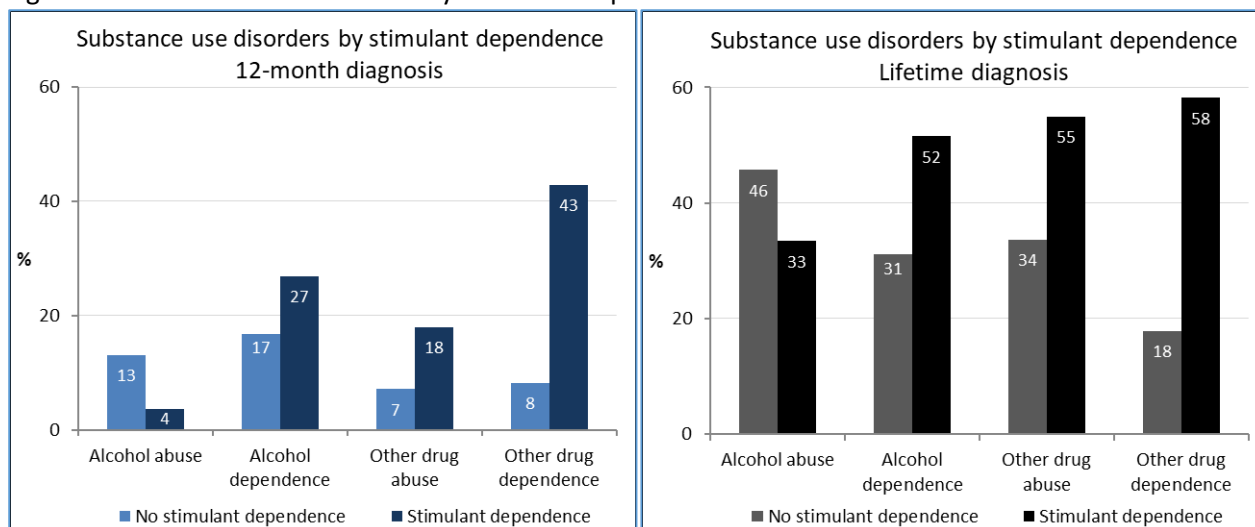


Table 2.4a Substance use disorders by stimulant dependence

		12-month diagnosis		Lifetime diagnosis	
		No stimulant dependence % (n=1035)	Stimulant dependence % (n=174)	No stimulant dependence % (n=910)	Stimulant dependence % (n=299)
Alcohol	Abuse	13.1	3.7 ^{^†}	45.7	33.4 [†]
	Dependence	16.8	26.9 [†]	31.1	51.5 [†]
Club drug	Abuse	0.7 [^]	5.4 ^{^†}	6.2	21.2 [†]
	Dependence	0.4 [^]	8.0 ^{^†}	0.9 [^]	15.1 [†]
Cocaine	Abuse	0.4 [^]	1.3 [^]	2.9	8.2 [†]
	Dependence	0.1 [^]	5.9 ^{^†}	0.6 [^]	10.1 [†]
Hallucinogens	Abuse	1.0 [^]	5.0 ^{^†}	8.4	25.5 [†]
	Dependence	0.5 [^]	6.8 ^{^†}	0.9 [^]	12.6 [†]
Inhalants	Abuse	0.2 [^]	0.0	4.1	12.4 [†]
	Dependence	0.4 [^]	1.8 ^{^†}	1.3 [^]	6.8 [†]
Marijuana	Abuse	4.6	6.0 [^]	23.4	24.0
	Dependence	5.6	31.0 [†]	12.3	43.8 [†]
Opiates	Abuse	0.4 [^]	1.6 ^{^†}	2.5	7.4 [†]
	Dependence	0.4 [^]	8.2 [†]	1.9 [^]	11.5 [†]
Other drugs	Abuse	0.3 [^]	1.3 [^]	2.7	5.4 ^{^†}
	Dependence	1.4	8.9 ^{^†}	2.5	9.0 [†]
Painkillers	Abuse	0.6 [^]	3.5 ^{^†}	3.8	10.4 [†]
	Dependence	0.9 [^]	11.2 [†]	1.8 [^]	14.8 [†]
Sedatives	Abuse	1.0 [^]	1.3 [^]	5.4	14.0 [†]
	Dependence	0.9 [^]	13.7 [†]	1.8 [^]	18.5 [†]
Any other drug*	Abuse	7.1	18.0 [†]	33.6	54.9 [†]
	Dependence	8.2	42.9 [†]	17.8	58.2 [†]

[†]Statistically significant (P<0.05); *Excluding stimulants and alcohol; [^]RSE >25% - interpret with caution

- Among prisoners with comorbid stimulant dependence disorder and other alcohol and drug dependence disorders, there was a variable age of onset. If the comorbidity included alcohol, hallucinogens, inhalants and marijuana then the age of onset for stimulant dependence happened after the age of onset for these substances. For all other substance dependence comorbidities (e.g. club drugs, cocaine, opiates, painkillers, sedatives and other drugs), the stimulant dependence age of onset happened first.

Table 2.4b Age of onset stimulant dependence disorder and other substance dependence disorders

	Comorbid Sample size*	Other substance dependence disorder Mean years onset (SD)	Stimulant dependence Mean age onset (SD)
Alcohol	156	18.7 (6.6)	22.2 (6.9)
Club drug	46	20.8 (6.0)	20.6 (5.5)
Cocaine	29	21.8 (5.5)	20.0 (4.8)
Hallucinogen	37	19.9 (6.8)	20.8 (5.8)
Inhalant	22	15.0 (3.6)	19.7 (3.2)
Marijuana	132	17.2 (5.7)	21.8 (6.2)
Opiate	33	21.6 (6.6)	20.8 (5.7)
Other drug	32	22.6 (8.5)	19.4 (6.6)
Painkillers	44	21.1 (6.4)	19.8 (5.3)
Sedative	52	21.8 (8.6)	21.7 (7.0)

*Comorbid lifetime stimulant dependence disorder and substance dependence disorder

2.5 Other mental health

Key findings include:

- **Eating disorders:** Prisoners with stimulant dependence were more than twice as likely to have a 12-month or lifetime eating disorder diagnosis than prisoners without stimulant dependence.
- **Psychosis symptoms:** There was no association between stimulant dependence and the presence of psychosis symptoms for both a lifetime or 12-month diagnosis. However, this finding should be interpreted with caution as the psychosis screener in the CIDI is not a diagnostic instrument.
- **Psychological distress:** There was a significantly higher prevalence of psychological distress in the past 30 days found for prisoners with a 12-month diagnosis of stimulant dependence (37% vs 27%) compared to prisoners without stimulant dependence.

Figure 2.5 Other mental health by stimulant dependence

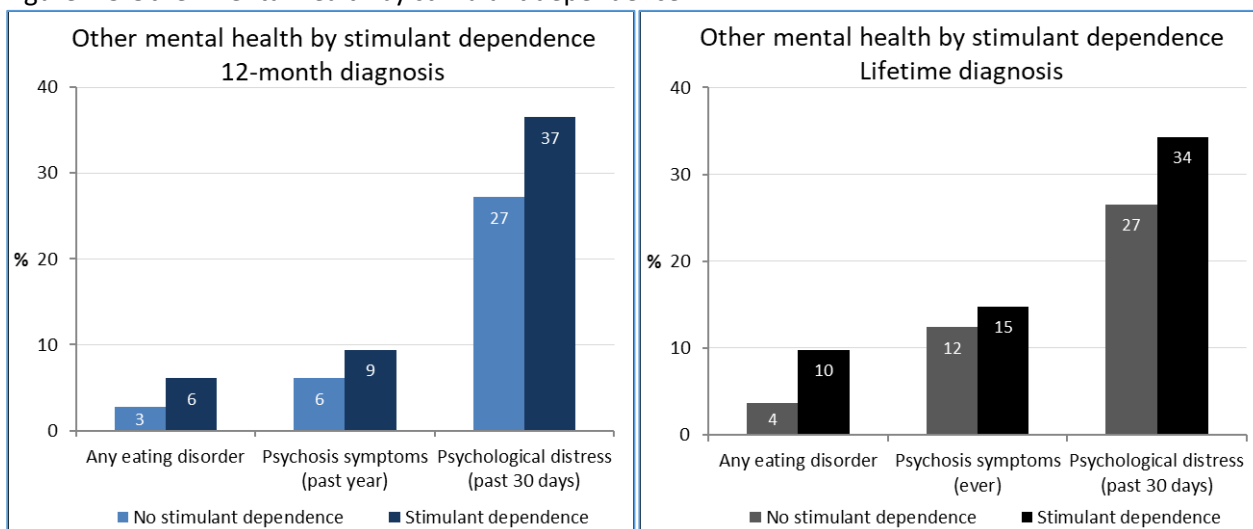


Table 2.5 Other mental health by stimulant dependence

	12-month diagnosis		Lifetime diagnosis	
	No stimulant dependence % (n=1035)	Stimulant dependence % (n=174)	No stimulant dependence % (n=910)	Stimulant dependence % (n=299)
Any eating disorder	2.8	6.1 ^{^†}	3.7	9.8 [†]
Psychosis symptoms	6.1	9.4	12.4	14.8
Psychological distress past 30 days	27.2	36.5 [†]	26.5	34.3 [†]

[†]Statistically significant (P<0.05); [^]RSE >25% - interpret with caution

2.6 Multiple disorders

Key findings include:

- As prisoners with stimulant dependence already have one disorder, it is not surprising that they have a higher prevalence of multiple disorders than prisoners without stimulant dependence.
- Compared to prisoners without stimulant dependence, those with a lifetime stimulant dependence disorder were twice as likely (58% vs 29%) to have been diagnosed with three or more mental health or substance use disorders.

Figure 2.6 Multiple disorders by stimulant dependence

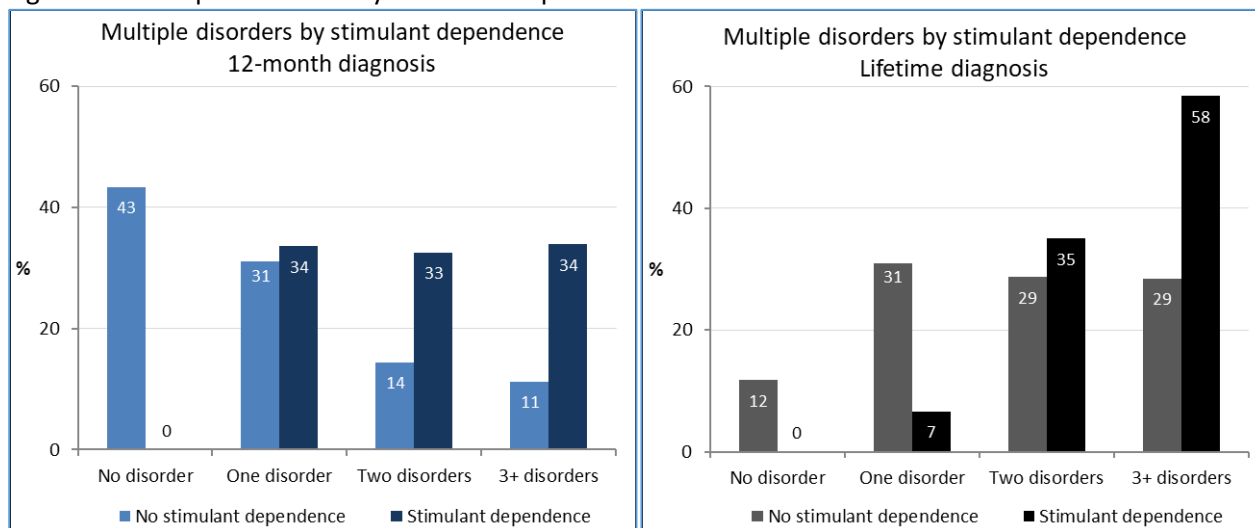


Table 2.6a Multiple disorders by stimulant dependence

	12-month diagnosis		Lifetime diagnosis	
	No stimulant dependence % (n=1035)	Stimulant dependence % (n=174)	No stimulant dependence % (n=910)	Stimulant dependence % (n=299)
No disorder	43.4	0.0†	11.8	0.0†
One disorder	31.0	33.6	31.0	6.6†
Two disorders	14.4	32.5†	28.7	35.0†
3+ disorders	11.2	33.9†	28.5	58.4†

†Statistically significant (P<0.05)

Table 2.6b Two or more disorders by disorder type and stimulant dependence

	2+ disorders (12-month diagnosis)		2+ disorders (Lifetime diagnosis)	
	No stimulant dependence % (n=285)	Stimulant dependence % (n=117)	No stimulant dependence % (n=542)	Stimulant dependence % (n=280)
2+ anxiety disorders	1.8	0.0	0.2	0.0
2+ mood disorders	3.2	0.0	0.2	0.0
2+ substance use disorders	13.0	16.2	35.4	32.9
Anxiety and mood	21.0	0.0	2.4	0.0
Mood and substance use	23.9	28.2	22.0	18.9
Anxiety and substance use	20.0	31.6	18.1	18.9
Anxiety, mood and substance use	17.2	23.9	21.8	29.3

†Statistically significant (P<0.05)

2.7 Personality disorders

Key findings include:

- The lifetime prevalence of any personality disorder was significantly higher for prisoners with stimulant dependence (42% vs 30%) compared to those without stimulant dependence.
- Prisoners with a lifetime stimulant dependence disorder were twice as likely to have an antisocial personality disorder (19% vs 8%), a narcissistic personality disorder (6% vs 3%) or a schizoid personality disorder (8% vs 3%) than those without stimulant dependence.

Figure 2.7 Personality disorders by stimulant dependence

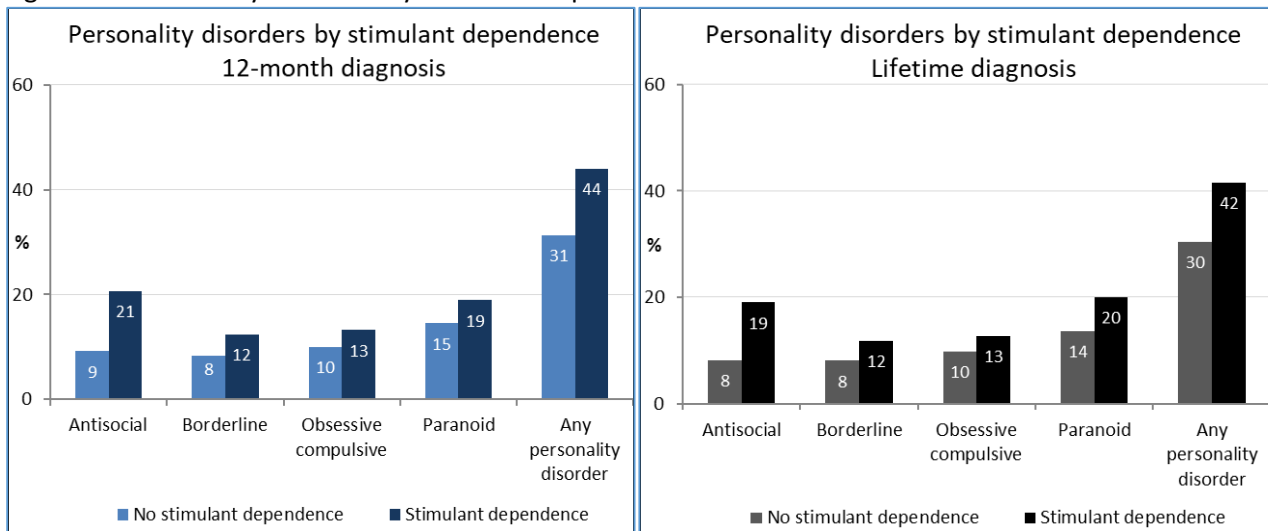


Table 2.7 Personality disorders by stimulant dependence

	12-month diagnosis		Lifetime diagnosis	
	No stimulant dependence % (n=1035)	Stimulant dependence % (n=174)	No stimulant dependence % (n=910)	Stimulant dependence % (n=299)
Antisocial	9.2	20.7 [†]	8.2	19.0 [†]
Avoidant	7.3	11.1	7.0	10.5
Borderline	8.4	12.4	8.1	11.8
Dependent	0.5 [^]	2.8 ^{^†}	0.4 [^]	1.9 ^{^†}
Depressive	4.4	6.9 [^]	4.1	7.0 [†]
Histrionic	1.4 [^]	2.8 [^]	1.3 [^]	2.6 [^]
Narcissistic	3.7	5.0 [^]	3.2	6.1 [†]
Negativity	5.9	10.5 [†]	5.8	8.6
Obsessive Compulsive	10.0	13.2	9.8	12.7
Paranoid	14.5	18.9	13.6	20.0 [†]
Schizoid	3.7	7.5 ^{^†}	3.1	7.8 [†]
Schizotypal	4.4	7.3 [^]	4.3	6.5
Any personality disorder	31.3	44.0 [†]	30.4	41.6 [†]

[†]Statistically significant (P<0.05); [^]RSE >25% - interpret with caution

2.8 Suicidal behaviours

Key findings include:

- Among prisoners with a 12-month mental disorder diagnosis, there were no significant associations between stimulant dependence and any of the suicidal behaviours (ideation, plan and attempt).
- Prisoners with a lifetime stimulant dependence disorder had a significantly higher prevalence of making a suicide plan (24% vs 15%) or a suicide attempt (24% vs 18%).

Figure 2.8 Suicidal behaviours by stimulant dependence

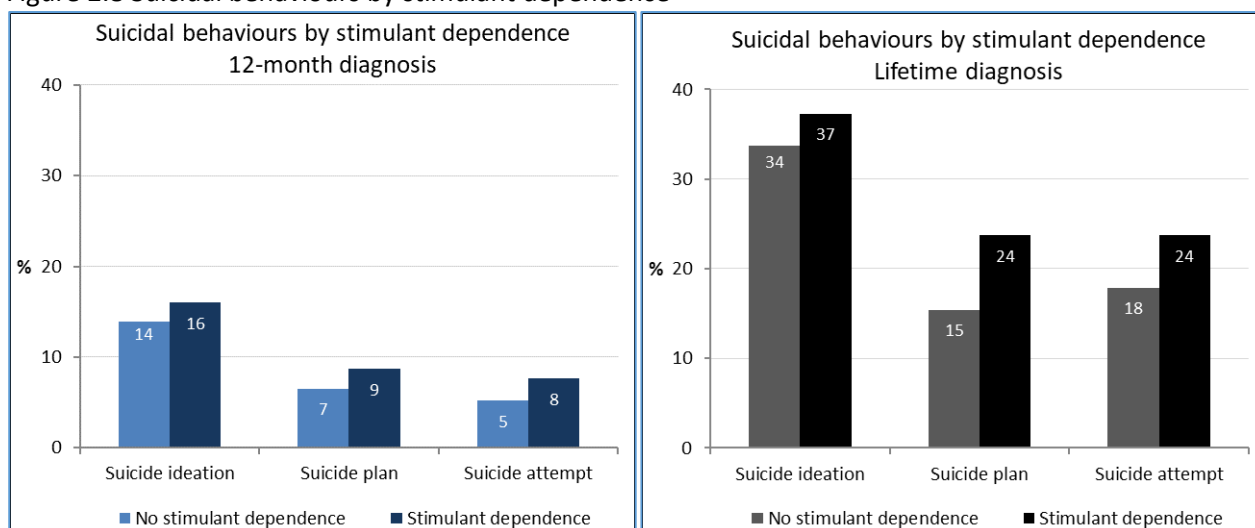


Table 2.8 Suicidal behaviours by stimulant dependence

	12-month diagnosis		Lifetime diagnosis	
	No stimulant dependence % (n=1035)	Stimulant dependence % (n=174)	No stimulant dependence % (n=910)	Stimulant dependence % (n=299)
Suicide ideation	13.9	16.0	33.7	37.3
Suicide plan	6.5	8.7	15.4	23.7†
Suicide attempt	5.2	7.6	17.9	23.7†

†Statistically significant (P<0.05)

2.9 Mental health treatment

Key findings include:

- Prisoners with a lifetime stimulant dependence disorder were significantly more likely than prisoners without stimulant dependence to have ever received mental health medications (34% vs 26%), been admitted to hospital for their mental health (30% vs 20%), seen a psychologist or counsellor (58% vs 43%) or seen a GP or other medical professional for their mental health (27% vs 16%).
- There was no significant association between prisoners who had or did not have a stimulant dependence disorder with the likelihood of seeing a psychiatrist (ever or in the past year).
- Prisoners with a lifetime stimulant dependence disorder had a higher prevalence (47% vs 33%) of seeking mental health treatment in the past year than prisoners without a stimulant dependence disorder. However, fewer than half (47%) of these prisoners sought treatment in the past year suggesting some may not be seeking treatment when they need it.

Figure 2.9 Mental health treatment by stimulant dependence

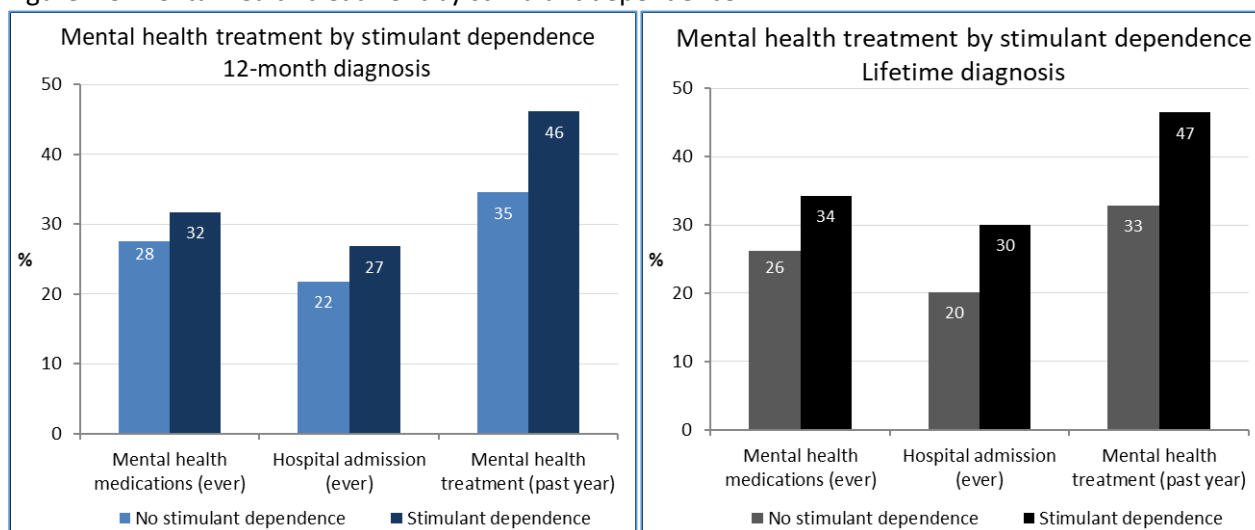


Table 2.9 Mental health treatment by stimulant dependence

		12-month diagnosis		Lifetime diagnosis	
		No stimulant dependence % (n=1035)	Stimulant dependence % (n=174)	No stimulant dependence % (n=910)	Stimulant dependence % (n=299)
Ever	Mental health medications	27.5	31.7	26.2	34.3 [†]
	Hospital admission	21.8	26.8	20.2	30.0 [†]
	Psychologist/Counselling	45.6	50.4	42.8	57.8 [†]
	Psychiatrist	17.6	15.9	17.2	17.9
	GP/other medical	17.2	27.5 [†]	15.8	27.4 [†]
Past year	Psychologist/Counselling	19.9	24.6	18.1	28.5 [†]
	Psychiatrist	7.5	4.5 [^]	7.1	7.0
	GP/other medical	14.1	23.0 [†]	13.6	20.5 [†]
	Other mental health professional	5.8	8.9	5.3	9.4 [†]
	Non-health care provider*	5.9	7.5 [^]	5.5	8.1
Any mental health treatment		34.5	46.1 [†]	32.9	46.5 [†]

[†]Statistically significant (P<0.05); [^]RSE >25% - interpret with caution

*Includes internet support group, self-help group, spiritual advisor and healer.

Summary and conclusions

The lifetime prevalence of stimulant abuse and dependence among New Zealand prisoners has increased nearly 10-fold (from 4% in 1999 to 38% in 2015) in the past two decades. Over half (56%) of prisoners reported having ever used stimulants such as methamphetamines and the mean age of first use has been getting younger (from 16.8 years among those aged 17 to 24 years compared to 29.8 years among those aged 45 years and older). Likewise, the average trajectory of first using stimulants to stimulant dependence was faster among younger prisoners aged 17 to 24 years (0.8 years) compared to 2.0 years for prisoners aged 45 years and older. These trends are concerning and suggest enhanced strategies are needed to prevent young people (particularly those exposed to the criminal justice system) from first trying stimulants and to seek treatment early if they experience problems with their use.

Lifetime stimulant dependence was found to be most prevalent among the more serious offenders, characterised by those whose first incarceration happened at a younger age, have spent more time in prison and had more custodial sentences. Drug-related (35%) or burglary-related (36%) offences were the most common current offence types among prisoners with a lifetime stimulant dependence disorder. Surprisingly, prisoners with a violent offence (excluding burglary) had a considerably lower prevalence (21%) of lifetime stimulant dependence. The prevalence of having used stimulants in the past year was highest (70%) among prisoners with a burglary current offence. This suggests an increased likelihood that the prisoner was under the influence of stimulants at the time of the offence or may have committed the offence in order to obtain stimulants. More research is needed into the role stimulant use and dependence plays in the onset and type of offending behaviours.

Prisoners with a lifetime stimulant dependence disorder were nearly twice as likely (62% vs 35%) to have a comorbidity with another substance use or mental disorder compared with prisoners without a stimulant dependence disorder. These people also had a significantly higher prevalence of most anxiety or mood disorders than prisoners without a stimulant dependence disorder. Among prisoners with a comorbid anxiety or mood disorder, the age of onset for the mental health disorder always took place prior to the age of onset of the stimulant disorder. This suggests prisoners with these mental health disorders are at a higher risk of substance use disorders and may be 'self-medicating' with stimulants and other substances. More research is needed to understand the pathways to substance disorders and to determine effective interventions to reduce substance use and dependence among prisoners with anxiety or mood disorders.

Most prisoners with stimulant dependence were also poly-drug users and findings indicate they were three times more likely (58% vs 18%) to have another drug dependence than prisoners who did not have stimulant dependence. Among prisoners with stimulant dependence comorbid with another substance dependence, the age of onset of the substance dependence varied. A younger age of onset was found for alcohol, marijuana, inhalants and hallucinogen dependence when comorbid with stimulant dependence lending credence to the 'gateway' theory of using these drugs leading to the use of more serious drugs such as stimulants, cocaine, painkillers and opiates.

Though prisoners with stimulant dependence were significantly more likely to seek mental health treatment in the past year than prisoners without stimulant dependence, fewer than half (47%) of these prisoners sought treatment in the past year suggesting some may not be seeking treatment when they need it. The prevalence of prisoners who had ever seen a psychiatrist (between 16%-18%) or ever been on mental health medication (between 26%-34%) was particularly low and may warrant further investigation.

Implications for policy and practice

The findings of this report provide important evidence to quantify the higher mental health comorbidities and treatment needs for prisoners with a lifetime stimulant dependence disorder. With fewer than half of these prisoners seeking treatment in the past year, more research may be helpful to determine their treatment needs and experience. Improving the integration of treatment for substance use disorders and mental health disorders in prison and the community would also be a useful strategy. These findings also

may be useful in developing continuity of care pathways in the community for prisoners with stimulant dependence disorders upon their release from custody.

Strengths and Limitations

This study had a number of strengths, including the use of validated and reliable diagnostic instruments (the CIDI and PDQ4) which have been used in New Zealand prisoner and general population surveys, as well as extensively internationally. The study sample size was large, ensuring comprehensive coverage of the mental health and substance use disorder characteristics of the prisoner population. The study also was limited by being unable to quantify the number of prisoners approached by Corrections to determine the overall study response rate and assess sample representativeness. There were also a high number of participants who did not complete the interview (10% of prisoners who consented to participate) due to its length and some of the distressing issues it covered. It should also be noted that the presentation of psychosis symptoms should not be interpreted as a diagnosis for psychosis which requires a longer clinically administered instrument.

Conclusions

In summary, the prevalence of stimulant use is high among prisoners, with particularly high rates among younger prisoners. Prisoners with a 12-month or lifetime stimulant dependence disorders had significantly higher comorbidities with other substance use disorders and other mental health disorders. All prisoners with a comorbid stimulant dependence disorder with an anxiety or mood disorder were found to have the age of onset of the mental health disorder take place prior to the age of onset of the stimulant disorder. This suggests that increased effort can be made to put in place stimulant abuse prevention strategies for young people with mental health disorders. These prisoners also had a higher prevalence of seeking mental health treatment, but less than half sought treatment in the past year suggesting some may not be seeking treatment when they need it. More research is needed to determine the treatment needs of prisoners with stimulant disorders comorbid with other disorders. A stronger emphasis is also needed on preventing young prisoners from developing stimulant use disorders, as these disorders may have a significant impact on their propensity for violence and further crime.

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Appendix 1: Summary Tables

Table i. Correlates of stimulant use and disorders

		% ever use stimulants	% use stimulants in past year	Stimulant abuse Disorder (%)		Stimulant dependence disorder (%)	
				12-month	Lifetime	12-month	Lifetime
Gender	Men	56.2	57.2	3.4	16.0 [†]	12.4	22.5
	Women	48.8	66.7	2.0	5.6	19.2 [†]	31.8 [†]
Age group	17-24 years	51.2	65.5	2.9	14.1	13.1	19.1
	25-44 years	64.5	61.1	4.4	17.6	16.9	29.5
	45+ years	40.4	38.8	1.4	11.7	3.8	11.9
Ethnicity	European	60.0	54.4	3.1	14.8	14.5	23.7
	Māori	60.5	59.8	4.1	18.2	13.4	24.6
	Pacific peoples	34/4	64.8	1.6	9.7	8.2	15.5
	Other/NA	33.8	38.6	2.2	6.1	6.7	21.5
Country of birth	New Zealand	59.1	58.8	3.5	16.4	14.0	24.7
	Other	30.1	40.3	2.2	8.0	3.6	10.1
Offence type	Drugs	70.0	52.2	3.2	18.1	19.9	35.8
	Burglary	66.9	70.8	3.4	17.1	19.2	34.9
	Violence	56.2	53.8	3.3	17.6	10.9	21.6
	Other	44.4	55.1	2.7	11.9	7.9	15.3
Time in custody	<1 year	47.9	60.5	3.3	12.8	10.4	18.5
	1-<3 years	57.9	60.3	2.8	15.3	17.8	26.0
	3-<5 years	72.6	49.2	2.8	17.3	13.8	28.7
	5+ years	78.2	51.0	5.1	27.4	14.2	35.4
Age first time in custody	<20 years	68.2	58.8	4.5	21.1	16.2	28.9
	20-24 years	57.6	63.3	2.4	14.6	14.0	22.8
	25+ years	44.9	52.1	3.0	11.4	9.5	18.4
Number previous custodial sentences	None	42.8	60.8	3.0	10.8	10.4	18.3
	1-2	54.1	55.8	3.2	14.3	11.6	20.1
	3+	68.7	56.9	3.8	20.4	15.8	29.2
Total sample		55.7	57.7	3.4	15.4	12.8	23.0

[†]Statistically significant (P<0.05)

Table ii. Comorbidities by stimulant dependence disorders

		12-month diagnosis		Lifetime diagnosis	
		No stimulant dependence % (n=1035)	Stimulant dependence % (n=174)	No stimulant dependence % (n=910)	Stimulant dependence % (n=299)
Anxiety disorders	Generalised anxiety disorder	4.9	7.3	8.4	10.6
	Panic disorder	3.9	7.9†	4.8	8.5†
	Post-traumatic stress disorder	14.6	25.5†	20.0	36.0†
	Any anxiety disorder	20.6	35.6†	26.1	44.3†
Mood disorders	Bipolar disorder	8.1	15.1†	9.0	18.4†
	Dysthymia	4.3	3.5	4.3	7.7†
	Major depressive disorder	13.7	20.2†	18.8	26.6†
	Any mood disorder	22.0	35.3†	28.0	45.3†
Substance use disorders	Alcohol abuse	13.1	3.7†	45.7	33.4†
	Alcohol dependence	16.8	26.9†	31.1	51.5†
	Other drug abuse*	7.1	18.0	33.6	54.9†
	Other drug dependence*	8.2	42.9†	17.8	58.2†
Comorbidity and multiple disorders	Any comorbidity	15.2	55.7†	35.7	62.1†
	No disorder	43.4	0.0†	11.8	0.0†
	One disorder	31.0	33.6	31.0	6.6†
	Two disorders	14.4	32.5†	28.7	35.0†
	Three or more disorders	11.2	33.9†	28.5	58.4†
Other mental health	Any eating disorder	2.8	6.1†	3.7	9.8†
	Psychosis symptoms	6.1	9.4	12.4	14.8
	Psychological distress (past 30 days)	27.2	36.5†	26.5	34.3†
	Any personality disorder	31.3	44.0†	30.4	41.6†
Suicidal behaviours	Suicide ideation	13.9	16.0	33.7	37.3
	Suicide plan	6.5	8.7	15.4	23.7†
	Suicide attempt	5.2	7.6	17.9	23.7†
Treatment	Any mental health treatment (past year)	34.5	46.1†	32.9	46.5†

†Statistically significant (P<0.05); *Excluding stimulants

Appendix 2: Glossary

Bipolar disorder (sometimes referred to as manic depression) refers to a condition where people experience mood extremes from low (depression) to high (mania). This included any BipolarI, BipolarII, Mania or Hypomania disorders.

Comorbidity – is defined in this report as the presence of a mental health disorder (mood and/or anxiety) and a substance use disorder (alcohol and/or drugs).

Drugs types– more detail on what each drug type in the CIDI includes is described below

- Club drugs – includes ecstasy, ketamine and MDMA
- Cocaine – includes powder, crack, free base, coca leaves or paste
- Hallucinogens – includes LSD, mescaline, PCP, angel dust, mushrooms or peyote
- Inhalants – includes inhalants or solvents such as nitrous oxide, glue, paint or gasoline
- Marijuana – includes marijuana or hashish
- Opioids – includes heroin or opium
- Painkillers – including analgesics such as codeine, morphine and percodan
- Sedatives – includes sedatives or tranquilisers such as Valium, rohypnol, diazepam
- Stimulants – includes speed, ice, glass, crystal, crank, pep pills, methamphetamines, amphetamines, dexamyl, adderall, ritalin

Dysthymia is similar to major depressive disorder but is a chronic and persistent condition that may last a lifetime.

Generalised anxiety disorder is characterised by excessive or disproportionate anxiety about multiple aspects of life such as extreme worrying almost every day for six months or more.

Major depressive disorder refers to a single period of depression marked by negative or hopeless thoughts and physical symptoms like fatigue.

Mental disorder included the presence of any anxiety, mood, substance or eating disorder.

Mental health professionals included psychiatrists, psychologists, counsellors, social workers, general medical or nursing professionals, or other mental health workers.

Mental health treatment refers to a visit for a mental health problem to a mental health professional.

Multiple disorders refers to the presence of two or more mental health and/or substance use disorder diagnosis.

Panic disorder (with or without agoraphobia) is characterised by sudden attacks of intense fear or panic that triggers severe physical reactions when there is no real danger or apparent cause.

Personality disorder is an enduring pattern of inner experience and behaviour that differs markedly from the expectations of the individual's culture, is pervasive and inflexible, has an onset in adolescence or early adulthood, is stable over time and leads to distress or impairment.

Post-traumatic stress disorder is a condition of persistent mental and emotional stress as a result of traumatic events in life, typically involving sleep disturbance and dulled responses to others and the outside world.

Substance (alcohol or drug) abuse includes at least one of the following symptoms in a 12-month period:

- Repeated use in situations where it would be considered hazardous;
- Interference with the individual's ability to fulfil their work, school or home obligations;
- Continued use of these substances even though it is causing interpersonal difficulties; or
- Any legal problems that occurred as a result of substance abuse.

Substance (alcohol or drug) dependence includes at least three or more of the following symptoms in a 12-month period:

- Developing a tolerance for the substance, where they have to use more in order to get the same effect;
- Continues to abuse the substance despite obvious evidence that it is causing them harm;
- Experiences withdrawal symptoms when they stop taking the substance;
- Difficulty cutting down on the amount they are using;
- Lack of control over the amount they consume;
- Loss of interest in other activities that they once enjoyed; or
- Devoting increasing amounts of time to the substance abuse (obtaining, using, recovering from it).