



Health Service Use for Mental Health Reasons in a Cohort of People Who Use Methamphetamine Experiencing Moderate to Severe Anxiety or Depression

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Abstract

This study examined health service use for mental health reasons in a cohort of people who use methamphetamine and experience anxiety or depression. Data were derived from baseline surveys of a subset of 429 participants from the ‘VMAX’ study. Anxiety and depression were measured using the Generalized Anxiety Disorder-7 instruments and the Patient Health Questionnaire-9. Sequential logistic regression determined correlates of health service use for mental health reasons. Lower odds of health service use for mental health reasons were evident for those living in a medium/small rural town (aOR = 0.27, CI = 0.12, 0.62), \geq weekly methamphetamine use (aOR = 0.51, CI = 0.27, 0.99), and not utilising professional support for methamphetamine use in the 12 months prior (aOR = 0.19, CI = 0.12, 0.30). People who use methamphetamine frequently use health services for mental health issues. Further work is needed to determine the effectiveness of these services for this population.

Keywords Methamphetamine · Anxiety · Depression · Dual diagnosis · Comorbidity · Rural · Metropolitan · Cohort study

Mental illness comorbidity is common among those who use methamphetamine (Lee et al., 2012). In Australia, rates of anxiety and depression are higher in those who use methamphetamine than in the general population (Duncan et al., 2021). However, despite extensive evidence of the association between methamphetamine use and mental health problems (McKetin et al., 2019), it is unclear to what extent people who experience anxiety

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or depression and use methamphetamine engage in health service use for mental health reasons.

Increased demand for health services in general is one of several methamphetamine use-related societal impacts reported in Australia (Whetton et al., 2016), estimated to cost AUD242–352 million in 2013/2014 (Tait et al., 2018). In a study of Australian methamphetamine users, McKetin et al. (2018) report that 88% had seen a general practitioner at least once in the past year, 34% had seen a psychologist or counsellor, and 23% had seen a psychiatrist. These rates are congruent with high rates of health service use reflected in populations who inject drugs (Djordjevic et al., 2021) and across people who use heroin, illicit stimulants, or who are drug dependent (Lewer et al., 2020).

Although these high rates in the use of health services is related to a broad range of health issues, McKetin et al. (2018) found more frequent methamphetamine use to be associated with higher odds of utilising high-cost acute services (e.g. emergency departments and psychiatric hospital admission), and lower odds of utilising non-acute services such as general practitioners or psychologists. Admissions to psychiatric hospitals are also associated with previous drug treatment and comorbid mental health disorders (McKetin et al., 2018), but the correlates of use of primary health services for mental health support in this population are not well understood. Considering the significant financial burden associated with the use of acute services, understanding the correlates of the use of primary care health services may lead to the development of diversion strategies that usher people who use methamphetamine towards these more cost-effective services. In addition, redirection to non-acute services (e.g. primary health) offers longer-term support to patients in need and alleviates overburdened healthcare systems (Hopkins et al., 2021). However, little is known about health service use for mental health reasons by those who use methamphetamine and have comorbid mental health problems.

A range of factors that may influence help-seeking health behaviours in people who use methamphetamine and have anxiety or depression have been identified. McKetin et al. (2018) posited that the effects of frequent methamphetamine use (i.e. intoxication and symptoms of withdrawal) may affect an individual's capacity to engage with health services and result in a reliance on acute services. Contact with non-acute services for mental health by people who use methamphetamine may also be affected by whether social determinants of health are addressed, as well as barriers such as poor availability and stigma (Levesque et al., 2013; Ward et al., 2021). For example, living in unstable housing, not being employed, and not finishing high school can impede capacity to engage with health services due to financial hardship (McKetin et al., 2018). Age, gender, Aboriginal and Torres Strait Islander status, geographic location, social support, polydrug use, injecting methamphetamine, and self-perceived health status have also been found to influence health service use in people who use methamphetamine (Kelly et al., 2005; Quinn et al., 2013; Roberts et al., 2018; Wallace et al., 2009). These covariates are not dissimilar to those reported in people without a mental health disorder or reported drug use; other studies have also found that socioeconomic and social factors are associated with mental health service use in adults without a mental health or drug use disorder (Fleury et al., 2014). However, psychological distress and being diagnosed with an affective disorder are considered to be strong predictors of health service use in non-treatment seeking populations (Mills et al., 2012).

Current understanding about health service use for mental health reasons by people who use methamphetamine is overwhelmingly drawn from studies of samples recruited from within the specialist drug treatment sector and is not representative of those who do not seek such treatment (Quinn et al., 2013). Also, although smoking is the most common way

in which methamphetamine is used in Australia (Australian Institute of Health & Welfare, 2020), the health service engagement literature predominantly relates to those who inject methamphetamine (Duncan et al., 2021). Furthermore, although McKetin et al (2020) found that treatment episodes for methamphetamine use have recently increased, they did not explore service utilisation for mental health issues. In this regard, McKetin et al. (2018) emphasised the need to understand how co-occurring depression or anxiety affects the capacity and abilities of individuals who use methamphetamine to engage with health services.

Understanding patterns of health service use for mental health reasons by people who use methamphetamine, and who experience anxiety or depression and use methamphetamine, is critical to (a) optimising pathways to care in this high-risk population and (b) maximising opportunities to address both mental health and drug use issues. Stuart et al. (2020) concluded that while there is a significant amount of research regarding the use of psychological treatments in the reduction of methamphetamine use itself, there is less evidence regarding psychological treatment for co-occurring mental health problems.

The aim of this study was to examine rates and correlates of health service use for mental health reasons in a cohort of community-recruited people who use methamphetamine and who experience moderate to severe anxiety or depression. The correlates were selected from the range of demographic, socioeconomic, substance use patterns, and other health correlates related to help-seeking health behaviours for those experiencing anxiety and depression and/or who use methamphetamine described above (Kelly et al., 2005; McKetin et al., 2018; Quinn et al., 2013; Teesson et al., 2009).

Method

Design

This cross-sectional analysis involved a subset of 429 participants from the VMAX Study; this subset has previously been identified as experiencing moderate to severe anxiety or depression (Duncan et al., 2021) and was chosen as it is important to identify correlates that may be a barrier to health service use for mental health reasons in people who use methamphetamine and concurrently experience anxiety or depression.

Briefly, participants from metropolitan and rural Victoria were recruited using respondent-driven and snowball sampling approaches, as well as targeted sampling via online advertising and posters placed in public locations and services. Eligibility included being aged 18 years or over, use of any form of methamphetamine at least once a month during the preceding 6 months, and use of methamphetamine via non-injecting routes of administration (e.g. smoking and snorting). Further in-depth description of the methods has been described in detail elsewhere (Quinn et al., 2020).

In-person baseline interviews, which took up to 60 min, were conducted in mutually agreed locations. Interviewers administered a structured survey using REDCap data collection software (Harris et al., 2009) that canvassed a range of demographic, socioeconomic, substance use, and social and health-related correlates. Participants were reimbursed AUD40 for their time and out-of-pocket expenses and AUD20 per peer (up to a maximum of three) who subsequently enrolled in the study. The route of administration criterion was relaxed towards the end of recruitment to allow those who used methamphetamine primarily through injection.

Measures

Outcome Variable

The primary variable of interest was past year health service use for mental health reasons. This variable was addressed through the question ‘Have you attended a health professional for any mental health problem(s) in the past 12 months?’ (yes or no). This outcome variable was inclusive of all primary healthcare and non-acute services that an individual may use to address mental health problems. All health services were considered, as other non-mental health identified services may be utilised for mental health support by participants, such as general practitioners and nurses. Elsewhere in the survey and outside of the scope of the present study, acute services such as in-patient treatment and ambulance attendance are measured separately.

Independent Correlates

A range of correlates were included in analyses. *Sociodemographic correlates* include age (years), gender (male or female), residential location (see below), and Aboriginal and Torres Strait Islander status (no or yes); education (\geq Year 11 or \leq Year 10), employment (yes or no), and homelessness in the past 12 months (yes or no); and social support status (medium-to-high or low support, see below). *Substance use correlates* included frequency of methamphetamine use ($<$ weekly or \geq weekly), utilising professional support for methamphetamine use in the past 12 months (yes or no), and preferred route of administration (injecting, smoking, or snorting/shelving/swallowing). Utilisation of professional support for methamphetamine use included whether a participant had utilised one of the following options: individual drug counselling, group counselling, residential detoxification, outpatient detoxification, residential rehabilitation, or pharmacotherapy treatment. *Other health correlates* included self-reported health status (excellent/very good/good/fair versus poor/very poor health) and whether participants had comorbid moderate to severe anxiety and depression or only of the two (see below). Each of these correlates is described in Table 1.

Participants were classified as experiencing moderate to severe anxiety using the 7-item Generalized Anxiety Disorder (GAD-7) scale (Rutter & Brown, 2017) and/or moderate to severe depression using the 9-item Patient Health Questionnaire (PHQ-9) (Beard et al., 2016). Valid and reliable measures (Kroenke et al., 2016), both scales rate participants’ experience of symptoms in the preceding fortnight using a 4-point Likert scale ranging from ‘not at all’ (0) to ‘nearly every day’ (3). Those scoring 10 or above in either scale were classed as having moderate to severe anxiety or depression (Beard et al., 2016; Rutter & Brown, 2017). Scores for moderate to severe anxiety and moderate to severe depression were significantly correlated to each other within this cohort ($r=0.70$, $n=725$, $p<0.001$ ($R^2=0.49$)).

Residential location was defined using five categories of the Modified Monash Model (MMM) (Australian Government Department of Health, 2020): metropolitan areas (major cities) (MMM 1), regional centres (MMM 2), large rural towns (MMM 3), and medium and small rural towns (MMM 4/MMM5) collapsed into a single category.

Self-reported social support was measured using the ENRICH Social Support Instrument (ESSI) seven-item scale (Vaglio et al., 2004). Participants were asked to indicate the response that most closely matched their current situation using a five-point Likert scale

Table 1 Participant characteristics ($N = 429$)

Category of correlates		<i>N</i>	%
Sociodemographic characteristics			
Gender	Men	251	58.5
	Women	178	41.5
Age (years)		429	$M = 34$
Residential location	Major city	155	36.1
	Regional centre	102	23.8
	Large rural town	129	30.1
	Medium or small rural town	43	10.0
Employment status	Employed: [yes, full time, yes, part time/casual, yes, other]	72	16.8
	Not employed: [no]	357	83.2
Highest level of education	\geq Year 11	197	45.9
	\leq Year 10	232	54.1
Homelessness	No	258	60.1
	Yes	171	39.9
Social support	High support	240	55.9
	Low support	189	44.1
Patterns of substance use			
Poly-drug use (#)		429	$M = 3.87$
Frequency of methamphetamine use	< Weekly	81	18.9
	\geq Weekly	348	81.1
Route of administration	Injecting	58	13.5
	Smoking	337	78.6
	Snort/shelve/swallow	34	7.9
Utilising professional support for methamphetamine use in the past 12 months	Yes	236	55.0
	No	193	45.0
Other health characteristics			
Self-reported health status	Excellent/very good/good/fair	301	70.2
	Poor/very poor	128	29.8
Anxiety status	None	26	6.1
	Mild	70	16.3
	Moderate	148	34.5
	Severe	185	43.1
Depression status	None	10	2.3
	Mild	50	11.7
	Moderate	162	37.8
	Moderately severe	121	28.2
	Severe	86	20.0

ranging from ‘none of the time (1)’ to ‘all of the time (5)’. A total score of ≤ 18 was categorised as low social support, while scores of 19–34 were classified as medium to high social support (Vaglio et al., 2004).

Polydrug use was calculated by the number of drugs used within the past month (Karjalainen et al., 2017). Scores for this ranged from 0 to 13, with 0 indicating no polydrug use. In addition to methamphetamine, substances included illicit pharmaceutical stimulants (e.g. methylphenidate, dexamphetamine), ecstasy/3,4-methylenedioxymethamphetamine, cocaine, gamma-hydroxybutyrate, ketamine, illicit benzodiazepines (e.g. Valium, Xanax, oxazepam), illicit pharmacotherapy (e.g. methadone, buprenorphine), heroin, other illicit opiates (e.g. morphine, oxycodone), amyl nitrate, other inhalants (e.g. nitrous, paint, petrol), hallucinogens (e.g. lysergic acid diethylamide, psilocybin), alcohol, tobacco, and cannabis.

Statistical Analysis

Contingency analyses were undertaken to provide prevalence of past year health service use for mental health reasons across each independent variable. Bivariable logistic regression was used to examine associations between each outcome and the independent variables. Multivariable sequential logistic regression was used to examine associations between the independent correlates and past year contact with mental health services in people that use methamphetamine who were experiencing moderate to severe anxiety or depression. Potential correlates were grouped into three steps (detailed below).

Step 1 consisted of anxiety or depression status; having both moderate to severe anxiety and depression was compared to having moderate to severe anxiety with none to mild depression and having moderate to severe depression with none to mild anxiety. Step 2 included sociodemographic characteristics. Step 3 additionally included substance use patterns and other health correlates. Analyses were conducted using Stata Version 15, with a significance level of $p < 0.05$. Adjusted odds ratios (aORs), 95% confidence intervals (CIs), and p -values are reported. Casewise deletion was used to treat missing data on covariates; 8 cases were deleted prior to analysis. All results of variance inflation factor analyses to test for collinearity were below 3, indicating no problematic collinearity. The Hosmer–Lemeshow goodness of fit test demonstrated that the overall fit of the model improved with the inclusion of more variables at each step: step 1 produced a significant result demonstrating a poor fit ($\chi^2(1) = < 0.001, p = 1.0$); however, step 2 ($\chi^2(8) = 5.23, p = 0.733$) and step 3: $\chi^2(8) = 9.01, p = 0.342$) were not significant, demonstrating an overall good fit.

In step 1, the model as a whole explained between 0.1% (Cox and Snell R^2) and 0.1% (Nagelkerke R^2) of the variance in contact with mental health services. In step 2, the model as a whole explained between 4.2% (Cox and Snell R^2) and 5.9% (Nagelkerke R^2) of the variance in contact with mental health services. In step 3, the model as a whole explained between 17.1% (Cox and Snell R^2) and 24.1% (Nagelkerke R^2) of the variance in contact with mental health services.

Ethics

The study was approved by the Alfred Hospital (Project number: 171/16) and Monash University Human Research Ethics Committees (Project number: 2938). Written consent was obtained from each participant prior to enrolment in the study.

Results

Sample Characteristics

Characteristics of the 429 participants are detailed in Table 1. Participants' ages ranged from 18 to 62 years (mean = 34 years) and the majority (58.5%) identified as male. The majority (83.2%) were not employed, over half (54.1%) had not completed high school, and more than a third (39.9%) had experienced homelessness during the preceding 12 months. 36.1% resided in a metropolitan city, 23.8% in regional centres, 30.1% in large rural towns, and 10.0% in medium or small rural towns.

As illustrated in Table 2, the percentage of participants who reported health service use for mental health reasons increased for each increasing level of anxiety and depression: 70% of participants with severe anxiety and 79% with severe depression self-reported such health service use.

Independent Correlates of Contact with Mental Health Services

Bivariable analyses found that gender, residential location, Aboriginal and Torres Strait Islander status, self-reported social support, and utilising professional support for methamphetamine use in the past 12 months were associated with health service use for mental health reasons in the same time period (Table 3).

Table 4 reports the multivariable sequential regression results. Step 1 illustrates that whether participants were experiencing comorbid moderate to severe anxiety depression or only one singularly was not significantly associated with higher or lower odds of health service use for mental health reasons in the preceding 12 months.

Inclusion of the sociodemographic correlates in step 2 showed that living in a medium/small rural town ($p=0.001$, aOR = 0.29, 95% CI = 0.14, 0.59) was significantly associated with lower odds of past year health service use for mental health reasons compared to residents of a major city. This effect remained significant after the inclusion of the substance

Table 2 Percentage distributions of health service use for a mental health reason by GAD 7 and PHQ 9 category ($N=429$)

Anxiety cut-offs	Yes (%)
None (0–4)	12 (46.1)
Mild (5–9)	52 (74.3)
Moderate (10–14)	101 (68.2)
Severe (15–21)	130 (70.3)
Depression cut-offs	
None (0–4)	8 (80.0)
Mild (5–9)	32 (64.0)
Moderate (10–14)	103 (63.6)
Moderately severe (15–19)	86 (71.0)
Severe (20–27)	68 (79.1)
Anxiety and depression	
None to mild anxiety, moderate to severe depression	67 (69.1)
Moderate to severe anxiety, none to mild depression	40 (66.7)
Both moderate to severe anxiety and depression	190 (69.9)

Table 3 Bivariable regression showing associations with health service use for mental health reasons: odds ratios (aORs), 95% confidence intervals (95% CIs), and probability values (*p*-values)

Variable	<i>n</i>	OR	<i>p</i> -value	95% CI
<i>Anxiety or depression status</i>				
Both moderate to severe anxiety and depression	272	1.00		
None to mild anxiety, moderate to severe depression	97	0.96	0.886	0.58
Moderate to severe anxiety, none to mild depression	60	0.86	0.628	0.48
<i>Sociodemographic characteristics</i>				
<i>Age</i>				
Male	429	1.00	0.770	0.98
<i>Gender</i>				
Female	251	1.00		
Major city	178	1.43	<0.001	0.93
<i>Residential location</i>				
Regional centre	155	1.00		
Large rural town	102	0.70	0.219	0.40
Medium or small rural town	129	0.54	0.023	0.32
<i>Aboriginal and Torres Strait Island Status</i>				
No	43	0.14	<0.001	0.14
Yes	377			
<i>Employment status</i>				
Employed	52	0.74	<0.001	0.41
Not employed	72	1.00		
<i>Highest level of education</i>				
≥ Year 11	357	1.07	0.813	0.62
≤ Year 10	197	1.00		
No	232	0.71	0.111	0.47
<i>Homelessness</i>				
Yes	258	1.00		
High support	171	0.90	0.610	0.59
Low support	240			
<i>Patterns of substance use and other health correlates</i>				
Poly-drug use	189	0.92	<0.001	0.61
	429	1.05	0.287	0.96

Table 3 (continued)

Variable	<i>n</i>	OR	<i>p</i> -value	95% CI
Frequency of methamphetamine use	< Weekly	1.00		
	≥ Weekly	0.59	0.066	0.33 1.04
Utilising professional support for methamphetamine use in the past 12 months	Yes	1.00		
	No	0.20	<0.001	0.13 0.31
Route of administration	Inject			
	Smoke	1.41	0.247	0.79 2.51
	Snort/shelve/swallow	1.99	0.158	0.77 5.15
Self-reported health status	Fair to excellent	1.00		
	Poor to very poor	1.58	0.056	0.99 2.53

Table 4 Sequential logistic regression showing associations with health service use for mental health reasons: adjusted odds ratios (aORs), 95% confidence intervals (95% CIs), and probability values (*p*-values)

Variable	Step 1			Step 2			Step 3			
	<i>n</i>	aOR	<i>p</i> -value	95% CI	aOR	<i>p</i> -value	95% CI	aOR	<i>p</i> -value	95% CI
<i>Anxiety or depression status</i>										
Both moderate to severe anxiety and depression	272	1	1	1	1	1	1	1	1	1
None to mild anxiety, moderate to severe depression	97	0.96	0.886	0.58 1.59	0.99	0.959	0.58 1.67	1.34	0.317	0.75 2.39
Moderate to severe anxiety, none to mild depression	60	0.86	0.628	0.48 1.57	1.02	0.950	0.54 1.91	1.36	0.376	0.69 2.67
<i>Demographic and socioeconomic characteristics</i>										
Age	429				1.02	0.839	0.98 1.03	1.01	0.411	0.98 1.04
Gender	251				1					
	178				1.36	0.177	0.87 2.14	1.25	0.366	0.77 2.05
Residential location	155				1					
	102				0.73	0.320	0.40 1.35	0.85	0.631	0.43 1.66
	129				0.57	0.051	0.32 1.00	0.55	0.068	0.29 1.05
	43				0.29	0.001	0.14 0.59	0.27	0.002	0.12 0.62
Aboriginal and Torres Strait Island Status	377				1					
	52				0.81	0.522	0.42 1.56	1.06	0.877	0.51 2.20
Employment status	72				1					
	357				1.25	0.474	0.68 2.29	1.26	0.487	0.65 2.44
Highest level of education	197				1					
	232				0.79	0.304	0.50 1.24	0.72	0.198	0.43 1.19
Homelessness	258				1					
	171				1.01	0.972	0.64 1.59	0.91	0.713	0.55 1.50

Table 4 (continued)

Variable	n	Step 1		Step 2		Step 3	
		aOR	p-value	aOR	p-value	aOR	p-value
<i>Anxiety or depression status</i>							
Both moderate to severe anxiety and depression	272	1	1	1	1	1	1
<i>Social support status</i>							
High support	240			1			
Low support	189			0.98	0.939	0.62	1.55
<i>Patterns of substance use and other health correlates</i>							
Poly-drug use	429					1.04	0.463
Frequency of methamphetamine use	81			1		1	1.17
<Weekly	348					0.51	0.046
≥Weekly	236					1	0.27
Yes							0.99
<i>Utilising professional support for methamphetamine use in the past 12 months</i>							
No	193					0.19	<0.001
Inject	58					1	0.12
Smoke	337					1.23	0.563
Snort/shelve/swallow	34					1.43	0.542
Fair to excellent	301					1	0.46
Poor to very poor	128					1.44	0.178
							0.85
							2.46

use and other health factor correlates in step 3 ($p=0.002$, $aOR=0.27$, $95\% CI=0.12, 0.62$) and, in addition, weekly or more frequent methamphetamine use ($p=0.046$, $aOR=0.51$, $CI=0.27, 0.99$), and not utilising professional support for methamphetamine use in the past 12 months ($p < 0.001$, $aOR=0.19$, $CI=0.12, 0.30$) were also associated with lower odds of health service use for mental health reasons in the preceding 12 months.

Discussion

Health service use for mental health reasons was high in the subset of the VMAX cohort who reported moderate to severe anxiety (70%) or depression (79%). While this is a higher percentage than that reported for those in Australia's general population with a common mental health disorder (35%) (AIHW, 2020), this result reflects the high use of health services for mental health issues by people who use methamphetamine reported previously (McKetin et al., 2018). This result is also consistent with those who inject drugs, use other illicit drugs, or who are drug dependent (Djordjevic et al., 2021; Lewer et al., 2020). As our study is comprised primarily of methamphetamine smokers, this result is evidence of consistent high health service use for mental health reasons for people who use methamphetamine overall.

The odds of health service use for mental health reasons did not significantly differ by whether participants experienced both moderate to severe anxiety and depression or only one of these conditions. Although other studies report comorbidity as a correlate of health service use for mental health reasons (Roberts et al., 2018), the evidence is less clear in regard to health service use for mental health reasons for people who use methamphetamine and report comorbid anxiety and depression. Importantly, across the sample, the proportion who reported health service use for mental health reasons in the preceding 12 months increased with increasing categorical severity of anxiety or depression (as shown in Table 2); it could be suggested that overall severity of symptoms may be a stronger indicator of health service use for mental health reasons than comorbidity itself. Additionally, McKetin et al. (2018) indicated that comorbid mental health disorders was a predictor of acute health service use (e.g. emergency departments and psychiatric admissions); future research would benefit investigating the triggers for what motivates people who use methamphetamine and comorbidly experience anxiety or depression to seek either acute or non-acute health services for mental health, especially for those who smoke methamphetamine. Evidence from the perspective of primary healthcare providers suggest that certain dimensions of access to care need to be considered, as well as the social determinants of health (Ward et al., 2021).

While our findings are congruent with previous studies that found increased health service use in those experiencing co-occurring depression, anxiety, and substance use (McKetin et al., 2018; Mills et al., 2012; Quinn et al., 2013), it is important to consider the multiple dimensions of service accessibility that affect people who use methamphetamine. Access to services needs to consider the availability of appropriate services for co-occurring methamphetamine use and anxiety or depression; they also need to be affordable to the consumer, approachable, and acceptable to the individual consumers' social and cultural needs (Ward et al., 2021). Addressing the helping and hindering factors associated with engagement in health service for people that use methamphetamine and experience co-occurring methamphetamine use and anxiety or depression is crucial to closing the gap for those are not seeking mental health support that may truly benefit from it.

Accessing treatment for methamphetamine use during the year prior was associated with higher odds of health service use for mental health reasons among those who experienced anxiety or depression. This finding supports the notion that access to either drug treatment or mental health support provides the opportunity for referral to the other service type if required (Quinn et al., 2013). This finding may indicate that receptiveness to support for methamphetamine use may increase openness to support for a mental health issue; conversely, those who do not seek treatment for methamphetamine use may be a group that is health service-averse in general (Quinn et al., 2013). Importantly, enabling factors for health service use, such as a reduction or cessation of illicit drug use, improved living conditions, and improved overall health (Kelly et al., 2005; McKetin et al., 2018; Roberts et al., 2018) are often addressed in the context of drug treatment settings. Additionally, consumers of professional drug treatment services may have had access to dual-diagnosis workers or referrals to other health services for mental health. This finding reinforces the importance of utilising professional support for methamphetamine use as an entry point to mental healthcare for people who use methamphetamine and highlights the need for integrated models of care which facilitate opportunities for people to seek support for both methamphetamine use and anxiety or depression (Duncan et al., 2021). Additionally, future longitudinal research on contact with mental health services which consider utilisation of professional support for methamphetamine use as a correlate would inform public health responses which best meet the needs of this group of people, for example, focusing on risk prevention strategies, transdiagnostic/integrated treatments and interventions, or prioritising treatment of either drug use or mental health.

Living in a medium or small rural town was associated with lower odds of health service use for mental health reasons compared to their city-based peers. While people residing in non-metropolitan areas of Australia have poorer access to health services in general (AIHW, 2020), access to mental healthcare is particularly problematic due to the inaccessibility issues existing in the current models of care, workforce shortages, and other factors such as geographic isolation, stigma, economic adversity, and a higher proportion of vulnerable groups, such as Indigenous Australians (van Spijker et al., 2019). While drivers of this finding merit further exploration, at face value, the result emphasises the importance of increasing the available health services for people who use methamphetamine in rural areas and subsequently equipping them to identify and meet the needs associated with co-occurring anxiety or depression (Duncan et al., 2021). Alternative models of care for people who use methamphetamine and may have co-occurring depression or anxiety are an area requiring more research.

The study also found that frequent methamphetamine use was associated with lower odds of health service use for mental health reasons. Although such disengagement from mental health support may be related effects of frequent methamphetamine use (e.g. managing ‘comedowns’ or withdrawal, lower perceived need for healthcare), it may also reflect issues around health service accessibility and/or stigmatisation of heavy methamphetamine use (McKetin et al., 2018). Importantly, as route of administration was not associated with any significant difference in use of health service for a mental health problem, findings highlight the need for services to be more inclusive of people who smoke methamphetamine, a group more likely to be younger, be employed, and use methamphetamine more frequently than people who inject methamphetamine (McKetin et al., 2020). It is important to consider that these correlates are associated with lower use of health service use for mental health reasons (Booth et al., 2010; Mills et al., 2012). A recent study by McKetin et al. (2021) suggests that methamphetamine smokers are more likely to receive assessment and case management only in the context of drug treatment, compared to those who

inject methamphetamine. Recent evidence indicating that methamphetamine smokers are at higher risk of experiencing depression compared to people who inject the drug (Duncan et al., 2021) further supports the critical need for health services to consider the unique needs and circumstances of people who smoke methamphetamine (i.e. less disruptive of employment and parenting) and provide treatment pathways that address methamphetamine use and common comorbid health problems, such as depression or anxiety.

This novel study provides important insights into the rates and correlates of health service use for mental health reasons in a community-based cohort of people who mainly smoke methamphetamine and experience anxiety or depression. The findings address gaps in the literature by providing insights into the real-life experiences of those who smoke methamphetamine and their health service use for co-occurring mental health problems (Stuart et al., 2020). Furthermore, the study highlights the need to address rural disparity in access to mental healthcare for people who smoke methamphetamine.

A limitation of the study is the self-report nature of the data. The extent of biases, such as social desirability or recall bias, is unknown. However, there is evidence that self-reported data collected from people who use illicit drugs can be sufficiently reliable and valid measures (Darke, 1998). The study was also limited to examining self-reports of contact with mental health services. It is unclear how participants perceived the question and the range of professions and services involved; however, prior to the beginning of the study, the questions were piloted and revised to minimise misinterpretation of any questions within the survey.

Overall, this study established that a significant portion of community-based individuals who mainly smoke methamphetamine engage with health service use for mental health reasons. Correlates associated with differences in reported health service use for mental health reasons among those who also experience moderate to severe anxiety or depression include utilisation of professional support for methamphetamine use, rurality, and frequency of methamphetamine use. As health services are likely to encounter individuals who experience co-occurring anxiety or depression and methamphetamine use, it is essential that services are well prepared and aware of the challenges faced by these individuals. Further work involving longitudinal observation is needed to determine how the use of mental health support changes over time for methamphetamine consumers, particularly for those reporting symptoms of depression or anxiety, with the aim of maximising psychological health outcomes.

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Declarations

Conflict of Interest Zoe Duncan, Rebecca Kippen, Keith Sutton, Bernadette Ward, Brendan Quinn, and Paul

Dietze declare that they have no conflict of interest.

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