

involved only assessing the client, providing information and education, or case management, without any more substantive/ongoing treatment being provided.*

For treatment provided to ACT residents, 41% of episodes involved smoking methamphetamine (cf. 55% involved injecting and 4% involved other routes of administration), suggesting that smoking crystalline methamphetamine is a substantial trend within the ACT. Clients who smoked methamphetamine were significantly younger (27.8 vs. 34.1 years, $t = -11.63$, $p < .001$) and more likely to be male (71% vs. 60%, $\chi^2_{(df=1)} = 17.3$, $p < .001$).

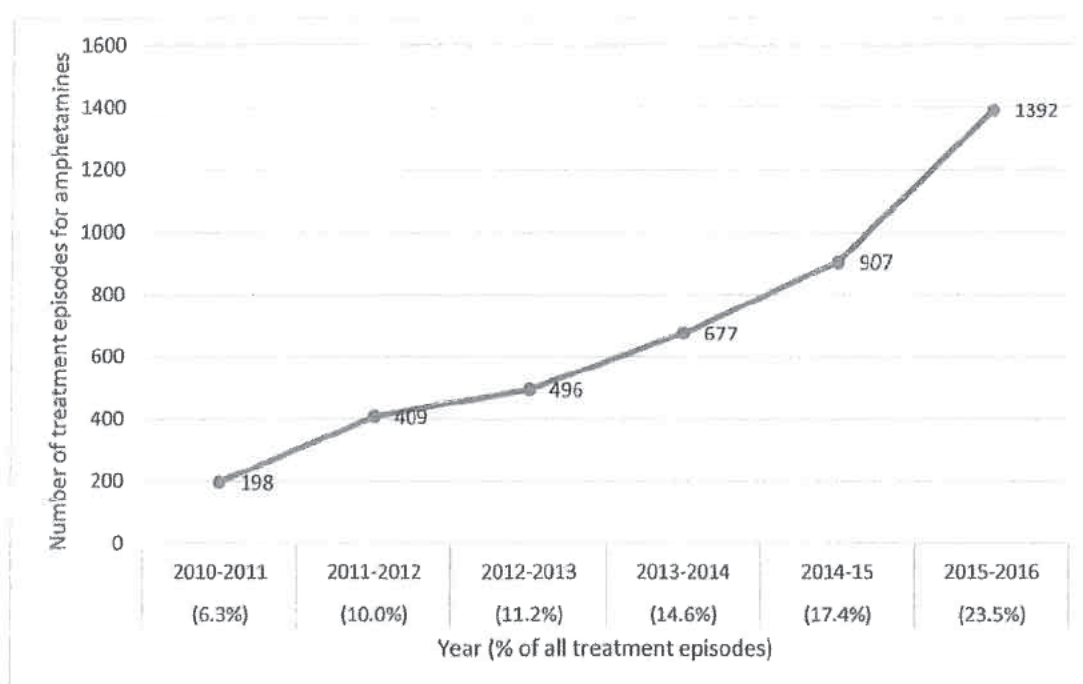


Figure 1 Number and percentage of closed treatment episodes in the ACT where amphetamines were the principal drug of concern

[Source: National Minimum Data Set for Alcohol and Other Drug Treatment Services]

The need for research into methamphetamine use in the ACT

It was in the context of these increasing trends that the current research was funded by ACT Health. The project proposal was developed by researchers at ANU and reviewed by the ACT Alcohol, Tobacco and Other Drug Strategy Evaluation Group. At the time there was little information on either the extent or the nature of methamphetamine use in the ACT community. In particular, there was a lack of data on the number of people dependent on methamphetamine, or experiencing harms from their use, who may need treatment or other health services.

The only indication of the extent of methamphetamine use at this time came from the 2013 National Drug Strategy Household Survey (NDSHS). This showed that 2.2% of ACT residents aged 14+ years

* Definitions of treatment modalities (e.g., case management) can be found in the AODTS NMDS data collection manual on the AIHW website: <http://www.aihw.gov.au/alcohol-and-other-drugs/data-sources/aodts-submission-guidelines/2017-18/>

reported using methamphetamine in the past year (approx. 6,600 people).¹⁹ The recently released 2016 NDSHS suggests declining methamphetamine use at a national level, a trend attributable to a reduction in the use of powder methamphetamine (i.e., “speed”) while the use of crystalline methamphetamine remained stable.²⁰ Data for methamphetamine use within the ACT were not available at the time of publication.

Because of the small number of people surveyed in the ACT through the NDSHS, it is not possible to reliably estimate how many of these people use the drug heavily, and who may need treatment or other health services.¹⁹ Estimating the number of people using drugs at levels that are likely to lead to problems is better achieved using indirect prevalence estimation methods, as described below. With so few regular drug users captured in the NDSHS, it is also not possible to understand patterns of use (e.g., how many people use the high purity form of crystalline methamphetamine), the demographics of people who use the drug or their health needs. This is better achieved through sentinel surveys of people who use the drug regularly.

Indirect prevalence estimation methods

Indirect prevalence estimation techniques offer an alternative way of measuring the size of hidden populations, and they can be used to estimate the number of illicit drug users in a given geographic region.²¹ They are preferred over population-based surveys which tend to underestimate problematic drug use, and sample too few heavy drug users to provide insight into patterns of drug use, harms related to drug use, or the health service needs of people who use drugs.

One of the more common and conceptually simple indirect prevalence estimation techniques is the benchmark-multiplier method. This method has been used in both Australia and Europe to estimate the size of opioid-using populations and populations of people who inject drugs.^{22,23}

The benchmark-multiplier method involves identifying the number of people who use a drug in a routine data source (e.g., drug treatment episodes), and multiplying this benchmark data by a multiplier that reflects the proportion of drug users who are represented in that data source. The multiplier is derived from a representative sample of the drug using population; for example, by asking people who use drugs about whether they have received drug treatment (i.e., establishing what proportion would be represented in the benchmark data). For example, if there were 1,000 heroin users treated within a one year period, and surveys of heroin users show that only half of heroin users had received treatment within the past year, the total number of heroin users can be estimated by doubling that observed in treatment (i.e., 2,000). In this example, the benchmark is the number of treatment entries for heroin use recorded in treatment data during the year (i.e., 1,000), and the multiplier is the inverse of the proportion of drug users who entered treatment for heroin use within that year (i.e., 1/0.5, or 2).

This benchmark multiplier method has been previously applied to estimate the number of regular and dependent methamphetamine users in NSW and Australia.²⁴ A survey of community-based methamphetamine users was undertaken in Sydney in 2005, from which multipliers were derived for drug treatment data and hospital data. These multipliers have since been used to estimate trends in the number of regular and dependent methamphetamine users in Australia up until 2014.

Ideally, multipliers should be derived from the same geographic region, and for the same timeframe, for which the prevalence is being estimated. This is because the availability of treatment and access to treatment (or other health service) can vary by geographic region and change over time. For this reason, estimating the number of people dependent on methamphetamine within the ACT should use a locally-derived multiplier.

The accuracy of prevalence estimates derived using the benchmark multiplier method depends critically on the multiplier being derived from a representative community-based sample of people who use methamphetamine. It is difficult to verify the representativeness of illicit drug using samples as they represent a hidden population. Respondent-driven sampling is considered best practice but it is resource intensive and difficult to implement in illicit drug using populations for ethical reasons.²⁵ Aside from this method, sampling that uses peer referral from multiple initial recruitment points is generally considered best practice for maximising the representativeness of the sample.²⁶ It is also critical to not recruit from the services from which the benchmark data are derived (i.e., drug treatment services) because this would inflate treatment exposure and deflate the multiplier and resulting prevalence estimate. Finally, it is important to match the multiplier to the benchmark data. For example, the multiplier should be derived using only treatment episodes that would be captured in the treatment benchmark data. Any mismatch between the benchmark data and the benchmark events used in the calculation of the multiplier would result in a deflated or inflated prevalence estimate.

The current research

The aim of the current research was to better understand the emergence of methamphetamine use in the ACT and how this has affected the utilisation of health services. Our specific objectives were to:

- A. Estimate the number of people in the ACT who were dependent on methamphetamine
- B. Estimate drug treatment coverage for methamphetamine dependence in the ACT (i.e., the proportion of people dependent on methamphetamine who would have received treatment for their methamphetamine use in the past year)
- C. Document barriers to receiving drug treatment for methamphetamine dependence in the ACT
- D. Provide descriptive information on:
 - a. the demographics of people who use methamphetamine in the ACT, in terms of their age, marital status, living arrangement, income and family circumstances;
 - b. patterns of methamphetamine use in the ACT, including forms of methamphetamine used (crystalline vs. other methamphetamine), routes of administration, frequency of use and polydrug use;
 - c. prevalence of key harms associated with methamphetamine use (including mental health, HIV risk and violence) amongst people who use the drug and their relationship with methamphetamine use patterns; and
 - d. the usage of other health services and contact with the criminal justice system.

To achieve these aims we conducted a survey of people who used methamphetamine in the ACT community. From this survey we derived multipliers for use in a benchmark-multiplier prevalence estimation exercise, and subsequently estimated the number of regular and dependent methamphetamine users in the ACT. The survey was used to obtain supporting information on the characteristics of methamphetamine use in the ACT (as per aims C and D), including the demographics of people who use, patterns of methamphetamine and other drug use, the contact that this population has with various health services and barriers to care.

2 Methods

2.1 Survey component

Procedure

Participants were recruited via advertisements in free magazines, flyers in local venues, the internet (e.g., www.pillreports.net) and word-of-mouth. Recruited participants were given flyers to hand on to their peers who used methamphetamine. Inclusion criteria were being at least 18 years of age, having used methamphetamine at least six times in the past six months, understanding English and residing in the ACT. Methamphetamine included drugs sold on the street under the pseudonyms of “ice”, “meth”, “crystal”, “base” or “speed”.²⁴ Forensic seizure data indicate that all of these forms of the drug contain methamphetamine.²⁷ Participants were screened by phone for eligibility and subsequently interviewed face-to-face at a mutually convenient public location (e.g., cafes, shopping malls). Interviews took approximately one hour. Recruitment took place from June 2016 to January 2017. Participants were reimbursed up to \$40 to cover out-of-pocket expenses. Verbal consent was obtained prior to completing the interview. The study was approved by The Australian National University Human Research Ethics Committee.

Of the 188 participants recruited, five were excluded from the final sample because they resided outside the ACT, resulting in a final sample of 183 participants. These participants most commonly heard about the survey by word of mouth (56%). Remaining participants learned about the survey from flyers placed in NSPs (11%) or other venues (e.g., CAHMA, shopping malls, bus interchanges; 21%), and 11% learned about the study via advertising on Facebook. Only 1% heard about the study via a drug treatment agency.

To understand the geographic spread of participant recruitment, we examined how many participants were recruited from each of the Statistical Subdivisions (SSDs) within the ACT. SSDs are a standard geographic classification system used by the Australian Bureau of Statistics. A map showing the boundary of each SSD, and the suburbs within each SSD, can be found in Appendix 1. Half of the participants resided in the North Canberra SSD, with remaining participants living in the SSDs of Belconnen (17%), South Canberra (12%), Gungahlin (8%), Tuggeranong (5%), Woden (4%), or Western Creek (2%).

Measures

A structured interview schedule assessed participant demographics, quality of life and mental health; the participant’s contact with drug treatment, other health services, and the criminal justice system; and their help-seeking behaviour and barriers to seeking help. Specific measures included in the interview schedule are described below. The survey also included the Schizophrenia section of the Composite International Diagnostic Interview, which is not reported here. This data will contribute to the PhD thesis of Alexandra Voce, who provided her time in-kind to collect the survey data. The questionnaire is available from the authors on request.

Demographics

Demographic measures included age, sex, gender identity, completed years of schooling, completed tertiary education (none, trade, university), main form of accommodation in the past month (public housing; privately rented house or flat; privately owned house or flat; parent’s home; boarding house, shelter dwelling or refuge; drug treatment residence; no fixed address; other), living arrangement (alone; with partner/spouse/de facto; with children [under 18 years of age]; with parent(s); with non-related adults/share house; other), main source of income (full-time employment, part-time or casual employment, disability pension, unemployment benefit, other government benefit, other income

source, no income), current marital status (single, married/de facto, separated, divorced, widowed), country of birth, and language spoken at home.

Methamphetamine and other drug use

Participants were asked their main drug of choice, whether they had ever injected a drug, and whether they had ever injected methamphetamine.

Days of use in the past month was assessed for methamphetamine and for all other major drug classes (tobacco, cannabis, alcohol, cocaine, ecstasy, hallucinogens, inhalants, heroin, other opioids, benzodiazepines, antidepressants, antipsychotics, and any other drug used in the past month). Both prescription and non-prescription use was included for other opioids, benzodiazepines, antidepressants and antipsychotics.

Methamphetamine use measures also included age at first use, duration of use (years since first use), days of use in the past month, main route of administration in the past month and which forms of methamphetamine the participant had taken in the past month (powder or "speed", "base", crystalline methamphetamine or "ice"). Participants were also asked whether they had used prescription stimulants in the past year (e.g., dexamphetamine, Ritalin®), and, if so, whether they had been prescribed these stimulants.

Dependence on methamphetamine

A DSM-IV TR diagnosis of methamphetamine dependence in the past year was made using the Mini International Neuropsychiatric Interview Version 6 (MINI).²⁸ Current (past month) dependence on methamphetamine was assessed using the Severity of Dependence Scale (SDS). The SDS has been validated for use in amphetamine-using populations,²⁹ and a score of four or greater is equivalent to a DSM-III-R diagnosis of severe methamphetamine dependence.³⁰

Methamphetamine treatment

Participants were asked whether they had ever been to treatment for their methamphetamine use (detoxification, rehabilitation or counselling). If so, they were asked whether they had started treatment for their drug use at a drug treatment service in the past year and then how many times they had started treatment. Working back from the most recent treatment episode, participants were asked to name the treatment services that they had attended within the past year, and the main drug for which they had sought help for on each occasion (which we coded as methamphetamine vs. other). This information was used to calculate lifetime and past year drug treatment for methamphetamine use, and to calculate the multiplier for the indirect prevalence estimation exercise (see section 2.3).

Participants were asked whether they had received any other professional help for their methamphetamine use in the past year, and, if so, from where (options included: counsellor, psychologist, psychiatrist, GP, peer-based services, online help, other health professional).

Barriers to treatment

An adaptation of the Barriers Questionnaire was used to assess barriers to seeking help for methamphetamine use. The Barriers Questionnaire was originally developed to ask people about the reasons why they had not previously sought treatment for drinking³¹ and was subsequently expanded to assess reasons for not seeking drug treatment.³² The final instrument consisted of 50 items, each rated not important (0), somewhat important (1), important (2) and very important (3). The instrument has not been scaled and is therefore intended to be interpreted at an item level only. We retained 27 of the original 50 items (removing items that were similar in content), modified the wording of remaining items to suit the Australian context with input from the Canberra Alliance for Harm Minimisation and

Advocacy (CAHMA), and added seven items that were relevant to the ACT based on the recommendations of the project's Advisory Group. The final list of reasons included in this modified version of the Barriers Questionnaires is reported in section 3.3 (Figure 3) of the results.

Help seeking

The participant's relative likelihood of seeking help for their methamphetamine use from different sources was assessed using the General Help Seeking Questionnaire (GHSQ). The GHSQ involves asking the participant about how likely it is that they would seek help for a particular problem from a nominated list of sources. Both the problem and the sources of help can be modified if needed. In this case, participants were asked "If you were having problems from your methamphetamine use, how likely is it that you would seek help from the following people?". The sources listed in the questionnaire were:

- doctor/GP
- detox program
- drug rehabilitation service
- drug counselling service
- private psychologist or counsellor
- psychiatrist
- phone helpline (e.g., Lifeline, phone counselling)
- the internet (e.g., online counselling), and
- a peer-based service (e.g., CAHMA).

The GHSQ also includes the option "I would not seek help from anyone". Each participant rated how likely it was that they would seek help from that source on a scale of one (extremely unlikely) to seven (extremely likely). No adjectives accompanied the scores between one and seven. Participants could also rate each source as not applicable or unsure (rating of zero). Participants who rated not applicable/unsure on an item were removed from the calculation of help-seeking scores. This version of the scale yielded a Cronbach's alpha of 0.82 in this sample, indicating good internal consistency of scale items (i.e., responses of one item correlated with responses on the other items).

Awareness of ACT alcohol and other drug services

To assess participants' awareness of services in the ACT, we asked participants to list all the services that they knew of from where they could get help for their methamphetamine use. We then read aloud a list of services in the ACT (see Table 10, section 3.5) and asked participants if they recognised each of these services, and also whether they had ever attended each of them. We also asked whether they were currently enrolled in opioid substitution therapy (methadone, buprenorphine), and if so whether they got their methadone/buprenorphine from Canberra Hospital (Building 7) or from a pharmacy.

Other health service contact

Participants were asked whether they had used specific health services within the past year (general hospital, psychiatric hospital, emergency department, ambulance, and general practitioner [GP]). If they had used each of these services, they were subsequently asked how many times they had attended in the past year. For general hospital, psychiatric hospital, emergency department, and ambulance attendances, participants were asked how many of these times were because of their methamphetamine use. Participants who reported having attended an emergency department because of their methamphetamine use were asked whether they were referred to another service for their drug use. For GPs, we asked participants whether they had told their GP that they used methamphetamine, whether they had received help for methamphetamine use from their GP in the past year, and whether they would be willing to discuss methamphetamine use, or get help for their methamphetamine use, from their GP.

Arrest history

Participants were asked whether they had been arrested for any offence within the past year, and, if so, how many times they had been arrested for methamphetamine-related offences (including methamphetamine use, possession, dealing/supply). Participants were also asked whether there were any other offences that they had been arrested for within the past year, and these were coded (yes/no) under the categories: offences against the person, dangerous/negligent acts, robbery and extortion, theft and related offences, deception and related offences, property damage, public order offences, driving under the influence of alcohol, driving under the influence of drugs, other illicit drug offences, other road traffic and motor vehicle offences, offences against justice procedures, and other offences. Details of specific offences included in each of these categories can be found in Appendix 2.

Drug-driving

For participants who had driven a vehicle in the past year, we asked whether they had been tested for drink-driving and drug-driving. Participants were then asked "How likely do you think it is that you will be tested for drug driving in the next year?" with response options of "not likely", "somewhat likely" and "very likely". They were then asked "Have you decided not to drive after taking illicit or non-prescribed drugs because of roadside drug testing?", with response options of "Not applicable/wouldn't normally drive after taking drugs", "No", "Sometimes", "Yes, always".

Behavioural risk factors for BBVs and STIs

Questions on behavioural risk taking for blood-borne viruses (BBVs) and sexually transmitted infections (STIs) were based on the Opiate Treatment Index subscale for HIV Risk Taking Behaviour,³³ modified in consultation with CAHMA, and appended with questions on pipe sharing, and access to sterile needles and sexual health information, which were developed specifically for this study. Questions are described below

BBV risk was assessed by asking participants: how many times they had injected a drug in the past month (once a week or less, more than once a week [but less than once a day], once a day, 2-3 times a day, more than 3 times a day); whether they had used a needle after someone else in the past month and if so how many different people had used a needle before them in the past month (1, 2, 3-5, 6-10, >10). We also asked participants whether they had injected with a used needle in the past month because they could not get sterile injecting equipment, whether they had shared other injecting equipment in the past month, and from where they had obtained clean needles in the past month (haven't used a clean needle, NSP, vending machine, pharmacy, other).

The Opiate Treatment Index questions were adapted to ask participants whether they had shared an ice pipe in the past month, how many times they had shared a pipe in the past month (1, 2, 3-5, 6-10, >10), and how many different people had used a pipe before them in the past month (1, 2, 3-5, 6-10, >10). We also asked participants if they had lesions on their lips in the past month (blisters, sores, cracks or burns) as this would convey an elevated risk of BBV transmission.

Sexual risk behaviour was assessed by asking participants if they had sex in the past month, and, if so, how many people they had sex with (1, 2, 3-5, 6-10, >10) and how many different people did they have unprotected sex with (1, 2, 3-5, 6-10, >10). Unprotected casual sex was assessed by asking the question "How often did you use condoms when having sex with casual partners in the past month" (no casual sex partner, every time, often, sometimes, rarely, never). Casual unprotected sex was defined as having a casual sex partner and not using a condom every time when having sex with casual sex partners.

Additional questions assessed whether participants were taking pre-exposure prophylaxis for HIV (PreP) in the past month, whether they had ever been tested for blood-borne and sexually transmitted viruses (hepatitis B, C, HIV, other sexually transmitted infections), what places they had received testing from (sexual health clinic, GP/doctor, other), and from what places they had received

information on sexual health (sexual health clinic, GP/doctor, CAHMA, NSP, other drug and alcohol service, pharmacy, other).

Quality of life

Quality of life was assessed using the Australian Quality of Life scale³⁴ (AQoL). The AQoL is a measure of disability that estimates an average utility score for each participant. Utility scores are scaled such that a score of 1.0 is the best possible health state and 0 is the worst possible health state, equivalent to death. The AQoL also provides scores on four dimensions of functioning: independent living, relationships, senses (e.g., vision and hearing) and mental health. The AQoL correlates well with other established instruments that assess quality of life (e.g., the EQ-5D) albeit with a slightly lower mean utility score and greater sensitivity to mild impairment in function.³⁵ The reliability of the AQoL in this sample was acceptable (Cronbach's alpha = 0.72).

Mental health

Participants were asked whether they had ever been told by a doctor that they had any of a list of mental health conditions (schizophrenia, mania or bipolar, drug-induced psychosis, other psychosis (e.g., postpartum depression with psychosis), depression, anxiety, ADHD, post-traumatic stress disorder).

The severity of psychiatric symptoms in the past month was assessed using the Brief Psychiatric Rating Scale (BPRS).³⁶ The BPRS involves a semi-structured clinical interview that assesses 24 psychiatric symptoms. Each symptom is rated on a scale of 1 (nil) to 7 (extremely severe) against pre-specified anchor points. Scores of 2-3 reflect symptoms of a sub-clinical nature or which are questionable. Scores of 4 or greater reflect clinically significant symptoms, with score of 4 and 5 being considered moderate and 6 and 7 being severe (e.g., would require hospitalisation). Ratings on the BPRS were reviewed at weekly meetings between researchers (Voce and McKetin) as part of the quality assurance procedures to maintain the consistency of ratings over the course of the study.³⁷

2.2 Indirect prevalence estimation methods

The number of regular and dependent methamphetamine users in the ACT was estimated by multiplying the number of benchmark events (i.e., the number of treatment episodes for methamphetamine use) for the 2015-16 financial year by the treatment multiplier for regular and dependent use respectively.

In our past application of the benchmark-multiplier method,^{24,38} we have explored a number of potential benchmark data sources for estimating the number of methamphetamine users (hospital admission data, drug treatment data, arrest data, emergency data and ambulance data) and found that hospital admissions data and drug treatment data have proved to be the most feasible because they include identifiable methamphetamine-related cases, and a sufficient number of cases, to produce reliable prevalence estimates.

Hospital data could not be obtained within the timeframe required for the current research. We were advised by ACT Health that hospital data could not be obtained within the project timeline because ACT Health is undergoing a system-side data review to be completed by 31 March 2018.

Arrest data were provided by ACT Policing. However, estimates were not produced using the arrest data because it was difficult to accurately match the arrest data to the multiplier derived in our survey. Specifically, there were 105 apprehensions involving amphetamines in the ACT in 2015-16; however, only 52 of these were recorded as arrests (other events were coded as charged before court, summons, drug diversion, caution). This level of detail was not collected in the survey. For this reason, the benchmark-multiplier exercise was undertaken using only drug treatment data.

Benchmark data

The benchmark data was defined as the number of drug treatment episodes in the ACT Minimum Data Set for Alcohol and Other Drug Treatment Services (ACT MDS AODTS) for the 2015-16 financial year where amphetamines were the primary drug of concern (ABS codes 3100-3199), the client was aged 18 to 64 years of age and an ACT resident, and where the main modality of treatment provided was counselling, residential rehabilitation, detoxification or the general category 'other' treatment. Other modalities of treatment captured in the ACT MDS AODTS (information and education only, support and case management only, assessment only, pharmacotherapy) were excluded from the benchmark data. This was done because these other treatment modalities were not included in the calculation of the multiplier. Essentially, treatment was most practically measured in the survey using modalities that participants would easily recognise as treatment, and which could be readily matched to services that submitted data to the ACT MDS AODTS.

Derivation of the multipliers

Multipliers were based on data from survey participants aged 18-64 years. The multiplier was the inverse of the rate of treatment episodes for the past year where methamphetamine was the main drug for which the participant received treatment. Multipliers were derived based on the entire sample aged 18-64 years, reflecting regular (at least monthly) use, and for the subset of the sample who were dependent on methamphetamine. Dependence was defined as having a score of four or greater on the Severity of Dependence Scale, which corresponds to a DSM-III-R diagnosis of severe methamphetamine dependence.³⁰

To estimate the rate of treatment episodes, each participant was asked how many times they had started drug treatment within the past year. We initially asked participants about any treatment that they had received in the past year, using the question "Have you started treatment for your drug use at a drug treatment centre in the past year (including rehab, detox or counselling for your drug use, i.e., from a specialist drug treatment service)?" Any treatment encounters were recorded if they involved assessment, detoxification, pharmacotherapy, counselling and rehabilitation provided as specialist drug treatment. They were not recorded if they involved other health and social services (e.g., use of Needle and Syringe Programs, accommodation services). For each episode of treatment initiated, the name of the facility was recorded, along with whether methamphetamine was the main drug for which the participant received treatment.

Only a subset of these treatment episodes were pertinent to the calculation of the treatment multiplier. Each treatment episode was reviewed and counted in the calculation of the multiplier if it was provided by a treatment service that was included in the ACT MDS AODTS and methamphetamine was the main drug for which treatment was received and the participant was aged 18 to 64 years. Treatment episodes were excluded from the calculation of the multiplier if they involved treatment options not included in the benchmark data source (e.g., pharmacotherapy, outreach, NSPs, support from mental health services).

Calculation of prevalence

The prevalence of regular and dependent methamphetamine use was calculated using the estimated resident population of the ACT aged 18 to 64 years at June 2016, which was 258,117.³⁹ Confidence intervals for prevalence were derived from the confidence interval around the multiplier. This was the inverse of the confidence interval around the rate of treatment episodes each year. The mean and 95% confidence interval for the rate of treatment episodes was derived from the intercept of a Poisson regression model predicting the rate of treatment episodes.

Calculation of treatment coverage

Treatment coverage for methamphetamine dependence was calculated as the proportion of participants who had initiated drug treatment within the past year, where drug treatment was defined in the same way as in the indirect prevalence estimation exercise; that is, any episode of treatment provided by a specialist drug treatment service within the ACT, involving counselling, rehabilitation or withdrawal management, where methamphetamine was the main drug for which the person received help. The calculation of the treatment coverage was based on participants who were currently dependent on methamphetamine and who were aged 18 to 64 years.

2.3 Statistical analyses

All statistical analyses were conducted in Stata SE Version 14.1. Group comparisons were made using t-tests for continuous data, a median comparison test for highly skewed continuous data, or a Chi-square test for categorical variables. Tests were two-sided and significance was set at $p < 0.05$. This p value represents the probability that a result (e.g., a difference between two groups) is due to chance (i.e., the type one error rate). The lower the p value the less likely the result is due to chance.

3 Results

3.1 Characteristics of the sample

Demographics

Participant demographics are shown in Table 1. Participants had an average age of 39 years (SD 10 years). The majority of participants were single, male, heterosexual, unemployed and residing in public housing. Most were living alone (42%), with their partner (20%) or unrelated adults (22%). Forty-two per cent had children under 18 years of age, but only 15% of the sample were currently living with children. Just over half had been to prison or juvenile detention.

Key points

Most participants were in their thirties or forties; around two-thirds were male

Many participants had low socio-economic status and lived in public housing

Almost half had children but most were not living with their children

Around half had a prison history

Table 1 Characteristics of participants in the sample

	Total sample (N = 183)
Age (mean years)	39
Gender (%)	68
Male	68
Female	32
Other	<1
Born outside of Australia (%)	9
Aboriginal or Torres Strait Islander (%)	16
Non-English speaking background (%)	1
Heterosexual (%)	92
Schooling (median years)	10
Ever been in prison or juvenile detention (%)	56
Tertiary education	
No tertiary qualifications (%)	50
Trade (%)	37
University (%)	13
Current employment status (%)	
Unemployed	67
Casual employment	13
Full-time	6
Student	4
Home duties	9

Table 1 Continued.

	Total sample (N = 183)
Main source of income (%)	
Full-time employment	6
Part-time employment	3
Disability pension	44
Unemployment benefit	33
Other benefit	10
Other or no income	4
Current marital status (%)	
Single	64
Married or de facto	22
Separated, divorced or widowed	14
Had children under 18 years of age (%)	42
Usual form of accommodation in the past month (%)	
Public housing	70
Private rented	9
Privately owned	8
Parents	2
Boarding house	3
No fixed address or other	8
Who they were living with in the past month (%)	
Alone	42
Partner	20
Children	15
Parents	11
Non-related adults	22

Patterns of methamphetamine use

Patterns of methamphetamine use in the sample are summarised in Table 2.

Methamphetamine use almost exclusively reflected the use of crystalline methamphetamine, with 94% of participants indicating that this was the main form of methamphetamine that they had used in the past month. Powder methamphetamine ("speed") was uncommon (4%).

Although only two people in the sample indicated that dexamphetamine was the main form of methamphetamine that they had used in the past month, 19% had taken prescription stimulants (dexamphetamine and/or Ritalin®) at some point in the past year. Most of this use was not prescribed (only 4% of the total sample had been prescribed stimulants).

Participants started using methamphetamine at a mean age of 19.6 years (SD 7.3) and had been using for a mean of 19.5 years (SD 9.4 years). Participants who had used methamphetamine in the past month (95%) had taken the drug on a median of 10 days (range 1-28 days) during that time.

The majority of participants nominated injection as the main way that they took methamphetamine in the past month (76%), with 20% smoking and only 5% nominating other routes of administration.

There was overlap between injecting and smoking: 34% of those who nominated injecting as their usual route of administration had also smoked the drug in the past month. Conversely, of those who usually smoked methamphetamine, 23% reported having injected a drug in the past month.

Dependence on methamphetamine

The majority of participants (85%) met the DSM-IV criteria for methamphetamine dependence in the past year according to the MINI (Table 2). Symptoms of dependence reported are shown in Table 3. Drugs used to avoid withdrawal symptoms (symptom 2 in Table 3) were cannabis (66%), heroin (41%), benzodiazepines (32%) and/or alcohol (29%), with only 6% of participants reporting methamphetamine or other stimulants use to relieve methamphetamine withdrawal symptoms.

Half of the participants met the criteria for methamphetamine dependence in the past month (51%, Table 2). This was based on an SDS score of 4 or greater, corresponding to severe methamphetamine dependence as assessed using the Composite International Diagnostic Interview.³⁰

Table 2 Methamphetamine use patterns

	Total sample (N = 183)
Age of first use (mean years)	20
Duration of use (mean years)	20
Any use in the past month (%)	95
Days used in the past month the past month (median)	10
Main route of administration in the past month (%)	
Inject	76
Smoke	20
Snort	3
Swallow	2
Main form of methamphetamine used in the past month (%)	
Crystalline methamphetamine	94
Powder (speed)	4
Other	2
DSM-IV dependence past year (%)	85
Past month dependence (%)	51
Methamphetamine SDS score (median)	4

Table 3 DSM-IV symptoms of dependence reported by participants in the past year

	% reporting symptom (n = 182)
1. Have you found that you needed to use more methamphetamine to get the same effect than you did when you first started taking it?	68
2. When you reduced or stopped using methamphetamine, did you have withdrawal symptoms ^a ? Or, did you use any drug(s) to keep yourself from getting sick or so that you would feel better?	73
3. Have you often found that when you used methamphetamine, you ended up taking more than you thought you would?	65
4. Have you tried to reduce or stop taking methamphetamine, but failed?	52
5. On the days that you used methamphetamine, did you spend substantial time (> 2 hours) in obtaining, using or in recovering from meth, or thinking about meth?	68
6. Did you spend less time working, enjoying hobbies, or being with family or friends because of your meth use?	51
7. Have you continued to use methamphetamine even if it caused you health or mental problems?	73

^a i.e., aches, shaking, fever, weakness, diarrhoea, nausea, sweating, heart pounding, difficulty sleeping, or feeling agitated, anxious, irritable or depressed

Other drug use

Other drugs used by participants are shown in Table 4. A conspicuous finding was that almost half the sample used heroin, and 37% of participants were enrolled in opioid substitution therapy (OST, mostly receiving OST via pharmacies, Table 4). There were significant differences in the characteristics of participants according to their opioid use status (see *Characteristics of the sample by opioid use*).

The most common other drugs used were tobacco and cannabis (these being used daily amongst the majority of the sample who had used them in the past month), and to a lesser extent alcohol. The consumption of alcohol was not dissimilar to that seen among the same age group and demographic in the NDSHS.²⁰ The use of remaining drug classes was more sporadic, being used infrequently by a minority of participants.

Table 4 Other drug use reported by participants

	Total sample (N = 183)
Number of other drug classes used in the past month (median)	5
Other drugs used in the past month, % (median days if used)	
Tobacco	97 (28)
Cannabis	80 (28)
Alcohol	62 (8)
Heroin	48 (8)
Other opioids ^a	50 (28)
Benzodiazepines ^a	51 (16)
Cocaine	11 (1)
Ecstasy	11 (2)
Hallucinogens	8 (1)
Inhalants	3 (3)
Currently in opioid substitution therapy (%)	37
Canberra Hospital (Building 7)	8
Pharmacy	29

^aIncludes prescribed and non-prescribed; other opioids includes opioid substitution therapy.

Key points

Crystalline methamphetamine use was the norm

Half of participants were currently dependent on methamphetamine

Many participants were also using heroin or enrolled in OST

Most participants smoked tobacco and cannabis daily

Characteristics of the sample by opioid use

Due to the high level of opioid use in the sample, we examined demographics and drug use patterns by concurrent opioid use. We did this by comparing those participants currently enrolled in opioid substitution therapy (OST), those participants not currently enrolled in OST but who had used heroin in the past month (heroin) and the remaining participants who were not enrolled in OST and had not used heroin in the past month (no heroin/OST; Table 5).

Participants who were not using heroin, or not enrolled in OST, used methamphetamine more often (median of 14 vs. 8 days in the past month), and half were dependent, despite their being younger, having used methamphetamine for fewer years, and being less likely to inject methamphetamine (being more likely to smoke methamphetamine). These participants had lower levels of polydrug use (although they were more likely to use ecstasy than the heroin/OST groups) and were also different demographically, being less likely to have a prison history or live in public housing.

Table 5 Demographic and drug use characteristics by opioid use category

	Opioid use category		
	OST (n = 68)	Heroin (n = 37)	No heroin/OST (n = 77)
Age (median years)	39	45 [†]	38*
Prison or juvenile detention history (%)	63	68	45**
ADHD (%)	19	8	38**
Living situation			
Private dwelling (%)	12	30*	19
Public housing (%)	87	51***	65
Temporary accommodation (%)	0	11**	3
Homeless (%)	1	8 [†]	12*
Living with partner in past month (%)	32	14*	13*
Methamphetamine use			
Duration (median years)	21	24	16 [†]
Days used in past month (median)	8	8	14*
Main route of administration in past month (%)			
Inject	85	86	63**
Smoke	12	11	31**
Snort or swallow	3	3	7
Smoked methamphetamine in past month (%)	40	32	53 [‡]
SDS score (median)	4	3	4
Dependent in past month (%)	56	43	52
DSM-IV dependence in past year (%)	87	73 [†]	88
Crystalline methamphetamine main form used (%)	98	92 [†]	92
Other drug use in past month			
Inject any drugs (%)	93	95	62***
No. other drug classes used (median)	6	5	4***
Heroin use (%)	74	100**	N/A
Days of heroin use (median)	6	7	N/A
Other opioids ^a (%)	99	30***	17***
Ecstasy (%)	7	3	19**
Benzodiazepines (%)	68	54	35***
Tobacco (%)	100	97	93*

[†]p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001. Comparisons in the middle column reflect Heroin vs. OST; comparisons in the right hand column reflect the No heroin/OST group vs. OST & heroin groups combined. Demographic and other drug use variables from Tables 1-3 excluded if p > 0.05.

^aIncludes prescribed and non-prescribed; other opioids includes opioid substitution therapy.

Characteristics of smokers vs. injectors

Crystalline methamphetamine can be inhaled when heated (i.e., smoked) and recent increases in crystalline methamphetamine use have been associated with an increasing trend toward smoking the drug. In the current sample, only 20% of participants reported smoking as the main method by which they took methamphetamine (cf. 76% for injecting and 5% for swallowing or snorting). There were some notable differences in the characteristics of participants who smoked compared to injecting the drug (Table 6).

Crystalline methamphetamine smokers were significantly younger, had been using for less time, and were less likely to use opioids (and conversely more likely to use ecstasy). Smokers also had more schooling, were more likely to live in a private dwelling (versus public housing) and were slightly less likely to have a prison history.

Even though there was a trend toward less frequent methamphetamine use among people who smoked methamphetamine, they had the same levels of dependence as participants who injected. It should be noted that these were not exclusive groups of smokers and injectors: 34% of injectors had also smoked methamphetamine in the past month, and 23% of the crystalline methamphetamine smokers had injected a drug in the past month.

Table 6 Characteristics of participants by whether they usually smoked or injected methamphetamine

	Main route of methamphetamine use	
	Inject (n = 134)	Smoke (n = 35)
Demographics		
Male (%)	71	63
Age (median years)	42	33***
Completed years of schooling (median)	10	12***
Tertiary qualifications (%)	55	40
Unemployed (%)	71	57
Single (%)	76	83
Heterosexual (%)	93	97
Currently have children under 18 years of age (%)	43	40
Live in a private dwelling (%)	12	37***
Live in public housing (%)	77	60*
Have you ever been in prison or juvenile detention (%)	62	46†
Methamphetamine use		
Age of first use (median years)	18	18
Duration of use (median years)	23	12***
Days of use in the past month (median)	12	6†
SDS score (median)	4	3
Dependent in the past month (%)	56	43
DSM-IV methamphetamine dependence past year (%)	82	91
Crystalline methamphetamine main form used (%)	96	100
Other drugs use in the past month		
Inject any drug (%)	98	23***
No. other drug classes used (median)	5	5
Heroin (%)	54	26**
Ecstasy (%)	6	20**
Inhalants (%)	1	9**
Currently enrolled in OST (%)	41	23*

†p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001. Comparisons were for injecting versus smoking methamphetamine. There were no significant differences in living situation or the use of other drugs in the past month between these groups.

Characteristics of recent initiates to methamphetamine use

In light of recent increases in crystalline methamphetamine use in Australia, we calculated the year in which participants first used methamphetamine to gain an understanding of whether participants had initiated use recently or whether they constituted a more established cohort of drug users. Figure 2 is a histogram showing the proportion of the sample who initiated methamphetamine use by year.

This shows that the vast majority of participants initiated methamphetamine use in the 1990s, indicating that they were an older established cohort of people who use drugs. However, the relative increase in the proportion of participants initiating use after 2010 would reflect a more recent cohort of recruits to methamphetamine use. These participants would have taken up using methamphetamine since the most recent increase in crystalline methamphetamine use in Australia, which occurred from 2010.¹

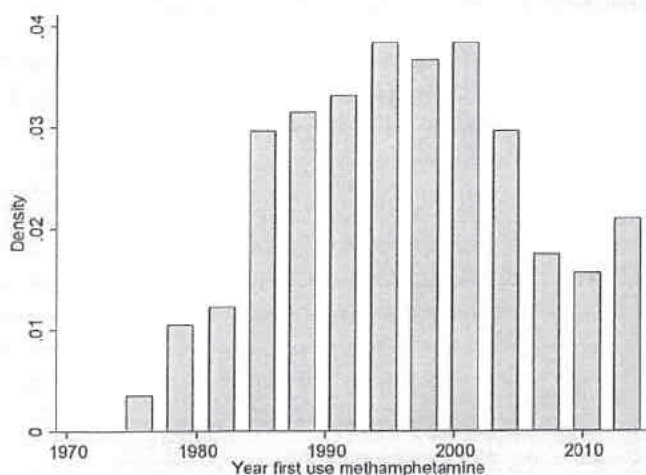


Figure 2 Histogram of year participants initiated methamphetamine use

Only 10% of participants fell into this category (i.e., 10% of participants had initiated use in 2010 or more recently). As expected these participants were much younger (median of 21 vs. 41 years) and had been using the drug for fewer years (4 vs. 22 years).

These more recent initiates to methamphetamine use were very different from remaining participants in terms of their demographics (Table 7). More recent initiates were more likely to be women (50% vs. 30%); they were more likely to live in a private share house rather than public housing, and not have children; they had more schooling and were less likely to have a trade qualification; and they were less likely to be unemployed or have a prison history.

More recent initiates to methamphetamine also had different drug use patterns: they were far less likely to inject drugs, use heroin or be enrolled in OST, and conversely more likely to use ecstasy, cocaine, hallucinogens and inhalants. They also used methamphetamine less often although were similarly likely to report symptoms of dependence (Table 7). There was no significant difference in their self-reported lifetime history of psychiatric diagnoses (not shown in Table 7).

Key points

Methamphetamine use occurred mostly in an older established cohort of people who injected heroin and/or were on OST

There was a smaller, more recent cohort of younger people in a higher socio-economic bracket who smoked methamphetamine

Table 7 Participant characteristics by whether they initiated methamphetamine use since 2010

	Year first used methamphetamine	
	< 2010 (n = 164)	2010+ (n = 18)
Demographics		
Age (median)	41	21**
Male (%)	70	50†
Years of schooling (median)	10	12**
Trade qualification (%)	40	11*
University degree (%)	12	17
Unemployed (%)	70	44*
Prison history (%)	59	28*
Living situation		
Public housing (%)	74	33***
Living alone in past month (%)	45	17*
Living with children ^a (%)	45	11**
Private dwelling (%)	16	44**
Share house (%)	20	44*
Methamphetamine use		
Age of first use (median)	18	18
Duration of use (median years)	22	4***
Days of use in past month (median)	10	3†
SDS score (median)	4	3
Dependent in past month (%)	53	39
Main route of methamphetamine use (%)		***
Inject	82	7
Smoke	15	73
Swallow	2	13
Snort	1	7
Inject any drug in the past month (%)	87	22***
Enrolled in OST (%)	40	6**
No. other drug classes used in past month (median)	5	5
Other drug use in the past month (%)		
Heroin (%)	51	17**
Cocaine (%)	10	28*
Ecstasy (%)	9	39***
Hallucinogens (%)	7	22*
Inhalants (%)	1	22***

†p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001. Comparisons were for 2010+ versus < 2010. P values for differences across multiple categories are placed against the variable name. Where there were multiple categories for a variable, the p value reflects significance across all categories.

^aChildren of any age.

3.2 Treatment or other help for methamphetamine use

Thirty-one per cent of the sample reported ever receiving treatment for their methamphetamine use. This was more common amongst participants dependent on methamphetamine (38% vs. 23%, $p = 0.023$). Treatment was defined as receiving detoxification, rehabilitation, or counselling for drug use from a specialist drug treatment centre.

Only 6% of participants received treatment for methamphetamine use in the past year ($n = 11$). This was almost exclusively amongst participants who were currently dependent on methamphetamine (11% vs. 1% for participants not currently dependent on methamphetamine, $\chi^2_{(df=1)} = 7.2$, $p = 0.007$).

As shown in Table 8, more participants had sought help for their methamphetamine use from sources other than drug treatment agencies in the past year (30%) than from these agencies (6%), with this similarly being more common amongst participants currently dependent on methamphetamine (40% vs. 18%, $\chi^2_{(df=1)} = 10.8$, $p = 0.001$).

The most common non-AOD treatment services from which participants sought help were general practitioners (GPs), counsellors and peer-based services. We did not collect further information on these services or on the nature of the help received via these services. Help from GPs could include specialist AOD services provided via some of the larger primary health care services in the ACT (cf. family practices). Help from counsellors could reflect both private counsellors and counselling services received from various non-AOD services (e.g., mental health support services). Similarly, peer-based services may not necessarily reflect only AOD-related peer support services.

Together 32% of the sample had either received specialist drug treatment or other professional help for their methamphetamine use in the past year. This was more common among people who were dependent on methamphetamine (45% vs. 18%, $\chi^2_{(df=1)} = 14.7$, $p < 0.001$).

Key points

Few participants had been to drug treatment for their methamphetamine use
More had sought help from other sources, such as their GP, counsellors or peer-based services

Table 8 Percentage of participants who had received drug treatment or professional help (by source of help) for methamphetamine use in the past year

	Dependent on methamphetamine		Total (n = 182)
	No (n = 88)	Yes (n = 94)	
Drug treatment (%)	1	11**	6
Any other professional help (%)	18	40**	30
General practitioner	11	24*	18
Peer-based service	6	17*	12
Counsellor	8	17	13
Psychologist	5	6	6
Online help	0	8	6
Other ^a	1	8*	4

† $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Comparisons were for dependent on methamphetamine in the past month versus not dependent on methamphetamine in the past month

^aOther services accessed included other social and health services (e.g., via NSPs, social workers, hospitals, probation officers)

3.3 Barriers to seeking help for methamphetamine use

Reasons for not seeking help for methamphetamine use amongst participants currently dependent on methamphetamine (SDS score 4+, n = 94) are shown in Figure 3. As described in the methods section of this report, these descriptors were pre-specified (based on the Barriers Questionnaire), and the participant rated whether or not each was a reason for not seeking help for their methamphetamine use.

Many of the commonly endorsed reasons for not seeking help in this group were around not wanting to stop using methamphetamine, including that people liked the effects of the drug (i.e., "I like getting high") and they didn't want to be told to stop using (i.e., "I don't want to be told to stop using drugs").

Structural barriers to receiving treatment included treatment not being available when participants wanted help, a perception that they would have to wait too long to get into treatment, and not being able to afford treatment.

In addition, there were barriers suggesting a lack of perceived benefit from treatment. For example, participants believed that treatment wouldn't help them or that they would fail at treatment, or that they had bad experience with treatment previously.

Some reasons for not seeking help included concerns that participants did not know what would happen to them if they went to treatment, or that they were afraid of what might happen to them.

Stigma-related and other structural barriers (e.g., need for time off work, transport) were less commonly cited as important reasons for not seeking help in this sample.

Key points

Liking the effects of methamphetamine, and not wanting to stop using the drug, was a key reason for not accessing drug treatment

Having to wait to get into treatment, and the cost of treatment, were also reasons for not going to treatment

There was a lack of awareness of, and fear of, what treatment involved

Some participants felt that treatment would not help them

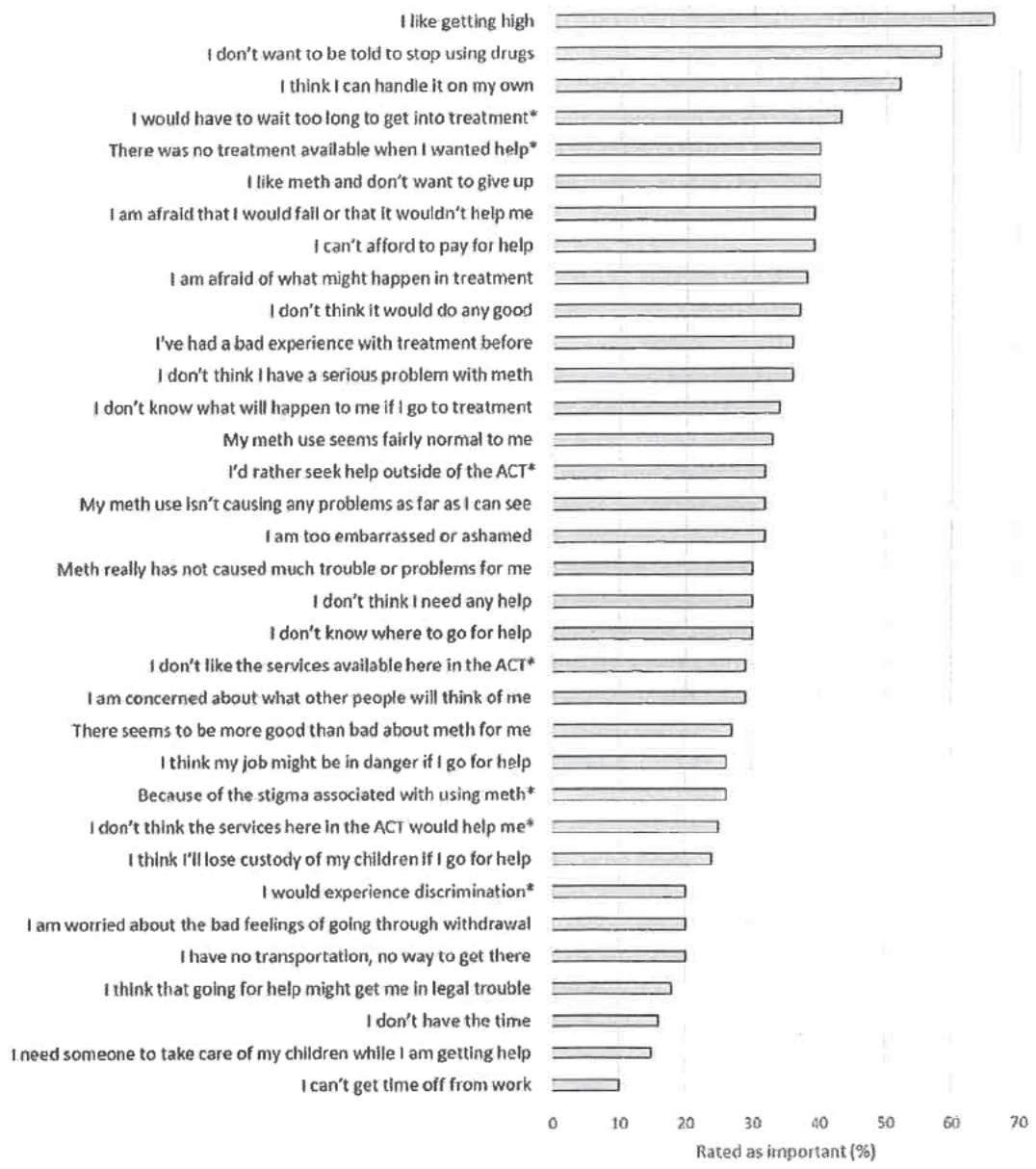


Figure 3 Reasons that were rated as important for not seeking help for methamphetamine use amongst participants dependent on methamphetamine in the past month (n = 94) [*Reasons added by the advisory group]

3.4 Willingness to seek help from different sources

Participants were asked how willing they would be to seek help from various types of services if they were experiencing problems from their methamphetamine use. Each service type was rated on a scale of one (very unlikely to seek help from the service) to seven (very likely to seek help from the service), where higher scores reflected participants being more likely to seek help from that type of service (Table 9).

Participants were most likely to report that they would not seek help from anyone. Otherwise, peer-based services and drug counselling were the most likely services from which participants would seek help if they had a problem, followed by GPs.

For GPs, 35% of participants indicated that they would be very unlikely to seek help from a GP (score of 1), whereas most remaining participants indicated that they would be very likely to seek help from a GP (44% had help seeking scores of 5-7). Participants were more willing to seek help from their GP (score of 4 or more) if their GP already knew that they used methamphetamine (69% vs. 36%, $\chi^2_{(df=1)} = 18.1, p < .001$) or they were men (54% vs. 36% for women, $\chi^2_{(df=1)} = 5.3, p = 0.022$).

Participants were unlikely to report that they would seek help via a phone or internet service, although this was correlated with age. Specifically, younger participants were more likely to report that they would seek help from an internet service ($r_s = 0.32, p < .001$) and there was a similar trend for phone helpline ($r_s = 0.15, p < .051$). Participants who were dependent on methamphetamine in the past month were relatively more likely to report that they would seek help from a drug counselling or rehabilitation service.

There were no significant differences in help seeking by opioid use category or main route of administration (data not shown).

Key points

Most participants said that they would not seek help from anyone if they had a problem with their methamphetamine use

Peer-based services and counselling services were the most likely sources of help that people would seek

Men were more likely than women to report being willing to seek help from a GP

Table 9 Participants' willingness to seek help by past month methamphetamine dependence

	Methamphetamine dependence in the past month		Total sample (N = 183)
	No (n = 89)	Yes (n = 94)	
If you were having problems from your methamphetamine use, how likely is it that you would seek help from the following people? (median score)			
You would not seek help from anyone	5	5	5
A peer-based service	4	5	4
A drug counselling service	3	4*	4
A doctor or GP	2	4	3
A detox program	2	3	2
A drug rehabilitation service	1	3*	2
A private psychologist or counsellor	1	2	2
A psychiatrist	1	2	1
A phone helpline	1	1	1
An internet service	1	1	1

* $p < .05$, ** $p < .001$, *** $p < .001$

Note. Scores reflect the participant's rating on a scale of 1 to 7 of willingness to seek help from each source, where 1 was extremely unlikely and 7 was extremely likely. This was a continuous hypothetical scale with no further adjectives assigned to the interim scores of 2 to 6. Participants could opt out of rating the service if they were unsure or felt that it was not applicable.

3.5 Awareness and use of ACT alcohol and other drug services

To assess participants' awareness of services in the ACT, we asked participants to list all the services that they knew of where they could get help for their methamphetamine use. We then read aloud a list of alcohol and other drug (AOD) services in the ACT (listed in Table 10) and asked participants if they recognised each of these services, and whether they had ever attended each of them.

When participants were asked where they could go in the ACT to get help for their methamphetamine use, they mentioned few treatment services. Despite recognising various AOD services within the ACT, most participants had not attended these services (Table 10).

The most well recognised and used services were Canberra Alliance for Harm Minimisation and Advocacy (CAHMA, a peer based support, advocacy and education service) and the Needle and Syringe Programs operated by the Directions service. High awareness of these services, and also the Directions drug and alcohol counselling service, is likely to be related to our having recruited a proportion of participants via the Directions NSPs and flyers placed at CAHMA.

Recognition of the Karralika and Arcadia House rehabilitation services was also high. However, attendance at these rehabilitation services was less common.

Low awareness/attendance at some services is likely to be due to their targeting specific populations (e.g., Gagan Gulwan Young Aboriginal Cooperation, which targets young Aboriginal and Torres Strait Islander people, and the Ted Noffs Foundation, where most of their services are for young people).

Table 10 Participants' awareness and use of ACT AOD services (N = 183)

	Mentioned (%)	Recognised (%)	Ever attended* (%)
Inpatient withdrawal unit (Building 7)	22	55	26
ACT Health alcohol and drug counselling services	24	59	27
Directions counselling service	42	73	37
Arcadia House (residential rehabilitation + day program)	25	81	15
Karralika Programs (residential rehabilitation)	21	76	19
Salvation Army Canberra Recovery Service (residential rehabilitation)	12	59	16
Ted Noffs (residential rehabilitation and outpatient services)	5	58	4
Winnunga Nimmityjah Aboriginal health service (broad-based clinical services for Aboriginal and Torres Strait Islander communities)	13	58	20
Gugan Gulwan Youth Aboriginal Corporation (broad-based support for Aboriginal and Torres Strait Islander communities)	5	25	9
The Connection (Indigenous peer-based outreach)	3	24	9
Toora Women (residential rehabilitation and outreach services)	7	48	5
CAHMA services (peer-based outreach)	36	70	54
Civic Directions NSP	48	85	67
Woden Directions NSP	41	79	54

*For any reason

Note. The information on the nature of these services provided is indicative only and may not include all services provided by these services. Information about what these services provide can be found on the ATODA directory: <http://directory.atoda.org.au/> or by contacting the relevant service directly.

Factors affecting awareness of ACT health services

There was significant variation in awareness of health services by opioid use category (Table 11). Participants who had not used heroin in the past month and/or who were not enrolled in OST had much lower awareness of services than other participants. Similarly, participants who did not inject methamphetamine (81% of whom smoked methamphetamine) were less likely to recognise all services (Table 12).

There was no significant difference in the awareness of services by past month dependence on methamphetamine, with the exception of CAHMA, which was more likely to be recognised by participants dependent on methamphetamine (79% vs. 60%, $p = 0.006$).

Table 11 Percentage of participants who recognised each ACT AOD service by opioid use category

Recognised service (%)	Opioid use category		
	OST (n = 68)	Heroin (n = 37)	No heroin/OST (n = 77)
Inpatient withdrawal unit	66	68	40***
ACT Health alcohol and drug counselling services	71	62	47**
Directions counselling service	79	78	64*
Arcadia House	90	78	74*
Karralika Programs	85	81	66**
Salvation Army Canberra Recovery Service	74	65	44***
Ted Noffs	69	73	42***
Winnunga Nimmityjah Aboriginal health service	56	65	56
Gugan Gulwan Youth Aboriginal Corporation	22	27	26
The Connection	21	35	22
Toora Women	54	57	39*
CAHMA services	75	76	62†

†p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001. Comparisons were Heroin vs. OST; No heroin/OST vs. OST & heroin combined. Data for NSP services are presented separately below.

Table 12 Percentage of participants who recognised each ACT AOD service by main route of methamphetamine administration

Recognised service (%)	Methamphetamine route of administration	
	Inject (n = 136)	Other (n = 46)
Inpatient withdrawal unit	61	35**
ACT Health alcohol and drug counselling services	65	41**
Directions counselling service	79	52**
Arcadia House	87	65**
Karralika Programs	84	54***
Salvation Army Canberra Recovery Service	64	43*
Ted Noffs	64	43*
Winnunga Nimmityjah Aboriginal health service	64	37**
Gugan Gulwan Youth Aboriginal Corporation	24	26
The Connection	27	17
Toora Women	55	30**
CAHMA services	81	38***

†p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001. Comparisons were Injection vs. other route of methamphetamine administration. Data for NSP services are presented separately below.

Factors affecting attendance of services

Lower awareness of services amongst participants who did not use opioids was mirrored in their being less likely to have ever attended services. However, the disparity in having ever attended services by opioid use category was only apparent for some services, including ACT Health services (inpatient withdrawal and the ACT Health alcohol and drug counselling services), the Karralika programs, and CAHMA services (Table 13).

Low attendance at the inpatient withdrawal unit was particularly related to smoking crystalline methamphetamine. Amongst participants in the "No heroin/OST" group, only 4% of crystalline methamphetamine smokers (one person) had ever attended this service.

Table 13 Participants' attendance at each ACT AOD service by opioid use category

	Opioid use category		
	OST (n = 68)	Heroin (n = 37)	No heroin/ OST (n = 77)
Ever attended service (%)			
Inpatient withdrawal unit (Building 7)	43	22	13**
ACT Health alcohol and drug counselling services	38	24	19*
Directions counselling service	43	35	34
Arcadia House	13	19	16
Karralika programs	31	19	8**
Salvation Army Canberra recovery service	18	14	16
CAHMA services	62	57	45***

†p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001. Comparisons were Heroin vs. OST; No heroin/OST vs. OST & heroin combined. Note: There were no statistically significant group differences for services omitted from the table. Data for NSP services are presented separately below.

Awareness and use of NSP services amongst participants who injected drugs

Amongst participants who had injected any drug in the past month (n = 145), 96% were aware of (recognised) one of the two Directions NSP services. Participants who had not used heroin in the past month or were not enrolled in OST were less likely to recognise these services (92% vs. 99%, $\chi^2_{(df=1)} = 5.1$, p = 0.023), and slightly less likely to have ever accessed them (79% vs. 90%, $\chi^2_{(df=1)} = 3.0$, p = 0.084).

Key points

- There was a high level of awareness of NSP services among injectors
- There was more limited awareness and use of the various other AOD treatment services in the ACT
- Awareness of AOD services was comparatively low for non-opioid users, particularly for crystal methamphetamine smokers

3.6 Contact with other health services

Although contact with other health services was high, most of this contact was not because of presentations for methamphetamine use specifically (e.g., methamphetamine intoxication or overdose; Table 14). Non-methamphetamine-related presentations could include presentations where methamphetamine was a contributing factor (e.g., accidents or injuries related to intoxication) and/or the broader health needs in this population.

Contact with emergency departments was particularly high, and elevated compared to the general population: 43% of participants had attended an emergency department in the past year. This compares with 13% of the Australian general population aged 15 years or older having used an emergency department in the past year.⁴⁰ Emergency department presentations were more common among participants who had used cocaine in the past month (67% vs. 40%, $\chi^2_{(df=1)} = 5.5$, $p = 0.019$). Other demographic and drug use factors were not significantly related to having attended an emergency department in the past year.

Around one in five of these emergency department presentations were for methamphetamine use. Methamphetamine-related emergency department presentations were more common amongst participants who were currently dependent on methamphetamine (12% vs. 3%, $\chi^2_{(df=1)} = 4.3$, $p = 0.038$). Half of the participants who had attended the emergency department for methamphetamine use were referred to other services for their drug use (e.g., treatment), but this represented only 3% of the total sample.

For participants who had attended a GP in the past year (90% of the sample), 44% reported that their GP was aware of their methamphetamine use. Twenty-two per cent had received help for their methamphetamine use from their GP and a further 29% would be willing to get help for their methamphetamine use from their GP. Amongst participants who had not already received help for their methamphetamine use from their GP, men were more likely than women to be willing to get help for their methamphetamine use from their GP (45% vs. 22%, $\chi^2_{(df=1)} = 5.5$, $p = 0.019$). Participants who had dependent children were less willing to get help for their methamphetamine use from their GP (27% vs. 45%, $\chi^2_{(df=1)} = 4.0$, $p = 0.045$).

The high level of contact with psychiatrists (Table 14) is likely to reflect psychiatric comorbidity in the sample (see section 3.11), although it is noteworthy that around one-third of psychiatrist visits were methamphetamine-related.

Key Points

Most contact with health services was not for methamphetamine use, but for other health issues

Contact with emergency departments was notably high

Emergency department presentations for methamphetamine use were more common amongst people who were dependent on the drug

Around half of participants said that they had discussed their methamphetamine use with their GP or would be willing to do so

Table 14 Past year attendance at other health services

	Total sample (N = 183)
General hospital or psychiatric hospital admission (%)	
Any attendance	22
Methamphetamine-related	9
Emergency department (%)	
Any attendance	43
Methamphetamine-related	8
Referred to AOD service	3
Ambulance (%)	
Any attendance	31
Methamphetamine-related	8
Psychiatrist (%)	
Any attendance	27
Methamphetamine-related	10
Counsellor (%)	
Any attendance	40
Methamphetamine-related	21
General practitioner (%)	
Any attendance	90
Methamphetamine-related	20

3.7 Criminal justice involvement

Just over one-quarter of participants (28%) reported having been arrested in the past year, and 7% said that they had been arrested for a methamphetamine-related offence (e.g., methamphetamine possession, supply).

Other offences for which people reported having been arrested were mostly theft/robbery, assault and damage to property or public disorder (Table 15).

The only significant factors related to being arrested for an offence in the past year were having a prison history (69% vs. 52%, $\chi^2_{(df=1)} = 4.2$, $p = 0.041$) and current cannabis use (90% vs. 76%, $\chi^2_{(df=1)} = 4.8$, $p = 0.028$).

Key points

Around one-in-four participants had been arrested within the past year
 Arrests were mostly for methamphetamine possession/supply, theft or robbery,
 assault, damage to property or public order offences

Table 15 Offences for which participants had been arrested in the past year

	Total sample (N = 183)
Arrested for any offence in the past year (%)	28
Offence arrested for in the past year (%)	
Methamphetamine-related offence (e.g., use, possession, supply)	7
Offences against the person	7
Property damage	7
Theft and related offence	5
Public order offences	4
Robbery and extortion	3
Deception and related offences	3
Offences against justice procedures	3
Driving under the influence of drugs	3
Other illicit drug offences	2
Road traffic and motor vehicle offenses	2
Dangerous or negligent acts	1
Driving under the influence of alcohol	1

Note: Details of offences included in each category can be found in Appendix 2

3.8 Quality of life

The AQoL was used to measure participants' quality of life. The AQoL provides a utility score for each participant that is scaled such that a score of 1.0 is the best possible health state and 0 is the worst possible health state, equivalent to death.

Participants' mean AQoL utility score was 0.52, suggesting that, on average, they had a relatively lower quality of life than the average Australian. (The mean AQoL utility score for the Australian general population aged 16 to 65 years ranges from 0.77 to 0.84.³⁵)

The AQoL also provides scores on four dimensions of functioning: independent living, relationships, senses (e.g., vision and hearing) and mental health. Scores are similarly scaled from zero to one, where 1 reflects optimal functioning (no impairment) and zero reflects poor functioning. However, these scores are not on the same scale as the utility scores and should therefore not be directly compared with the utility scores.³⁵

AQoL dimension scores show relatively worse quality of life on dimensions of relationships and mental health, but with relatively little evidence of impairment on independent living and senses (e.g., hearing, vision) (Figure 4).

Current dependence on methamphetamine was associated with lower mean utility scores (0.45 vs. 0.59, $t = 3.8$ ($df = 172$) $p < .001$) and also lower median scores on the AQoL relationship dimension (0.74 vs. 0.82, χ^2 ($df = 172$) $p = 6.6$, $p = 0.010$).

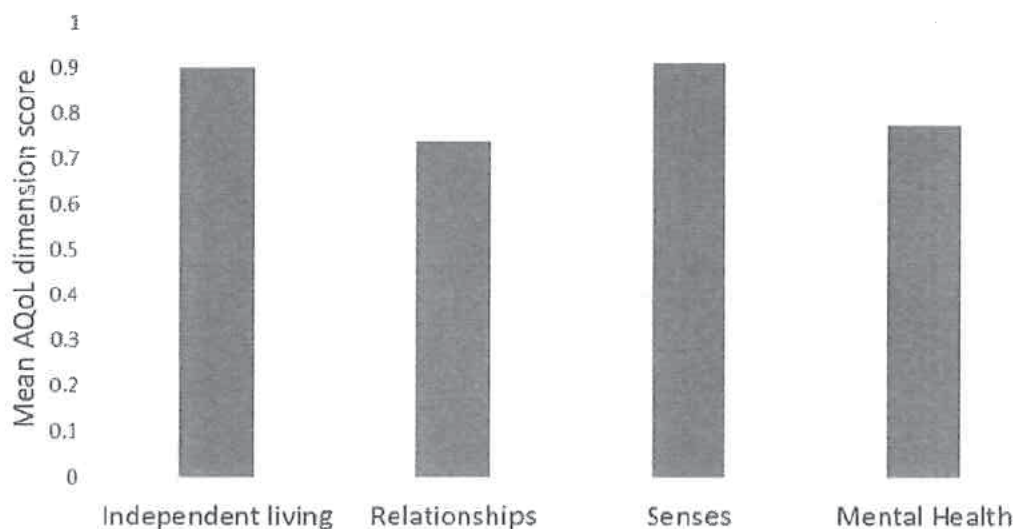


Figure 4 Mean value scores on each of the AQoL dimensions

Key point

Participants, particularly those dependent on methamphetamine, had a worse quality of life than the average Australian. This was related to poor quality social relationships and poor mental health

3.9 Behavioural risk for blood-borne viruses and sexually transmitted infections

Injecting risk

Eighty per cent of the sample had injected a drug in the past month ($n = 145$). Amongst those who injected, 42% injected daily or more often. Injecting daily or more often was more common for participants who were using heroin and not in OST than for either OST or other participants (60% vs. 35% and 38% respectively; $\chi^2_{(df=2)} = 6.1$, $p = 0.047$; Figure 5).

For participants who had injected in the past month, 7% had shared a needle during this time. All of these participants indicated that they had shared a needle because they could not get access to a clean needle.

Most participants who injected (89%) had obtained clean needles from an NSP in the past month, although many participants also obtained clean needles from other places (54% had obtained them from a pharmacy, 41% from a vending machine and 34% from a friend).

Twenty-eight per cent of participants had shared other injecting equipment (tourniquets, swabs).

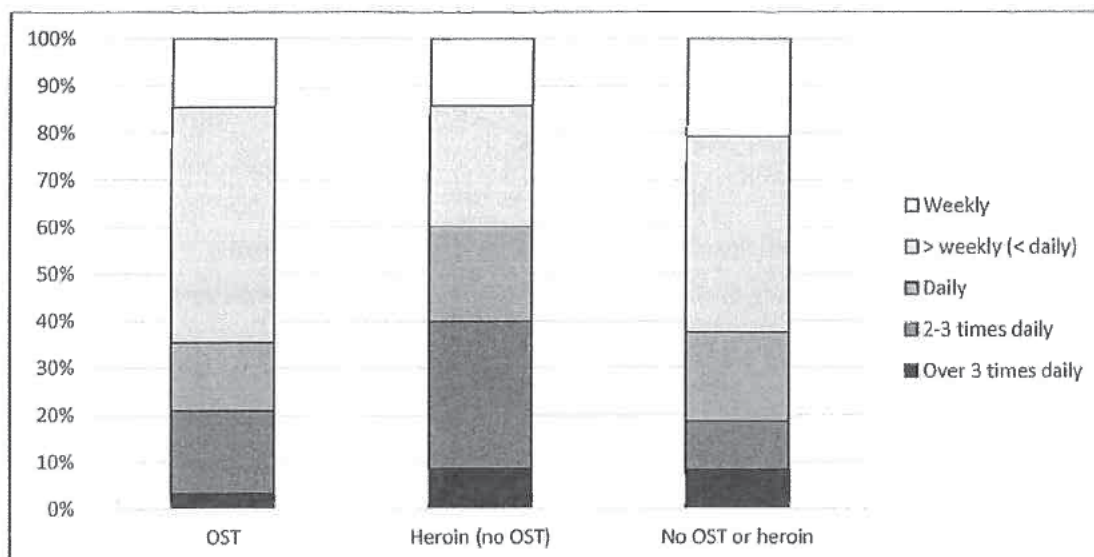


Figure 5 Frequency of injecting in the past month by opioid use category amongst participants who had injected any drug in the past month

Smoking methamphetamine

Forty-four per cent of participants had smoked methamphetamine in the past month ($n = 80$). The vast majority of these participants had shared a pipe (86%), had done so on a median of three to five occasions, and with a median of two different people having used the pipe before them.

Twenty-eight per cent of participants who had shared a pipe reported having lesions on their lips (i.e., burns, sores, cuts), representing a possible avenue for blood-borne virus transmission. This group were more likely to be currently dependent on methamphetamine (74% vs. 42%, $\chi^2_{(df=1)} = 5.5$, $p = 0.019$) and to have been diagnosed with schizophrenia (37% vs. 6%, $\chi^2_{(df=1)} = 10.6$, $p = 0.001$).

Sixty-eight per cent of participants who smoked methamphetamine in the past month had also injected drugs during that time (or 30% of the entire sample), introducing an avenue for secondary transmission of blood-borne viruses in the event that they also had lip lesions.

Sexual risk behaviour

Half of the sample (51%) was sexually active in the past month. Sexual activity was more common amongst participants who were not using heroin or on OST (61% vs. 32% and 49% respectively, χ^2 (df = 2) = 8.3, $p = 0.016$) and younger participants ($r_s = -0.40$, $p < .001$).

Participants who were sexually active typically had one partner within the past month (74%), with the remaining participants having two (14%) or three or more partners (12%). Thirty-four per cent of participants who were sexually active in the past month had unprotected sex with a casual sex partner (17% of the full sample).

Testing for BBV and STI

The vast majority of participants had been tested for HIV, hepatitis B and C (88%, 88% and 84% respectively) at some point in their lifetime, and 77% had been tested for other STI. In total, 92% of participants had been tested for sexually transmitted infections. Testing was most often done by a GP (72%), with 16% having been tested through a sexual health clinic and 41% having received testing through other locations, these mostly being alcohol and other drug services, hospitals and prisons.

Key points

Needle sharing was low

One in four participants shared other injection-related equipment

Sharing of pipes by people with burns or sores on their lips was a risk factor for BBV transmission

Unprotected sex with casual sex partners was a potential risk factor for STI transmission

Most participants had been tested for BBV and other STI via their GP

3.10 Drug driving

Sixty-five per cent of the sample ($n = 117$) had driven a vehicle in the past year. Of these participants, almost half (46%) had been tested for drink-driving and 27% had been tested for drug-driving. Most participants who were tested for drug-driving had also been tested for drink-driving (91%), consistent with ACT Policing's standard roadside drug and alcohol testing protocols.

The majority of participants thought it was likely that they would be tested for drug driving in the coming year (32% and 33% cited likely and very likely respectively). Participants who had been tested for drug-driving in the past year were more likely to believe that they were very likely to be tested in the coming year relative to other participants (50% vs. 27%, χ^2 (df = 1) = 5.5, $p = 0.019$). They were also more likely to report not having driven after taking drugs because of roadside drug testing (75% vs. 48%, χ^2 (df = 1) = 6.0, $p = 0.014$).

Key points

Around one in four participants had been tested for drug-driving
 Roadside drug testing was a deterrent for driving while drug-affected for most
 participants who had been been previously tested

3.11 Mental health

History of mental disorders

The majority of participants reported having ever been diagnosed with depression or anxiety (70% and 59% respectively) and 35% had been diagnosed with PTSD (Table 16). Psychotic disorders were relatively less common but still substantially elevated compared to the general population, with 29% of participants reporting having been diagnosed with either schizophrenia or mania (cf. lifetime prevalence in the general population of < 4%⁴¹).

Table 16 Percentage of participants who had been diagnosed with various mental health disorders

Have you ever been told by a doctor that you had:	Total sample (N = 183)
Depression (%)	70
Anxiety (%)	59
ADHD (%)	25
PTSD (%)	35
Schizophrenia (%)	18
Mania or bipolar (%)	16
Any other psychosis (%)	3

Current psychiatric symptoms

Psychiatric symptoms reported by participants in the past month are shown in Table 17. The presence of a symptom reflects a score of 4 or greater on the Brief Psychiatric Rating Scale, which indicates symptoms of clinically significant intensity.³⁶

The majority of participants who were dependent on methamphetamine reported clinically significant levels of depression and anxiety (Table 17). Depression and anxiety were also significantly more common amongst participants who had been diagnosed with PTSD (Figure 6).

Suicidal ideation was reported by 26% of participants, more often amongst participants who were dependent on methamphetamine (Table 17). Suicidality occurred almost exclusively amongst participants with current depressive symptoms (44% vs. 3% for participants who were not currently depressed, $\chi^2_{(df=1)} = 36.1, p < .001$).

Symptoms of paranoia (i.e., suspiciousness) and hallucinations were each experienced by around one-third of participants in the past month and were more common amongst participants dependent on methamphetamine (Table 17). These symptoms were also more common amongst participants who had been diagnosed with schizophrenia or bipolar disorder ($p < .05$); however, they still affected around one-in-five participants who had not been diagnosed with these disorders (suspiciousness 24%, hallucinations 21%).

Half of participants reported hostility in the past month and 19% reported hostility in the severe range (BPRS score of 6 or 7) which would reflect physical violence or damage to property. Self-neglect (31%) reflected irregular eating patterns and/or poor personal care.

Other symptoms on the BPRS were less commonly reported (up to 10% of participants) and are not documented here.

Table 17 *Psychiatric symptoms in the past month by dependence on methamphetamine in the past month*

Past month symptom (%)	Dependent on methamphetamine		Total sample (N = 183)
	No (n = 89)	Yes (n = 94)	
Anxiety	52	79***	66
Depression	46	71**	59
Suicidality	18	34*	26
Hostility	43	53	48
Suspiciousness	24	40*	32
Usual thought content	22	30	26
Hallucinations	22	39**	31
Self-neglect	32	30	31

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Comparisons were for participants dependent on methamphetamine in the past month versus participants not dependent on methamphetamine in the past month. The presence of a symptom reflects a score of 4+ on the corresponding BPRS item, which indicates a clinically significant symptom.

Key points

There were very high rates of mental health problems

Dependence on methamphetamine was related to anxiety, depression, suicidality, paranoia and hallucinations

One in three participants had been diagnosed with PTSD

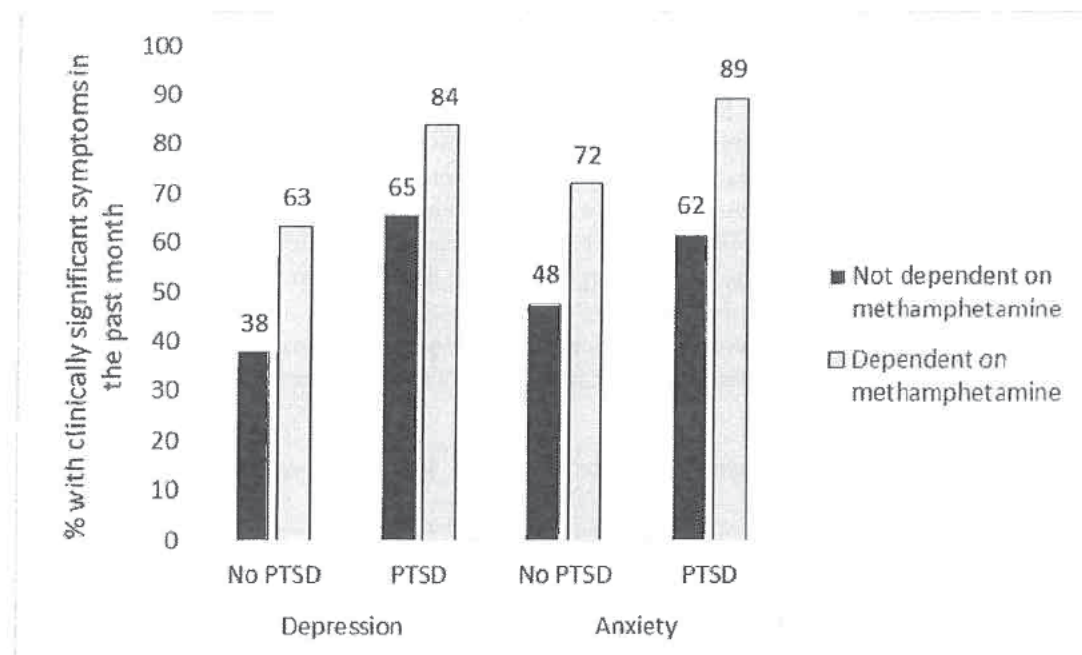


Figure 6 Symptoms of depression and anxiety by a history of PTSD and current methamphetamine dependence

3.12 Estimating the number of methamphetamine users in the ACT

Using the benchmark multiplier method, we estimated the number of regular (monthly) and dependent methamphetamine users in the ACT. This involved deriving a multiplier from the survey data which could be applied to the number of methamphetamine treatment episodes in the ACT, as explained below.

The number of treatment episodes in the ACT for methamphetamine use (benchmark data)

In 2015-16 there were 1,392 episodes of treatment for methamphetamine use recorded in the ACT MDS AODTS. Of these only 330 were within the benchmark data definition, that is, episodes of care for clients residing within the ACT aged 18-64 years of age, and for treatment modalities included in the benchmark data definition (detoxification, $n = 33$; residential rehabilitation, $n = 78$; counselling, $n = 191$; other, $n = 28$).

Excluded episodes were for clients residing outside the ACT ($n = 427$), and episodes for clients within the ACT where the main type of treatment provided was assessment only ($n = 265$), support and case management ($n = 148$), information and education only (181) and pharmacotherapy ($n = 8$). We decided to exclude these types of treatment on the grounds that they were not captured in the survey data on treatment episodes used to calculate the multiplier. We chose to include treatment episodes that were classified as "other" treatment because it was unclear what these other treatment episodes involved, and we could not confirm that they did not include treatment episodes captured in the multiplier. This would have had minimal impact on the prevalence estimates as these other treatment episodes comprised only 8% of treatment episodes included in the benchmark dataset.

Deriving the multiplier for treatment data

As explained in section 2.2, two multipliers were derived for the benchmark treatment data: one for the entire sample, which represented at least monthly use of methamphetamine (referred to hereafter as “regular use”) and one for the subsample who were dependent on methamphetamine in the past month, defined as having a score of 4 or greater on the SDS scale (referred to as “dependent use”). Treatment episodes used to derive the multiplier were matched to the benchmark data (see section 2.2 for details) and were based on participants aged 18-64 years of age. Four per cent of participants aged 18-64 years, and seven per cent of participants in this age range who were dependent on methamphetamine, had received treatment for methamphetamine use in the past year, with a range of 1 to 4 treatment episodes per person. The multiplier was the inverse of the rate of methamphetamine treatment episodes in these respective samples of participants, which is shown in Table 18. The multiplier for regular use was 11.4 and for dependent use it was 6.7.

Table 18 Rate of treatment admissions in the past year for regular and dependent methamphetamine use

	n	Rate of treatment admissions in the past year ^a	Multiplier (95% CI)
		Mean (95% CI)	
Regular use	182	0.088 (0.054 – 0.143)	11.4 (7.0 – 18.6)
Dependent use	94	0.149 (0.088 – 0.251)	6.7 (4.0 – 11.3)

^aRate of treatment admissions for 18-64 years calculated based on a Poisson distribution

Estimated number of methamphetamine users in the ACT

Prevalence estimates for methamphetamine use were calculated by multiplying the benchmark data (330 treatment episodes) by the multiplier for regular and dependent use respectively (Table 19). This yielded an estimate of 3,754 people in the ACT aged 18-64 who had used methamphetamine at least monthly in the past year, with 2,216 (59%) of these people being dependent on the drug. The breadth of the 95% confidence limits reflects the imprecision of the estimate, with this ranging from 2,300 regular users, of whom 1,300 were dependent, to 6,100 regular users, of whom 3,700 were dependent. This equated to a population prevalence of less than 2% of 18-64 year olds resident in the ACT (1.5% for regular use and 0.9% for dependent use).

Table 19 Estimated number of regular and dependent methamphetamine users in the ACT

	No. treatment episodes (benchmark data)	Multiplier (95% CI)	Estimated number of methamphetamine users (95% CI)	Past year prevalence (%; 95% CI) ^a
Regular	330	11.4 (7.0 – 18.6)	3,754 (2,300 – 6,127)	1.45 (0.89 – 2.37)
Dependent	330	6.7 (4.0 – 11.3)	2,216 (1,312 – 3,741)	0.86 (0.51 – 1.45)

^aCalculated using the estimated resident population of the ACT aged 18 to 64 years at June 2016.

Note: The multiplier used in the estimation was precise to six decimal places, and therefore the estimates presented in Table 19 will differ slightly from those manually derived by readers using the multiplier reported in Table 19. Because the estimates are not accurate to this level of precision, we recommend presenting the estimated number of methamphetamine users to the nearest 100.

Treatment coverage

The treatment coverage for the sample was 7% for dependent on methamphetamine use. That is, 7% of participants dependent on methamphetamine residing in the ACT aged 18-64 years received treatment from a specialist drug treatment service within the ACT (detoxification, counselling, residential rehabilitation, or other treatment, but not pharmacotherapy, case management, assessment only, or

information and education only). These participants started an average of two treatment episodes each during that year (95% CI 1-3 episodes).

Key points

We estimated that there were approximately 3,800 regular methamphetamine users in the ACT, of whom around 2,200 were dependent on the drug

This represents less than 2% of ACT residents aged 18-64 years of age

Treatment coverage for methamphetamine dependence in the past year was estimated at 7%

4 Discussion

4.1 Comment on the findings

Extent of methamphetamine use in the ACT

We estimated that there were around 3,800 adults in the ACT who used methamphetamine on a regular basis (at least monthly) of whom approximately 2,200 were dependent on the drug. This equates to a population prevalence of less than 2% for 18-64 year olds (1.5% of adults had used methamphetamine regularly within the past year, and a subset of around 0.9% were dependent). These estimates were imprecise (ranging from 0.5% to 2.4% of the population aged 18-64 years) due to the low rate of treatment admissions in the survey sample. This also meant that we were unable to provide estimates for specific sub-populations (e.g., breakdown of prevalence by age and sex).

These figures represent the first attempt to estimate the extent of problematic methamphetamine use in the ACT, and only the second attempt to undertake an indirect prevalence estimation exercise for illicit drug use in the ACT (the first attempt being for heroin use in the early 1990s⁴²). The estimates are plausible in comparison to the NDSHS data, from which it was estimated that 2.2% of ACT residents aged 14+ years had used methamphetamine in the past year, and around 0.7% had used at least monthly. The fact that the NDSHS prevalence estimates are lower than our indirect prevalence estimates is expected due to the under-sampling of heavy drug use in household surveys, and because we restricted the age range of our prevalence estimates to 18-64 years, the segment of the adult population most likely to use the drug.

Rates of regular and dependent methamphetamine use in the ACT were slightly below the national average (estimated at 2.1% and 1.25% respectively in 2013-14³⁸). The lower prevalence within the ACT may be due to differences in our methods compared to those used to derive the national prevalence estimates. However, a lower prevalence is consistent with 2016 waste-water data analysis, which also suggested that the ACT had lower levels of methamphetamine consumption than other states and territories in Australia.⁴³ Although prevalence estimates cannot be derived from waste-water analysis,⁴⁴ the quantity of methamphetamine detected in waste-water is a good proxy for the level of use.

Key points

Estimates for regular and dependent methamphetamine use in the ACT were slightly lower than the national average

These estimates were imprecise but plausible in comparison with other national data

The primary limitation of these estimates is that they assume we surveyed a representative sample of regular/dependent methamphetamine users in the ACT. Our recruitment methods were biased toward injecting opioid users (and conversely away from crystalline methamphetamine smoker – see Limitations). This would have biased our estimates should these sub-groups of the population have had different rates of treatment admissions for methamphetamine use, but we did not find any evidence that this was the case.

A further caveat is that we relied on a single prevalence estimate based on drug treatment data. In the case of indirect prevalence estimation, confidence in the results can be improved by comparison of

estimates derived via several different sets of indicator data (e.g., hospital data, arrest data). This is because each data set has its own idiosyncrasies which can lead to bias. Although reliance on a single set of indicator data is not ideal, the treatment data (and the corresponding treatment multiplier) reflect the most robust of the three data sources we considered. This is because of the detail provided for each drug treatment episode in the ACT MDS AODTS, which allowed us to closely match the benchmark treatment data to the multiplier derived from our survey.

Patterns of methamphetamine and other drug use

Almost all methamphetamine users in the ACT took the high purity crystalline form of the drug (“crystal meth”, or “ice”). This signals a nearly complete shift in the market from lower purity powder methamphetamine or amphetamine (i.e., “speed”), which dominated through the 1990s and early 2000s.^{27,45}

Methamphetamine has a five-fold greater effect on brain chemicals than its predecessor amphetamine⁴⁶, eliciting a stronger euphoria — this underpinning its higher dependence liability.⁶ The crystalline form of methamphetamine (“ice”), in particular, is associated with more frequent use patterns¹⁹ and higher rates of dependence than the powder form of the drug⁵, and its use has been related to increased problems from methamphetamine use in Australia.¹ It is therefore likely that the predominance of crystalline methamphetamine use in the ACT will be associated with increased methamphetamine-related treatment demand and harms, even if the number of people using methamphetamine remains stable.

We found evidence for two distinct groups of people using crystalline methamphetamine in the ACT. First, the use of the drug had been taken up amongst an older group of people who had a long history of injecting heroin, many of whom were enrolled in OST. In this context, methamphetamine use formed a pattern of polysubstance use amongst this established group of people who injected drugs. The second group were suggestive of a “new” cohort of crystalline methamphetamine smokers who had recently taken up use of the drug, and some of whom were beginning to experience problems from their use. This latter group is consistent with trends seen at the early stages of an epidemic. The characteristics of each group, and their implications, are discussed below in more detail.

The new cohort of young crystalline methamphetamine smokers

Younger crystalline methamphetamine smokers were mostly in their early adulthood, had a relatively short using career, tended to be better educated, and had patterns of other drug use that were indicative of social drug use (e.g., ecstasy use). The use of crystalline methamphetamine amongst younger adults is likely to reflect the increased availability of crystalline methamphetamine use since 2010¹, affecting patterns of drug use amongst more recent birth cohorts.

Despite their recent initiation into methamphetamine use, a surprising proportion of this younger cohort (39%) were dependent on methamphetamine. This is consistent with the onset of dependence for substance use occurring in late adolescence and early adulthood (18-29 years of age).⁴⁷ Once established, dependence on methamphetamine (similar to other drugs) can persist throughout adulthood,⁴⁸ with treatment seeking not occurring for a decade or more after the onset of dependence symptoms.⁴⁸ Not only can this lead to entrenched patterns of drug use and health issues from long-term substance dependence, it also means that the impact of this new cohort of crystalline methamphetamine smokers on drug treatment demand will only become fully apparent over the next decade or longer.

Providing early intervention to this younger group of crystalline methamphetamine smokers therefore has the potential to circumvent the development of entrenched substance dependence and the longer term impact on treatment demand. However, early interventions need to be specifically tailored toward this group as they generally have a low perceived need for help, even despite the emergence of dependence symptoms.^{49,50} The perceived desirable effects of stimulant drugs (e.g., on sociability,