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Addiction and treatment experiences among active methamphetamine users recruited from a township community in Cape Town, South Africa: a mixed-methods study

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Abstract

Background—Since 2000, there has been a dramatic increase in methamphetamine use in South Africa, but little is known about the experiences of out-of-treatment users. This mixed-methods

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Contributors

Meade, Watt, and Skinner designed the original project and secured grant funding; Meade, Towe, and Watt conceptualized the current study; Watt and Kimani conducted the qualitative analyses; Meade, Towe, and Lion conducted the quantitative analyses; Meade drafted the initial manuscript; Towe, Watt, Lion, and Myers wrote sections of the final manuscript; Pieterse provided oversight of data collection and management; and all authors contributed to and approved the final manuscript.

Conflict of Interest

We wish to confirm that there are no known conflicts of interest associated with this publication, and there has been no significant financial support for this work that could have influenced its outcome.

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study describes the substance use histories, addiction symptoms, and treatment experiences of a community-recruited sample of methamphetamine users in Cape Town.

Methods—Using respondent driven sampling, 360 methamphetamine users (44% female) completed structured clinical interviews to assess substance abuse and treatment history and computerized surveys to assess drug-related risks. A sub-sample of 30 participants completed in-depth interviews to qualitatively explore experiences with methamphetamine use and drug treatment.

Results—Participants had used methamphetamine for an average of 7.06 years (SD=3.64). They reported using methamphetamine on an average of 23.49 of the past 30 days (SD=8.90); 60% used daily. The majority (90%) met ICD-10 criteria for dependence, and many reported severe social, financial, and legal consequences. While only 10% had ever received drug treatment, 90% reported that they wanted treatment. In the qualitative interviews, participants reported multiple barriers to treatment, including beliefs that treatment is ineffective and relapse is inevitable in their social context. They also identified important motivators, including desires to be drug free and improve family functioning.

Conclusion—This study yields valuable information to more effectively respond to emerging methamphetamine epidemics in South Africa and other low- and middle-income countries. Interventions to increase uptake of evidence-based services must actively seek out drug users and build motivation for treatment, and offer continuing care services to prevent relapse. Community education campaigns are also needed.

Keywords

methamphetamine; addiction; drug abuse; substance abuse treatment; South Africa

1. INTRODUCTION

Methamphetamine is a highly addictive amphetamine-type stimulant (ATS) that produces increased energy, alertness, hypersexuality, and euphoria, among other physiological effects (Barr et al., 2006; Darke et al., 2008; Panenka et al., 2013). Globally, ATS is the second most widely used class of drugs, and they are generally more prevalent in high-income countries (United Nations Office on Drugs and Crime, 2014). The prevalence of ATS use remains relatively low in Africa, but notable increases have emerged in the southern and western parts of the continent (Mbwambo et al., 2012). Providing quality treatment for ATS addiction in low- and middle-income countries (LMICs) remains compromised by overstretched health care facilities and the dearth of accessible drug treatments (Coovadia et al., 2009; Mbwambo et al., 2012; Odejide, 2006).

Methamphetamine first emerged in South Africa in the late 1990s, fuelled by socio-political changes following the end of Apartheid (Peltzer et al., 2010; United Nations Office on Drugs and Crime, 2012). The prevalence of methamphetamine use has increased steadily since 2000, with its epicentre in Cape Town (Dada et al., 2014; Parry et al., 2008; Peltzer et al., 2010). Data from drug treatment facilities in the city indicate that the proportion of patients reporting methamphetamine as their primary drug increased from 0.3% in 2002 to 42.3% in 2006, the fastest increase in admissions for a single drug ever noted in South

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Africa (Pluddemann et al., 2008). In recent years, nearly half of admissions were related to methamphetamine (Dada et al., 2014). Community-based studies provide further evidence of a growing methamphetamine problem in peri-urban ("township") communities that are characterized by high population densities, elevated poverty rates, and limited infrastructure (Meade et al., 2012; Myers et al., 2013; Simbayi et al., 2006; Wechsberg et al., 2010). Methamphetamine use in South Africa is of particular concern because of its association with risky sexual behaviors (Meade et al., 2012; Simbayi et al., 2006; Wechsberg et al., 2010), fueling fears that methamphetamine may accelerate HIV transmission in communities already burdened by high HIV prevalence. With 6.4 million HIV-infected adults (18.8% of persons 15-49 years), South Africa has the largest number of cases of any country in the world (Shisana et al., 2014).

In South Africa, methamphetamine is generally smoked using a glass pipe, and is known as "tik" due to the sound produced when heated (Peltzer et al., 2010). Smoking, like injection, increases drug availability, onset of action, and peak effects, thus increasing risk of dependence (McKetin et al., 2006; Volkow et al., 2004). Studies on amphetamine dependence have originated primarily from North America, Europe, and Australia, with limited information from LMICs (Degenhardt and Hall, 2012). While there are a few studies from China, Thailand, and South Africa (Kelly et al., 2014; Sutcliffe et al., 2009; Watt et al., 2014), none of these examined the drug use histories, symptoms of addiction, and treatment experiences of methamphetamine users in the community. Examining how addiction and drug treatment are perceived by drug users can guide the development of interventions to improve the uptake of services in LMICs that are (or may become) affected by methamphetamine. Our mixed-methods study aimed to fill this gap in the literature by assessing the addiction and treatment experiences of a community-recruited sample of methamphetamine users from a South African township.

2. METHODS

2.1 Setting

This study was conducted in Delft, a township located ~24 kilometers from Cape Town's city center that was established in the early 1990s. The majority of Delft's 150,000 residents are Coloured (52%) and Black African (46%) (these terms originate from the Apartheid era and are still used as demographic markers referring to people of mixed versus African ancestry, respectively; City of Cape Town, 2013). The population is relatively uneducated (with only 27% of adults completing high school), largely unemployed (with a 40% unemployment rate), and poor (with 45% of households earning ≤ ZAR 600 per month, well below the poverty line; Lehohla, 2012). Like in other similar townships, drug markets are entrenched in the community and controlled by gangs. Drugs, particularly marijuana, methaqualone (Mandrax), and methamphetamine, are sold through drug houses and shebeens (unlicensed drinking venues), as well as through street-based dealers who are gang-affiliated. For many unemployed men, selling drugs is their main source of income. The ready availability of drugs has contributed to a steady rise in drug-related crimes in Delft (Goga, 2014). Within the last few years, a government-funded outpatient drug treatment service became available in this township (Dada et al., 2014).

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2.2 Participants and procedures

The sample included active methamphetamine users who met the following eligibility criteria: ≥18 years old, residence in Delft, self-reported smoking of methamphetamine (tik) in the past week, a urine drug screen positive for methamphetamine, no acute intoxication, and intact mental status. As described in detail elsewhere (Kimani et al., 2014), respondent driven sampling was used to recruit participants between May and October, 2013. Briefly, eight initial participants ("seeds") were selected from the community based on prior contacts with our study team. After completing the study visit, each participant was given "coupons" to recruit up to two peers who use methamphetamine. Recruits came to the study site, presented their coupons, completed the study assessments if eligible, and then received recruitment coupons. The process continued until 362 participants were enrolled (seven pilot participants, eight seeds, and 345 recruits). Two participants did not complete the clinical interview, leaving a final sample of 360.

After providing written informed consent, eligible participants completed an audio computer-assisted self-interview (ACASI) and a clinical interview administered by staff with extensive training and ongoing supervision. The visit took ~2 hours and was completed in the language of participants' choosing (Afrikaans, Xhosa, or English).

A sub-set of 30 participants, purposely selected for race and gender balance to ensure representation of relevant demographic groups, returned on a separate day to complete individual in-depth interviews (IDIs). The IDIs were audio-recorded, and then transcribed and translated into English.

Participants were compensated with grocery store vouchers worth ZAR 70 (~US$7) each for the survey and IDI. Approval was obtained from the ethical review boards at Duke University Health System and Stellenbosch University.

2.3 Survey measures

2.3.1 Sample characteristics—In the ACASI, participants reported their age, gender, race, sexual orientation, marital status, and indicators of socioeconomic status (e.g., level of education, employment status, housing status, and resources in the home). They also reported if they had ever sold or distributed methamphetamine for money or injected drugs. Finally, participants reported the following sexual behaviors for the past 3 months: number of male and female partners, unprotected intercourse, sex trading (exchanging sex for money or drugs, and vice versa), and having sex while high on methamphetamine.

2.3.2 Addiction Severity Index-Lite (ASI-L)—This widely used structured interview assesses substance use and associated impairments (McLellan et al., 1992). Participants reported the number of days in the past 30 on which they used: ATS, alcohol to intoxication, marijuana, methaqualone, heroin, and other drugs. They also reported how many days they experienced problems related to substance use in the past 30, how many years they had regularly used these substances, the most typical route of administration, and whether they had ever been arrested and charged with a drug offense. The ASI-L yields composite scores for alcohol and drugs, ranging from 0 (no problems) to 1 (maximal problems), based on past

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30 day frequency of use, associated problems, perceptions of problem severity, and treatment need (McGahan et al., 1986; McLellan et al., 1992).

2.3.3 Composite International Diagnostic Interview (CIDI 3.0)—This structured interview, developed for administration by non-clinicians, assesses the prevalence of substance use and other mental disorders. Its reliability and validity have been demonstrated globally, including in South Africa (Seedat et al., 2009; Ustun et al., 1997; van Heerden et al., 2009; Wittchen, 1994). We classified past year ATS use disorders specific to tik, based on the International Classification of Diseases criteria (ICD, 10th revision; Kessler and Üstün, 2004; Robins et al., 1988), using eight items from the CIDI. Each ICD-10 criterion was assessed with one or more items that were coded as present or absent by the interviewer. For example, progressive neglect of alternative pleasures or interests was assessed with two questions, with the first assessing the amount of time spent using tik or recovering from its effects and the second assessing reduction in important activities due to tik use. The total number of criteria present was summed, with a cutoff of ≥3 indicating ICD-10 dependence.

2.3.4 Severity of Dependence Scale (SDS)—This 5-item questionnaire assesses severity of dependence, with items specific to tik (Gossop et al., 1995). Total scores were computed, with a cutoff of >4 indicating problematic use (Gossop et al., 1995; Topp and Mattick, 1997a).

2.3.5 Treatment experiences and motivations—Participants reported if and when they had ever received professional treatment for tik. They were then asked: *Do you want to get treatment for your tik use?* Regardless of their response, participants were asked two open-ended follow-up questions: What are the main reasons that you do want treatment for your tik use? and What are the main reasons for not seeking treatment for your tik use? For these two questions, three authors analyzed responses to identify categorical codes and discussed to reach consensus. Two research assistants then independently coded responses.

2.4 In-depth interviews

For the subset of participants who completed IDIs, staff used a discussion guide to elicit personal narratives of methamphetamine use, including initiation (*Tell me about how you started using tik*), patterns of use (How has your tik use changed since you started, up until now?), impacts on various aspects of life (Do you think your tik use is a problem? Why or why not?), experiences with drug treatment (I want to hear your thoughts about getting treatment for tik, or trying to stop tik use), and motivations for drug cessation (*Do you have any desire to stop using tik now? Why?*). The guide also included multiple follow-up probes to elicit additional information about each primary prompt.

2.5 Data analysis

Using a concurrent nested strategy, the primary quantitative data was complemented by perspectives and context gleaned from the IDIs (Creswell, 2009; Morse, 1991). Descriptive statistics were generated with SPSS 22 to characterize the substance use histories, addiction symptoms, and treatment experiences of the sample. The qualitative transcripts were first examined using analytic memo writing to organize the content of each transcript into

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primary categories and extract meaning (Birks et al., 2008), before being coded using NVivo 10. Using content analysis (Ulin et al., 2005), the qualitative output was examined for thematic categories related to perceptions and experiences of methamphetamine addiction, drug treatment, and motivations for drug cessation.

3. RESULTS

3.1 Sample characteristics

The sample included 201 men and 159 women, ranging in age from 18 to 66 years. As described in Table 1, the majority were Coloured, heterosexual, and unmarried. Only 2% had injected drugs in the past 3 months (6% lifetime). Women were more likely than men to be Coloured ($\chi(1)^2 = 27.30$, p = .000) and unemployed ($\chi(1)^2 = 5.49$, p = .019). The 17 men and 13 women who completed IDIs had similar demographic characteristics as the full sample.

The large majority of the sample were unemployed and had not completed high school. Many participants lived in households without basic amenities, such as a refrigerator, stove/electric pot, telephone, or television; only 13% had access to an individually owned car. The median monthly income from employment was ZAR 300 (~US$30), well below the poverty line. The majority of participants reported generating income through illegal means, including drug dealing and sex work. In the IDIs, participants described a setting of high poverty, with little opportunity for economic and social advancement. The relationship between poverty and methamphetamine use was perceived as cyclical, with individuals initiating use due in part to lack of future prospects, and in turn methamphetamine use undermining their economic and social well-being.

> “In this community, there are no work opportunities. You don't have people helping you to find work. Our youth, to find a quick fix, they'd rather sell drugs for tik.” (44 years old, 14 years of use)

> “It's breaking up our community. We have a very poor community, due to unemployment. Households don’t necessarily have an employed person. As I said, as a tik user, from my own personal experience, I stole from my Mother and I stole from friends. Other tik users will take from anyone. They'll take from anyone, where they can take.” (22 years old, 4 years of use)

3.2 Severity and perceptions of methamphetamine addiction

Table 2 describes the substance use characteristics of the sample. Frequency of methamphetamine use was high, with over half of participants reporting daily use. The majority purchased methamphetamine from “tik houses” (91%) and smoked it at their home or a friend's home (93%). The mean SDS score was well above the clinical cut-off of >4, and the vast majority of participants met criteria for amphetamine dependence. In the IDIs, participants recognized that methamphetamine was habit-forming. Almost all reported that they quickly progressed to regular use, as this man explains:

> “From my perspective, I didn't even notice that I was getting hooked. There was a time when I realized that I'm doing this thing daily, or every second day, and if I

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> don't have it, it seems as if the entire world is standing still." (33 years old, 13 years of use)

Overwhelmingly, participants were aware of the physical effects of methamphetamine, describing intense cravings between uses and difficulty quitting. Despite this, addiction was not typically viewed as a physical or medical condition, but rather a lack of will power or personal strength. One woman, who used daily and described intense craving, said:

> "You can control your habit, because the lolly [tik pipe] is an object that is not alive... You are a human being that is smoking and holding that lolly." (26 years old, 11 years of use)

Most acknowledged that their methamphetamine use caused problems with family, friends, and neighbors (82%) and interfered with daily responsibilities (73%). In the IDIs, participants spoke about how their methamphetamine use led to a cascade of social and financial problems, often culminating in criminal behaviors, as this man described:

> "I never thought I would be a shoplifter, robbing people's cell phones and bags. Because whenever you are craving, you just want to [be] smoking, otherwise your whole body becomes weak." (22 years old, 5 years of use)

This was consistent with our survey data: 44% had sold methamphetamine for money, 38% had been arrested on a drug charge, and 37% reported trading sex for money or methamphetamine.

3.3 Concurrent use of other substances

The majority of participants (89%) used other substances in the past 30 days (Table 2). Among participants who had used each substance, the average number of days of use was: 5.69 (SD=4.72) for alcohol to intoxication, 20.68 (SD=11.26) for marijuana, 20.44 (SD=11.45) for methaqualone, and 22.49 (SD=11.07) for heroin. In the IDIs, participants reported that they typically used these substance to help them "come down" after smoking methamphetamine.

Overall, participants spent an average of ZAR 2,078 (~US$200) on drugs and ZAR 109 (~US$10) on alcohol in the past 30 days. The mean ASI composite score for drugs was very high, while the ASI composite score for alcohol was relatively low.

3.4 Experience and perceptions of drug treatment

Only 10% of participants had ever received treatment for their methamphetamine use (3% in the past year). Among the 30 participants who completed IDIs, four reported personal experiences with drug treatment, and an additional nine spoke about someone they knew who had been in drug treatment. In all but two cases, the treatments were residential and located outside of Delft. Several participants described these treatment facilities as "rude" and "prison"- like, with regimented routines, such as very early wake-up times, and restrictions on personal freedom. Not a single participant knew someone who had successfully recovered from drug addiction. Almost universally, participants perceived available treatments as ineffective or even counter-productive, as described by this woman:

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> "I never saw a person who went to rehab and came back clean. They will always go back to drugs, and when they go back, they smoke even more. So I can't say what works." (23 years old, 8 years of use)

Participants also expressed a lack of understanding of what effective treatment involves, with several commenting that the study assessments felt like treatment. For many, this was their first opportunity to reflect upon their drug use and its impact on their life.

3.5 Motivations for drug cessation

The majority of participants wished that they could stop using methamphetamine and wanted treatment. When asked to describe their primary reason for treatment, 62% stated that they wanted to be "tik free" and improve their lives (e.g., "I don't want this life of addiction anymore," "I want to be the person I was before," "I want a better future"). In the IDIs, participants spoke passionately about their desire to stop using methamphetamine. They explained that they wanted to get their lives "back on track" and establish greater stability in terms of finding work, pursuing meaningful intimate relationships, and staying out of the criminal justice system. This man reflected on his desire to both recapture a better time from his past and seek a more positive future:

> "I want my life back. Even though I know I could never have my previous life, perhaps it would be better... I want to be the provider. Whenever my mother speaks, she always says that she wants her old child back. I can see how they're struggling, and I blame myself. I shouldn't have started with drugs." (33 years old, 2 years of use)

In the open-ended responses, relationships were a significant motivator for drug cessation: 25% described wanting to quit for the "sake of their children" and 12% for other family members (e.g., "I want my family back," "my marriage is suffering," "I can't take the heartache in my mother's eyes"). A minority noted specific negative consequences of drug use as primary motivators: employment problems (5%), financial stress (5%), health problems (4%), and criminal behaviors (2%).

3.6 Barriers to drug cessation

Despite the nearly universal desire to stop using methamphetamine, participants identified several barriers that they perceived as very difficult to overcome. In the IDIs, the primary barrier discussed was the social context, in which methamphetamine use was perceived as normative and readily available. Participants who tried to quit, either with or without the help of drug treatment services, explained how their drug-using peer networks contributed to relapse, because methamphetamine use was a central component of social interactions. As a result, many participants believed that the only way to quit would be to leave the community.

> "If you want to get help, don't stay in Delft, because it won't help. You will just go forwards and backwards all the time." (23 years old, 5 years of use) "If you think you can stop and still stay in Delft you will be lying to yourself." (22 years old, 4 years of use)

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In the clinical interview, the most commonly reported barriers were beliefs that treatment was not an option (36%), was not available to them (18%), and/or does not work (16%). Others noted the high cost of treatment (13%) and shame/fear (11%). A smaller proportion acknowledged denial of their addiction (7%), feeling self-control over their methamphetamine use (6%), and strong temptations to continue using (3%). Among the 26 participants who did not want treatment, the primary reasons were: feeling self-control over their drug use (69%), enjoyment of methamphetamine use (19%), belief that treatment does not work (12%), and denial of addiction (8%).

4. DISCUSSION

There is a paucity of research describing the addiction experiences and treatment histories of out-of-treatment methamphetamine users. The few studies that have examined this vulnerable population are concentrated in high-income countries (Kenny et al., 2011; MacMaster, 2013; Quinn et al., 2013), and the extent to which findings can be extrapolated to LMICs with newer ATS problems is unknown. Our prior qualitative work in this setting has demonstrated the ubiquity of methamphetamine use and the negative impacts associated with it, including adverse effects at the individual, interpersonal, and community levels (Watt et al., 2014). The current mixed-methods study yields valuable information on the burden of addiction and barriers to treatment among methamphetamine users that could help shape interventions to respond more effectively to growing methamphetamine problems in South Africa and other LMICs. Our findings also have important implications for HIV transmission, given the high rates of sexual risk behaviors among methamphetamine users. A previous analysis of the qualitative data from this sample revealed that many participants viewed sex trading as normative and a common means for acquiring methamphetamine, and that sex trading contributed to HIV risk via multiple partners and inconsistent condom use (Watt et al., 2015).

Although methamphetamine has only been readily available in Cape Town since the early 2000s, the average participant had been smoking the drug regularly for 7 years, with most reporting that progression to regular use occurred quickly. The vast majority met diagnostic criteria for dependence on methamphetamine, underscoring the high addictive potential of the drug (Barr et al., 2006; Darke et al., 2008; Gossop et al., 1992; Hall and Hando, 1994; Topp and Mattick, 1997b). The experiences of these participants reflect how quickly the use of smoked methamphetamine can intensify and spread within a community, particularly in the context of poverty, low educational attainment, and limited employment opportunities. While participants acknowledged the many adverse effects of methamphetamine use, they had little understanding of the addiction process or addiction as a chronic but treatable medical condition (Hartz et al., 2001; Newton et al., 2009). The severe social, economic, and legal consequences of methamphetamine addiction were striking. These findings highlight the need for structural interventions that target poverty through providing education, employment, and economic empowerment initiatives. Such interventions may help address some of the underlying drivers of methamphetamine use in impoverished and under-resourced communities.

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Although South Africa has one of the most developed drug treatment systems in Africa, the burden of unmet needs remains high (Seedat et al., 2008). In our sample, the large majority of participants wanted treatment for methamphetamine, but only 10% had ever received it. Even in high-income countries, only a small proportion of people with methamphetamine dependence ever seek drug treatment (Kenny et al., 2011; MacMaster, 2013). In response to the methamphetamine problem, the City of Cape Town has opened several government-supported outpatient clinics that provide evidence-based treatment for ATS disorders, including one located in the study community (Dada et al., 2014). However, few participants were aware of these services. Further, participants believed that available treatments were mostly ineffective and abusive, which may explain their limited use of these services. This was confirmed through our qualitative data, which revealed that participants had no personal knowledge of drug users benefitting from treatment, likely contributing to a sense of hopelessness. These negative beliefs about treatment are not unique to South Africa; studies from other countries reveal concerns about confidentiality and ineffectiveness as major barriers to methamphetamine treatment (Kenny et al., 2011; Wallace et al., 2009). While these beliefs may reflect misperceptions about available services, poor quality treatment does continue to exist in this region (Myers et al., 2014). There was also a strong belief that users must leave the community to recover, and that relapse is inevitable upon return. While relapse rates with methamphetamine are high (Brecht and Herbeck, 2014; McKetin et al., 2012), it appears that educating the community about addiction as a treatable medical condition, the availability of evidence-based treatments, what to expect during treatment, and the need for ongoing aftercare is necessary to address these misperceptions and encourage treatment seeking. In addition, our finding that methamphetamine users have negative beliefs about drug treatment suggests that there may be a mismatch between community needs and existing treatment services. Related to this, in order to stem the tide of methamphetamine use within low-income communities, the continued roll-out of evidence-based treatments should be accompanied by continuing care services that provide abstinence-specific support following treatment completion. This may be particularly critical for people living in communities where methamphetamine use is entrenched.

Despite limited use of treatment, most participants identified important motivators for drug cessation. The majority acknowledged that methamphetamine use had adversely affected their relationships and interfered with daily responsibilities, including their ability to earn a living. Many engaged in illegal behaviors to support their drug use and were subsequently involved in the criminal justice system. The desire to repair relationships, particularly with family and children, and to lead a “better life” were strong motivators. The willingness of participants to talk about their addiction and reflect upon its impact on their lives, often for the first time, suggests that motivational interviewing may be a helpful strategy to address barriers to treatment initiation (Smedslund et al., 2011). However, in a population that is not well-linked to the healthcare system and avoids discussing substance use with healthcare providers due to stigma (Sorsdahl et al., 2012), there is a critical need to develop and test community-based interventions to improve initial linkage to available drug treatment services. Given the effectiveness of our chain referral strategy to recruit methamphetamine users, most of whom had never sought treatment, such interventions might benefit from the power of peer influence. Future studies might test the effectiveness of respondent driven

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sampling to identify methamphetamine users and deliver education, with the goal of linking them to care. Peer-led interventions with hard-to-reach drug users have shown success in facilitating entry into and engagement with harm reduction services in other parts of the world and could be adapted for this population and context (Latkin et al., 2013).

This study had many notable strengths, including the largest sample of community-recruited methamphetamine users in South Africa to date; the combination of clinical interviews, self-report questionnaires, and urine drug screens to assess severity of methamphetamine use; and the use of mixed methods. Nevertheless, the data should be interpreted in light of some limitations. While respondent driven sampling was used, we cannot draw population-level inferences beyond the single township, so the extent to which results generalize to other South African communities or other parts of the world is unknown. Second, to minimize potential impersonation, current methamphetamine use was confirmed using an on-site drug screen. Since methamphetamine is only detectable in urine for 3-5 days, we may have excluded less frequent users. Finally, qualitative data was collected from participants in a single sitting, which may have limited opportunities to cover topics in depth. However, the qualitative interviews followed the quantitative survey and clinical interviews, which established rapport and stimulated self-reflection, likely contributing to more honest and insightful conversations.

In conclusion, this study is among the first to document the frequency, severity, and adverse consequences of methamphetamine use among community-recruited methamphetamine users in South Africa. Our findings have implications for how best to respond to methamphetamine use in this and other LMICs. The rapid progression to regular use and high burden of addiction in this sample highlights the need for evidence-based programs to prevent initiation of methamphetamine use. To improve the uptake of drug treatment among methamphetamine users, barriers to treatment initiation must be reduced, including the lack of awareness of treatment options, limited understanding of addiction as a treatable medical condition, and negative beliefs about treatment effectiveness. Interventions that actively seek out people who may benefit from treatment, build their readiness for change and motivation for treatment, and actively link them with evidence-based services are likely to address many of these barriers. These interventions should be accompanied by community education campaigns that raise awareness about treatment options, educate communities about evidence-based approaches to addiction treatment, and challenge misperceptions about treatment, as well as interventions that address the structural drivers of methamphetamine use in resource-poor communities (e.g., limited educational and employment opportunities). Finally, given the lack of support for recovery and abstinence in communities where methamphetamine use is normalized and treatment uptake is low, these interventions should include continuing care services to prevent relapse.

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HIGHLIGHTS

- Mixed methods were used to describe addiction experiences in methamphetamine users
- Most reported daily drug use and high addiction severity; few had sought treatment
- Both motivators for and barriers to treatment were prominent in the qualitative data
- Interventions must seek out users, foster motivation, and link them to treatment
- Community education about addiction may be important in eliminating barriers

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Table 1

Sample characteristics

	Full sample N=360	IDI sample N=30
Demographics		
Age, M (SD)	28.97 (7.30)	28.47 (6.70)
Race: Coloured vs. Black African, %	263 (73%)	20 (67%)
Gay/lesbian or bisexual	44 (12%)	3 (10%)
Currently married, %	50 (14%)	3 (10%)
Socioeconomic status		
Employed (part- or full-time), %	67 (19%)	4 (13%)
Completed secondary school, %	42 (12%)	4 (13%)
Living in shack or backyard dwelling, %	117 (33%)	7 (23%)
Monthly income from all sources, median	ZAR 1365	ZAR 1960
Sources of income		
Formal employment, %	58 (16%)	3 (10%)
Informal employment, %	239 (66%)	20 (67%)
Government or family support, %	233 (65%)	20 (67%)
Illegal means, %	258 (72%)	27 (90%)
Resources in the home		
Telephone, %	204 (57%)	21 (70%)
Refrigerator, %	184 (51%)	20 (67%)
Television, %	246 (68%)	24 (80%)
Electric stove/hotpot, %	240 (67%)	21 (70%)
Car, %	46 (13%)	8 (27%)
HIV risk behaviors, past 3 months		
Multiple sex partners, %	112 (31%)	10 (33%)
Unprotected intercourse, %	138 (38%)	11 (37%)
Sex while high on methamphetamine, %	182 (51%)	16 (53%)
Exchanged sex for money or methamphetamine, %	132 (37%)	10 (33%)
Injection drug use, %	7 (2%)	0 (0%)

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Table 2

Substance use characteristics

	Full sample N=360	IDI sample N=30
Methamphetamine use and addiction		
Years of regular use, M (SD)	7.06 (3.64)	7.17 (4.03)
Days of use in past 30 days, M (SD)	23.49 (8.90)	25 (7.97)
Current daily use, %	215 (60%)	20 (67%)
Use often out of control[1,3], %	225 (63%)	20 (69%)
Thought of missing a hit causes worry[1,3], %	198 (55%)	20 (69%)
Worried about tik use[1,3], %	273 (76%)	25 (86%)
Desire to stop using tik[1,3], %	319 (89%)	27 (93%)
Impossible to stop using tik[2,3], %	263 (73%)	27 (93%)
Severity of Dependence Score[3], M (SD)	10.68 (4.10)	12.14 (2.92)
ICD-10 amphetamine dependence[3], %	323 (90%)	27 (93%)
Illegal behaviors, lifetime		
Sold methamphetamine for money, %	157 (44%)	20 (67%)
Arrested on a drug charge, %	135 (38%)	13 (43%)
Other drug-related variables, past 30 days		
Any alcohol use to intoxication, %	134 (37%)	11 (37%)
Any marijuana use, %	278 (77%)	21 (70%)
Any methaqualone use, %	231 (64%)	19 (63%)
Any heroin use, %	37 (10%)	3 (10%)
ASI drug severity composite score, M (SD)	0.07 (0.13)	0.09 (0.13)
ASI alcohol severity composite score, M (SD)	0.40 (0.17)	0.42 (0.14)
Professional treatment for methamphetamine		
Ever received treatment, %	37 (10%)	4 (14%)
Received treatment in past year, %	9 (3%)	2 (7%)
Wants treatment currently, %	322 (90%)	25 (89%)

[1] Number/proportion reporting “almost always” or “often” for these SDS items.

[2] Number/proportion reporting “very difficult” or “impossible” for this SDS item.

[3] One woman did not complete the SDS or CIDI.