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Distinctive characteristics of methamphetamine users presenting at public clinics: Steep rise in South Carolina, United States, 2000–2005

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Abstract

Background—Illicit methamphetamine use has risen dramatically over the last decade. We sought to examine methamphetamine use among individuals presenting for drug treatment in South Carolina, USA, to assess trends over time, correlates of methamphetamine use, and the relationship between methamphetamine use and functional/behavioral problems.

Methods—Data from 2000–2005 were obtained from a state-wide network of substance abuse clinics. We examined time trends, and compared sociodemographic characteristics and problems with daily functioning (Axis IV and Axis V disorders) of methamphetamine users versus other drug users.

Results—Of 235,415 individuals presenting or being admitted to a clinic, 3,526 reported illicit methamphetamine use. The prevalence of methamphetamine use as a presenting problem increased dramatically across the six-year period, especially in the rural Upstate region (0.4% to 6.1%). In comparison to other drug users presenting or admitted to treatment during this same time period, methamphetamine users were more likely to be female, between 20–40 years old, and non-Hispanic white ethnicity. In addition, more methamphetamine users had occupational (49% vs. 43%, $p < 0.001$) or economic problems (41% vs. 35%, $p < 0.001$), and problems with their primary support group (58% vs. 54%, $p < 0.05$). However, the prevalence of Axis IV and Axis V problems were not statistically different between the two groups.

Conclusions—The rapid escalation of methamphetamine use in South Carolina and elsewhere highlights the need for longitudinal studies to better understand the etiology and characteristics associated with methamphetamine uptake and addiction, and to develop the knowledge base required for more effective prevention and treatment.

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Keywords

Addiction; epidemiology; methamphetamine; treatment admissions; prevalence; rural; South Carolina

1. Introduction

In recent decades, the illicit use of methamphetamine and other psychostimulant drugs has dramatically increased in the United States (Barr et al., 2006; Herman-Stahl et al., 2006, 2007). Oral preparations of methamphetamine are approved in the US and other countries for the treatment of attention-deficit hyperactivity disorder and short-term treatment of obesity (Kish, 2008). While oral forms of therapeutic amphetamine and methamphetamine produce effects in 20–60 minutes, illicit smokable forms produce a very rapid and intense “high” within a few seconds or minutes (Kish, 2008). Methamphetamine synthesis is relatively simple and inexpensive (Sulzer et al., 2005); therefore, meth is frequently produced in clandestine, dispersed laboratories (Wu et al., 2007). In a substantial addition to these numerous and widespread small-scale producers, industrial-scale criminal enterprises have produced tons of methamphetamine since the 1990s for consumption in the United States (Barr et al., 2006).

During the 1990s, the use of methamphetamine and other “club drugs” proliferated from certain sub-cultures (e.g., raves and dance clubs) into more diverse settings including college bars, parks, house parties, and concerts (Kelly et al., 2006). Methamphetamine prevalence assessments in the early 1990s showed that use of this drug in the US was largely confined to the western states (Gorman et al., 1995; Harris et al., 1993; Heischouer and Miller, 1991; Reback, 1997). However, more recent studies have shown methamphetamine use reaching comparable levels in other parts of the country (Freese et al., 2002; Guss, 2000; Semple et al., 2002), especially the south and midwest, with northeastern states lagging behind (Maxwell and Rutkowski, 2008). A nationally representative survey in 2003 showed that overall, 4.6% of Americans aged 18–25 had misused methamphetamine (Wu et al., 2007).

We clearly need accurate information on trends over time in the rate of methamphetamine use, in order to effectively plan for the allocation of clinical and public health resources. Researchers have found some heterogeneity in trend data using different sources (Gonzales et al., 2010). For example, the nationally representative National Survey on Drug Use (NSDUH) and Monitoring the Future (MTF) studies have found stable or decreasing methamphetamine use in the last decade (2008; Johnston et al., 2009). However, these surveys may miss a proportion of methamphetamine users who are homeless, incarcerated, or in publically funded or informal treatment settings. Several other recent national studies relying on other indicators (e.g. facility admissions, emergency room episodes) have concluded that methamphetamine use has continued to steadily increase from the early 1990s through 2005 (Gonzales et al., 2010; Rawson and Condon, 2007). Data from the Drug Abuse Warning Network (DAWN), derived from emergency departments and medical examiners/coroners, has shown that from 1992 to 2005, methamphetamine use as a percentage of drug abuse treatment admissions increased from 1% to 9% nationally. During this time, the sex ratio remained fairly constant at approximately 55% male; however, the ethnic composition of methamphetamine users appeared to change, with a decrease from 91% non-Hispanic white to 71%, and an increase from 9% to 18% Hispanic ethnicity (Maxwell and Rutkowski, 2008). Comparing representative states in different regions of the country, striking regional prevalence differences have been shown, but despite the varying rates in 1992, similar magnitude increases were seen across different states in the prevalence of methamphetamine use. For example, methamphetamine admissions per 100,000

population increased in Hawaii from 33 to 244; in California from 49 to 218; in Georgia from 2 to 77; and in Maine from 1.5 to 7 (Maxwell and Rutkowski, 2008).

The extraordinary rise in methamphetamine use in the United States led to a series of regulatory efforts to prevent methamphetamine misuse, including laws designed to make it more difficult to obtain ephedrine and pseudoephedrine, key ingredients commonly used to manufacture methamphetamine. Regulations implemented in the US and Canada from 1989 to 2006 targeted forms used by both large-scale and small-scale producers (Cunningham et al., 2009; Maxwell and Rutkowski, 2008), however, studies have not shown a clear or consistent impact of these regulations on methamphetamine purity or methamphetamine-related hospital admissions (Callaghan et al., 2009; Cunningham et al., 2009). In an encouraging sign, indicators of methamphetamine use, including national surveys as well as law enforcement data, emergency room data, and treatment admissions, have shown a possible stabilization of methamphetamine use rates in many parts of the country, although rates remain high (2008; Burke et al., 2008; Embry et al., 2009; Gonzales et al., 2010; Maxwell and Rutkowski, 2008; SCDAODAS, 2008).

In South Carolina, the Department of Alcohol and Other Drug Abuse Services (DAODAS) maintains a network of clinics to serve substance abusers. DAODAS records show methamphetamine admissions (in which methamphetamine use was the patient's primary, secondary, or tertiary problem) increased across the state from 126 patients in the year 2000 to 1,066 patients in 2007 (SCDAODAS, 2008). These numbers corresponded to an increase from 0.7% to 5.8% of all DAODAS admissions. While the use of methamphetamine still represents only a limited proportion of all drug admissions, the rapidly rising prevalence indicates a need for increased attention to this problem, both for better understanding characteristics of methamphetamine users, and developing knowledge of risk factors for methamphetamine use that can inform the development of new prevention strategies.

The goal of the current study was to assess the change over time in methamphetamine use among individuals presenting or being admitted for illicit drug use in South Carolina, and to assess regional differences across South Carolina. In addition, we sought to assess sociodemographic and other variables as correlates of methamphetamine use, as well as the relationship between methamphetamine use and functional/behavioral problems, including specific problems with daily life and a global assessment of functioning.

2. Methods

2.1. Study population and source of data

We used data collected by DAODAS, which coordinates a state-wide network of prevention, intervention, and treatment services, with county-level clinics covering all 46 counties in South Carolina. Data available for this analysis were obtained from clients at two visit types: when they first presented for possible treatment at a clinic, and more extensive data from a subset of these clients who were admitted into a drug treatment program. Clients may be admitted for inpatient services at rehabilitation facilities, halfway houses, or hospitals.

A two-page data form (Preliminary Client Record Form, PCRF) is completed for new clients initially presenting at a clinic, and collects data on age, gender, race/ethnicity, marital status, and pregnancy status. All clients identify a presenting problem, and specify one problem on a 42-item list including specific illicit drugs, tobacco smoking, alcohol, nicotine, family problems, legal problems, financial problems, sexual abuse, physical abuse, and gambling. For clients who are admitted to a treatment or counseling program, a three-page form (Admission form) is completed, collecting self-reported data including education, employment, income, living arrangements, criminal arrests, recent negative behavioral or

emotional sequelae of alcohol or drug use, *counselor assessment* of primary, secondary, and tertiary problems (i.e., specific illicit drugs, nicotine, alcohol, physical abuse, legal problems, etc.), as well as psychosocial and environmental problems (Axis IV) and global assessment of functioning (Axis V). No data are collected during treatment/counseling visits; however a new presentation or admissions form may be completed if a client returns after completing and/or exiting a program.

We obtained a de-identified dataset including data from all PCRF and Admission forms from January 2000 through December 2005. Each individual was assigned an anonymous identification number, allowing us to track multiple presentations and/or admissions over time for individuals. This research was approved by the Institutional Review Board of the Medical University of South Carolina. The individuals available for our analysis therefore were the complete set of South Carolina DAODAS clients during this time period. Clients may have presented to a DAODAS clinic and/or been admitted for any problem on the 42-item list. Some clients (e.g., individuals arrested for driving under the influence [DUI]) presented at a clinic after being required by a court to complete a pre-trial intervention for substance use treatment.

2.2. Regional analyses and year-specific analyses

The state of South Carolina is characterized by substantial heterogeneity between regions with respect to median levels of income and education, access to health care, and other factors. Therefore, in addition to overall state-wide analyses, we conducted analyses focusing on two representative areas of South Carolina: one urban and one rural. For the urban area, we chose the three counties (Charleston, Berkeley, and Dorchester) surrounding the coastal city of Charleston. This area is characterized by rapid population growth through immigration from other regions of the US, and high median income and education, but significant health and income disparities. For the rural area, we chose the “Upstate” region, comprising seven counties (Anderson, Cherokee, Greenville, Oconee, Pickens, Spartanburg, and Union) in the northwestern part of South Carolina. This rural area is characterized by lower levels of education, higher rates of poverty, and lower levels of immigration in comparison to the Charleston region. We compared methamphetamine use among DAODAS clients in these two areas, as well as to the remainder of the counties in South Carolina, and to South Carolina overall.

We analyzed methamphetamine use within each year from 2000–2005 to examine time trends. Within each year, if an individual had more than one record in the dataset, we summarized across all of the individual’s visits to determine whether methamphetamine use was recorded during that year as a presenting, primary, secondary, or tertiary problem. We defined “any methamphetamine use” by summarizing across all four problem categories.

2.3. Construction of substance use groups

To compare methamphetamine users to other illicit drug users, we constructed two mutually exclusive substance use groups. In defining *methamphetamine users*, we chose to adopt the most sensitive possible definition (“any methamphetamine use”), including methamphetamine use as a presenting, primary, secondary, or tertiary problem. In defining the comparison group, *non-methamphetamine illicit drug users*, we included individuals who had no methamphetamine use recorded, and had another illicit substance listed as a presenting, primary, secondary, or tertiary problem.

In region-specific analyses, we used three different definitions of methamphetamine use, with some overlap between definitions, to provide a more detailed characterization of the pattern and context of methamphetamine use. The first definition only included individuals

who reported methamphetamine as their “*presenting problem*” when first presenting to the DAODAS clinic. The second group only included individuals whose counselor recorded methamphetamine as the “*primary problem*” at the admission visit. The third group included all individuals with *any methamphetamine use*, taken from the presenting, primary, secondary, or tertiary problems recorded.

2.4. Axis IV and Axis V data

At the admission visit, the counselor recorded Axis IV and Axis V assessments. These assessments are part of the standard multi-axial diagnostic system for mental disorders used by mental health professionals in the United States, and are based on the classifications published in the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV). In our study, the *Axis IV* assessment (psychosocial and environmental problems) consisted of yes/no indications for specific problems within nine realms: 1) problems with primary support group, 2) problems related to the social environment, 3) educational problems, 4) occupational problems, 5) housing problems, 6) economic problems, 7) problems with access to health care services, 8) problems related to interaction with legal system/crime, 9) other psychosocial and environmental problems. For example, within the realm of “housing problems”, specific problems were homelessness, inadequate housing, unsafe neighborhood, discord with neighbors or landlord, or “other”. The *Axis V* global assessment of functioning scale was specified on a scale of 1–100, with a higher score indicating better functioning.

2.5. Statistical analyses

In preliminary analyses, we used the chi-square test to assess differences between substance use groups in self-reported sociodemographic characteristics, as well as counselor assessments of psychosocial and environmental problems (Axis IV) and global assessment of functioning (Axis V). We analyzed Axis IV items by counting the number of realms with a problem indicated, as well as by categorizing individuals by any vs. no Axis IV problems, and finally in realm-specific analyses with individuals categorized by any vs. no problems within each realm. We analyzed Axis V data based on a cutoff point of 40, considering individuals scoring below this level to be functioning poorly. To evaluate trends over time within each region of South Carolina, we used pair-wise chi-square tests to compare the proportion of clients reporting methamphetamine use for each year in comparison to the previous year. In addition, we evaluated differences in methamphetamine trajectories between regions by fitting a term for the (region $\times$ year) interaction in logistic models of methamphetamine use. In these analyses, we fit a three-level indicator variable for region, with the reference group coded as counties other than the Upstate and Charleston areas. Finally, we fit logistic regression models to evaluate individual-level correlates of methamphetamine use in a multivariable context. SAS statistical software (SAS Inc., Cary NC) was used for all analyses.

3. Results

3.1. Characteristics of methamphetamine use

Between January 2000 and December 2005, a total of 233,737 individuals presented to a South Carolina DAODAS clinic and completed the initial evaluation (PCRF). Twenty-one individuals made this initial presentation twice during the study time period, leading to a total number of 233,758 PCRF records. Examining the first (or only) PCRF record for each individual, we found that 102,484 (44.0%) sought help for alcohol, 340 (0.15%) for nicotine, 83,607 (35.8%) for illicit drugs, and 46,942 (20.1%) for other problems. Of these 233,737 individuals presenting to a DAODAS clinic, at least 187,404 (80.2%) were admitted into a DAODAS program based on the presence of data for “primary problem” (assessed after

admission). However, complete data from the admission visits (including sociodemographic variables and Axis IV/Axis V assessments) were available for only 144,164 individuals. 4,359 individuals had more than one admission into a new treatment program during the time period, generating a total of 9,984 new admission visits among them. The maximum number of new admission visits during the time period was nine visits, attained by four people. Therefore, we had a total of 149,789 admissions visits. Some individuals appeared in the Admissions dataset, but did not have PCRF data available; in total, information was available for 235,670 individuals. 1712 individuals (0.90%) were judged at least once to have methamphetamine use as a primary problem, while another 1018 (0.43%) had methamphetamine as a secondary or tertiary problem at least once. Overall, looking across all PCRF and Admissions data, 3526 out of 235,415 individuals (1.50%) were found to misuse methamphetamine.

Looking across the 6-year time span, we observed a substantial increase in methamphetamine use (Table 1) with methamphetamine use as the presenting problem increasing by a full order of magnitude, from 0.20% to 2.27% ($p<0.001$). Furthermore, these increases varied by region of South Carolina. In analyses of methamphetamine as the presenting problem, we observed an enormous fourteen-fold increase in the Upstate region, with statistically significant increases each year; but only five-fold increases in the Charleston tri-county area and in the remainder of the state (Table 1). We observed statistically significant increases in the Upstate each year for methamphetamine as a presenting problem. In the Charleston region and the rest of the state, however, we did not observe significant increases each year. By 2005, 9% of DAODAS clients in the Upstate had methamphetamine use listed as a problem, versus only 1% in the Charleston area and the rest of the state. We found a highly significant interaction between region and year, with the Upstate region showing a steeper trajectory than the reference group (Region 3, other SC counties) ($p<0.0001$), but no significant difference between the trajectory slope in the Charleston region and the reference group.

Our results revealed that methamphetamine users had a distinct sociodemographic profile compared to other drug users in the DAODAS population (Table 2). In particular, methamphetamine users were much more likely to be female, between 20–40 years old, and non-Hispanic white. Analyses of education, income, homeless status, and living with spouse showed that methamphetamine users were slightly less educated than other drug users.

In multivariable logistic regression models, we found age, gender, and ethnicity all to be independent correlates of methamphetamine use in relation to other illicit drugs (Table 3). Individuals aged 20–40 were approximately twice as likely to be methamphetamine users in comparison to other age groups; in addition, women were 30% more likely than men to use methamphetamine. Finally, non-Hispanic Whites were approximately twenty times more likely than African Americans to use methamphetamine, and approximately three times more likely than Hispanics and other ethnic groups. No interactions were seen between age, gender, and ethnicity.

3.2. Axis IV and Axis V

Not surprisingly, many individuals seeking help at DAODAS clinics reported numerous problems with daily living (Table 4). Interestingly, methamphetamine users (8.23%) were more likely to report “no problem” relative to other drug users (6.00%) ($p<0.05$). However, among those individuals reporting at least one problem, there seemed to be a shift towards a larger number of problems among methamphetamine users relative to other drug users. Methamphetamine users were significantly more likely than other drug users to have problems with primary support group, occupational problems, and economic problems, but less likely to have education-related problems. Finally, we observed similar proportions of

methamphetamine users (18.6%) and other drug users (20.2%) with low global assessments of functioning (Axis V).

4. Discussion

In this study, we found that presentations and admissions with methamphetamine use increased strikingly in South Carolina over the 6-year period from 2000 through 2005. In addition, we observed conspicuous differences by region of South Carolina, with much higher rates of methamphetamine use among clients in the rural region ("Upstate") as compared to the Charleston tri-county metropolitan area. This finding reflects the sociodemographic profile of methamphetamine users in South Carolina, and suggests that the population of methamphetamine users in South Carolina is predominantly composed of lower-income, lower-education rural users, likely using locally produced methamphetamine, rather than higher-income urban users who may use methamphetamine as a club drug, and more typically use crystal methamphetamine from larger-scale producers in the Western US or Mexico. Indeed, in conducting a recent research study, we encountered difficulties in recruiting methamphetamine users in the urban region of Charleston, and in order to meet our goals, we moved recruitment from the Charleston area to the rural Upstate region.

Results from the National Survey on Drug Use and Health (NSDUH) comparing urban and rural counties are consistent with our finding; analyses based on data from 2002–2004 showed that the prevalence of methamphetamine use in the US increased steadily in a progression from urban to rural counties (4 categories) in youth and young adults (Gfroerer et al., 2007; Lambert et al., 2008). Overall, rural youth and young adults were 1.5 to 2 times more likely to use methamphetamine than their urban counterparts; the rates of methamphetamine use were approximately 1% to 3%, depending on age group and rurality (Lambert et al., 2008). The association between rural residence and increased methamphetamine use appears to be unique to methamphetamine: other illicit substances are either more likely to be consumed in urban areas, or do not show a difference between urban and rural areas. Increased methamphetamine use in rural areas may be due to a perceived lack of alternative activities for youth and young adults (Zule et al., 2007), as well as out-migration of lower-risk individuals to urban areas (Lambert et al., 2008).

Several researchers have previously conducted analyses to identify factors related to methamphetamine use in adolescents; however, to our knowledge, this study is only the second to examine correlates of methamphetamine use among adults. Among adults, a large study using NSDUH data previously showed that methamphetamine use was very rare among older adults, with an overall prevalence of 0.01%, but higher prevalence among individuals who were unmarried or with major depression (Blazer and Wu, 2009). In our study, we found a significantly tightened range of ages among methamphetamine users relative to other drug users, with fewer methamphetamine users younger than 20 or older than 40. To our knowledge, previous studies have not focused on this direct comparison. Future research is warranted to identify the factors driving the age differences between these drug using populations. Consistent with the findings from the present study, several previous studies found that methamphetamine use was more likely in females than males (Embry et al., 2009; Gonzales et al., 2008; Miura et al., 2006; Russell et al., 2008).

Studies of the neurobiology of methamphetamine have suggested that chronic abuse can lead to neural damage and cognitive impairment (Barr et al., 2006). The hypothesized neurotoxic effects of methamphetamine use include reduced dopamine levels (Wilson et al., 1996), reduced levels of the dopamine transporter (McCann et al., 1998; Sekine et al., 2001; Volkow et al., 2001a; Volkow et al., 2001b; Volkow et al., 2001c), and reduced levels of the serotonin transporter (Sekine et al., 2006). These observations provide a context for our

findings related to problems with daily living and the global assessment of functioning. Our analysis of psychosocial and environmental problems (Axis IV) provides evidence of significant impairment in methamphetamine users. Although slightly fewer methamphetamine users had “any Axis IV problem” compared to the other drug users, an examination of specific problems revealed that those methamphetamine users who did report at least one problem, tended to report more total problems than other drug users. Overall, our results document a large number of problems with daily living experienced by methamphetamine users who present for treatment at community-based clinics.

We are aware of several limitations to this study. First, with regard to generalizability, the population studied was composed of individuals seeking treatment at the publically-funded DAODAS clinics. We therefore may not be able to generalize the observed results to methamphetamine users who are not seeking treatment, or who seek treatment elsewhere. Second, with regard to assessments of causality, the cross-sectional structure of the data prevented us from making causal assessments of factors that predicted the initiation of methamphetamine use. Rather, we were limited to assessing correlates of prevalent methamphetamine use in an analysis conducted at a single timepoint. Finally, the available data did not include a comprehensive assessment of psychosocial, behavioral, and clinical factors that would have been of interest in the analysis. Nevertheless, the study has considerable strengths, including a large sample size and several years of data, and we were able to control for a number of sociodemographic factors in our analysis.

In conclusion, in this sample of individuals seeking treatment at one of the South Carolina state drug and alcohol agency clinics from 2000 through 2005, we identified approximately an order of magnitude increase from 2000 to 2005 in the percent of methamphetamine users. As this analysis of methamphetamine use is based on the population of individuals seen at community-based treatment clinics, the number of methamphetamine users in the community is likely to be higher than the number we report, since only those who presented or who were enrolled in a state agency counseling/treatment program are included in this study. In addition, we observed striking geographical variation, with much higher rates in a rural region of South Carolina in comparison to the Charleston metropolitan area. Methamphetamine users experienced numerous problems with daily living, and were more likely to be white, female, and clustered in the ages from 20–40. The rapid escalation of methamphetamine use in South Carolina and around the United States in the last ten years highlights the need to understand characteristics of users, and the personal and social burden imposed by this highly addictive drug. To more clearly understand the etiology of methamphetamine use and dependence, longitudinal clinical and epidemiologic studies should focus on high-risk populations to identify psychodynamic, social, and neurologic parameters that can serve as risk factors identifying individuals at high risk of methamphetamine addiction.

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Number of individuals reporting methamphetamine use each year at Department of Alcohol and Other Drug Abuse Services (DAODAS) public clinics in South Carolina.

Table 1

	Charleston tri-county area	Upstate	Rest of South Carolina	Total (South Carolina overall)
Presenting problem [/]				
2000	9/6989 (0.13%)	48/11806 (0.41%)	30/24055 (0.12%)	87/42850 (0.20%)
2001	7/6595 (0.11%)	74/11675 (0.63%)*	45/24652 (0.18%)	126/42922 (0.29%)**
2002	5/4911 (0.10%)	118/10540 (1.12%)*	40/22575 (0.18%)	163/38026 (0.43%)*
2003	13/4974 (0.26%)*	162/10268 (1.58%)*	85/21300 (0.40%)*	260/36542 (0.71%)*
2004	34/5333 (0.64%)*	305/10204 (2.99%)*	113/21325 (0.53%)*	452/36862 (1.23%)*
2005	37/5197 (0.71%)*	660/10835 (6.09%)*	151/21335 (0.71%)*	848/37367 (2.27%)*
Primary problem [/]				
2000	8/4971 (0.16%)	48/10298 (0.47%)	22/19179 (0.11%)	78/34448 (0.23%)
2001	5/4940 (0.10%)	66/10329 (0.64%)	38/19487 (0.20%)*	109/34756 (0.31%)*
2002	6/3779 (0.16%)	119/9067 (1.31%)*	37/17849 (0.21%)	162/30695 (0.53%)*
2003	14/3962 (0.35%)*	165/8727 (1.89%)*	62/16818 (0.37%)*	241/29507 (0.82%)*
2004	29/4328 (0.67%)*	237/8602 (2.76%)*	120/16862 (0.71%)*	386/29792 (1.30%)*
2005	38/4265 (0.89%)*	531/8896 (5.97%)*	156/16578 (0.94%)*	725/29739 (2.44%)*
Any methamphetamine use reported [/]				
2000	19/7008 (0.27%)*	123/11810 (1.04%)*	77/24085 (0.32%)*	219/42903 (0.51%)*
2001	18/6603 (0.27%)*	168/11678 (1.44%)*	90/24673 (0.36%)*	276/42954 (0.64%)*
2002	25/4916 (0.51%)*	243/10551 (2.30%)*	109/22625 (0.48%)*	377/38092 (0.99%)*
2003	33/4978 (0.66%)*	351/10273 (3.42%)*	162/21351 (0.76%)*	546/36602 (1.49%)*
2004	52/5334 (0.97%)*	519/10209 (5.08%)*	221/21335 (1.04%)*	792/36878 (2.15%)*
2005	63/5198 (1.21%)*	976/10835 (9.01%)*	258/21335 (1.21%)*	1297/37368 (3.47%)*

[/] Presenting problem: recorded at initial visit, whether or not client is admitted to a treatment/counseling program. Primary problem: assessed by counselor for clients who are admitted to a program. "Any methamphetamine use" may reflect presenting, primary, secondary, or tertiary problem.

- * Chi-square p-value < 0.05 showing a change from the previous year, within region
- ** Chi-square p-value < 0.01 showing a change from the previous year, within region
- *** Chi-square p-value < 0.001 showing a change from the previous year, within region

Table 2

Characteristics of drug users presenting to clinics in South Carolina, comparing methamphetamine users (any use reported) to other drug users, 2000–2005.

	Methamphetamine users	Other drug users
Age **		
<i>Less than 10</i>	1 (0.05%)	93 (0.11%)
<i>10–14</i>	19 (1.01%)	3004 (3.61%)
<i>15–19</i>	261 (13.88%)	16458 (19.76%)
<i>20–29</i>	768 (40.83%)	23065 (27.70%)
<i>30–39</i>	587 (31.21%)	23190 (27.85%)
<i>40–49</i>	214 (11.38%)	14793 (17.76%)
<i>50–59</i>	29 (1.54%)	2412 (2.90%)
<i>60–69</i>	2 (0.11%)	235 (0.28%)
<i>70–79</i>	0 (0.00%)	22 (0.03%)
<i>80+</i>	0 (0.00%)	5 (0.01%)
<i>Total</i>	1881	83277
Gender (male) **	1106/1881 (58.80%)	55965/83277 (67.20%)
Education *		
<i>Less than high school</i>	780 (48.30%)	34762 (49.59%)
<i>High school</i>	612 (37.89%)	23726 (33.85%)
<i>More than high school</i>	223 (13.81%)	11610 (16.56%)
<i>Total</i>	1615	70098
Client's annual income *		
<i>\$0</i>	858 (56.60%)	35434 (55.46%)
<i>\$1 – \$14,999</i>	421 (27.77%)	19923 (31.19%)
<i>\$15,000 – \$29,999</i>	189 (12.47%)	6731 (10.54%)
<i>\$30,000 – \$49,999</i>	40 (2.64%)	1315 (2.06%)
<i>\$50,000 +</i>	8 (0.53%)	483 (0.76%)
<i>Total</i>	1516	63886
Ethnicity **		
<i>Non-hispanic White</i>	1781 (94.68%)	45313 (54.41%)
<i>Non-hispanic Black</i>	71 (3.77%)	36204 (43.47%)
<i>Hispanic</i>	14 (0.74%)	895 (1.07%)
<i>Other</i>	15 (0.80%)	865 (1.04%)
<i>Total</i>	1881	83277
Living arrangements *		
<i>Homeless</i>	65 (4.02%)	2836 (4.04%)
<i>Institutional</i>	36 (2.23%)	2380 (3.39%)
<i>Independent/living with parents</i>	1516 (93.75%)	64997 (92.57%)

	Methamphetamine users	Other drug users
<i>Total</i>	1617	70213
Married (limited to age 18+)	391/1719 (22.75%)	14039/68258 (20.57%)

*
p<0.05, comparing “other drug users” to methamphetamine users

**
p<0.001, comparing “other drug users” to methamphetamine users

Table 3

Characteristics predicting methamphetamine use among clients presenting to clinics in South Carolina, 2000–2005.

	Unadjusted odds ratio (95% CI)	Adjusted odds ratio (95% CI)
Age		
<20 [*]	0.48 (0.41, 0.55)	0.47 (0.40, 0.55)
20–39 (<i>reference</i>)	1.0	1.0
40+ [*]	0.45 (0.38, 0.52)	0.54 (0.47, 0.63)
Gender (female) [*]	1.5 (1.4, 1.7)	1.3 (1.2, 1.4)
Ethnicity		
<i>Non-Hispanic White (reference)</i>	1.0	1.0
<i>African American</i> [*]	0.052 (0.040, 0.067)	0.054 (0.041, 0.070)
<i>Hispanic</i> [*]	0.34 (0.18, 0.64)	0.34 (0.18, 0.64)
<i>Other</i> [*]	0.41 (0.22, 0.74)	0.43 (0.24, 0.78)

^{*}p<0.05 in adjusted multivariate logistic model

Education coded with 3 levels (less than high school; high school; more than high school). Income coded with 5 levels (\$0, \$1–\$1249, \$1250–\$2499, \$2500–\$4166, \$4167+ per month).

Table 4

Axis IV and Axis V disorders, comparing methamphetamine users (any use reported) to other drug users presenting to clinics in South Carolina, 2000–2005.

	Methamphetamine users N=1617	Other drug users N=70129
AXIS IV Disorders		
Any problem *	1484 (91.77%)	65895 (93.96%)
Number of problems **		
<i>No problems</i>	133 (8.23%)	4234 (6.04%)
<i>1–3 problems</i>	799 (49.41%)	37985 (54.17%)
<i>4–6 problems</i>	583 (36.05%)	24590 (35.07%)
<i>7–9 problems</i>	102 (6.31%)	3315 (4.73%)
Specific AXIS IV subfields		
<i>No problems</i> **	133 (8.23%)	4332 (6.00%)
<i>Problems w/primary support group</i> *	940 (58.13%)	38046 (54.25%)
<i>Problems related to the social environment</i>	861 (53.25%)	37511 (53.49%)
<i>Education</i> *	381 (23.56%)	18409 (26.25%)
<i>Occupational problems</i> **	797 (49.29%)	30394 (43.34%)
<i>Housing problems</i>	265 (16.39%)	11748 (16.75%)
<i>Economic problems</i> **	657 (40.63%)	24864 (35.45%)
<i>Problems w/access to health care services</i>	265 (16.39%)	11234 (16.02%)
<i>Problems related to interaction w/legal system/crime</i>	919 (56.83%)	38453 (54.83%)
<i>Other psychosocial and environmental problems</i>	147 (9.09%)	6618 (9.44%)
AXIS V (Global Assessment of Functioning)		
AXIS V < 40	301 (18.61%)	14192 (20.22%)

* p<0.05, comparing “other drug users” to methamphetamine users

** p<0.001, comparing “other drug users” to methamphetamine users