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Cocaine Versus Methamphetamine Users in the Emergency Department: How Do They Differ?

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Abstract

Background: Stimulant use disorder is a worldwide problem. Users present to the ED for diverse reasons including trauma, chest and abdominal pain, altered mental status, stroke, suicidality, and skin infection.

Objective: To determine what differences exist between stimulant users.

Methods: We compared Stimulant users presenting to an urban ED Level I trauma center over a 3-month period with toxicology screens positive for cocaine and/or methamphetamine.

Results: Of 718 subjects (465 male, 253 female), 610 (85%) were positive for methamphetamine, 80 (11%) cocaine, and 28 (4%) both. Significant racial differences existed, but not for age, gender, and insurance status. Ethanol co-ingestion was higher for cocaine users, otherwise no significant differences were detected for laboratory values and maximum heart rate, and systolic/diastolic blood pressure. For presenting complaint, the proportion of cocaine users was higher for trauma and lower for altered level of consciousness than other subgroups. There was no significant difference in proportion of subjects admitted to the hospital, but cocaine users had a higher rate of elopement and were placed on 72-h psychiatric holds and/or transferred to inpatient psychiatric facilities at a significantly lower rate than the other subgroups.

Conclusion: Cocaine users were more likely to present with trauma, elope from the ED, and have alcohol intoxication. Methamphetamine users were more likely to be Caucasian, have altered level of consciousness, be placed on psychiatric holds, or transferred to inpatient psychiatric facilities. These differences may be explained by regional preferences, socialization, personality types, and the unique neuropsychopharmacological differences between cocaine and methamphetamine.

Keywords: Cocaine; Methamphetamine; Amphetamine; Emergency; Trauma; Stimulant

Introduction

Cocaine and amphetamine use is a major worldwide problem, with over 19 million estimated cocaine users and 33 million methamphetamine users [1]. From the most recent United States Substance Abuse and Mental Health Services Administration national survey on drug use and health of 2015, roughly 2 million people age 12 or older were regular users of cocaine, and this trend has remained steady over the past decade [2]. In contrast, approximately 897,000 people age 12 or older were regular users of methamphetamine, which represents a substantial increase from 569,000 the prior year [2]. In 1989 Derlet and associates were the first to report their experience with patients using cocaine and methamphetamine who presented to the Emergency Department (ED) and found these agents caused acute cardiovascular, psychiatric, toxicological, neurologic, and traumatic disorders [3,4]. The United States Drug Abuse Warning Network (DAWN) began monitoring cocaine and methamphetamine-associated ED visits in 1995. From the last published report, there were 505,224 cocaine and 102,961 methamphetamine-associated ED visits in 2011 [5]. Cocaine-associated ED visits remained steady while methamphetamine-associated ED visits nearly doubled from 2007 to 2011 [5].

Stimulant use disorder is a new diagnosis appearing in the most recent version of the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5) and replaces the prior fourth edition diagnoses of stimulant abuse and stimulant dependence [6,7]. Stimulant use disorder captures a wide range of problems associated with the use of cocaine and methamphetamine involving impaired control, social impairment, risky use, and pharmacological indicators of tolerance and withdrawal [6]. Despite falling under the same diagnosis of stimulant use disorder, cocaine and methamphetamine users have been shown to have significant differences with regard to demographics, region, and utilization of hospital resources, as well as biological and psychosocial risk factors [1-5]. To date, there have been no studies specifically comparing cocaine and methamphetamine users presenting to the ED for acute medical, traumatic, and psychiatric issues. Our initial hypothesis was that these patients were similar with regard to demographics and resource utilization. In this study, we sought to determine if salient differences existed between these groups, and if so, explore possible explanations.

Methods

This study covered a three-month period from May to August 2016 at an urban, academic Level I trauma center with an annual ED census of 80,000 visits. This ED serves a population of 500,000 within its city limits and 1.6 million in its surrounding area. The hospital also serves as a tertiary referral center for Northern and Central California and as the *de facto* public hospital for the city, providing care for a significant number of uninsured and/or dispossessed patients as well as those brought in by law enforcement from the street, jails, prisons, and detention centers. Patients presenting to the ED with cocaine and methamphetamine-positive urine toxicology screens were identified in a retrospective review of the electronic medical record, and vital signs, demographics, mode of arrival, presenting complaint, disposition, and laboratory values were accessed. Disposition categories included elopement, which refers to leaving the ED without informing a member of the treatment team or against medical advice. Data were recorded on a standardized form by the study authors. Inter-rater reliability was not evaluated. Qualitative urine toxicology screens were performed using a UniCel DxC 800 Synchron (Beckman Coulter Inc., Brea, California) to detect cocaine and methamphetamine. Data were entered into Excel (version 14, Microsoft, Redmond, Washington) and analyzed with Stata (version 12, StataCorp, College Station, Texas). Statistical analysis was performed using chi-square, Student's t-test, and Analysis of Variance (ANOVA). Results are reported as mean ± Standard Deviation (SD) unless otherwise stated. Statistical significance is assumed at a level $P \leq 0.05$. This study was approved by our medical system's institutional review board.

Results

For the three-month period in 2016, a total of 610 subjects were identified as methamphetamine-positive, 80 as cocaine positive, and 28 as cocaine/methamphetamine positive out of 3,013 total urine toxicology screens and 20,203 ED patient visits. Differences in demographics, race, insurance, mode of arrival, and disposition are detailed in Table 1. The prevalence of methamphetamine use was over 7 times higher than for cocaine. With respect to racial differences, a higher proportion of Caucasians used methamphetamine. No significant differences in insurance status or mode of arrival were found. For disposition from the ED, methamphetamine users were placed on 72-h psychiatric holds or transferred to inpatient psychiatric facilities at a much higher rate than cocaine users (35.6% vs. 5%). Cocaine users eloped from the ED at a significantly higher rate than methamphetamine users (15% vs. 3.8%).

	Cocaine n (%)	Meth n (%)	Cocaine/Meth n (%)	P
Positive tox screen	80/3013 (2.7)	610/3013 (20.3)	28/3013 (0.9)	<0.0001
Age ± SD	43.0 ± 17.0	41.7 ± 12.4	39.4 ± 15.9	0.4†
Male	56 (70.0)	387 (63.4)	22 (78.6)	0.2
Female	24 (30.0)	223 (36.6)	6 (21.4)	0.2
Race				
Caucasian	16 (20.0)	436 (71.4)	15 (53.7)	<0.00001
Hispanic	28 (35.0)	102 (16.7)	5 (17.8)	0.0004
African American	31 (38.8)	40 (6.6)	6 (21.4)	<0.00001
Asian/Pacific Islander	5 (6.2)	31 (5.1)	2 (7.1)	0.8
Native American	0	1 (0.2)	0	0.9
Insurance				
None/Self-pay	19 (23.8)	165 (27.1)	7 (25.0)	0.8
Medical/Medicare	55 (68.7)	378 (62.0)	18 (64.3)	0.5
HMO/MCO	6 (7.5)	67 (10.9)	3 (10.7)	0.6
Mode of Arrival				
Ambulance	44 (55.0)	319 (52.3)	13 (46.4)	0.7
Ambulatory	16 (20.0)	148 (24.3)	8 (28.6)	0.6
Police	12 (17.5)	116 (19.0)	5 (17.9)	0.7
Transfer	8 (7.5)	27 (4.4)	2 (7.1)	0.1
Disposition				
Admit	41 (51.2)	253 (41.5)	10 (35.7)	0.2

Discharge	21 (26.3)	110 (18.0)	8 (28.6)	0.1
Eloped	12 (15.0)	23 (3.8)	3 (10.7)	0.0005
Psychiatric Hold/Transfer	4 (5.0)	217 (35.6)	6 (21.4)	<0.00001
Jail	2 (2.5)	7 (1.1)	1 (3.6)	0.4

Table 1: Comparison of cocaine and methamphetamine users: Demographics, mode of arrival, and disposition. Meth: Methamphetamine; HMO/MCO: Health Maintenance Organization/Managed Care Organization; †ANOVA.

Analysis of maximum heart rate, systolic/diastolic blood pressure, and the following relevant laboratory values: Ethanol, creatinine, Troponin I, B-type Natriuretic Peptide (BNP), and Creatine Kinase (CK) appear in Table 2. For average maximum heart rate and blood pressure, there were no significant differences between subgroups. The range of maximum heart rate was 64-173 beats per minute (bpm) for cocaine users, 62-177 bpm for methamphetamine users, and 70-155 bpm for combined users. The range of maximum systolic blood pressure was 109-226 mmHg for cocaine users, 104-251 mmHg for methamphetamine users, and 119-182 mmHg for combined users. The range of maximum diastolic blood pressure was 53-164 mmHg for cocaine users, 59-163 mmHg for methamphetamine users, and 66-123 mmHg for combined users.

	Cocaine	Meth	Cocaine/Meth	P
Maximum				
Heart Rate (bpm)	103.7±19.2	108.3±19.2	106.4±20.8	0.1
Systolic BP (mmHg)	149.1±22.5	145±21.5	142.5±16.7	0.2
Diastolic BP (mmHg)	93.7±20.4	92.8±17.3	90.9±15.7	0.7
Laboratory				
Ethanol n (%)	22 (27.5)	74 (12.1)	5 (17.9)	0.0008 †
Ethanol level (mg/dL)	150.1±98.8	136.4±119.3	82.8±82.4	0.5
Creatinine (mg/dL)	1.21±0.27	1.06±0.75	1.12±0.27	0.2
Troponin I (ng/mL)	0.04±0.04	0.15±0.61	0.04±0.004	0.5
BNP (pg/mL)	637.5±1221.3	726.4±1024.4	1010.5±737.5	0.8
Creatine kinase (U/L)	365.8±259.5	1124±3369.8	766.3±544.6	0.7

Table 2: Comparison of cocaine and methamphetamine users: Vital signs and laboratory results. Meth: Methamphetamine; bpm: Beats Per Minute; BNP: B-type Natriuretic Peptide; †Chi-square analysis; Normal reference range for creatinine (0.44–1.27mg/dL), Troponin I (0–0.04 mg/mL), BNP (0–100 pg/mL), creatinine kinase (0–250 U/L).

Cocaine users had a higher rate of ethanol co-ingestion than methamphetamine users (27.5% vs. 12.1%), and cocaine/ethanol users were significantly younger than solely cocaine users (34.8 ± 14.9 vs. 42.6 ± 16.8 years, P=0.007). No gender difference existed for the cocaine/ethanol versus solely cocaine subgroups (female: 31.8% vs. 41.5%, P=1.0). No age or gender difference was observed between methamphetamine/ethanol users and solely methamphetamine users (40.9 ± 10.9 vs. 41.8 ± 12.6 years, P=0.5; female: 28.4% vs. 37.6%, P=0.2). Methamphetamine/cocaine/ethanol users were older than methamphetamine/cocaine users, but this difference did not reach statistical significance (51.0 ± 7.5 vs. 36.91 ± 16.2 years, P=0.07). Gender difference existed but was also not significant (40% female vs. 17%, P=0.3). No significant differences were detected for the remaining laboratory results between subgroups. Presenting complaints between the subgroups are shown in Table 3. Cocaine users had a significantly higher rate of trauma from blunt and penetrating mechanisms, and lower rate of altered level of consciousness compared to methamphetamine and combined users.

	Cocaine n (%)	Meth n (%)	Cocaine/Meth n (%)	P
Blunt trauma	21 (26.2)	73 (12.0)	5 (17.9)	0.002
Altered LOC	9 (11.2)	176 (28.9)	9 (32.1)	0.003
Abdomen pain	7 (8.8)	51 (8.3)	3 (11.0)	0.9
Suicide attempt	7 (8.8)	63 (10.3)	4 (14.2)	0.7
Chest pain	12 (15.0)	101 (16.5)	1 (3.5)	0.2
Skin infection	4 (5.0)	45 (7.3)	0	0.3
Penetrating trauma	9 (11.2)	26 (4.3)	4 (14.2)	0.004
Miscarriage	2 (2.5)	7 (1.2)	0	0.5
Ingestion	6 (7.5)	45 (7.4)	2 (7.1)	0.9
Headache	3 (3.8)	23 (3.8)	0	0.6
Total	80	610	28	

Table 3: Comparison of cocaine and methamphetamine users: Presenting complaint. Meth: Methamphetamine; LOC: Level of Consciousness.

Discussion

Stimulant use disorder, which encompasses both cocaine and methamphetamine use, is a challenging medical and psychiatric condition with a high rate of relapse affecting millions [8]. According to national trends published in the past decade, there are more cocaine than methamphetamine users, although methamphetamine use continues to rise whereas cocaine use has remained steady [1,2]. Past 5-year data from Quest Diagnostics (Madison, New Jersey), which performs screening tests for drugs of abuse for employers and hospitals, indicate a gradual rise in the prevalence of positive tests for methamphetamine, whereas cocaine has remained steady [9]. Attempts to hamper methamphetamine production by restricting specific chemical precursors such as phenyl acetone, pseudoephedrine, and ephedrine have decreased domestic methamphetamine production by 56% from 2010 to 2015 [10]. However, this appears to have not been effective in mitigating methamphetamine use, as the United States Drug Enforcement Agency (DEA) reports Mexico has taken over as the major supplier of methamphetamine [10,11]. Decreasing drug price and increasing purity may also be contributing factors to the recent increase in methamphetamine prevalence: DEA analysis of domestic methamphetamine over the past decade revealed the price per gram decreased 57% from $152 to $66, while the purity increased from 56% to 92% [10]. Methamphetamine use has also been increasing worldwide, especially in Southeast Asia, Eastern Europe, Russia, Australia, and the Middle East [1,12-15].

The much higher proportion of methamphetamine versus cocaine users in our ED located in central California may reflect a regional difference from other hospitals in the Midwest, South, and Northeast serving mostly urban patient populations [16,17]. Cocaine users tend to be found in a higher percentage in metropolitan counties compared to methamphetamine users, who are evenly distributed between metropolitan, urbanized nonmetropolitan, and rural counties [18]. Methamphetamine use has been problematic in California since the 1980s [19]. Information from the Treatment Episode Data Set (TEDS) from 2003 to 2013 indicate a recent rise in the number of people admitted for methamphetamine treatment in both the state of California and nationwide [20,21]. In Sacramento County, where our hospital is located, ED visits for methamphetamine-related complaints increased 85% vs. 13% for all ED patients over a 3-year period [22]. We are concerned with the dramatic increase in Methamphetamine use in our population. An analysis of methamphetamine-screening test positivity by zip code showed Sacramento County to have a rate of 1.7-3.8%, which represented the highest tier recorded statewide, along with Los Angeles and San Diego [23].

Several stimulant studies were performed at our institution many years ago, and it is interesting to compare these to our recent findings. Derlet and colleagues published the first retrospective individual studies of cocaine and methamphetamine patients presenting to our ED in 1987 [3,4]. The authors detailed the characteristics of 137 cocaine and 127 methamphetamine-positive patients during a period of several months. Their reported prevalence for cocaine use was 0.2% and 0.7% for methamphetamine, in contrast to our finding of 0.4% and 3%, respectively. Admission rate was 12% for cocaine and 19% for methamphetamine users compared to 51.2% and 41.2%, respectively in our study. Psychiatric hold or transfer rate was 24% for cocaine and 49% for methamphetamine users versus our reported rates of 5% and 35.6%, respectively. Patients presenting with trauma were not included in these studies, and most patients were brought to the ED for altered mental status or found unresponsive [3,4]. As with our findings, ethanol was the most frequently detected co-ingestion. Another study investigated the association of cocaine, methamphetamine, and ethanol in 18,004 trauma patients from 1989 to 1994 [24]. The authors reported methamphetamine prevalence increased from 7.4% to 13.4% compared to cocaine (5.8% to 6.2%) and ethanol (43% to 35%). Cocaine-positive patients were most commonly male, African American, and injured by assaults, gunshot, or stab wounds, whereas methamphetamine-positive patients were most likely to be male, Caucasian, and involved in motor vehicle and motorcycle collisions. In 1998 Richards and associates prospectively compared droperidol versus lorazepam for agitated patients presenting to the ED, of whom 14% were cocaine users and 72% were methamphetamine users, or a ratio of 1:5 [25]. This predominance of methamphetamine versus cocaine use reflected our more recent data (ratio of 1:7.5). From 1999 to 2003 this study group also published studies detailing methamphetamine-associated rhabdomyolysis, patterns of tooth wear, acute coronary syndrome, leukocytosis as well as ED resource utilization and found higher rates of admissions, ambulance use, and presenting complaints of trauma compared to non-methamphetamine patients [26-30]. Demographic results were similar to our methamphetamine user findings, with male gender (64% vs. 63.4%) and Caucasian race (74% vs. 71.4%), and co-ingestion of ethanol (20% vs. 12.4%) and cocaine (7% vs. 4.4%) [26].

In another trauma-based study of 10,663 subjects at our hospital from 2002 to 2006, London and co-workers determined minimally injured (Injury Severity Score <9) methamphetamine-positive patients utilized more hospital resources and incurred more cost than cocaine- or non-methamphetamine-positive patients [31]. Demographics and racial proportions were comparable to our and the earlier trauma study, and mechanism of injury was predominantly blunt trauma. Lee et al. then performed a study from 2004 to 2006 in which 318 patients' self-reporting of methamphetamine use was correlated to their toxicology screen [32]. The authors found a 52% self-report rate, highlighting the importance of diagnostic toxicology screening. One last study was performed at our ED between 2009 and 2010 to determine the prevalence of methamphetamine use in 1,207 psychiatric patients, and if detection of methamphetamine on toxicology screening was associated with involuntary 72-h holds [33]. The authors reported a methamphetamine prevalence of 15%, a lower rate than present-day. In Sacramento County, where these studies were conducted, methamphetamine was detected in 27% of patients admitted to the county-funded Mental Health Treatment Center's Intake Stabilization Unit in 2015 [34].

The gender and racial distribution observed in our study, with a predominance of males for both drug-type users (70% for cocaine and 63% for methamphetamine), and Caucasian users (20% for cocaine versus 71.4% for methamphetamine), was also observed in the aforementioned studies and government agency reports [2,18,20,21,24,26,31]. This gender and racial distribution is dissimilar to the most recent census taken for our county, in which 49% of the population was reported as male, 45% Caucasian, 27% as Hispanic, 14.6% as African American, and 18% as Asian [34]. Although methamphetamine and cocaine are stimulants, the two drugs do not appear to share a common user group or substitute for the other [18,35-41]. According to data from the National Survey on Drug Use and Health (NSDUH), the lifetime prevalence of crack cocaine use is higher among African Americans age 18 years and older than among every other racial/ethnic group [37]. One explanation for this is geographic variation, in that cocaine use is more common in inner cities with higher proportion of African Americans, whereas methamphetamine use is more common in suburban or rural areas [18,36]. Social network and peer/family may also influence individual susceptibility, choice of drug type, and route of administration [42-44]. Another explanation of this marked demographic difference is primary socialization theory, in which normal and deviant behaviors, such as drug use, are learned from interactions between social, psychological, and cultural characteristics of the individual's primary socialization sources [45]. Personality differences with varied internalizing versus externalizing factors may also account for choice of drug [46]. Internalizing relates to inner psychological distress and is generally the first factor measured in psychopathology, whereas externalizing is associated with behaviors that cause distress for others.

There were significant differences in disposition between cocaine and methamphetamine patients for 72-h involuntary psychiatric holds or transfer to inpatient psychiatric facilities, and elopement rates (Table 1). A significant proportion of our ED patients present with acute psychiatric disorders primarily due to access issues. The genesis of this problem is the closure of most public mental health clinics and residential treatment facilities several years ago from lack of county funding, leaving these patients in a void [47]. Our ED has taken over this role, leading to overcrowding and hallway boarding of ambulatory patients on 72-h psychiatric holds [47-49]. Unfortunately, this is not a phenomenon unique to California [50]. Both cocaine and methamphetamine users were transported by police to the ED at a high rate, primarily for erratic behavior or public intoxication, (Table 2, "altered level of consciousness" and "ingestion"). Police are usually the first to be called for these types of public disturbances, and in the past the detainees were frequently taken directly to jail or detoxification centers rather than the ED. This trajectory has changed since California Proposition 47 was passed in 2014 and reduced many nonviolent crimes to misdemeanors, including possession of cocaine and methamphetamine [51-53].

Methamphetamine users were placed on involuntary holds or transferred to psychiatric facilities at a significantly higher rate than cocaine users, whereas cocaine users had a higher elopement rate. These differences in disposition observed between non-admitted patients may be explained by the unique neuropsychopharmacological properties of cocaine and methamphetamine. Stimulant use disorder in general is associated with a high rate of suicidal ideation and/or attempts, depression, anxiety, and acute psychosis [54-61]. Stimulants are primarily taken for their positive actions, such as enhancement of alertness and emotion [44,62]. However, in the recovery period, decreased levels of energy and downward mood swings occur from depletion of monoamines and adenosine triphosphate, with disruption of the hypothalamic–pituitary–adrenal axis, autonomic nervous system, sleep pattern, and stress response, leading to impaired psychological and neurocognitive function [62,63].

Both cocaine and methamphetamine cause a rapid increase in Central Nervous System (CNS) and peripheral monoamines from blockade of the plasmalemmal Dopamine Transporter (DAT), preventing reuptake of synaptic dopamine [64-66]. However, there are significant differences in pharmacodynamics and pharmacokinetics between both drugs. Methamphetamine leads to reverse transport of cytosolic dopamine and induces conformational changes in the DAT, further facilitating cytosolic dopamine release [67]. Methamphetamine causes pH-driven release of dopamine from presynaptic vesicles and prevents reuptake of dopamine into presynaptic vesicles by binding to the VMAT-2 vesicular transporter [66,68]. Methamphetamine is a more potent releaser of dopamine than cocaine at equivalent concentrations [69,70]. In terms of pharmacokinetics, methamphetamine has a much longer elimination half-life (8-13 h) than cocaine (1-3 h) and slower clearance from the CNS [71,72]. Methamphetamine users have been shown to have a higher prevalence of acute and chronic psychosis and risk of suicide than cocaine users [54,55,73-75]. The difference in pharmacokinetics between methamphetamine and cocaine and the more potent effect of methamphetamine on CNS monoamine transmission most likely accounts for its greater psychotogenic properties [55,76]. This may explain the much higher rate of psychiatric disposition and altered level of consciousness in methamphetamine relative to cocaine users in our study. Another possibility is cocaine users with acute psychosis or altered level of consciousness may "return to normal" at a faster rate and not require lengthy observation. Alternatively, cocaine users may impulsively decide to leave the ED by eloping after returning to baseline, which may account for their higher observed rate compared to methamphetamine users.

The higher rate of trauma observed for cocaine versus methamphetamine users in our study has been reported in past trauma-based studies [24,31,77-79]. In addition, we found the co-ingestion of ethanol was significantly higher for cocaine than methamphetamine users. This has also been noted in prior studies, and ethanol co-ingestion with cocaine appears to increase the propensity for trauma [80-86]. Blondell et al. reported cocaine use was associated with blunt and penetrating injuries, and that the effect of ethanol co-ingestion was additive to the rate of injury [80]. Cocaine combined with ethanol forms a psychoactive euphoriant by-product, cocaethylene, which may account for the higher proportion of ethanol co-ingestion in cocaine users [64]. A high propensity for violence-related trauma in cocaine users has been reported [87-90]. Siegal et al. noted the frequency of cocaine use increased the likelihood of violent trauma [89]. In a study of all New York City residents with fatal injuries, cocaine use was found in 27%, and ethanol was detected in 45% of these cocaine-positive decedents [90]. The authors postulated cocaine users may be more aggressive, risk-taking individuals whose involvement with buying and dealing illegal drugs, theft, and prostitution increased their chance of fatal injury. It is not clear why a difference in the proportion of trauma was seen in our study population, but one possibility may be that cocaine and methamphetamine engage different neural circuitry depending on the environmental context in which the drugs are taken [91,92]. Cocaine users may be more extroverted and likely to use cocaine outside their home compared to methamphetamine users, which puts them at higher risk for traumatic injury. In line with this theory is a higher ratio of externalizing versus internalizing personality factors in cocaine users compared to methamphetamine users, leading to higher probability of interpersonal dispute and impulsive, risk-taking behavior [46]. This putative difference in personality-type, combined with the shorter half-life and lesser psychotomimetic effects of cocaine relative to methamphetamine, may also explain the higher rate of elopement for cocaine users observed in our study.

Limitations

There are several limitations associated with this study. First, it is a retrospective review performed over a span of a few months. As such, it represents a "snapshot" in time of cocaine and methamphetamine use in our ED patient population, and the proportions recorded for the study could possibly have changed over the course of months to years. A longitudinal study would be preferable to study the differences between cocaine and methamphetamine users. There is no standardized protocol in place at our ED for ordering toxicology screens, except for trauma patients admitted to the hospital and patients on 72-h psychiatric holds. Otherwise the decision to obtain toxicology screens is at the discretion of the treating clinician. This may lead to sampling bias. The area served by our ED is noted to have higher than average levels of methamphetamine distribution and use, and our results likely reflect regional differences in drug use. Definitive association between cocaine and methamphetamine use and each patient's presenting complaint was not possible, as the amount of time elapsed between last drug dose and ED presentation could not be established.

Conclusion

Methamphetamine use is several times more prevalent than cocaine in our ED patient population, and this prevalence is increasing compared to previous studies. Methamphetamine users were more likely to be Caucasian, present with altered level of consciousness, be placed on a 72-h psychiatric holds, or be transferred to inpatient psychiatric facilities. Cocaine users had a higher rate of trauma, alcohol intoxication, and elopement from the ED. These differences may be explained by regional preferences, socialization, personality types, and the unique neuropsychopharmacological differences between cocaine and methamphetamine.

Conflict of Interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of this paper.

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