



Substance Use in Patients Admitted to the Psychiatric Emergency Department in Northern Iran

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Abstract

Background: Acute psychiatric problems are increasingly observed following substance abuse in emergency departments. To address this significant societal issue, it is essential to understand its various dimensions in order to develop comprehensive control policies.

Objectives: This study aimed to evaluate substance use and its related factors in patients admitted to a psychiatric emergency ward in Sari, Mazandaran, Iran.

Methods: In this cross sectional investigation, all patients who were admitted to the emergency department of Zare referral psychiatry hospital during the previous one year were studied. A checklist of demographic and psychiatric factors was completed for each patient based on their medical records. Urine rapid tests were routinely conducted in this department to screen for drug consumption. Descriptive statistics, central and dispersion indices, and the chi-square test were used to analyze the data.

Results: A total of 578 cases, comprising 406 males (70.2%) and 172 females (29.8%), were examined. The mean age of patients was 34.7 ± 11.2 years. The most common symptoms reported were aggression (50.5%), insomnia (11.2%), paranoia (10.7%), and self-talk (8.1%), respectively. The most frequent final clinical diagnosis was bipolar disorder in 145 cases (25.1%), followed by schizophrenia in 131 cases (22.7%), and substance-induced psychotic disorder in 63 cases (10.9%). In the substance use screening among patients, the urine test was positive for morphine in 17.6% of the patients. Methamphetamine, methadone, and cannabis tests were positive in 16.1%, 9.5%, and 3.5% of cases, respectively. Among patients with positive urine tests (for methamphetamine, methadone, or morphine), the most common clinical diagnosis was substance-induced psychotic disorder, followed by schizophrenia. Schizophrenia and substance-induced psychotic disorder were the two most common diagnoses in patients with positive cannabis urine tests, respectively.

Conclusions: The high rate of substance abuse among psychiatric emergency patients, often co-occurring with other psychiatric disorders, the high prevalence of psychosis, and the behavioral risks associated with these patients emphasize the need for special attention to this psychosocial problem.

Keywords: Psychiatric Disorders, Psychiatric Emergency Services, Substance Use

1. Background

Psychoactive substance abuse is one of the most important. The World Health Organization (WHO) reported that in 2020, approximately 284 million individuals between the ages of 15 and 64 years worldwide had used drugs, marking a 26% increase from the previous decade. Drug use is on the rise among young individuals and has surpassed previous generations in many countries (1). In Iran, due to its proximity to Afghanistan, the world's largest opium producer, access to opioids has been both

easy and abundant for years. This has contributed to the high prevalence of substance abuse in the country (2).

Recently, clandestine methamphetamine production has emerged in Afghanistan, further fueling the illicit drug market globally. In addition to crystalline methamphetamine production, Afghanistan has established an illegal market for other synthetic drugs (3).

Substance abuse is a major public health concern in Iran. Studies have shown that approximately 150 out of 100 000 individuals use opium, 660 use opium juice (Shireh), 590 use methamphetamine, 470 use cannabis, and 350 use

heroin. Substance use disorder is considered one of the top four health burdens in Iran (4).

The use of methamphetamine in Iran, like in other countries, has become a growing concern in recent years (5). Domestic production has led to a significant drop in methamphetamine prices, resulting in a substantial increase in its use (6).

In recent years, numerous studies have been conducted on psychiatric disorders associated with drug use (7, 8). Many individuals with substance use disorders also suffer from psychiatric illnesses, and vice versa (9, 10). Research has shown a high prevalence of alcohol abuse in patients with depression, and some studies have linked opioid use to schizophrenia (11). Schizophrenia may be caused in part by cannabis (12). Cannabis use has also been shown to exacerbate schizophrenia in patients who already have the disease. Non-schizophrenic cannabis users might experience acute psychotic reactions, particularly at high doses; however, these reactions typically subside as the drug wears off (13). The comorbidity of methamphetamine use and psychiatric disorders is a significant concern. Methamphetamine use can lead to psychotic, mood, and anxiety disorders, either independently or as a consequence of its use (14). This is concerning because the coexistence of these conditions has a detrimental impact on both (15). Methamphetamine use is increasingly associated with acute psychiatric issues in emergency rooms, contributing to a range of psychological, familial, and financial difficulties, in addition to incidents of theft, murder, suicide, violence, and divorce (16).

As announced by the WHO, we must increase our understanding of how illicit drugs relate to other pressing issues and devote the necessary resources and attention to addressing every aspect of the global drug problem, including providing evidence-based care to all who require it (1). Due to the lack of sufficient epidemiological research on this problematic phenomenon in Iran and the lack of accurate statistics on the prevalence of drug use in emergency departments and, on the other hand, due to the lack of sincere cooperation of individuals in providing information about drug use, the implementation of such studies faces certain complications and problems.

2. Objectives

Considering that drug abuse, especially methamphetamine, has changed the pattern of referrals to psychiatric emergency rooms, the purpose of this study was to investigate the frequency of drug use and factors associated with it in patients admitted to the Emergency Department of Zare hospital in Sari, which is a referral

center for psychiatric patients in Mazandaran province in Iran.

3. Methods

For this descriptive study, which involved the examination of existing data, permission was obtained from the authorities at Mazandaran University of Medical Sciences and Zare hospital. The records of all patients who had been admitted to the hospital's emergency department in the previous year were reviewed, and a relevant checklist for each patient was completed. This study received approval from the Ethics Committee of the Research and Technology Vice-Chancellor of Mazandaran University of Medical Sciences and fully adhered to the principles of the Helsinki Treaty.

In the emergency department, a urine rapid test was routinely conducted to assess drug consumption. For patients with multiple hospitalizations, a checklist was completed for each hospitalization. Following the completion of the checklists, the information was entered into a computer, and SPSS for Windows version 10 software (SPSS Inc., Chicago, IL, USA) was utilized for data analysis. Descriptive statistics, central and dispersion indices, and the chi-square test were employed, and relevant tables were generated.

4. Results

A total of 578 cases were included in the study, with 406 (70.2%) males and 172 (29.8%) females. The mean age of the subjects was 34.7 ± 11.2 years, ranging from 17 to 84 years. The most common symptom observed in patients at the time of presentation was aggression, which was reported in 292 patients (50.5%). Following aggression, the most prevalent symptoms were insomnia (11.2%), paranoia (10.7%), and self-talk (8.1%).

The average duration of hospitalization for patients was 23.0 ± 19.3 days, with hospital stays ranging from 1 to 191 days. Among the patients, 263 subjects (45.5%) had a history of previous hospitalizations; nevertheless, 315 patients (54.5%) had no such history, either because they had not sought treatment before or because they had received outpatient care without requiring hospitalization.

Regarding family history of psychiatric disorders, 59 patients (10.2%) had at least one family member with a known psychiatric disorder; however, 519 patients (89.8%) had no such family history. Similarly, in terms of family history of substance dependence, 42 patients (7.3%) had at least one family member who was dependent on a

substance; nonetheless, 536 patients (92.7%) had no such family history.

The study also assessed tobacco addiction among patients, revealing that smoking was reported by 215 patients (37.2%), of whom 195 (90.7%) and 20 (9.3%) were male and female, respectively. In the screening for substance use, including cases with polysubstance use, 102 (17.6%), 83 (14.4%), 55 (9.5%), and 20 (3.5%) patients tested positive for morphine (including raw opium, opium juice, heroin, and Heroin-Kerack), methamphetamine, methadone, and cannabis, respectively. Notably, Heroin-Kerack is a locally produced drug containing diacetylmorphine and various contaminants, including morphine, 6-monoacetylmorphine, codeine, caffeine, acetyl codeine, papaverine, noscapine, dextromethorphan, phenobarbital, and diazepam (17). Among these substances, only methamphetamine use was significantly higher in male cases (71 vs. 12, $P < 0.001$); nevertheless, there was no significant difference in the consumption of other substances between genders (Table 1).

Concerning the final diagnosis, 4 patients (0.7%) left the hospital before receiving a final diagnosis. For 18 patients (3.1%), more than one diagnosis was proposed. The most frequent final diagnosis among patients was bipolar disorder, with 145 cases (25.3%), followed by schizophrenia in 131 patients (22.8%), substance-induced psychotic disorder in 63 patients (11.0%), unspecified psychotic disorder in 45 patients (7.8%), major depressive disorder in 45 patients (7.8%), and substance-induced mood disorder in 23 patients (4.0%).

A total of 86 patients (15.9%) were diagnosed with substance-induced disorders, including 63 subjects with psychotic disorders and 23 cases with mood disorders. In 57 patients (9.9%), it remained unclear whether their disorder was induced by substances or not, with 45 cases having unspecified psychotic disorders and 12 subjects having unspecified mood disorders.

For patients with positive urine tests (indicating methamphetamine, methadone, or morphine use), the most common clinical diagnosis was substance-induced psychotic disorder, followed by schizophrenia. In cases where cannabis use was detected in urine tests, schizophrenia and substance-induced psychotic disorder were the two most common diagnoses, respectively (Table 2).

When comparing the final diagnoses of various psychiatric disorders among individuals who tested positive for different substances, it was observed that schizophrenia, major depressive disorder, and bipolar disorder were more common in those who tested positive for morphine. However, this difference was

not statistically significant. Similarly, substance-induced psychotic disorder and substance-induced mood disorder were more common in methamphetamine users; however, this difference was also not statistically significant. However, substance-induced psychotic disorder was statistically more prevalent in methamphetamine users than in cannabis users ($P = 0.00$), and substance-induced mood disorder was statistically more prevalent in methamphetamine users than in methadone users ($P = 0.01$).

5. Discussion

In recent times, the use of substances has become increasingly prevalent among patients presenting with behavioral problems in psychiatric emergency rooms (18, 19). Recent studies, especially in Western countries, have highlighted a high prevalence of psychiatric disorders among individuals with substance addiction. The diagnosis of substance-induced psychiatric disorders has been included in the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM) since 1994 (20). However, even before that, these disorders were categorized under organic mental disorders (21).

The prevalence of smoking in the general population of Iranian society has been reported as 14.1% (22). Nevertheless, this study reported a smoking prevalence of 37.2% among the study population, indicating a higher prevalence of smoking in this group. In Iran, smoking is six times more common in men than in women (22, 23); nonetheless, in this study, the male-to-female smoking ratio was reported as 3 to 1. This finding suggests that the proportion of female smokers among psychiatric emergency patients is higher than in the general population.

In a similar study conducted in 2008, the prevalence of smoking among individuals attending the psychiatric clinic of the same hospital was reported as 31.8% (24). This finding suggests that either smoking rates have increased in recent years or that smoking is more common among patients in psychiatric emergency departments compared to outpatient psychiatry clinic.

Regarding a family history of psychiatric disorders revealed that at least one family member had a known psychiatric disorder in 10.2% of the cases. According to the results of WHO's global surveys on mental health, all psychiatric disorders have a population-attributable risk ratio of 12.4% for disorders among parents of affected individuals (25).

The most common symptoms observed in patients included self-talk (8.1%), auditory hallucinations (5.9%), incongruous crying (4.7%), incongruous laughter (3.8%),

Table 1. Positive Cases of Urine Screening for Substances in Patients Admitted to the Psychiatric Emergency Department

| Variables | Male | Female | Total | P-Value |
|-----------------|------|--------|-------|---------|
| Cannabis | 19 | 1 | 20 | 0.109 |
| Methamphetamine | 71 | 12 | 83 | 0.001 |
| Methadone | 48 | 7 | 55 | 0.37 |
| Morphine | 83 | 19 | 102 | 0.008 |

Table 2. The Most Common Diagnoses in Substance Users in Patients Admitted to the Psychiatric Emergency Department

| Substance | First Diagnosis; No. (%) | Second Diagnosis; No. (%) | Third Diagnosis; No. (%) |
|-----------------|---|--|--|
| Cannabis | Schizophrenia; 8 (40) | Substance-induced psychotic disorder; 3 (15) | Bipolar disorder; 2 (10) |
| Methamphetamine | Substance-induced psychotic disorder; 33 (39.8) | Schizophrenia; 16 (19.3) | Substance-induced mood disorder; 10 (12) |
| Methadone | Substance-induced psychotic disorder; 16 (29.1) | Schizophrenia; 12 (21.8) | Psychotic disorder NOS; 8 (14.5) |
| Morphine | Substance-induced psychotic disorder; 23 (22.5) | Schizophrenia; 21 (20.6) | Bipolar disorder; 18 (17.6) |

visual hallucinations (2.6%), and other hallucinations (1.9%). It is noteworthy that the final diagnoses for 22.8%, 11.3%, and 8.2% of patients were schizophrenia, substance-induced psychotic disorder, and unspecified psychotic disorder, respectively. Additionally, considering the results of the urine tests and the inherent characteristics of some of the substances used, these symptom patterns can be justified (26). The psychiatric emergency service has the clinical impression that excessive use of amphetamine or methamphetamine leads to a significant number of patients presenting with symptoms such as paranoia, hallucinations, or formal thought disorders. However, some studies did not demonstrate a clear relationship between these symptoms and substance use (27). In a study conducted in the emergency department of a general hospital in the same area as the current study, statistically significant differences were observed in visual hallucinations ($P = 0.001$), auditory hallucinations ($P = 0.001$), paranoia ($P = 0.001$), delusions of grandeur ($P = 0.035$), talkativeness ($P = 0.001$), suicidal thoughts ($P < 0.001$), homicidal thoughts ($P = 0.001$), violence ($P > 0.001$), and disorientation ($P < 0.001$) in patients who tested positive for methamphetamine, compared to those who tested negative (28).

When examining the final diagnoses of patients, the most common diagnosis was bipolar disorder (25.3%), followed by schizophrenia (22.8%). In another study conducted in the outpatient psychiatry clinic of the same hospital, the prevalence of mood disorders was 36.7%; however, schizophrenia and other psychotic disorders accounted for 28.7% (24). In a study conducted by Breslow et al. in the USA, prevalence of schizophrenia among individuals referred to the psychiatric emergency room

was similar to the findings of the present study (29).

Substance-induced psychotic disorder was the most common clinical diagnosis in the current study's patients with positive urine tests for opium, methadone, and morphine, followed by schizophrenia. Among patients with positive urinary cannabis tests, schizophrenia, and substance-induced psychotic disorder were two of the most common diagnoses. In a study by Farnia et al. in the west of Iran, amphetamine-induced psychotic disorder was the most prevalent diagnosis (in 40.4% of patients), followed by opiate-induced psychiatric disorders (30). In a study on diseases associated with drug use conducted by McCabe et al. in Australia, the rate of schizophrenia was reported to be 10.4% among patients, which is lower than the prevalence observed in the present study (31). The most common diagnosis in the aforementioned study was depression, with 45.8% of the individuals affected. Nevertheless, in the present study, depression was diagnosed in only 7.8% of the patients.

Considering that depression is usually more prevalent among women (32, 33) and in the study of McCabe et al. More than 50% of the patients were women (31) and in the present study women constituted only 29.8% of the patients, the results related to the low prevalence of depression can be justified. Of course, it should be noted that due to the limited number of psychiatric emergency beds, these beds are often allocated to patients exhibiting aggressive behavior (comprising more than 50% of cases in the current study), and depressed patients are usually admitted to non-emergency departments.

In the substance use screening of patients referred to the psychiatric emergency room in the current study, the highest positive rate was related to opioids (including methadone), accounting for 27.4% of the cases. This

finding is consistent with previous research, indicating that opioids are the most commonly used substances in Iran (24, 34). A study conducted in western Iran by Farnia et al. reported that 80.5%, 15.8%, and 3.1% of hospitalized cases used amphetamines, opioids, and cannabis, respectively (30). In Ley et al.'s study in England, only 3% of cases tested positive for opioids; nevertheless, the prevalence of cannabis consumption was 14% (35). However, in the present study, only 3.5% of cases had a positive cannabis test. Tijdink's study in the Netherlands reported a 22% positive urine test rate for cannabis, with a 10% positive test rate for opioids, which is closer to the findings in the present study (36).

The above-mentioned variations can be attributed to differences in the pattern of drug consumption between Iran and the countries in the aforementioned studies. For example, in the Netherlands, marijuana use is not illegal, and its legal status likely contributes to higher usage rates. In studies conducted in Western countries, cannabis consumption among psychiatric emergency room patients has been reported to be as high as 40% (37). In the general population of Iran, the prevalence of raw opium, opium juice, and heroin consumption has been reported as 69 - 94.6%, 50.1%, and 28 - 43.5%, respectively. This figure for cannabinoid substances has been 13% (38).

One notable aspect of this study is the high number of positive reports in methamphetamine tests for patients referred to the psychiatric emergency room (14.5%). In some studies, this figure has been reported to be only 1 - 3% (35). In a study conducted in the same region as the present study, the prevalence of positive methamphetamine tests among 3263 patients referred to the emergency department of a general hospital was 1.2% (28). Globally, the prevalence of amphetamine use is estimated to be 7%, with dependence affecting 11% of users (39). However, in Schiller et al.'s study in the United States, 22% of patients referred to the emergency room tested positive for amphetamines (18). This variation might be due to under-detection in some studies (35) and could indicate an increase in the consumption of this substance in certain countries. Amphetamine use has become more popular in recent years (24-40). North America had the highest rate of amphetamine use, followed by Oceania. Methamphetamine is believed to be one of the most commonly used illicit drugs in Southeast and West Asia, although prevalence estimates are only available for a few countries (39).

In some studies, it has been demonstrated that amphetamine use can induce acute psychosis in otherwise healthy individuals. However, no significant relationship has been identified between the blood levels of this substance and psychiatric

disorders (41). Previous investigations involving regular amphetamine users have reported a range of 8 - 46% experiencing substance-induced psychotic disorders (42-48). In the current study, the most common diagnosis among methamphetamine users was methamphetamine-induced psychotic disorder (39.8%). The psychotic symptoms resulting from methamphetamine use often resemble those seen in schizophrenia. However, methamphetamine-induced psychotic disorder typically resolves following detoxification from the drug. It is worth noting that full recovery might not always be achieved after methamphetamine detoxification (49). A study conducted in Japan by Akiyama revealed that amphetamine-induced mental disorders can persist for several years, with recurrences even after apparent recovery (50). This finding underscores the complexity of managing this issue, given that existing psychosocial interventions, aside from contingency management, have shown limited overall efficacy, and there is no effective pharmacotherapy available to reduce stimulant use (39).

It is important to highlight that substance-induced psychotic disorder was the most prevalent diagnosis among individuals who had used any substance. Therefore, the high rate of substance abuse among psychiatric patients in the psychiatric emergency department, coupled with the substantial percentage of patients experiencing psychosis, underscores the need for special attention to this matter. One significant barrier in addressing this challenge is the perception of substance use as a manageable health condition, which continues to be hindered by stigma and legal discrimination (19). Additionally, substance abuse is highly comorbid with other psychiatric disorders. This comorbidity can complicate the course of treatment and recovery for both substance use disorders and other psychiatric conditions and contribute to issues such as violence, spousal abuse, homicide, suicide, and accidents (19, 51, 52).

One of the strengths of this study was the use of laboratory tests to investigate substance use. However, some experts argue that qualitative urine substance screening might have less impact on clinical management decisions in psychiatric emergency services and provide less additional information than a detailed patient history (53). The limitations of this study included the possibility of laboratory errors (false positive or false negative test results) and the retrospective nature of the data review.

Footnotes

Authors' Contribution: Mehran Zarghami conceived and designed the evaluation, participated in the

interpretation of clinical data, re-analyzed the statistical data, and revised the draft of the manuscript critically for important intellectual content. Ali Khoshboresh Astaneh designed the evaluation, collected the clinical data, performed the statistical analysis, participated in the interpretation of clinical data, and drafted the manuscript. Both authors read and approved the final manuscript.

Conflict of Interests: Mehran Zarghami is a member of the editorial board of this journal.

Data Reproducibility: The dataset presented in the study is available on request from the corresponding author during submission or after publication.

Ethical Approval: In this study, which has been approved by the Ethics Committee of the Research and Technology Vice-Chancellor of Mazandaran University of Medical Sciences (code no. IR.MAZUMS.REC.1391.159), the terms of the Helsinki Treaty were fully observed.

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