





## Research Article

## Identifying the Factors Influencing the Completion of Institutional Detoxification Period Among Patients with Substance Use Disorder in Iraq

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## Abstract

**Background:** Substance use disorders (SUD) continue to be the primary cause of disability and early death, affecting the global criminal justice, social care, health, and welfare systems. **Objectives:** To identify the factors influencing the acceptance of patients with SUD to complete the institutional detoxification period. **Methods:** This retrospective cohort study reviewed the medical records of the Al-Qanat Center for Social Rehabilitation, Baghdad, Iraq. The extraction chart was conducted from July 18 to August 26, 2024. It included patients who received mental services from SUD treatment programs during 2023. **Results:** The study included 470 patients with SUD. Most patients (95.5%) were male, with an average age of 26.85 years, 52.7% of them were single, 60.1% had low-income jobs, 61.1% had primary school degrees, and >73.8% completed the treatment during the hospitalization period. Addicted women were significantly less likely to complete the detoxification period compared to men. The addicted patients who were more likely to complete the hospitalization period included those with younger age, longer hospitalization periods, and shorter duration of addiction. Methamphetamine (Crystal) was the most used substance (77.7%) by the admitted patients. **Conclusion:** The gender disparities in treatment completion of SUD highlight the need for gender-sensitive detoxification centers that account for societal factors and encourage family and community support to improve treatment engagement and outcomes. Developing new centers across the country's provinces is pivotal to being more accessible for such patients.

**Keywords:** Detoxification, Iraq, Quantitative Study, Substance use disorder, Treatment acceptance.

### تحديد العوامل المؤثرة في استكمال فترة إزالة السموم المؤسسية بين مرضى تعاطي المخدرات في العراق

#### الخلاصة

**الخلفية:** لا تزال اضطرابات تعاطي المخدرات هي السبب الرئيسي للإعاقة والوفاة المبكرة، مما يؤثر على أنظمة العدالة الجنائية والصحة والرعاية الاجتماعية العالمية. **الأهداف:** التعرف على العوامل المؤثرة في قبول المرضى الذين يعانون من تعاطي المخدرات لاستكمال فترة إزالة السموم المؤسسية. **الأساليب:** استعرضت هذه الدراسة الأثرية بأثر رجعي السجلات الطبية لمركز القناة للتأهيل الاجتماعي، بغداد، العراق. تم إجراء مخطط الاستخراج في الفترة من 18 يوليو إلى 26 أغسطس 2024. وشمل المرضى الذين تلقوا خدمات عقلية من برامج علاج اضطراب تعاطي المخدرات (SUD) خلال عام 2023. **النتائج:** شملت الدراسة 470 مريضاً مصاباً بمرض SUD. كان معظم المرضى (95.5%) من الذكور، بمتوسط عمر 26.85 عاماً. 52.7% منهم كانوا عازبين، و60.1% لديهم وظائف منخفضة الدخل، و61.1% حاصلون على شهادات ابتدائية. >73.8% أكملوا العلاج خلال فترة الإقامة في المستشفى. كانت النساء المدمنات أقل عرضة بشكل ملحوظ لإكمال فترة إزالة السموم مقارنة بالرجال. كان من بين المرضى المدمنين الذين كانوا أكثر عرضة لإكمال فترة الاستشفاء أولئك الذين لديهم سن أصغر، وفترات دخول أطول في المستشفى، ومدة إدمان أقصر. كان الميثامفيتامين (الكريستال) هو المادة الأكثر استخداماً (77.7%) من قبل المرضى المقبولين. **الاستنتاجات:** يسلط التفاوت بين الجنسين في استكمال علاج تعاطي المخدرات الضوء على الحاجة إلى مراكز إزالة السموم التي تراعي الفوارق بين الجنسين والتي تراعي العوامل المجتمعية وتشجع دعم الأسرة والمجتمع لتحسين المشاركة في العلاج ونتائجه. يعد تطوير مراكز جديدة في جميع أنحاء البلاد أمراً محورياً لتكون أكثر سهولة لهؤلاء المرضى.

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## INTRODUCTION

Substance use disorders (SUD) continue to be the primary cause of disability and early death, affecting the global criminal justice, social care, health, and welfare systems [1,2]. Over the period 2011–2021, the estimated number of users of any drug globally increased from 240 million to 296 million [3]. Nearly 500,000 deaths related

to the use of drugs happened in 2019 (17.5% more than in 2009). According to the World Health Organization (WHO) report, only 1 in 5 people with drug use disorders received drug treatment [3]. Regional variations exist in the primary substances reported by individuals entering drug treatment. In most of Europe and several subregions of Asia, opioids are the

predominant primary drug. In contrast, cocaine is the primary drug in Latin America, cannabis in some regions of Africa, and methamphetamine in East and Southeast Asia [3]. A systematic review conducted in 2022 on drug use disorders in the Eastern Mediterranean region estimated that 6.7% of the adult population ages 15–64 years (~30 million) used any illicit drug in the past year. The prevalence of SUD was 10.9% in men and 2.5% in women. The elevated prevalence in the Eastern Mediterranean region can be attributed mainly to the significant cannabis use in the North African subregion (8.0%) and opioid use in the South Asian subregion (3.3%) [4]. In 2017, the Eastern Mediterranean region experienced a loss of approximately 4.2 million disability-adjusted life years (DALYs) attributable to substance use disorders [5]. Unfortunately, substance abuse has risen noticeably in Iraq in recent years [6]. This is attributed to the country's history marked by armed conflict, corruption, financial strain, inadequate enforcement over the selling of psychoactive medications [6-8], low education, and negative friends and peer pressure [9-10]. Additionally, the country experiences a high prevalence of mental health disorders (MHDs) like depression and anxiety [11-13]. According to the United Nations Office on Drugs and Crime (UNODC), Iraq is situated at the crossroads of drug trafficking, spanning Southwest Asia, Africa, and Europe. This includes the Balkan and Southern routes for opiate smuggling from Afghanistan to Europe, Southeastern Europe, the Indian Ocean, and Eastern Africa, including the Arabian Peninsula [14]. Even though therapy is necessary, there is a big obstacle in the form of limited access to mental health services because of problems with trust, treatment stigma, social stigma, and drug shortages [15]. According to data presented by the Iraqi Ministry of Health (MOH) in the annual statistical report for the year 2022, there were 777 outpatients and inpatients with drug addiction despite the MOH's best efforts to improve substance abuse prevention and treatment [16]. The institutional treatment of patients with SUD was still in the initial stages of development. In 2017, Iraq implemented its first drug law and commission, followed by the introduction of a National Strategy on Narcotics and Psychotropic Substances for the period 2023–2025 in 2023. The country hosted the inaugural regional event on this issue in 2023 to enhance collaboration and coordinate efforts in drug detection and disruption [14]. Until recently, the country had a limited number of health institutions dedicated to treating drug dependence and providing rehabilitation. These centers are primarily situated in Baghdad [14]. Like other chronic diseases, early intervention in the substance abuse process correlates with improved outcomes [17]. "Detoxification, the process by which the body clears itself of drugs, is designed to manage the acute and potentially dangerous physiological effects of stopping drug use" [17]. Detoxification of SUD typically requires several days to two weeks to complete, depending on the

substance of abuse, the severity of dependence, and the support available to the patient [18]. Detoxification alone does not address the psychological, social, and behavioral problems associated with addiction [17]. Thus, admission to the treatment center is the first step in the recovery journey, which is one of the most crucial phases in determining a patient's initial acceptance of treatment. The results of this study can enhance policies and programs for the treatment of SUD, resulting in better health and social outcomes for impacted patients. This study aims to identify the factors influencing the decision of patients with SUD to complete the institutional detoxification period.

## METHODS

### *Study design and setting*

This retrospective cohort study reviewed the medical records of the Public (Al-Qanat) Center for Social Rehabilitation, Baghdad, Iraq. The chart extraction was conducted from July 18 to August 26, 2024. The researchers collected data (via record extraction) 4–5 days weekly. It included patients who received mental services from institutional SUD treatment programs during 2023. This center is one of the two main addiction and rehabilitation specialized centers to treat substance use disorders in Baghdad. The Iraqi Ministry of Health (MOH) manages the center, offering free medical care, counseling, psychology, and rehabilitation services.

### *Data source and information collected*

The present study included individuals diagnosed with SUD and hospitalized during 2023 (given that the center opened on February 8, 2023) [19]. The researchers relied mainly on the patient's medical records. Patients with missing data or with alcohol addiction only were excluded from the study. Data were extracted from medical records and included patients' demographics consisting of age, gender, occupation, education, accommodation types, marital status, and residence; hospitalization period; addiction duration; substance use type; crystal meth dose; urine toxicological test; and pharmacological treatment. The primary outcome variable was completing the detoxification period.

### *Sample size*

The required sample size was calculated using the Yamane equation (Yamane, 1967) [20]:

$n = N / (1 + N \times e^2)$ , Where  $n$  is the sample size,  $N$  is the population size, and  $e = (\pm)$  is the level of precision, sometimes called sampling error.

### *Ethical approval*

The study protocol was approved by the Research Ethics Committee of the College of Pharmacy, University of Baghdad, the Local Health Directorate, and the hospital

involved. The names of patients were de-identified for their confidentiality.

### Statistical analysis

The statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics (means, standard deviation, frequencies, and percentages) were conducted for all study items. Additionally, chi-square and independent t-tests were used to measure the factors associated with completing the required hospitalization period. An independent t-test was used because the hospitalization variable is binary (completed *vs.* not completed), while the other variables were continuous. GraphPad Prism 8 was used to construct the figures. All *p*-values < 0.05 were considered statistically significant. The outcome variable was binary (completed *vs.* not completed).

### RESULTS

As shown in Table 1, the center had 645 patients with SUD during 2023. After applying the exclusion criteria, 470 patients admitted to the Al-Qanat Center for Social Rehabilitation in Baghdad were included in the study. In total, 175 individuals were excluded from the study either due to missing information (*n*=34) or they had alcohol addiction only (*n*=141). The mean age of the sample was 26.85 years, with 95.5% being male, 52.7% single, and 60.1% with low-income jobs.

**Table 1:** The characteristics of participating patients with SUD

Characteristic	Subcategories	Frequency (%)
Gender	Male	449(95.5)
	Female	21(4.5)
Residence	Baghdad	283(60.1)
	Al-Najaf	35(7.4)
	Al-Dewaniya	31(6.6)
	Babylon	31(6.6)
	Kerbela	20(4.2)
	Basrah	19(4)
	Thi-Qar	18(3.8)
	Al-Anbar	10(2.1)
	Other provinces	23(4.9)
Occupation	Jobless	125(26.5)
	Free business (low-income job)	283(60.1)
	Employee	63(13.4)
	No formal education	35(7.4)
Education	Primary	288(61.1)
	Secondary	115(24.4)
	College	33(7.0)
	Owned	286(60.7)
Accommodation types	Agricultural land	40(8.5)
	Rented	122(25.9)
	Irregular	23(4.9)
Marital status	Single	248(52.7)
	Married	192(40.8)
	Divorced	30(6.4)
Hospitalization period	Widow	1.0(0.2)
	Complete	347(73.8)
	Incomplete	123(26.1)
	<i>n</i>	Mean±SD
Age (year)	470	26.85±7.73

More than two-thirds (68.5%) of the participants were either illiterate or had a primary school degree (Table 1). Most patients (60.1%) were from Baghdad, followed by Al-Najaf (7.4%), Al-Dewaniya (6.6%), Babylon (6.6%), and Kerbela (4.2%). The admitted patients predominantly completed hospitalization period 347 (73.8%) (Table 1). According to the Chi-square test results, addicted women were significantly less likely to complete the hospitalization period compared to men (Table 2).

**Table 2:** The difference in completing the hospitalization period according to the patient's gender

Gender	Complete the hospitalization period		<i>p</i> -value*
	No	Yes	
Male	110(24.5)	339(75.5)	0.000
Female	13(61.9)	8(38.1)	

Values are expressed as frequency and percentage. \* Chi-Square test.

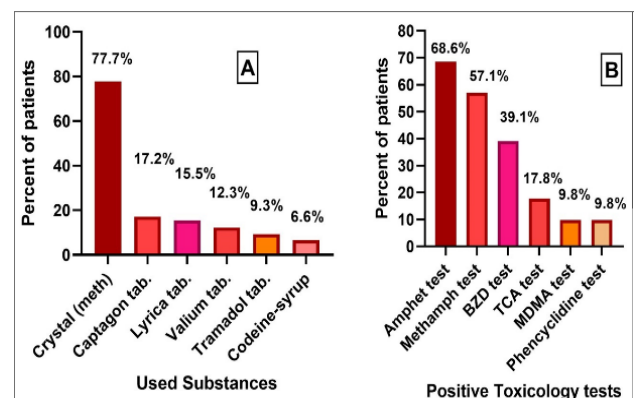
According to the Independent Samples Test, the addicted patients who were more likely to complete the hospitalization period, including those with younger age, had more extended hospitalization periods and shorter duration of addiction (Table 3).

**Table 3:** The difference in completing the hospitalization period according to the patient characteristics

Characteristics	Complete the hospitalization	<i>n</i>	Value	<i>p</i> -value*
Age	No	123	28.72±8.68	0.002
	Yes	347	26.20±7.27	
Crystal dose (gm)	No	123	1.30±1.50	0.164
	Yes	347	1.52±1.54	
Hospitalization period	No	123	9.73±5.83	0.000
	Yes	347	19.32±4.22	
Addiction duration (year)	No	123	5.62±4.62	0.026
	Yes	347	4.59±4.35	

Values are expressed as mean±SD. \* Independent samples test.

Methamphetamine (Crystal) was the most used substance (77.7%) by the admitted patients (Figure 1-A).



**Figure 1:** The percentages of used substances (A) and positive substance tests at admission (B). Captagon: a combination of amphetamine and theophylline [43], and methamphetamine; crystal amphetamine: AMP test; Methamphetamine: MET test; Benzodiazepine: BZD test; methylene deoxy methamphetamine: MDMA test; Tricyclic antidepressant: TCA test.

On the other hand, the most common substances among patients, according to the results of toxicological tests

for drug use conducted upon admission, were amphetamines and methamphetamines, with positive test results at 68.6% and 57.1%, respectively. At 39.1%, benzodiazepines were also prevalent. The positive test rates for other substances were lower, at 17.8% for TCA and 9.8% for both MDMA and phencyclidine (Figure 1-B).

## DISCUSSION

The present study recorded that about three-quarters of patients with SUDs completed the hospitalization periods, which revealed patients' willingness to accept treatment. Our findings demonstrate that men were more likely to stick to their hospitalization duration than women. Women with addictions are more likely to encounter several barriers to obtaining and starting treatment for SUD, which are fueled by individual, family, socio-cultural, and economic factors [21,22]. This trend may be associated with the conservative societal culture that restricts girls from remaining outside the home for long periods, even during hospitalization. Parents and husbands frequently find it difficult to accept the notion of a girl remaining alone and without a family companion throughout the detoxification period. Furthermore, women have multitasks at home, including childcare, which may influence their decision to remain in the hospital [23]. It is worth noting that the decision to complete the hospitalization period is optional and not mandatory, and patients may leave without obtaining medical permission from healthcare providers or hospital administration. Comprehensive treatment models take into account co-occurring disorders like anxiety and depression. Gender-specific support services, including life skills coaching, social support, childcare, and facilities that allow children to stay with their mothers, can help mitigate societal and familial obstacles. Additionally, addressing the stigma surrounding treatment and ensuring adequate insurance coverage is crucial for improving access and completion rates in detoxification programs tailored for women [24-25]. Moreover, approximately 95.5% of admitted patients with SUD were men. Substance use was perceived predominantly as a male issue, and numerous substance abuse studies feature most male participants, attributed to a merging of social, cultural, and economic factors prevalent in Iraqi society. Men frequently engage in public and social activities, resulting in enhanced mobility and heightened exposure to street and communal influences, thus leading to a more significant tendency for SUD. This finding aligned with a study in Iraq, which indicated a higher prevalence of substance use disorder among men, primarily attributable to traditional gender norms in the country [26]. In Arab countries, women and girls are less likely to consume alcohol and substances due to religious and social taboos [27]. Additionally, the stigmatization of substance use in Iraq may lead to difficulty accessing medical treatments,

particularly for women [9]. In addition, mentally ill women fear stigma and seek help from general practitioners or faith healers (FH) rather than mental health institutions [27]. The current study showed that more than half of the admitted patients had low educational levels, single status, and low daily incomes. Likewise, two previous national studies showed that SUD patients were primarily single, low-educated, and jobless [9,28]. This trend could be due to several socio-economic difficulties facing those vulnerable patients. Together with the lack of awareness about the significance of addiction treatment, these disadvantaged sociodemographic characteristics could hinder completing the detoxification program. This study found that more than half of the admitted patients were residents of Baghdad governorate, followed by Al-Najaf governorate. In previous studies, Basrah governorate had the second-highest number of admitted patients, while other governorates had the least [29]. The treatment center is in Baghdad, which facilitates access for local patients and those from adjacent governorates. On the other hand, patients from distant provinces should bear longer travel time and expenses. The findings of the present study indicate that younger patients with a shorter duration of addiction were more likely to complete the hospitalization period. Younger patients are most susceptible to SUD and societal disengagement due to several circumstances. On the other hand, young SUD patients receive a lot of support from their families, which is a crucial motivator to finish the detoxification period. The family can exert positive pressure on patients with SUD to encourage them to comply with treatment and consequently enhance the family's reputation. This pressure compels people to engage in treatment to reconcile family and community expectations. However, family pressure may cause over-reliance and unsustainable effects. Emphasizing family and community expectations may result in short-term external motivation rather than fostering a lasting internal drive for recovery [30]. This internal motivation should arise from the individual's recognition of the significance of change and a sincere desire for transformation. Young individuals additionally carry the obligation of fulfilling familial necessities and ensuring an adequate standard of living, which bolsters their desire to abstain from substances while aiming for a better future. The significance of family is paramount in Eastern countries, particularly in the Middle East, likely due to the prevailing attitudes and traditions in this region, where familial bonds have considerable value across multiple generations [31]. In addition to family-related support, factors related to the treatment facility can significantly enhance the young patients' adherence to the detoxification period by offering psychotropic treatment and psychological support for free. A shorter duration of addiction correlates with a less severe substance use problem, resulting in enhanced commitment to treatment. The effects of long-term substance abuse on the brain are lasting, even after the

individual ceases to use drugs. Drug-induced alterations in brain function can result in a variety of behavioral consequences, such as the inability to control the impulse to use drugs despite the negative consequences [17]. This underscores the significance of early care and intervention, which may offer higher recovery outcomes. Previous studies have revealed that younger age and a shorter history of substance use reduced chronicity with fewer adverse consequences, which may diminish the perceived need for treatment [32,33]. Frequent drug users may exhibit greater impulsivity, engage more extensively in illicit activities and countercultural practices, and possess a social network that undermines the efficacy of treatment [33]. In the current study, addiction to crystal (methamphetamine), Captagon (an amphetamine and theophylline combination), and Lyrica® (pregabalin) outnumbered other drugs by more than three-quarters of hospitalized patients. This result is also linked with the United Nations Office on Drugs and Crime (UNODC) report in Iraq, which states methamphetamine seizures surged about sixfold in 2023 relative to 2019, while Captagon-induced seizures reportedly tripled from 2022 to 2023, with total amounts confiscated in 2023 being 34 times greater than in 2019 [14]. It is noted that the primary sources of crystal and Captagon are the black market [28]. The prevalence of Captagon in Iraq is closely linked to regional conflicts and open borders with Syria, which has emerged as a major center for Captagon production, largely controlled by regime-affiliated militias that use the trade to generate revenue under sanctions [34]. Political instability and weak border controls have facilitated the smuggling of this drug. Captagon trade has also crossed the borders of the Middle East, indicating the sophistication and complexity of smuggling networks [34-35]. Several socio-economic and geopolitical factors influence the prevalence of methamphetamine in Iraq. The rise in methamphetamine use is part of a broader global trend in amphetamine-type stimulant (ATS) abuse, which has not spared Iraq. Factors such as economic instability, violence, and poorly monitored borders contribute to this drug's availability and use [7,36]. Additionally, a study that examined Iraqi community pharmacists' perceptions towards customers with substance use disorder reported that pregabalin is the most often requested medication by a person with SUD [6]. It is important to note that these treatments are only available by prescription. In this context, some pharmacists reported that patients pretend to suffer from neurological diseases or provide fake prescriptions to obtain these medications. In addition, drug addicts pose a threat to some pharmacists. Unfortunately, some pharmacists have lost their lives because they refused to dispense psychoactive medications to such people [37,38]. Launch campaigns and school-based programs to educate the public about the dangers of methamphetamine and enforce laws and policies to control the production and distribution of

methamphetamine. Develop community support initiatives to provide resources and support for individuals struggling with addiction [39]. It is worth noting there was a significant discrepancy between the substances reported by addicted patients and those identified by the toxicological tests. The toxicological lab tests showed that there were more drugs in the patient's body fluids compared to those disclosed by the patients with SUD. This discrepancy is due to patients' hesitation to reveal their substance use, particularly in the presence of family members during medical visits. The stigma surrounding addiction may diminish the likelihood of individuals disclosing their abuse. There may be variation in patient perception of the type and quantity of substances consumed, particularly in cases of polysubstance use or when substances are purchased from unreliable sources. This behavior highlights the necessity of establishing a safe and neutral environment for patients, potentially enhancing the accuracy of information regarding substance use. According to a study on the correlation between urine detection and self-reported substance use in West Africa, the sensitivity and specificity of self-reported psychoactive substance use were 66% and 64%, respectively [40]. A comprehensive systematic study of 207 out of 7924 found that the agreement between self-reports and biological tests ranges from good to excellent ( $>0.79$ ), with differences depending on drugs, biological samples, and treatment contexts. Studies indicate that informing individuals before biological testing improves self-reports [41]. Another study conducted in Iran showed that only 24.6% of participants reported using methamphetamine during treatment, with a sensitivity of 50.0% and a negative predictive value of 86.0% [42]. Consequently, self-reporting may not accurately assess the prevalence of psychoactive substance use. Effective diagnosis of psychoactive substance use in patients necessitates both a comprehensive history and urine analysis.

### Study limitations

There are some limitations to the study, such as the use of a single center in one province. However, this center is the largest in Baghdad and Iraq, drawing patients from surrounding regions. In fact, there are few clinics in Iraq; hence the current study's findings are fairly generalizable to patients with SUD in Iraq. The study relied on reading medical records and did not interact with patients to inquire about any potential factors that could influence their completion of the institutional detoxification process.

### Conclusion

There was a significantly higher SUD prevalence among men compared to women, and male patients had a greater likelihood to complete a substance use detoxification period compared to female patients. This prevalence could be related to cultural, biological, and

social pressure and gender norms that may hinder female patients from completing treatment retention. A short addiction duration and a younger age are correlated with higher treatment retention. Toxicological lab tests revealed more substances in the patient bodies compared to self-disclosed reports. The gender disparities in substance use disorder prevalence and treatment completion in Iraq highlight the necessity for targeted interventions that account for societal factors, provide gender-sensitive treatment centers, and encourage family and community support to enhance treatment engagement and outcomes.

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## Conflict of interests

No conflict of interest was declared by the authors.

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## Data sharing statement

Supplementary data can be shared with the corresponding author upon reasonable request.

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