IJBMC International Journal of Body, Mind and Culture

Volume 12, Issue 9, pp 224-233
DOI: 10.61838/ijbmc.v12i9.839

Article type:
Original Research

Prevalence and Determinants of Relapse Among Individuals with Substance Use Disorders in Iran: A Multi-Center Study

Mehran. Dakhil Alian[1], Fereshteh. Shakibaei[2*]

1 Psychiatry Resident, Isfahan University of Medical Sciences, Isfahan, Iran.
2 Associate Professor, Child and Adolescent Psychiatrist, Behavioral Sciences Research Center, Medical School, Isfahan University of Medical Sciences, Isfahan, Iran.

Corresponding author email address:
shakibaei@med.mui.ac.ir

Article history:

Received 21 Feb 2025
Revised 14 May 2025
Accepted 24 June 2025
Published online 01 Dec 2025

How to cite this article:
Dakhil Alian, M., & Shakibaei, F. (2025). Prevalence and Determinants of Relapse Among Individuals with Substance Use Disorders in Iran: A Multi-Center Study. International Journal of Body, Mind and Culture, 12(9), 224-233.

ABSTRACT

Objective: Robust, context-specific data on relapse magnitude and its determinants are essential for designing effective prevention and recovery strategies.

Methods and Materials: In a multi-center cross-sectional study, 412 adults with DSM-5 SUD were recruited from eight outpatient addiction treatment centers in three Iranian provinces. Eligible participants had completed at least one structured treatment episode and achieved a minimum of one month of abstinence. Data were collected using a structured questionnaire assessing socio-demographic and clinical characteristics, relapse history, self-reported reasons for relapse, perceived social support, abstinence self-efficacy, family conflict, craving, psychological distress, and environmental factors (drug-using network, drug availability). Relapse was defined as a return to regular problematic use after at least one month of abstinence. Bivariate tests and multivariable logistic regression were used to identify independent predictors of relapse.

Findings: Overall, 61.9% of participants (n = 255) reported relapse after their most recent treatment episode; the median time to relapse was four months. In multivariable analysis, younger age, unemployment, primary opioid use, longer duration of use, more previous treatment episodes, and psychiatric comorbidity predicted higher relapse odds. Lower social support and abstinence self-efficacy, higher family conflict, greater craving, having at least one drug-using close contact, and perceiving drugs as easily available were also independently associated with relapse.

Conclusion: Relapse is highly prevalent among treatment-seeking individuals with SUD in Iran and is shaped by interacting individual, interpersonal, and environmental factors. Comprehensive relapse prevention requires integrated clinical, family-based, and structural interventions tailored to these determinants.

Keywords: Substance use disorders, addiction, prevalence, relapse, Iran.

Introduction

Substance use disorders (SUDs) are among the leading contributors to global morbidity and mortality. Recent global estimates suggest that nearly 292 million people used an illicit drug in 2022 and around 64 million were living with a drug use disorder, while only about one in eleven received any form of treatment (United

Nations Office on Drugs and Crime [UNODC], 2024). Analyses from the Global Burden of Disease collaboration indicate that drug use disorders are among the fastest-growing behavioral risk factors for disability-adjusted life years (DALYs), with age-standardized DALY rates attributable to drug use increasing by more than 8% over the past decade (Hay et al., 2025). Despite large investments in treatment systems, relapse after an initial period of abstinence remains the norm rather than the exception, with international studies suggesting that more than half of patients return to problematic use within the first year following treatment (Mao et al., 2024). Understanding the extent and determinants of relapse in specific national contexts is therefore a central priority for research, service planning, and policy.

Iran is a high-burden setting for substance use, particularly opioid use, due to its geographical proximity to major opium-producing regions and its location on key trafficking routes from Afghanistan to Europe (Amin-Esmaeili et al., 2016; Asadi et al., 2025). National survey data show that the 12-month prevalence of illicit drug use disorders in Iran is approximately 2–3%, with opioids (especially opium and heroin) accounting for the largest share of problems (Amin-Esmaeili et al., 2016). More recent population size estimation studies indicate that substance use is substantially more prevalent among men than women, that opium remains the most commonly used substance among adults, and that there are several hundred thousand people who inject drugs (PWID) nationally (Rastegari et al., 2023; Rastegari et al., 2022). Substance use disorders are estimated to account for roughly 2% of all disease burden in the country and rank among the top three public health challenges (Rastegari et al., 2022; Asadi et al., 2025).

Over the past two decades, Iran has implemented an extensive network of harm-reduction and treatment services, including methadone and buprenorphine maintenance, residential and outpatient rehabilitation centers, and psychosocial interventions delivered through governmental and non-governmental organizations (Mirzaei et al., 2024). Nevertheless, important gaps remain in coverage, continuity of care, and quality of psychosocial services. Policy analyses highlight persistent challenges such as fragmented governance, limited integration between health and social services, inadequate attention to women and other vulnerable groups, and a continuing tension between punitive and public-health approaches (Mirzaei et al., 2024). Within this context, relapse after treatment is widely recognized by clinicians and policymakers as a major barrier to achieving sustainable recovery and to containing the broader social harms associated with drug use.

Relapse is generally conceptualized as a return to a pattern of problematic use following a period of abstinence or controlled use that is clinically significant and associated with functional impairment (Marlatt & Donovan, 2005; Mao et al., 2024). It is usually distinguished from a lapse, which refers to an isolated episode of use that does not necessarily herald a full return to prior levels of consumption. Contemporary models portray relapse as a dynamic, non-linear process, influenced by interactions among individual vulnerabilities (e.g., craving, impulsivity, psychiatric comorbidity), environmental and social triggers (e.g., drug availability, peer networks, family conflict), and structural factors (e.g., poverty, housing instability, criminal justice involvement). Relapse is not simply an individual failure but often reflects the limitations of treatment systems and broader social determinants of health (Barati et al., 2021; Mousali et al., 2021).

Empirical studies from Iran consistently document high relapse rates among people receiving treatment for SUD. Early work in methadone maintenance programs suggested that approximately 60–65% of patients relapsed within six months of admission in some regions (Pashaei et al., 2013). More recent hospital- and clinic-based studies have reported relapse proportions ranging from about 30% to over 70%, depending on the sample, follow-up period, and operational definition of relapse (Moradinazar et al., 2020; Mousali et al., 2021). A cross-sectional study of 396 patients in Hamadan found that 80% had experienced at least one episode of relapse following treatment, underscoring the chronic, recurrent nature of SUD in this context (Mousali et al., 2021). Similarly, a recent study of 403 clients attending treatment centers in Saveh reported a high event rate of relapse over the observation period and identified multiple demographic and behavioral risk factors (Ezati et al., 2023).

Qualitative studies have provided additional insight into the subjective experience of relapse among Iranian service users. For example, Seyedfatemi et al. (2014), in a qualitative study of opiate-dependent individuals,

described relapse as a cyclical process triggered by emotional distress, interpersonal conflict, social cues, and a gradual erosion of motivation for abstinence (Seyedfatemi et al., 2014). Participants emphasized feelings of hopelessness, stigma, and a lack of social support as key drivers that pulled them back into drug use, even after substantial periods of abstinence. More recent qualitative work suggests that relapse is often embedded in complex life trajectories characterized by economic instability, family breakdown, and cumulative trauma, highlighting the need for multi-level interventions (Araban et al., 2026).

An emerging body of quantitative research has begun to map the multi-level determinants of relapse among Iranian patients. Using an ecological framework, Barati et al. synthesized findings from national and international studies and concluded that relapse is shaped by demographic and clinical characteristics (e.g., younger age, lower education, polysubstance use, psychiatric comorbidity), interpersonal factors (e.g., family disputes, lack of family support, having drug-using friends or relatives), environmental factors (e.g., easy access to drugs, presence of high-risk venues), and behavioral and cognitive factors (e.g., weak self-efficacy, negative outcome expectancies, poor coping skills) (Barati et al., 2021; Moazami Goudarzi et al., 2025; Shaker, & Kadhim, 2024). In a large cross-sectional sample of treatment-seeking individuals, Mousali et al. found that easy access to drugs and family conflict increased the odds of relapse by more than threefold and fourfold, respectively, even after adjusting for other variables (Mousali et al., 2021; Pirzadeh & Parsakia, 2023).

Other Iranian studies have focused on specific populations or substances. Moeeni et al. (2016), in a cohort of amphetamine-type stimulant users in a matrix treatment program, showed that younger age, history of injection, and continued contact with drug-using peers predicted shorter time to relapse, emphasizing the importance of both individual and network factors. A systematic review of relapse among women highlighted additional gender-specific factors, including intimate partner violence, financial dependency, and the double stigma of substance use and non-conformity to gender norms (Shid Anbarani et al., 2023). Interventional studies based on the Theory of Planned Behavior and other health behavior models demonstrate that enhancing perceived behavioral control, abstinence self-efficacy, and intention to remain abstinent can significantly reduce relapse rates, at least in the short term (Sohrabpour et al., 2024).

Despite these advances, the literature on relapse in Iran remains fragmented. Many studies are limited to single cities or provinces and focus on specific treatment modalities (e.g., methadone maintenance) or subgroups (e.g., men only, amphetamine users). There is substantial heterogeneity in how relapse is defined and measured, which complicates comparison of findings across studies and the derivation of robust national estimates. Moreover, although ecological and multi-level frameworks have been proposed, relatively few empirical studies explicitly integrate individual, interpersonal, and structural determinants within the same analytic model (Barati et al., 2021; Mirzaei et al., 2024).

Given the high burden of SUDs, the substantial public investment in treatment, and the persistent problem of relapse in Iran, there is a clear need for up-to-date, context-sensitive evidence on both the magnitude and the determinants of relapse among people with substance use disorders. Existing data suggest that relapse is common, often occurring within months of treatment initiation, and is driven by an interplay of individual vulnerabilities, social environments, and structural conditions. However, comprehensive studies that quantify relapse rates and simultaneously examine a broad set of potential correlates in Iranian treatment populations are still limited.

The present study was therefore designed to (a) estimate the prevalence and temporal pattern of relapse among individuals with substance use disorders who have received treatment in selected addiction treatment centers in Iran, and (b) identify key demographic, clinical, interpersonal, and environmental factors associated with relapse in this population. By providing a detailed picture of relapse rates and their correlates in an Iranian context, the study aims to inform the design of targeted, multi-level interventions and to contribute to national policy discussions on how best to strengthen the continuum of care for people with substance use disorders.

Methods and Materials

Study Design and Participants

This study used a multi-center, cross-sectional design to estimate the prevalence of relapse and to identify factors associated with relapse among individuals with substance use disorders (SUDs) in Iran. Data were collected between March 2023 and February 2024 from eight outpatient addiction treatment centers located in three provinces (Tehran, Isfahan, and Kermanshah), selected to represent different geographic and socio-economic contexts. All centers provided pharmacological treatment (e.g., methadone or buprenorphine maintenance, detoxification) and basic psychosocial services according to national guidelines.

Participants

The target population consisted of adults with a diagnosed SUD who had experienced at least one period of abstinence after a formal treatment episode. Inclusion criteria were: Age ≥ 18 years; Meeting DSM-5 criteria for a substance use disorder (as documented in the clinical record); History of at least one structured treatment episode for substance use (e.g., maintenance therapy, residential rehabilitation, structured outpatient program); At least one month of continuous abstinence following the most recent treatment episode (self-reported and confirmed in the clinical file); and ability to provide informed consent and complete the study questionnaire. Exclusion criteria were: Evidence of acute psychosis, severe cognitive impairment, or intoxication at the time of interview, judged by the clinical team; Current hospitalization for any acute medical or psychiatric condition; and inability to communicate in Persian.

Sampling and Sample Size

A multi-stage sampling strategy was used. First, three provinces with established addiction treatment networks and surveillance systems were purposively selected. Second, within each province, treatment centers were randomly sampled from official lists maintained by provincial health authorities. Within each sampled center, systematic sampling was used: every third eligible patient attending the clinic on pre-specified days was invited to participate until the target number was reached.

Sample size was calculated using the single-proportion formula, assuming an expected relapse prevalence of 60% (based on previous Iranian studies), a 95% confidence level, and a margin of error of 5%. This yielded a minimum sample size of 369. To allow for clustering, non-response, and incomplete data, we targeted 420 participants. Of 452 patients approached, 28 declined participation and 12 provided incomplete questionnaires, resulting in a final analytic sample of 412 participants (response rate 91.2%)..

Instruments

A structured questionnaire was developed based on previous Iranian and international research on relapse (Barati et al., 2021; Mousali et al., 2021; Ezati et al., 2023; Moeeni et al., 2016). The instrument consisted of four sections:

1. Socio-demographic and Clinical Characteristics

Participants reported age, gender, marital status, education, employment status, housing status, and monthly household income. Clinical variables included primary substance of use (opioids, amphetamine-type stimulants, cannabis, alcohol, other), route of administration (oral, smoking, injection, mixed), age at onset of regular use, duration of use (years), number of previous treatment episodes, history of incarceration, and self-reported psychiatric diagnosis (e.g., depression, anxiety, bipolar disorder) as previously communicated by a clinician.

2. Relapse:

Relapse was operationalized in line with previous Iranian studies (Pashaei et al., 2013; Mousali et al., 2021). For the most recent treatment episode, participants were asked: “Following discharge or initiation of maintenance treatment, did you return to regular substance use (at least four days per week for two consecutive weeks) after a period of at least one month of abstinence?” Those answering “yes” were classified as having relapsed in relation to their most recent treatment episode. Additional items captured: (a) number of relapses over the past 12 months; (b) time (in months) from discharge or initiation of maintenance treatment to first relapse; and (c) primary reasons for relapse, based on a checklist derived from prior qualitative and quantitative research (e.g., craving, emotional distress, family conflict, peer influence, easy access to drugs, economic stress, boredom, physical pain) with the option to provide open-ended responses (Seyedfatemi et al., 2014; Araban et al., 2026).

3. Psychosocial Factors

Psychosocial determinants included:

Perceived social support, measured using the 12-item Multidimensional Scale of Perceived Social Support

Ijbmc.org
E-ISSN: 2345-5802

(MSPSS). Higher scores indicate greater perceived support.

Abstinence self-efficacy, assessed with a 20-item Persian adaptation of the Drug-Taking Confidence Questionnaire, yielding a total score in which higher values reflect greater confidence in resisting use across high-risk situations.

Perceived availability of drugs, rated on a 5-point Likert scale from "very difficult" to "very easy".

Substance-using social network, assessed by asking whether the participant currently had at least one close friend or relative who regularly used drugs (yes/no).

Family conflict, measured using a short 8-item family conflict scale, with higher scores indicating more frequent conflict and tension at home.

4. Craving and Psychological Distress

Craving was measured using a 10-point visual analogue scale (0 = no craving at all, 10 = extreme craving) referring to the past week. Psychological distress was assessed using the 21-item Depression, Anxiety, and Stress Scale (DASS-21); summary scores were calculated and categorized according to established cut-offs.

All instruments had previously been translated into Persian and used in Iranian samples, with acceptable reliability reported. In the current study, internal consistency (Cronbach's alpha) was .88 for MSPSS, .92 for the self-efficacy scale, .80 for the family conflict scale, and .93 for DASS-21.

Procedure

Data collection was carried out by trained psychology graduates who received a two-day training on the study protocol, ethical considerations, and interview techniques. After eligibility screening by clinic staff, the research assistant explained the aims of the study, assured confidentiality and anonymity, and obtained written informed consent. Participants then completed the questionnaire in a private room at the treatment center. For those with low literacy, items were read aloud and responses recorded by the interviewer.

To enhance confidentiality and reduce social desirability bias, participants were reminded that their responses would not be shared with clinicians or other patients and would not affect their access to services. Each questionnaire took approximately 30–40 minutes to complete.

Ethics

Participation was voluntary; respondents could withdraw at any time without consequences for their treatment. No personal identifiers were collected on questionnaires. Completed forms were stored in locked cabinets, and electronic data were anonymized and password-protected.

Analysis

Data were entered into SPSS version 26 and checked for accuracy and missing values. Descriptive statistics (mean, standard deviation, frequency, and percentage) were calculated for all variables. The primary outcome was relapse (yes/no) with respect to the most recent treatment episode.

Bivariate analyses compared relapsed and non-relapsed participants using independent-samples t-tests for continuous variables and χ^2 tests for categorical variables. Variables associated with relapse at $p < .20$ in bivariate analyses, as well as those considered theoretically important based on prior literature (e.g., age, gender, primary substance, self-efficacy), were entered into a multivariable logistic regression model to identify independent predictors of relapse. Adjusted odds ratios (aORs) and 95% confidence intervals (CIs) were reported.

To explore the reasons for relapse, frequencies and percentages for each self-reported reason were calculated. Because multiple reasons could be endorsed, these proportions sum to more than 100%. For descriptive purposes, we also summarized the median time to relapse and number of relapse episodes in the past year among those who had relapsed. Statistical significance was set at $p < .05$ (two-tailed).

Findings and Results

Sample Characteristics

The final sample included 412 participants. The mean age was 37.4 years (SD = 9.1; range 18–65). Most participants were male (88.6%), married or cohabiting (54.4%), and had completed at most secondary education (61.2%). Approximately 47.1% were unemployed, 28.6% were employed full-time, and the remainder worked part-time or informally. The mean duration of regular substance use was 11.2 years (SD = 7.5).

The most commonly reported primary substance was opioids (68.2%; primarily opium, heroin, and opium

derivatives), followed by amphetamine-type stimulants (21.4%; predominantly methamphetamine) and other substances (10.4%; including cannabis, alcohol, and sedative-hypnotics). About 23.3% reported a history of injection drug use. The median number of previous treatment episodes was 2 (interquartile range [IQR] = 1–3). A self-reported psychiatric diagnosis (most commonly depression or anxiety) was present in 32.5% of participants.

Prevalence and Pattern of Relapse

Overall, 255 of 412 participants (61.9%) met the study definition of relapse in relation to their most recent treatment episode. Among these, the median time to relapse after discharge or initiation of maintenance treatment was 4 months (IQR = 2–8 months). Over the previous 12 months, 43.1% of those who relapsed reported two or more relapse episodes.

Bivariate Associations with Relapse

Table 1 presents socio-demographic and clinical characteristics by relapse status. Relapsed participants were significantly younger, more likely to be unemployed, and more likely to report opioids or methamphetamine as their primary substance. They also had a longer duration of substance use, a higher number of previous treatment episodes, and a higher prevalence of self-reported psychiatric diagnoses.

Table 1

Socio-demographic and Clinical Characteristics by Relapse Status (N = 412)

Variable	*No relapse (n = 157)*	*Relapse (n = 255)*	*Test statistic (p)*
Age, years, M (SD)	*39.1 (9.4)*	*36.3 (8.7)*	*t(410) = 3.05, p = .002*
Male, n (%)	*134 (85.4)*	*231 (90.6)*	*$\chi^2(1) = 2.78$, p = .095*
Unemployed, n (%)	*58 (36.9)*	*136 (53.3)*	*$\chi^2(1) = 10.64$, p = .001*
Married/cohabiting, n (%)	*87 (55.4)*	*137 (53.7)*	*$\chi^2(1) = 0.10$, p = .749*
Education ≤ secondary, n (%)	*88 (56.1)*	*164 (64.3)*	*$\chi^2(1) = 2.89$, p = .089*
Primary substance: opioids, n (%)	*93 (59.2)*	*187 (73.3)*	*$\chi^2(1) = 8.46$, p = .004*
Primary substance: stimulants, n (%)	*30 (19.1)*	*58 (22.7)*	*$\chi^2(1) = 0.77$, p = .380*
Duration of use, years, M (SD)	*9.8 (6.9)*	*12.1 (7.8)*	*t(410) = −3.03, p = .003*
Previous treatment episodes, M (SD)	*1.6 (1.1)*	*2.4 (1.6)*	*t(410) = −5.22, p < .001*
History of incarceration, n (%)	*51 (32.5)*	*115 (45.1)*	*$\chi^2(1) = 6.49$, p = .011*
Psychiatric diagnosis, n (%)	*37 (23.6)*	*97 (38.0)*	*$\chi^2(1) = 8.77$, p = .003*

Table 2 summarizes psychosocial and psychological variables by relapse status. Relapsed participants reported significantly lower social support, lower abstinence self-efficacy, higher family conflict, greater craving, and higher psychological distress (DASS-21 total score). They were also more likely to report having at least one close friend or relative who used drugs and to perceive drugs as easily available in their community.

Table 2

Psychosocial and Psychological Characteristics by Relapse Status (N = 412)

Variable	No relapse (n = 157)	Relapse (n = 255)	Test statistic (p)
MSPSS social support, M (SD)	58.9 (11.3)	51.2 (12.8)	t(410) = 6.09, p < .001
Abstinence self-efficacy, M (SD)	69.7 (13.6)	60.4 (14.9)	t(410) = 6.34, p < .001
Family conflict, M (SD)	15.8 (4.9)	19.6 (5.5)	t(410) = −7.24, p < .001
Craving (0–10), M (SD)	3.4 (2.1)	6.1 (2.4)	t(410) = −11.13, p < .001
DASS-21 total score, M (SD)	22.5 (13.8)	31.8 (15.4)	t(410) = −6.16, p < .001
At least one drug-using close contact, n (%)	61 (38.9)	154 (60.4)	$\chi^2(1) = 17.31$, p < .001
Perceived drug availability “easy/very easy”, n (%)	69 (43.9)	178 (69.8)	$\chi^2(1) = 25.28$, p < .001

Self-reported Reasons for Relapse

Among those who relapsed (n = 255), the most frequently endorsed reasons were: Craving and inability to resist urges (72.2%); Emotional distress (sadness, anxiety, anger) (58.4%); Family conflict or marital problems (46.7%); Influence of drug-using friends or relatives (43.9%); Easy access and availability of substances (40.0%); Economic stress and unemployment (35.3%) and boredom and lack of meaningful activities (30.6%). Many participants endorsed multiple reasons, suggesting that relapse often results from the convergence of internal and external stressors.

Multivariable Predictors of Relapse

Variables associated with relapse at $p < .20$ in bivariate analyses were entered into a multivariable logistic regression model. The final model included age, employment status, primary opioid use, duration of use, number of previous treatment episodes, psychiatric diagnosis, social support, abstinence self-efficacy, family conflict, craving, presence of drug-using close contacts, and perceived drug availability. Table 3 presents the adjusted odds ratios. The model was statistically significant ($\chi^2(12) = 132.7$, $p < .001$) and demonstrated acceptable discrimination (Nagelkerke $R^2 = .39$; area under the ROC curve = 0.81).

Table 3

Multivariable Logistic Regression Predicting Relapse (N = 412)

Predictor	aOR	95% CI	p
Age (per 1-year increase)	0.97	0.95–0.99	.009
Unemployed (vs. employed)	1.78	1.12–2.85	.015
Primary opioid (vs. other)	2.05	1.28–3.28	.003
Duration of use (per 1-year increase)	1.03	1.00–1.06	.047
Previous treatment episodes (per episode)	1.31	1.12–1.54	.001
Psychiatric diagnosis (yes vs. no)	1.71	1.09–2.69	.019
MSPSS social support (per 10-point increase)	0.74	0.62–0.88	.001
Abstinence self-efficacy (per 10-point increase)	0.69	0.58–0.82	< .001
Family conflict (per 5-point increase)	1.42	1.15–1.76	.001
Craving (per 1-point increase, 0–10)	1.38	1.21–1.56	< .001
Drug-using close contact (yes vs. no)	2.46	1.59–3.80	< .001
Drug availability “easy/very easy”	2.31	1.45–3.67	< .001

Younger age, unemployment, primary opioid use, longer duration of use, more previous treatment episodes, co-occurring psychiatric diagnosis, lower social support, lower abstinence self-efficacy, higher family conflict, greater craving, having at least one drug-using close contact, and perceiving drug availability as easy were all independently associated with higher odds of relapse.

Discussion and Conclusion

This multi-center study provides a comprehensive picture of relapse among individuals with substance use disorders attending outpatient treatment centers in Iran. Nearly two-thirds of participants (61.9%) reported relapse after their most recent treatment episode, with many experiencing multiple relapses in the preceding year. These findings underscore the chronic and recurrent nature of SUDs and confirm that relapse remains a major challenge in the Iranian treatment system, consistent with previous work reporting high relapse rates across different regions and treatment modalities (Pashaei et al., 2013; Mousali et al., 2021; Ezati et al., 2023).

The observed relapse proportion in this study is broadly comparable to prior Iranian and international reports. For example, Pashaei et al. (2013) found that approximately 60% of opioid-dependent patients relapsed within six months of entering methadone maintenance treatment. Similarly, Mousali et al. (2021) reported that more than 80% of a clinical sample had experienced at least one relapse episode after treatment. International cohort studies also indicate that 40–70% of individuals with SUD relapse within the first year following treatment, depending on substance type, treatment intensity, and follow-up length. Collectively, this evidence reinforces the view that relapse should be expected and planned for as part of a long-term, chronic care approach rather than interpreted as treatment failure or individual weakness.

The median time to relapse of four months observed here suggests a critical “vulnerability window” in the first year after treatment during which intensified support may be particularly important. This aligns with previous research in Iran and elsewhere showing that the risk of relapse is highest in the early months after discharge or initiation of maintenance therapy and then gradually declines (Moeeni et al., 2016; Pashaei et al., 2013). It also highlights the potential value of structured continuing care, periodic follow-up contacts, and step-down support during this period to consolidate gains.

Consistent with ecological models of relapse (Barati et al., 2021), our results indicate that relapse arises from the intersection of individual, interpersonal, and environmental factors.

At the individual level, younger age, longer duration of use, greater number of previous treatment episodes, higher craving, and co-occurring psychiatric disorders were all associated with relapse. These findings are in line with previous Iranian work showing that younger individuals and those with more severe or chronic patterns of use are at higher risk of relapse (Mousali et al., 2021; Ezati et al., 2023). Craving emerged as one of the strongest predictors of relapse, echoing a large body of evidence that identifies craving as a proximal trigger of relapse episodes (Marlatt & Donovan, 2005). The association between psychiatric comorbidity and relapse is also consistent with earlier studies in Iran and internationally, emphasizing the need for integrated treatment of SUD and common mental disorders (Amin-Esmaeili et al., 2016).

Lower abstinence self-efficacy independently predicted relapse, even after adjusting for other variables, corroborating theory and prior empirical work which suggest that self-efficacy is a key cognitive determinant of relapse (Sohrabpour et al., 2024). Interventions that enhance confidence in the ability to resist use—through skills training, coping strategies, and mastery experiences—may therefore contribute substantially to relapse prevention.

At the interpersonal level, higher family conflict and having at least one drug-using close contact were robust predictors of relapse. These findings are in line with earlier Iranian studies reporting that family disputes, lack of family support, and contact with drug-using peers are among the strongest correlates of relapse (Barati et al., 2021; Mousali et al., 2021; Araban et al., 2026). Qualitative studies in Iran have highlighted how unresolved family conflict, perceived rejection, and stigmatizing attitudes can erode motivation for abstinence and drive individuals back to drug use as a coping strategy (Seyedfatemi et al., 2014). At the same time, having drug-using friends or relatives increases exposure to cues, opportunities, and social pressures for drug use. Together, these findings argue strongly for family- and network-focused components in relapse prevention efforts, including family therapy, psychoeducation, and programs that help clients construct non-using support networks.

At the environmental level, perceived ease of drug availability was independently associated with higher relapse odds, echoing earlier work in Iran demonstrating that easy access to drugs is one of the most consistent predictors of relapse (Mousali et al., 2021; Ezati et al., 2023). In a context where drugs may be readily accessible in certain neighborhoods or social settings, individual-level efforts to remain abstinent are continually undermined by frequent exposure to substances and cues. Addressing this dimension requires not only clinical interventions but also broader policy measures aimed at reducing availability, disrupting local drug markets, and providing safe, drug-free environments for recovery.

Finally, social support emerged as a protective factor: higher perceived support from family, friends, and significant others was associated with a reduced likelihood of relapse. This finding is consistent with international literature highlighting the protective role of supportive relationships in maintaining abstinence and facilitating recovery (Barati et al., 2021; Sohrabpour et al., 2024). Enhancing supportive ties, facilitating peer support or mutual-help groups, and addressing stigma within families and communities may thus be critical ingredients of relapse prevention strategies in Iran.

Participants' self-reported reasons for relapse largely mirrored the quantitative findings. Craving, emotional distress, family conflict, peer influence, and easy availability were among the most commonly cited triggers. These subjective accounts resonate with previous qualitative work in Iran, which has described relapse as a dynamic process arising from the accumulation of psychological strain, interpersonal tensions, and environmental pressures (Seyedfatemi et al., 2014; Araban et al., 2026). The fact that many respondents endorsed multiple reasons underscores the need for multi-component interventions that simultaneously address emotional regulation, coping skills, family dynamics, and environmental risk.

The high relapse rate and the pattern of determinants observed in this study have several implications: Treatment programs should be designed with the expectation that relapse is common and should include explicit relapse prevention components, including skills training, craving management, and the development of individualized plans for high-risk situations. Given the role of psychiatric comorbidity, mental health screening and treatment should be systematically integrated into addiction services. Addressing depression, anxiety, and

trauma may reduce relapse risk and improve the overall quality of life.

Family conflict and drug-using social networks are key determinants of relapse. Interventions that involve families in education, communication training, and conflict resolution, as well as those that support clients in building pro-recovery networks, should be strengthened. Programs using cognitive-behavioral, motivational, or strengths-based approaches to bolster abstinence self-efficacy and social support may have a particularly important role. Evidence from theory-based interventions in Iran suggests that working on perceived behavioral control and support can meaningfully reduce relapse rates (Sohrabpour et al., 2024). Efforts to reduce drug availability in high-risk neighborhoods, support employment and housing for people in recovery, and address legal and policy barriers (e.g., criminal records, stigma in the labor market) are crucial to complement clinical interventions.

This study has several strengths. It draws on a relatively large sample from multiple treatment centers and uses standardized, validated instruments to measure psychosocial and psychological factors. It also integrates multiple levels of analysis, including individual, interpersonal, and environmental determinants, thereby providing a nuanced picture of relapse in an Iranian context. However, limitations must be acknowledged. First, the cross-sectional design precludes causal inferences and may be subject to recall bias, particularly regarding time to relapse and reasons for relapse. Prospective longitudinal designs would allow for a clearer understanding of temporal relationships and trajectories. Second, relapse was assessed by self-report and was not systematically validated by biological measures, although confidentiality assurances and the clinical context may have reduced under-reporting. Third, the sample was drawn from outpatient treatment centers and may not represent individuals not engaged in treatment, women, or those in rural areas, groups that are often under-represented in research. Fourth, although the model explained a substantial proportion of variance in relapse, unmeasured factors—such as personality traits, spiritual coping, or detailed neighborhood characteristics—may also play important roles. Future research should explore these dimensions.

Relapse is highly prevalent among individuals with substance use disorders attending outpatient treatment centers in Iran, with nearly two-thirds of participants returning to problematic use after their most recent treatment episode. Relapse is shaped by an interlocking set of factors, including younger age, unemployment, opioid use, chronicity of use, psychiatric comorbidity, low social support and self-efficacy, high family conflict, high craving, drug-using social networks, and easy drug availability. These findings underscore the need for a comprehensive, multi-level approach to relapse prevention that integrates evidence-based clinical interventions with family- and community-based strategies and structural reforms. Designing and implementing such approaches is essential if Iran is to reduce the burden of substance use disorders and to support sustained recovery among those affected.

Acknowledgments

The authors express their gratitude and appreciation to all participants.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Ethical considerations in this study were that participation was entirely optional.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was carried out independently with personal funding and without the financial support of any governmental or private institution or organization.

Authors' Contributions

All authors equally contribute to this study.

References

Amin-Esmaeili, M., Rahimi-Movaghar, A., Sharifi, V., Hajebi, A., Radgoodarzi, R., Mojtabai, R., & Motevalian, A. (2016). Epidemiology of illicit drug use disorders in Iran: Prevalence, correlates, comorbidity and service utilization results from the Iranian Mental Health Survey. *Addiction*, 111(10), 1836–1847.

Araban, M., Ezati, E., Karimy, M., & Baghcheghi, N. (2026). An exploration into the factors contributing to addiction relapse: A qualitative study. *Heliyon*, 12, eXXXXX.

Asadi, A., et al. (2025). Illicit drug use derived from wastewater-based epidemiology in Iran. Heliyon, 11, eXXXXX.

Barati, M., Bashirian, S., Mohammadi, Y., Moeini, B., Mousali, A. A., & Afshari, M. (2021). An ecological approach to exploring factors affecting substance use relapse: A systematic review. *Journal of Public Health*, 29(1), 1–12.

Ezati, E., Baghcheghi, N., Araban, M., & Karimy, M. (2023). Assessing drug use relapse rate and its associated factors among Iranian users. *Journal of Substance Use*, 28(6), 945–951.

Hay, S. I., et al. (2025). Burden of 375 diseases and injuries and risk-attributable DALYs for 204 countries and territories, 1990–2023. *The Lancet*, 405, 1–22.

Mao, S., Chou, T., & D'Orsogna, M. (2024). A probabilistic model of relapse in drug addiction. *Journal of Theoretical Biology*, 576, 111–125.

Marlatt, G. A., & Donovan, D. M. (Eds.). (2005). *Relapse prevention: Maintenance strategies in the treatment of addictive behaviors (2nd ed.)*. Guilford Press.

Mirzaei, S., et al. (2024). Exploring substance use disorder treatment policies in Iran: Achievements, challenges and future directions. *Harm Reduction Journal*, 21, 1–14.

Moazami Goudarzi, S., Azemoudeh, M., & Hoseini Nasab, S. D. (2025). Family Cohesion, Religious Values, and Spiritual Intelligence as Predictors of Youth Addiction: The Mediating Role of Social and Psychological Well-being. *International Journal of Body, Mind and Culture*, 12(3), 98–104. DOI: 10.61838/ijbmc.v12i3.880

Moeeni, M., Razaghi, E. M., Ponnet, K., Torabi, F., Shafiee, S. A., & Pashaei, T. (2016). Predictors of time to relapse in amphetamine-type substance users in the matrix treatment program in Iran: A Cox proportional hazard model application. *BMC Psychiatry*, 16, 265.

Moradinazar, M., et al. (2020). Prevalence of drug use, alcohol consumption, cigarette smoking and socioeconomic-related inequalities in Iran: Findings from a national survey. *Substance Abuse Treatment, Prevention, and Policy*, 15, 39.

Mousali, A. A., Barati, M., Mohammadi, Y., Bashirian, S., Moeini, B., & Afshari, M. (2021). Factors affecting substance use relapse among Iranian addicts. *Journal of Education and Health Promotion*, 10, 129.

Pashaei, T., Shojaeizadeh, D., Rahimi Foroushani, A., Ghazitabatabae, M., Moeeni, M., Rajati, F., & Moradi, A. (2013). Effectiveness of relapse prevention cognitive-behavioral model in opioid-dependent patients participating in the methadone maintenance treatment in Iran. *Iranian Journal of Public Health*, 42(8), 896–902.

Pirzadeh, S., & Parsakia, K. (2023). A Comparative Study of Family Structure (Cohesion and Flexibility) and Functioning in People with and without Drug Abuse: Family structure and drug abuse. *International Journal of Body, Mind and Culture*, 10(1), 82–89. DOI: 10.22122/ijbmc.v10i1.278

Rastegari, A., Baneshi, M. R., Hajebi, A., et al. (2023). Population size estimation of people who use illicit drugs and alcohol in Iran, 2015–2016. *International Journal of Health Policy and Management*, 12, 1–11.

Shaker, A. F., & Kadhim, A. A. (2024). Psychological and Social Risk Factors Contributing to Substance Use at Babylon Governorate, Iraq. *International Journal of Body, Mind and Culture*, 11(5). DOI: 10.22122/ijbmc.v11i5.766

Seyedfatemi, N., Peyrovi, H., & Jalali, A. (2014). Relapse experience in Iranian opiate users: A qualitative study. *International Journal of Community Based Nursing and Midwifery*, 2(2), 85–93.

Shid Anbarani, B., et al. (2023). Factors affecting substance use relapse in women: A systematic review. *Scientific Journal of Forensic Medicine*, 29(3), 1–12.

Sohrabpour, M., Kamyab, A., Yari, A., Afzali Harsini, P., & Khani Jeihooni, A. (2024). The factors affecting substance abuse relapse based on the Theory of Planned Behavior in male addicts covered by addiction treatment centers in Southern Iran. *BMC Public Health*, 24, 1265.

United Nations Office on Drugs and Crime. (2024). *World Drug Report 2024*. UNODC.