

ORIGINAL RESEARCH

Substance Abuse Among University Students in Iran and Associated Factors: A Comprehensive Review

Tendencias de uso de sustancias entre estudiantes universitarios iraníes: una revisión exhaustiva

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Abstract

Substance abuse represents a critical public health concern among university cohorts, posing severe risks to academic success and long-term psychosocial well-being. This review aims to systematically identify prevalent substance use behaviors and characterize the underlying risk factors unique to university students in Iran. Utilizing a structured review framework, this study synthesizes data from cross-sectional literatures published between 2014 and 2025. Electronic databases—including ScienceDirect, PubMed, Scopus, Google Scholar, IranMedex, and SID—were searched using combinations of the following keywords: "risky behavior," "high-risk behavior," "substance use," "substance abuse," "smoking," "alcohol abuse," and "drug abuse," each crossed with the terms "university students" and "Iran." From an initial pool of 18212 articles, only 26 studies met the inclusion criteria. The most prevalent substance abuse behaviors among university students were found to be hookah and cigarette smoking, along with alcohol consumption. Substance use was significantly associated with sociodemographic variables such as male gender and older age, as well as behavioral risk factors such as attending social gatherings, and initiating substance use prior to 18 years of age. Parental support was found to be a significant protective factor against substance abuse. Hookah and cigarette smoking, along with alcohol consumption, were more commonly observed among male university students in Iran, although an increasing trend is observed among females consistent with the narrowing gender gap reported worldwide. Policymakers must implement strategies to safeguard the health of university students. The findings of this study can help health systems and government officials recognize potential health risks and implement interventions to promote the well-being of young people.

Keywords: Substance use, Hookah smoking, Cigarette smoking, Alcohol consumption.

Resumen

El abuso de sustancias representa una preocupación crítica de salud pública entre las cohortes universitarias, planteando graves riesgos para el éxito académico y el bienestar psicosocial a largo plazo. Esta revisión tiene como objetivo identificar sistemáticamente los comportamientos predominantes de uso de sustancias y caracterizar los factores únicos de riesgo subyacentes para los estudiantes universitarios en Irán. Utilizando un marco de revisión estructurado, este estudio sintetiza datos de literatura transversal publicada entre 2014 y 2025. Las bases de datos electrónicas —incluidas *ScienceDirect*, *PubMed*, *Scopus*, *Google Scholar*, *IranMedex* y *SID*— fueron buscadas utilizando combinaciones de las siguientes palabras clave: "comportamiento de riesgo", "comportamiento de alto riesgo", "uso de sustancias", "abuso de sustancias", "fumar", "abuso de alcohol" y "abuso de drogas", cada una cruzada con los términos "estudiantes universitarios" e "Irán". De un grupo inicial de 18,212 artículos, solo 26 estudios cumplieron los criterios de inclusión. Se encontró que los comportamientos de abuso de sustancias más prevalentes entre los estudiantes universitarios eran la *hookah* y el tabaco, junto con el consumo de alcohol. El uso de sustancias se asoció significativamente con variables sociodemográficas como ser de sexo masculino y mayor de edad, así como con factores de riesgo conductuales como asistir a reuniones sociales e iniciar el uso de sustancias antes de los 18 años de edad. Se encontró que el apoyo parental era un factor protector significativo contra el abuso de sustancias. La *hookah* y el tabaco, junto con el consumo de alcohol, se observaron más comúnmente entre los estudiantes universitarios masculinos en Irán, aunque se observa una tendencia creciente entre las mujeres consistente con la reducción de la brecha de género reportada en todo el mundo. Los responsables políticos deben implementar estrategias para salvaguardar la salud de los estudiantes universitarios. Los hallazgos de este estudio pueden ayudar a los sistemas sanitarios y a los funcionarios gubernamentales a reconocer posibles riesgos para la salud e implementar intervenciones para promover el bienestar de los jóvenes.

Palabras clave: uso de sustancias, fumar hookah, fumar cigarrillos, consumo de alcohol.



Introduction

Adolescence and young adulthood are critical developmental phases that offer significant opportunities for personal growth but also bring a heightened vulnerability to high-risk behaviors ⁽¹⁾. Among these behaviors, substance abuse remains a major global public health concern ⁽²⁾. According to the United Nations Office on Drugs and Crime (UNODC), more than 296 million people worldwide used drugs in 2021, with nearly 39.5 million individuals experiencing substance use disorders ⁽³⁾. Parallel to these international metrics, localized studies report a high prevalence of substance use and cigarette smoking among Iranian young adults ^(4, 5)—a trend consistent with global reports indicating that adolescents and young adults are uniquely prone to initiating tobacco, alcohol, and illicit drug use ⁽⁶⁾.

Substance use involves behaviors that can adversely affect physical and mental health as well as social, cultural, and economic well-being ⁽⁶⁻⁸⁾. Initiation frequently coincides with major life transitions. Entering university, in particular, entails separation from family, exposure to new peer networks, and shifts in lifestyle that may increase experimentation with psychoactive substances ⁽⁹⁾. From a sociocultural perspective, needs for identity, belonging, and social acceptance strongly shape use patterns in youth ⁽¹⁰⁾. Gender norms and expectations also matter: in many settings, male students experience peer pressure to consume alcohol or tobacco, whereas female students may face stigma, different or less frequent patterns of use, and unequal access to services ⁽¹¹⁾. Consumer trends and marketing, alongside the visibility of smoking and drinking in recreational spaces, further normalize these behaviors ⁽¹²⁾.

The health and psychosocial consequences are exceptionally wide-ranging. Tobacco use remains among the leading preventable causes of premature mortality globally and is a recognized risk factor for chronic cardiovascular and respiratory diseases ⁽¹³⁾. Similarly, alcohol and illicit drug use contribute to a broad societal burden of harm, including intentional injuries, accidents, and interpersonal violence ⁽¹⁴⁾. Beyond these acute somatic complications, substance use is strongly

associated with profound mental health challenges such as clinical anxiety and mood disorders, as well as psychosocial difficulties including persistent emotional distress, loneliness, diminished self-efficacy, and impaired impulse control ^(15, 16). Cumulatively, these conditions can trigger suicidal ideation, involvement in criminal acts, and behavioral violence, while severely disrupting academic performance, familial relationships, peer interactions, and overall community functioning ⁽¹⁷⁻¹⁹⁾.

Supply-side determinants, such as market availability, distribution networks, regulatory policies, pricing mechanisms, and advertising strategies, exert a significant influence on youth consumption patterns ⁽²⁰⁾. As an example of systemic oversight, the United States Centers for Disease Control and Prevention (CDC) established the Youth Risk Behavior Surveillance System (YRBSS) in 1991 to rigorously monitor high-risk health behaviors, including tobacco, alcohol, and illicit substance use, through biennial reporting ⁽²¹⁾. Mitigating these trends requires the coordinated engagement of public health and social institutions to execute both therapeutic interventions and primary prevention strategies, notably by restricting environmental availability and reinforcing protective community factors ⁽²²⁾.

Within Iran, the most prevalent modalities of substance use among the youth demographic include tobacco (primarily cigarettes and waterpipes/hookah), alcohol, and illicit drugs, with initiation typically occurring during adolescence or early adulthood ⁽²³⁾. The inclination of young populations to engage with these substances is intimately linked to profound physiological, psychological, and social ramifications. These include disrupted neurocognitive and emotional development, pronounced academic underachievement, chemical dependency, chronic somatic diseases, and broader societal vulnerabilities, including interpersonal violence and elevated risks of HIV transmission ⁽²⁴⁻²⁶⁾.

Despite the documented severity of these public health implications and numerous reports highlighting fluctuating prevalence rates, few comprehensive analyses have simultaneously evaluated both the epidemiological prevalence and

the unique sociocultural correlates of substance use among university students in Iran. Addressing this critical empirical gap is essential to inform targeted prevention strategies and foster healthier lifestyle frameworks within this vulnerable population. Consequently, this review synthesizes evidence published between 2014 and 2025 regarding common substance use behaviors among Iranian university students and their associated risk factors, aiming to provide actionable data for health systems and policymakers to design optimized, culturally tailored interventions.

Method

This review was conducted to systematically investigate the prevalence and associated risk factors of substance use among university students in Iran. Electronic databases—including ScienceDirect, PubMed, Scopus, Google Scholar, IranMedex, and SID—were searched for relevant literature published between 2014 and 2025. The search strategy utilized combinations of the following English keywords and their corresponding Persian equivalents: "risky

behavior," "high-risk behavior," "substance use," "substance abuse," "smoking," "alcohol abuse," and "drug abuse," with each term crossed with "university students" and "Iran."

Inclusion criteria for the studies were as follows: descriptive-analytical methodology, original research articles, and availability of full text. Initially, 18,212 articles were retrieved. Of these, 52 articles were relevant to the study's objective. After applying the inclusion criteria regarding the year of publication and full text availability, 26 articles met the final criteria for inclusion (Figure 1).

Results

A total of 26 cross-sectional articles met the inclusion criteria and were selected for final review. The foundational characteristics of these studies, along with the reported prevalence rates and associated risk factors of substance use among Iranian university students, are summarized in Table 1.

Figure1. the studies selection process

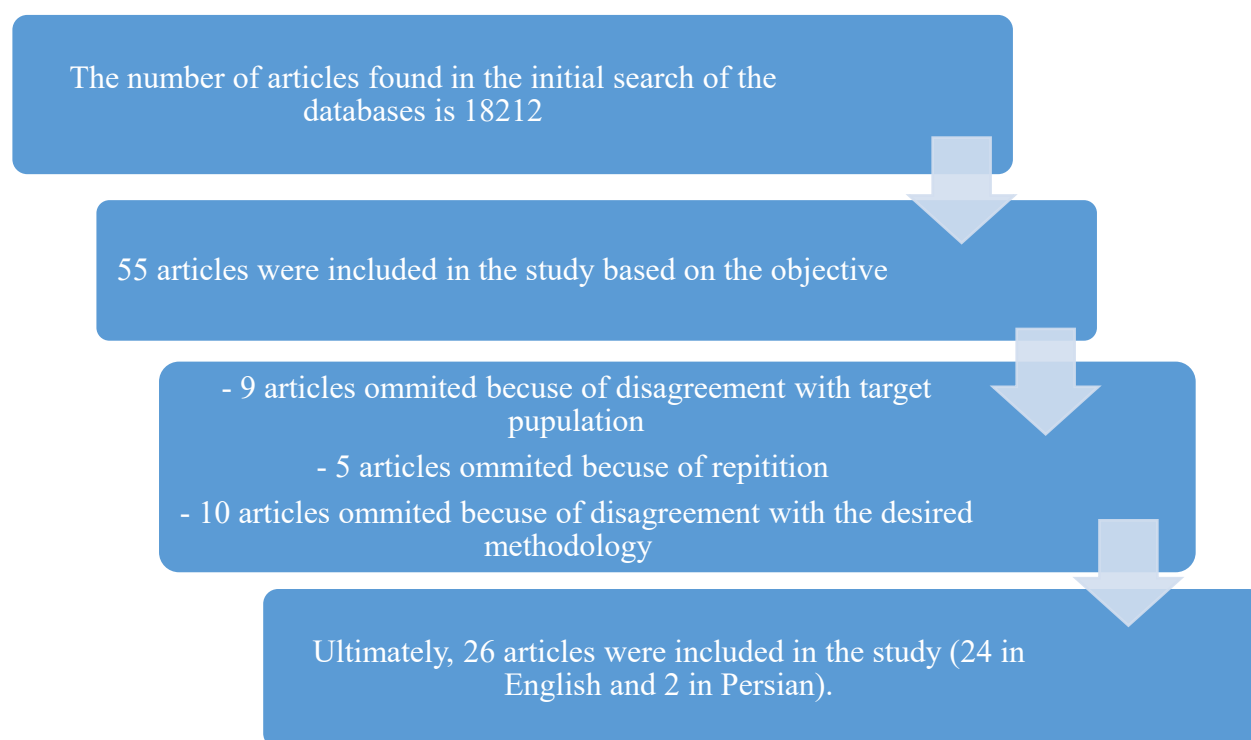


Table 1. Characteristics of the studies

	Author(s) (year)	Title	Sample Size (n)	Important findings
1	Mohammadpoorasl et al. (2014)	Substance abuse in relation to religiosity and familial support	1,837 university students	Prevalence of alcohol (7.7%) and substance abuse (8.0%). Higher use in males, older students, and those with less parental support
2	Rahmati-Najarkolaei et al. (2014)	health-risk behaviors of freshmen	432 students	5.5% of students smoked regularly. Higher smoking and hookah use among males.
3	Rezahosseini et al. (2014)	Drug abuse among university students	1,260 students	Cigarette smoking (12.6%), alcohol (4.7%), opiate substances (3.3%).
4	Abbasi-Ghahramanloo et al. (2015)	Prescription drugs, alcohol, and illicit substance use and their correlations among medical students	1992 medical science students	Alcohol use (6.9%). Higher use correlated with male gender, hookah use and prescription drug misuse.
5	Babaii Heydarabadi et al. (2015)	Prevalence of substance abuse among dormitory students	404 dormitory students	Substance misuse (15.4%). The most common were cigarette smoking (47.4%) and hookah use (42.9%). being male (34.4%) was a risk factor. Nearly half started under 18, often in dorms or parks.
6	Jalilian et al. (2015)	Socio-demographic characteristics associated with cigarettes smoking, drug abuse and alcohol drinking among male medical university students.	425 male medical students	19.4% smoked, 3.9% used drugs, 10.1% drank alcohol. Lower maternal education, living apart from family linked to higher risk.
7	Heydari et al. (2015)	The prevalence of substance uses and associated risk factors among university students.	1,149 students	Smoking (28.3%), and alcohol (13.0%). Bing male and living alone were related with higher risk.
8	Hedayati-Moghaddam, et al. (2015)	Epidemiology of tobacco and substance abuse among university students.	944 students	(8.9%) smoked cigarettes, (9.6%) drank alcohol. The majority started before the age of 20. Older students were more likely to smoke and drink.
9	Kazemzadeh et al. (2016)	The frequency of high-risk behaviors among college students	563 medical science students	The alcohol consumption rate using CM and NSU methods was (16.8% vs. 8.1%).
10	Sharifi et al. (2016)	Subgrouping of risky behaviors among Iranian college students	1,777 medical students	12.4% smoked, 11.6% used hookah, 4.9% drank alcohol. Higher prevalence reported in males.
11	Maghsoudi et al. (2017)	Estimating the prevalence of high-risk behaviors in university students.	390 students	16.44% smoked, 22.66% used hookah, 18.79% drank alcohol. Higher prevalence reported in males.
12	Tarrahi et al. (2017)	Substance Abuse and Its Predictors in Freshmen Students.	1,181 students	7.3% smoked, 7.21% used hookah, and (5.5%) drank alcohol. Being male and having a smoker family member or a friend, were related factors.

	Author(s) (year)	Title	Sample Size (n)	Important findings
13	Mozafarinia et al. (2017)	Prevalence of Substance Abuse among Students	422 students	Cigarette smoking (26.3%), alcohol consumption (19.9%), and hookah use (14.9%). Mothers education level and income had impact on alcohol use.
14	Afrashteh et al. (2017)	Clustering and combining pattern of high-risk behaviors among students	977 students	10% cigarette smoking and most of them were male students.
15	Kabir et al. (2018)	Tobacco Use and Substance Abuse in Students	1,959 college students	Both cigarette and hookah (9.3%), and (9.5%) alcohol consumption. Male gender, living alone, and having a smoker among family or friends were risk factors.
16	Kabir et al. (2018)	Substance abuse behaviors among university freshmen	5,252 first-year students	Smoking (10.8%), hookah (17%) and alcohol consumption (4%). Older age, males, and having a smoker friend or family member were risk factors.
17	Poorolajal et al. (2018)	The top six risky behaviors among university students	4,261 students from 13 universities	Smoking (13.5%), alcohol consumption (7.8%), and illicit drug misuse (4.9%). Risky behaviors had a synergistic reinforcing effect on each other.
18	Zahedi et al. (2018)	Substance Use Prevalence among University Students	2,157 students	6.44% used hookah, 1.18% drank alcohol, 2.13% smoked. Higher prevalence reported among males.
19	Sorush et al. (2018)	High-Risk Behaviors in Medical Students	275 medical students	Cigarette smoking (10.5%) and alcohol consumption (10.2%).
20	Marin et al. (2019)	Changes in Risk-Taking Behaviors during the First Year of College	1,406 first-year students	"No risk" students (77.1%), "At risk of smoking" (12.3%). Yearly, 4.2% of "No risk" students started smoking, and 22.4% of smokers did other risky behaviors.
21	Narimani et al. (2020)	Risk-Taking Behaviors among Students	215 students	37.2% smoked, 47.9% used hookah, 33% drank alcohol. Male gender and history of substance abuse were risk factors.
22	Shekari et al. (2020)	Health-risk behaviors among university students	3,649 students	Smoking (18.5%), hookah use (9.1%), and alcohol consumption (9.2%). Higher use correlated with male gender.
23	Balvardi et al. (2021)	Prevalence of Substance Use Among Students of Medical Science Universities	3,900 students	Alcohol consumption (20.6%) was the most common risky behaviors especially among male students.
24	Moghaddam Tabrizi et al. (2022)	Estimating the prevalence of high-risk behaviors in medical university students	450 students	Hookah use (20%), cigarette smoking (17%), Alcohol consumption (8.3%), especially among boys.
25	Afshari et al. (2017), (Persian)	Prevalence of high-risk behaviors among students	280 students	There was a relationship between smoking, and alcohol consumption with male gender.
26	Khojandi (2019), (Persian)	High-risk behaviors prevalence among university students	530 students	20% of the population smoked, Higher use correlated with male gender.

Conclusion

Investing in the health and development of youth is foundational to sustainable societal progress. However, substance abuse among youth, particularly university students, poses a significant threat to their health and overall development. This study sought to explore the prevalent substance abuse behaviors among Iranian university students and the associated demographic and social factors. For this review study, cross-sectional articles conducted in the past ten years in Iran were examined. Questionnaires were used to collect data in the under-review studies. In some cases, data were collected using indirect network expansion methods⁽²⁷⁻²⁹⁾. In some studies, the latent class analysis method was used for data analysis^(1, 30, 31). The sample size in the studies reviewed ranged from 215 to 5,252 individuals.

A review of cross-sectional studies conducted in Iran over the past decade revealed a concerning trend: substances like hookah, cigarettes, and alcohol are widely consumed by students. Hookah smoking, in particular, stands out as the most commonly used substance, with its prevalence ranging from 9.3% to 47.9%^{(1) (32)}. The popularity of hookah, often viewed as a social activity and a symbol of prestige, is rising, especially among young women⁽³³⁾. This trend is not unique to Iran; hookah use is also prevalent among students in other countries, including the U.S., Arab countries, and Eastern Mediterranean nations^{(34) (33, 35)}. In another study, the prevalence of hookah smoking among students in Turkey, Jordan, and Palestine was reported to be 31.8%⁽³⁶⁾. The results of a study in the United States indicate that approximately 1 out of every 5 students reported using a hookah in the past year, with factors such as being male, having Arab ethnicity, cigarette smoking, and the belief that smoking hookah is less harmful than smoking cigarettes are associated with hookah use⁽³⁷⁾. It is believed that hookah emerges during the transition to university, serving not only as a sign of independence but also as a behavior influenced by consumer trends and social fashions⁽³⁸⁾. Based on the results of the reviewed studies, Iran has a high prevalence of hookah consumption, indicating a need for preventive measures in this regard.

Cigarette smoking was the second most common form of substance abuse, with a prevalence ranging from 9.3% to 47.4%.^{(1) (39) (40)}. In Arab countries, the highest percentage of cigarette users among university students was reported in Egypt at 46.7%, followed by Kuwait at 46%, and Saudi Arabia at 42.3%⁽³³⁾. The overall prevalence of traditional cigarette smoking in a study in Eastern Europe was reported as 12.3%⁽⁴¹⁾. In American countries, efforts are being made to restrict the sale of cigarettes to those under 21 years of age, thereby reducing the prevalence of smoking at younger ages⁽⁴²⁾. Considering these findings, there is an urgent need to implement policies to curb smoking, particularly among youth. There is a significant gap in the literature regarding other forms of nicotine consumption, particularly electronic cigarettes, which are a growing global public health concern. Future research is recommended to monitor these trends in the Iranian student population.

According to the studies, alcohol consumption is the third most common substance abuse behavior among Iranian university students, with a reported prevalence ranging from 4.7%^(43, 44) to a maximum of 33%⁽³²⁾. Previous studies have shown a growing trend of alcohol consumption among male college students, and it has also been increasing among female students globally^(45, 46). The inclination towards alcohol consumption is less frequently observed among students in countries where the population adheres to religious beliefs prohibiting its use⁽⁴⁷⁾. In a study, a 20.3% prevalence of alcohol consumption among male students was reported in Iraq⁽⁴⁸⁾. In Myanmar, a study revealed that alcohol consumption among male students was twice as high as that among female students⁽⁴⁹⁾. Individual and religious beliefs, cultural norms, environmental factors, alcohol accessibility and availability, national laws, and governmental enforcement of alcohol-related regulations have been identified as key determinants of alcohol consumption⁽⁴⁹⁾. While alcohol use is less widespread in Islamic countries, there has been a notable increase in recent years.

Demographically, male students are more likely to use substances. However, recent studies indicate that substance abuse is also rising among female students, particularly with regard to hookah

smoking⁽³⁹⁾. Similarly, in some studies conducted in countries other than Iran, no difference in hookah consumption between genders was mentioned^(34, 50). Despite these findings, it's important to note that most studies conducted in Iran and other countries highlight significant differences in substance abuse behaviors between genders. In Arab countries, there is a notable prevalence of smoking among men⁽³³⁾. Various studies have also reported differences in alcohol consumption between women and men, with men having a higher incidence of alcohol consumption^(46-48, 51). Conversely, a study conducted in Yemen reported significantly higher hookah consumption among women compared to men⁽⁵²⁾. These variations may be attributed to differing levels of societal acceptance regarding female tobacco use across these distinct regional contexts.

Research indicates that students inclined toward substance use often initiate these behaviors at the age of 18 or younger^(40, 44, 53). While a correlation likely exists between student substance use and older age, as suggested by alternative literatures^(33, 44, 54-56), a more thorough, longitudinal analysis is required. Some first-year university students, despite not being tobacco users initially, began using tobacco or transitioned from exclusive tobacco use to multiple substance use behaviors while living with friends and away from their families⁽³⁰⁾. Additionally, findings show that individuals who frequently use hookah often seek out social circles with similar habits^(57, 58), particularly since hookah smoking is typically a communal activity⁽³⁴⁾. Ultimately, peer pressure, the desire for autonomy, and critical developmental needs—such as identity formation and a sense of belonging during the transition to university life—serve as significant catalysts in the initiation of substance use behaviors.

Multiple studies have identified parental support as a protective factor against substance abuse behaviors^(25, 53, 54), whereas having family members or friends who engage in substance use increases the likelihood of similar behaviors^(1, 57, 59). Therefore, promoting family involvement and creating supportive environments within universities could play a key role in prevention. At the same time, prevention efforts should not only focus on reducing demand but also on controlling

the supply of psychoactive substances within the environment, as easy accessibility can significantly increase the risk of use⁽²²⁾.

In conclusion, behaviors such as smoking hookah, cigarettes, and consuming alcohol are relatively common among university students. In Iran, alcohol consumption is notably lower compared to Western countries, largely due to religious and cultural constraints. However, the rising popularity of hookah smoking may be attributed to lenient regulations, social acceptability, and increased accessibility. Substance use is generally more prevalent among male students, but emerging research suggests a growing trend among female students as well. Ultimately, the transition to university life, characterized by diminished parental oversight and expanded personal autonomy, represents a critical developmental window that amplifies vulnerability to these risk-taking tendencies. Because these habits impose profound risks on both psychiatric and physiological health, policymakers and educational authorities must prioritize targeted awareness campaigns, implement stricter regulatory oversight, and foster supportive institutional and familial environments. Safeguarding the well-being of this young adult demographic is foundational to sustainable national development and vital to alleviating the long-term societal burdens of substance dependency.

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