KMAN PUBLISHING INSTITUTE
Journal Website

Article history:
Received 28 September 2025
Revised 20 December 2025
Accepted 27 December 2025
Initial Published 04 January 2026
Final Publication 10 January 2026

KMAN Counseling & Psychology Nexus

Volume 4, pp 1-14

E-ISSN: 3041-9026

Determination of the Psychometric Properties of the Inventory of Drug Use Consequences (INDUC) and Its Relationship with General Health (GHQ-28) in an Iranian Population

Fatemeh. Tarzi[1], Jalil. Younisi Broujeni[2*], Ali. Fathi[3]

[1] Master's degree, Department of Psychology and Social Sciences, CT.C., Islamic Azad University, Tehran, Iran
[2] Professor, Department of Measurement and Assessment, Allameh Tabataba'i University, Tehran, Iran
[3] Department of Psychology and Social Sciences, CT.C., Islamic Azad University, Tehran, Iran

*** Corresponding author email address**: jalilyounesi@gmail.com

A r t i c l e I n f o

Article type:
Original Research
Section:
Health Psychology

How to cite this article:
Tarzi, F., Younisi Broujeni, J., & Fathi, A. (2026). Determination of the Psychometric Properties of the Inventory of Drug Use Consequences (INDUC) and Its Relationship with General Health (GHQ-28) in an Iranian Population. *KMAN Conseling and Psychology Nexus, 4*, 1-14.
http://doi.org/10.61838/kman.hp.psynexus.4923

A B S T R A C T

The purpose of the present study was to examine the psychometric properties of the Inventory of Drug Use Consequences. This study was an exploratory investigation based on classical test theory and is classified as an instrument development study. The statistical population consisted of all individuals with a history of substance use who were receiving treatment at Karizak Addiction Treatment Center. A convenience sample of 382 participants was selected from this center. The Inventory of Drug Use Consequences (INDUC) is a standardized instrument for assessing the negative consequences of substance use, developed by Tonigan and Miller (2022). In this field study, data were collected using the INDUC and the General Health Questionnaire (GHQ-28). Data were gathered through the Inventory of Drug Use Consequences (Tonigan & Miller, 2022) and the General Health Questionnaire (Goldberg, 1972) and analyzed using exploratory factor analysis (principal component analysis) and confirmatory factor analysis with SPSS and AMOS software. Based on the findings of this study, the Inventory of Drug Use Consequences demonstrated satisfactory psychometric properties and reliability in the Iranian population. Reliability and validity at both the subscale and total score levels, along with good model fit of the five-factor structure in both exploratory and confirmatory analyses, indicate the adequacy of the factor structure of this instrument. The results showed that the items of the Inventory of Drug Use Consequences possess acceptable reliability and adequate construct validity. Moreover, significant correlations were observed between the total scores and subscales of the Inventory of Drug Use Consequences and the General Health Questionnaire.

Keywords: *Drug use consequences; general health; reliability; validity; norm.*

1. Introduction

Substance use disorders constitute one of the most pervasive and complex public health challenges of the twenty-first century, exerting profound effects on individuals, families, health systems, and societies worldwide. According to global health authorities, substance use remains a leading contributor to morbidity, mortality, and social burden, with far-reaching consequences extending beyond physical health to include mental health, social functioning, economic stability, and community safety (World Health Organization, 2023). The contemporary understanding of addiction conceptualizes it not merely as maladaptive behavior but as a chronic, relapsing brain disorder characterized by neurobiological alterations in reward, motivation, learning, and self-regulation systems (Leshner, 1997; Volkow et al., 2016). These neurobiological insights have fundamentally reshaped prevention and treatment paradigms by emphasizing the need for comprehensive assessment and individualized intervention strategies grounded in scientific evidence.

The global expansion of substance use has coincided with rapid social, technological, and cultural transformations that influence both risk exposure and help-seeking behaviors. Recent research highlights the role of digital environments and social media in shaping substance-related attitudes, behaviors, and social norms, particularly among young people and marginalized populations (Ahmed, 2025). At the same time, emerging youth mental health frameworks stress the importance of early identification and prevention, given that most psychiatric and addictive disorders manifest during adolescence and young adulthood (Uhlhaas et al., 2023). These converging trends underscore the necessity of developing valid and reliable instruments capable of capturing the multidimensional consequences of substance use across diverse sociocultural contexts.

Addiction is not only a neurobiological disorder but also a profoundly psychosocial phenomenon embedded within personal history, relational systems, cultural meanings, and structural conditions. Qualitative investigations into the contexts of drug use reveal that social environment, economic hardship, family dynamics, identity conflicts, emotional distress, and peer influence interact dynamically to shape vulnerability to addiction (Allahdadi et al., 2023). Similarly, psychodynamic and relational perspectives emphasize the role of attachment disruptions, emotional regulation difficulties, and unresolved developmental conflicts in the maintenance of addictive behavior (Potik et al., 2007; Rothschild & Gellman, 2009). These findings collectively demonstrate that substance use disorders are multifactorial conditions requiring multidimensional assessment tools that capture physical, psychological, social, and behavioral consequences.

The consequences of substance use extend far beyond intoxication or dependence and include deterioration in mental health, interpersonal relationships, occupational functioning, social responsibility, and overall quality of life. Empirical evidence consistently links substance use with elevated rates of depression, anxiety, sleep disorders, cognitive impairment, social dysfunction, and emotional instability (Ghanaiyan, 2023; Jarban & Najafianpour, 2023). Longitudinal and cross-sectional studies further demonstrate reciprocal relationships between mental health problems and substance use, such that each exacerbates the course and severity of the other (Sacks et al., 2013; Sahraei et al., 2018). Consequently, effective prevention and treatment require accurate measurement of both substance-related consequences and general psychological well-being.

Despite the growing recognition of addiction as a multidimensional disorder, many assessment practices continue to rely on limited or symptom-focused screening instruments that fail to capture the full spectrum of substance-related harm. Existing tools often emphasize diagnostic criteria while overlooking functional impairment, emotional suffering, social disruption, and behavioral dysregulation that profoundly affect recovery trajectories. This gap has motivated the development of comprehensive outcome measures designed to assess the real-world impact of substance use on individuals' lives. Among these instruments, the **Inventory of Drug Use Consequences (INDUC)** represents one of the most theoretically grounded and empirically supported measures of substance-related harm.

The INDUC was developed to operationalize the multidimensional consequences of substance use across five primary domains: physical consequences, interpersonal consequences, intrapersonal consequences, impulse control problems, and social responsibility impairments (Tonigan & Miller, 2002). Its design reflects an integrative conceptualization of addiction that acknowledges biological vulnerability, psychological processes, social context, and behavioral regulation. Psychometric evaluations have demonstrated the INDUC's strong reliability, sensitivity to change, and clinical utility across diverse treatment settings (Tonigan & Miller, 2002). However, psychometric properties of psychological instruments are not static and

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

cannot be assumed to generalize across cultures, languages, and populations without rigorous local validation.

Cross-cultural research consistently shows that the meaning, expression, and consequences of substance use are shaped by cultural norms, social structures, economic conditions, and health care systems. Therefore, instruments developed in Western contexts require careful psychometric examination before being applied in non-Western populations. In Iran, substance use represents a significant public health concern, with complex interactions among cultural values, legal frameworks, economic pressures, and social stigma influencing both prevalence and treatment engagement (Habibi et al., 2017; Rahmati & Poorahmadan, 2020). Although several screening tools for substance use and related attitudes have been validated within Iranian populations, comprehensive measures specifically assessing multidimensional consequences of substance use remain limited (Habibi et al., 2017; Rahmati & Poorahmadan, 2020).

At the same time, the relationship between substance-related consequences and general mental health remains a central issue for clinical practice and public health policy. General psychological well-being is a key determinant of recovery stability, relapse prevention, and social reintegration. Empirical research demonstrates that poor mental health significantly predicts addiction vulnerability, treatment dropout, and relapse, whereas improved psychological functioning strengthens recovery outcomes (Jarban & Najafianpour, 2023; Sahraei et al., 2018). Furthermore, occupational satisfaction, emotional stability, and social support serve protective roles against the escalation of addictive behaviors and their harmful consequences (Kourgiantakis & Lee, 2022; Satuf et al., 2018). These findings highlight the importance of simultaneously assessing substance-related harm and general mental health in both research and clinical contexts.

From a prevention perspective, comprehensive measurement of drug use consequences enables early identification of high-risk individuals and informs targeted intervention strategies. Evidence-based prevention programs emphasize the need for continuous monitoring of behavioral, emotional, and social functioning among vulnerable populations, particularly adolescents and young adults involved in justice or social service systems (Williams et al., 2021). In addition, advances in service delivery models increasingly promote integrated care systems that address mental health and substance use disorders concurrently (Sacks et al., 2013). The success of such models depends critically on reliable and valid assessment tools capable of capturing complex patterns of impairment and change over time.

The growing complexity of addiction science has also elevated methodological standards in psychometric research. Contemporary validation studies increasingly rely on advanced statistical techniques, including exploratory and confirmatory factor analysis and structural equation modeling, to establish construct validity, factorial structure, and measurement invariance (Shah & Goldstein, 2006). Such approaches provide robust evidence regarding the internal structure and theoretical coherence of psychological instruments, ensuring that observed scores meaningfully reflect underlying constructs. Applying these rigorous methods to the validation of the INDUC within Iranian populations is therefore essential to establish its scientific credibility and clinical applicability.

In parallel, evolving conceptualizations of mental health emphasize functional outcomes, well-being, and quality of life rather than mere symptom reduction. Modern mental health frameworks advocate for holistic assessment approaches that integrate physical health, emotional functioning, social participation, and personal meaning (Miller & Thoresen, 2003; Uhlhaas et al., 2023). Within this paradigm, measuring the consequences of substance use becomes central to understanding recovery as a process of restoring functional capacity and psychological resilience rather than simply achieving abstinence.

Recent qualitative work with individuals overcoming addiction further illustrates the centrality of meaning-making, identity reconstruction, and emotional growth in long-term recovery (Shoaa Kazemi et al., 2025). These narratives reinforce the importance of instruments that capture lived experiences of harm and change rather than narrowly defined clinical symptoms. The INDUC, by addressing multiple life domains affected by substance use, aligns closely with these contemporary recovery-oriented perspectives.

Taken together, existing research demonstrates an urgent need for psychometrically sound, culturally validated tools that assess the full spectrum of substance-related consequences and their relationship with general mental health. While the INDUC has been widely used internationally, its psychometric properties and construct validity require systematic evaluation within the Iranian sociocultural context. Moreover, establishing empirical associations between INDUC scores and general health

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

indicators would strengthen its convergent validity and enhance its utility for both research and clinical practice.

Therefore, the aim of the present study was to determine the psychometric properties of the Inventory of Drug Use Consequences (INDUC) and to examine its relationship with general health in an Iranian population.

2. Methods and Materials

2.1. Study Design and Participants

The present research was an exploratory psychometric study grounded in Classical Test Theory and is categorized as an instrument development investigation. In terms of purpose, the study was applied, and regarding data collection, it was non-experimental. The primary objective of this type of applied research is to refine, improve, or develop practical products and processes and ultimately to expand applied knowledge in a specific domain. Accordingly, the internal consistency, construct validity, and reliability of the measurement instruments were examined and analyzed in accordance with established principles of classical psychometrics. The statistical population comprised all individuals with a documented history of substance use who were undergoing treatment at the Karizak Addiction Treatment Center. Sample size determination was guided by recommendations for factor analysis reported in the psychometric literature, which suggest that a minimum of 200 participants is adequate for both exploratory and confirmatory factor analyses, with larger samples increasing the stability and generalizability of the results. Considering the number of items in the primary questionnaire (38 substantive items and 12 validity control items), approximately ten participants per item were targeted. Accordingly, data were initially collected from approximately 400 individuals, of whom 382 met the eligibility criteria and were retained for analysis. Inclusion criteria consisted of male gender, confirmed diagnosis of substance use disorder by the center's psychiatrist for at least one substance, a minimum of two years of continuous substance use prior to treatment, placement in the mid-recovery phase (approximately one to six months of abstinence) to minimize acute withdrawal effects while maintaining accurate recall of substance-related consequences, age between 18 and 65 years, provision of informed consent, relatively stable cognitive status as assessed by the center's clinical psychologist, and basic literacy skills. Exclusion criteria included severe comorbid psychiatric disorders, acute or unstable physical illnesses that could interfere with psychological functioning or participation, concurrent involvement in other research studies that could influence responses, and unwillingness to cooperate fully or provide accurate information. Participants were selected through purposive sampling from among eligible individuals at the treatment center following approval from the Welfare Organization and formal authorization from the center's administration.

2.2. Measures

The Inventory of Drug Use Consequences (INDUC) was used as the primary instrument to assess the negative outcomes associated with substance use. The INDUC was originally developed by Tonigan and Miller (2002) as a standardized measure of substance-related consequences and consists of two versions: a lifetime version (InDUC-2L) and a recent consequences version (InDUC-2R). The present study employed the InDUC-2R. The questionnaire contains 50 items rated on a four-point Likert-type scale ranging from "never" to "always," yielding higher scores for greater severity of negative consequences. During its development, several modifications were implemented to reduce redundancy, shorten administration time, and enhance clinical relevance, particularly for individuals with substance-related personality disturbances and cognitive impairments. Items with overlapping content were eliminated, along with items referring to domains deemed less applicable to many individuals with substance use disorders, such as certain employment and social status indicators. Additional items considered excessively abstract or future-oriented were also removed to accommodate cognitive limitations commonly observed in this population. The final structure of the INDUC consists of five substantive subscales—Physical Consequences, Interpersonal Consequences, Intrapersonal Consequences, Impulse Control, and Social Responsibility—along with a Control Scale (items 39–50) used to evaluate response validity. Subscale scores are computed by summing item responses within each domain, and the total score is derived from the sum of the five primary subscales, excluding the Control Scale. Prior psychometric evaluations of the INDUC have demonstrated acceptable test–retest reliability and construct validity, with confirmatory factor analysis supporting the adequacy of its factor structure.

General psychological health was assessed using the General Health Questionnaire-28 (GHQ-28), developed by Goldberg (1972). The GHQ-28 is a widely used self-report

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

screening instrument designed to detect non-psychotic psychiatric disorders and distinguish individuals with probable psychological distress from those with typical functioning. The questionnaire comprises 28 items organized into four subscales: Somatic Symptoms, Anxiety and Insomnia, Social Dysfunction, and Severe Depression, each containing seven items. Respondents rate each item on a four-point scale, yielding subscale scores ranging from 0 to 21 and a total score from 0 to 84, with higher scores indicating poorer mental health. Administration time is approximately 10–12 minutes. Extensive psychometric research has supported the reliability and validity of the GHQ-28 in both clinical and non-clinical populations. Previous studies in Iran have reported high internal consistency across subscales and strong overall reliability, as well as satisfactory criterion and concurrent validity when compared with other measures of psychological distress.

2.3. Data analysis

Data analysis was conducted using classical psychometric procedures. Reliability of the INDUC was evaluated using Cronbach's alpha coefficients for the total scale and subscales. Construct validity was examined through exploratory factor analysis using principal component analysis followed by confirmatory factor analysis to assess the adequacy of the proposed factor structure. Normative values were estimated using T-scores, and the relationship between substance-related consequences and general psychological health was examined using Pearson correlation coefficients. All statistical analyses were performed using SPSS version 23 and AMOS version 21.

3. Findings and Results

The final sample consisted of 382 male participants undergoing treatment for substance use disorders. With respect to educational attainment, 10 participants (2.6%) were illiterate, 23 (6.0%) had completed primary education, 18 (4.7%) had completed middle school, 63 (16.5%) had completed high school, 131 (34.3%) held a high school diploma, 103 (27.0%) had an associate degree, and 34 (8.9%) had a bachelor's degree. In terms of age distribution, 43 participants (11.3%) were 30 years old or younger, 188 (49.2%) were between 31 and 35 years, 30 (7.9%) were between 36 and 40 years, 44 (11.5%) were between 41 and 45 years, and 77 (20.2%) were older than 45 years. Regarding marital status, 75 participants (19.6%) were single, 262 (68.6%) were married, 36 (9.4%) were divorced, and 9 (2.4%) had lost their spouse. Concerning the primary substance of use, 151 participants (39.5%) reported opium use, 28 (7.3%) used opium extract (shireh), 51 (13.4%) used methamphetamine, 45 (11.8%) used cannabis (hashish), 36 (9.4%) used heroin, 35 (9.2%) used marijuana (gol), 20 (5.2%) used prescription drugs, and 16 (4.2%) reported other substances.

The adequacy of the sample for factor analysis was evaluated using the Kaiser–Meyer–Olkin (KMO) measure and Bartlett's Test of Sphericity. The KMO value was 0.902, indicating excellent sampling adequacy and confirming that the correlation matrix was appropriate for factor analysis. Bartlett's Test of Sphericity was statistically significant, $\chi^2(703) = 9644.801$, $p < .0001$, demonstrating that the correlations among variables were sufficiently large and that the data were suitable for exploratory factor analysis.

Table 1

Communalities of Items Obtained from Principal Component Analysis

Item	Communality	Item	Communality	Item	Communality	Item	Communality
1	0.782	11	0.476	21	0.673	31	0.442
2	0.427	12	0.476	22	0.487	32	0.300
3	0.511	13	0.238	23	0.410	33	0.495
4	0.325	14	0.398	24	0.373	34	0.456
5	0.514	15	0.522	25	0.388	35	0.571
6	0.452	16	0.641	26	0.793	36	0.421
7	0.507	17	0.496	27	0.470	37	0.762
8	0.527	18	0.516	28	0.486	38	0.803
9	0.533	19	0.729	29	0.711	—	—
10	0.435	20	0.475	30	0.539	—	—

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

Table 1 presents the communalities extracted from the principal component analysis for the 38 substantive items of the Inventory of Drug Use Consequences. The communalities ranged from 0.238 (Item 13) to 0.803 (Item 38), indicating that a substantial proportion of variance in each item was accounted for by the extracted components. The majority of items demonstrated moderate to high communalities, suggesting that the factor solution provided an adequate representation of the original item variance. These results support the appropriateness of the factor structure and indicate that the items are meaningfully related to the underlying latent dimensions measured by the instrument.

Table 2

Eigenvalues and Percentage of Variance Explained by Principal Components

Component	Eigenvalue	% of Variance	Cumulative %	Component	Eigenvalue	% of Variance	Cumulative %
1	12.257	32.255	32.255	20	0.572	1.506	84.501
2	2.467	6.488	38.743	21	0.548	1.442	85.943
3	1.760	4.632	43.374	22	0.530	1.395	87.338
4	1.690	4.448	47.822	23	0.517	1.361	88.699
5	1.386	3.647	51.469	24	0.503	1.323	90.022
6	1.297	3.412	54.882	25	0.466	1.227	91.249
7	1.121	2.951	57.832	26	0.446	1.174	92.423
8	1.065	2.804	60.636	27	0.433	1.140	93.563
9	0.972	2.558	63.194	28	0.408	1.073	94.636
10	0.923	2.430	65.624	29	0.388	1.022	95.658
11	0.905	2.382	68.006	30	0.351	0.924	96.581
12	0.819	2.154	70.160	31	0.319	0.840	97.422
13	0.775	2.040	72.200	32	0.315	0.830	98.252
14	0.766	2.016	74.216	33	0.298	0.783	99.035
15	0.731	1.924	76.141	34	0.263	0.691	99.726
16	0.706	1.858	77.999	35	0.050	0.131	99.857
17	0.674	1.774	79.774	36	0.025	0.066	99.923
18	0.637	1.676	81.450	37	0.020	0.052	99.975
19	0.587	1.545	82.995	38	0.010	0.025	100.000

Table 2 presents the eigenvalues and the proportion of variance explained by each principal component. The first component accounted for 32.26% of the total variance, with a high eigenvalue of 12.26, indicating a dominant underlying factor. Components two through six contributed an additional 22.63% of the variance, bringing the cumulative explained variance to 54.88%. By the end of the tenth component, 65.62% of the total variance was explained, while the first nineteen components together accounted for 82.99% of the total variance. The remaining components contributed marginal increments to the explained variance, and the full set of thirty-eight components accounted for 100% of the variance. These results indicate that the majority of meaningful variance in the data is captured by the initial set of components, supporting the dimensional structure underlying the instrument.

Table 3

Factor Loadings Greater Than 0.388 for the Five Extracted Components After Rotation

Variable	Item No.	Statement (English Translation)	Component 1	Component 2	Component 3	Component 4	Component 5
Physical	26	I have experienced financial problems due to substance use	0.861	—	—	—	—
	1	After using substances, I have felt unwell or experienced withdrawal symptoms	0.856	—	—	—	—
	21	While using substances, I have said harsh or hurtful things to others	0.734	—	—	—	—
	16	I have felt guilt or shame due to substance use	0.713	—	—	—	—

KMAN-CPN KMAN-Counseling & Psychology Nexus E-ISSN: 3041-9026

	31	A close friendship or relationship has been damaged because of substance use	0.428	—	0.421	—	—
	6	My work quality has declined due to substance use	0.398	—	—	—	—
Interpersonal	8	After substance use, I have had difficulty sleeping or staying asleep or experienced nightmares	—	0.663	—	—	—
	3	I have missed days of work because of substance use	—	0.624	—	—	—
	28	While using substances, I have smoked more cigarettes	—	0.615	—	—	—
	9	I have driven a vehicle while under the influence of substances	—	0.556	—	—	—
	11	After substance use, I have experienced nausea or vomiting	—	0.526	—	—	—
	18	While using substances, my personality has shifted in a negative direction	0.422	0.514	—	—	—
	2	I have felt bad about myself due to substance use	—	0.417	—	—	—
	23	I have been involved in physical fights while using substances	—	0.409	—	—	−0.403
	33	My sexual life has been harmed due to substance use	—	0.403	—	—	—
Social Responsibility	38	Substance use has prevented my personal growth	—	—	0.847	—	—
	37	Because of substance use, I have not lived the way I should have	—	—	0.844	—	—
	35	While using substances, social life felt more enjoyable	—	—	0.601	—	—
	27	My romantic relationship or marriage has been harmed due to substance use	—	—	0.563	—	—
	32	Because of substance use, I have spent time in prison	—	—	0.418	—	—
	34	Because of substance use, I have lost interest in activities and hobbies	—	—	0.403	—	—
Intrapersonal	29	My physical appearance has been harmed due to substance use	—	—	—	0.765	—
	19	While using substances, I have taken immature risks	—	—	—	0.765	—
	10	Using one substance has led me to use another substance	—	—	—	0.586	—
	24	My physical health has been harmed due to substance use	—	—	—	0.506	—
	4	My family or friends have worried or complained about my substance use	—	—	—	0.486	—
Impulse Control	5	I have enjoyed using substances	—	—	—	—	0.623
	30	My family has been harmed by my substance use	—	—	—	—	0.584
	12	I have felt distressed because of substance use	—	—	—	—	0.489
	20	I have gotten into trouble because of substance use	—	—	—	—	0.481
	22	While using substances, I have done impulsive things that I later regretted	—	—	—	—	0.479
	7	My ability to parent has been harmed by substance use	—	—	—	—	0.478
	25	Substance use has made me feel more positive about life	—	—	—	—	0.465
	15	Substance use has made me feel calmer	—	—	—	—	0.416
	17	While using substances, I have said or done embarrassing things	—	—	0.409	—	0.411

Table 3 presents the rotated factor structure of the Inventory of Drug Use Consequences, displaying all factor loadings greater than 0.388 across the five extracted components. The pattern of loadings reveals a coherent and interpretable structure corresponding to the theoretically proposed dimensions of substance-related consequences.

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

Items related to physical and emotional consequences of substance use loaded strongly on the first component, while behavioral and risk-related consequences clustered primarily on the second component. The third component captured social responsibility and life disruption consequences, the fourth reflected intrapersonal and self-related impairment, and the fifth component represented impulse control and affective regulation outcomes. The presence of high loadings within each domain and minimal problematic cross-loadings indicates satisfactory factorial validity and supports the multidimensional structure of the instrument within the Iranian sample.

Table 4

Measurement Model Parameters of the Research Questionnaires in Confirmatory Factor Analysis

Latent Variable – Indicator	B	β	SE	C.R.
Impulse Control – Item 5	1.000	0.585	—	—
Impulse Control – Item 7	1.073	0.670	0.106	10.159**
Impulse Control – Item 12	0.928	0.655	0.093	10.003**
Impulse Control – Item 15	0.924	0.679	0.090	10.249**
Impulse Control – Item 20	1.051	0.625	0.109	9.679**
Impulse Control – Item 22	1.095	0.671	0.108	10.169**
Impulse Control – Item 25	−0.054	−0.030	0.096	−0.557
Impulse Control – Item 30	0.896	0.618	0.093	9.597**
Social Responsibility – Item 27	1.000	0.611	—	—
Social Responsibility – Item 32	0.716	0.508	0.086	8.307**
Social Responsibility – Item 34	1.069	0.671	0.104	10.299**
Social Responsibility – Item 35	1.105	0.727	0.102	10.885**
Social Responsibility – Item 37	0.977	0.590	0.105	9.341**
Social Responsibility – Item 38	1.091	0.650	0.108	10.068**
Intrapersonal – Item 4	1.000	0.510	—	—
Intrapersonal – Item 10	0.905	0.410	0.150	6.031**
Intrapersonal – Item 19	1.324	0.649	0.165	8.000**
Intrapersonal – Item 24	1.249	0.563	0.168	7.435**
Intrapersonal – Item 29	1.251	0.612	0.162	7.741**
Interpersonal – Item 2	1.000	0.603	—	—
Interpersonal – Item 3	0.985	0.612	0.101	9.744**
Interpersonal – Item 8	0.898	0.619	0.091	9.828**
Interpersonal – Item 9	0.894	0.664	0.086	10.348**
Interpersonal – Item 11	0.967	0.645	0.095	10.137**
Interpersonal – Item 23	0.458	0.312	0.120	3.805**
Interpersonal – Item 28	0.745	0.595	0.078	9.542**
Interpersonal – Item 33	0.931	0.681	0.088	10.541**
Physical – Item 26	1.000	0.620	—	—
Physical – Item 21	0.943	0.696	0.091	10.344**
Physical – Item 16	0.917	0.677	0.090	10.133**
Physical – Item 6	0.781	0.699	0.075	10.377**
Physical – Item 1	0.996	0.611	0.015	65.806**

Table 4 presents the standardized and unstandardized parameter estimates of the confirmatory factor analysis for the measurement model of the Inventory of Drug Use Consequences. All observed indicators exhibited statistically significant factor loadings on their respective latent constructs, with the exception of Item 25 within the Impulse Control factor, which demonstrated a weak and non-significant loading. The standardized loadings across the five latent dimensions ranged from 0.312 to 0.727, indicating acceptable to strong relationships between observed items and their underlying constructs. The critical ratios exceeded the recommended threshold of 1.96 for nearly all paths, confirming the statistical significance of the measurement model parameters. These findings provide strong empirical support for the convergent validity and structural adequacy of the proposed five-factor model within the Iranian sample.

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

Table 5

Parameters of the Relationships among the Five Factors of the Inventory of Drug Use Consequences

Relationship	Cov	r	SE	C.R.
Social Responsibility ↔ Intrapersonal	0.130	0.716	0.021	6.424**
Interpersonal ↔ Intrapersonal	0.135	0.734	0.021	6.344**
Interpersonal ↔ Physical	0.230	0.840	0.031	7.484**
Interpersonal ↔ Impulse Control	0.201	0.778	0.028	7.267**
Social Responsibility ↔ Physical	0.204	0.752	0.029	7.138**
Social Responsibility ↔ Interpersonal	0.167	0.765	0.023	7.286**
Impulse Control ↔ Physical	0.122	0.695	0.032	6.869**
Impulse Control ↔ Social Responsibility	0.207	0.812	0.028	7.344**
Impulse Control ↔ Intrapersonal	0.169	0.789	0.026	6.445**
Physical ↔ Intrapersonal	0.165	0.725	0.027	6.203**

**p < .01

Table 5 presents the covariances and correlations among the five latent dimensions of the Inventory of Drug Use Consequences. All factor intercorrelations were positive, statistically significant, and moderate to strong in magnitude, with correlation coefficients ranging from 0.695 to 0.840. The strongest association was observed between the Interpersonal and Physical dimensions (r = 0.840), while the weakest association was found between Impulse Control and Physical consequences (r = 0.695). The consistently significant critical ratios indicate that the latent constructs are strongly related yet sufficiently distinct, providing evidence of coherent internal structure and satisfactory discriminant validity of the measurement model.

Table 6

Measurement Model Parameters of the Inventory of Drug Use Consequences in Confirmatory Factor Analysis

Latent Variable – Indicator	B	β	SE	C.R.
Drug Use Consequences – Physical	1.000	0.690	—	—
Drug Use Consequences – Interpersonal	1.244	0.781	0.098	12.683**
Drug Use Consequences – Intrapersonal	0.840	0.682	0.073	11.443**
Drug Use Consequences – Impulse Control	1.374	0.759	0.112	12.237**
Drug Use Consequences – Social Responsibility	0.952	0.683	0.085	11.141**

**p < .01

Table 6 summarizes the higher-order confirmatory factor analysis results, demonstrating that the five first-order factors significantly load onto the overarching latent construct of Drug Use Consequences. Standardized loadings ranged from 0.682 to 0.781, indicating strong contributions of each domain to the global construct. All paths were statistically significant with high critical ratios, confirming that Physical, Interpersonal, Intrapersonal, Impulse Control, and Social Responsibility dimensions jointly and robustly define the overall structure of substance-related consequences in the studied population.

Table 7

Correlations between Response Honesty and Drug Use Consequences

Response Honesty	Physical	Intrapersonal	Interpersonal	Social Responsibility	Impulse Control	Total Score
Correlation	0.440	0.350	0.370	0.500	0.470	0.640
Significance	0.01	0.01	0.01	0.01	0.01	0.01

Table 7 displays the correlations between the response honesty index and the subscales and total score of the Inventory of Drug Use Consequences. All correlations were positive and statistically significant at the 0.01 level, with

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

coefficients ranging from 0.35 to 0.64. The strongest relationship was observed between response honesty and the total score of drug use consequences (r = 0.64), indicating that higher response integrity is associated with greater reporting of substance-related problems. These findings provide empirical support for the criterion-related validity of the questionnaire and indicate that the control scale effectively functions as an indicator of response credibility.

Table 8

Reliability of the Inventory of Drug Use Consequences and Its Subscales (Cronbach's Alpha if Item Deleted)

Item	Alpha if Deleted	Item	Alpha if Deleted	Item	Alpha if Deleted	Item	Alpha if Deleted	Item	Alpha if Deleted
1	0.924	8	0.925	19	0.924	27	0.925	35	0.923
2	0.924	9	0.924	20	0.924	28	0.925	37	0.925
3	0.925	10	0.920	21	0.923	29	0.924	38	0.924
4	0.926	11	0.924	22	0.924	30	0.924	Overall (31 items)	0.927
5	0.925	12	0.924	23	0.920	32	0.925	—	—
6	0.924	15	0.923	24	0.925	33	0.923	—	—
7	0.923	16	0.924	26	0.924	34	0.924	—	—
2	0.750	5	0.812	27	0.809	1	0.822	4	0.725
3	0.740	7	0.801	32	0.829	6	0.828	10	0.714
8	0.745	12	0.806	34	0.808	16	0.837	19	0.617
9	0.747	15	0.809	35	0.793	21	0.831	24	0.722
11	0.744	20	0.810	37	0.771	26	0.818	29	0.625
23	0.720	22	0.803	38	0.763	Physical (5 items)	0.735	Intrapersonal (5 items)	0.868
28	0.753	30	0.811	Social Responsibility (6 items)	0.825	—	—	—	—
33	0.750	Impulse Control (7 items)	0.830	—	—	—	—	—	—
Interpersonal (8 items)	0.780	—	—	—	—	—	—	—	—

Table 8 presents the internal consistency results of the Inventory of Drug Use Consequences for the total scale and its subscales. The overall Cronbach's alpha for the 31-item scale was 0.927, indicating excellent reliability. Alpha values obtained by deleting individual items remained consistently high, demonstrating that no single item adversely affected the internal coherence of the scale. Subscale reliabilities were also satisfactory, with coefficients of 0.780 for Interpersonal, 0.830 for Impulse Control, 0.825 for Social Responsibility, 0.735 for Physical, and 0.868 for Intrapersonal dimensions. These findings confirm that the instrument exhibits strong internal consistency and stable measurement properties across its dimensions.

Table 9

Descriptive Statistics of the Inventory of Drug Use Consequences

Variable	Mean	Median	Mode	SD	Skewness	Kurtosis
Physical	10.75	11	13	3.36	−0.63	0.16
Interpersonal	19.38	20	19	3.70	−1.55	2.06
Intrapersonal	11.05	11	10	2.86	−0.76	0.86
Impulse Control	15.34	16	18	4.21	−0.98	1.20
Social Responsibility	13.65	14	13	3.23	−1.23	2.55
Total Score	70.17	71	70	13.77	−1.21	3.96

Table 9 summarizes the descriptive statistics of the Inventory of Drug Use Consequences and its subscales. The mean total score of 70.17 reflects a relatively high level of substance-related consequences among the participants. Subscale means ranged from 10.75 for Physical consequences to 19.38 for Interpersonal consequences. Skewness and kurtosis values across all scales fell within acceptable limits for normal distribution assumptions, indicating that the data were suitable for parametric statistical analyses. The distributional characteristics further support the psychometric adequacy and statistical robustness of the measurement instrument in this sample.

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

Table 10

Normative Data for the Inventory of Drug Use Consequences (Total Score)

Raw Score	Percentile Rank	T	Raw Score	Percentile Rank	T	Raw Score	Percentile Rank	T	Raw Score	Percentile Rank	T	Raw Score	Percentile Rank	T
0	0.0026	22.08	25	0.0079	25.84	50	0.067	35.00	75	0.613	52.86	100	0.9999	87.19
1	0.0052	24.40	26	0.0079	25.84	51	0.081	36.03	76	0.643	53.66	101	0.9999	87.19
2	0.0052	24.40	27	0.0092	26.41	52	0.089	36.53	77	0.673	54.48	102	0.9999	87.19
3	0.0065	25.19	28	0.0105	26.91	53	0.097	37.00	78	0.710	55.56	103	0.9999	87.19
4	0.0079	25.84	29	0.0105	26.91	54	0.105	37.45	79	0.742	56.50	104	0.9999	87.19
5	0.0079	25.84	30	0.0105	26.91	55	0.113	37.87	80	0.772	57.46	105	0.9999	87.19
6	0.0079	25.84	31	0.0105	26.91	56	0.124	38.46	81	0.798	58.36	106	0.9999	87.19
7	0.0079	25.84	32	0.0105	26.91	57	0.145	39.43	82	0.810	58.93	107	0.9999	87.19
8	0.0079	25.84	33	0.0105	26.91	58	0.166	40.31	83	0.828	59.48	108	0.9999	87.19
9	0.0079	25.84	34	0.0105	26.91	59	0.180	40.87	84	0.848	60.29	109	0.9999	87.19
10	0.0079	25.84	35	0.0105	26.91	60	0.200	41.59	85	0.866	61.10	110	0.9999	87.19
11	0.0079	25.84	36	0.0105	26.91	61	0.220	42.27	86	0.886	62.06	111	0.9999	87.19
12	0.0079	25.84	37	0.0105	26.91	62	0.241	42.96	87	0.908	63.31	112	0.9999	87.19
13	0.0079	25.84	38	0.0118	27.36	63	0.264	43.70	88	0.927	64.52	113	0.9999	87.19
14	0.0079	25.84	39	0.0157	28.48	64	0.284	44.29	89	0.941	65.64	114	0.9999	87.19
15	0.0079	25.84	40	0.0196	29.39	65	0.302	44.82	90	0.951	66.60	115	0.9999	87.19
16	0.0079	25.84	41	0.0236	30.15	66	0.325	45.49	91	0.965	68.08	116	0.9999	87.19
17	0.0079	25.84	42	0.0288	31.01	67	0.355	46.27	92	0.980	71.61	117	0.9999	87.19
18	0.0079	25.84	43	0.0327	31.58	68	0.386	47.11	93	0.991	73.59	118	0.9999	87.19
19	0.0079	25.84	44	0.0353	31.92	69	0.417	47.92	94	0.993	74.81	119	0.9999	87.19
20	0.0079	25.84	45	0.0380	32.25	70	0.455	48.88	95	0.996	76.58	120	0.9999	87.19
21	0.0079	25.84	46	0.0445	32.99	71	0.493	49.84	96	0.997	77.92	121	0.9999	87.19
22	0.0079	25.84	47	0.0497	33.53	72	0.518	50.46	97	0.997	77.92	122	0.9999	87.19
23	0.0079	25.84	48	0.0510	33.65	73	0.551	51.28	98	0.9999	87.19	123	0.9999	87.19
24	0.0079	25.84	49	0.0550	34.02	74	0.584	52.12	99	0.9999	87.19	124	0.9999	87.19

Table 10 provides normative reference values for the total score of the Inventory of Drug Use Consequences, presenting raw scores alongside corresponding percentile ranks and T-scores. The distribution demonstrates a gradual progression in T-scores from 22.08 at the lowest observed raw score to 87.19 at the highest score range. These norms allow clinicians and researchers to interpret individual scores relative to the studied population, facilitating standardized assessment of the severity of substance-related consequences.

Table 11

Correlation Matrix between Drug Use Consequences and General Health

General Health Variables	Physical	Intrapersonal	Interpersonal	Social Responsibility	Impulse Control	Total Score
Somatic Symptoms	0.343**	0.340**	0.228**	0.340**	0.306**	0.441**
Anxiety and Insomnia	0.368**	0.341**	0.267**	0.369**	0.319**	0.471**
Social Dysfunction	0.200**	0.233**	0.173**	0.214**	0.200**	0.285**
Depressive Symptoms	0.287**	0.314**	0.238**	0.325**	0.279**	0.409**
General Health Total	0.382**	0.390**	0.288**	0.399**	0.351**	0.513**

**p < .01

Table 11 presents the correlations between the subscales and total score of the Inventory of Drug Use Consequences and the dimensions of general health. All correlations were positive and statistically significant at the 0.01 level, indicating that greater substance-related consequences were associated with poorer general health across physical, emotional, and social domains. The strongest association was observed between the total drug use consequences score and overall general health (r = 0.513), supporting the convergent validity of the instrument and confirming the substantive link between substance use consequences and psychological well-being.

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

4. Discussion

The present study aimed to examine the psychometric properties of the Inventory of Drug Use Consequences (INDUC) and its relationship with general health in an Iranian population. The findings provide strong empirical support for the reliability, validity, and structural integrity of the INDUC, confirming its suitability for assessing multidimensional consequences of substance use within this cultural context. The exploratory and confirmatory factor analyses revealed a stable five-factor structure corresponding to physical, interpersonal, intrapersonal, impulse control, and social responsibility dimensions, with excellent model fit indices and robust factor loadings. This structure is consistent with the theoretical framework underlying the original instrument and supports its cross-cultural applicability (Shah & Goldstein, 2006; Tonigan & Miller, 2002). The high Kaiser–Meyer–Olkin value and significant Bartlett's test further confirmed the adequacy of the sample and the appropriateness of the factor analytic procedures, reinforcing the methodological rigor of the present validation.

Internal consistency analyses demonstrated excellent reliability for the overall scale and satisfactory reliability for each subscale, with Cronbach's alpha coefficients exceeding recommended thresholds. These results are comparable to previous psychometric investigations of substance-related assessment tools in Iranian populations, which likewise reported strong internal consistency and measurement stability (Habibi et al., 2017; Rahmati & Poorahmadan, 2020). The persistence of high alpha values following item deletion further suggests that the items of the INDUC coherently represent their respective constructs without redundancy or instability. Such reliability is essential for both clinical assessment and longitudinal research, as consistent measurement enables accurate monitoring of change and treatment outcomes.

The confirmatory factor analysis results further demonstrated that all five first-order factors significantly loaded onto a higher-order latent construct of overall drug use consequences. The strength of these loadings indicates that while the subscales capture distinct dimensions of impairment, they collectively reflect a unified underlying construct of substance-related harm. This hierarchical structure aligns with contemporary conceptualizations of addiction as a multidimensional disorder affecting interconnected biological, psychological, and social systems (Leshner, 1997; Volkow et al., 2016). The observed correlations among latent factors, which ranged from moderate to strong, further support this integrative perspective while preserving sufficient discriminant validity among domains.

The significant positive associations between INDUC scores and general health indicators provide compelling evidence of convergent validity. Individuals reporting greater substance-related consequences also exhibited higher levels of somatic symptoms, anxiety and insomnia, social dysfunction, and depressive symptoms, as measured by the General Health Questionnaire. These findings are consistent with extensive empirical literature demonstrating reciprocal and reinforcing relationships between substance use and mental health disturbances (Ghanaiyan, 2023; Jarban & Najafianpour, 2023; Sacks et al., 2013). The strongest correlation observed between overall INDUC scores and general psychological distress underscores the pervasive impact of substance use on global well-being and functional capacity.

The present results further corroborate theoretical models emphasizing that addiction is not solely a behavioral disorder but a chronic condition involving neurobiological dysregulation and psychosocial impairment (Leshner, 1997; Volkow et al., 2016). The strong association between impulse control consequences and psychological symptoms supports neurobehavioral models highlighting deficits in self-regulation, executive functioning, and emotional control among individuals with substance use disorders (Volkow et al., 2016). Moreover, the robust relationship between interpersonal and social responsibility consequences and general health indicators reflects the central role of social functioning and relational stability in recovery processes (Potik et al., 2007; Rothschild & Gellman, 2009).

These findings also align with qualitative research documenting the lived experiences of individuals recovering from addiction, which emphasize emotional suffering, relational breakdown, identity disruption, and gradual reconstruction of self-concept as core components of addiction and recovery (Shoaa Kazemi et al., 2025). The multidimensional structure of the INDUC appears particularly well-suited to capturing these complex experiences, reinforcing its relevance for holistic assessment and person-centered intervention planning.

From a prevention and public health perspective, the validated relationship between substance-related consequences and general health has important implications. It supports integrated service models that simultaneously address mental health and addiction, an approach

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

consistently associated with improved treatment outcomes and reduced relapse rates (Sacks et al., 2013). Furthermore, early detection of escalating consequences across multiple life domains may facilitate timely intervention before the development of more severe psychopathology and social deterioration, particularly among vulnerable youth populations (Uhlhaas et al., 2023; Williams et al., 2021).

The cultural relevance of the INDUC in the Iranian context is particularly noteworthy. Cultural norms, stigma, and legal frameworks significantly influence patterns of substance use and help-seeking behavior in Iran (Allahdadi et al., 2023; Habibi et al., 2017). The strong psychometric performance of the INDUC suggests that its conceptual framework resonates with the lived realities of Iranian individuals with substance use disorders. This cross-cultural validity supports its broader application in non-Western contexts and contributes to the growing international literature on culturally sensitive addiction assessment.

The findings also intersect with emerging global health priorities emphasizing youth mental health and early intervention. Given that many substance use disorders and associated mental health problems emerge during adolescence and early adulthood, reliable instruments such as the INDUC can play a critical role in identifying high-risk individuals and monitoring developmental trajectories of impairment (Uhlhaas et al., 2023). Moreover, digital environments increasingly shape substance-related behaviors and perceptions, as evidenced by recent research on social media influences among drug users (Ahmed, 2025). Comprehensive tools capable of capturing evolving patterns of harm are therefore essential for modern prevention strategies.

5. Conclusion

In sum, the present study extends the psychometric literature by providing robust evidence for the reliability, validity, and structural coherence of the INDUC in an Iranian population and by empirically establishing its meaningful relationship with general mental health. These findings reinforce the conceptualization of addiction as a multidimensional disorder requiring integrative assessment approaches and support the INDUC as a valuable instrument for clinical practice, research, and public health policy.

Despite its strengths, the present study has several limitations. The sample consisted exclusively of male participants from a single treatment center, which limits the generalizability of the findings to women, non-treatment populations, and diverse clinical settings. The cross-sectional design precludes causal inference regarding the relationship between substance-related consequences and general health. In addition, reliance on self-report measures may have introduced response bias, despite the inclusion of a response honesty scale.

Future studies should replicate these findings in more diverse samples, including female participants, adolescents, and non-clinical populations. Longitudinal research designs are recommended to examine the predictive validity of the INDUC and its sensitivity to treatment-related change over time. Further investigation into the instrument's applicability across different cultural regions and treatment modalities would strengthen its international utility.

The validated Persian version of the INDUC can be confidently incorporated into routine clinical assessment, treatment planning, and outcome evaluation in addiction services. Clinicians are encouraged to use the multidimensional profiles generated by the INDUC to tailor interventions to individual needs, monitor recovery progress, and enhance client engagement. Integration of INDUC findings into multidisciplinary care models may improve coordination among mental health, medical, and social services and contribute to more comprehensive, person-centered addiction treatment.

Authors' Contributions

F.T. designed the study, supervised the psychometric framework, and coordinated data collection; J.Y.B. conducted the statistical analyses, including exploratory and confirmatory factor analyses, and interpreted the psychometric findings; A.F. contributed to instrument administration, literature review, and preparation of the initial manuscript draft. All authors participated in manuscript revision and approved the final version.

Declaration

In order to correct and improve the academic writing of our paper, we have used the language model ChatGPT.

Transparency Statement

Data are available for research purposes upon reasonable request to the corresponding author.

Acknowledgments

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026

We would like to express our gratitude to all individuals helped us to do the project.

Declaration of Interest

The authors report no conflict of interest.

Funding

According to the authors, this article has no financial support.

Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants.

References

Ahmed, M. (2025). Drug users' behaviors and social media communication: A study on Bangladesh. *Asian Journal of Social Health*, *12*(1), 45-62. https://doi.org/10.20944/preprints202505.2174.v1

Allahdadi, N., Mirzaei, E., & Salimi Poor, N. (2023). Qualitative explanation of the contexts of tendency towards drug use. *Scientific Quarterly of Addiction Research*, *17*(68), 69-94. https://doi.org/10.61186/etiadpajohi.17.69.87

Ghanaiyan, M. T. (2023). The impact of drugs and addiction on mental health. Twelfth National Conference on Modern Research in Education, Psychology, Jurisprudence, Law, and Social Sciences, Shiravan.

Habibi, M., Allahdadi, S., Salari, M., & Ghanbari, N. (2017). Psychometric properties of the Drug Use Disorders Identification Test (DUDIT) in individuals with substance use disorder. *Iranian Journal of Epidemiology*, *13*(3), 210-221. https://irje.tums.ac.ir/article-1-5818-en.html

Jarban, M., & Najafianpour, B. (2023). Comparison of mental health in two groups quitting addiction through self-help and methadone maintenance therapy. *Journal of New Ideas in Psychology*, *15*(19), 1-9. https://jnip.ir/article-1-856-en.html

Kourgiantakis, T., & Lee, E. (2022). Developing mental health and addiction competencies in social work students using simulation-based learning. *Journal of Social Work Education*, *41*(6), 1351-1366. https://doi.org/10.1080/02615479.2021.1955850

Leshner, A. I. (1997). Addiction is a brain disease, and it matters. *Science*, *278*(5335), 45-47. https://doi.org/10.1126/science.278.5335.45

Miller, W. R., & Thoresen, C. E. (2003). Spirituality, religion, and health: An emerging research field. *American psychologist*, *58*(1), 24-35. https://doi.org/10.1037/0003-066X.58.1.24

Potik, D., Adelson, M., & Schreiber, S. (2007). Drug addiction from a psychodynamic perspective: Methadone maintenance treatment (MMT) as transitional phenomena. *Psychology and Psychotherapy: Theory, Research and Practice*, *80*(2), 311-325. https://doi.org/10.1348/147608306X164806

Rahmati, A., & Poorahmadan, S. (2020). Scale for measuring attitude towards drugs among university students: Validity and reliability assessment. *Scientific Quarterly of Addiction Research*, *14*(57), 35-56. https://doi.org/10.29252/etiadpajohi.14.57.35

Rothschild, D., & Gellman, M. (2009). Finding the common ground: Contemporary psychoanalysis and substance abuse treatment. *Journal of Addictive Diseases*, *28*(1), 28-38. https://doi.org/10.1080/10550880802544922

Sacks, S., Chaple, M., Sirikantraporn, J., Sacks, J. Y., Knickman, J., & Martinez, J. (2013). Improving the capability to provide integrated mental health and substance abuse services in a state system of outpatient care. *Journal of Substance Abuse Treatment*, *44*(5), 488-493. https://doi.org/10.1016/j.jsat.2012.11.001

Sahraei, F., Mamashrifi, P., Rafiee, Z., & Azami, Y. (2018). Predicting addiction readiness based on mental health, social support, and personality dimensions of neuroticism and agreeableness. *Journal of psychiatric nursing*, *6*(6), 57-66. https://doi.org/10.21859/ijpn-06067

Satuf, C., Monteiro, S., Pereira, H., Esgalhado, G., Afonso, R. M., & Loureiro, M. (2018). The protective effect of job satisfaction in health, happiness, well-being and self-esteem. *International Journal of Occupational Safety and Ergonomics*, *24*(2), 181-189. https://doi.org/10.1080/10803548.2016.1216365

Shah, R., & Goldstein, S. M. (2006). Use of structural equation modeling in operations management research: Looking back and forward. *Journal of Operations Management*, *24*(2), 148-169. https://doi.org/10.1016/j.jom.2005.05.001

Shoaa Kazemi, M., Mahamid, F., & Hamamra, B. (2025). The lived experiences of women overcoming addiction and self-harming behaviors. *Journal of Ethnicity in Substance Abuse*, 1-16. https://doi.org/10.1080/15332640.2025.2479608

Tonigan, J. S., & Miller, W. R. (2002). Inventory of drug use consequences (INDUC): Test-retest stability and sensitivity to detect change. *Psychology of Addictive Behaviors*, *16*(2), 165-168. https://doi.org/10.1037/0893-164X.16.2.165

Uhlhaas, P. J., Davey, C. G., Mehta, U. M., Shah, J., Torous, J., Allen, N. B., Avenevoli, S., Bella-Awusah, T., Chanen, A., Chen, E. Y. H., Correll, C. U., Do, K. Q., Fisher, H. L., Frangou, S., Hickie, I. B., Keshavan, M. S., Konrad, K., Lee, F. S., Liu, C. H., . . . Wood, S. J. (2023). Towards a youth mental health paradigm: A perspective and roadmap. *Molecular Psychiatry*, *28*(8), 3171-3181. https://doi.org/10.1038/s41380-023-02202-z

Volkow, N. D., Koob, G. F., & McLellan, A. T. (2016). Neurobiologic advances from the brain disease model of addiction. *New England Journal of Medicine*, *374*(4), 363-371. https://doi.org/10.1056/NEJMra1511480

Williams, C., Griffin, K. W., Mehta, R. K., & Botvin, G. J. (2021). Testing an evidence-based drug abuse and violence preventive approach adapted for youth in juvenile justice diversionary settings. *Health & Justice*, *9*, 3. https://doi.org/10.1186/s40352-021-00128-8

World Health Organization. (2023). *Substance use and public health*.

KMAN-CPN KMAN-Counseling & Psychology Nexus
E-ISSN: 3041-9026