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Prevalence of Addictive Behaviors in Adults with Substance Use Disorders

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Abstract

The prevalence of addictive behaviors among adults with substance use disorders (SUDs) is a critical area of study due to its implications for intervention and treatment. This study investigated the prevalence of various addictive behaviors, including gambling, drug use, social networking addiction, and sexual addiction, among adults with SUD. The independent variables include demographic information and scores on scales measuring addictive behaviors, while the dependent variable is the presence and severity of addictive behaviors. A cross-sectional research method was used, with a sample size of at least 350 participants. The study encompassed a diverse representation of individuals with addictive behaviors, utilizing a sample of individuals aged 18 to 65 years, a stratified random sampling strategy based on the type of substance that was used. The findings revealed that gambling symptoms were significantly correlated with substance use ($r = .16$, $p < .01$), social networking addiction ($r = .02$, $p < .01$), and sexual addiction ($r = .06$, $p < .01$). Furthermore, sexual addiction showed significant positive correlations with both substance use ($r = .42$, $p < .01$) and social networking addiction ($r = .22$, $p < .01$). Gender comparisons showed that males reported significantly higher mean scores than females. The anticipated findings of this study illuminated the co-occurrence of addictive behaviors in individuals with SUDs, underscoring the necessity for integrated treatment and intervention strategies. Gaining insight into the prevalence and patterns of these behaviors within this population holds considerable implications for developing tailored interventions and support services.

Keywords: Substance use Disorder, Addictive Behaviors, Prevalence, Gambling, Drug Use, Social Networking Addiction, Sexual Addiction.

Introduction

Addiction is a complex, multidimensional condition that involves compulsive engagement in rewarding behavior despite adverse consequences. It includes both substance-related disorders and behavioral addictions. According to the Diagnostic and Statistical Manual of Mental

Disorders (5th ed.; DSM-5; American Psychiatric Association, 2013), addiction is characterized by four key domains: impaired control over behavior, social impairment, risky use of the substance or behavior, and pharmacological indicators such as tolerance and withdrawal. Similarly, the International Classification of Diseases (11th ed.; ICD-11; World Health Organization, 2019) defines disorders due to substance use and addictive behaviors as patterns marked by impaired control, increasing priority given to the behavior, and continuation or escalation despite negative consequences. Addictive behaviors, whether related to substances (e.g., drug use) or activities (e.g., gambling, gaming), share several core features. These include impaired self-regulation, compulsivity, persistent engagement despite adverse outcomes, and the inability to voluntarily reduce or stop the behavior. Such behaviors are closely associated with dysfunction in the brain's reward circuitry, particularly involving the dopaminergic system, which reinforces the repetition of maladaptive habits. Adolescence represents a critical developmental stage marked by significant psychological, social, and neurobiological changes. During this period, individuals are particularly susceptible to engaging in risky and addictive behaviors. Neurodevelopmental factors, including the imbalance between a highly reactive socioemotional system and a still-maturing cognitive control system, contribute to increased impulsivity, heightened reward sensitivity, and diminished capacity for long-term planning and self-regulation. In addition, various psychosocial influences such as peer pressure, family environment, exposure to trauma, and socio-economic challenges can further elevate the risk of developing addictive behaviors. Globally, the burden of substance use remains substantial. According to the United Nations Office on Drugs and Crime (UNODC, 2023), over 296 million people used drugs in 2021, with more than a quarter falling within the 15–34 age range. In Pakistan, substance use among adolescents is notably prevalent, with cannabis and tranquilizers ranking among the most commonly used substances. In parallel, behavioral addictions—such as problematic gaming, gambling, and excessive internet use—are emerging as significant public health concerns, especially in younger populations. The ICD-11 has formally recognized "Gaming Disorder" as a specific behavioral addiction. It also includes a new category, "Other Specified Disorders Due to Addictive Behaviors," to encompass other maladaptive behavioral patterns that do not yet fall under existing diagnostic labels. An increasing body of research highlights the high comorbidity between behavioral addictions and substance use disorders, suggesting that these conditions may share common genetic, neurobiological, and psychosocial risk factors. They also appear to involve overlapping neural mechanisms, particularly those governing reward processing, impulse control, and decision-making. Although a considerable amount of research has examined this intersection in adult populations, there remains a notable gap in studies focusing on adolescents, particularly those in low- and middle-income countries (LMICs). Given the heightened vulnerability of adolescents and the unique sociocultural contexts of LMICs, further exploration of these co-occurring conditions is essential to inform prevention and intervention strategies and to address the broader public health implications. Several studies shed light on the growing issue of substance use among youth in Pakistan. Alam et al. (2018) explored drug use among university students in Lahore, highlighting that emotional instability and curiosity often drive students toward experimenting with substances, including cigarettes. Using qualitative methods such as interviews and semi-structured questionnaires with students from six HEC-recognized universities, the study emphasized the importance of collaboration between parents, academic institutions, and government bodies in addressing this concern. Similarly, Ahmed et al. (2008) investigated smoking behavior among university students in Karachi. The study found that 39% of participants smoked at least once, and 23%

were current smokers. Influential factors included family members, peers, and the presence of smokers at home. Notably, most students supported smoking cessation programs and smoke-free public places, suggesting openness to interventions. Rozi and Akhtar (2004) examined smoking patterns among adolescent males in public and private high schools in Karachi. The study identified a 13.7% smoking prevalence, with higher rates in public schools. It pointed to family and peer influence, advertising, and the appeal of smoking as major contributing factors, underscoring the need for preventive education and awareness in early adolescence. Zaman et al. (2015) focused on drug abuse among students from two private and two public universities, finding higher abuse rates in private institutions. Contributing factors included depression, anxiety, peer pressure, and psychiatric conditions such as schizophrenia. Common substances misused were stimulants, opioids, and benzodiazepines. The findings portray drug abuse as a global and multifaceted issue, influenced by genetic, environmental, and psychosocial variables. Saeed et al. (2021) conducted a qualitative study using phenomenological analysis to explore drug abuse in educational institutions. Interviewing 10 teachers and 10 students, the research found rising rates of drug use among youth, often linked to a lack of parental guidance and academic engagement. The study calls for a united effort from parents, educators, and institutions to address the issue meaningfully. Together, these studies highlight the urgent need for a comprehensive, multi-stakeholder approach to tackle substance use and addictive behaviors. They also point to the vulnerability of caregivers and the broader impact of substance use disorders, underscoring the importance of targeted interventions, support systems, and public awareness. Several theoretical models have explored the causes of substance abuse in adults. Among them, Self-Determination Theory (SDT), developed by Deci and Ryan (1985) and expanded by Ryan and Deci (2000), offers a comprehensive view of motivation and behavior change. SDT emphasizes the role of intrinsic versus extrinsic motivation in determining the likelihood of sustained behavior. Central to this theory are two factors: how self-determined an individual's motivation is, and whether they perceive themselves as the agent of change. Research shows that people who are internally motivated tend to be more engaged, confident, and persistent in their efforts, leading to better outcomes and overall well-being. A key component of SDT, Organismic Integration Theory (Ryan et al., 1996), outlines four types of motivation along a continuum—from external to fully internal regulation. At one end, external regulation refers to behavior driven by rewards or punishment. For example, someone might temporarily stop using substances while under surveillance, only to relapse once monitoring ends. Introjected regulation involves behavior motivated by guilt, shame, or the desire to please others, often resulting in anxiety and inconsistent effort. Further along the continuum is identified regulation, where individuals change behavior because they recognize its value, for instance, quitting smoking after a heart attack. While this form of motivation can drive simple behavior changes, it often falls short for deeply ingrained habits like addiction. That's where integrated regulation comes in. This highest form of internal motivation occurs when change aligns with personal values and identity, for example, avoiding alcohol because it supports a life goal or moral belief. Many therapeutic approaches, such as Alcoholics Anonymous, motivational interviewing (MI), and humanistic therapies, aim to promote this level of motivation. According to SDT, successful behavior change also depends on satisfying three basic psychological needs: autonomy, competence, and relatedness. Autonomy involves feeling that behavior is self-chosen rather than imposed. Unlike self-efficacy, which focuses on belief in one's ability, autonomy emphasizes the feeling of control over one's actions. External controls like deadlines, threats, or imposed goals tend to undermine this need. People who perceive their recovery efforts (like

attending meetings or avoiding substances) as self-directed are more likely to stay committed. Competence refers to the sense of being effective. People who receive supportive feedback and face achievable challenges are more likely to engage and persist in healthy behaviors. Lastly, relatedness involves feeling connected to others. Social relationships can strongly influence motivation, particularly when behaviors are encouraged or modeled by significant others. For example, someone may stop drinking because it's meaningful to their family or improves their relationships. Supportive social environments help meet these needs by offering choice, empathy, and encouragement. When people feel understood and respected, they're more open to change, even when the message is difficult. This also explains why people often respond more positively to feedback from trusted individuals. In sum, SDT suggests that individuals who are internally motivated, feel in control of their choices, and are supported in their social environments are more likely to adopt and maintain healthy behaviors. In contrast, those relying on external motivation in unsupportive settings are more prone to relapse once the pressure is removed. Motivational Interviewing (MI) aligns well with SDT principles. MI enhances autonomy by avoiding confrontation, supports competence by helping clients set achievable goals, and fosters relatedness through empathy and rapport. According to Miller and Rollnick (2002), effective motivation includes a strong personal reason to change (willingness), belief in one's ability (ability), and urgency (readiness). MI strengthens all three, helping clients move from external pressure to self-directed change.

Rationale

The widespread presence of both substance uses and other addictive behaviors among adults calls for deeper understanding, especially because of the toll it takes on individuals, families, and society (Hasin et al., 2020). Substance use is known to increase the likelihood of developing other addictive behaviors (Lechner et al., 2015), yet much remains unknown. Many existing studies lack the diversity needed to fully reflect the different groups affected (MacLaren & Best, 2010), pointing to the importance of long-term research to uncover the underlying causes and risk factors (Haylett et al., 2004). Exploring this area further could bring real benefits to public health. Pinpointing high-risk groups and understanding how these behaviors overlap could help shape more focused prevention efforts (Schuckit, 2014). Treatments that are adapted to the unique needs of people with both substance use, and behavioral addictions can lead to better outcomes and improved quality of life (Ersche et al., 2017). Reliable data on how common these issues are and what drives them can also guide policies and help allocate resources more effectively (McLellan et al., 2014). Research into addictive behaviors among adults with substance use has the potential to bring about lasting improvements. With careful design and attention to ethical standards, it can help fill critical knowledge gaps and support practical steps toward better prevention, treatment, and public health outcomes.

Methods

Objectives

- To determine the prevalence and severity of addictive behaviors in adults with a history of substance use, including alcohol, drugs, and tobacco.
- To investigate the co-occurrence of addictive behaviors, specifically food addiction and problem gambling, among individuals with substance use disorders.
- To identify demographic and clinical factors associated with higher addictive behavior scores, aiming to understand the predictors of these behaviors in the studied population.

Hypotheses

- There is a significantly higher prevalence of substance abuse, sexual addiction, social networking, and gambling in adults.
- Males have a higher level of addictive behaviors compared to females

Research Design

This study will adopt a **cross-sectional research design,** which involves gathering data from participants at a single point in time to gain a clear understanding of the current prevalence and characteristics of addictive behaviors among adults with a history of substance use (Babbie, 2016).

Sample

The study aimed to recruit **a minimum of 350 participants,** determined through power analysis to ensure sufficient statistical strength. A **stratified random sampling method** was used to ensure balanced representation across subgroups based on the type of substance used, such as alcohol, drugs, or tobacco, allowing for more accurate and generalizable findings (Neuman, 2014). The sample included **adults aged 18 to 65 years** with a history of substance use. Individuals with **severe cognitive impairments, language barriers,** or those **unwilling to provide informed consent** excluded to maintain data quality and ethical standards.

Instruments

Demographic Information. A structured questionnaire will be used to collect demographic data, including age, gender, education, and employment status.

Gambling Symptom Assessment Scale (G-SAS): Subjects reported their symptom severity using the Gambling Symptom Assessment Scale (G-SAS), a 12-item self-report scale used in previous studies (Kim et al., 2009). The G-SAS assesses gambling urges, thoughts, and behaviors during the previous seven days. In scoring the G-SAS, each item is scored on a 5-point scale from 0 (no symptoms) to 4 (extreme symptoms). The total score ranges from 0 to 48. Each item is rated for average severity in the past 7 days. Maximum score for the G-SAS is 48, severe scores Int J Ment Health Addiction (2008) 6:551 563 553 range from 31 to 40, moderate from 21 to 30, and mild from 8 to 20 (Kim et al. 2001). The Korean version of G-SAS was used in this study. The Cronbach alpha for the Korean version of G-SAS was 0.91 (Kim et al. 2005a).

Drug Use Questionnaire **(DAST-10)**

The Drug Abuse Screening Test (DAST-10), originally developed by Harvey A. Skinner in 1982, is a 20-item self-report questionnaire designed to assess drug use and identify individuals who may have problems with substance abuse, which is further modified and changed into 10 10-item scale. The DAST-10 is typically scored by summing the number of "Yes" responses, with higher scores indicating a greater likelihood of drug-related problems. This reliability is typically assessed using Cronbach's alpha, which has been reported to be above 0.70 for the DAST-10.

Social Networking Addiction Scale. The seven-dimensional online social networking addiction scale (Esmaeili Rad & Ahmadi, 2017) was utilized. The scale consists of 21 items, with each item's score ranging from 1 to 5. The Cronbach's α reliability coefficient of the scale was found to be 0.98.

Sexual Addiction Screening Test: Sexual Addiction Screening Test (SAST). The SAST is a 45-item measure that assesses symptoms of sexual addiction [Carnes, 1989]. All items are scored dichotomously (yes/no). Previous research demonstrated that the SAST efficiently and effectively discriminated between sex addicts and nonaddicts. Using 13 as a cutoff score, 96.5% of respondents were correctly classified as sexually addicted, while only 3.5% scoring 13 or

more were nonaddicted, and thus misclassified, using the SAST. For this sample, internal consistency of the SAST was excellent (KR-20 = .94) [George and Mallery, 2003].

Procedure

This study strictly followed ethical research standards. All the research participants were asked to give informed consent after being informed about the study's purpose, their rights, and the voluntary nature of their involvement. They were informed about privacy and confidentiality. They were given the right to withdraw from the research whenever they wanted. Data was gathered from various settings, including outpatient treatment facilities and community support groups. Participants who meet the inclusion criteria were then approached, given study details, and asked for consent. Those who agree completed questionnaires in a private and comfortable environment. The data collection period spans six months to allow for a broad representative sample. The data was analyzed using SPSS. Descriptive statistics were used to summarize participant demographics, addictive behavior patterns, and substance use severity. Inferential tests were applied, with results considered statistically significant at $p < 0.05$.

Results

Table 1

Mean, Standard Deviation, and Alpha Coefficient of Gambling Symptom Assessment Scale (G-SAS), Drug Use Questionnaire (Dast-10), Social Networking Addiction Scale, and Sexual Addiction Screening Test (SAST) scale (N=350)

Scales	No. of Items	Mean	SD	Range	Alpha Coefficient
GSAS	12	31.33	5.24	5-20	.77
DAST	10	12.13	1.67	14-70	.75
SNAS	21	56.93	7.24	0-34	.84
SAST	45	54.14	6.61	0-19	.82

Note: GSAS Gambling Symptom Assessment scale, DAST Drug Use Questionnaire, SNAS Social Networking Addiction Scale, SAST = Sexual Addiction Screening Test.

Descriptive statistics and reliability estimate of the study scales indicated good internal consistency across all measures. The Gambling Symptom Assessment Scale (G-SAS), Drug Abuse Screening Test (DAST-10), Social Networking Addiction Scale (SNAS), and Sexual Addiction Screening Test (SAST) demonstrated Cronbach's alpha values ranging from .75 to .84, indicating strong reliability.

Table 2

Socio-demographic information (N=350)

Sample Description	**F**	**%**
Patient Gender		
Male	291	83.1
Female	59	16.9
Age		
20-35	240	80
36-50	59	6.3
51-65	51	13.7
Education level		
Primary	65	18.6

Matric	181	51.7
FA	92	26.3
BA	12	3.4
Marital Status		
Unmarried	182	52
Married	186	48
Occupation		
Employed	154	44
Unemployed	156	56
Family System		
Nuclear	158	45.1
Joint	192	54.9
Type of Addiction		
Smoking	142	40.66
Ice	39	9.66
Alcohol	96	32.0
other	73	17.66
Disturbed Sleep		
Yes	150	40
No	200	60

The present study included a total of 350 participants, predominantly male (83.1%), with the majority aged between 20–35 years (68.6%). Most participants had completed at least matriculation-level education, and nearly equal number were married and unmarried. Over half the sample belonged to a joint family system, and 56% were unemployed. Substance addiction was most prevalent in the form of smoking (40.7%), followed by alcohol use (32%), with disturbed sleep reported by 40% of participants.

Table 3

Correlation Matrix for all the Variables Used in the Study (N = 300)

Variables	**n**	**M**	**SD**	GSAS	DAST	SNAS	SAST
GSAS	350	31.33	5.24	--			
DAST	350	12.13	1.67	.16**	--		
SNAS	350	56.93	7.24	.02*	.06**	--	
SAST	350	54.14	6.61	.22**	.42*	- .10*	--

Note: GSAS Gambling Symptom Assessment scale, DAST Drug Use Questionnaire, SNAS Social Networking Addiction Scale, SAST = Sexual Addiction Screening Test.

**p < .01.

Correlation analysis revealed significant positive associations among the study variables. Gambling symptoms were significantly correlated with substance use ($r = .16$, $p < .01$), social networking addiction ($r = .02$, $p < .01$), and sexual addiction ($r = .06$, $p < .01$). Furthermore, sexual addiction showed significant positive correlations with both substance use ($r = .42$, $p < .01$) and social networking addiction ($r = .22$, $p < .01$).

Table 4
Comparison of Gender on all assessment scales (N = 350)

	Males (n = 98)		Females (n = 202)			Cohens d
Variables	M	SD	M	SD	t (298)	
GSAS	8.54	3.94	3.32	4.44	15.20	1.24
DAST	11.38	3.71	2.34	3.21	11.88	2.20
SNAS	18.48	5.32	5.29	2.88	18.09	3.29
SAST	17.03	4.57	2.34	4.98	13.02	2.20

*p .05. **p < .01.

Gender comparisons showed that males reported significantly higher mean scores than females across all scales: gambling symptoms, substance use, social networking, and sexual addiction. These differences were statistically significant ($p < .01$), with large effect sizes, particularly in substance use and sexual addiction, indicating that male participants exhibited greater addictive behavior tendencies than their female counterparts. (see tables)

Discussion

This study provides a vital examination of the co-occurrence of substance use and behavioral addictions specifically gambling, social networking, and sexual addiction in adults with Substance Use Disorders (SUDs). The findings confirm the high prevalence of multiple addictive behaviors among individuals with SUDs, reinforcing the complex and interlinked nature of addiction. A primary finding of this research is that males reported significantly higher levels of addictive behaviors compared to females, consistent with previous literature (Li, 2017; MacLaren & Best, 2010). Male participants scored higher on all scales, including the Gambling Symptom Assessment Scale (G-SAS), Drug Abuse Screening Test (DAST), Social Networking Addiction Scale (SNAS), and the Sexual Addiction Screening Test (SAST). This gender disparity aligns with global trends indicating men are more likely to engage in risk-taking behaviors, including substance abuse and gambling (Griffiths et al., 2010). Correlation analysis revealed significant associations between substance use and both behavioral and sexual addictions. These results support previous findings that addictive behaviors often cluster together, potentially sharing common neurobiological and psychosocial roots (Di Nicola et al., 2015; Comings & Blum, 2000). The positive correlation between substance use and social networking addiction also reflects contemporary concerns about digital behavioral addictions among adult populations (Andreassen, 2015). Self-Determination Theory (SDT) provided a robust theoretical framework for understanding these behaviors. SDT posits that addiction arises from unmet psychological needs and motivational dysregulation (Ryan & Deci, 2000). The study's findings support this view by highlighting how external and introjected motivations may drive maladaptive behavior, especially in unsupportive social environments (Deci & Ryan, 1985). Moreover, the alignment of motivational interviewing with SDT further supports therapeutic models that prioritize autonomy, competence, and relatedness (Miller & Rollnick, 2002). Additionally, the study identified alarming trends in behavioral addictions such as social networking and gambling. The emergence of digital addiction reflects findings from recent large-scale studies, suggesting that problematic internet use and online behaviors are rapidly becoming public health challenges (Bányai et al., 2017; Demetrovics & Griffiths, 2012).

Limitations

Several limitations must be acknowledged. First, the cross-sectional design restricts causal interpretations. It is unclear whether behavioral addictions precede or follow substance use. Second, the use of self-reported data may be subject to social desirability or recall bias, potentially skewing results (Babbie, 2016). Third, the sample primarily comprised treatment-seeking individuals, which may not represent the broader SUD population, including those who do not access formal services. Finally, the overrepresentation of male participants may limit generalizability to women or non-binary individuals.

Future Recommendations

- Longitudinal studies should be conducted to establish the causal direction of relationships between substance use and behavioral addictions.
- Mixed-method approaches, integrating qualitative interviews, can offer richer insights into the psychosocial context of co-occurring addictions.
- Objective measures (e.g., behavioral tracking, biomarkers) should complement self-report tools to enhance data reliability.
- Future studies should aim for gender-balanced and community-based samples, including marginalized populations.
- Research should explore intervention efficacy targeting co-occurring addictions, especially using culturally adapted approaches in LMICs like Pakistan.

Implications

This research holds critical clinical and policy implications. It underscores the necessity for integrated treatment models that address both substance use and behavioral addictions concurrently. Gender-sensitive approaches must be prioritized, given the higher prevalence among men. Clinicians should screen for behavioral addictions during SUD assessments to ensure comprehensive care. From a public health perspective, this study supports the development of early intervention programs, particularly for young adults aged 20–35, who constitute the highest risk group. It also highlights the need for digital literacy and behavioral health campaigns aimed at curbing social networking and gambling addictions.

Conclusion

This study contributes substantially to the growing body of literature on co-occurring addictions by establishing strong correlations between substance use and behavioral addictions among adults, especially men. It confirms that addiction is a multifaceted and interrelated phenomenon that requires holistic, person-centered, and gender-informed interventions. By advancing our understanding of these patterns, the findings pave the way for more effective prevention and treatment strategies that address the full spectrum of addictive behaviors.

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