MED-PHOENIX: JOURNAL OF NATIONAL MEDICAL COLLEGE

ORIGINAL ARTICLE

PREVALENCE OF DEPRESSION IN SUBSTANCE USE DISORDER PATIENTS IN REHABILITATION CENTERS IN POKHARA

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Date of Submission : May 7, 2025
Date of Acceptance : May 14, 2025
Date of Publication : August 6, 2025

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Citation:
Magar RR, Lama U, Prajapati R, Amatya N. Prevalence of Depression in Substance Use Disorder Patients in Rehabilitation Centers in Pokhara. Medphoenix. 2025;10(1):3-8.
DOI: *https://www.doi.org/10.3126/medphoenix.v10i1.82569*

Conflict of interest: None, ***Funding:*** None

Publisher: *National Medical College Pvt. Ltd.*
MedPhoenix - Journal of National Medical College (JNMC); 2025,10(1), available at www.jnmc.com.np

ISSN:2631-1992 (Online); ISSN:2392-425X (Print)

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ABSTRACT

Introduction: *The objective of the study is to find out prevalence of depression among substance use disorder patients in rehabilitation centres. It aims to determine the relationship among various drug abusing patterns, prevalence of depression with substance use disorder and severity of depression with duration and frequency of substance abused.*

Materials and Methods: *The study was done in 3 rehabilitation centres at Pokhara, namely Richmond, Gateway and Helping hands rehabilitation centres. Ethical clearance was approved from Institutional Review committee (IRC) of Gandaki Medical College and Research Centre. One on one interview was taken using self-designed semi structured questionnaire to obtain information about socio-demography, types, duration and frequency of substance abused. Hamilton Depression Rating Scale was used for the rating of depression.*

Result: *All 110 respondents were men with mean age of 26.57 ±8 years. The prevalence of depression in SUD patients was 38.2%, among whom 69% has mild depression and 31% has moderate level of depression. The link between depression and duration of substance abuse was found to be statistically significant ($p<0.001$). Only 4.3% had depression who uses substance for less than 1 year whereas among those using substances for over 10 years, 85% had depression. Similarly, occasional substance users had a lower rate of depression (21.4%), while daily users had a much higher rate (57.1%).*

Conclusion: *This study shows that the longer and more frequently an individual uses substance, the higher their chances are of experiencing depression.*

Keywords: *Depression, Drug Abuse, Rehabilitation Centre, Substance Use Disorder*

INTRODUCTION

Drug abuse is one of the major problems worldwide including Nepal and depression is a common co-morbid disorder in substance use disorder (SUD) patients. Looking at the data from various literature and clinical studies shows that SUD is often associated with depressive disorders and vice versa.[1] SUD patients should be assess carefully because both active drug abuse and withdrawal from drugs can mimic symptoms of depression.[2, 3] However, if not recognized early, SUD patients with co-morbid depressive disorder are more likely to have an unfavorable treatment outcome and tend to have a higher risk of relapse in substance abuse.[4]

That is why we need reliable instruments to screen for

depressive disorders in SUD patients in rehabilitation center in order to facilitate adequate treatment. In this study, we used Hamilton Depression Rating Scale (HDRS) to screen the prevalence of depression in this subpopulation. The objective of the study is to find out prevalence of depression among SUD patients in rehabilitation centers in Pokhara. It aims to determine the relationship between severity of depression with duration and frequency of substance abused.

Drug abuse is still considered as taboo in our country due to which most of the SUD patients goes to rehabilitation center for detox program or treatment instead of psychiatric consultation. And due to lack of proper trained professionals, knowledge and infrastructure a lot of comorbid depressive symptoms may be missed. So, to minimize the complications arise by comorbid depressive conditions on SUD patients, we need a very comprehensive, easy to use screening device which can be used by non-medical personnel also after few trainings. So, this study can help to emphasize on the specificity of HDRS as screening device for depression outside hospital setting.

Also, the prevalence of depression on SUD has been already done on psychiatric ward but none on rehabilitation centers in this region. So, I hope this study will help to maximize the screening program for depression on SUD patients if proper training and infrastructure are available at rehabilitation centers or outside the hospital setting also.

MATERIALS AND METHODS

Study Design:

The study was a cross-sectional study carried out from June 2024 to Feb 2025. The study was done in 3 rehabilitation centers from Pokhara, namely Richmond, Gateway and Helping hands rehabilitation centers. Letter of approval was taken from each institute and ethical clearance was approved from Institutional Review committee (IRC) of Gandaki Medical College and Research Center.

Sample Selection

The subjects were only male aged between 18 to 58 years old (no females were admitted in those centers). Total 130 SUD patients were selected from 3 rehabilitation centers from Pokhara which were selected on convenience-based. Out of which 20 were excluded because of varied exclusion criteria like history of ongoing antidepressant medications, suffering from acute withdrawal symptoms and patients who were staying in treatment centers for more than 6 months. Also, the participants who were clinically diagnosed beforehand with comorbid psychiatric conditions like depression, anxiety and bipolar disorder were also excluded from the study. Participants must demonstrate a minimum of 14 days of drug abstinence, verified through the date of intake in treatment center, to be included in the study. Written informed consent was taken and subjects confidentiality were highly secured. One on one interview was taken using self-designed semi structured questionnaire to obtain information about socio-demography, types, duration and frequency of substance abused. Hamilton Depression Rating Scale was used for the rating of depression.

Sample Size

Sample size was calculated by applying statistical formula $N=Z^2pq/d^2$ = 92, where z=1.96 (95% CI), P=40.06% (prevalence from previous study)[5], q= 1-p and d=10% (margin of error). The data were entered in Excel and analyzed by SPSS version 25. The p value of less than 0.005 was considered as statistically significant.

RESULT

Sociodemographic characteristics of the respondents

The study included 110 male participants, with a mean age of 26.57 ± 8.26 years. The age range spanned from 18 to 58 years. Age distribution analysis showed that the majority (60.0%, n=66) fell within the 20–29-year age group, followed by 15.5% (n=17) in the 30–39-year range and 14.5% (n=16) under 20 years of age. Additionally, 8.2% (n=9) belonged to the 40–49-year category, while only 1.8% (n=2) were aged 50 years or older.

Table 1: Distribution of respondents according to age group (N=110)

Age group	Number	Percentage (%)
<20	16	14.50
20-29	66	60.00
30-39	17	15.50
40-49	9	8.18
>49	2	1.81

Different types of substance abused:

Similarly, when examining different types of drug misuse, 71.8% (n=78) of participants use marijuana, 43.6% (n=48) use opioids, 41.8% (n=46) use alcohol, 31.8% (n=35) use heroin, and 23.6% (n=26) use intravenous drugs. Among them, 80.8% are polydrug addicts who use more than

one drug, whereas 29.2% are single-drug addicts.

Table 2: Types of substance abuse (n=110)

Types of substance abuse	Number	Percentage (%)
Alcohol	46	41.8
Marijuana	79	71.8
Opioids	48	43.6
Heroin	35	31.8
I.V drugs	26	23.6
Polydrug user	88	80.8
Single drug user	22	20.2

Prevalence and severity of depression among drug abusers

The analysis showed that 38.2% (n=42) of participants exhibited signs of depression (Figure 1). Among those diagnosed with depression, 69.0% (n=29) had mild depression, while 30.9% (n=13) had moderate depression. Notably, no cases of severe depression were observed (Figure 2).

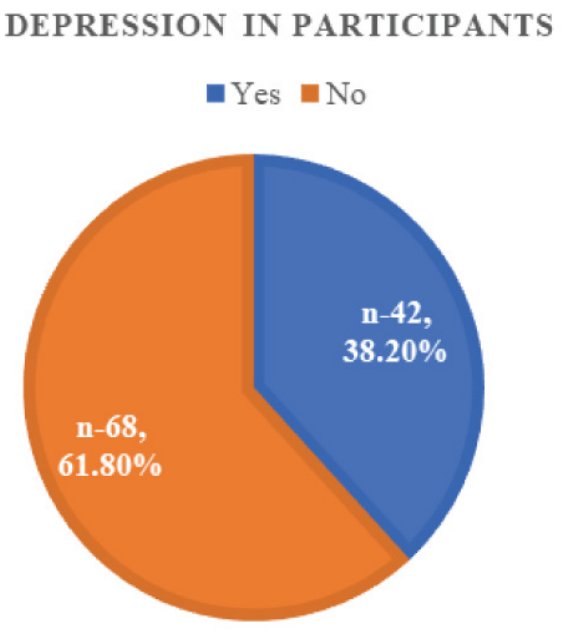

Figure 1: Prevalence of depression in SUD patients

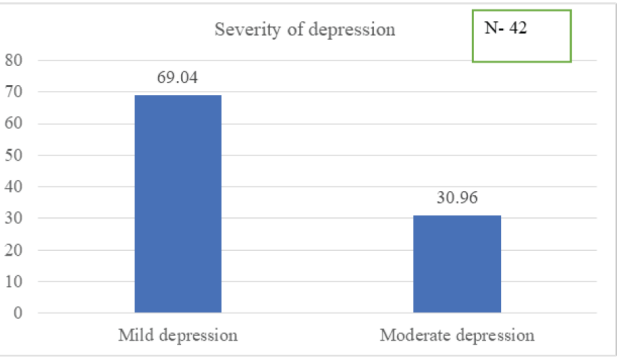

Figure 2: Severity of depression

Depression and Age group

The result showed that none of the participants below age 20 years had depression. The highest prevalence was observed in the 30–39 year age group (70.60%, n = 12/17), followed by those aged >40 years (63.60%, n = 7/11). In contrast, individuals aged 20–29 years exhibited a lower prevalence (34.80%, n = 23/66). Overall, 38.20% (n = 42/110) of participants were diagnosed with depression, highlighting a statistically significant (p<0.001) association between age group and depression prevalence. (Table 3)

Table 3: Relationship between depression and Age of the participants (N=110, row percentage)

Age Group	Depression		Chi-square Value	P Value
	Yes n(%)	No n(%)		
< 20	0	16 (100)	20.776	<0.001
20-29	23(34.80)	43(65.20)		
30-39	12(70.60)	5(29.40)		
>40	7(63.60)	4 (36.40)		
Total	**42 (38.20%)**	**68 (61.80%)**		

Chi-square test; p-value significant at <0.05

Depression and duration of substance use

When assess the relationship between depression and substance use among participants, it was found that participants who had been using substance less than 1 year, only four percentage (n-1, 4.30%) had depression while those participants who had been using substances for more than 10 years, eighty-five percentage (n-17, 85%) had depression. This denotes that depression increases with increasing duration of substance use. The relationship between depression and duration of substance use was found to be statistically significant (p<0.001) (table 4).

Table 4: Relationship between depression and duration of substance use (N=110, row percentage)

Depression (in years)	Depression		Chi square value	P value
	Yes n (%)	No n (%)		
<1	1(4.30)	22(95.7)	39.338	<0.001
1-5	4(14.30)	24(85.70)		
6-10	20(51.30)	19(48.70)		
>10	17(85.0)	3(15.0)		
Total	42(38.20)	68(61.80)		

Chi-square test; p-value significant at <0.05

Depression and frequency of substance use

Among the participants who used substance occasionally, nearly one-fourth (n-3, 21.40%) had depression whereas, more than half participants had depression who used substance on daily basis (n-28, 57.10). It was found that there is a significant association between substance use frequency and depression (p=0.001) (table 5)

Table 5: Relationship between drug abuse and its frequency (N=110, row percentage)

Frequency of substance abused	Depression		Chi square test	P value
	Yes n (%)	No n (%)		
Occasionally	3 (21.40)	11 (78.60)	13.477	0.001
Weekly	11(23.40)	36(76.60)		
Daily	28(57.10)	21(42.90)		
Total	42 (38.20)	68 (61.80%)		

Chi-square test; p-value significant at <0.05

Table 6: Multivariate analysis

Variable	COR (95% CI)	P Value	AOR (95%CI)	P value
Age group				
Less than 25 years	Ref	<0.001	Ref	0.20
25 years and more	4.58 (1.99-10.55)		0.40 (0.102-1.64)	
Duration of substance use				
Less than 5 years	Ref	<0.001	Ref	<0.001
5 years and more	15.47 (5.34-44.80)		57.82 (10.44-320.011)	
Frequency of substance use				
Occasional/weekly	Ref	<0.001	Ref	0.017
Daily	2.94 (1.51-5.70)		20.66 (1.71-249.67)	

Binary logistic regression; p-value significant at <0.05; COR: crude odds ratio, AOR: adjusted odds ratio, Ref : reference category

The results showed that individuals aged 25 years and above had higher crude odds of substance use (COR: 4.58, 95% CI: 1.99-10.55, p < 0.001); however, after adjustment, this association was not statistically significant (AOR: 0.40, 95% CI: 0.102-1.64, p = 0.20). Duration of substance use showed a strong correlation, with those using substances for five or more years exhibiting significantly higher odds (COR: 15.47, 95% CI: 5.34-44.80, p < 0.001) and this remained true even after adjustments (AOR: 57.82, 95% CI: 10.44-320.01, p < 0.001). Similarly, daily substance users were at a greater risk than those who used occasionally or weekly (COR: 2.94, 95% CI: 1.51-5.70, p < 0.001). The adjusted odds ratio further reinforced this association (AOR: 20.66, 95% CI: 1.71-249.67, p = 0.017), indicating that more frequent substance use is a strong predictor of sustained dependency. (Table 6).

DISCUSSION

The purpose of this study was to assess the prevalence of depression among SUD patients and to determine the correlation between the severity of depression with duration and frequency of substance abuse. Our findings indicate that 38.2% of SUD patients experienced symptoms of depression. This aligns with prior research conducted by Kessler et al., which reported that 44% of individuals undergoing treatment for SUD were diagnosed with co-occurring major depression.[6] Such similarities reinforce the strong association between substance misuse and mental health disorders, particularly depression. In our study, majority of participants, around 60% with substance use disorder (SUD) were under age group 20–29 years, aligning with findings by Pradhan SN et al., who reported the highest SUD prevalence in the 20–30-year age group.[7] This suggests that younger individuals may be more susceptible to substance abuse due to heightened stress, frustration, and competitive social environments. Similarly, in our study while comparing depression with age group, it was found that highest rate of depression (70%) was found in 30-39 year age group. This points out to suggest that there may be relation between depression and duration of substance abuse.

Regarding the severity of depressive symptoms, our study found that among those affected, 69.4% exhibited mild depression, 30.6% presented with moderate depression whereas no participants demonstrated signs of severe depression. Similar study done by Pradhan SN and colleagues in Kathmandu Medical College, Nepal showed that 73.8 % cases were found to be suffering from depression, in which 45.2% had mild to moderate depression and 28.6% had severe depression.[7] However,

these findings contrast sharply with the results of Ikram I. Mohamed, whose study reported a higher prevalence of severe depression 72% among SUD patients, with only 9% classified as having moderate depression.[8] This discrepancy may be attributable to variations in study populations, diagnostic criteria, or external influences such as socioeconomic conditions, treatment accessibility, and substance type. Further comparative analysis could provide deeper insight into how contextual factors shape mental health outcomes among individuals struggling with substance dependence. It is also evident from our study that most of the SUD patients were polydrug user. Pane Biance et al. also revealed the similar result that the majority of SUD patients were polydrug user[9] whereas Jabeen et al. found that more than half of SUD patients were single drug users.[10]

The present study found a significant association between both the duration and frequency of substance use and the prevalence of depressive symptoms. In particular, participants who had used substances for less than one year showed a very low prevalence of depression (4.30%), whereas those with more than 10 years of use exhibited a strikingly high prevalence (85%). Similarly, daily substance users had a markedly higher rate of depression (57.10%) compared to occasional users (21.40%). The statistically significant associations ($p < 0.001$ for duration and $p = 0.001$ for frequency) support a dose-response relationship, suggesting that prolonged and frequent substance use is linked with increased vulnerability to depression. In other words, as the length and regularity of substance use increase, the odds of developing depressive symptoms rise dramatically. This pattern of increasing risk is further quantified by the odds ratios: participants with substance use durations of five or more years had a crude odds ratio (COR) of 15.47 (95% CI: 5.34–44.80) and an adjusted odds ratio (AOR) of 57.82 (95% CI: 10.44–320.01), while daily users had a COR of 2.94 (95% CI: 1.51–5.70) and an AOR of 20.66 (95% CI: 1.71–249.67). These figures suggest that even after controlling for potential confounding factors, prolonged and frequent substance use independently predicts a significantly higher risk of depression.

Many studies have strongly suggested that chronic drug use induces structural and neurophysiological alterations in both cortical and subcortical brain regions, including disruptions in cortico-striatal-limbic circuits[11,12] Postmortem and imaging studies consistently implicate the involvement of the prefrontal cortex (PFC) in addiction[13], highlighting its role in inhibitory control, decision-making, emotional regulation, motivation, and salience attribution.[14] Thus we can somehow deduce that prolong substance abuse can lead to various neurobehavioral consequences including mood disorder, anxiety and depression.

Our results add to this body of evidence and reinforce the need for interventions that address both substance use and mental health. From clinical point of view, the importance of early intervention cannot be overstated. If we can reduce the frequency and overall duration of substance use—through behavioral therapies, counseling, or appropriate medications—it may be possible to lower the risk of developing depression.

CONCLUSION

This study shows that depression is common among patients with substance use disorder. Most of these cases were either mild (69%) or moderate (31%), and none were severe. Our results also reveal that the longer and more frequently an individual uses substance, the higher their chances are of experiencing depression. So, it will be of utmost importance to intervene early through appropriate medications and proper counseling to lower the risk of developing depression. In many treatments centers lack of proper trained professionals, knowledge and infrastructure a lot of comorbid depressive symptoms may be missed or misdiagnosed. This study thus helps to emphasize in providing proper infrastructure and training to related professionals which helps in screening of depression in SUD patients outside the hospital setting, ultimately helps in decreasing comorbidity and improving treatment outcomes.

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