Clinical Depression in Alcohol Dependent Patients in a Tertiary Care Center in the Western Region of Nepal: A Cross-Sectional Study

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Abstract

Background

Alcohol dependence syndrome (ADS) is one of the common diagnoses in the psychiatry department. ADS is associated with various comorbid psychiatric disorders. We aim to study the prevalence of co-morbid depression in ADS patients.

Methods & Materials

We conducted a tertiary hospital-based cross-sectional study using a convenient sampling method. Ethical approval was obtained from the Institutional Review Committee (IRC) of Lumbini Medical College and Teaching Hospital (LMCTH). A total of 58 ADS patients were diagnosed using the International Classification of Diseases (ICD)-10 Classification of Mental and Behavioral Disorders. The study duration was 1 year from January 2023 to December. We used the Beck Depression Inventory (BDI) to evaluate depressive symptoms and the Alcohol Use Disorder Identification Test (AUDIT) to assess the severity of drinking in all patients.

Results

We found that out of the total 58 ADS patients, 55.17 % were suffering from depressive disorder. More depressive symptoms were observed among depressed ADS than non-depressed ADS patients, which was significant at p-value (0.001*). Also, a significant number of depressed ADS patients (37.5 %) were having suicidal ideation, which was significant at p-value (0.006*). Again, BDI and AUDIT scores correlated at p-value (0.039*). However, depressive symptoms were not associated with gender, age, marital status, family type, locality, socio-economic status, and total AUDIT score.

Conclusion

This study showed high estimates of depressive symptoms among ADS patients and high suicidal ideation in depressed ADS patients. So, depressive symptoms should be looked for carefully to detect and treat in ADS patients.

Keywords

Clinical depression, Alcohol dependent patient, Beck Depression Inventory, Alcohol Use Disorder Identification Test

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INTRODUCTION

Alcohol has been a frequently used substance since ancient times.[1] Drinking pattern differs in different parts of the world in terms of the type of drinks and the frequency and average intake.[2] Heavy alcohol drinking has been known to produce psychological distress, mental disorders, and an increased risk of suicide. [3-5] People dependent on alcohol are prone to depression.[6-7] Estimates of alcohol abuse and major depression in clinical samples of alcoholics vary from 12 % to 68%.[8-13] There is close co-morbid susceptibility with heavy consumption of alcohol and depression, so there are more chances of having depressive symptoms in alcohol dependent patients.[14] In Alcohol Use Disorder, depressive disorders are the most frequent psychiatric co-morbidity. [15]

Simultaneous presence of alcohol dependence and depressive disorder has got more severe and worse prognosis for both disorders.[15] Women with alcohol use disorder suffer 1.5 to 2 times greater than men from depressive disorder during their lifetime.[16] Adults with alcohol use disorder have 1.2 times higher chances of having depressive disorder than adults without an alcohol use disorder.[17] The

lifetime prevalence of alcohol-use disorders in people with major depressive disorders has been reported to be as high as 40 %, and among people with alcohol-use disorders, the prevalence of depression has been reported to be as high as 35 %.[18] Co-occurrence of these two disorders is also known to augment the adverse consequences of each disorder; for example, depression predicts poor treatment response and higher rates of relapse in alcohol-use disorders, while alcohol use disorders are associated with higher rates of suicide among patients with depression.[19-20] In studies among individuals with alcohol-use disorders, a high prevalence of depression was found among inpatient clients in de-addiction centers.[21-23] Depressive disorders were commonly diagnosed co-occurring disorders among individuals with alcohol-use disorders seeking treatment from the national de-addiction center in India.[24] The National Institute on Alcohol Abuse and Alcoholism's National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) indicated that patients who suffer from major depressive disorder are more likely to suffer from alcohol use disorder[17] and conversely, those who suffer from alcohol use disorder have a 12-month prevalence of major depressive disorder of 16.4 %.[25] Depression is a strong predictor of the first incidence of alcohol use disorder.[26]

Despite the high prevalence of depression in alcohol dependent individuals, the nature of the relationship between depressive disorder and alcohol abuse has been difficult to define.[27] Alcohol abuse and major depression appear to be independent entities, but symptoms of depression may develop during the alcoholism phase, and some patients with affective disorder may drink when they are ill.[28] The prevalence of depression among alcohol-dependent persons is high (63.8 %), with a significant association between depression and the mean AUDIT score, and concluded that alcohol dependence is associated with major depression.[29]

There has not been much independent study regarding the prevalence of comorbid depression among ADS patients in Nepal. Therefore, we conducted present study to find out the demographics, prevalence and factors associated with depression in ADS patient in western region of Nepal in a tertiary care hospital.

MATERIALS AND METHODS

We conducted a hospital-based cross-sectional study to evaluate clinical depression among alcohol dependent patients. The study site was Lumbini Medical College and Teaching Hospital (LMCTH), a private institution affiliated with Kathmandu University. It covers 6-7 districts to which it provides psychiatry services along with other services. It is located in Palpa District, which is a mid-hill district of western Nepal in Lumbini Province. The study period was 1 year from January 2023 to December. Ethical approval was obtained from the Institutional Review Committee (IRC) of Lumbini Medical College and Teaching Hospital (LMCTH) dated 2022-12-29 with Protocol No: IRC-LMC-03/M-022.

Inclusion criteria:

All patients with alcohol dependence syndrome (ADS) who give consent.

Exclusion criteria:

ADS patient with:

1. Active alcohol withdrawal or in delirium tremens
2. Anxiety disorder, schizophrenia, and bipolar disorder
3. Severe medical disease (e.g., acute exacerbation of chronic obstructive pulmonary disease, cerebrovascular accident, head injury, acute pancreatitis)
4. Who is handicapped and
5. Who do not give consent for the study.

We used a convenient and non-probability sampling method. i.e., whoever came first, and met the inclusion and exclusion criteria were included in the study. Data was collected after verbal and written consent from the patient in the study. We used a self-designed semi-structured Performa to collect socio-demographic profiles of patients (age, gender, marital status, religion, family type, locality, education, occupation, family income, duration of alcohol intake in years).The diagnosis of ADS was made as per the International Classification of Diseases (ICD) -10. We used the Alcohol Use Disorder Identification Test (AUDIT) (31, 32) for severity of alcohol intake. AUDIT is a screening tool with 10 items about recent alcohol use, alcohol dependence symptoms, and alcohol-related problems. The maximum score of the AUDIT is 40 points. The AUDIT consists of two factors: a consumption factor (items 1–3) and an adverse consequence of drinking factor (items 4–10). We also used the Beck Depression Inventory-II (BDI) for the severity of clinical depression.[33] BDI is a 21-item inventory that measures symptoms of depression. Based

on the BDI total score, patients were classified into two groups: ≤13 = not depressed and ≥14 = depressed. Mild depression was defined as a total score of 14–19. Moderate depression was defined as a total score of 20–28, and severe depression was defined as a total score of 29 or above on the BDI. Suicidal ideation was measured using item I about suicide of the BDI (I don't have any thoughts of killing myself; I have thoughts of killing myself, but I would not carry them out; I would like to kill myself; I would kill myself if I had the chance). Data was entered in windows XP and analyzed via statistical package for social sciences (spss) - 27.

RESULTS

A total of 58 Alcohol dependence syndrome (ADS) patients were in this study. Out of the total, male 51 (87.90 %) predominance over female 7 (12.10 %) was present. The age groups 30-39 and 50-59 were the highest, 16 (27.60 %) each, and the age group 60-69 was the lowest at 4 (6.90 %). Regarding their marital status, they were married 46 (79.30 %), remarried 1 (1.70 %), separated 1 (1.70 %), single 8 (13.80 %), and widowed 2 (3.40 %). They followed Hinduism 56 (96.60 %), Christianity 1 (1.70 %), and Other religions 1 (1.70 %). Thirty-four (58.60 %), patients were living in a nuclear family, 14 (24.10 %) in a joint, and 10 (17.20 %) in an extended family. They belong to rural 45 (77.60 %) and urban 13 (22.40 %) backgrounds, respectively.

Their educational status revealed illiterate 6 (10.30 %), middle school certificate 22 (37.90 %), graduate or postgraduate 3 (5.20 %), and no professional or honours. And occupational wise, there were unemployed 9 (15.50 %), farmers 17 (29.30 %), and professionals 7 (12.10 %). Regarding their monthly family income in Nepalese Rupees (Nrs), 6 (10.30 %) families earned less than Nrs 4850, 14 (24.10 %) families earned between Nrs 4851-14550, and 5 (8.60 %) families earned more than Nrs 97451. In this study, 2 (3.40 %) patients were of upper class, 23 (39.70 %) of middle class, and 33 (56.90 %) of lower class socioeconomic status. Out of the total 18 (31 %) ADS patients were taking alcohol for 10-19 years, and 20-29 years each, and only 2 (3.40 %) of them were taking alcohol for 40-49 years.

Table 1: Demographic characteristics of the patients

Age group	Frequency (%)	Education	Frequency (%)
20-29	14 (24.10)	Illiterate	6 (10.30)
30-39	16 (27.60)	Primary school certificate	11 (19)
40-49	8 (13.80)	Middle school certificate	22 (37.90)
50-59	16 (27.60)	High school certificate	13 (22.40)
60-69	4 (6.90)	Intermediate or post high school diploma	3 (5.20)
Total	58 (100)	Graduate or post graduate	3 (5.20)
Gender		Professionals or Honours	0 (0)
Male	51 (87.90)	Total	58 (100)
Female	7 (12.10)	Occupation	
Total	58 (100)	Unemployed	9 (15.50)
Marital status		Unskilled worker	6 (10.30)
Married	46 (79.30)	Semiskilled worker	9 (15.50)
Remarried	1 (1.70)	Skilled worker	9 (15.50)
Separated	1 (1.70)	Clerical, Shop owner, Farmer	17 (29.30)
Single	8 (13.80)	Semi-professional	1 (1.70)
Widowed	2 (3.40)	Professional	7 (12.10)
Total	58 (100)	Total	58 (100)
Religion		Modified Family Income Group in Nepalese Rupees of the Kuppuswamy's Socio-economic scale for 2019	
Hindu	56 (96.60)	Original in INR/Modified in (Nrs)	
Christian	1 (1.70)	≤100/≤4850	6 (10.30)
Others	1 (1.70)	101-299/4851-14550	14 (24.10)
Total	58 (100)	300-499/14551-24350	13 (22.40)
Family type		500-749/24351-36550	11 (19)
Nuclear	34 (58.60)	750-999/36551-48750	6 (10.30)
Joint	14 (24.10)	1000-1999/48751-97450	3 (5.20)
Extended	10 (17.20)	≥2000/≥97451	5 (8.60)
Total	58 (100)	Total	58 (100)
Locality			
Rural	45 (77.60)		
Urban	13 (22.40)		
Total	58 (100)		

Table 2: Kuppuswamy SES Class

	Frequency (%)
Upper class	2 (3.40)
Middle class	23 (39.70)
Lower class	33 (56.90)
Total	58 (100)

Table 3: Alcohol intake according to duration in years

Class interval in years	Frequency (%)
0-9	13 (22.40)
10-19	18 (31)
20-29	18 (31)
30-39	7 (12.10)
40-49	2 (3.40)
Total	58 (100)

The table 4 shows that there was a total of 32 (55.17 %) depressed ADS patients and 26 (44.82 %) non-depressed ADS patients. Out of the depressed ADS patients, there were 29 (90.62 %) males and 3 (9.37 %) females, and out of non-depressed ADS patients, there were 22 (84.61 %) males and 4 (15.38 %) females. The mean age of depressed and non-depressed ADS patients was 40.44 (±12.85) and 41.46 (±12.75) in years. Among depressed ADS patient, there were married 26 (81.25 %), widowed 1 (3.12 %) and none were remarried and separated or divorced, and among non-depressed ADS patients there were married 20 (76.92 %), single 3 (11.53 %), remarried, separated or divorced and widowed 1 (3.84 %) each. Further, depressed ADS patients followed Hinduism 31 (96.82%), and non-depressed ADS patients followed Hinduism 25 (96.15 %). Similarly, depressed ADS patients were living in a family type of nuclear 17 (53.12 %) and extended 6 (18.75 %), and non-depressed ADS patients were living in a family type of nuclear 17 (65.38 %) and extended 4 (15.38 %). Moreover, depressed ADS patients were from rural 25 (78.12 %) and urban 7 (21.87 %) backgrounds, and non-depressed ADS patients were from rural 20 (76.92 %) and urban 6 (23.07 %) backgrounds. The socioeconomic class of depressed ADS patients was lower class 21 (65.62 %) and upper class 2 (6.25 %), and that of non- depressed ADS patients was lower class 12 (46.15 %), middle class 14 (53.84 %), but no upper class was found. Similarly, the duration of alcohol intake was 16.9 ± 9.68 years and 18 ± 10.78 years among depressed and non-depressed ADS patients, respectively.

Table 4: Demographic and clinical features between alcohol dependent patients with and without depression

Characteristics	Depression n=32 (55.17%	Non-depression n=26 (44.82%)	t/x^2	P
Males/Females	29/3	22/4	0.488	0.485
Age (in years)	40.44 ± 12.85	41.46 ± 12.75	0.303	0.763
Marital status				
Married	26 (81.25%)	20 (76.92%)	2.691	0.611
Remarried	0	1 (3.84%)		
Separated/divorced	0	1 (3.84%)		
Widowed	1 (3.12%)	1 (3.84%)		
Single	5 (15.62%)	3 (11.54%)		
Religion			2.044	0.360
Hindu	31 (96.87%)	25 (96.15%)		
Christian	0	1 (3.84%)		
Others	1 (3.12%)	0		
Family type			0.932	0.627
Nuclear	17 (53.12%)	17 (65.38%)		
Extended	6 (18.75%)	4 (15.33%)		
Joint	9 (28.12%)	5 (19.23%)		
Locality			0.012	0.913
Rural	25 (78.12%)	20 (76.92%)		
Urban	7 (21.87%)	6 (23.07%)		
Kuppuswamy socio-economic status class			4.974	0.083
Upper class	2 (6.25%)	0		
Middle class	9 (28.12%)	14 (53.84%)		
Lower class	21 (65.62%)	12 (46.15%)		
Duration of alcohol intake in years	16.9 ± 9.68	18.0 ± 10.78	0.421	0.675
Audit Consumption sub score	6.53 ± 2.60	6.92 ± 2.82	0.549	0.585
Audit Adverse consequences sub score	13.94 ± 5.89	12.50 ± 5.79	-0.931	0.356
Total score	20.4 ± 7.02	19.6 ± 6.98	0.4491	0.655
BDI-Total score	23.03 ± 8.61	8.85 ± 3.31	-7.924	0.001*
BDI-suicidal ideation	12 (37.50%)	0	12.293	0.006*

About the AUDIT consumption sub-score, it was 6.53 ± 2.60 and 6.92 ±2.82 among depressed and non-depressed ADS patients, respectively. Again, on the AUDIT adverse consequences sub-score, it was 13.94 ± 5.89 and 12.50 ± 5.79 among depressed and non-depressed ADS patients, respectively. Similarly, on total AUDIT, depressed and non-depressed ADS patients had scores of 20.4 ± 7.02 and 19.6 ±6.98, respectively.

On assessing the total BDI score, it was found that depressed ADS patients had a mean score of 23.03 ± 8.61 and non-depressed patients had a mean score of 8.85 ± 3.31, which was significant at p value (0.001*). Again, on BDI suicidal ideation, there were 12 (37.5 %) depressed ADS patients and no one had suicidal ideation among non-depressed ADS patients, which was significant at p value (0.006*). Table no 5 shows the correlation between total BDI (16.67 ± 9.78) and AUDIT (20.03 ± 6.94) mean score, which was significant at p value (0.039*).

Table 5: Correlation between BDI and AUDIT

	Mean (Standard Deviation)	t-value	P-value
BDI	16.67 ± 9.78	0.271	0.039*
AUDIT	20.03 ± 6.94		

DISCUSSION

The mean age of patients in this study was found to be 40.44 ± 12.85 and 41.46 ± 12.75, depressed and non-depressed, respectively. This was comparable to other studies. [1, 34, 35] Age group-wise, the 30-39 and 50-59 age groups people were a higher frequency of 16 (27.60 %) than the rest of the age groups. This was in line with the previous study for age 30-39 years.[34] There was a male predominance in this study, accounting for 87.90 %, which was reflected in almost all studies from Nepal.[1, 22, 34-38]

Only a single patient (1.70 %) in this study was separated from marital life. The other studies have a higher percentage of people who have their marital status as separated or divorced.[36, 38, 39] This could be because this study site was a rural area where people were less educated, with a high chance of less-education of life partners, and they could not seek newer opportunities. And they could not live their life independently. However, other studies have a higher percentage of marital status as separated or divorced.[36, 38, 39] These studies were from somewhat urban areas, and people can have more opportunities to live their life independently, and also, people in those studies were more educated, so would be their partners. Another prominent reason might be because of their religious belief in rural areas that, once married, they should not get separated or divorced.

Talking about religion, the study patient followed Hinduism (96.60%), which is similar to other studies. [1, 34] The Maximum number of patients were living in a nuclear family (58.60%), which was comparable to a previous study. [1] Most of the study patients belong to a rural background (77.60%). It may be because the study site is situated in a rural area and there are no other tertiary hospitals nearby. And urban people have difficulty coming to this hospital because of poorer roadways and the risk of landslides. A maximum number of patients had a middle school certificate (37.90 %), which was comparable to other studies. [1, 35, 36, 38] Most of the patients were farmers or shop owners, 29.3 %. This finding was different from other studies where business and unemployed were maximum in that category.[1, 38, 34, 36]

This study patients' family income was comparable to another study. [1] However, in another study, the patient's families had more income.[38] This high income could be because the study site was Kathmandu, which is the capital city of Nepal, and has more job opportunities. About socioeconomic status, 56.90 % of the patients belong to the lower class, and previous studies from Nepalgunj and Kathmandu cities had lower-middle and middle socioeconomic classes. Again, the reason is attributed to urban areas and job opportunities. The mean year of alcohol intake was 17.41 ± 10.11 in this study, which was more than in the previous study. [1]

We find that 55.17 % of ADS patients were depressed, and 50 % of those depressed were moderate or severely depressed, suggesting a higher prevalence and more depressive symptoms among ADS patients. Our finding of co-occurrence of depressive symptoms (55.17 %) in ADS patients closely corresponds with the findings of a hospital-based study in Nigeria. Ugocukwu et.al reported that the prevalence of major depression among 59 alcohol dependent patients was 45.80 % in the tertiary care center in a Nigerian hospital. [40] Another study conducted by Odlaug and colleagues showed that the rate of depression among 2,979 ADS patients was 43.87 % in eight European countries. [41] Similarly, another study from China done by Hui Huang et.al. found that 48.90 % of ADS patients were depressed. [42] This consistency of results across multiple countries indicates a stable and high co-morbidity of ADS and depression. Again, a Nepalese study among 188 alcohol use disorder (AUD) patients lifetime prevalence and 12-month prevalence of major depression were 45 % and 36 %, respectively. [43]

However, in other studies from Nepal, the prevalence of depression was found to be low among ADS patients. Among 31 ADS patients, 28.57 % of patients were reported to have depressive disorder. [35] Similarly, 104 ADS patients,

16.30 %, were found to have depression. [37] Another study was done in 34 inpatients of the psychiatry department, on the 14th day assessment after detoxification, 17.64 % were found to be depressed. [22] In Norway, a study conducted in 127 AUD inpatients, 14 % of the participants were diagnosed with major depressive disorder. [44] In an Indian study done by Raju et.al, among 173 alcohol dependent army personnel, 4.62 % had depression. [45] Another study from Nepal, done among 53 ADS inpatients, showed that 94.3 % of patients were suffering from depressive episode, and 11.3 % from severe depressive episode. [46] This variation in prevalence could be because of the inconsistent definition of depression and ADS.

In this study BDI total score among depressed and non-depressed was significant, however, there was no association between gender, age, marital status, religion, family type, and locality. In the study, alcohol abusers were 2.5 times more likely to report symptoms of depression than the non-abusers.[47] Further, being male, being unemployed, and being younger remained independent predictors of symptoms of depression. Male gender is a protective factor against Major Depressive Disorder (MDD). Those with low and moderate cohesion are more likely than those with high family cohesion to have MDD. [48] Females had a higher rate of suicide attempts and depressive symptoms at treatment onset. [49] A previous Chinese study found that unstable marital status and AUDIT total score were risk factors for the comorbidity of ADS and depressive symptoms.[42]

We found that 20.70 % of ADS patients had suicidal ideation, and the rate of 37.50 % was higher in patients with comorbid depressive symptoms. Our results were consistent with the previous study of Hui Huang et.al, which reported that 19.60 % of alcohol dependent patients had suicidal ideation and 37.30 % had suicidal ideation with comorbid depressive symptoms.[42] Another study showed that among 510 patients, ADS participants 12 % reported suicidal thoughts, and those with co-morbid psychiatric disorder were twice as likely to have suicidal ideation. Moreover, alcohol dependence, alcohol craving, and depressive disorder may be regarded as risk factors for suicidal ideation.[50] Again, Cornelius et.al concluded that suicidality was significantly higher in the depressed alcoholic.[51] Similarly, in a comparison study, among the elderly with alcohol use disorder, more than half of the cases had one suicidal attempt. [52] Therefore, therapists treating these kinds of cases should be vigilant to ADS patients with depression and provide numerous interventions to prevent potential suicidal behavior.

This study also observed that ADS patients were more male than female, and the male/female ratio of ADS patients was 7.30 %, which corresponded to other studies. [17, 42, 53, 54] Possible explanations could be male freedom and friends circle outside compared to females in this part of the world. Our study showed a correlation between BDI and AUDIT, which was significant at p-value (0.039). A similar finding was demonstrated by another study. [55] It suggests that, increase in alcohol drinking increases the chances of people being depressed.

The strength of our study is that it was conducted in a tertiary care hospital, so it may represent the diversity of people from different regions of this part of the country. There are several limitations to this study. Although the ICD-10 criterion for alcohol dependence was used, the diagnosis of depressive disorder was not established, and the depressive symptoms were identified only based on the BDI. This study was cross-sectional. Therefore, the potential causality and direction between ADS and depression could not be ascertained. Longitudinal studies are needed to elucidate this relationship. Also, it is a private hospital, so it may not represent common people from the community.

In conclusion, this study found relatively high estimates of depressive symptoms in ADS patients. There is a high rate of suicidal ideation in patients with depression, so one should be more careful about patients with depression comorbid with ADS for timely detection and early intervention.

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None

CONFLICT OF INTEREST

None

References

1. Dhungana S, Ojha SP, Chapagain M, Talachan P, Pant S B, and Mishra A .Profile of Alcohol-Dependent Patients Admitted in De-addiction Ward of Tribhuvan University Teaching Hospital (TUTH), Kathmandu. Journal of Psychiatrists; Association of Nepal.2018; . 6(1): 38–43. Doi:10.3126/jpan.v6i1.21771
2. Gea A, Beunja JJ, Estruch R, Sa'nchez-Villegas A, Salas-Salvado' J, Buil-Cosiales P. et.al. Alcohol intake, wine consumption and the development of depression: the PREMED study. BMC Medicine. 2013 Aug 30; 11: 192. doi: 10.1186/1741-7015-11-192
3. Relm J, Room R, Graham K, Monteiro M, Gmel G, Sempos CT. et.al. The relationship of average volume of alcohol consumption and patterns of drinking to burden of disease: an overview. Addiction. 2003 May 8; 98: 1209-1228. doi: 10.1046/-j.1360-0443.2003.00467.x
4. Brady J. The association between alcohol misuse and suicidal behaviour. Alcohol and alcoholism. 2006 Aug 4; 41(5): 473-478. doi: 10.1093/alcalc/ag1060
5. Norstrom S, Ramstedt M. Mortality and the population drinking: A review of the literature. Drug and Alcohol Review. 2005 Nov; 24(6): 537-547. doi: 10.1080/09595230500293845
6. Tyndel M. Psychiatric study of one thousand alcoholic patients. Canadian Psychiatric Association Journal. 1974 Feb; 19(1): 21-24.
7. Nakamura MM, Overall JE, Hollister LE, Radcliffe EL. Factors affecting outcome of depressive symptoms in alcoholics. Alcoholism: clinical and experimental research.1983 Spring; 7(2): 188-193. doi: 10.1111/j.1530-0277.1983.tb05437.x
8. Halikas JA, Herzog MA, Mirassou MM, Lyttle MD. Psychiatric diagnosis among female alcoholics. Currents in alcoholism. 1981; 8: 283-291. PMID:7343185(1-4)
9. Powell BJ, Penick EC, Othmer E, Bingham SF, Rice AS. Prevalence of additional psychiatric syndromes among male alcoholics. J Clin Psychiatry. 1982 Oct; 43(10):404-7. PMID: 7118834.
10. Dorus W, Kennedy J, Gibbons RD, Ravi SD. Symptoms and diagnosis of depression in alcoholics. Alcohol Clin Exp Res. 1987 Apr; 11(2):150-4. doi: 10.1111/j.1530-0277.1987.tb01279.x.
11. Hasin DS, Grant BF, Endicott J. Severity of alcohol dependence and social/occupational problems: relationship to clinical and familial history. Alcohol Clin Exp Res. 1988 Oct; 12(5):660-4. doi: 10.1111/-j.1530-0277.1988.tb00261.x.
12. Herz LR, Volicer L, D'Angelo N, Gadish D. Additional psychiatric illness by Diagnostic Interview Schedule in male alcoholics. Compr Psychiatry. 1990 Jan-Feb; 31(1):72-9. doi: 10.1016/0010-440x(90)90056-x.
13. Gorman DM. Distinguishing primary and secondary disorders in studies of alcohol dependence and depression. Drug Alcohol Rev. 1992; 11(1):23-9. doi: 10.1080/09595239200185041.
14. Vatsalya V, Kong M, Marsano LM, Kurlawala Z, Chandras KV, Schwandt ML. et.al. Interaction of Heavy Drinking Patterns and Depression Severity Predicts Efficacy of Quetiapine Fumarate XR in Lowering Alcohol Intake in Alcohol Use Disorder Patients. Subst Abuse. 2020 Sep 9; 14:1178221820955185. doi: 10.1177/1178221820955185.
15. McHugh RK, Weiss RD. Alcohol Use Disorder and Depressive Disorders. Alcohol Res. 2019 Jan 1; 40(1). doi: 10.35946/ar-cr.v40.1.01.
16. Kessler RC. Epidemiology of women and depression. J Affect Disord. 2003 Mar; 74(1):5-13. doi: 10.1016/s0165-0327(02)00426-3.
17. Grant BF, Goldstein RB, Saha TD, Chou SP, Jung J, Zhang H. et.al. Epidemiology of DSM-5 Alcohol Use Disorder: Results From the National Epidemiologic Survey on Alcohol and Related Conditions III. JAMA Psychiatry. 2015 Aug; 72(8):757-66. doi: 10.1001/jama-psychiatry.2015.0584.
18. Boden JM, Fergusson DM. Alcohol and depression. Addiction. 2011 May; 106(5):906-14. doi: 10.1111/j.1360-0443.2010.03351.x.
19. Hawton K, Casañas I Comabella C, Haw C, Saunders K. Risk factors for suicide in individuals with depression: a systematic review. J Affect Disord. 2013 May; 147(1-3):17-28. doi: 10.1016/j.-jad.2013.01.004.
20. Suter M, Strik W, Moggi F. Depressive symptoms as a predictor of alcohol relapse after residential treatment programs for alcohol use disorder. J Subst Abuse Treat. 2011 Oct; 41(3):225-32. doi: 10.1016/j.jsat.2011.03.005.
21. Sau M, Mukherjee A, Manna N, Sanyal S. Sociodemographic and substance use correlates of repeated relapse among patients presenting for relapse treatment at an addiction treatment center in Kolkata, India. Afr Health Sci. 2013 Sep; 13(3):791-9. doi: 10.4314/ahs.v13i3.39.
22. Khalid A, Kunwar AR, Rajbhandari KC, Sharma VD, Regmi SK. A study of prevalence and comorbidity of depression in alcohol dependence. Indian J Psychiatry. 2000 Oct; 42(4):434-8. PMID: 21407983; PMCID: PMC2962747.
23. Neupane SP, Bramness JG. Prevalence and correlates of major depression among Nepalese patients in treatment for alcohol-use disorders. Drug Alcohol Rev. 2013 Mar; 32(2):170-7. doi: 10.1111/-j.1465-3362.2012.00487.x.
24. Balhara YPS, Sarkar S, Bera SC, Gupta R,Chawla N, Lal R. Who seeks treatment for dual disorders? Observations from a dual disorder clinic at the National Drug Treatment Centre in India over a 12 year period.Int J High Risk Behav Addict. 2017 Mar; 6(1): 1-6. doi: 10.5812/ijhrba.32501.
25. Grant BF, Harford TC. Comorbidity between DSM-IV alcohol use disorders and major depression: results of a national survey. Drug Alcohol Depend. 1995 Oct; 39(3):197-206. doi: 10.1016/0376-8716(95)01160-4.
26. Boschloo L, Vogelzangs N, van den Brink W, Smit JH, Veltman DJ, Beekman AT. et.al. Depressive and anxiety disorders predicting first incidence of alcohol use disorders: results of the Netherlands Study of Depression and Anxiety (NESDA). J Clin Psychiatry. 2013 Feb 11; 74(12):1233-40. doi: 10.4088/JCP.12m08159.
27. Davidson KM. Diagnosis of depression in alcohol dependence: changes in prevalence with drinking status. Br J Psychiatry. 1995 Feb; 166(2):199-204. doi: 10.1192/bjp.166.2.199.
28. Schuckit MA, Monteiro MG. Alcoholism, anxiety and depression. Br J Addict. 1988 Dec; 83(12):1373-80. doi: 10.1111/-j.1360-0443.1988.tb02551.x.
29. Kuria MW, Ndetei DM, Obot IS, Khasakhala LI, Bagaka BM, Mbugua MN, Kamau J. The Association between Alcohol Dependence and Depression before and after Treatment for Alcohol Dependence. ISRN Psychiatry. 2012 Jan 26; 2012:482802. doi: 10.5402/2012/482802.
30. The ICD-10 classification of mental and behavioural disorders: Diagnostic criteria for research. Geneva: World Health Organization, 1993.
31. Babor TF, Higgins-Biddle JC, Saunders JB, Monteiro MG. The Alcohol

Use Disorders Identification Test. World Health Org Geneva (2001).
32. Reinert DF, Allen JP. The alcohol use disorders identification test: an update of research findings. Alcohol Clin Exp Res. 2007 Feb;31(2):185-99. doi: 10.1111/j.1530-0277.2006.00295.x. PMID: 17250609.
33. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. Arch Gen Psychiatry. 1961 Jun;4:561-71. doi: 10.1001/archpsyc.1961.01710120031004. PMID: 13688369.
34. Belbase M, Jalan RK, Adhikari J. Sociodemographic Profiles And Psychiatric Comorbidities Among Patients With Alcohol Dependence In Western Nepal. Journal of Psychiatrists' Association of Nepal. 2021 Oct 14;10(1):31-7. doi: https://doi.org/10.3126/jpan.v10i1.40345
35. Sharma B, Devkota A, Pant SC. Psychiatric Comorbidities in Patients with Alcohol Dependence Syndrome in a Tertiary Care Center: A Cross-Sectional Study. Journal of Lumbini Medical College. 2018 Dec 27;6(2):97-101. https://doi.org/10.22502/jlmc.v6i2.266
36. Shakya Dhana R, Shyangwa Pramod M, Sen B. Psychiatric comorbidity in cases admitted for alcohol dependence. Delhi Psychiatry Journal. 2009 Oct;12(2).
37. Acharya M. Depression in Patients with Alcohol Dependence Syndrome in a Tertiary Care Center: A Descriptive Cross-sectional Study. Journal of the Nepal Medical Association. 2021 Aug;59(240):787. doi: 10.31729/jnma.6967
38. Neupane SP, Bramness JG. Who seeks treatment for alcohol problems? Demography and alcohol-use characteristics of patients in taboo and non-taboo drinking groups attending professional alcohol services in Nepal. Asian Journal of Psychiatry. 2014 Dec 1;12:82-7. http://dx.doi.org/10.1016/j.ajp.2014.06.017
39. Luitel NP, Baron EC, Kohrt BA, Komproe IH, Jordans MJ. Prevalence and correlates of depression and alcohol use disorder among adults attending primary health care services in Nepal: a cross sectional study. BMC health services research. 2018 Dec;18:1-0. https://doi.org/10.1186/s12913-018-3034-9
40. Ugochukwu OC, Donald CC, Chukwuemeka SP. Comorbidity of alcohol use disorder and depression among patients attending a tertiary hospital in the Niger Delta region of Nigeria. American Journal of Psychiatry and Neuroscience. 2016 May 17;4(3):38-42. doi: 10.11648/j.ajpn.20160403.11
41. Odlaug BL, Gual A, DeCourcy J, Perry R, Pike J, Heron L, Rehm J. Alcohol dependence, co-occurring conditions and attributable burden. Alcohol and Alcoholism. 2016 Mar 1;51(2):201-9. doi: 10.1093/alcalc/agv088
42. Huang H, Zhu Z, Chen H, Ning K, Zhang R, Sun W, Li B, Jiang H, Wang W, Du J, Zhao M. Prevalence, demographic, and clinical correlates of comorbid depressive symptoms in Chinese psychiatric patients with alcohol dependence. Frontiers in psychiatry. 2020 Jun 3;11:499. doi: 10.3389/fpsyt.2020.00499
43. Neupane SP. Prevalence and correlates of major depression and anxiety disorders among patients with alcohol-use disorders in Nepal (Master's thesis).
44. Lien IA, Bolstad I, Lien L, Bramness JG. Screening for depression in patients in treatment for alcohol use disorder using the Beck Depression Inventory-II and the Hopkins Symptom Checklist-10. Psychiatry Research. 2022 Feb 1;308:114363. https://doi.org/10.1016/j.psychres.2021.114363
45. Raju MS, Chaudhury S, Sudarsanan S, Salujha SK, Srivastava K. Trends and issues in relation to alcohol dependence in the armed forces. Medical Journal Armed Forces India. 2002 Apr 1;58(2):143-8. doi: 10.1016/S0377-1237(02)80049-1
46. Pradhan SN, Adhikary SR, Sharma SC. A prospective study of comorbidity of alcohol and depression. Kathmandu University Medical Journal. 2008;6(3):340-5. doi: 10.3126/kumj.v6i3.1709
47. Bazargan-Hejazi S, Bazargan M, Gaines T, Jemanez M. Alcohol misuse and report of recent depressive symptoms among ED patients. The American journal of emergency medicine. 2008 Jun 1;26(5):537-44. doi:10.1016/j.ajem.2007.08.019
48. Caetano R, Vaeth PA, Canino G. Comorbidity of lifetime alcohol use disorder and major depressive disorder in San Juan, Puerto Rico. Journal of Studies on Alcohol and Drugs. 2019 Sep;80(5):546-51. doi: 10.15288/jsad.2019.80.546
49. Palma-Álvarez RF, Rodríguez-Cintas L, Abad AC, Sorribes M, Ros-Cucurull E, Robles-Martínez M, Grau-López L, Aguilar L, Roncero C. Mood disorders and severity of addiction in alcohol-dependent patients could be mediated by sex differences. Frontiers in psychiatry. 2019 May 31;10:343. doi: 10.3389/fpsyt.2019.00343
50. Ziółkowski M, Czarnecki D, Chodkiewicz J, Gąsior K, Juczyński A, Biedrzycka A, Gruszczyńska E, Nowakowska-Domagała K. Suicidal thoughts in persons treated for alcohol dependence: The role of selected demographic and clinical factors. Psychiatry research. 2017 Dec 1;258:501-5. http://dx.doi.org/10.1016/j.psychres.2017.08.089
51. Cornelius JR, Salloum IM, Mezzich J, Cornelius MD, Fabrega Jr H, Ehler JG, Ulrich RF, Thase ME, Mann JJ. Disproportionate suicidality in patients with comorbid major depression and alcoholism. The American journal of psychiatry. 1995 Mar 1;152(3):358-64. doi: 10.1176/ajp.152.3.358
52. Morin J, Wiktorsson S, Marlow T, Olesen PJ, Skoog I, Waern M. Alcohol use disorder in elderly suicide attempters: a comparison study. The American Journal of Geriatric Psychiatry. 2013 Feb 1;21(2):196-203. http://dx.doi.org/10.1016/j.jagp.2012.10.020
53. Hasin DS, Stinson FS, Ogburn E, Grant BF. Prevalence, correlates, disability, and comorbidity of DSM-IV alcohol abuse and dependence in the United States: results from the National Epidemiologic Survey on Alcohol and Related Conditions. Archives of general psychiatry. 2007 Jul 1;64(7):830-42. doi: 10.1001/archpsyc.64.7.830
54. Teesson M, Hall W, Slade T, Mills K, Grove R, Mewton L, Baillie A, Haber P. Prevalence and correlates of DSM-IV alcohol abuse and dependence in Australia: findings of the 2007 National Survey of Mental Health and Wellbeing. Addiction. 2010 Dec;105(12):2085-94. doi:10.1111/j.1360-0443.2010.03096.x
55. Choi BY, Jeong HC. Relationship between alcohol dependence and depression of alcohol dependent inpatients. International Journal of Bio-Science and Bio-Technology. 2015 Oct;7(5):375-82. http://dx.doi.org/10.14257/ijbsbt.2015.7.5.37