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Alcohol Use Disorder and Psychiatric Illnesses in Eastern Uganda: A Cross-sectional Study

Niyubahwe Raissa
Kampala International University
Nishimwe florant
Kampala International University
Niyokwizera Emmanuel
Kampala International University
Ilunga Muland Roger
Kampala International University
Mugabekazi Nadege
Hope Africa University
Bushura Afolabi Aroyewun
Kampala International University
Joshua Muhumuza
Kampala International University
Iryivuze Olivier
Kampala International University
Nakawuki Madrine
Kampala International University
Nnaemeka Chukwudum Abamara
nc.abamara@unizik.edu.ng
NnamdiAzikiwe University

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Abstract

Background: High levels of alcohol used disorder (AUD) have been reported among patients with mental illnesses worldwide. However, little has been investigated about alcohol use disorder and mental illnesses in Uganda. This study aims to determine the prevalence of Alcohol use disorder and associated socio-demographic factors in patients already having another psychiatric disorder attending Jinja Regional Referral Hospital.

Methods: we conducted a hospital based cross sectional study among adults living with mental illnesses by assessing their alcohol use using Mini International Neuropsychiatric Interview (MINI) for alcohol use disorder. The Researchers adopted a predictive design and the questionnaires used for the study was comprised of independent variables including clinical and social-demographic factors, the dependent variable was alcohol use disorder. STATA 15 was used to analyze the data.

Results: A total of 300 patients were interviewed. The average age was 34.4years (± 9.037), males were 55.7%. 25.3%; of Participants had AUD and majority of them had a severe alcohol use disorder according to the AUDIT categorization (43/76).

The factors associated were; being a male (aOR =1.683, C I= 1.163-2.940, P=0.048)

Findings: The prevalence of AUD among adults having another psychiatric disorder was high (25.3%) and severe. Male sex was the main associated factor of AUD. However age, marital status and occupation were not significantly associated with alcohol use disorder.

Conclusion: Regular screening of all patients having psychiatric disorder for substance use disorders including alcohol will contribute to prevention and appropriate intervention of AUD among adult living with mental illness.

Introduction

Alcohol use poses a significant threat to both physical and mental health, as well as to individuals' social well-being, across both high- and low-income countries. Harmful alcohol consumption is responsible for approximately three million deaths globally each year. Research indicates that individuals with psychiatric disorders are at a substantially higher risk of developing Alcohol Use Disorder (AUD) compared to the general population. This co-occurrence—often referred to as dual diagnosis—is linked to increased relapse rates, poor adherence to treatment, symptom exacerbation, and prolonged hospitalizations.

Among those with dual diagnoses, mood disorders, anxiety disorders, other substance use disorders, and psychotic disorders are most frequently observed, with substance use disorders being particularly common. Sociodemographic factors such as sex, marital status, education level, and occupation have also been associated with dual diagnosis. Although women with AUD are more vulnerable to developing psychiatric comorbidities, within psychiatric populations, men are more likely than women to develop

AUD as a coexisting condition. Across both genders, younger age, single marital status, and low socioeconomic status are linked to a higher risk of AUD.

In East Africa, studies have shown that individuals with psychiatric disorders face a four- to ten-fold increased risk of developing AUD compared to the general population. Despite a growing body of research on AUD in Uganda, the majority of studies have focused on the general population. There is limited evidence on the prevalence and patterns of co-occurring AUD and psychiatric disorders among mental health patients, highlighting a critical gap in local mental health research.

Objectives of the Study

1. To identify the socio-demographic and clinical characteristics of participants with alcohol use disorder.
2. To determine the prevalence of alcohol use disorder among patients with another psychiatric disorder.
3. To examine socio-demographic factors associated with AUD in patients with another psychiatric disorder.
4. To analyze socio-demographic factors associated with AUD in psychiatric patients, controlling for diagnosis and personality.

Hypotheses

1. Socio-demographic factors and clinical characteristics will significantly predict AUD.
2. There is a significant prevalence of AUD among patients with another psychiatric disorder.
3. There is a significant relationship between socio-demographic factors and AUD in patients with another psychiatric disorder.
4. There is a significant relationship between socio-demographic factors and AUD in psychiatric patients, controlling for diagnosis and personality.

Methods

Aim, Design, Setting, and Study Population

This study aimed to assess the prevalence of Alcohol Use Disorder (AUD) and examine associated sociodemographic factors among patients already diagnosed with other psychiatric conditions. A hospital-based cross-sectional study was conducted using a predictive design and quantitative methods at the psychiatric unit of Jinja Regional Referral Hospital in Eastern Uganda. The hospital, located in Jinja Town about 83 km from Kampala, serves the Busoga region and has a 34-bed psychiatric unit.

The unit manages approximately 750 patients monthly, including an estimated 40 with depression, 120 with schizophrenia, 100 with substance use disorders, and 150 with bipolar affective disorder. It is staffed by one psychiatrist, five psychiatric clinical officers, two psychiatric nurses, and two general nurses.

A total of 300 participants (167 males and 133 females) were selected through convenience sampling based on accessibility and willingness to participate. Participant demographics are summarized in Table 1. To ensure statistical consistency, only individuals diagnosed with AUD and comparable psychiatric disorders were included in the study.

Inclusion Criteria

- Patients diagnosed with depression.
- Patients diagnosed with bipolar affective disorder.
- Patients diagnosed with schizophrenia.
- Patients diagnosed with substance use disorders other than alcohol.

Exclusion Criteria

- Patients under 18 years of age with active psychiatric symptoms.
- Patients presenting with primary alcohol use disorders.

Sampling Procedure and Data Collection

Data were collected in August 2023 using convenience sampling. Participants were selected based on accessibility, availability, and willingness to participate. All participants provided informed consent and met the inclusion criteria. Medical records were reviewed, and participants were screened for AUD.

Measures

Alcohol Use Disorder

AUD was assessed using the Mini International Neuropsychiatric Interview (MINI), a brief structured diagnostic interview for major Axis I psychiatric disorders per DSM-5 and ICD-10.

The MINI AUD module consists of 13 items with yes/no responses, divided into two sections: I1 (1 item) and I2 (12 items). A diagnosis of AUD requires two or more positive responses in section I2.

- Mild AUD: 2–3 symptoms
- Moderate AUD: 4–5 symptoms
- Severe AUD: 6 or more symptoms

Validation studies show the MINI has good reliability and validity (Cronbach's alpha = 0.75) and has been used widely, including in Ugandan settings.

Clinical Factors

Participants' diagnoses (schizophrenia, major depressive disorder, bipolar affective disorder, and substance use disorders other than alcohol) were confirmed using medical records.

Socio-demographic Factors

A locally developed questionnaire captured data on age, sex, marital status, and occupation.

Data Processing and Analysis

Responses were prepared and coded before being entered into Microsoft Excel (2016) and exported to Stata 15 for analysis.

The prevalence of AUD among psychiatric patients was presented as a percentage based on MINI scores, with 95% confidence intervals for estimation. Stata 15 was used for descriptive statistics, regression analysis, and multiplicity corrections.

Socio-demographic factors associated with AUD were analyzed using bivariate and multivariable logistic regression. Variables with a p-value < 0.2 were included in the multivariate model. A p-value ≤ 0.05 was considered statistically significant.

Ethical Considerations

Ethical approval was obtained from the Uganda National Council for Science and Technology. Additional clearance was granted by the administration of Jinja Regional Referral Hospital. All procedures contributing to this work comply with the ethical standards of Uganda and Institutional committee on human experimentation and with the Helsinki Declaration of 1975, as revised by in 2008. All participants provided a written informed consent.

Table: 1: Results

Characteristic	Frequency	Percentage
Age	Mean=34.4, SD=11.6, Min=18, Max=66	
18-30	137	45.7
31 - 45	111	37.0
46-66	52	17.3
Sex		
Male	167	55.7
Female	133	44.3
Marital status		
Married	97	32.3
Single	155	51.7
Divorced	39	13.0
Widowed	9	3.0
Occupation		
Employed	60	20.0
Self employed	82	27.3
Unemployed	158	52.7

Table1 Socio demographics' and clinical characteristics of participants

In our study the mean age was 34.4 (SD=11.6) and majority of participants were males 167 (55.7%) young (age between the age of 18- 30) 137(45.7%), Single 155(51.7%) and unemployed 158 (52.7%). The rest of the baseline characteristics are shown in table 1.

Prevalence of alcohol use disorder in patients already having another psychiatric disorder

In this study, 76 of the 300 study participants had AUD translating in a prevalence of 25.3% with a 95% confidence interval of 20.3-30.3%. Majority of these 76 participants had a severe alcohol use disorder according to the MINI categorization (43/76). The highest prevalence of alcohol use disorder was seen among patients with another substance use disorder (38.0%) in which 30 out of the 79 patients with another substance use disorder had alcohol use disorder. The rest of the data relating to prevalence in the different diagnoses are shown in table 2.

Table 2: Prevalence of alcohol use disorder in patients already having another psychiatric disorder

Category	Frequency	Percentage (95% CI)
Overall (N=300)		
No AUD	224	74.7
AUD present	76	
Mild	15	19.73
Moderate	18	23.68
Severe	43	56.57
BAD (N=106)		
No AUD	87	82.1
AUD present	19	
Mild	2	10.52
Moderate	4	21.05
Severe	13	68.42
Schizophrenia (N=71)		
No AUD	54	76.1
AUD present	17	
Mild	4	23.53
Moderate	4	23.53
Severe	9	52.94
Depression (N=44)		
No AUD	34	77.3
AUD present	10	
Mild	4	40
Moderate	2	20
Severe	4	40
SUD (N=79)		

No AUD	49	62.0
AUD present	30	
Mild	5	16.7
Moderate	8	26.7
Severe	17	56.66

Socio-demographic factors associated with alcohol use disorder in patients already having another psychiatric disorder

At bivariate level of analysis age groups and sex were factors associated with alcohol use disorder. On the other point of view marital status and occupation were not associated to AUD thus excluded from the further analysis

At multivariate level of analysis, the only social demographic factor that was independently associated with alcohol use disorder was sex. In this study a male participant was 1.683 (cOR=1.683, CI=1.163-2.940, P=0.048) times more likely to have alcohol use disorder compared to a female one. The rest of multivariate analysis is shown in tables 3 and 4

Table 3: Bivariate analysis of the Socio-demographic factors associated with AUD in patients already having another psychiatric disorder

Characteristic	No AUD, N=224	AUD present, N=76	Bivariate analysis		
			cOR	95% CI	P value
Age					
18-30	108(36.0)	29(9.7)	Ref		
31 - 45	79(26.3)	32(10.7)	1.509	0.844-2.695	**0.165**
46-66	37(12.3)	15(5.0)	1.510	0.730-3.122	0.266
Sex					
Male	117(39.0)	50(16.7)	1.759	1.023-3.023	**0.041**
Female	107(35.7)	26(8.7)	Ref		
Marital status					
Married	71(23.7)	26(8.7)	Ref		
Single	120(40.0)	35(11.7)	0.796	0.443-1.431	0.447
Divorced	26(8.7)	13(4.3)	1.365	0.612-3.048	0.447
Widowed	7(2.3)	2(0.7)	0.780	0.152-4.000	0.766
Occupation					
Employed	46(15.3)	14(4.7)	Ref		
Self employed	58(19.3)	24(8.0)	1.360	0.633-2.920	0.431
Un employed	120(40.0)	38(12.7)	1.040	0.516-2.097	0.912

Name: Stata:15 Official Link for Bivariate analysis: https://en.wikipedia.org/wiki/Bivariate_analysis

Table 4: Multivariate analysis of the Socio-demographic factors associated with AUD in patients already having another psychiatric disorder controlling for diagnosis.

Name: Stata:15 Official Link for Bivariate analysis: https://en.wikipedia.org/wiki/Bivariate_analysis

Name: Stata: 15 Official link for Multivariate analysis: https://www.stata.com/manuals/mv.pdf

Table: 4b

Pseudo R-squre	
Cox and Snell	0. 023
Nagelkerke	0.034
McFadden	0. 021

Characteristic	Bivariate analysis			Multivariate analysis		
	cOR	95% CI	P value	aOR	95% CI	P value
Age						
18-30	Ref					
31 - 45	1.509	0.844-2.695	0.165	1.658	0.899-3.059	0.106
46-66	1.510	0.730-3.122	0.266	1.530	0.708-3.307	0.280
Sex						
Male	**1.759**	**1.023-3.023**	**0.041**	**1.683**	**1.163-2.940**	**0.048**
Female	Ref					

Test de Hosmer et Lemeshow		
Chi-squre	df	p-Value.
8. 801	8	0. 359

The three cells of Pseudo R-square of socio-demographic factors associated with AUD in patients already having another psychiatric disorder controlling for diagnosis was significant at 0.05.

If we consider hosmer and Lemeshow test, our p-value is 0.359 and then greater than 0.05, this means that the binary logistic regression fit our data and is sweetable to use in term of prediction on our data.

Name: Stata: 15. The link for Pseudo R-Square analysis: https://www.stata.com/manuals/rlogistic.pdf (search for “Pseudo R-Squared” inside PD.

Discussion

The overall prevalence of Alcohol Use Disorder (AUD) among patients with mental illness at Jinja Regional Referral Hospital was 25.3%. Studies conducted in Eastern Africa have reported varying prevalence rates among psychiatric populations. While some findings align with the present study, others show notably higher or lower rates.

For example, studies in Tanzania and Ethiopia reported significantly higher prevalence rates of 59.3% and 52%, respectively. These discrepancies can be attributed to differences in methodology, screening tools, sample sizes, and study settings. The Tanzanian study utilized the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST), which includes multiple substances beyond alcohol. In contrast, the Ethiopian study employed the Alcohol Use Disorders Identification Test (AUDIT), focusing specifically on alcohol consumption. Notably, both studies had smaller sample sizes (184 in Tanzania

and 200 in Ethiopia) and were conducted in rural contexts, which may influence the generalizability of their results.

Conversely, some studies reported findings consistent with the current study. For instance, other research in Ethiopia and Tanzania found AUD prevalence rates of 24.5% and 21.7%, respectively. These similarities may be due to larger sample sizes and urban study settings, which are comparable to the present research context.

Regarding associated factors, the present study identified a significant association between AUD and sex. Specifically, males were 1.683 times more likely to have AUD than females (AOR = 1.683, 95% CI: 1.163–2.940, p = 0.048). However, age, marital status, and occupation were not significantly associated with AUD in this study.

The finding on sex aligns with previous research from both general populations and psychiatric cohorts, which consistently show that men are more prone to alcohol-related disorders. This may be explained by a biologically lower response to alcohol's effects in men, cultural norms that encourage male alcohol use for socialization, and a higher tendency among men to self-medicate with alcohol.

With regard to age, the study's results corroborate findings from several East African studies that found no significant association between age and AUD. However, a recent study by Karino et al. (2023) in Tanzania reported a higher likelihood of AUD among young adults aged 18–24. Although this age group represented only 8.5% of their study population, they appeared to be at higher risk, possibly due to increased vulnerability during the transition to adulthood.

Recommendation

· **There is the need to establish integrated care models** that address both AUD and psychiatric illnesses simultaneously. Given the strong correlation between alcohol use and mental health disorders such as depression, anxiety, and PTSD, it is important to treat these conditions together to improve outcomes. **Also the Ugandan ministry of health should encourage the Training of healthcare providers** at the primary care level to screen for and manage AUD and common psychiatric illnesses, especially in rural areas. This will improve early detection and intervention.

· **Public health campaigns** should be launched to raise awareness about the risks of excessive alcohol consumption and its connection to mental health issues. These campaigns should target both individuals and communities to reduce stigma surrounding AUD and associated psychiatric disorders. Promote **community-based interventions** that educate people on healthy coping mechanisms for stress and trauma, reducing reliance on alcohol as a form of solace to their stressful life events.

· Implement stronger regulations on the production and distribution of alcohol, particularly in rural areas in where local brews are often easily accessible and may be consumed excessively. **Increase taxes on alcohol** to reduce affordability and access, particularly for homemade and illicit brews, which are often linked to hazardous drinking behaviors.

· **Increase funding for mental health services** in rural and underserved areas of Uganda. This would include expanding mental health facilities, hiring more mental health professionals, and providing mobile health services to remote areas.

· Introduction of telepsychiatry and tele-psychotherapy **or mobile health services are necessary** to overcome geographic barriers and provide mental health support to communities in Eastern Uganda.

· Design **interventions targeting high-risk populations**, such as unemployed youth, individuals exposed to trauma (including post-conflict or violence-related trauma), and target men, who are often more affected by AUD in this region. Implement **gender-specific programs** addressing the unique challenges faced by men and women, who may experience stigma differently and may have less access to healthcare services.

· It is very imperative to develop **alcohol rehabilitation centers** that offer both medical detoxification and psychological counseling. Community-based rehabilitation programs can also be effective for treating AUD alongside mental health issues.

· Introduction of **peer support groups** or Alcoholics Anonymous-style groups in local communities is a welcome idea to create support networks for individuals recovering from AUD. Overall, these recommendations would help address the complex interactions between alcohol use disorder and psychiatric illnesses, particularly in rural and underserved areas of Republic of Uganda.

Limitations

The study relied on self-reported questionnaires that might have given a subjective picture of the patient's alcohol consumption. Such tools might allow a less reflection of the exact reality. In addiction the fact that questionnaires were administered by the researchers would have amplified the effects given the fact that respondent might tend to please the researchers. Self-administered questionnaires should be used to determine whether the findings can be repeated.

Generalization

The study was conducted in the Jinja Referral Hospital. Jinja Referral Hospital is one of the biggest hospitals with sizeable Psychiatric wards in Western Uganda, and psychiatric patients are admitted in it from Western Uganda, and from every other region in Uganda and beyond. Hence caution is required in generalizing the study in other countries in East African and beyond.

Conclusions

This study has shown that the frequency of AUD among patient with mental illnesses is high and, severe. Male patient with substance use disorders are mostly affected. Gender (male) was suggestively and independently linked with presence of mental disorders.

These findings add important evidence in the existing few studies in Uganda on substance use among patients with mental illnesses. Awareness creation through psychoeducation about alcohol use disorder, consequence and its early management, are suggested. Additional studies are also suggested, in order to explore the relationship of alcohol use and mental illnesses.

Abbreviations

AUD Alcohol Use Disorder

BD Bipolar Disorder

CI Confidence Interval

MINI. Mini International Neuropsychiatric interview

ORs Odds Ratio

SUD Substances Use Disorders

Declarations

Ethical approval and consent to participate

Approval to carry out the study was sought from Research Ethics committee of Bishop Stuart University (BSU-REC-2023-131). Informed consent from participants was obtained after fully explaining the details of the study to them in English and local Languages.

The research also adhered to the ethical principles outlined in the 1964 Declaration of Helsinki and its subsequent amendments, or other comparable ethical standards.

Consent for publication

Not applicable.

Competing interests

The authors declare that there is no conflict of interest

Authors' contributions

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Data Availability:

The data and materials used in this study can be obtained by directly contacting the first author, marie.niyubahwe@studwc.kiu.ac.ug

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