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Comorbid substance used disorders and associated factors among people with mental illness: A facility based cross sectional study from northeast Ethiopia: A preliminary study for a harm reduction strategies

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ABSTRACT

Introduction
Many international prevalence studies have shown that psychiatric patients have significantly higher rates of comorbid substance used disorder than the general population. Services and programs should acknowledge the strong link that exists on comorbid substance used and other mental illnesses. However, the prevalence and associated factors of comorbid substance used disorders were unknown among psychiatric patients at Dessie referral hospital.

Objective
To determine the prevalence of comorbid substance used disorders and associated factors of psychiatric patients.

Method
An institution based cross-sectional study was conducted from 01/11- 28/12/2017 at Dessie referral hospital by using systematic random sampling technique. Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) was used to assess comorbid substance used disorders. The data were analyzed by using SPSS version 23.

Results
The overall lifetime prevalence of any comorbid substance used was 63.7%. The all types of substance used disorders were 38.1%. The most common types of comorbid substance used disorders were Khat (30.7%), tobacco (17.0%) and alcohol (12.2%) respectively. Being male (AOR=9.27, 95% CI: 4.47-19.22), age of the patient (AOR=4.05, 95% CI: 1.43-11.49), history of hospital admission (AOR=3.06, 95% CI: 1.19-7.83), family history of alcohol (AOR=2.30, 95% CI: 1.02-5.18) and other substance used (AOR=2.27, 95% CI: 1.08-4.76) were independently associated factors for comorbid substance used disorders. But being student by occupation (AOR=0.22, 95% CI: 0.05-0.89) was a protective factor of comorbid substance use disorder.

Conclusions
The high prevalence of comorbid substance used disorders detected in our facility-based study implies the need to design effective screening tools and feasible intervention strategies for comorbid substance used disorder.

Keywords: Comorbid Substance used disorder, Psychiatric patient, Dessie referral hospital

INTRODUCTION

The use of psychoactive substances such as alcohol, khat, and tobacco has become one of the rising major public health and socioeconomic problems worldwide [1]. The global burden of disease attributable to alcohol and illicit drug accounts 5.4% of the total burden of disease. Another 3.7% of the global burden of disease is attributable to tobacco use. About 5.9% of all global deaths, 139 million disability-adjusted life years (DALYs), or 5.1% of the global burden of disease and injury were attributable to alcohol consumption [2]. The rapid economic, social, and cultural transitions that most countries in Sub-Saharan Africa is now experiencing has created a favorable condition for increased and socially disruptive use of drugs and alcohol [3]. Substance misuse is a growing problem of Ethiopia, as in many developing countries. Alcohol and khat are the most frequent substances of abuse [4]. According to the Ethiopian Demographic and Health Survey (DHS) 2011, the prevalence of alcohol used among men and women was 53% and 45%, respectively, and 11% of women and 28% of men ever chewed khat [5].

The study done on general population samples of United States [6-7], and other parts of the world [8-9] consistently found that mental disorders co-occur with substance use more frequently than a mere coincidence will predict. International prevalence studies have shown that persons with severe mental illness have significantly higher rates of substance use, particularly of alcohol, cannabis and amphetamines than the general population [10]. The study done in Australia also revealed that higher rates of alcohol, cannabis and amphetamine use among patients with schizophrenia relative to the general population [11]. The Comorbidity of psychoactive substance used and other mental illnesses have driven several interests largely due to observations in clinical samples that patients with both disorders suffer more persistent and severe course of illness and are more likely to be treatment-resistant than patients with 'single' disorders [12-13]. The combination of substance used and mental health disorders often results in serious social, psychological and physical complications. People with co-morbid disorders have poorer diagnosis, lower access to care and poorer compliance with medication and follow up. The occurrence of a substance use or a mental health disorder is often reciprocally interlinked, with one condition leading to or exacerbating the other [14]. Co-morbidity of mental illness and psychoactive substance use is a major challenge to the management of both disorders in several parts of the world [15]. It has been found to be associated with increased psychiatric admission, poor treatment outcome in both psychiatric and substance use treatment population, disabilities and medication non-adherence [16-17]. Studies done in psychiatric treatment, patients have also indicated that at least one-half of patients in psychiatric and substance use treatment settings are of the co-morbid cases [18]. These studies were, however, done in the developed world. In Ethiopia and other parts of Africa where socio-demographic factors are known to impact behavior, the relationship between substance used and these factors have a significant role in the clinical treatment of patients when such risk factors are clearly identified and modified. In Ethiopia, however, there is relatively little information on co-morbidity of substance used disorder to psychiatric patients and its associated factors. In order to improve mental health and mental health care, comorbid substance use disorders and associated factors among psychiatric patients needs to be addressed.

METHODS

Study design and setting

In this study, we explored the prevalence of comorbid substance used disorders and associated factors of psychiatric patients in Dessie referral hospital by using an institution based cross-sectional study design. This is a preliminary study as a baseline for the project of harm reduction strategies in the above mentioned hospital. The study was conducted at the Dessie referral hospital from November 1/2017 to December 28/2017. Dessie referral hospital is located in South Wollo, Dessie town which is found 401 Kms north east of Addis Ababa. The hospital provides services for greater than 7 million populations. It has around 16 departments. Among these departments, psychiatry is one which has inpatient services together with other medically ill patients and outpatient mental health services for approximately 1200 outpatients per month.

Study participants and sampling procedure

Three hundred thirty six adult psychiatric patients that attended to Dessie referral hospital psychiatry department were included in this study. Psychiatric patients that were severely ill and unable to communicate with different reasons for data collection periods were excluded. A Systematic random sampling technique was used to select 336 adult psychiatric patients.

Data collection tools & Measurements

A structured questionnaire was first being developed in English and translated into Amharic then back-translated independently into English to check for consistency and semantic validity. Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST): Developed by an international research team funded by World Health organization (WHO) in 1997 was used to assess to comorbid substance used among psychiatric patients with some modifications. We substituted khat instead of amphetamine since khat is an amphetamine like substance and amphetamine is not available and used in the study area. As the Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) was developed mainly for drug use, but can be used for other substances, including alcohol and tobacco as well, particularly in high prevalence settings, it is being considered as an instrument of choice when the goal is to address a range of different psychoactive substances. It is a brief screening questionnaire (8 items) developed for primary care which helps health care providers to identify patients that may have hazardous, harmful or dependent use of one or more substances. It was validated in many cultures and languages. The score is different to specific substance and the risk level is classified as low, moderate and high. Since the moderate and high risk levels need intervention, we dichotomize the findings into two; having risks and has no risk and also for analysis purpose.

Data Collection method and data collectors

Data were collected from study participants using pre-tested written, structured questionnaire by using face to face interview technique. Data collectors were three psychiatric Nurses. The principal investigators and one trained mental health professional specialist was monitored and follow the whole activities throughout the study period. The responsibility for the data collectors was to read the questionnaire, to write the response of participants and check for the appropriateness of data while still in the study site. The questionnaires were filled after obtaining written consent to the respondents. The collected information about the psychiatric patients was reported to the supervisor every day to enable taking immediate action in case inconsistencies or problems happen to the reported data. The supervisor was providing all items necessary for data collection on each data collection days, checking filled questionnaire for completeness and solving problems that would happen to the data collection process.

Data Quality Assurance

The following measures were taken to maintain and increase the reliability and validity of the study. The questionnaire was pre tested on 5% of study participants that were done on psychiatric patients that have been following up at Selam general hospital and modifications were incorporated to the questionnaire as needed. The supervisor and data collectors were trained in one day about the instruments and data collection techniques. Follow up of activities by the principal investigators and the supervisor was done during the phase of data collection. Adequate related literatures were reviewed; opinions and comments from experts were obtained throughout the research process to ensure and maintain the external validity of the study. Data were checked and entered by the principal investigators and cleaned before analyses. Epidata version 3.1 double entry was used for data entry. All of the entered data were checked again before final analyses.

Data Analysis

Data were checked for its completeness on the day it was collected. Data were entered into a computer using Epidata version 3.1 then transferred to SPSS version-20 for analysis. Then outputs were presented using tables and figure. Descriptive analysis, such as frequencies, proportions, median and means were used. Presence and degree of association between comorbid substance used disorders and the respondents' socio- demographic features and other variables were investigated by binary logistic regression and finally all independent variables whose p- value ≤ 0.25 was entered into multivariate analysis to identify independently associated factors for comorbid substance used disorder. A p- valued < 0.05 was considered as statically significant.

Ethical Clearance

Ethical clearance was obtained from the ethical review committee of the Wollo University college of Medicine and Health Science. An official letter of co-operation was also written to Dessie referral hospital and specifically to psychiatry department. Written informed consent was obtained from each study participant. Individuals who do not volunteer to continue from the beginning or from any part of the interview were respected right to do so. Privacy and strict confidentiality were maintained during the interview process as well as anonymity was kept during data processing and report writing.

RESULTS

Socio-demographic characteristics

A total of 336 psychiatric patients were interviewed with a response rate of 94.6 %. Among all, the majority 181 (53.9%) were males and their age was ranged from 18-90 year with a mean age of 34.1 ± 13.2 years, and Majority 294 (87.5%) were Amhara by ethnicity. Most of the respondents, 236 (70.2%), was followers of Islamic religion followed by 89 (26.5%) followers of Orthodox religion. Relatively majority of the respondents 153 (45.5%) were married followed by single 138 (41.1%). With regard to educational status, higher proportion 100 (29.8%) of the respondents had attended primary school (1-8) and nearly the same proportion of the respondents 95 (28.3%) were illiterate. Among the total respondents, one thirds 114 (33.9%) was unemployed. For more information, see table 1. The median family monthly income of respondents

was 900.00 Ethiopian Birr and the range was too high (0-50,000Ethiopian Birr). Sixteen (4.8%) of respondents had no any income and they were living by begging and support from different sources. Out of the total respondents, majority 156 (46.4%) was living with their spouse and children followed by 131 (39.0%) living with their parents.

The illness related information

The majority of patient's diagnosis 158 (47.0%) was schizophrenia followed by major depressive disorder 82 (24.4%). In line with the patient's diagnosis, high proportion 139 (41.4%) of them was on antipsychotic medication followed by 91 (27.1%) antipsychotics and antidepressant medications. For majority 234 (69.6%) of the patients, the onset of the illness was between 15 and 34 years of age, the most productive age. The mean ages of onset of illness were 29.88 ± 13.1 years. Regarding the duration of the illness, one third of the patients 117 (34.8%) had less than 2 years, followed by 103 (30.7%) 5-10 years. The range of the duration of illness was 1 month to 44 years and the median years of duration of illness were 4.0 ± 4.86 years. The majority of the patients 295 (87.8%) had no history of admission to hospital and among those who had admission, 12 (29.3%) were admitted two times and above. The majority of the respondents 253 (75.3%) had no family history of mental illness as shown in table 2. Of all respondents, 202 (60.1%) had a family history of psychoactive substance used habitually. Among those who had been having follow up before, 140 (41.7%) received psycho-education about substance use problems.

Table 1: Socio-demographic characteristics of the respondents at Dessie referral hospital psychiatry clinic, 2017 (n=336).

Socio-demographic Characteristics		Number (n)	Percent (%)
Gender	Male	181	53.9
	Female	155	46.1
Age group in year	18-25	99	29.5
	26-30	77	22.9
	31-40	90	26.8
	41+	70	20.8
Religion	Muslim	236	70.2
	Orthodox	89	26.5
	Others*	11	3.3
Ethnicity	Amhara	294	87.5
	Oromo	32	9.5
	Others**	10	3.0

| Marital status	Married	153	45.5
	Single	138	41.1
	Divorced	25	7.4
	Widowed	19	5.7
	Other	1	0.3
Level of education	Illiterate	95	28.3
	1-8	100	29.8
	9-12	88	26.2
	Diploma & above	53	15.8
Work status	Unemployed	114	33.9
	Employed	52	15.5
	Student	28	8.3
	Farmer	79	23.5
	Merchant	27	8.0
	Others	36	10.7

Table 2: The illness related conditions of the psychiatric patients at Dessie referral hospital psychiatry clinic, Dessie town, 2017 (n=336).

Variables		Number(n)	Percent (%)
	Schizophrenia	**158**	**47.0**
Diagnosis	Bipolar	55	16.4
	MDD	82	24.4
	Other	41	12.2
	Antipsychotic	139	41.4
	Antidepressant	44	13.1
Medication	Mood stabilizer	7	2.1
	Benzodiazepine	10	3.0
	Antipsychotic &antidepressant	91	27.1
	Antipsychotic & mood stabilizer	43	12.8
	Others	2	0.6
Medication side effects	No	272	81.0
	Yes	58	17.3
	Not applicable	6	1.8
Age of onset of illness (in year)	<15	13	3.9
	15-24	120	35.7
	25-34	114	33.9
	≥35	89	26.5
Duration of illness (in year)	<2	117	34.8
	2-5	88	26.2
	5-10	103	30.7
	>10	28	8.3
History of admission	No	152	52.6
	Yes	137	47.4
Family history of mental illness	No	238	82.4
	Yes	51	17.6
Family history of alcohol use	No	257	76.5
	Yes	79	23.5
Family history of alcohol use	No	213	63.4
	Yes	123	36.6

Substance use disorders among psychiatric patients

The overall lifetime prevalence of any psychoactive substance used for psychiatric patients was 214 (63.7%). The most common substances used by the respondents were Khat 168 (50%), alcohol 95 (28.3%), tobacco 79 (23.5%), sedatives 32 (9.5%) and cannabis 12 (3.6%). Among those who used substance, 113 (33.7%) used more than one type of substance.

The overall prevalence of substance used disorders among psychiatry patients were 128 (38.1%) and among these, 37 (11.0%) had two substances use disorder and 21 (6.3%) had three and more substances used disorders in addition to their mental illness. When we assessed the substance used risk level, 5 (1.5%) were high risk users and majority, 123 (36.6%) were moderate risk users.

Figure 1: Substance used risk level among psychiatric patients at Dessie referral hospital,2017 (n=336)
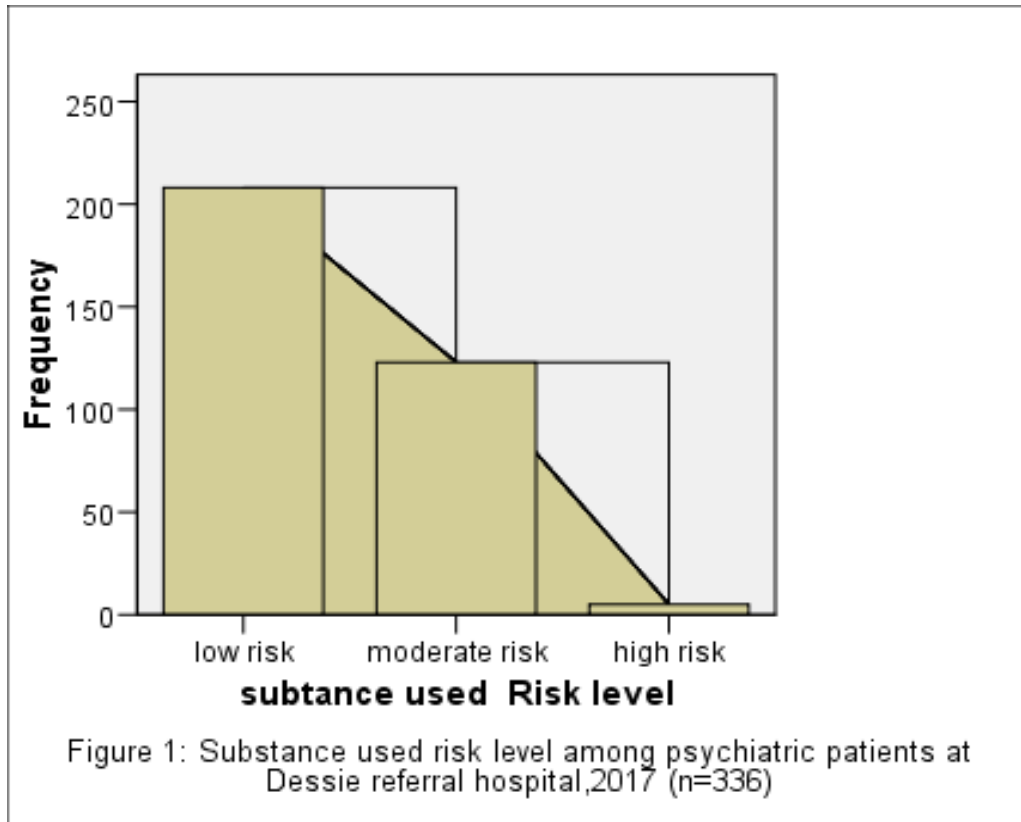
The most common types of substance used disorders were Khat 103 (47.2%), tobacco 57 (26.1%), alcohol 41 (18.8%), cannabis 10 (4.6%) and sedative 6 (2.8%) respectively as shown in table 3.

Table 3: The types of substance used disorder among psychiatric patients at Dessie referral hospital psychiatry clinic, Dessie town, 2017 (n=218).

Types of substance used disorder	Number (n)	Percent (%)
Khat	103	47.2
Tobacco	57	26.1
Alcohol	41	18.8
Cannabis	10	4.6
Sedatives(benzodiazepine)	6	2.8
Opioids (pethidine)	1	0.5

In descriptive analysis, more than halve of male patients 101 (55.8%) had substance used disorders; and a majority of psychiatric patients 47

(61.0%) that had substance used disorder was between 26 and 30 years old. Nearly half of colleges and above educated respondents 28

(52.8%) had substance used disorder and majority 15 (53.6%) of respondents that lived alone had substance used disorders as compared to living with parents 46 (35.1%). A majority, 21 (51.2%) of the respondents who had a history of admission to hospital had a substance used disorder than

whose who had no history of admission. Patients having families that had alcohol 47 (59.5%) and other substance used 65 (52.8%) were vulnerable to develop a substance used disorder as compared to those who had no families that use alcohol and other substances as shown in table 4.

Table 4: Proportion of substance used disorder with socio-demographic and other related variables of the respondents at Dessie referral hospital psychiatry clinic, 2017 (n=336).

Variables	N	No substance use disorder	Substance use disorder
Gender of patient			
Male	181	80(44.2%)	**101(55.8%)**
Female	148	128(82.6%)	27(17.4%)
Age of the patient in years			
18-25	99	74(74.7%)	25(25.3%)
26-30	77	30(39.0%)	**47(61.0%)**
31-40	90	58(64.4%)	32(35.6%)
≥41	70	46(65.7%)	24(34.3%)
Educational status			
Illiterate	95	63(66.3%)	32(33.7%)
1-8	100	64(64.0%)	36(36.0%)
9-12	88	56(63.6%)	32(36.4%)
Diploma & above	53	25(47.2%)	**28(52.8%)**
Living with whom			
Parents	131	85(64.9%)	46(35.1%)
Alone	28	13(46.4%)	**15(53.6%)**
Family(spouse &child) children)	156	100(64.1%)	56(35.9%)
History of admission			
No	295	188(63.7%)	107(36.3%)
Yes	41	20(48.8%)	21(51.2%)
History of admission			
No		188(63.7%)	107(36.3%)
Yes	41	20(48.8%)	**21(51.2%)**
Family History of alcohol use			
No		176(68.5%)	81(31.5%)
Yes	79	32(40.5%)	**47(59.5%)**
Family History of other substance use			
No	213	150(70.4%)	63(29.6%)
Yes	123	58(47.2%)	**65(52.8%)**

Factors associated with Substance used disorders

In the bivariate logistic regression analysis substance used disorder was significantly associated with sex (being male), age (26-30 year), educational status (college and above), having families that used alcohol, having families that used other substances and patients that received psycho-education before at p-value ≤ 0.05. A multiple logistic regression was performed

including all variables with p-value ≤ 0.25 in the bivariate logistic regression to increase our confidence in having adequately controlled for confounding variables. Only variables with p-value lower than 0.05 remained in the final model and taken as statistically significant as shown in table 5. After multivariate analyses were computed, the substance used disorder among psychiatric patients was significantly associated with sex of the patient (being male), age of the patient (26-30year old),

patient's occupation (being students), having a history of admission at a hospital, family history of alcohol and other substance abuse. The odds of substance used disorder among male psychiatric patients were 9 times higher than those of female patients (AOR=9.277, 95%CI: 4.475–19.229) at p< 0.000.

The odds of substance used disorder of patient whose ages was between 26 and 30 years old had 4 times higher than from those who were between 18 and 25 year old patient (AOR=4.055, 95%CI: 1.430– 11.496) at p= 0.008; and those psychiatric patients that had a history of admission to hospital had 3 times higher odds of substance used disorder than those who had no history of admission (AOR=3.064, 95%CI: 1.199-7.831) at p= 0.019. The odds of substance used disorder were more than 2 times higher among

patients that had a family history of alcohol and other substance abuse respectively [(AOR=2.306, 95%CI: 1.025–5.188) at p= 0.044, (AOR=2.275, 95%CI: 1.087–4.765) at p= 0.029]. On the other hand, being student by occupation was a protective factor of substance used disorder. The odds of reporting substance used disorder was 22% times less among patients who were students (AOR=0.220, 95%CI: 0.054–0.890) at p=0.034. In this study religion, marital status, educational status, monthly income, living with whom, age of onset of the illness, diagnosis, duration of illness, family history of mental illness, types of psychotropic medication used and having medication side effects were not significantly associated with substance used disorder among psychiatric patients.

Table 5: Multiple logistic regression analysis of associated factors for substance used disorders among psychiatric patients at Dessie referral hospital, Ethiopia, 201 7 (n=336).

Variables	N	Binary logistic regression COR (95%CI)	p- value	Multiple logistic regression AOR (95% CI)	p- value
Gender					
Male	181	5.985(3.600- 9.950)	**<0.0001***	9.272(4.509-19.068)	**<0.0001***
Female	155	**1.00**		**1.00**	
Age of patient					
18-25 yr	99	0.648(0.331- 1.266)	0.204	1.531(0.267-8.768)	0.632
26-30 yr	77	3.003(1.531-5.888)	**<0.001***	5.895 (1.300-26.727)	**0.021***
31-40 yr	90	1.057(0.549- 2.037)	0.867	1.229 (0.388-3.897)	0.726
≥41 yr	70	**1.00**		**1.00**	
Educational status					
Illiterate	95	**1.00**		**1.00**	
1-8grade	100	1.107(0.614-1.997)	0.735	0.824 (0.367-1.851)	0.640
9-12 grade	88	1.125(0.612-2.066)	0.704	1.339 (0.507-3.534)	0.556
Diploma & above	53	2.205(1.109-4.383)	**0.024***	1.001(0.288-3.480)	0.999
Occupation					
Unemployed	114	**1.00**			
Employed	52	1.357(0.693-2.655)	0.373	0.661(0.220-1.984)	0.460
Student	28	0.4020(.142-1.139)	0.086	0.232(0.058-0.931)	**0.039***
Farmer	79	1.549(0.862-2.784)	0.144	0.840 (0.335-2.103)	0.709
Merchant	27	1.480(0.632-3.466)	0.367	0. 660(0.207-2.109)	0.483
Others	36	1.046(0.479-2.284)	0.911	0.763(0.253-2.301)	0.631
History of admission					
No	295	**1.00**		**1.00**	
Yes	41	1.845(0.957- 3.558)	0.068	3.193(1.287-7.92	**0.012***
Family History of alcohol abuse					
No	257	**1.00**		**1.00**	
Yes	79	3.191(1.896-5.371)	**0.000***	2.300(1.035- 5.109)	**0.041***
Family History Other substance abuse					

No	213	**1.00**		**1.00**	
Yes	123	2.668(1.684-4.228)	**0.000***	2.179 (1.052-4.511)	**0.036***
Psycho-education received					
No	196	**1.00**		**1.00**	
Yes	140	1.566(1.002-2.446)	**0.049**	1.030 (0.562-1.889)	.924

NB: - * p- value **< 0.05** is consider as statically significant.

DISCUSSION

The results of this particular study showed that the overall lifetime prevalence of any psychoactive substance use for psychiatric patients was high. The most common substances used were Khat (50%), alcohol (28.3%) and tobacco (23.5%). This finding is consistent with the findings of other studies except khat in some studies, which reported the use of psychoactive substances such as alcohol, cannabis, and tobacco were higher rate among patients with mental disorders [1, 6, 7, 10, 19, 20, 21]. In this study, the overall prevalence of substance used disorders among psychiatric patients was 38.1% in addition to their mental illness. Which is congruent but slightly less than with other similar studies done in psychiatric treatment patients, indicated that at least one-half of patients had co-morbid substance used disorder [18, 21, 22]. This difference could be due to study settings; in other studies substance treatment setting were included.

Regarding to the substance used risk level in this study, 36.6% were moderate risk users and only 1.5% was high risk users. This is higher than the study done in South Africa showed that 23% met substance abuse and 24% substance dependence DSM-IV-R diagnostic criteria [23]. The difference could be tool differences; we used ASSIST to identify the level of substance use risk. In this study the independent associated factors of substance used disorder among psychiatric patients were sex of the patient (being male), age of the patient (26-30 year old), patient's occupation (being students), having a history of admission at a hospital, family history of alcohol and other substance abuse. The prevalence of substance used disorder among male psychiatric patients was higher than those of female patients. This is consistent with other studies done in Nigeria, South Africa and Europe (Spain) [19, 22, 23]

The prevalence of substance used disorder among patients whose ages were between 26 and 30 year old was higher than from those who were 41 years old and above. This is consistent with a study done in South Africa and Spain [22-23], and those psychiatric patients that had a history of admission to hospital had three folds higher substance used disorder than those who had no history of admission. This is indirectly consistent with a study done in South Africa; Patients were more likely to be admitted compulsory if they stated that their primary substance of abuse were cannabis, alcohol or methamphetamine [22].

The odds of substance used disorder were more than two times higher among patients who had a family history of alcohol and other substance abuse. Which is more or less similar with the study conducted in Tanzania, showed that family history of substance use was associated with substance use among psychiatric patients [20]. On the other hand, being student by work status was a protective factor of substance used disorder. The odds of reporting substance used disorder were 22% times less among patients that were students. It is also indirectly consistent with the study done in Tanzania in which formal employment was associated with substance use [20].

Based on the findings of this study, we conclude that a substance used disorders were higher among psychiatric patients. Being male, age of the patient, history of admission, family history of alcohol and other substance use were independently associated factors. This implies that the need to design effective screening tools and feasible motivational intervention strategies for comorbid substance used disorder.

Authors' Contributions

Muhammed Seid contributed to the design, conduct and analyses of the research and writing the manuscript. **Mengesha Birkie** contributed to the design, conduct and analyses of the research and in the review of the manuscript. Both authors read and approved the final manuscript.

Competing Interests

The authors declared that they have no competing interests.

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