Prevalence of Depression and Associated Factors Among Under Graduate Students of Second Generation Ethiopian University

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Abstract:
Background: *In Ethiopia, mental illness including depression is the leading non-communicable disorders in terms of burden. Despite depression is common in previous studies in some first generation Ethiopian universities, it is unknown among second generation Ethiopian universities specifically among Wollo university students. Objective:Theaim of this study was to determine the prevalence depressive disorder and its associated factors among regular undergraduate health science students of wollo university, Ethiopia, 2016.*
Methods: *An institution based cross-sectional study designwas conducted at Wollo University students from June 1-10/2016. The stratified random sampling technique was. Data were collected using structured,pretested and self-administered questionnaires. Beck Depression Inventory-II (BDI-II) questionnaire was used to determine depression. Data were analyzed by using SPSS version 20.*
Result: *Among 334 Wollo University undergraduate students screened for depression, 118 (35.3%) had depression from which, 50.45%, 35.13% and 14.41% had mild, moderate and severe depression respectively. The sex of the student (being male) (AOR=1.69, 95%CI: 1.96-2.98), study year (first year (AOR=4.33, 95% CI: 1.40-13.39), having a chronic medical illness (AOR=2.07, 95%CI: 1.19-3.57), family history of mental illness (AOR=2.89, 95%CI: 1.37-6.16), and khat chewing (AOR=2.53, 95%CI: 1.16-5.51) were significantly associated with depression.*
Conclusion: *The prevalence of depression among Wollo University undergraduate health sciences students was one in three students. The probability of having depression was higher among students who were males, first year, having a family history of mental illness, chronic medical illnesses and chewing khat. Considering screening, management and preventiveand programs for depression that well-matched to university students are very important.*
Keywords: *Depression, Undergraduate, Student, Second Generation, Ethiopia, University*

I. Introduction

Mental illness covered 13% of the total global burden of disease; anamount that is expected to rise to 15% by the year 2020 [1]. Furthermore, depression is currently the leading cause of non-fatal burden when considering all mental and physical illnesses, accounting for approximately 10% of total years lived with disability (YLD) in Low and Middle Income Countries (LMICs). Since 2010, major depression has been the second leading cause of burden globally, with the highest estimations of disability in people of working age [2]. Since depression has no any socialand cultural boundaries, it might have effects on students in different sex,age group, socioeconomic status, religion, and ethnicity. It has been suggested that university students experience rates of depression that are considerably higher than, those found in the general population [3]. Students may feel depressed with their university environment, relationship with others and their academic presentation. Depression is a severe problem and is not only affected student's educational performance, but it also leads to long lasting learning difficulties [4].

A recent review of studies displayed that the prevalence of depression among university students worldwide ranged from 10% to 85%, with a weighted mean prevalence of 30.6% [3]. A study done on Australian undergraduate students showed that more than 15% are suffering from most common mental disorders such as anxiety or depression [4]. A longitudinal study that was conducted in a UK medical school found that the prevalence rate of depression varied from 2.2% to 14.8% [5].The study conducted in Beijing university students showed that the prevalence rate of depression is approximately 63.7% and males have higher prevalence of depression than females [6]. Another study that was conducted in Chinese university students

showed that prevalence rates of depressive symptoms among students were 11.7 %. Out of these, 4 % were experiencing major depressive disorder [7]. Similarly a study conducted in Turkish university students showed that the prevalence of depression was about 27% [8]. The study conducted among Indian medical college students found that the prevalence of depression was 49.1 %. It was significantly higher in 1st year (59.3%) and 2nd year (65.6%), as compared to 3rd (34.4%) and 4th year (37.2%) [9]. Similar to the above finding, the study conducted among university of the West Indies students, found that the prevalence of depression was around 40% [10].

In Africa, depression is recorded as high as in western countries among university students. For example, a cross sectional study done among Egyptian university students revealed that 37% of them had moderate depression [11]. A cross sectional study done among Nigerian University Students found that severe depression was 7.0% and moderate to severe depression was 25.2% [12]. The study conducted among the students of Addis Ababa University indicated that the prevalence of depression was 31.7% [13]. From the previous studies, we can understand that depression is common among university and college students because college year itself is stressful period. In Ethiopia, particularly in second generation Universities, learning is the most stressful and makes students more anxious and depressed. For second generation university students, live far from home, plan for the future and compared with first generation university students and succeed their education and maintain a good grade would be the most common causes that lead university students with depression. Although depression is common in previous studies in some first generation Ethiopian universities, it is unknown among second generation universities particularly among Wollo university students. Therefore, this study determined the prevalence of depressive disorders and its associated factors among health Sciences students in Wollo University.

II. Methods

Study setting and Sampling procedures
An institution based cross-sectional study was conducted at Wollo University among regular undergraduate health sciences students from June 1-10/2016. Wollo University is one of the 2nd generation Ethiopian universities, established in 2005. In 2016 academic year, College of medicine and health sciences had 1,449 regular undergraduate students, of which 654 (45%) were female students. A stratified sampling technique was used to select 334 students proportionally from each department and year of study. A sampling frame of health science students from each department and each year was taken and finally the simple random sampling method was employed to each department and each year students.

Data collection and processing
The data collection was conducted by self-administered, pretested, structured and well organized questionnaires. Beck Depression Inventory-II (BDI-II) questionnaire was used to assess depression among students [14]. The BDI-II has been well studied and has excellent reliability and validity for measuring severity of depression. A total score of 0-13 was considered as "have no depression", 14-19 was considered as "having mild depression", 20-28 was considered as "having moderate depression" and 29-63 was considered as "having severe depression" [15]. Alcohol Use Disorders Identification Test (AUDIT) was also used to assess alcohol use disorder among students. The data were collected by three graduating non health science students. Two days training was given to them about the interview processes and on how to administer and collect the questionnaire. Data were checked for completeness of missing values and analyzed by using SPSS version 20. The association between depression and other variables was assessed by using a multivariate logistic regression at the 95 % confidence level and a p-value of <0.05 was used to declare the significance of the association.

The ethical clearance was obtained from an ethical review committee of Wollo University, college of medicine and health science. The purpose of this study was explained to the respondents and was assured of confidentiality of the responses by ensuring that the participants did not mention their names in the questionnaire and they had full right not to participate and interrupt in between. Those who have depression and suicidal ideation during the study period were further interviewed and given appropriate treatment and counseling in collaboration with Wollo University student clinic.

III. Results

Socio-demographic characteristics
A total of 334 students were involved in the study. Among all, the majority 225 (67.4%) were male students, 199 (59.6%) were Amhara by ethnicity and 249 (74.6%) were followers of orthodox Christian religion as shown in table 1 below.

Table 1: Socio- Demographic Characteristics of students at Wollo University, Ethiopia, 2016(n=334).

Socio-demographic Characteristics		Number (n)	Percent (%)
Gender	Male	225	67.4
	Female	109	32.6
Age group in year	18-23	244	73.0
	24-29	69	20.7
	30-35	21	6.3
Religion	Orthodox	249	74.6
	Muslim	47	14.0
	Protestant	26	7.8
	Others*	12	3.6
Ethnicity	Amhara	199	59.6
	Oromo	85	25.4
	Tigray	38	11.4
	Other	12	3.6
Marital status	Single	306	91.6
	Married	28	8.4
Monthly pocket money(Birr)	<100	28	8.4
	100-299	102	30.5
	300-400	111	33.3
	$\geq$500	93	27.8
Frequency of visit to worship	Every day	158	47.3
	Once a week	95	28.4
	Twice a week	44	13.2
	Three times a week	37	11.1

*Catholics and have no religion

The mean age of students was 22.14 ± 1.253 years and the range was 18 and 35 years. Majority 244 (73.0%) were between 18 and 23 years old. Almost one third of the students 124 (37.1%) were 1st year and 50 (15%) were from the department of public health as shown in table 2. Most of the students 330 (98.8%) were living in the dormitory and about 306 (91.6%) were single. Nearly half of the students 158 (47.3%) were visiting churches/mosques every day for worshiping. Out of the total participants, 111 (33.2%) had monthly pocket money of 300-400 Birr and 185 (55.4%) thought that their monthly pocket money was adequate. Among those interviewed students, 49 (14.7%) had a family history of perceived mental illness, and only 4 (1.2%) had diagnosed past mental illness. Regarding the psychoactive substance use, 153 (45.8%) were drinking alcohol, 55 (16.5%) were chewed khat and 13 (3.9%) were smoked cigarette for the last12 months. Of those who smoke cigarette, 9 (69.2%) were smoking half or more packets per day, and 19 (5.7%) were used other psychoactive substances as shown in table 3. More than half of the students 204 (61.1%) reported that they experienced stress or tension after joining the university.

Table 2: Department and year of study of students at Wollo University, Ethiopia, 2016 (n=334).

Department	N	Percent (%)	Year of study	N	Percent (%)
Public health	50	15.0	1	124	37.1
Comprehensive Nursing	48	14.4	2	50	15.0
Medical Lab	31	9.3	3	68	20.4
Midwifery	41	12.3	4	73	21.9
Environmental health	32	9.6	5	19	5.7
Pharmacy	42	12.6	**Total**	**334**	**100.0**
Psychiatry	7	2.1			
Anesthesia	5	1.5			
Medicine	47	14.1			
Pediatric & child Health Nursing	12	3.6			
Adult Health Nursing	19	5.7			
Total	**334**	**100.0**			

Table 3: Psychoactive substance use and other problems among students at Wollo University, Ethiopia, 2016(n=334).

Psychoactive substance use problems		Number (n)	Percent (%)
Alcohol use disorder	Yes	55	16.5
	No	279	83.5
Cigarette smoking	Yes	13	3.9
	No	321	96.1
Khatchewing	Yes	55	16.5
	No	279	83.5
Other psychoactive substance use	Yes	19	5.7
	No	315	94.3
Ever experience stress (tension)	Yes	204	61.1
	No	130	38.9

Depression and its severity

Among 334 Wollo University undergraduate health science students screened for depression by Beck Depression Inventory-II(BDI-II), 118 (35.3%) had depression from which 50.45%, 35.13% and 14.41% had mild, moderate and severe depression respectively as shown in figure 1.
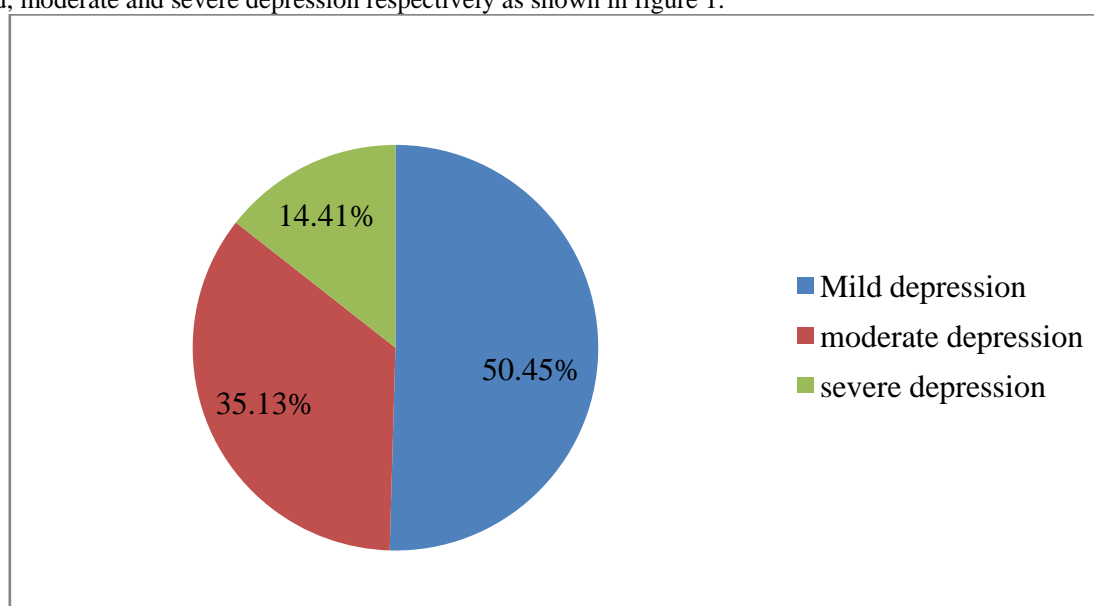
Figure 1: Severity of depression among Wollo University undergraduate health science students, 2016 (n=334).

In descriptive analysis, majority of psychiatry nursing 6 (85.7%), anesthesia 4 (80.0%), and nursing specialty (adult 10 (52.6%) and pediatric child health 8 (66.7%) nursing) students were depressed. More than half of first year students 69 (55.6%)were depressed. Among students who had families with perceived mental illness, 28 (57.1%)were depressed as compared to those who had no families with mental illness as shown in Table 4.

Factors Associated with Depression

The association between depression and explanatory variables was assessed by using logistic regression at the 95 % confidence level and a p-value of <0.05 was used to declare the significance of the association. In this particular study, the sex of the student, study year, Chronic Medical illness, family history of mental illness, and khat chewing were significantly associated with depression in multivariate logistic regression. On the other hand variables like religion, ethnicity, marital status, income, frequency of worship, cigarette smoking, other substance use and alcohol drinking had no any significant association with depression as evidence of p-value >0.05.The odds of depression among male students were 1.6 times higher thanfemale students (AOR=1.689, 95%CI: 1.956-2.983) at p=0.034). The odds of depression among first year students were nearly 4 times higher than the fifth year students (AOR=4.328, 95%CI: 1.399-13.386) at p=0.007). Significant association was also observed between chronic medical illness and depression (AOR=2.068, 95%CI: 1.199-3.567 at p=0.009). Depression among those students who had a chronic medical illness was 2 times higher than those students who had no chronic medical illness. Those students who had a family history of mental illness were almost 3 times depressed than those students who had no family history of mental illness (AOR=2.899,

95%CI: 1.365-6.159 at p=0.006). The odds of depression among students who were chewing khat was 2.5 times higher than those students who weren't chewing khat(Adjusted Odds Ratio (AOR)=2.530, 95%CI: 1.162-5.506 at p=0.019).

Table 4: Proportion of depression with socio-demographic and other related variables of the respondents at Wollo University, Ethiopia, 2016 (n=334).

Variables	N	Depression		P- Value
		Yes	**No**	
Gender				
Male	225	82(36.4%)	143(63.6%)	**0.034**
Female	109	36(33.0%)	73(67.0%)	
Department				
Public Health	50	10(20.0%)	40(80.0%)	
Comprehensive Nursing	48	14(29.2%)	34(70.8%)	0.294
Medical laboratory	31	12(38.7%)	19(61.3%)	0.070
Midwifery	41	15(36.6%)	26(63.4%)	0.081
Environmental health	32	12(37.5%)	20(62.5%)	0.085
Pharmacy	42	13(31.0%)	29(69.0%)	0.230
Psychiatry	7	6(85.7%)	1(14.3%)	**0.005**
Anesthesia	5	4(80.0%)	1(20.0%)	**0.018**
Medicine	47	14(29.8%)	33(70.2%)	0.267
Adult health nursing	19	10(52.6%)	9(47.4%)	**0.010**
Pediatric child health Nursing	12	8(66.7%)	4(33.3%)	**0.003**
Religion				
Muslim	47	17(36.2%)	30(63.8%)	
Orthodox	249	88(35.3%)	161(64.7%)	0.913
Protestant	26	9(34.6%)	17(65.4%)	0.894
Other	12	4(33.3%)	8(66.7%)	0.542
Ethnicity				
Oromo	85	29(34.1%)	56(65.9%)	
Amhara	199	70(35.2%)	129(64.8%)	0.864
Tigre	38	14(36.8%)	24(3.2%)	0.770
Other	12	5(41.7%)	7(58.3%)	0.603
Year of study				
1st	124	**69(55.6%)**	55(44.4%)	**0.006**
2nd	50	10(20.0%)	40(80.0%)	0.313
3rd	68	16(23.5%)	52(76.5%)	0.477
4th	73	17(23.3%)	56(76.7%)	0.057
5th	19	6(31.6%)	13(68.4%)	
Family History of Mental illness				
No	285	90(31.6%)	195(68.4%)	
Yes	49	**28(57.1%)**	21(42.9%)	**0.003**
Chew khat				
No	279	8(30.8%)	193(69.2%)	
Yes	55	32(58.2%)	23(41.8%)	**0.014**
Other substance use				
No	315	107(34.0%)	208(66.0%)	
Yes	19	**11(57.9%)**	8(42.1%)	0.410
Chronic Medical illness				
No	227	71(31.3%)	156(68.7%)	
Yes	107	47(43.9%)	60(56.1%)	**0.008**
Ever smoking cigarette				
No	321	109(34.0%)	212(66.0%)	
Yes	13	9 (69.2%)	4 (30.8%)	0.160

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

IV. Discussion

In this study the prevalence of depression among Wollo university undergraduate health science students was 35.3%. Among the study participants who were depressed, 50.45%, 35.13%, 14.41% had mild, moderate and severe depression respectively. The result of this study was consistent with other studies conducted in different universities: Study conducted among Canadian and Iranian students showed that the prevalence of depression was 33% [16, 17]. Another study conducted among Egyptian university students

showed that the prevalence of depression was 37% [12] which is consistent with our study. A study conducted at Addis Abeba University showed that 31.7% of the respondents were depressed [13].

On the other hand, the result of this study was slightly greater than the prevalence reported among Polish university students (17.1%) [18]; Turkish university students (27%) [19] and Adama university students (21.6%) [20]. However, it was lower than the study conducted among Chinese, Indian universities and Iranian medical school students (63.7%, 49.1% and 64.3% respectively) [6, 9, 21]. These differences could be due to study participants and measuring tool differences. The result of this study showed that there were gender differences; male students were more depressed than female students (69.5% male, 30.5% female). This was compared with the study findings among Chinese university students [6]. But it was contrasted to a study done among Addis Abeba University students; which showed that females were more depressed than males [13]. The variation of this report might be due to differences in cultural responsibility and variation in gender support level of university (Wollo University has affirmative action for female students which could make them less depressed).

In this study lower study year was associated with higher depression; in agreement with the study conducted among the Chinese university [7], Addis Abeba University [13] and Adama University students [20], showed that there was an association between lower study year and depression. In this study being a first year student was strongly associated with depression.

Students who had a family history of mental illness also associated with depression (23.7%) which was comparable to a study done among Adama university students (19.5%) [20]. Experiencing chronic medical illness were also associated with depression (43.9%), which is consistent with the review of the literature conducted in Ethiopia showed that there was an association between chronic medical illness and depression [22]. Khat chewing was also the other factor that associated with depression, which is in line with a review of the literature conducted in Ethiopia [20, 22].

V. Conclusion

The prevalence of depression among Wollo University undergraduate health science students was almost one in three students (35.3%). The probability of having depression was higher among students who were males, first year, having a family history of mental illness, chronic medical illnesses and who were chewing khat. Considering screening, treatment and preventive programs for depression that suited to university students is very important. Comparative study giving emphasis to gender also recommended.

ABBREVIATIONS

AOR: Adjusted Odds Ratio

AUDIT: - Alcohol Use Disorder Identification Test

BDI-II: - Beck Depression Inventory II

CI: - Confidence Interval

DF: - Degree Of Freedom

DSM-IV-TR: - Diagnostic Statically Manual IV Text Revised

LMICs: - Low and Middle Income Countries

MDD: - Major Depressive Disorder

SPSS: Statistical Package for the Social Sciences

UK: United Kingdom

YLD: Years Lived with Disability

COMPETING INTERESTS
The authors have declared that they have no competing interests.
AUTHORS' CONTRIBUTIONS
Both authors conceived and designed the study, involved in analyzing and interpreting the data. MuhammedSeid wrote the manuscript, and then both authors have given final approval.

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