Prevalence and factors associated to depression among Debrebirhan University students: a cross-sectional study

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Abstract

Background:

Undiagnosed depression among university students has an adverse effect on the wellbeing and academic performance of students. This study aimed to assess the prevalence of depression and associated factors among Debre Birhan university students.

Methodology:

Institutional based cross-sectional study design is conducted in Debre Birhan University from April to June 2013 E.C. Three hundred sixty nine students participated in this study which was selected by simple random sampling technique. Data were collected by using a self-administered PHQ-9 standard depression questionnaire. First the data was entered into in Epidata 3.1 and then was exported to SPSS version 20 for analysis. Associated factors were identified using binary logistic regression and variables with a p-value < 0.05 were declared as statistically significant factors with the outcome variables.

Result:

All of the study subjects were between ages 18 and 33 with a mean age of 22.65 9 ± 2.78. The overall prevalence of depression is 17.1%. Among this according to PHQ-9 scores cut scores, 161(43.6 %) scored as normal (0−4), 145(39.3%) scored as mild (5−9), 53(14.4%) scored as moderate (10−14), 4(1.1%) scored as moderately severe (15−19) and 6(1.6%) students scored as sever (> 20). In multivariate analysis being female AOR = 9.28[3.47−24.81], academic year AOR = 0.236[0.059−0.936], smoking 26.3[9.33−74.1] and alcohol use AOR of 2.62[0.95−7.21] are significantly associated with depression.

Conclusion and recommendation:

This study found a considerable proportion of undergraduate students with depression. Higher institutions need to pay special attention to students especially those who are female, junior students, smokers and alcohol users.

Introduction

Background

Depression is a common mental disorder characterized by depressed mood, loss of interest or pleasure, feeling of worthlessness or inappropriate guilt, disturbed sleep and appetite, feeling of tiredness, and poor concentration for a minimum of two weeks. [1]

The total number of people living with depression in the world is 322 million. [2] It is also predicted to become the second leading cause of the global disease burden by the year 2020. [3]

Depression is a treatable disorder and if this disorder is left untreated in the early age of occurrence, it can lead to different problems like school failure, conduct disorder and delinquency, eating disorders such as anorexia and bulimia, school phobia, panic attacks, substance abuse, or even suicide. [1]

Numerous researchers and clinicians agree that it is the most disabling problem that also causes increased risk of other health conditions like substance abuse, HIV/AIDS infection and injury. [4,5] According to the World Federation of Mental Health report of 2012, depression interferes with the daily life of people and causes pain for both patients and those who care about them.[6].

The mortality rate due to suicide is 20 times greater among depressed individuals than the general population. [2−4] In Ethiopia, depression contributes to about 6.5% of the burden of diseases. This is the highest share of burden compared to other forms of mental disorders. [4]

Prevalence rates vary by age, peaking in older adulthood (above 7.5% among females aged 55-74 years, and above 5.5% among males).[2].Globally, studies conducted on different samples of undergraduate students have identified a moderate to high prevalence of depression in this population. [7−11]

Globally, studies conducted on different samples of undergraduate students have identified a moderate to high prevalence of depression in this population [18−23]. Early diagnosis and management of psychological distress lead to better management and patient outcomes [24].

The period of youth is a time of contradictions when a person goes through many changes and experiences such as emotional ,behavioral ,sexual ,economic, academic and social and as well as efforts of discovering ones identity with psychosocial and sexual maturation. During this period, the mental health of university youth constitutes one of the important components of social health.

Universities are recognizing as stressful environment that often exerts a negative effect on the academic performance, physical health and psychological well-being of the students. Stress during education can lead to depression and have a negative impact on cognitive functioning and learning.

Almost all of the university students came from different regions of Ethiopia and they have low probability to live with their families because of this they develop the feeling of loneliness and they have high probability to develop depression. When they join the university it may be the first time to separate from family because of this they may feel a sense of loneness. In addition to this they join a new environment and it may be difficult to easily to adapt the new environment.

Even if there are studies that deal about the prevalence of depression in general population. Studies on depression among university students of Ethiopia are few. Hence this study will fill this information gap.

The outcome variable is prevalence of depression that related to socio demographic characteristics, substance use and comorbidity as shown below on conceptual framework developed after literature review.

Objective

General objective

• To assess the prevalence of depression and associated factors among DebreBirhan university students

Specific Objectives

• To determine the prevalence of depression among DebreBirhanuniversity students

• To identify factors associated to depression.

Methodology

Study area

The study is conducted in Debrebirhan University which is established in 1999 E.c. Debrebirhan is located on 130 km away from Addis Ababa in North Shoa Amhara regional state.

Debrebirhan University is among 3rd generation universities, those newly started education as university. Currently there are a total of 6 (six) faculties and 51 (fifty one) departments for regular under graduate studies and 6 (six) post graduate programme. The total student population in 2013 E.C is 6953 with number of male being 4442 and 2511 female students. This figure indicates only regular students.

Study period

The study was conducted from April to June 2013 E.C.

Study Design

Institutional based cross-sectional study design was used to assess prevalence and associated factors to depression among DebreBirhanuniversity students.

Study Population and source population

Source population

All students who are registered in DebreBirhan University in 2013 E.C is the source population.

Study population

Students who are registered as regular under graduate class and who fulfill inclusion criteria

Inclusion and exclusion criteria

Students who were sick to the extent of unable to read and write during data collection, summer, extension, distant education students, post graduate students, student who were absent during date of data collection and students found out of main campus were excluded from the study.

Sample Size Determination

Sample size is determined using single population proportion formula taking the prevalence of depression at Ambo University (32.2%) [18].Where: n = sample size

P = prevalence of health and health related problems

q = 1-p

d = desired degree of precision

Z= is the standard normal value at the level of confidence desired; at 95%

$$n= \frac{(z_{\alpha/2})^2 \times pq}{d^2}$$

Assumptions

- Considering 95% CI and 5% margin of error
- Precision of 0.05
- Prevalence of depression at Ambo University (32.2%). (18)

ni=Z $(1.96)^2$*0.322 (1-0.322)/0.05^2

=Z (1.96)2*0.322 (0.678)/0.0025

= $(1.96)^2$*87.32

=3.84*87.32

=335.44

By adding 10% non-response rate the final sample size will be 369

Sampling Procedure

Simple random sampling technique is used to select participants. A list of regular undergraduate students from the registrar is prepared by their ID number. Then after sample size was proportionally allocated for each facility. Then 369 students were finally selected in each faculty using lottery method in each faculty. .

Variables

The Dependent Variable

Depression (yes/no)

Independent Variables

Socio demographic characteristics including age, sex, year of enrollment, faculty, residency of parents of the study subject, marital status and monthly income. Substance use including: use of chat, alcohol, cigarette smoking.

Operational Definition

According to this study the existence and prevalence of depression is determined by PHQ-9 depression questionnaire.

- PHQ-9 scores ≥10 indicating a student is having depression disorder.
- PHQ-9 scores less than 10 indicating a student is not having depression disorder.
- We use also depression score as:

Mild: PHQ-9 scores of 5 to 9

Moderate: PHQ-9 scores of 10 to 14

Moderately severe: PHQ-9 scores of 15 to 19

Severe: PHQ-9 scores of ≥20

Data collection instrument

Depression screening instruments include the Patient Health Questionnaire-9 (PHQ-9), the Patient Health Questionnaire-2 (PHQ-2), the Beck Depression Inventory for Primary Care (BDI-PC), and the 5-Item World Health Organization Well-Being Index (WHO-5).Factors which to use include the number of questions, scoring and ease of interpretation, and reading level required. [25, 26]

The PHQ-9 which has been validated in multiple studies has been found to be acceptable and is as good as longer clinician-administered instruments in a range of settings, countries, and populations. The PHQ-

9 is more accurate than other screens with sensitivity 88 percent and specificity of 88 percent. [28-31]

The PHQ-9 is scored 0 to 27, with scores ≥10 indicating a possible depressive disorder. [28]

Data analysis and management

First the data was entered into in Epidata 3.1 and then exported to SPSS version 20 for analysis. Data was sorted, frequency ordered and checked for completeness and acceptability.

A necessary correction was made on error observations by cross checking with the questionnaire. 5 % of random cases are checked with the original data for consistency. Incomplete questionnaires was excluded from analysis.

Both descriptive and inferential statistics is computed as appropriate. The demographic characteristics of participants is computed by using descriptive statistics like mean, percentage, frequencies, and standard deviation.

PHQ-9 scores is added and categorized as two output based on cut point of 10 to determine as students is having depression or not as PHQ-9 standard. Then to determine factors associated with depression bivariate binary logistic regression and multivariate stepwise logistic regression was applied.

To increase the power all variables with p value of less than 0.25 in bivariate analysis are candidate for multivariate analysis. The final decision on association of independent variables with dependent variable is based on only with adjusted odds ratio.

Data quality control

The data collectors are representatives of class room in selected participant's class room. Detail orientation was given and procedure of data collection is demonstrated and practiced. During data collection investigator was monitoring as data is collected in right way. There was regular and close communication between investigator and data collectors. Incomplete, inaccurate filling on questionnaire was not included in analysis.

Dissemination of the result

The finding of the study will be given to DebreBirhan university school of public health, college of medicine, concerned bodies working in the university and health science library trough copy of printed document. The finding will also be communicated to the scientific world by publishing in journal.

Ethical considerations

Ethical clearance letter was first obtained from DebreBirhan university school of public health. Then ethical clearance paper is presented for student council, registrar to get cooperation.

Participants were told as they have full right to stop filling questionnaire any time if they do not want to participate. Confidentiality was assured by making the questionnaire anonymous.

Participation was based on willingness after consent is obtained. There is no harm with participation in this research. Individual who fulfill criteria for depression will be notified to visit clinic.

Result

Part I: Socio-demographic Characteristics of the respondents

The total numbers of the distributed questionnaires were 369 and all were filled completely and consistently making a response rate of 100 %. Among the total respondents who filled the questionnaire 145(39.3%) were females and the rest were males. Minimum and maximum ages of respondents were 18 and 33 respectively. The mean age of the participants was 22.65 with a standard deviation of 2.78.

Table 1: Socio-demographic characteristics of the respondents (n=369), Debre Birhan University, June 2013 E.C

Characteristics	Category	Frequency(n)	Percentage (%)
Sex	Male	224	60.7
	Female	145	39.3
Academic year	2nd year	146	39.6
	3rd year	163	44.2
	4th year	35	9.5
	5th year	25	6.8
Field of study	Agriculture	29	7.9
	Medical and health sciences	43	11.7
	Social study and humanity	42	11.4
	Technology	148	40.1
	Natural and computational sciences	30	8.1
	Business and economics	77	20.9
Family marital status	Live together	263	71.3
	Separated	44	11.9
	Widowed	62	16.8
Monthly personal income (birr)	<500	198	53.9
	500-1000	18	4.9
	>1000	152	41.2

Part II: Substance use among respondents

Table 2 : Distribution of substance use among respondents at DBU university students in June 2013

Substance type	Category	Frequency(n)	Percentage (%)
Khat use	Current Users	86	23.3
	Non users	283	76.7
Cigarette use	Current Users	73	19.8
	Non users	296	80.2
Alcohol use	Current Users	93	25.2
	Non users	276	74.8

Part III: PHQ-9 depression questionnaire response

Table 3: PHQ-9 depression questionnaire response at DBU university students in June 2013

	0		1		2		3	
	n	%	n	%	n	%	n	%
Over the last two weeks, how often have you been bothered by any of the following problems?								
Little interest or pleasure in doing things	200	54.2	93	25.2	53	14.4	23	6.2
Feeling down, depressed, or hopeless	263	71.3	64	17.3	21	5.7	21	5.7
Trouble falling or staying asleep, or sleeping too much	164	44.4	124	33.6	54	14.6	27	7.3
Feeling tired or having little energy	167	45.3	90	24.4	80	21.7	32	8.7
Poor appetite or overeating	239	64.8	82	22.2	33	8.9	15	4.1
Feeling bad about yourself, or that you are a failure, or that you have let yourself or your family down	245	66.4	69	18.7	28	7.6	27	7.3
Trouble concentrating on things, such as reading the newspaper or watching television	189	51.2	109	29.5	49	13.3	22	6
Moving or speaking so slowly that other people could have noticed? Or the opposite, being so fidgety or restless that you have been moving around a lot more than usual.	224	60.7	90	24.4	33	8.9	22	6
Thoughts that you would be better off dead, or of hurting yourself in some way	264	71.5	73	19.8	23	6.2	9	2.4
If you checked off any problems, how difficult have these problems made it for you to do your work, take care of	150	40.7	191	51.8	19	5.1	9	2.4

things at home, or get along with other people?											

Part IV: Prevalence of depression

PHQ-9 scores ≥10 indicating a student is having depression disorder. Based on this the overall prevalence of depression is 17.1%.

Among all participants according to PHQ-9 scores cut scores, 161(43.6 %) scored as normal (0-4), 145(39.3%) scored as mild (5-9), 53(14.4%) scored as moderate (10-14), 4(1.1%) scored as moderately severe (15-19) and 6(1.6%) students scored as sever (>20).

Table 4: Levels of depression and its prevalence in DBU June 2013 E.C , (N=369)

Variable	Grading of depression	Frequency(n)	Percentage (%)
Non depressed		306	82.9%
Depressed	Mildly depressed	145	39.3
	Moderately depressed	53	14.4
	Moderately severe	4	1.1
	Severe	6	1.6

Factors associated to depression

Sex, academic year, monthly income, khat use, cigarette use and alcohol use were associated with depression in bivariate analysis but after controlling confounding variables in in the final binary logistic regression model revealed that being female, academic year, smoking and alcohol use are significantly associated with depression.

Table 5: Factors associated with depression among students of DBU University in 2013 (n = 369).

Variable	Category	Depression		COR 95 % CI	AOR 95 % CI
		Yes	No		
Sex	Male	18	206	1	1
	Female	45	100	5.1 [2.8-9.3] ***	9.28[3.47-24.81] ***
Academic year	2nd year	35	111	1	1
	3rd year	24	139	0.548[0.308-.974] *	0.85[0.37-1.92]
	4th year	4	31	0.227[0.077-.669] * *	0.236[0.059-0.936] *
Field of study	Agriculture	5	24	1	1
	Medical and health sciences	5	38	1.632 [0. 165-2.414]	3.410 [0.58-19.85]
	Social study and humanity	9	33	1.309 [0. 389-4.404]	2.759 [0.56-13.45]
	Technology	28	120	1.120[0.393-3.193]	2.401 [0.59-9.63]
	Natural	6	24	1.200[0. 322-4.469]	1.518[0.21-10.86]
	Bussiness & economics	10	67	0.716[0. .222-2.309]	1.975[0.38-10.27]
Monthly personal income(Birr)	<500	36	163	1	
	500-1000	2	16	0.566 [0.125-2.571]	
	>1000	25	127	0.891[0. 509-1.561]	
Khat use	Current Users	29	57	3.72 [2.1-6.6]	0.78[0.22-

				***	2.76]
	Non users	34	249	1	1
Cigarette use	Current Users	43	30	19.78 [10.31-37.91]	26.3[9.33-74.1] ***
	Non users	20	276	1	1
Alcohol use	Current Users	25	68	2.303[1.299-4.08] ***	2.62[0.95-7.21] *
	Non users	38	238	1	1
* P<0.05, **P<0.01, and ***P<0.001)					

Discussion

The study found a considerable proportion 17.1% of depression among undergraduate students in Debre Birhan University. Being female, academic year, smoking and alcohol use are significantly associated with depression.

The overall prevalence of depression is 17.1%. Among all participants according to PHQ-9 scores cut scores, 161(43.6 %) scored as normal (0-4), 145(39.3%) scored as mild (5-9), 53(14.4%) scored as moderate (10-14), 4(1.1%) scored as moderately severe (15-19) and 6(1.6%) students scored as sever (>20).

Compared to other studies the prevalence is less than a report from other Ethiopian Universities like in study at at Ambo showed that among the study participant 32.2% [18] , Jimma University 23% respectively [17]. It is higher but compared to Arsi University prevalence of depression among study participants was 4.4% [24].

Higher figure when compared to study at universities outside Ethiopia like at Malaysia 30% respondents experienced depression [22] , at Pakistan the depression prevalence was found to be 53.43 % [21], but comparable to study at France university 16.4%[19] and lower compared to study at Quebec 13 % [20].

The above mentioned variation on the prevalence of depression between the present study and previous studies that were conducted among university students could be due to variation in screening instruments across studies. The other reason could be because University of Debre BIrhan has psychological consultancy service for the students.

Like for example in Ambo university study they use (CES-D) screening tool, in malasia study they use CESD -10 , in Arsi University they use Beck depression inventory (BDI-II) 21 , in Quebec they use BDI-II screening tool .

Among those who are depressed 45 (71.4%) are females the remaining were male. In multivariate analysis significant association is observed between gender and depression. Female sex is associated with depression AOR= 9.28[3.47-24.81] compared to male sex. This means being female nine times increase the risk of depression compared to male. That is binge female is a risk factor for depression. This is similar to studies in multiple studies like in studies in three European countries [13], America at Michigan University [15] , France university [19] and Ambo University [18] .

Another factor associated with depression in multivariate analysis is academic year when compared to second year students those who are fourth year and above are less likely to get depressed by 76.4% AOR=0.236[0.059-0.936] . This is similar to studies at at Ambo [18] and at Malaysia [22]. This could be due to those who are senior students are more likely to get adapt university and has more coping mechanism whereas Probably second year students have yet to experience study difficulties and stress as the course progresses in later years.

We noted that substance use is associated with depression. Among those with depression 68.25 % are currently smokers. Those who are currently smoker are highly associated with depression with AOR of 26.3[9.33-74.1] .Similar finding was also reported in France study [19]. We also noted the same is true for alcohol use AOR of 2.62[0.95-7.21] those who use alcohol are double risk of depression compared to non-alcohol users. But other studies did not find any significant difference on Alcohol use.

According to the outcome of this study Khat use, income and field of study are not statistically significant with depression. This is inconsistent with Malasia [22] , Ambo [18] , Philippines [23] . This discrepancy could be due to sociocultural differences in study populations.

The study had several limitations. Firstly, due to cross-sectional design, the causality of the associations could not be determined. Secondly, the data was collected using self-reporting method; hence the findings may be subjected to response or recall bias. Thirdly, as this study did not consider mental and physical health related variables like anxiety, stress, morbidity, mortality and disability.

Conclusion And Recommendations

This study found a considerable proportion of undergraduate students with depression (17.1%). Higher institutions need to pay special attention to students especially those who are female, junior students, smokers and alcohol users.

Psychosocial counseling or targeted intervention among the student is necessary. Future research could benefit from large-scale nationwide longitudinal studies which include all possible factors related to students' depression.

Abbreviations

AOR
Adjusted Odds Ratio
BDI-PC
Beck Depressive Inventory For primary care
DBU
Debre Birhan University
DSM V-TR
Diagnostic and Statistical Manual for Psychiatric Disorders 4th edition text revised
ETB
Ethiopian Birr
FMOH
Federal Ministry of Health
HIV / AIDS
Human immune deficiency virus/ Acquired immune deficiency syndrome
PHQ-9)
Patient Health Questionnaire-9
SPSS
Statistical Package for Social Sciences
WHO
World Health Organization

Declarations

Ethics approval and consent to participate

Ethical clearance and a letter of support were obtained from SPHMMC, research ethical review committee before the data collection. After final clearance and approval, the letter was submitted to SPHMMC Psychiatry department Office. Objective and use of the interview was explained to the respondents and written consent was obtained. It was explained to the participants that they have the full right not to participate in the study or if they are not willing to continue their participation at any stage of the study. To ensure confidentiality of information, participants name was not used during data collection and this was clearly explained to participants of the study. The questionnaires and others tools were coded to exclude showing names; no references were made in oral or written reports that could link participants to the research. No conflict of interest was taken in to consideration while doing the research. Appropriate treatment and follow up will be initiated for the study subjects that are found depressed or suicidal.

Consent for Publication

This manuscript is not containing data from any other person's.

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Figures
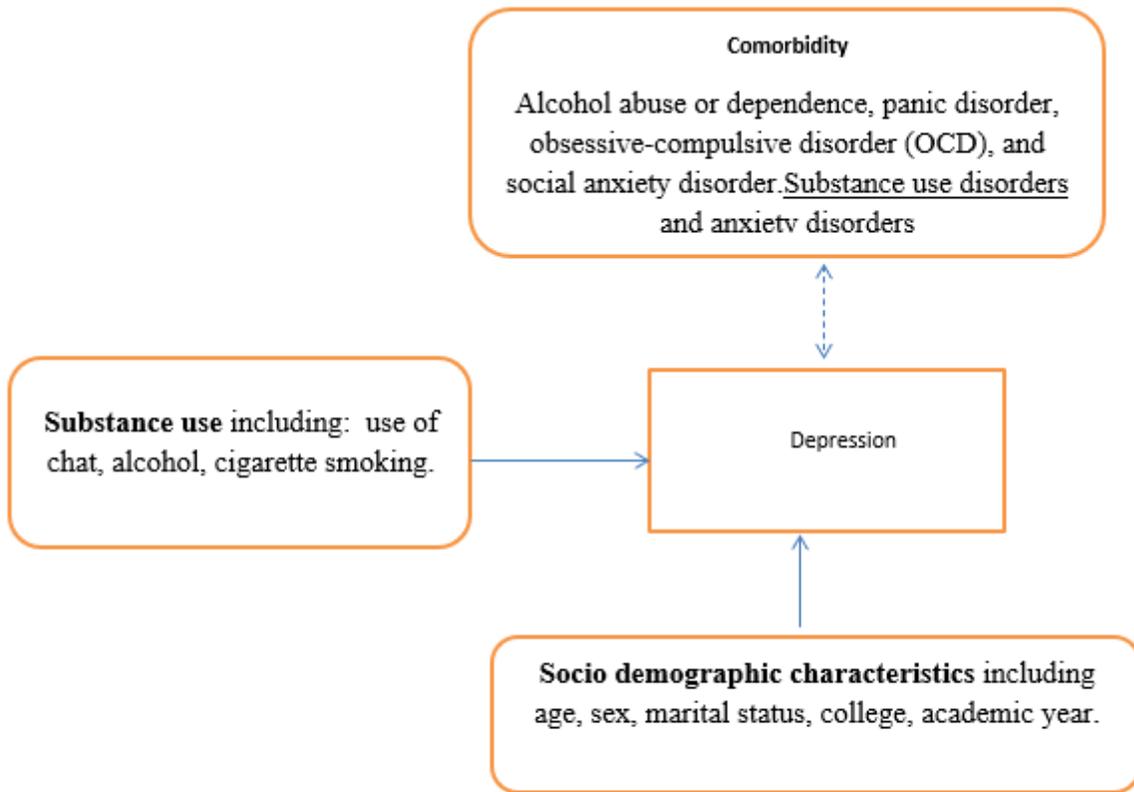
Figure 1
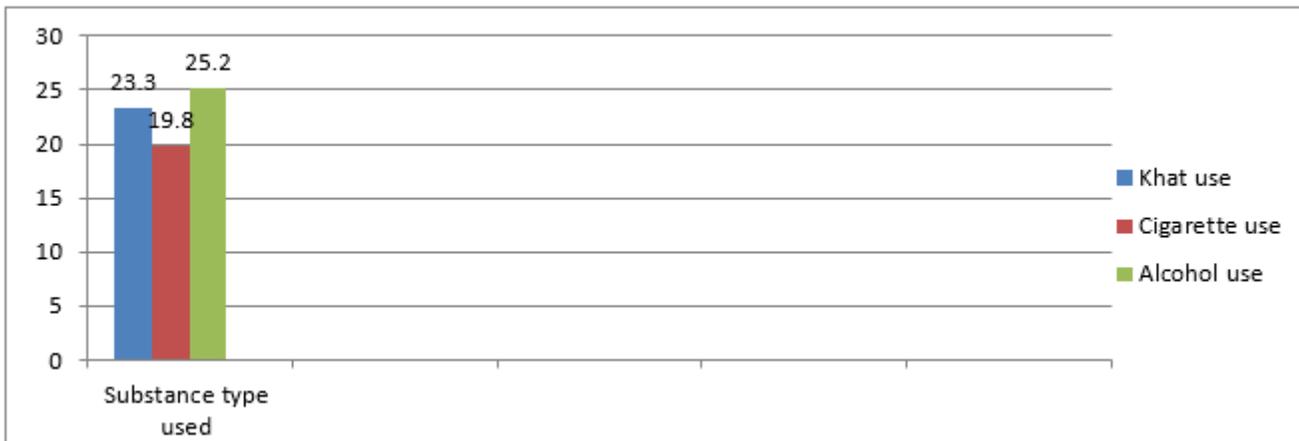
Conceptual Frame works

Figure 2

type of Substance use among respondents at Debre Birhan University students June 2013 E.C
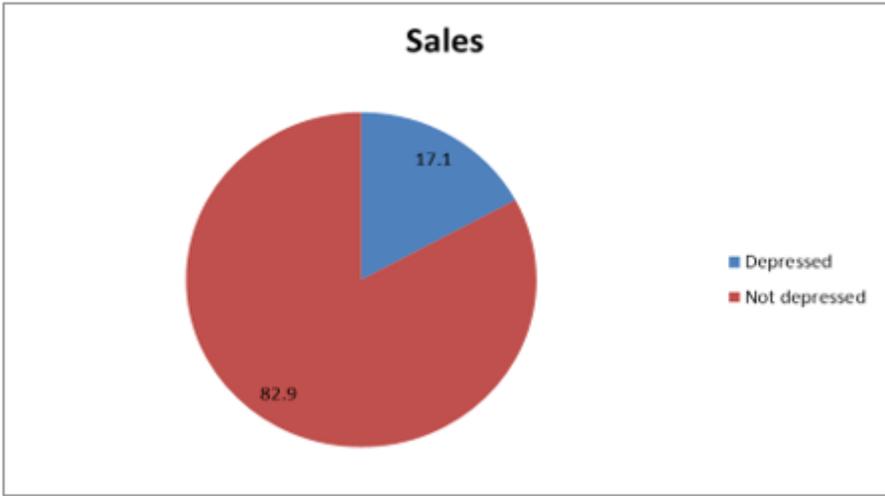
Figure 3

prevalence of depression among Debre Birhan Unversity students June 2013 E.C