Magnitude of Depression and Associated Factors Among High and Preparatory Public School Teachers in Gondar Town, Northwest, Ethiopia 2020

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Abstract

Abstract Background: Depression is a significant preventable public health problem; which is highly prevalent and disabling worldwide. Despite depression is highly prevalent worldwide, it is limited in evidence that illustrates the prevalence of depression and factors associated with it among teachers in Ethiopia. **Objective:** To assess the magnitude and associated factors of depression among high and preparatory public-school teachers in Gondar town, Northwest Ethiopia, 2020. **Methods:** Institution based cross-sectional study was conducted among randomly selected 423 high and preparatory public-school teachers from February to March 2020 in Gondar town. A simple random sampling technique was applied to data collection. A structured self-administered questionnaire was used to collect data. Depression was declared at teachers with scores of 5 and above in

Background

Depression is recognized by the DSM 5 as a mental disorder and is characterized by ongoing negative mood, low self-esteem, and a loss of interest or pleasure in enjoyable activities. Depression can significantly impair daily functioning and reduce quality of life (1–3). It is a significant preventable public health problem which is prevalent, disabling, worldwide mental health problem, with over 350 million people across the globe experiencing the condition (4). It was also ranked by World health organization as the single largest contributor to global disease , disability (7.5% of all years lived with disability in 2015) (5).

According WHO to report on 2017 the total number of people living with depression in the world was 322 million (5,6) and predicted it to become the second leading cause of the GDB of the year 2020 (7). Although depressive disorder is fairly prevalent conditions in the general population, and significant suffering, high morbidity ,mortality, its psychosocial, functional impairment were unrecognized and undertreated in the community (8).

Depression is rooted in a complex array of chemical reactions in the brain, which are in turn affected by a large constellation of factors, including those of biological (e.g., genetics, hormones, illness, substance use), environmental (e.g., diet, stressful or traumatic events) and cognitive (e.g., coping skills) emotional stress and poor emotion management being attribution (14-15). It is a common mental illness among secondary school teachers with annual prevalence rate ranged of 5.8% (9) to (52.6%) (10). Contrasted with the overall public, teachers will in general present more significant levels of pressure and a higher extent of basic mental problems particularly depression (11).

Teaching has been reported to be one of the most stressful occupations in the world and numerous studies have indicated excessive stress may have an obvious effect on the physical and mental health status of teachers ,depression in particular (10,12–14). It is physically and mentally challenging occupation and depression generally, reduces the quality of life, overall mental and physical wellbeing of teachers. Moreover depression leads to unpleasant emotions which impair the teacher's ability to function at work and teachers' negative psychological characteristics may influence teaching climate(7).

Although little is known regarding how depression affects teachers, structural factors and insufficient resources have emerged as strong stress factors that affect the health of teachers (4,10,12–16).

Developing stress management programs, modulating role ambiguity and role conflict, clarifying the order of priority of teachers' work, reducing workload by focusing on the contents of teachers' work, considered as a possible solution regarding to reduce impacts of depression (2,6,15). Recreation has been found to alleviate work stress and promote quality of life (17). Besides, development of potential interventions that help alleviate the stress associated with teaching, foster an environment that cultivates greater job satisfaction, periodical support and evaluation of medical and psychological issues for the identified cases should be initiated in secondary schools to assist teachers and manage their depression (3,18,19).

Despite the teacher's depression had a huge burden of diseases and highly prevalent, as per our knowledge little had been known about the magnitude and associated factors of depression among teachers in Ethiopia. Therefore, this study intended to assess the magnitude of depression and associated factors among secondary public school teachers in Gondar town, North West, Ethiopia.

Objectives

General objective

To assess the magnitude of depression and associated factors among high and preparatory school teachers in Gondar town Northwest Ethiopia 2020.

Specific objectives

- To determine the prevalence of depression among high and preparatory school teachers in Gondar town.
- To identify associated factors for depression among high and preparatory school teachers in Gondar town.

Methods And Materials

The method was done based on the guideline of research protocol prepared by University of Gondar and following all the procedure accordingly and which helps us to meet the international research procedure and show the result of this study by publish on scientific journal.

Study design and period

Institution-based cross-sectional study was conducted from February- March 2020.

Study Area

The study was conducted in Gondar town, Northwest Ethiopia Amhara region, which is located about 730 km from Addis Ababa to the capital of Ethiopia. According to 2019 /20 academic year central Gondar education office report in the town there were around eleven high and preparatory public schools. The office has around 719 (561 male 158 female teachers). Among the teachers 112 males and 2 females have a second degree. The schools have been provided education services for 6076 male and 7220 female high school and 2998 male 3093 female preparatory students.

Source Population

All high and preparatory public schools teachers working in Gondar town

Study Population

All high and preparatory public- school teachers in Gondar town available during data collection time.

Inclusion and exclusion criteria

Inclusion Criteria

All high and preparatory schools teachers in Gondar town

Exclusion criteria

Those who are severely ill during the data collection time were excluded.=

Sampling procedure and sampling techniques

Sample size estimation

A single population proportion formula was used to estimate the sample size. Sample size with z-value of 1.96 and marginal error of 5% sample was calculated as

$$n = z^2 a p(1-p) / D^2$$

Where n =initial sample size a = confidence interval (95%) p =proportion of =0.5

D =marginal error of 5% $(z a/2)^2 =1.96$

$$n = \frac{1.96^2 \times (0.232(1-0.232))}{(0.05)^2} = 384$$

Since there is no related study to know the prevalence of depression in related to study population in Ethiopia, we used 50% proportion to calculate sample size. And to find the final sample size we were added 10% non-response rate then the final sample was 423.

Sampling procedure

Among eleven High and preparatory public school teachers found in Gondar town simple random sampling techniques through lottery method was used to select each study participant after proportional distributions of sample for public school teachers. The total numbers of teachers in the town is 739 and 423 samples were proportional distributed to each school. To select the sample from each school we have used lottery method by using their record list at school. After we found their identification number from the school teacher's list document, we were mixed numbers in a piece of paper then select random numbers from mixed numbers via lottery corresponding to proportionally defined sample for each school.

Variables

Dependent variable

Depression yes /no

Independent variables

- Socio- demographic factors
- Sex
- Age
- Marital status
- Religion
- Ø Social and personal factors
- Academic status
- family size
- Job satisfaction

- stressor
- Income
- social support
- hour of spent time in work
- Ø Behavioral and clinical factors
- Substance use
- Mental illness
- family mental illness
- chronic illness
- taking any medication

Operational definitions

Depression: A score of 5 and above in (Patient Health Questioner -9) declared as having depression(24).

Social support: assessed by an Oslo-3 social support scale which has total scores of 14 and classified into three , scored 3–8, 9–11 and 12-14 were considered as having poor, moderate and strong social support respectively (10) .

Substance use: Current use: Using at least one of a specific substance for a nonmedical purpose within the last 3 months.

Ever use of substance: Using at least one of any specific substance for the nonmedical purpose at least once in a lifetime.

Perceived stress: The PSS is a 10-item questionnaire to measure the self-reported level of stress from 0 (never) to 5 (very often) with a range of 0 to 40 for the total score of the scale (25) . Scores ranging from 0-13 considered low stress, 14-26 considered moderate stress and 27-40 considered high perceived stress.

The presence of a known chronic medical illness: When subjects have at least one or more chronic diseases such as Diabetes mellitus, Hypertension, Heart disease, HIV, Epilepsy, Asthma and Cancer. (YES / NO)

Job satisfaction: one's positive perceived emotion on the appraisal of his/her job which is measured by taking the mean (average) score of different 20 items by using a five-point Likert scale (from 1 = very dissatisfied to 5 = very satisfied). The overall job satisfaction score was calculated by taking the average (mean) score of all the subscales. As a result, teachers for whom score below mean considered as dissatisfied and those with mean and above regarded as satisfied. (26).

Salary: Average monthly income 6485 and below Ethiopian birr was considered as poor salary and above 6485 Ethiopian birr were good salary.

Data collection method and tools

Data were collected by using structured self-administered questionnaires which assess socio demographic characteristics, depression levels, presence of stressor, degree of social support, presence of medical illness and family mental illness, levels of income,

Depression was measured by (Patient Health Questionnaire-9), a nine item questionnaire score of 5 and above is considered as having depression with depression severity: (0-4 none, 5-9 mild, 10-14 moderate, 15-19 moderately severe, 20-27 severe. This is questionnaire validity in Ethiopian with Cronbach's alpha 0.84 reliability index 0.98 (27).

Social support was assessed by the OSSS-3 consists of three items questionnaire assessing the level of social support with a sum score of ranges from 3 to 14, According to this, respondents who scored 3–8, 9–11 and 12-14 were considered as having poor, moderate and strong social support respectively. This tool was adapted in an African context. For example, in a validation study of OSS-3 in Nigeria, the internal consistency Cronbach's alpha value was found to be 0.8 which is also valid in Ethiopia (24).

Substance use was assessed by ever use of alcohol, Khat, cigarette and other particular substance for non-medical purpose in life. Current the use of substance will be assessed for the last three months. The tool is adapted in the Ethiopian context with WHO student drug-use questionnaire (28).

Job satisfaction was assessed by JSS for one's positive perceived emotion on the appraisal of his/her job which is measured by taking the mean (average) score of different 20 items by using a five-point Likert scale (from 1 = very dissatisfied to 5 = very satisfied). The overall job satisfaction score will be calculated by taking the average (mean) score of all the subscales and classified as satisfied above average and dissatisfied average or below(25).

Presence of stressors was assessed by perceived stress scale with 10 item questionnaire and valid in Ethiopia with McDonald's Omega value of 0.78 and 0.68 for the PSS-10: factor-1 and PSS-10: factor-2, respectively (25).

Presence of a known chronic medical illness was assessed by yes/ no question for chronic illness such as diabetes mellitus, hypertension, cancer, asthma, kidney disease and others. Family mental illness was assessed by asking whether teachers have family with mental illness and response of yes/ no.

More over teachers was asked whether they have been taken any medication and with a response of yes/no.

Data collection procedure

The questionnaire was prepared in English then translated to Amharic, and retranslated English by psychiatric professionals and language experts to keep its consistency. A valid questioner was used for collect data. One day training was given for four data collectors and one supervisor by the principal investigator on the data collection method, informed consent and confidentiality issues. A pre -test study was conducted one week prior to the actual data collection on 21 (5%) in the sample size at Makisegnit preparatory and high school and the questionnaire was checked for its reliability, clarity, simplicity, and understandability. Regular supervision by the supervisor and principal investigator was carried out. Each day during data collection, filled questionnaires were checked for completeness, accuracy and consistency. Amharic version had been validated in Ethiopia and used in several institutions based as well community-based studies in Ethiopia.

Data processing and analysis

Data were edited, cleaned, coded and entered in to the Epi-data 3.1 version and analyzed by using SPSS 22 versions. Bivariate and multivariate logistic regression analysis was done to identify the associated factors between dependent and independent variables. Variables with p- value less than 0.25 in a bivariate analysis were candidates for multivariate logistic regression analysis. Variables with a p-value of less than 0.05 in multivariate logistic regressions considered as statistically significant. The strength of the association declared by odds ratio with 95% CI and Hosmer-Lemeshow goodness of fit used to check model . Results presented in the form of table, figures & Charts using frequency & summary statistics such as mean, & percentage to describe the study population in relation to different variables.

Results

Socio-demographic characteristics of participants

Out of the proposed 423 samples 328 participants were addressed for study and 320 participants were willing to participate in the study. Due to COVID-19 pandemic, schools were locked down and it was difficult to address remained 95 teachers from proposed sample 423. The overall response rate for the study was 9.5%. The mean age of the participants was 39.3 (Standard deviation $\pm$ 8.8), and 28% were in the age group of 33-38 years. Out of the participants 226 (70.6% were males, 221 (69.1%) were married, about 214(66.6%) had a master’s degree. Most of the participants 274(77.2%) were Orthodox followers. Of the participants 75% had a teaching experience more than 7 years with 72.2% works 6 and below hours per day .Besides 50.6% of participants have 6485 Ethiopian birr and below monthly income. More over about half of the participant 158 (49.1%) have 3-4 families (**table 1**).

Table: 1 Socio-demographic characteristics among high and preparatory public-school teachers in Gondar town, 2020.

Variable	Descriptive		
	Number	Percent	
<u>Sex</u>	226	70.6	
Male	94	29.4	
Female	320	100.0	
Total			
Age	80	25	Mean±S-deviation
24-32	91	28.4	(39.3 ± 8.8)
33-38	73	22.8	
39-45	76	23.8	
46 -60			
<u>Marital status</u>	50	15.6	
Single	221	69.1	
Married	34	10.5	
Divorced	15	4.7	
Widowed			
<u>Religion</u>	247	77.2	
Orthodox	29	9.1	
Muslim	25	7.8	
Protestant	12	9.8	
Catholic	7	2.2	
Other			
<u>Level of education</u>	106	33.3	
Master	214	66.7	
Frist degree			
<u>Work-experience</u>	80	25	
1-6 years	90	28.1	
7-13..	79	24.78	
14-20	71	22.2	
21 and above			

<u>Salary in Ethiopia birr</u>	162	50.6
6485 and Above	158	49.4
Below 6485		
<u>Family size</u>	165	51.6
1-3	155	48.4
4 and above		
<u>Work-hours per day</u>	231	72.2
6 and below	89	27.8
Above 6		

Personal and work- related characteristics of participants

In personal and work related variables showed that about 93(60.3%) and 93 (29.3%) have moderate and high perceived life stress respectively. More than half of participant's 180(61%) have poor social support and 163(51%) were dissatisfied in their job. Above 108 (33.8%) have ever taken substance for no medical purpose. About 239(74%) have been used substance like chat ,cigarettes and alcohol in last three months .Besides 34(10%) have family history of mental illness. Less than 3.5 percent of the participants have chronic medical illness recently (Table2).

Table 2: Distribution of personal and work related variables among high and preparatory public-school teachers in Gondar town, 2020

Variables	Number	Percent
Family mental illness	34	10.2
Yes	284	88.8
No		
social support	180	61.1
poor	100	34
moderate	13	4.4
good		
Levels of stress	34	10.6
Low	193	60.3
Moderate	93	29.1
High		
Job satisfaction	153	47.8
Satisfied	167	52.2
Dissatisfied		
Social support	1	56.3
Poor	80	31.1
Moderate	100	4.1
Good	13	

Behavioral characteristics of participants

Majority of the participants (70%) was used substance such as smoke cigarette, drink alcohol and chewing Khat recently and about 30 % use that substance at their life for non-medical purpose (figure 1) .

Prevalence of depression among participants

Out of 320 high and preparatory public-school teachers in Gondar the prevalence of depression was founded to be 44.7%,Of them with depression severity classification 53.3 %, 30.6 %, 12.2 %, 1.9 % of no - depression, mild, moderate and severe depression respectively (Figure-2)

4.5 Factors associated with depression

To examine the association of independent variables with dependent variable bivariate and multivariate binary logistic regression analyses were done.

In the bivariate analysis , factors including, perceived life stress ,current use substance with 7-13years of work experience and 15-20 years of work experience with Work hours per a day religion and poor social support were significantly associated .

In the final model analysis predictors for depression was perceived life stress with AOR 2.6 95% CI (1.10,6.25) for moderate, AOR 2.96 95% CI (1.29,7.02) for severe perceive stress , AOR 6.2 95% CI (1.33,29.66) for poor social support , AOR 3.04 95% CI (1.75-5.30) for current use of substance and AOR 0.34 95 %CI(0.16,71) work experience for 7-14 years and AOR .45 95 % CI (0.21,0.95) work experience for 15-20 years were significantly associated with p value of less than 0.05 (table 3).

Table: 3 Distributions of results in bivariate and multivariate logistic regression analysis among high and preparatory public-school teachers in Gondar town, 2020.

Variables	Characterstics	Depression		COR (95%CI)	AOR(95%CI)	P-value
		<u>Yes</u>	<u>No</u>			
-						
Age	24-32	37	43	1.00	1.00	0.71
	33-38	36	55	0.86(.45,1.61)	1.45(0.65,3.23)	0.47
	39-4	32	41	0.65(0.35,1.21)*	1.34(0.54,3.31)	0.69
	46 -60	38	38	0.78(0.41,1.48)	1.88(0.68,5.71)	0.31
<u>Religion</u>	Orthodox	107	140	1	1	
	Muslim	14	12	4.56(.54-3.66)	8.69(.88,85.2)	0.23
	Protestant	13	15	5.60(.59-52.53)	10(.91,109.4)	0.7
	Catholic	8	4	6.50(0.68,62)*	9.8(.87,109.64)	0.06
	Other	1	6	12.00(1.05,7.90)	22.4(1.63,10.15)	0.66
<u>Work-experience</u>	1-6 years	45	35	1	1	
	7-13..	31	59	1.32(0.69-2.51)*	0.34 (.16,.71)**	0.01
	14-20	32	47	0.54(0.28,1.02)*	0.45 (.21.95)**	0.00
	21 and above	35	36	0.77(0.36,1.33)	0.79(.37,1.68)	0.24
<u>Work-hours per day.</u>	6 and below	111	120	1	1	
	Above 6	32	57	1.64(0.99-2.27)*	0.34(.35-1.13)	0.12
<u>Perceived stress</u>	Mild	9	25	1	1	
	Moderate	86	107	2.23(.99-5.034)*	2.6 (1.10,6.25)**	0.01
	Sever	48	45	2.96(1.29-7.028)*	3.46 (1.35,8.75)**	0.01
Social support	Good	2	11	1	1	
	Moderate	37	63	3.2(.67,15.37)*	5.31(1.04-26.83)	0.28
	Poor	93	87	5.8(1.26-27.28)*	6.2(1.33,29.66)**	0.04
Current Substance use	Yes	63	80	2.310(1.44,3.70)*	3.05(1.75,5.30)**	0.00
	No	45	132	1	1	

Note ; COR => crude odds ratio, AOR=> adjusted odds ratio, * => significant at p value< 0.25 and **=> was significant at p value < 0.05.

Discussion

The finding of this study revealed that the prevalence of depression among high and preparatory school teachers was (44.7%) 95% CI(39.1-50), with severity of depression 30.6%, 12.2%, and 1.9% mild, moderate and severe depression respectively. Our study result was almost similar to research conducted in secondary school teachers in, Malaysia 43% (21).

The prevalence of depression in this study is higher than studies that were carried in Africa,(Egypt 23.2%(9) and Nigeria 29.3%) (23). A possible reason might be due to differences in tool, PHQ -9 over include duration of symptoms but Beck's depression inventory II over includes a higher score of severity cut off. Compare in the tools, PHQ -9 with a cut of 10 and above depression, over screen individuals as having depression compare to beck inventory cut of ≥ 8 depression (29). PHQ -9 cut of 5 and above have depression, in this study may contribute a higher prevalence of depression.

Study result also higher than a study reported on Europe(England 5.8%,(9) Italy 23.9%) (20), Japan 20.1% (18).The finding of this study was nearly seven fold compared to a study report in England (9). This is might be due to they use cut off point of PHQ-9 depression 10 and above to level depression(24). Higher perceived stress might be contributed to higher prevalence of depression in this study. Another possible reason for the difference might be due to socio-cultural difference large sample size in Europe n=555 in England (9) and higher perceived stress in our study participants.

This study result was lower than a study conducted in India Bangalore 52.6% (10). Possible for the differences might be small sample size (n=105), higher perceived stress and life -style difference, socio-cultural difference.

In this study, it was found that teachers with moderate and high perceived life stress had higher depression than those who have no perceived stress. Developing depression in perceived stress was 2.6 times and 3.4 times higher with moderate and severe perceived stress respectively compare to less stress. It is supported by a study conducted in Malaysia ,(21)India Bangalore (10).

Psychological distress such as perceived stress has a negative impact on health, as perceived stress in working people results in various feelings such as worry, fear and depression(3). Participants in this study have 60.3 % and 29.1% moderate and high perceived stress, which may contribute to a higher magnitude of depression in this study.

This high level of stress among studied teachers must explain by the social constraint that disturbs their teaching practices and their emotional experiences at work lead to depression. If there is perceived life stress, it is believed those stress hormones are produced more than usual which have biofeedback effects on a disturbance in memory, attention and drive. More importantly excessive stress hormones like

cortisol play a role in the reduction of neurotransmitter's which have significance on control mood emotion and pleasure(30).

Poor social support is a predictive of depression in this study. Depression is associated with poor social support 6.2 times higher compared to good social support and it is widely studied as a factor that minimizes the effects of stress, and good social support can enhance resilience to stress. This study result supported by study result in Japan(10) and France (33) lack of colleague support at work was a predictive factor of depression.

Social support is negatively correlated with depression; this implies that social support would alleviate depressive symptoms and relive their psychological stress of daily life and communication. The personal network that provides social support maintain emotional wellbeing and buffer effects of adverse effects(31). Good social support decrease in life risky behavior prevents negative life appraisal and social disengagement(13,32).

Current uses of substance developed depression 3 times higher than no current use of substances. Despite depression leads to substance use or Vis versa is controversial, the basic disease model of addiction says substance use can change the brain drastically that can't regulate itself. Moreover substance use changes normal physiological adaption of the reward system play a role in control emotion, drive, and mood, reasoning and decision-making process. Different studies reviled people with depression have low dopamine and serotonin. Drug abuse also alters these neurotransmitter levels(34).

As discussed above most of participants (70%) currently use substances. This might be contribute higher magnitude of depression in this study compared to Egypt (9) and Nigeria (23). In addition, we found that work experience 7-13 years and 15-29 years were predictive factor for depression. Work experiences were associated to teacher's depression.

The likely hood of developing depression in teacher's work experience of 7-14 and 15-20 years were 34% and 45 % less likely than work experience 1-6 years respectively. Different literature report out, workers at early and late life are more commonly depressed, it is unsurprised that teachers in this age group are expected to have a higher work load, multiple responsibilities, role conflicts, and significant loss, physical and psychological traumas might experience. These are directly or indirectly induce depression(30).

Conclusion

The prevalence of depression was found to be high. Therefore, emphasis should be given for teachers who have poor social support, who have perceived stress, work experience between 7-20 years, and current substance users. Then we recommend that early screening and treatment of depressive patients have to be a routine activity to be conducted in schools and link to psychiatric clinics.

Declarations

Authors' contributions

AA, WG and MW involved in the design, conduct, and analyses of the thesis and manuscript preparation. AA and MB participated in drafting and preparing the manuscript. All authors read and approve the final manuscript.

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Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics approval and consent to participate

The study was approved by the ethical review board of University of Gondar. Participants were fully informed about the study and written informed consent was taken from each participant during data collection. Information was collected anonymously and kept confidential throughout the study.

Consent for publication

Not applicable.

Competing interests

All authors declare that they have no competing interests.

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Abbreviations

AOR	Adjusted odd ratio
BSC	Bachelor of Science
DF	Degree of Freedom
GBD	Global Diseases Burden
JSS	Job Satisfaction Scale
MDD	Major Depression Disorder
COR	Crude Odds Ratio
OSS	Oslo's Social Support
PHQ	Patient Health questioner
PSS	Perceived Stress Scale
SPSS	Statistical Package for Social Science
U.S	United State
WHO	World Health Organization

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Figures

Figure 1

Extent of substance use history among high and preparatory public-school teachers in Gondar town, 2020

Figure 2

Level of depression severity classification among high and preparatory public-school teachers in Gondar town, 2020