

## Geriatric Depression in Ethiopia: Prevalence and Associated Factors

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### Abstract

**Background:** Depression represents one of the most profound human problems currently facing the global health care system and estimated to cover 5.7% of the total burden of disease in 2020. Though occurs at any age, it is the most common mental health disorder in the elderly. There is limited information in this regard in Ethiopia. This study was aimed to determine the prevalence and associated factors of depression among old age population in Harar town.

**Methods:** A community based cross-sectional study was conducted in March 2012. Three hundred and fifty two respondents were participated in the study. Systematic random sampling technique was applied to select the study participants. Geriatric depression rating scale (GDS-15) was used to assess the depression. Respondents who had a score of five and above on the GDS-15 were considered as depressed.

**Results:** The prevalence of depression was 28.5%. Being female [AOR=4.11, 95% CI(1.53,11.07)], not married [AOR=10.1, 95% CI(3.89,26.18)], those with no formal education [AOR =3.6, 95% CI(1.45,9.07)], elderly who attended primary school [AOR=0.28,95% CI(0.1,0.78)], living alone [AOR=3.46,95% CI, (1.32,9.12)], those who had chronic illness [AOR=3.47, 95% CI(1.5,7.7)], elderly with cognitive impairments [AOR=2.77, 95% CI,(1.18,6.47)], as well as substance use [AOR=2.6,95%CI(1.07 ,6.28)] were factors associated with depression.

**Conclusion:** About one third of the elders were found to be depressed. Designing prevention and intervention strategies addressing the identified factors is important. Better emphasis to the most vulnerable group of the population is required.

**Keywords:** Depression; Geriatric depression; Old age; Ethiopia; Health

### Introduction

Depression is a disorder that is characterized by sadness, changes in appetite, altered sleep patterns, feelings of dejection or hopelessness and sometimes suicidal tendencies. It represents one of the most profound human problems currently facing the global health care system [1-7].

The world health organization (WHO) has categorized depression as among the most disabling clinical diagnosis in the world and estimated that by the year 2020 if current trends continue the burden of depression will increase to 5.7% of the total burden of disease [8].

Though occur at any age; depression is the most common mental health disorder in the elderly [9-11]. The overall prevalence rate of depressive disorders among the elderly estimated to range between 10% and 29% depending on cultural situations [12-23].

Survey conducted in rural Chinese reported that the point prevalence of mild depression was 26.5% and 4.3% for severe depression [24].

Two community based study done in 2004 and 2005 in central Malaysia reported the prevalence of depression in elderly were 8% in rural and 6% in urban communities respectively [25-27].

Study conducted in UAE nationals in 2000 reported that the point prevalence of depression among elderly was 20.2 percent [28]. Another cross-sectional national survey conducted in the elderly population of Saudi Arabia showed the prevalence of depression was 39 percent [29].

Community based study done in elderly African Americans in Indianapolis and elderly Yoruba in Ibadan, Nigeria reported 14.5% and 21.4% respectively [30]. Another Cross-sectional study done in 2003 in Nigeria reported that lifetime and 12-month prevalence estimates of major depressive disorder were 26.2% and 7.1% respectively [31].

Survey carried out on old people at a nursing home in Tunisia revealed that prevalence of depression in the elderly was 51.4% [32]. Study done in Egypt in 2009 reported that the point prevalence of depression in elderly age 60 and above was 46.6 percent [33].

Various factors were reported to be associated with the development of depression. Being unmarried, being female, low educational status, low income, living alone, bereavement, illnesses, and substance use were reported attributes of depression which could present variably in different contexts [11,22,23,25,27-30,33,34-36].

Depression among elders causes significant problems. It may accelerate the course of concurrent illness and amplify cognitive impairment and functional disability [1,4,8,9,11,12,37]. Epidemiologic studies suggest that depression disorders have also association with increased risk of suicide [38-42].

In Ethiopia, mental disorder was reported to account for 11% of the total burden of diseases [43]. Despite the priority and launching national mental health policy of Ethiopia, interventions against the problem are still limited. Among the main reason is lack of data on the extent of the

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**Received:** October 06, 2016; **Accepted:** November 23, 2016; **Published:** November 30, 2016

**Citation:** Girma M, Hailu M, Wakwoya A, Yohannis Z, Ebrahim J (2016) Geriatric Depression in Ethiopia: Prevalence and Associated Factors. J Psychiatry 20: 400. doi: [10.4172/2378-5756.1000400](https://doi.org/10.4172/2378-5756.1000400)

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problem [4,26,34]. This study was aimed to determine the prevalence of depression and identify the contributing factors among elders in Harar town, Ethiopia.

## Methods

### Study design and period

Community based cross sectional study was carried out in Harar town from March to April 2012. Harar town is located 526 km east to the capital city of Ethiopia with a total population of 183,344 of which 9,625 are 60 and above years of age.

### Sample size and sampling procedures

The study sample size was determined by a single population proportion formula with the assumptions of 95% level of confidence, 5% margin of error, prevalence of depression 21.4% [28] and an added 10% non-response rate. With this calculation, the final sample size was 352.

Systematic random sampling was employed to select the samples. When selected individual did not fulfill eligibility criteria, the next person was contacted and when there were more than one elderly in the house selection were done by lottery method. Number of study subjects selected in each village was proportional to elderly population size in each village.

### Data collection procedures

The questionnaire was derived from different literature that included the socio-demographic characteristics, history of substance use, clinical factors, social issues and questions addressing depression called Geriatric depression rating scales-15 (DRS-15). Data was collected by face to face interview using a semi-structured and pre-tested questionnaire. The level of depression was measured using DRS-15 items (with a 15 days recall period). The tool (DRS-15 items) reflects the multidimensional nature of depression. In this study, a cut of point of 5 and above was taken to classify depressed [44].

### Data quality control

The data collectors and supervisors were trained on data collection tool, ethics and approach in interviewing techniques. The questionnaire was first prepared in English and then translated into Amharic by psychiatrist and professional translators and then back-translated to English. Questionnaires were pretested in nearby town on similar population among (5%) of the actual sample. The supervisors traveled together with the data collectors to the study sites and supervised the actual data collection and checked the completeness and clarity of the filled questionnaire, then passed to the principal investigator. Manual and computerized data cleaning was done before analysis.

### Data analysis

Coded data from semi-structured questionnaire were entered to Epi-info version 6.0 and transferred to SPSS (V16.0) for analysis. For testing the statistical significance, odds ratio with 95% Confidence Level was calculated for each independent variable against the dependent variable using the Bivariate logistic regression. Multivariable logistic regression analysis was performed for those variable shown p-value of less than or equal to 0.05 in the Bivariate analysis to control for the confounders and identify the independent factors. A p-value less than or equal 0.05 was used to declare the presence of statistical significance.

## Result

### Socio-demographic characteristics of the respondents

A total of 344 respondents with a response rate of 97.7% were

studied. Majority (61.9%) of the respondents were females. Respondent's age ranges from 60 to 94 with mean age of  $69.56 \pm 7.8$  (SD) and (34.4%) were between 60-64 years of age. About (48.3%) were orthodox in religion and most were retired (Table 1).

### Substance use and clinical related factors

40.1% of the study subjects had history of using substances of any type at least once in the last three months of which majority 94 (27.3%) used khat (Catha Edulis) (Figure 1).

About 33.1% of the respondents were presented with chronic medical illness and 24.1% had family history of depression (Table 2).

### Depression prevalence

The overall prevalence of depression among old age was 28.5% of which 61.9% and 48.0% were females and those between ages 70-74 years respectively.

### Depressive symptoms distribution

Feeling in helpless situations, fear that something bad going to

Variables (n=344)	Freuency	(%)
Gender	Female	213 (61.9)
	Male	131 (38.1)
Age (years)	60-64	120 (34.4)
	65-69	74 (21.2)
	70-74	66 (19.1)
	75+	84 (24.3)
Ethnicity	Amhara	158 (45.9)
	Oromo	107 (31.1)
	Harari	49 (14.3)
	Others <sup>a</sup>	30 (8.7)
Educational status	No formal education	105 (30.5)
	Primary education	116 (33.7)
	Secondary education and above	123 (35.8)
Marital status	Not married(single/divorced/widowed)	96 (27.9)
	Married	248 (72.1)
Religion	Orthodox	166 (48.3)
	Muslim	146 (42.4)
	Others <sup>b</sup>	32 (9.3)
Occupation	Employed	116 (33.7)
	Retired /not working/	175 (50.9)
	House wife	53 (15.4)
Monthly income	150-350	117 (34.01)
	351-550	113 (32.84)
	≥551	114 (33.15)
Living arrangement	Living with(spouse/children )	258 (75)
	Living alone	86 (25)

Others<sup>a</sup>: Somali, Argoba, Silte, And Gurage Others<sup>b</sup>: Protestant, Catholic and Traditional believers  
Not married: single, divorced and widowed

**Table 1:** Socio-demographic variables of respondents (n=344), Eastern Ethiopia, Harar Town, March 2012.

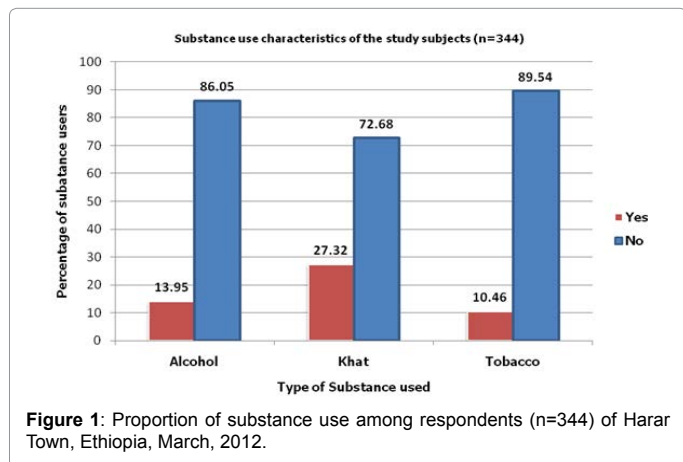


Figure 1: Proportion of substance use among respondents (n=344) of Harar Town, Ethiopia, March, 2012.

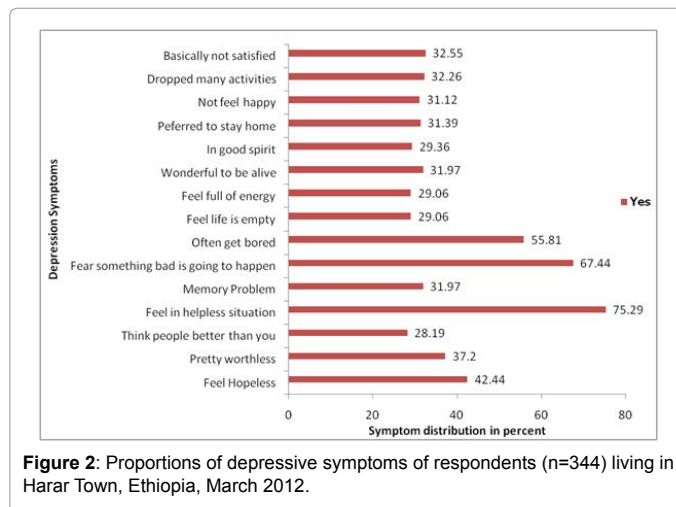


Figure 2: Proportions of depressive symptoms of respondents (n=344) living in Harar Town, Ethiopia, March 2012.

Variables (n=344)	Freuency	(%)
Substance use in the previous 3 months		
khat	94	(27.32)
Alcohol	48	(13.95)
Tobacco	36	(10.46)
Chronic medical illness		
Yes	114	33.1
No	230	66.9
Family history of depression		
Yes	83	24.13
No	261	75.87
Cognitive impairments		
Yes	67	19.47
No	277	80.53

Table 2: Substance use and clinical related factors of the respondents (n=344), Eastern Ethiopia, Harar Town, March 2012.

happen and often get bored 75.29%, 67.44% and 55.81% respectively were observed the most frequent depressive symptoms among the study subjects with thinking that most people are better than them observed less frequent (28.19%) (Figure 2).

### Factors associated with depression

Different factors associated with depression among elders were identified. A higher level of depression was [1(1.53, 11.07)]. Report of not married history was significantly associated with depression [AOR=10.1, 95% CI(3.89,26.18)] and those with no formal education [AOR =3.6, 95% CI(1.45,9.07)], who attended primary school [AOR=0.28, 95% CI(0.1,0.78)], those living alone [AOR=3.46, 95% CI(1.32,9.12)], those who had chronic illness [AOR=3.47, 95% CI(1.5,7.7)], those with cognitive impairments [AOR=2.77, 95% CI(1.18,6.47)], as well as those who had history of substance use [AOR =2.6, 95% CI(1.07 ,6.28)] were also found more likely depressed. In the study, occupational status and family history of depression was not significantly associated with depression (Table 3).

### Discussion

About one third of the study participants were found to be depressed. The finding of this study is higher than what was reported from Japan, Finland, Central Malaysia and UAE [1,17,21,25,28]. The difference could be attributed to socio-economic, cultural and difference of measurement scales. However, this finding was consistent

Variables (n=344)	Depression		COR (95% C.I.)	AOR (95% C.I.)
	Yes	No		
Gender				
Male	85	128	6.02(3.19,11.37)	4.11(1.53,11.07)*
Female	13	118	1.00	1.00
Educational status				
No formal education	42	63	2.26(1.27,4.01)	3.6(1.45,9.07)*
Primary education	28	88	1.08(0.59,1.96)	0.28(0.1,0.78)*
Secondary education and above	28	95	1.00	1.00
Marital status				
Not married(single/divorced/widowed)	61	35	9.93(5.77,17.10)	10.1(3.89,26.18)*
Married	37	211	1.00	1.00
Occupational status				
Employed	20	96	1.00	1.00
Retired /not working/	64	111	2.76(1.56,4.90)	1.98(0.82,4.78)
House wife	14	39	1.72(0.79,3.75)	1.74(0.51,5.9)
Living arrangement				
Living with(spouse/children )	55	31	8.87(3.40,10.18)	3.46(1.32,9.12)*
Living alone	43	215	1.00	1.00
Substance use				
Yes	52	86	2.10(1.3,3.38)	2.6(1.07,6.28)*
No	46	160	1.00	1.00
Chronic medical illness				
Present	58	56	4.92(2.98, 8.12)	3.47(1.5,7.7)*
Absent	40	190	1.00	1.00
Family history of depression				
Yes	29	54	1.49(0.88,2.53)	0.52(0.2,1.33)
No	69	192	1.00	1.00
Cognitive impairment				
Yes	43	24	7.23(4.04,12.91)	2.77(1.18,6.47)*
No	55	222	1.00	1.00

Table 3: Factors associated with elderly depression among respondents (n=344) living in Harar Town, Eastern Ethiopia, March 2012.

with previous studies done in Greece, Chinese, Sri Lankans and Nigeria [19,22,24,31].

Furthermore, the result of this study was lower than studies done in Saudi Arabia, Tunisia and Egypt [29,32,33]. This variation could be due to the study done in Tunisia and Saudi was institutional based while the Egyptian study involved study subjects from rural residences which could inflate the result.

The likelihood of depression was higher among females which is consistent with reports from previous studies [11,22,23,28,29]. This could be explained by the fact that most of elderly women lost their spouses and were widowed. Moreover in developing countries like Ethiopia, the situation is even worse as most elderly women are financially dependent on their spouses and are from the lower socioeconomic group.

Elderly subjects who were not married (single, divorce & widowed) showed more than ten times likely hood to develop depression than married. This finding is consistent with many studies which stated that elderly not married are more liable to develop depression [11,22,23,28-34]. This is attributed to the perceived loneliness sensation and loss of social support.

In this study elderly with no formal education were more than three times more likely to be depressed compared to those with Secondary school and above. This is consistent with previous studies [11,29,34]. Furthermore, elderly who attended primary school were seventy two percent less likely to develop depression than who attended secondary school and above. This is consistent with study done in Egypt. This could be due to the fact that those elderly with higher education might be employed to different organization and had passed good social interaction but they might be depressed when retired because of decline in social interaction and feeling of inadequacy.

Reports from this study revealed that elders living alone were more than three times likely to develop depression than those who live with family members. This is in line with reports from previous similar studies [22,29,31,33]. This could also be as a result of social isolation which leads to the development of depression among the elderly.

The current study also found that the likelihood of getting depressed is higher among elderly who have chronic illness and cognitive impairment. This is in line with previous studies [25,30,35,36] and could be attributed to the fact that physical illness may increase levels of functional disability which in turn may increase the development of emotional problems and/or depression.

The likelihood of depression is higher among substance users with Khat predominance. This built on what was reported by different researchers where substance use was found to be significant predictor of mental health problems. This issue is interwoven due to the fact that substance use is related to different facets of health problems. Moreover, because this study is a cross-sectional, it is difficult to conspicuously identify in which direction the causality is prevailing and it is beneficial to consider interventions addressing both.

In the study, respondents age, ethnicity, religion, occupation, income and family history of depression were not significantly associated with depression.

This study was not without limitations. Reports for some of the questions were past history or encounters which are prone to recall bias. Variables like Khat chewing and other substances are by nature a sensitive issue and social desirability bias is unavoidable

## Conclusion

About one third of the elders were found to be depressed. Designing

prevention and intervention strategies addressing the identified factors is important. Better emphasis to the most vulnerable group of the population is required.

## Ethical consideration

Ethical clearance was obtained from the Institutional Research Ethics Review Committee (IRERC) of University of Gondar and Amanuel Specialized Mental Hospital. A letter introducing the objective of the study, and maintaining the confidentiality was attached as the cover page of the questionnaire.

Participants were consented for participation in the study. The right to refuse was clearly stated to the respondent if they are not volunteer to participate in the study.

## Competing interest

The authors declare that we have no conflict of interests.

## Author's contribution

Mulugeta Girma, Million Hailu and Dr. Asfaw Wakwoya designed the study, collected data and participated on data analysis and preparation of the manuscript. Jemal Ebrahim and Zegeye Yohannis participated in analysis, drafted and prepared the manuscript. All the authors approved the final version of manuscript.

## Acknowledgments

The authors would like to acknowledge University of Gondar and Amanuel Specialized Mental Hospital for financial support. We also would like to thank study subjects who volunteered to participate and take their time to respond to the questionnaire.

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**Citation:** Girma M, Hailu M, Wakwoya A, Yohannis Z, Ebrahim J (2016) Geriatric Depression in Ethiopia: Prevalence and Associated Factors. *J Psychiatry* 20: 400. doi: [10.4172/2378-5756.1000400](https://doi.org/10.4172/2378-5756.1000400)

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