



East African Journal of Health and Science

eajhs.eanso.org

Volume 8 Issue 2, 2025

Print ISSN: 2707-3912 | Online ISSN: 2707-3920

Title DOI: <https://doi.org/10.37284/2707-3920>



EAST AFRICAN
NATURE &
SCIENCE
ORGANIZATION

Original Article

Prevalence of Depression and Associated Factors among Adult Patients Admitted to Medical and Surgical Wards at Bossaso Town Hospitals, Puntland, Somalia

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Article DOI: <https://doi.org/10.37284/eajhs.8.2.3244>

Date Published: **ABSTRACT**

02 July 2025

Keywords:

Prevalence,
Depression,
Bossaso
Associated
Factors,
Bossaso,
Somali.

Depression disorder presents with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, poor concentration, problems with thinking and making decisions. Further, to the best of our knowledge, no study has been conducted to determine depression and associated factors among adult patients admitted to medical and surgical wards in the study area. Objective: To assess the prevalence of depression and associated factors among adult patients admitted to medical and surgical wards at Bossaso town hospitals, Puntland, Somalia. Method: A hospital-based cross-sectional study design was conducted among 416 patients admitted to medical and surgical wards from June 2022 to July 2022. Three hospitals were selected using simple random sampling. Sample frame: The study participants were selected by using a simple random sampling technique using hospital registration books. Depression was assessed Patient Health Questionnaire - 9 item. Data was coded and entered into EpiData version 3.1 software and exported to SPSS version 20 for analysis. Logistic regression model was used to identify independent predictors of depression, and a statistically significant result was determined at a p-value less than 0.05. Results: The prevalence of depression was found to be 20.9% (95% CI: 16., 24.0). In the multivariable logistic regression, female sex (AOR = 2.1, 95% CI: 1.14-4.0), duration of hospital stays 1-2 week (AOR = 2.7, 95% CI: 1.45-5.31), admission at surgical ward (AOR = 2.6, 95% CI: 1.48-4.56), previous history of mental illness (AOR=2.5,95% (1.41-4.75) and being cigarette smoking (AOR = 3.0,95% CI: 1.60-5.68) were factors significantly associated with depression. Conclusion: The prevalence of depression among admitted patients was high. Female sex, duration of hospital stays, admission to surgical ward, previous history of mental illness and being cigarette smoking were factors significantly associated with depression.

APA CITATION

Salaad, S. M. & Hussein, A. M. (2025). Prevalence of Depression and Associated Factors among Adult Patients Admitted to Medical and Surgical Wards at Bossaso Town Hospitals, Puntland, Somalia. *East African Journal of Health and Science*, 8(2), 58-70. <https://doi.org/10.37284/eajhs.8.2.3244>.

CHICAGO CITATION

Salaad, Safia Mohamed and Asma Mohamed Hussein. 2025. "Prevalence of Depression and Associated Factors among Adult Patients Admitted to Medical and Surgical Wards at Bossaso Town Hospitals, Puntland, Somalia". *East African Journal of Health and Science* 8 (2), 58-70. <https://doi.org/10.37284/eajhs.8.2.3244>

HARVARD CITATION

Salaad, S. M. & Hussein, A. M. (2025). "Prevalence of Depression and Associated Factors among Adult Patients Admitted to Medical and Surgical Wards at Bossaso Town Hospitals, Puntland, Somalia", *East African Journal of Health and Science*, 8(2), pp. 58-70. doi: 10.37284/eajhs.8.2.3244.

IEEE CITATION

S. M., Salaad & A. M., Hussein "Prevalence of Depression and Associated Factors among Adult Patients Admitted to Medical and Surgical Wards at Bossaso Town Hospitals, Puntland, Somalia", *EAJHS*, vol. 8, no. 2, pp. 58-70, Jul. 2025.

MLA CITATION

Salaad, Safia Mohamed & Asma Mohamed Hussein. "Prevalence of Depression and Associated Factors among Adult Patients Admitted to Medical and Surgical Wards at Bossaso Town Hospitals, Puntland, Somalia". *East African Journal of Health and Science*, Vol. 8, no. 2, Jul. 2025, pp. 58-70, doi:10.37284/eajhs.8.2.3244.

INTRODUCTION

Depression disorder presents with depressed mood, loss of interest or pleasure, decreased energy, feelings of guilt or low self-worth, disturbed sleep or appetite, poor concentration, problems with thinking and making decisions, and, in severe stages, recurring thoughts of death or suicidal (1). Everyone has feelings of sadness and unhappiness from time to time, but when these depressed feelings become overwhelming and lead to physical and mental deterioration, they are referred to as depressive disorders (2). Depression is a very painful and difficult human experience (3). It's a leading cause of morbidity, and it's often linked to a drop in social, occupational, and interpersonal functioning (4). It is also a major cause of disability worldwide and is more disabling than angina, arthritis, asthma, and diabetes mellitus (5).

Depression has many possible causes, including mood disturbance, genetic vulnerability, chronic stressful life, use of psychoactive substances, and medical problems. It is believed that several of these forces interact to bring depression (1),(6). According to the World Health Organization estimate, on average, 15% of global populations experience depression once or more in their stay of

life (7). In 2017, the World Health Organization (WHO) report showed that the prevalence of depression ranged from 9 to 27% across different regions (8).

In many countries, the vast majority of people with depression symptoms do not receive any care. Even in developed countries, nearly half of patients with depression do not get therapy (12), (13). Depression can affect everyone, is not an exclusive disease, and appears in both sexes and in all age groups and races. In addition to its hereditary aspects, it is also caused by social and environmental factors (14). Depression is a strong predictor of moderate cognitive impairment in healthy people (15). It also impairs one's ability to function, lowers one's quality of life, hinders the body's recovery from sickness, and raises the risk of suicide (10). Approximately 90% of those who die by suicide have at least one mental diagnosis, with depressive illnesses being the most typically linked to suicidal conduct (16).

Depression raises the risk of Chronic heart failure, especially in those who are already at risk, e.g., those with systolic hypertension and cardiovascular disorders (17). Depression may become a severe medical condition. It can cause the affected person

to suffer greatly and function poorly at work, at school, and in the family. At its worst, depression can lead to suicide. Over 700,000 people die due to suicide every year (18, 19)

Globally, depression is a leading cause of major public health problems. This suggests that depressive disorders may become the second most disabling disease of mankind by the year 2020 (20). The WHO has reported that about 450 million people worldwide suffer from mental illness, and one in four people meets criteria for mental illness at some point in their life. Among the mental disorders, depression is a disease of global burden, affecting 350 million people worldwide (8).

According to the World Mental Health Survey, 15 % of the population in high-income nations is likely to develop depression during their lifetime, compared to 11 % in low- and middle-income countries (21). Several factors could play a role in the development of depression secondary to medical and surgical illnesses. These include repeated hospital admission history, poor social support, long hospital stay and previous history of mental illness (22). The consequences of psychiatric morbidity, particularly depression, if it is not diagnosed and treated, can be severe. These include suicide, loss of jobs and relationships, loss of productivity, and worsening of physical health, including an increased risk of myocardial infarction (23).

Psychiatric disorders affect approximately 30% of patients admitted to medical or surgical wards and are a major cause of morbidity, mortality, low adherence, functional disability, and higher health care costs.¹⁻⁵ Early diagnosis and treatment of psychiatric comorbidity can have a positive influence on these aspects (24). In Sub-Saharan Africa, 15 to 30 % of the population suffers from depression (25), and in Ethiopia, it accounts for 9.1% (21). In Africa, available evidence suggests that the prevalence of depression is high in primary care settings and often goes unrecognised, although depression is treatable, treatment is often

unavailable, especially in low- and middle-income countries (26).

In Ethiopia, depression was found to be the seventh leading cause of disease burden (27). and its prevalence has increased in hospitals compared to the community setting because the hospital environment itself is stressful (21). At its worst in Somalia, depression can lead to suicide; over 5000 people die due to suicide every year. Suicide is the leading cause of death in Somalia, especially among the young generation (28). According to a situation analysis by the WHO in 2010, Somalia had one of the highest rates of mental illness in the world, with one-third of Somalis suffering from some sort of mental illness. Despite these dire numbers, the country lacks proper mental health facilities, with only five low-capacity psychiatric hospitals, the majority of which are located in Somaliland (28).

In Somalia, mental health services are insufficient in terms of the number of facilities, qualified staff, and geographical coverage, psychotropic drugs are not always available, and there are serious concerns about the staff's ability to properly prescribe them (28).

However, Research into depression symptoms and their determinants among people with medical and surgical patients in Somalia is limited because of a shortage of psychiatrists and other mental health professionals, such as clinical psychologists and social workers, and also though of high mortality and morbidity from depression in the country, studies of prevalence of depression and associated factors are limited.

Further, to the best of our knowledge, no study has been conducted to determine depression and associated factors among adult patients admitted to medical and surgical wards in the study area. Taking this into account, research to assess the prevalence of depression and associated factors among adult patients admitted to medical and surgical wards at Bossaso town hospitals, Puntland, Somalia.

METHODOLOGY

A Hospital-based cross-sectional study was conducted with a quantitative approach to identify Depression and associated factors in Adult Patients Admitted to Medical and Surgical Wards at Bossaso Town, Bosaso City, from June 2022 to July 2022. The city is in the northeastern Bari region of Somalia; it is commercial and one of the most populated cities in Puntland State (Somalia). The city has six hospitals (one governmental hospital and five private hospitals), 8 health centres, and various medical and dental clinics.

Source Population

All adult patients aged 18 years and above admitted to the medical and surgical wards at Bossaso Town Hospitals.

Study Population

Selected adult patients who are admitted to the medical and surgical wards of the selected hospitals in Bossaso Town during the study period of the study population.

Inclusion criteria

The study included all admitted adult patients aged ≥ 18 of the selected hospitals.

Exclusion criteria

Those who were unable to communicate and unconscious patients because of the severity of illness, the outpatient department (OPD) and those who were in the operating room during the study period were excluded from the study.

Sample Size Determination

Sample Size Determination for 1st Objective

The minimum required sample size of this study was determined by using the single population proportion formula and was estimated by taking a 53.9% prevalence of Depression among adult patients. The formula shown below was used to determine the sample size prevalence of depression

and associated factors among adult patients admitted to medical and considering a 95% confidence interval (CL) and 5% margin of error, the sample size was calculated as follows:

$$n_i = (Z^2 \times p \times (1 - p)) / d^2$$

There is no study which determines the prevalence of depression among adult patients admitted to medical and surgical wards in Somalia. The sample size was calculated based on the figure found from a study conducted in Ethiopia that showed a prevalence of depression to be 53.9% among adult patients admitted hospital (11)

$$n_i = (Z^2 \times p \times (1 - p)) / d^2$$

$$n_i = (1.96)^2 \times (0.539) \times (1 - 0.539) / (0.05)^2$$

$$n_i = (3.8416) \times (0.584) \times (0.461) / 0.0025$$

$$n_i = 382$$

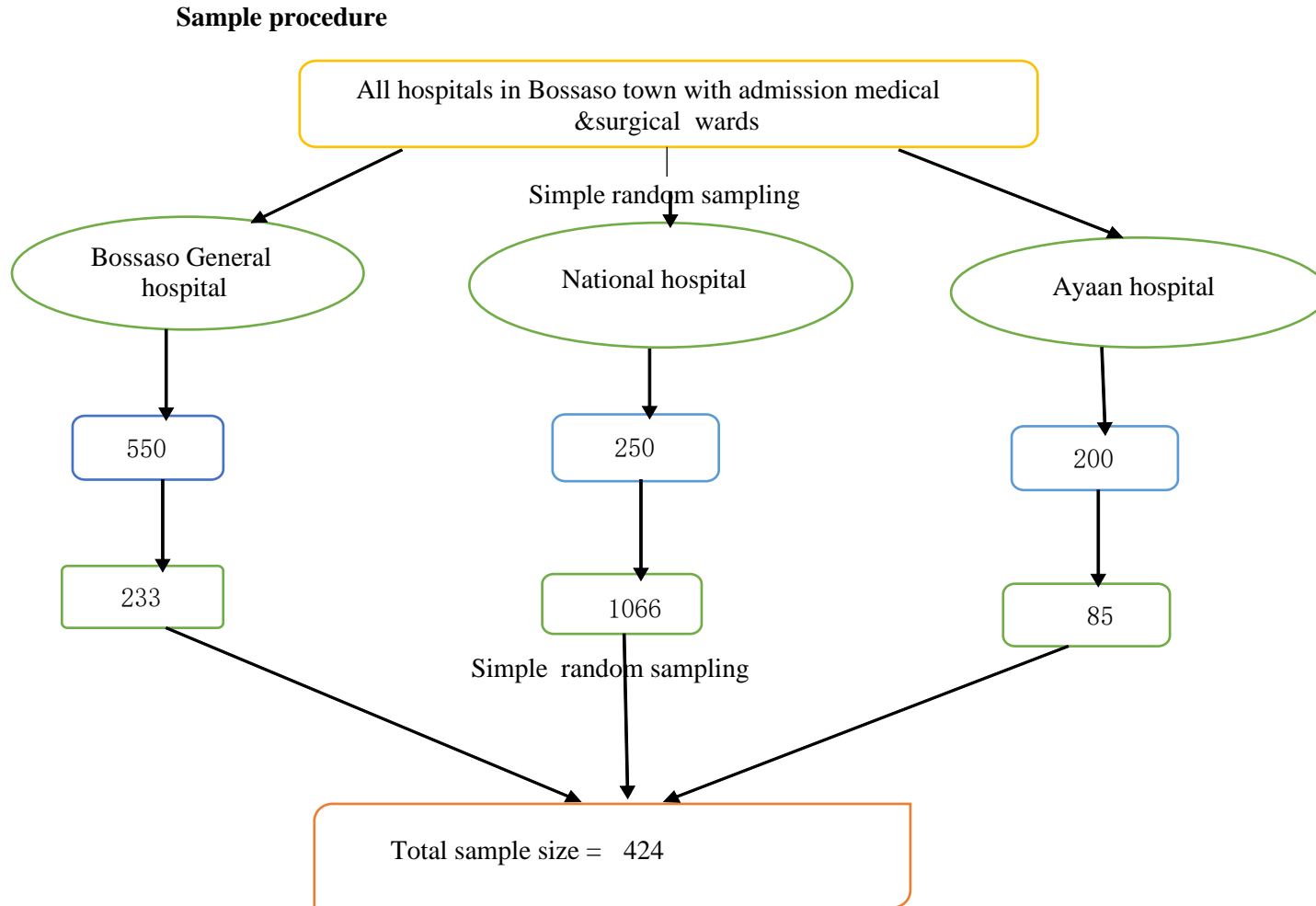
A total sample size of 382 samples, plus a 10% non-response rate was included in the study

Total sample size = 424

Sampling Technique and Procedures

In Bossaso town, there are 7 hospitals, including (public & private), that give effective service to all patients admitted in both two wards, of which three were selected using a lottery method by simple random sampling. The hospitals were the National Hospital, Ayaan Hospital and Bossaso General Hospital. Then, every selected hospital was allocated proportionally to get a convenient sample size. The study was conducted among adult patients admitted to the medical and surgical wards of the selected hospitals. The study participants were selected by using a simple random sampling technique using hospital registration books.

Figure 1: Schematic Presentation of the Sampling Procedure of Prevalence of Depression among Adult Patients Admitted Medical and Surgical Wards at Bossaso Town Hospitals, Puntland, Somalia.



Data Collection Instruments

Patient Health Questionnaire-9 -9 (PHQ-9) was used to measure depression status in clients that are adopted in similar studies. It has 9 items with a value from 0 to 3. Not at all = 0, several days =1, and More than half the day = 2, nearly every day =3. By summing the value, the depression status was determined as depression or not, and its levels were determined as mild, moderate, moderately severe, and severe depression. The PHQ-9 has reliability, validity, and sensitivity of 88% and specificity of 88% for depression diagnosis (11).

In addition, the Oslo 3-item social support scale was used to assess different levels of social support by measuring the number of individuals the respondents feel close to, other people's interests and concerns, and how easy it is to get practical aid from others. The sum score scale comprised three major categories: "poor social support" (3–8), "moderate support" (9–11), and "strong support" (12–14).

Procedure of Data Collection

Data were collected by interviews and a structured questionnaire first prepared in English and translated to local languages Somali for better understanding by the data collectors and respondents. The questionnaire was then back-translated into English to check for its consistency.

Data Quality Control

The questionnaire was initially prepared in English and was translated into the Somali language. Its proper design was checked for any inconsistencies or distortions in the meaning of words and concepts. Pre-test 5% was done in Kalkal hospital, and training was given for the data collectors with an academic background of a degree in nursing/diploma in midwifery and one coordinator outside of study in the hospital. Before the actual data collection. Every day after data collection, questionnaires were reviewed and checked for completeness and relevance by the supervisors and

principal investigator, and the necessary feedback was offered to data collectors prior to starting the next morning's data collection. Data quality was also ensured during data coding, cleaning, entry into the computer, and during analysis.

Data Processing and Analysis

The completeness of the data was checked manually and coded accordingly. The coded and cleaned data were entered into a computer using EpiData version 3.1 and transferred to SPSS version 20. After the completion of data were cleaned before analysis. Description of frequency, mean, median, proportion and SD was done for the selected variables. A binary logistic regression model was employed to identify factors associated with depression among adult patients admitted to medical and surgical wards.

Initially, bi-variate analysis was done, and variables with a p-value less than 0.25 were identified as candidates for multivariate analysis. Then, multivariate analysis was done, and the adjusted odds ratio was computed and interpreted. A p-value less than 0.05 is a cut-off for determining the significance of the associated results of the study were presented in text, tables and graphs.

Multi-col-linearity was checked by the variance inflation factor (VIF), and successfulness of the model fit was checked by Hosmer-Lemeshow test.

RESULTS

Socio-demographic Characteristics of Study Participants

Out of 424 samples, 416 adult patients were interviewed, with a response rate of 98.1%. The mean age of respondents was 33.9 years with SD ± 10.4 . of the study participants were female 247(59.4%) and almost half 247(59.4%) of study participants were from urban. concerning marital status, 220(52.9%) were married. 152(36.5%) of respondents were not able to read and write. Regarding the occupational status, 133(32.0%)

were housewives. Almost half, 218(52.4%) of study participants were less than 100 USD (Table 1)

Table 1: Socio-demographic Characteristics of Adult Patients Admitted to Medical and Surgical Wards at Bossaso Town Hospitals, Puntland, Somalia

Sn	Variable	Category	Frequency	Percentage %
1	Sex	Male	169	40.6
		Female	247	59.4
2	Marital status	Single	120	28.8
		Married	220	52.9
		Divorced	43	10.3
		Widowed	33	7.9
3	Education status	Can't read and write	152	36.5
		Can read and write	99	23.8
		Primary	53	12.7
		Secondary	72	17.3
		College/university	40	9.6
4	Occupation status	House wife	133	32.0
		Government employee	121	29.1
		Daily labor	78	18.8
		Private sector labour	57	13.7
		Others	27	6.5
5	Residence	Urban	247	59.4
		Rural	169	40.6
6	Monthly income	<100USD	218	52.4
		100-200USD	116	27.9
		≥200USD	82	19.7

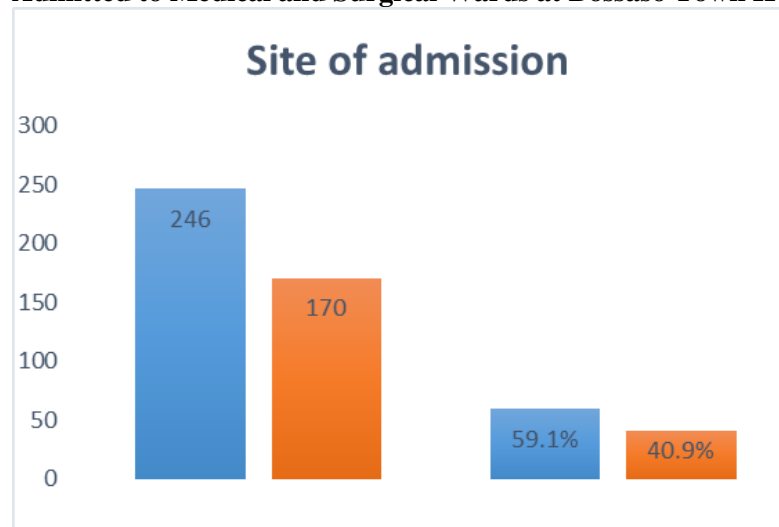
Clinical and Psychosocial and Substance Use Characteristics

More than half, 246 (59.1%) of the study participants were admitted to the medical ward, and 301 (72.4%) of the study subjects had no previous history of mental illness. Regarding the hospital stay, 201(48.3%) had stayed for less than a one-week duration as inpatients. Out of study

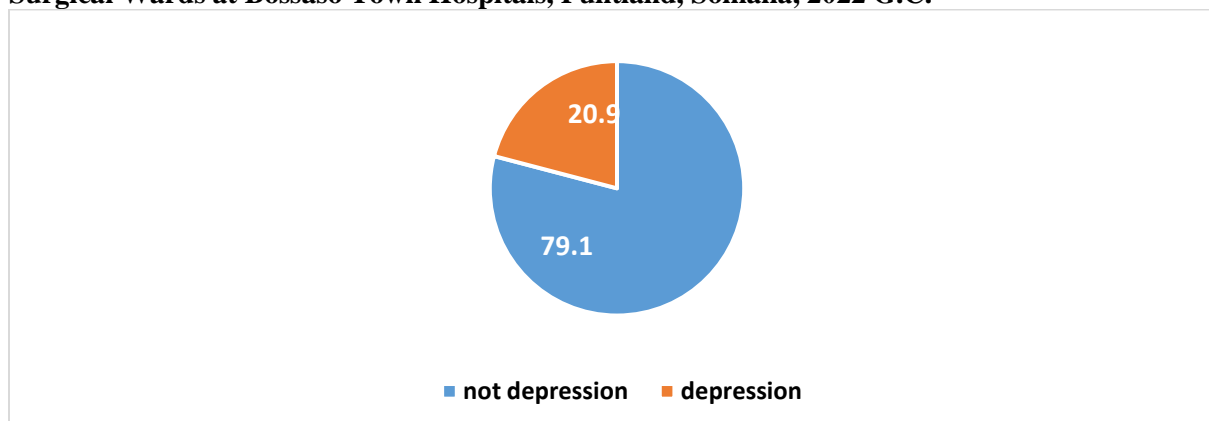
participants, 184(44.2%) of the study participants had cardiovascular disease as a current diagnosis and almost three-quarter 332 (79.8%) of the studied participants had no history of substance use, majority of study participants 321(77.2%) had no smoking cigarettes, while 234(56.3%) lives with their families and 339 (81.5%) had poor social supports (Table 2).

Table 2: Description of Clinical, Psychosocial and Substance Use Characteristics of Adult Patients Admitted to Medical and Surgical Wards at Bossaso Town Hospitals, Puntland, Somalia, 2022 G.C.

SN	Variables		Frequency	Percent (%)
1	Site of admission	Medical	246	59.1
		Surgical	170	40.9
2	Previous history of mental illness	No	301	72.4
		Yes	115	27.6
3	Duration of hospital stay	Less than a week	201	48.3
		1-2 weeks	134	32.2
		≥ 3 weeks	81	19.5
4	Current diagnosis	Cardiovascular d/r	184	44.2
		Endocrine d/r	98	23.6
		Hypertension	65	15.6
		Diabetes	39	9.4
		Others	20	4.8
5	Ever substance use	No	332	79.8
		Yes	84	20.2
6	Current Drink alcohol	No	414	99.5
		Yes	2	0.5
7	Currently smoke cigarettes	No	321	77.2
		Yes	95	22.8
8	Current chat Chewing	No	304	73.1
		Yes	112	26.9
9	Living condition	With family	234	56.3
		With alone	95	22.8
		With relative	87	20.9
10	Social support	Poor	339	81.5
		Moderate	35	8.4
		Strong	42	10.1

Figure 2: Schematic Representation of the Site of Admission and Depression among Adult Patients Admitted to Medical and Surgical Wards at Bossaso Town Hospitals, Puntland, Somalia, 2022 G.C.

Prevalence of depression among adult patients in this study was found to be 20.9% {95% CI(16.9-24.8%)}

Figure 3: Cumulative Prevalence of Depression among Adult Patients Admitted to Medical and Surgical Wards at Bossaso Town Hospitals, Puntland, Somalia, 2022 G.C.

Factors Associated with Depression among Adult Patients Admitted to Medical and Surgical Patients at Bossaso Hospitals, Puntland, Somalia.

As described in Table 3, bivariate logistic regression analysis was done to find out the association of each independent variable with comorbid depression. Variables with a P-value of less than 0.25 on bivariate logistic regression, sex, residence, site of admission, duration of hospital stay, previous history of mental illness and current smoking were entered into multivariate logistic regression. In the final model, the strength of association was measured by OR with 95% confidence interval and variables associated with depression with P-value<0.05 considered as significantly associated were female gender, surgical site admission, hospital duration stays, previous history of mental illness and being a smoker.

Multivariable logistic regression analysis found that female gender was 2.1 (95% CI: 1.1-4.0) times more likely to develop depression compared to male gender. Subjects who are admitted to the surgical ward were 2.6 (95% CI: 1.4-4.5) times more likely to have depression than those admitted to the medical ward. Patients who had a previous history of mental illness were 2.5 (95% CI: (1.4-4.7) times more likely to develop depression when compared to patients who had no previous history of mental illness. Those with a duration of hospital stays of 1-

2 weeks were 2.7 (95% CI: 1.4-5.3) times more likely to have depression compared to subjects with a hospital stay of less than one week. Current cigarette smoking of the patients increases the likelihood of having depression by three times (95% CI: 1.6-5.6) compared to non-smokers (Table 4).

Table 4: Bi-variate and Multi-variate Analysis for the Factors Associated with Depression among Adult Patients Admitted in the Medical and Surgical Ward at Bossaso Town Hospitals, Puntland, Somalia 2022 G.C.

Variables	Categories	No Depression N(%)	Depression N(%)	COR(95%CI)	P- value	AOR(95%CI)	P- value
Sex	Male	149(88.2%)	20(11.8%)	1		1	
	Female	180(72.9%)	67(27.1%)	2.7(1.60-4.78)	0.000	2.1(1.1-4.0)	0.017*
Residence	Urban	205(83.0%)	42(17.0%)	1			
	Rural	124(73.4%)	45(26.6%)	1.7(1.10-2.8)	0.019		
Site of admission	Medical ward	212(86.2%)	34(13.8%)	1			
	Surgical ward	117(68.8%)	53(31.2%)	2.8(1.73-4.59)	0.000	2.6(1.4-4.5)	0.001**
Previous history of mental illness	No	247(82.1%)	54(17.9%)	1		1	
	Yes	82(71.3%)	33(28.7%)	1.8(1.11-3.0)	0.017	2.5(1.4-4.7)	0.002**
Duration of hospital stay	Less than one week	170(84.6%)	31(15.4%)	1			
	1-2 weeks	89(66.4%)	45(33.6%)	2.7(1.64-4.68)	0.000	2.7(1.4-5.3)	0.002**
	Greater than 3 weeks	70(86.4%)	11(13.6%)	0.8(0.41-1.81)	0.694	0.7(0.3-1.7)	0.496
Smoke cigarettes	No	266(82.9%)	55(17.1%)	1			
	Yes	63(66.3%)	32(33.7%)	2.4(1.46-4.11)	0.001	3.0(1.6-5.6)	0.001**

*Statistically significant at p-value<0.05, ** statistically significant at p-value<0.01,

*** Statistically significant at p-value<0.001.

DISCUSSION

In the current study, the prevalence and associated factors of depression were assessed. The results revealed that a high proportion of depression symptoms were found among people admitted to the medical and surgical wards. The prevalence of depression symptoms among people admitted to the medical and surgical wards was found to be 20.91%. Regarding prevalence, the result of the current study are very low compared to other studies carried out in Iran, Pakistan, Uganda, Kenya,

Mekelle – Ethiopia, Addis Ababa – Ethiopia and in Nigeria which reported that the prevalence of depression symptoms was 58.8%, 48.5%, 29.3%, 42%, 54.6%, 53.9% and 54.5% (10, 11, 31-35) respectively. The variation in the above rates might be due to differences in the sample sizes, age of participants, types of study design, the use of various scales and rating for assessing the level of depression symptoms, methodologies, types of admission site, types of patients, and sociocultural contrasts between Somalia and other countries.

On the other hand, the current study's finding is lower than a study in India, which found the prevalence of depression to be 60.5% (22). As suggested by the researchers, the reason for the higher magnitude could be the ongoing conflict in different parts of the country. There were different factors associated with depression in this study; being female sex is two times more likely a risk for depression when compared to male sex among patients admitted to medical and surgical wards. These findings agreed with other studies conducted in Addis Ababa (11) and in Iran (22), which reported that female gender is significantly associated with depression compared with male sex. On the other hand, it is contrary to a study conducted in Ethiopia found that male clients are 1.6 times more likely than females to develop depression (7).

Patients admitted to surgical wards are more than 2.6 times more likely to have depression as compared with those who are admitted to medical wards. Depression is a common condition among surgical patients, and its symptoms lead to increased morbidity and mortality rates, psychosocial dysfunction. This finding are in lines with other two studies from Southern Ethiopia and Iran which showed that patients who were admitted to surgical ward for surgical management were 3.87 and 2.1 times more likely to have depression when compared to patients admitted to the medical ward (7) (50). But different studies revealed that depression are highly associated with admission in the medical ward than the surgical ward (11, 20). So, it needs further research, why patients admitted to surgical wards are highly at risk of depression symptoms compared to medical ward patients.

This study shows that the duration of hospital stays of 1-2 weeks was 2.7 times more likely to have depression compared to subjects with hospital stays of less than one week. This finding line with a study in Harar. Patients who stayed in the hospital for one to two weeks were two times more likely to develop depressive symptoms than those who stayed for less than one week (2). And also a study conducted in Gondor (37). Treatment adherence is known to be poor among patients

with depression, leading to an increasing length of stay. Also, it aggravates chronic diseases and disability. This could increase unexplained physical symptoms and, consequently, increase hospital stays. Patients who had a previous history of mental illness were 2.5 times more likely to develop depression compared to patients who had no previous history of mental illness. This finding line other studies done in Iran found that a previous history of mental illness was a risk factor for depression symptoms in surgical patients (22). Another study conducted in Addis Ababa, Ethiopia, showed that depression symptoms were significantly associated with a prior history of mental illness, which 1.79 times increased the risk of depression symptoms compared to patients who had no history of mental illness (11). Stressful life situations such as financial problems and ongoing chronic medical conditions like diabetes, brain damage as a result of serious injury.

According to substance use being cigarette smoking is 3 times more likely to develop depression compared to nonsmokers. This finding supports two studies conducted in Pasco, United States, northern Ethiopia and a systematic review conducted in Britain, which demonstrates that smokers were three times more likely to have developed depression symptoms compared to nonsmokers (47, 48, 49). The possible reason may be that those who have an addictive problem, like smoking, are more prone to the risk of mental problems.

Strengths and Limitations of the Study

Strengths of the study

- It was conducted in representative hospitals selected from Bossaso Town.
- Using trained nurses who work in the selected hospitals as data collectors helped to keep the privacy of the respondents, because of this, they can provide the required information comfortably.

- Outcome variables (depression) were assessed by a patient health questionnaire (PHQ-9).

Limitations of the study

- Assessment of depression was measured regarding their past emotions. There is a possibility of recall bias.
- Since the study was done in selected hospitals, it might not be generalised to the general population of all hospitals in Bossaso town.

CONCLUSION

A high prevalence of depression was observed in the hospitals of Bossaso town, which was 20.9%. The prevalence of depression among this sample suggests the need for physicians/healthcare professionals to look beyond the presenting diagnosis on the wards and be more aggressive toward diagnosing and treating co-morbid depression. In multi-variate analysis, depression is significantly associated with female gender, site of admission, previous history of mental illness, duration of hospital stays, and being a smoker. This is one way to reduce morbidity, mortality and health expenses. The study findings indicate the importance of strategies to fully integrate mental health services into health care centres in order to decrease the prevalence of depression.

RECOMMENDATION

Based on the findings, the following recommendations are forwarded.

Ministry of Health

- To give training on how to screen depression among medical and surgical patients, and interventions that would address the awareness of the above factors, would benefit the prevention of further complications.
- Depression patients who smoke cigarettes should receive health education.
- Hospital management, the Minister of Health, and stakeholders should provide specific health education on depression management

to healthcare professionals.

Health Professionals

- Educate admitted patients in medical and surgical wards about the depression risk associated with modifiable factors like cigarette smoking and previous history of mental illness.
- Depression screening for those at risk and referral to a psychiatric hospital for those who require it.
- Health care providers should give additional care and concentration to the depression patients with surgical site admission, previous history of mental illness and those patients with longer hospital stay.
- The community, especially the female sex, should try to visit the health institution as soon as possible if they feel any signs of depression.

To Researchers

Researchers should conduct cohort studies to show a cause-and-effect relationship between mental health disorders and adult patients admitted to medical and surgical wards.

Since this study was conducted in a few hospitals, further nationwide and community-based researches are needed to assure the generalizability of the findings.

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