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RESEARCH ARTICLE

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Psychological Distress and Associated Factors Among Patients Attending Orthopedic Unit, Dilla University Referral Hospital, Dilla, Gedeo Zone, South Ethiopia 2021

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ABSTRACT

Background: Psychological discomfort is a state of emotional distress caused by everyday stressors and obligations that are difficult to manage. It's one of the most common mental health problems on the planet. The physical status of a person has an impact on his or her psychological well-being, and if not handled well, it will eventually have an impact on his or her well-being. Orthopedic trauma has a wide range of effects on survivors' physical health, as well as a variety of mental health concerns that impede recovery. Psychiatric problems and behavioral abnormalities are 3-5 times more common in people who have been harmed, and they are a predictor of poor outcomes. It is crucial to begin further therapies as soon as possible.

Methods: A cross-sectional study was undertaken at Dilla University Referral Hospital on an institutional basis. The data was collected via a face-to-face interview and the Kessler psychological distress scale (K-10) was used to assess psychological distress. A total of 366 people were chosen using simple random selection. SPSS21 was used to enter and evaluate the data. To find related factors, bivariate and multivariate logistic regressions were used. Variables having a p-value of less than 0.05 were deemed statistically significant.

Result: Out of all respondents, 114 (31.4%) of the individuals have experienced psychological anguish. Independent variables such as being female (adjusted odds ratio (AOR=5.8, 95 percent CI (3.5-11.1), being under 27 years old (AOR=2.34, 95 percent CI (1.89-3.68), being unable to read and write educational status, married (adjusted odds ratio (AOR=2.67(1.24-5.34), poor social support (AOR=1.4, 95 percent CI (1.21-2.89), and poor sleep quality (AOR=1.5, 95 percent).

Conclusion: The prevalence of psychological distress was high. Being female, having poor social support, and having a high PSQI score were significantly associated factors with psychological distress. It is good if clinicians emphasize orthopedic patients especially females and those having poor social support and low sleep quality symptoms.

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Abbreviations

AOR: Adjusted Odd Ratio
BDI: Beck depression inventory
CI: Confidence Interval,
COR: Crud odd ratio
DURH: Dilla university referral hospital
HADS: hospital anxiety and depression scale
PD: Psychological distress
PSQI: Pittsburgh Sleep Quality Index
WHO: World health organization
USA: United States of America

Introduction

Psychological distress is emotional suffering characterized by undifferentiated combinations of symptoms of depression (e.g. Loss of interest, sadness, hopelessness) and anxiety (e.g. restlessness, feeling tense) which are sometimes accompanied

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by somatic symptoms (e.g. insomnia, headaches, lack energy) [1,2]. Psychiatric disorders and behavioral disturbances are more common among people with injuries and are a predictor of poor outcomes, ongoing disability and psychological well-being of a physically challenged person are important to their mental health [3].

Damage to a part of the muscles, bones, joints, or ligaments, is described as orthopedic trauma. It is troubling states that interfere with the normal functioning processes of individuals. It has a wide-ranging adverse health outcome, which might obstruct the sufferers' recovery. Musculoskeletal injuries account for 16% of the global disease burden, making them the major cause of morbidity and mortality [4]. The impact of orthopedic trauma on individuals, their families, and society as a whole is immense. It has a significant impact on the victims' mental health, affecting their healing [5].

Survivors of orthopedic trauma may develop psychological discomfort months or years after the incident [6]. A lot of people suffer from physical disabilities as a result of catastrophic injuries, which might persist for a year or more. Although a large proportion of orthopedic trauma survivors develop serious psychiatric diseases, only a small percentage of patients get proper mental health care from skilled specialists [7].

Sufferers following experiencing trauma display different emotional and behavioral disturbances [8]. Worldwide, an estimated Orthopedic traumatic injury accounts for 650 million people living with a disability in 2020 [9].

According to data from the World Health Organization, 20-50 million people worldwide suffer from non-fatal musculoskeletal injuries each year. Even though some people survive orthopedic wounds, they often have a variety of negative health effects [10]. They are the most common cause of severe long-term pain and physical disability, and they affect hundreds of millions of people around the world. They significantly affect the psychosocial status of affected people as well as their families and careers [11].

Little attention has been given to the negative mental health outcomes of orthopedic trauma in Ethiopia which is against its burden. Psychological distress among orthopedics has several complications likely to develop many mental illnesses like depression, Post-traumatic stress disorder, and personality disorders. Assessing psychological distress during care provides a cost-effective way of preventing complications associated with orthopedic trauma.

Significant progress has been made in the management of orthopedic trauma patients as surgical techniques have improved and patient care has improved. In the treatment of various orthopedic ailments, orthopedic surgeons, on the other hand, tend to focus on physical and technical elements. In truth, patients' psychology is affected by significant physical changes, unusual hospital environments, and the unpredictability of post-injury recovery; yet, this aftermath is almost totally overlooked. This study will aid health practitioners in initiating preventive or early interventions to minimize mental, bodily, and emotional distress in such patients, since psychological discomfort may be a precursor to mental, physical, and emotional weariness.

Methods

Study Setting

We conducted a cross-sectional study design at Dilla University Referral Hospital from August to November 2021 G.C which is found in Dilla town, South Ethiopia which is found at a distance of 365kms from the capital city of Ethiopia. The Hospital was established in 1985 G.C. It provides curative and rehabilitative services for about 2million people. The hospital has five wards, namely Medical (39 beds), surgical (26beds), obstetrics and gynecology (23 beds), Pediatrics (18 beds), and psychiatry (12 beds).

Eligibility Criteria

Those orthopedic trauma patients who were on admission and follow up and aged above 18 were included in the study. Those who were severely sick and unable to communicate were excluded from the study.

Sample Size and Sampling Technique

The sample size was determined by using the single population proportion formula, [n = (Z α/2)2 p (1-p)/d2], to estimate the sample size. The study considered the prevalence of 35.4% psychological distress among trauma orthopedic patients obtained from a previous study among patients who attend an orthopedic unit in Tikur-anbessa specialized hospital Ethiopia, and 95% confidence interval, a margin of error of 5%, a non-response rate of 10% was used to get the total sample size of 386. Participants of this study were selected from outpatient clinics and ward through a systematic random sampling technique. Sampling interval (k) was determined by dividing the average number of estimated people at the orthopedic outpatient and inpatient clinic based on one week pilot period by the total sample size. The first respondent was selected by lottery method and the next respondent was chosen at regular intervals.

Study Variables

Dependent/outcome variable

Psychological distress

Independent variables

- Socio-demographic factors (age, sex, religion, marital status, educational status, monthly income, occupational status),
- Chronic medical illness,
- Pain severity,
- Having a family history of mental illness,
- Substance use history,
- Injury-related factors
- Developing complication
- Social support
- Sleep quality

Operational Definitions

Amputation: Surgical removal of all or part of a limb, the loss of a limb through trauma [12].

Injury: Any damage to a body especially to the upper and lower extremity that is caused by accidents, falls weapons, and more [12].

Psychological Distress: Kessler psychological distress scale, those who scored 10-19 have assumed to likely to be well, 20-24 have mild distress, 24-30 have moderate distress, and those who have scored 30- 50 were assumed to have severe psychological distresss [13].

Poor Sleep Quality: Pittsburgh Sleep Quality Index, the score ranges from 0-to 21. Those who score the highest above 5 have poor sleep quality. and below 5 have good sleep quality [14].
Social Support: oslo-3, those who have scored 3-8 "poor", 9-11 "moderate", 12-14 "good" [15].

Data Collection Tools and Procedure

Data were collected from patients with face-to-face interviews from November 8-December 10 by using structured questionnaires prepared in the English language that was developed after reviewing different relevant literature and arranged according to a particular objective. The first section consists of sociodemographic characteristics. The second section is psychological distress questions which were assessed by using Kessler psychological distress scale. (34).

The third section was questions related to clinical and substance-related factors which contain four substance-related yes or No questions and two questions about chronic medical illness and family history of mental illness that were answered through yes or no responses. The fourth section was questions related to injuries. Sleep-related questions were included in the fifth section by using Pittsburgh Sleep Quality Index (PSQI) tool. This instrument measures the following different sleep components: latency, duration, subjective sleep quality, efficiency, disturbance, daytime dysfunction, and use of hypnotic medication [16].

The last section is psycho-social related questions which were addressed by using OSLO-3 social support questions. This tool has three questions which have a total of 14 scores. Those who scored 3-8 were taken as poor social support, 9-11 moderate social support, and 12-14 as good social support [15].

Data Processing and Analysis

Data was checked first manually for completeness and then edited, coded, entered, cleaned, and analyzed using SPSS software version 21. Descriptive statics was carried out using text, table, and figure. Binary logistic regression had done to assess the potential predictors of the outcome variable. Variables with a p-value < 0.25 were a candidate for multiple logistic regressions. Finally, multivariate analysis was used to identify significant factors associated with psychological distress among orthopedic trauma patients and to control potential cofounders. Adjusted odds ratio (AOR) along with a 95% confidence interval was estimated to assess the strength of the association and a P value<0.05 was taken as significant.

Data Quality Control

To assure the data quality and consistency, the English version of the questionnaire was translated to Amharic and the local language of the study area and then back-translated to English by a language expert. The pretest study was done on 5% of the sample in Hawassa comprehensive specialized hospital. Both data collectors and investigators checked data for its completeness daily.

Results

Socio-Demographic Characteristics

A total of 386 participants with a response rate of 94.8% were included in the study. Among these 230 (62.8%) were males and 136(37.2%) were female. The mean age of the participants was 33.94 years with a standard deviation of (SD= ± 10.6) which ranges from 18 to 76 years, from which 139(29.5%) were in the age group of 18-29 years, 143(30.4%) were in age group 30-39, 46 (9.8%) were in the age group of 40-49, and 38(8.1%) were greater than 50 years old. Of the study participants, 159(43.4%) were protestant, 132(36.1%) were Muslim, 74(20.2%) were orthodox Christian religious followers and only 1(0.3%) were other religious followers. In terms of marital status, 191(40.6%) were single, 94(25.7%) were married, 71(19.3%) were divorced, and 10(2.7%) were widowed. Of the study participants, 107(29.2%) were not educated while 29(7.9%) have a degree and above educational status regarding participant occupations half of them were merchant (189(51.6%) and farmers only constitutes 59(16.1%) and the rest are Gov. .employed, student, other constitutes 26(7.1%), 72(7.15), 29(5.5%) respectively
(Table 1)

Table 1: Distribution of orthopedic trauma patients visiting the orthopedic unit of Dilla referral hospital, Dilla, Ethiopia (n=366)

Variable		frequency	Percent (%)
Sex	Female	136	37.2
	Male	230	62.8
Age	18-29 years	101	27.7
	30-39 years	90	24.7
	40-49 years	74	20.3
	>50 years	100	21.2
Religion	Orthodox	74	20.2
	Muslim	132	36.1
	Protestant	159	43.4
	Other	1	0.3
Marital status	Single	191	52.2
	Married	94	25.7
	Divorce	71	19.4
	Widowed	10	2.7
Occupation	government-employed	26	7.1
	Merchant	189	51.6
	Farmer	59	16.1
	Student	72	19.7
	Other	20	5.5
Educational status	not educated	107	29.2
	1-8 grade	76	20.8
	9-10 grade	71	19.4
	11-12 grade	22	6.0
	Diploma	61	16.7
	Degree and above	29	7.9
Average income	<3500 birr	249	68
	>3500 birr	117	32
Occupation	Government employ.	26	7.1
	Merchant	189	51.6
	Farmer	59	16.1
	Student	72	15.3
	Other	20	4.2

Clinical and substance-related factors of participants

According to clinical factors, 82 (22.4%) of them have reported they had a chronic medical illness, and 85(23.2% of them have a family history of medical illness. Of the participant 260(71%) have ever used any substance in their lifetime among them 121(33.1%) were khat users, 87(23.8%) were alcohol users and 52(14.2 %) were tobacco users. Of the participant, 257(70.2%) are currently using any substance among them 121(33.1%) were khat users, 87(23.8%) were alcohol users and 52(14.2 %) were tobacco users (Table 2).

Table 2: Distribution of substance use and family history of mental illness among patients visiting the orthopedic unit of Dilla referral hospital, Dilla, Ethiopia (n=366)

Ever used substance * family history of mental illness					
			family history of mental illness		Total
			0	yes	
ever used substance	yes	Count	241	19	260
		Percent (%)	92.7%	7.3%	100.0%
	no	Count	40	66	106
		Percent (%)	37.7%	62.3%	100.0%
Total		Count	281	85	366
		Percent (%)	76.8%	23.2%	100.0%

Trauma-Related Factors of Participants

Of the participant, 90(24.6) had upper extremity injuries, 199(54.4%) had lower extremity injuries and 77(21%) had multiple injuries. A road traffic accident was the cause of injury for 244 (66.7%) study participants followed by a falling accident which was responsible for orthopedic injury in 112 (30.6%) of participants. Regarding the type of injury, 152 (41.5%) had closed fractured among these fractures 69(18.9%) individuals had developed a complication. Among 69(18.9%) those individually developed complications all of them have developed an infection and none of them develop gangrene. The pain was reported by 213 (%) of the study participants among those 67 (18.3%) had mild pain, 74 (20.2%) of them has moderate pain and 73(19.9 %) had severe pain within the past 12 hours (Table 3).

Table 3: Description of trauma-related factors among orthopedic trauma patients visiting the orthopedic unit of Dilla referral hospital, Dilla Ethiopia (n=366)

Variable		Frequency (n)	Percent (%)
Location of injury	Upper extremity	90	24.6
	lower extremity	199	54.4
	Multiple injuries	77	21
Cause of injury	Road traffic accident	244	66.7
	Fall	112	30.6
	Other	9	2.5
Type of injury	Closed fracture	152	41.5
	Open fracture	85	23.2
	Dislocation	73	19.9
	Fracture and dislocation	56	15.3
Complication	Yes	69	18.9
	No	297	81.1
Duration since injured	Less than or equal to3 a month	145	39.6
	4-6 month	148	40.4
	>6 month	73	19.9
Pain	Yes	213	58.2
	No	152	41.8
Intensity of pain	Mild	66	18.3
	Moderate	73	20.2
	Severe	74	19.9

Psychosocial support and sleep quality-related factors

Among participants 122(33.3%) have poor social support, 193(52.7%) have medium social support and only 51(13.9%) have strong social support. In terms of sleep quality, 82(22.4%) have less than five PSQI scores while 284(77.6%) of them have PSQI score greater than five and the study participant have a mean PSQI score of 7.23 with a standard deviation of (SD= ± 2.23) with 2 minimum and 15 maximum PSQI score (Figure 1).

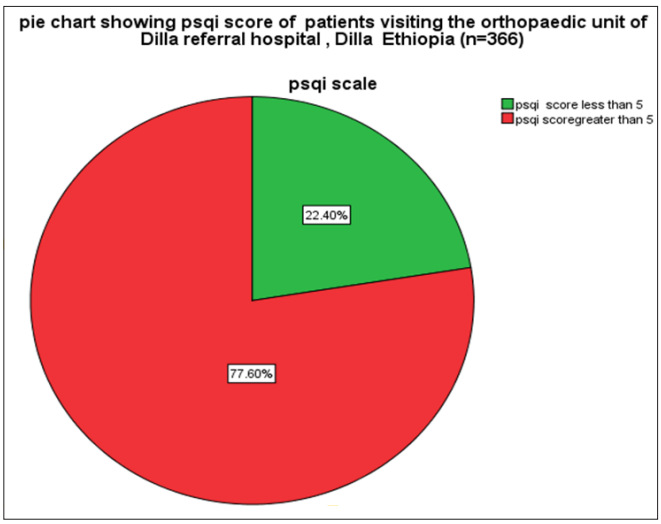

Figure 1: pie chart showing PSQI score of study participants

Prevalence of psychological distress

This study showed that the prevalence of psychological distress was 114 (31.1%) overall of which 82 of them were female. According to the k10 scale of psychological distress classification, 252 (68.9%) of them are likely to be well, 20(5.5%) have a mild disorder, 30(8.2%) have a moderate disorder and 64(17.5%) were likely to have severe distress disorder from which 41(30.1%) were female (Figure 2).

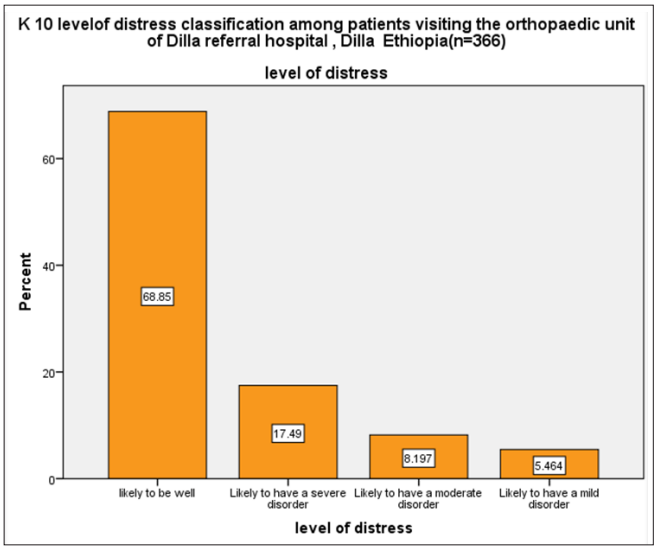

Figure 2: Bar chart showing the level of psychological distress

Factors associated with psychological distress

Bivariate analysis of test analysis of factors for psychological distress revealed that independent variables; sex, marital status, educational status, monthly income, type of substance used, family history of mental illness, type of injury and psychosocial related factor, family history of mental illness, chronic medical illness, having pain, PSQI score, location of injury were found to be candidate variables for multivariate analysis at p-value <0.2. These factors were entered into multivariate analysis for further analysis then cause of injury, occupational status, having a chronic medical illness, location, type of injury, and having pain were dropped out as their p-value was > 5% and the remaining factor was interred to multiple logistic regression to control confounding effects. As a result, being female, and low monthly income of less than 3500, being married, not being educated, having low social support, use of a substance, and having PSQI score greater than five are found to be statistically significant in psychological distress at the p-value of less than 0.05.

Females were 5.8 times more likely to have psychological distress than males (AOR=5.8, 95% CI(3.5-11.1) those who have married have 7.7 times more to have a risk of psychological distress than those unmarried (AOR=0.17,95% CI (3.1-18.8), those who have average monthly income less than 3500 have a risk of psychological distress than those with an average income of >3500 birr (AOR=12.9,95% CI (5.1-32.4), having high social support 60% less likely to develop psychological distress than those who have poor social support and having PSQI score less than five have 50% less likely to have psychological distress than those who have PSQI score greater than five (Tabe 4).

Table 4: Bivariate and multivariable analysis of factors associated with psychological distress among orthopedic trauma patients visiting the orthopedic unit of Dilla specialized hospitals, Dilla, Ethiopia (n=366)

Variable	category	Psychological distress		COR (95% CI)	p-value	AOR (95 CI %)	p-value
		Yes(%)	No(%)				
Sex	Female	82(71.9)	54(21.4)	9.3(5.6-15.6)	<0.001	5.8(4.6-15.6)	<0.001
	Male	32(28.1)	198(78.6)	1	1	1	
Marital status	unmarried	42(36.8)	149(59.1)	1		1	
	Married	72(63.2)	103(40.9)	0.4(0.2-0.6)	<0.001	7.7(3.1-18.8)	<0.001
Educational status	educated	105(92.1)	154(61.1)	1	1	1	
	Not educated	9(7.9)	98(38.9)	0.13(0.6-0.2)	<0.001	22.5(7.5-67)	<0.001
Average income	<3500 birr	48(42.1)	201(79.8)	5.4(3.3-8.7)	<0.001	4.8(2.4-9.8)	<0.001
	>3500 birr	66(57.9)	51(20.2)	1		1	
Type of injury	Closed fracture	50(43.9)	102(40.5)	2.25(1.5-4.8)	0.01	2.4(1.4-3.9)	<0.001
	Dislocation and fracture	10(8.8)	46(18.3)	1	1	1	1
Type of substance used	alcohol	36(31.6)	51(20.2)	3.5(1.5-7.9)	0.002	2.5 (0.3-3.7)	<0.001
	No use	45(39.5)	61(24.2)	1	1	1	1
Psychosocial support	Poor social support	45(47.4)	68(27)	1		1	1
	Strong social support	15(13.2)	36(14.3)	7.9(2.3-26)	0.001	0.4(0.2-0.8)	0.006
PSQI score	Less than 5	16(14)	66(26.2)	1	1	1	1
	Greater than 5	98(86)	186(73.8)	0.435(0.17-1.05)	0.66	1.5(1.01-1.3)	0.031

Discussion

In this study, psychological anguish was shown to be 31.1%. The current study found a greater prevalence of psychological discomfort than a study conducted in India, which indicated a prevalence of 22% as well as research from the United States that found a prevalence of 19%. [17,18]. The reason for the above disparity could be due to variations in sample size and study population, which consisted solely of athletes receiving physical therapy in the United States.

The prevalence of psychological problems was found to be lower in this study than in a study conducted in the United States and 43.9 % in the Philippines [19,20]. This disparity could be explained by the tool used, the Beck Depression Inventory (BDI), the time since the injury occurred and the respondents of the study, who were all patients with severe lower limb damages, the study type, which was a prospective cohort study in the United States with a follow-up, and the sample size, that was a large scale study among medically hospitalized patients in the Philippines [19]. The prevalence of this study relatively goes in line with the study done at Tikur Anbessa specialized hospital that shows 35.4% of prevalence [20]. The little difference in the prevalence is may have resulted from the sample size in which 407 orthopedic trauma patients participated and may be due to the assessment tool that was HADS [6].

Females were 5.8 times more likely to develop psychological distress than males. This study was supported by studies conducted in the United Kingdom, Jordan, and India [17,21,22]. This study shows higher odds of developing psychological distress among females compared with a study conducted in Ethiopia Tikur anbesa specialized hospital (AOR=1.65,95% CI:1.89,3.04) (19) this may be due to sample size difference or other aspects of the study participant.

The odds of developing psychological distress among those who had strong social support were 50% lower when compared to those who have poor social support. This may be due to the reason that good social support is known to buffer the negative consequence of traumatic events. This result is consistent with a study done at Tikur anbesa specialized hospital, Ethiopia which shows psychological distress is higher in those participants having poor social support and the difference in odd numbers may be due to sample size variation (AOR=3.51,95%CI:1.39,8.88) [6].

The odds of developing psychological distress are 4.8 times higher in those who have low monthly income than in those who have a high higher monthly income. And also the odds of psychological distress among those who are married are 7.7 times greater than those who are not. This may be due to additional life stress associated with living in low economic status and taking on other responsibilities while being married.

The odds of developing psychological distress in those who are uneducated are 22.5 times higher than in those who are educated. This may be due to the reason that being educated may increase a person's stress coping mechanisms. This result is not consistent with a study conducted at Tekur Anbesa specialized hospital in which the odds of developing psychological distress were not significantly associated with (AOR=1.76,95%CI 0.57,5.22) [6]. This may be due to the study area in which higher numbers of educated people are available.

The odds of developing psychological distress are 50% times greater in those who have poor sleep quality than those who have good sleep quality. This may be because sleep may affect a person's mood by affecting brain activity [23,24]. Those who have closed fractures have 2.4 times higher risk of developing than those who are not. And those who are using alcohol had 2.5 times greater risk of developing psychological distress than their counterparts.

Conclusion

This study found a high prevalence of psychological distress when compared to the general population. Factors like being female, having poor social support and having poor sleep quality, being married, having a low average monthly income, being uneducated, and using the substance alcohol are significantly associated with psychological distress. It is good if clinicians working at orthopedic clinics emphasize patients' psychological state during evaluation to work with psychiatry professionals to overcome the problem with early diagnosis and treatment. Especially for females, those having sleep disturbance symptoms, those who are uneducated, and those with poor social support. It is also good if other researchers conduct a prospective cohort study to investigate the temporal relationship between factors such as closed fracture, using Alcohol, and psychological distress. Lastly, since this study shows psychological distress is higher among participants having poor sleep quality, it is better to conduct another study, for further investigation between sleep quality and psychological distress.

Declarations Ethical approval and consent to participate

Ethical clearance was obtained from both the Dilla University specialized hospital Ethical Review committee. Written Informed consent was obtained from participants aged 18years and above. Written assent was also obtained for those aged below 18 years from patients' caregivers coming with them. Each respondent was informed about the objective of the study and that it will contribute necessary information for policymakers and other concerned bodies. Anyone who was not willing to participate in the study was not forced to participate. They were also informed that all data obtained from them would be kept confidential by using code instead of any personal identifier and is meant only for the purpose of the study.

Declaration

Authors' contributions: All authors participated in preparing and approving the 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 upon reasonable request.

Ethics approval and consent to participate: The study was approved by and carried out following the institutional review board of Dilla University. Informed consent was obtained from all the participants. Those participants who were found to have depression were immediately linked to mental health services for further evaluation and management.

Consent for publication: Not applicable

Competing interests: The authors declare that they have no competing interests.

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