

Anxiety and the associated factors among admitted surgical and medical patients, Addis Ababa, Ethiopia: A cross-sectional study

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Abstract

Background

Anxiety is a common comorbid mental health problem with different medical illnesses and it can complicate major medical health problems. Despite its impact of physical functioning, quality of life, drug adherence, use of health service resources, good health behaviors, and increasing suicidal tendencies and mortality, it is neither diagnosed nor treated. Therefore, this study aimed to explore the prevalence of anxiety and its determinants among admitted patients for the contribution of attempting optimal care for of these patients.

Method

An institution based cross-sectional study was conducted among adult surgical and medical inpatients from May 13 to June 12, 2019. Systematic random sampling technique was used to recruit a total of 590 participants. Hospital Anxiety Scale (HAS) was used to measure anxiety symptoms. Binary logistic regression was employed to identify factors associated with anxiety symptoms. Odds ratio with 95% confidence interval was used to assess the strength of the association, and variables with p-value of < 0.05 was declared as statistically significant.

Result

The mean age of the participants was 39.71 ± 14.94 (SD), ranging from 18 to 66 years. About half (51%) of the respondents were male, the overall prevalence of anxiety was 62.7% with 95% CI (58.6, 66.9). In the multivariate analysis; female sex (AOR = 1.92, 95% CI: 1.31, 2.80), being single (AOR = 2.01, 95% CI: 1.33, 3.01), previous history of admission (AOR = 1.71, 95% CI: 1.13, 2.57) and multiple medical diagnosis (AOR = 1.61, 95% CI: 1.04, 2.47) were factors significantly associated with anxiety symptoms.

Conclusion

In this study, the prevalence of anxiety among medical and surgical inpatients was found to be high. Therefore, it is better to screen any risks of anxiety, and psychological assessment tests are better to be integrated into routine hospital inpatient care to prevent anxiety.

Introduction

In a contemporary world, it is becoming increasingly clear that we can improve medical care by paying more attention to psychological aspects of medical assessment and treatment(1). Admission in hospitals for medical evaluation and treatment results in different psychological reactions such as anxiety. Anxiety is a diffuse, unpleasant, vague sense of apprehension accompanied by autonomic and somatic symptoms. Despite anxiety has lifesaving qualities and warns of threats of bodily damage, it can affect social, occupational and other important areas of functioning if it is prolonged, irrational, disproportionate and/or severe; occur in the absence of stressful events; interfere with everyday activities.

The 12-month prevalence rate of anxiety disorder was 17.7% (2, 3). Anxiety is a common problem in hospitalized patients, particularly in those waiting for surgical procedures and patients with surgical intervention was more than four times more likely to develop anxiety(4), and with chronic conditions which are treatment refractory(5, 6). Anxiety disorders are among the most common mental health problems that share features of excessive fear, anxiety and related behavioral disturbances(7). In a survey of lifetime prevalence and age-of-onset distributions of mental disorders in the recently completed National Comorbidity Survey Replication, the lifetime prevalence estimates of anxiety disorders were 28.8% (8). Worldwide, the estimated number of people living with anxiety disorders in 2015 was 264 million (3.6%), and females were more affected than males (4.6–2.6% ratio)(9). Fifteen point three (15.3%) of anxiety was reported among inpatients in the general hospital in China(10). A 12 year case-control study on inpatient medical-surgical suicidal behavior reported that the prevalence of anxiety disorder was 25% and inadequately controlled anxiety was one of the identified stressor of the suicide attempters(11) and increases length of hospital stay(12).

It was found that the prevalence of anxiety was reported to be 64.9% among adult hospitalized patients in Internal and Surgical Wards of Shiraz Hospitals, Iran(13). In a study conducted among patients with chronic heart, kidney and respiratory disorders, the prevalence of anxiety was 52.2% in Turkey (66%, 46.6% and 44.3% of patients with respiratory disease, heart disease and renal disease respectively(14). In a cross sectional study performed in patients admitted to a university hospital in southern Brazil, the prevalence of anxiety was 33.7%(15). In the assessment of anxiety symptoms among surgical hospitalized patients in Ghulam Mohammad Mahar Medical College and Hospital, Sukkur, Pakistan, 64% of them were severely anxious(16). According to a hospital-based cross-sectional study among 510 cancer patients in Vietnam, the prevalence rate of anxiety was reported to be 43.1%(17). At the third week of admission, anxiety was found in 32 and 29.87% of patients undergoing emergency and elective surgery in Allama Iqbal Memorial Teaching Hospital, Sialkot, Pakistan respectively(18). In a study carried out to assess the prevalence and associated factors of anxiety and depression among cancer patients at a Rwandan referral hospital, it was reported that 52.1% of patients had anxiety(19). A study on mental distress and associated factors among medical surgical adult in patients in public hospitals in Addis Ababa Ethiopia and found that the prevalence of mental disorder was 53.1% (20).

Anxiety disorders are the sixth leading cause of disability in both high and low- and middle-income countries(21). Anxiety amplify physical symptoms; increases impairment in functioning; decreases quality of life; decreases adherence to prescribed regimens; increases use of health service resources; Affects good health behaviors (diet, exercise, and smoking), increases suicidal tendencies(22) and mortality(23) in the medical and surgical patients. Anxiety is affecting the quality of life patients with chronic medical illness like cancer(24–27).

There were several factors that could play a role in the development of anxiety in patients with medical and surgical illnesses. Of these, socioeconomic and educational status (10, 23, 28, 29), employment status and stages of cancer(19), age, gender, and residence(15, 20, 29–31), hospital stay(16, 30), social

support(22, 32, 33), fear of death, family concern, fear of dependency and fear of disability(23), high blood pressure, diabetes mellitus and obesity(15), and cigarette and alcohol(34).

Studies revealed that anxiety is the commonest psychological problem among medical and surgical patients posed greater consequences including the quality of life, use of health service resources, increase suicidal behaviors and mortality, yet frequently it is under diagnosed and untreated. The investigators, observed a high number of medical and surgical inpatients through their liaison consultation. Despite its burden, the prevalence of anxiety and predictors among these groups of people has not been well explored in Ethiopia. Therefore, the results of this study will provide essential data for future interventions.

Methods

Study setting and period

An institution based cross-sectional study was conducted among medical and surgical inpatients at St. Paul's Hospital Millennium Medical College (SPHMMC) from May 13 to June 12, 2019. SPMMC is located in the northern part of Addis Ababa, the capital of Ethiopia. St. Paul's hospital was upgraded into a medical college through a decree of the Council of Ministers in 2010 but the hospital was established in 1968 by the late Emperor Haile Selassie. The hospital had both inpatient and outpatient service with different departments, and there are 400 beds for inpatients, and approximately 2682 patients were admitted in the wards every month; of those, 884 patients were in the medical, and 379 in the surgical department during our data collection period.

Study participants and sampling procedure

The study involved adult patients receiving medical care at medical and surgical wards of St. Poul's Hospital Millennium Medical College. According to the average number of admitted patients in the ward per month, the total sample size was proportionally allocated to the medical and surgical wards. We have used systematic random sampling technique to select 590 study participants. The patients admitted in the ward were approached through calculating sampling interval ($k = N/n$), where N and n were the total number of admitted patients during the data collection period and our sample size respectively. The sampling interval (k) = , so that the participants were interviewed every k^{th} . Hence, the first individual was selected by lottery method, and then the other respondents were interviewed at a regular interval of 2. The patients with the age of 18 years and above were included in the study. The patients who were with cognitive impairment, with decreased levels of consciousness and unable to communicate were excluded.

Sample size determination

The sample size was calculated by using the single population proportion formula with the assumptions of prevalence of anxiety in a previous study conducted in another area of Ethiopia 61% (24), ($p = 0.61$), z

(standard normal distribution) 1.96, confidence level 95% ($\alpha = 0.05$) and non-response rate 5%: According to the above considerations, the final representative sample size was determined to be 600.

Measurement

Data were collected by a face-to-face interview using a semi-structured questionnaire which contained five parts: socio-demographic factors, psychosocial related factors, substance use related factors, clinical related factors and Hospital anxiety scale questionnaires. We used the Amharic version of the questionnaire including HAS which was well understandable for the data collectors and participants. To ensure the quality of data, pretest was performed; training was given for the data collectors and supervisors before the actual data collection carried out, and the collected data were checked for its completeness and consistency.

Anxiety was measured by using the hospital anxiety scale which was originally developed by Zigmond and Snaith(35). The HAS is a valid and reliable instrument, which was originally designed to assess anxiety and depression in general medical settings. It carefully separates the emotional concepts from physical illness, and therefore the reliability score showed that it was related to psychological issues, not a biological illness. It has 7-items and the total possible score ranges from 0 to 21. Cronbach's alpha coefficient was 0.829 for anxiety and test-retest intra-class correlation coefficient was 0.944(36). In Ethiopia, HAS was validated in HIV infected patients with internal consistency of 0.78(37). The internal consistency of HAS in our study was 0.79 which was reliable.

Social support was measured by using Oslo-3 social support scale which was used in several studies. Its total score ranges from 3-14. When an individual scored 3-8, 9-11 and 12-14, he/she was considered as having poor, moderate and strong social support respectively(38). The internal consistency of Oslo-3 social support scale in the current study was 0.83. History of substance use was assessed by using WHO's Alcohol, Smoking and Substance Involvement Screening Test (ASSIST)(39).

Data processing and analysis

After checking completeness and consistency, data were coded and entered into Epi-data software version 3.1, and then exported to SPSS version 20 for analysis. Descriptive statistics were employed to describe the characteristics of study participants' relation to the outcome variable. Binary logistic regression analysis was carried out to identify factors associated with anxiety among admitted medical and surgical patients. The strength of the association was presented by odds ratio with 95% confidence interval. Variables with p-values of less than 0.2 in the bivariate analysis were taken into multivariate logistic regression model, and a p-value of less than 0.05 in multivariate analysis was considered as statistically significant.

Results

Socio-demographic characteristics

A total of 590 participants with a response rate of 98.3% were involved in the study. The mean age of the participants was 39.71 ± 14.94 (SD) ranging from 18 to 66 years. Three hundred-one (51%) of the respondents were males, and about three-fifth (58.5%) were from urban areas. Of the total participants, 329 (55.8%) were orthodox Christian; 276 (46.8%) were married; 254(43.1%) were Oromo by their ethnicity. Two hundred seventy-six (46.8%) of the study participants were living with their spouse; 219 (37.1) were unable to read and write, and 145 (24.6%) of the participants were farmers. (**Table 1**)

Distribution of clinical related factors among respondents

Four hundred ten (69.5%) of the participants were admitted in the medical wards. At the movement, one hundred eighty-five (31.4%) of the respondents were diagnosed with endocrine related disorders; Two hundred fifty-one (42.5%) of the respondents stayed in the hospital for a week. About three-fifth (63.1%) of the participants had at least one pervious history of admission; majority (70.3%) of the participants were diagnosed for multiple diseases (at least two), and about 63 (10.7%) of the respondents had history of suicidal attempt (**Table 2**).

Psychosocial and substance related factors among respondents

Of the total participants, 239 (40.5%) had poor social support. Majority (70.3%) of the respondents had never used chat in their life. More than half (68.5%) of the respondents has ever drunk alcohol in their lifetime; 88 (14.9%) of them had ever smoked cigarette. One hundred fifty-four (26.1%) of the respondents were using psychoactive substances within three months immediately before the study period. (**Table 3**)

Prevalence of anxiety among medical and surgical inpatients

The prevalence of anxiety was 62.7% with 95% CI (58.6, 66.9). Of the respondents with anxiety (370), 55.9% were female. Among the anxious participants, one hundred sixty-two (43.8%) had previous history of admission; 128 (34.6%) diagnosed with at least two medical illnesses.

Factors associated with anxiety among medical and surgical inpatients

To explore the strength of the associations between anxiety and predictor variables, bivariate and multivariate logistic regression analysis was carried out. In the bivariate analysis, factors including female sex, being single, urban residence, being a housewife, pervious history of admission, multiple diagnosis and feeling of pain showed associations with anxiety at a p-value of less than 0.2. These variables were fitted into the multivariate logistic regression model to control the confounding effects and to identify the independent predictors. In the multivariate logistic regression analysis, female sex, being

single, previous history of admission and the presence of multiple diagnosis (two and above) were significantly associated with anxiety at a p-value of less than 0.05.

Female sex was nearly two times more likely to develop anxiety compared to male sex (AOR = 1.92, 95% CI: 1.31, 2.80). The odds of developing anxiety were about two times higher among single compared to married (AOR = 2.01, 95% CI: 1.33, 3.01). The likelihood of developing anxiety was 1.6 times higher among those who had a multiple diagnosis (at least two) of medical illness than those who had a single diagnosis (AOR = 1.61, 95% CI: 1.04, 2.47). The odds of developing anxiety were 1.7 times higher among those who had a previous history of admission compared to those who had no such history (AOR = 1.71, 95% CI: 1.13, 2.56). (**Table 4**)

Discussion

According to a series of studies in the globe, people are more prone to suffer from psychological problems, including anxiety and depression while they are physically sick and treated in a non-psychiatric hospitals. This may be due to the direct or indirect stress from those illnesses. The prevalence of anxiety was reported in the previous studies at a very different rates depending on the method used, the population differences, and the disease severity (40–42).

In the current study, the prevalence of anxiety and its possible association with various factors were assessed. The results revealed that a remarkable proportion of patients admitted in medical and surgical wards had anxiety or the prevalence of anxiety among medical and surgical inpatients was found to be 62.7% (95% CI: 58.6, 66.9). The prevalence of anxiety in the current study was similar to the findings in other studies conducted among preoperative surgical patients at the University of Gondar comprehensive, specialized hospital 59.6%, and Debre Markos and Fileg Hiwot general hospitals in Ethiopia 61%(23, 24), Iran 64.9%(14) and Pakistan 64%(42) However, the prevalence of anxiety in the current study was higher than the studies conducted in another area of Ethiopia 47%(22), Rwanda 52.1%(19), Sialkot, Pakistan 32% and 29.87% for patients undergoing emergency and elective surgery respectively(18), Vietnam 43.1% (17), China 15% (10), Turkey 52.2%(14), Iran 32%(30), Brazil 35%(43), and Italy 21%(44). On the other hand, our study finding was lower than the prevalence reported in the studies conducted at Tunisia 67.5% (21) and Jimma University Specialized Hospital, Ethiopia 70.3%(25). The possible reason for the variations might be sample size difference, discrepancy of instruments, time difference and study population contrast.

Regarding the factors associated with anxiety, female sex was positively associated with anxiety. This was in agreement with other studies carried out in Iran(25), Pakistan(45), South Africa(46) and Ethiopia(24, 47). The plausible reason for this association might be biological factors, hormonal fluctuations, and vulnerability for separation anxiety, socioeconomic disadvantages, and deprivation of social status, maladaptive coping styles and lack of a support system for women. Medical and surgical patients who never married were twice of married patients to develop anxiety. This was consistent with the study findings found in Jimma, Ethiopia(25) and Iran(30). The possible reason might be a lack of

social support, being demotivated and feeling of loneliness that lead to anxiety. In this study, single participants are highly affected with anxiety compared to their counterparts that could possibly show lack of emotional and social family support system on increasing anxiety(48). Participants with previous history of admission were more likely to develop anxiety compared to those who had no such history. This might be due to repeated hospital exposure that could be distressing environment, fear of death because of repeated admission, fear of loss of their family after discharging from the hospital, loss of their job because of admission repeatedly, and fear of other hospital acquired disease(49). The other reason also might be patients with chronic illnesses (having repeated exposure of admission) need to take expensive drugs for a long time, and an economic burden may lead to an increased risk of anxiety(50), extended duration of the disease course that might be associated with long-term risk of complications and the poor physical condition of patients(51). Participants who had more than one (multiple) chronic illnesses were more likely to develop anxiety compared with those who had only a single diagnosis. This might be associated with the burdens of different illnesses, drug-drug interactions of different illnesses treatment and medication side effect. Another reason might be the feeling of uncertainty and worry about how their life is going to be these multiple illnesses could be possible. These worries and uncertainties could be manifested as comorbid anxiety(52, 53).

This study also has limitations; it was a cross-sectional study and thus cannot establish a causal link between associated factors and anxiety symptoms among admitted medical and surgical patients. The finding is likely only to hint at the complex interactions between depression symptoms and explanatory variables. So the explanation and usage of the study must be considered a limitation.

Conclusion

The prevalence of anxiety among medical and surgical inpatients was high. Anxiety was significantly associated with female sex, being single, previous history of admission and having multiple diagnoses. Therefore, it is better to integrate mental health care with routine services for medical and surgical inpatients and it is good to give more emphasis to patients, especially for those who had a history of frequent admission, multiple diagnoses and who are female and single.

Abbreviations

AMSH: Amanuel Mental Specialized Hospital; AOR: Adjusted Odds Ratio; CI: Confidence Interval; COR: Crude Odd Ratio; DSM IV: Diagnostic and Stastical Manual for Mental Disorder Text Revision-Fourth Edition; HAS: Hospital Anxiety Scale; JUSH: SPHMMC: St. Paul's Hospital Millennium Medical College; SQR-20: Self Reporting Questionnaire-20; UoG: University of Gondar; USA: United States of America; WHO: World Health Organization

Declarations

Ethical consideration

Ethical clearance was obtained from a joint Ethical Review Board (ERB) of College of Medicine and Health Science (CMHS) of the University of Gondar (UoG). A formal letter of permission was also obtained from SPHMMC. The study participants were provided sufficient information on the purpose, objective and relevance of the study and had the right to refuse or discontinue the participation at any time. Written informed consent was obtained from each participant. Confidentiality was assured by omitting any identifiers of the participants. Severely anxious patients were consulted to the nearby senior psychiatry clinicians.

Consent to publish: Not applicable.

Competing interests

None declared

Data sharing statement

The dataset during and/or analyzed during the current study available from the corresponding author on reasonable requests

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Authors' Contribution

All the authors conceived the idea and participated in the design of the study, proposal development, statistical analysis, and carry out the manuscript. All authors read and approved the final manuscript.

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Tables

Table 1: Distributions of socio-demographic characteristics among medical and surgical inpatients at St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, 2019 (n = 590).

Characteristics	Category	Frequency	Percent (%)
Age	39.71 (Mean) ± 14.94 (SD)		
Sex	Male	301	51
	Female	289	49
Residence	Urban	345	58.5
	Rural	245	41.5
Marital status	Married	276	46.8
	Single	231	39.2
	Divorced	39	6.6
	Widowed/separated	44	7.5
Ethnicity	Amhara	248	42.0
	Oromo	254	43.1
	Gurage	58	9.8
	Others*	30	5.1
Religion	Orthodox	329	55.8
	Protestant	126	21.4
	Muslim	105	17.8
	Catholic	30	5.1
Educational status	Unable to read and write	219	37.1
	Primary school	244	41.4
	Secondary school	84	14.2
	College and above	43	7.3
Occupational status	Governmental employee	62	10.5
	Private employee	111	18.8
	Merchant	35	5.9
	Farmer	145	24.6
	House wife	114	19.3
	Student	36	6.1
	Daily laborer	87	14.7

Living condition	With spouse	276	46.8
	With family	135	22.8
	Alone	145	24.6
	<i>with their children</i>	34	5.8

NB: Other* = Tigre, Wolayta and Silte

Table 2: Characteristic-distributions of clinical factors admitted patients.

Variables	Categories	Frequency	Percent
Ward	Medical	410	69.5
	Surgical	180	30.5
Current diagnosis	Musculoskeletal disease	41	6.9
	Genitourinary disease	56	9.5
	Endocrine disease	185	31.4
	Gastrointestinal disease	103	17.5
	Infectious disease	155	26.3
	Cardiovascular disease	50	8.5
Duration of hospital stay	One week	251	42.5
	Two weeks	242	41.0
	Three weeks	41	6.9
	≥ one month	56	9.5
Pervious history of admission	No	372	63.1
	Yes	218	36.9
Multiple diagnosis of medical illness	No	415	70.3
	Yes	175	29.7
History of suicidal attempt	No	527	89.3
	Yes	63	10.7
Feeling of pain	No	285	48.3
	Yes	305	51.7
Fear of death	No	488	82.9
	Yes	102	17.3
Fear of complication	No	248	42.0
	Yes	342	58
History of mental illness	No	465	78.8
	Yes	125	21.2

Family history of mental illness	No	480	81.4
	Yes	110	18.6
Family history of chronic medical illness	Yes	89	15.1
	No	501	84.9

Table 3: Psychosocial and substance use characteristics of respondents

Characteristics	Categories		Frequency	Percent
Social support	Poor		239	40.5
	Moderate		266	45
	Good		85	14
History of ever substance use (in lifetime)	Khat use	Yes	175	29.7
		No	415	70.3
	Alcohol use	Yes	404	68.5
		No	186	31.5
	Cigarette use	Yes	88	14.9
		No	502	85.1
	Other substance use	Yes	22	3.7
		No	568	96.3
History of substance use At the movement (within three months prior to the study)	chat use	Yes	100	16.9
		No	490	83.1
	Alcohol use	Yes	154	26.1
		No	436	73.9
	Cigarette use	Yes	46	7.8
		No	544	92.2
	Other substance use	Yes	10	1.7
		No	580	98.3

NB: Other substances: Cannabis (hashish)

Table 4: Factors associated with anxiety among admitted patients.

Variables	Categories	Anxiety			
		Yes	No	COR (95% CI)	AOR (95% CI)
Sex	Male	163	138	1.00	1.00
	Female	207	82	2.14 (1.52,3.01)	1.92 (1.31,2.80)**
Residence	Urban	220	125	1.01 (0.54,0.95)	0.77 (0.51,1.17)
	Rural	150	95	1.00	1.00
Marital status	Married	154	122	1.00	1.00
	Single	162	69	1.86 (1.29,2.69)	2.01 (1.34,3.01)**
	Divorce	27	12	1.78 (0.87,3.66)	1.92 (0.91,4.08)
	Widowed/er	27	17	1.26 (0.67,2.41)	1.54 (0.77,3.09)
History of previous admission	Yes	162	56	2.28 (1.58,3.29)	1.71 (1.13,2.57)*
	No	208	164	1.00	1.00
Diagnosis	Multiple	128	47	1.95 (1.32,2.87)	1.61 (1.05,2.47)*
	Single	242	173	1.00	1.00
Occupation status	Governmental employee	39	23	1.00	1.00
	Private employee	61	50	1.39 (0.82,2.37)	1.39 (0.75,2.56)
	Merchant	16	19	0.46 (0.22,0.97)	0.67 (0.29,1.55)
	Farmer	91	54	0.92 (0.49,1.71)	1.03 (0.52,2.04)
	Housewife	82	32	0.66 (0.399,1.098)	0.74 (0.41,1.34)
	Student	21	15	0.76 (0.36,1.60)	0.84 (0.37,1.94)
	Daily worker	57	30	1.03 (0.590,1.802)	1.01 (0.53,1.92)
Feeling of pain	Yes	202	103	1.00	1.00

No	168	117	1.36 (0.98,1.91)	1.41 (0.99,2.01)
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Note: ** = p-value < 0.001; * = p-value < 0.05; Model fitness (Hosmer and Lemeshow Test): p-value (sig) = 0.84