

Preoperative Anxiety and Associated Factors Among Adult Elective Surgery Patients in North Wollo Zone, Northeast Ethiopia

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Background: Higher levels of preoperative anxiety may be associated with life-threatening postoperative complications and increase the risk of postoperative mortality. Therefore, this study aimed to assess the prevalence and associated factors of high level of preoperative anxiety among elective surgical patients in North Wollo Zone, Northeast, Ethiopia.

Methods: Hospital-based, cross-sectional study was conducted on 211 patients scheduled for surgery. Participants were selected using a systematic random sampling method. The data were collected using the state-trait anxiety inventory scale. Participants who scored STAI scale >44 were considered as experiencing a high level of preoperative anxiety. Reliability of the questionnaire was assessed (Cronbach's alpha coefficient=0.84). The data were entered using EpiData version 4.2 and analyzed using SPSS version 24. Binary logistic regression was computed to determine the predictors of preoperative anxiety. A p-value < 0.05 at 95% CI was considered as significant predictors of high-level preoperative anxiety.

Results: A total of 211 participants were involved in this study with a response rate of 97.7%. The prevalence of high level of preoperative anxiety among elective surgical patients scheduled for surgery was 102 (48.3%). Factors such as fear of death (AOR=6.72, CI=(2.56, 17.66)), fear of unexplained origin (AOR=4.98, 95% (CI: 1.91, 12.97)) and fear of post-operative pain (AOR=4.39 95% (CI=2.17, 8.88)) were significant predictors of preoperative anxiety.

Conclusions and Recommendations: The prevalence of high level of preoperative anxiety was high. Fear of death, fear of unknown origin, and fear of postoperative complications were significant predictors of preoperative anxiety. The preoperative nursing care focused on appropriate anxiety-reducing methods such as preoperative education, family-centered preparation for surgery, providing psychological care and medication can be required for surgical patients who develop high levels of preoperative anxiety.

Keywords: anxiety, preoperative anxiety, surgery, Ethiopia

Background

Anxiety can be explained as feelings of uncertainty, uneasiness, apprehension, or tension that a person experiences in response to an unknown object or situation.¹ Anxiety is a normal reaction to stress, conflict, trauma, or frustration, and a reasonable and expected response to real or potential danger. However, higher and extended levels of anxiety may be associated with life-threatening postoperative complications and increase the risk of postoperative morbidity and mortality.^{2,3} The clinical manifestations of anxiety are generally classified as physiologic, psychological,

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and cognitive responses to stress. Physiologic symptoms of anxiety are increased pulse, blood pressure, and respiration, diaphoresis, anorexia, nausea, vomiting, sleep disturbance, headache, and muscle tension. The psychological manifestations of anxiety are withdrawal, depression, irritability, crying, lack of interest, worthlessness, and apprehension. The cognitive symptoms are decreased interest, inability to concentrate, non-responsiveness to external stimuli, preoccupation, forgetfulness, and rumination. The pathophysiologic explanation of the sign and symptoms of anxiety are explained by the activation of the autonomic nervous system and which result in a neuroendocrine change in the body.¹

Surgery is an invasive procedure performed through an incision of the body. This incision is usually associated with bleeding, pain, and sometimes causes morbidity and mortality. The preoperative period is one of the stressful events for surgical patients scheduled for surgery. This stressful event triggers physiologic, psychological, and emotional responses to stressful situations. Therefore, preoperative nursing care should focus on the reduction of patient anxiety through the establishment of preoperative educational interventions, administering required medications, and providing non-pharmacological treatment methods.⁴⁻⁶

Preoperative anxiety has a significant impact on patients, health professionals, and health institutions. The morbidity, mortality, and postoperative complications are more severe in elder patients and patients with cardiac and endocrine disorders. The patient may pay an additional cost for the management of postoperative complications commonly associated with preoperative anxiety.⁷ Postoperative pain is one of the most common complaints of patients who undergo surgery. Preoperative anxiety has several postoperative complications such as cardiovascular disturbances like increased blood pressure and heart rate, gastrointestinal disturbances such as nausea, vomiting, and diarrhea, and endocrine disturbances like diaphoresis and increased risk of infection. Increased blood pressure may increase the risk of bleeding and suppression of the immune system may delay the wound healing process.^{1,8} Anxiety has resulted in an impairment of cognitive functions characterized by an impaired process of thinking, remembering, learning, judgment, decision-making, and loss of attentiveness.^{7,9} Patients and relatives of patients who suffer from preoperative anxiety may lose trust in health-care providers and hospitals, and the patients are not satisfied with the service provided by health institutions. Additionally, the health institutions may be affected

by the spending of additional costs for unplanned prolonged hospitalization and treatment of complications.¹⁰

Preoperative anxiety was found to be associated with socio-demographic and surgery-related factors. Based on the findings of previous studies socio-demographic factors such as age, sex, educational status, occupation, monthly income, marital status, and religion affect the patient's susceptibility to preoperative anxiety.^{11,12} Surgery-related factors such as fear of postoperative pain, fear of postoperative disability, awareness about the disease and surgery, concerning family issues, and fear of medical mistakes have a significant effect on patient anxiety level.^{9,13}

Globally, approximately 50% of patients scheduled for elective surgery experienced preoperative anxiety.¹⁴ Studies reported from different countries showed that the prevalence of preoperative anxiety was high. Besides, the prevalence of preoperative anxiety was 53% in Brazil,¹⁵ 63% in Pakistan,¹⁶ 67% in Tunisia,¹⁷ and 72.8% in Rwanda.¹⁸ In Ethiopia, preoperative anxiety is a common mental health problem and its magnitude ranges from 47%¹⁹ to 70.3%.²⁰ There are only a few relevant studies on preoperative anxiety among surgical patients in developing countries, particularly in Ethiopia. Therefore, this study aimed to assess the prevalence of preoperative anxiety and its predictors among adult patients scheduled for elective surgery.

Methods

Study Design and Setting

The study was conducted in North Wollo Zone Hospitals. The city of the North Wollo zone is Woldia town, which is 521 KM from Addis Ababa, the capital city of Ethiopia, and 360 KM from Bahir-Dar, the capital city of Amhara regional state. There are five governmental hospitals in the North Wollo zone. Those hospitals are Woldia General Hospital, Lalibela primary Hospital, Kobo primary Hospital, Meket primary Hospital, and Wadila primary Hospital. This quantitative, institution-based cross-sectional study was conducted from December 10/2019 to February 10/2020

Population

Target Population

All patients were diagnosed and appointed for elective surgery in the five North Wollo zone hospitals.

Study Population

Those randomly selected surgical patients who were appointed for elective surgery in the five North Wollo zone hospitals.

Eligibility Criteria

Inclusion Criteria

All patients greater than 18 years old and scheduled for elective surgery.

Exclusion Criteria

Surgical patients who have known psychiatric disorders, critically ill surgical patients, and patients who took any type of anxiolytics medications were excluded from this study.

Sample Size Determination and Sampling Technique

We estimated the number of patient participants by using a single population proportion formula with consideration of the following assumptions:

Prevalence of preoperative anxiety ($P=70.3\%$), which is taken from a study conducted in Jimma University,²⁰ Level of confidence= 95% ($Z=1.96$), 5% margin of error ($d=0.05$), 10% for non-response rate.

The Sample size was calculated by using a single proportion formula:

$$n_i = \frac{z\left(\frac{\alpha}{2}\right)^2 * P(1 - p)}{d^2}$$

where n_i =initial sample size

$$n_i = \frac{(1.96)^2 * 0.7(1 - 0.7)}{(0.05)^2} = 323$$

The initial sample size was 323.

However, the source population (500) is less than 10,000, then the calculation was processed with correction formula, ie, $n_f = n_i / (1 + \frac{n_i}{N}) = 323 / (1 + \frac{323}{500}) = 196$, and we add a non-response rate of 10% (20 in number) so the final sample size was 216.

A systematic random sampling technique was used to collect data from selected participants. First, we inspect the hospital surgical registration book to allocate the sample size proportionally. According to Woldia General Hospital surgical ward registration book report, about 150 patients per month were admitted for surgery. Similarly, 58 patients in Lalibela Hospital, 38 patients in Kobo hospital, 34 patients in Meket hospital, and 28 patients in Wadila hospital were admitted for surgery per month. Since our study period was two months, we took two-month patient flow by multiplying the monthly patient flow by two.

Based on the proportional allocation formula the total sample sizes (216) were allocated to five North Wollo zone hospitals. Finally, 105 patients from Woldia General Hospital, 41 patients from Lalibela primary Hospital, 27 patients from Kobo primary Hospital, 24 patients from Meket primary Hospital, and 19 patients from Wadila primary Hospital have participated in this study (Figure 1).

Operational Definitions

Anxiety

There is a vague feeling of dread or apprehension.

Preoperative Anxiety

Expressed by a score of S-STAI as anxiety and no anxiety.

High Level of Anxiety

Patients who score S-STAI >44 .

Low Level of Anxiety

Patients who score S-STAI ≤ 44 .²¹

Adult

Age greater than 18 years old.

Data Collection Instruments and Personnel

Data were collected using an interviewer-administered and structured questionnaire. The tool was adapted and modified from a validated questionnaire used in previous studies conducted in Ethiopia.^{20,21} The questionnaire contains 30 questions arranged into three sections; the first section contains eight questions regarding the socio-demographic characteristics of the participants, the second section contains 10 questions regarding the anxiety-related questions of surgical patients. The third section contains 12 questions regarding the contributing factors of anxiety. The data were collected by five trained Diploma nurse data collectors and three BSc Nurse Supervisors. A written guideline was given to the administrator of the questionnaire to assure that every patient received the same directions and information. The data were collected on the day before surgery.

The level of preoperative anxiety was assessed using the state-trait anxiety inventory (STAI) scale. The STAI is a suitable instrument for measuring the level of preoperative anxiety in adults. It has two subscales. The first part is the state anxiety inventory scale, which evaluates the current feeling of participants "at this moment" using items that measure subjective feelings of uncertainty, uneasiness,

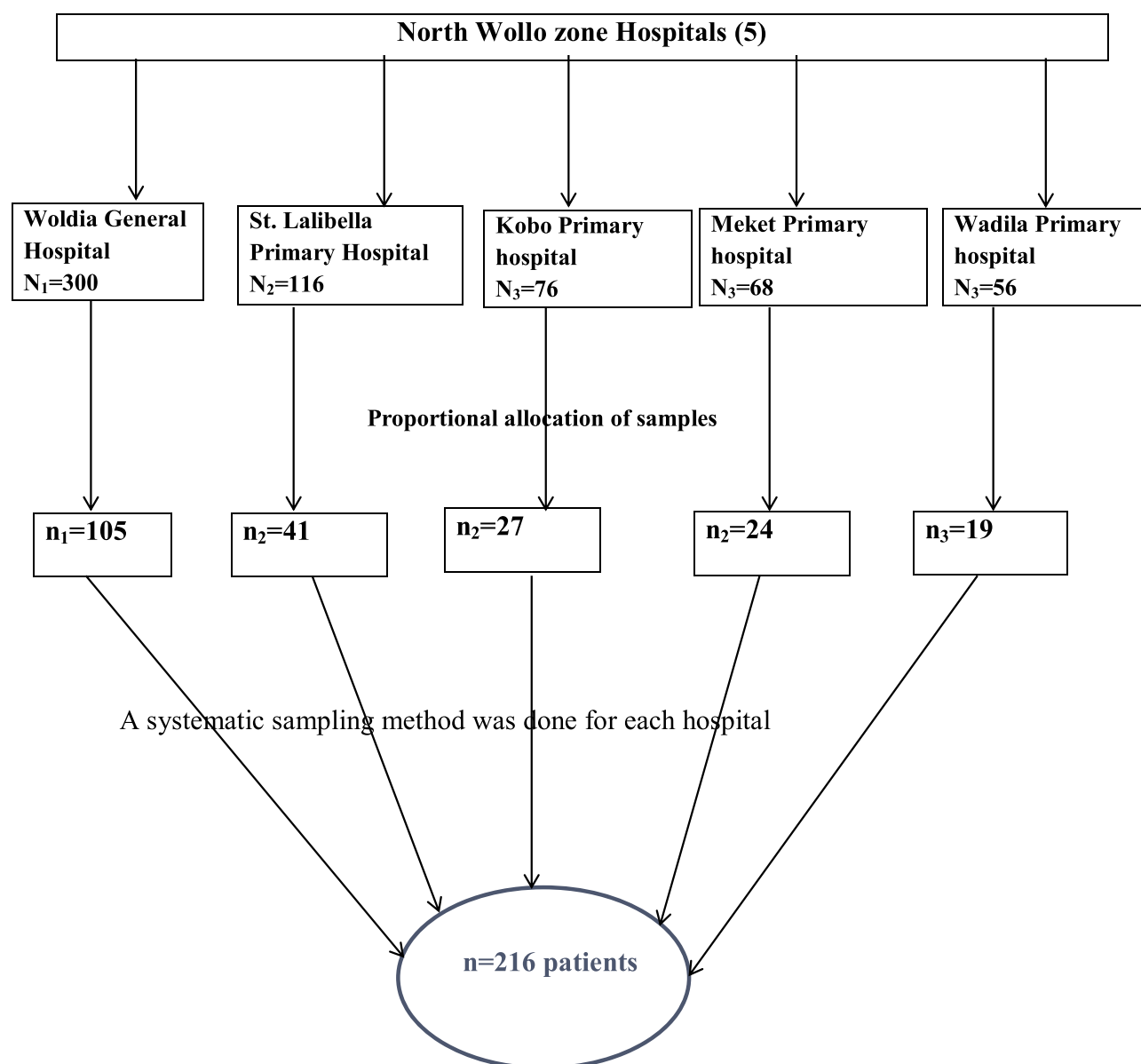


Figure 1 Schematic representation of the sampling procedure in North Wollo zone hospitals, 2020.

apprehension, tension, and activation of the autonomic nervous system. The second part is the trait anxiety inventory scale, which evaluates the participant's general feelings "generally" including general states of confidence, calmness, and security. To respond to the state anxiety inventory scale, participants choose the number that best describes the intensity of their feelings: (1) Not at all, (2) Somewhat, (3) Moderately, and (4) Very much. To respond to the trait anxiety scale questions, respondents rate the frequency of their general feelings on the following four-point scale: (1) Almost never, (2) Sometimes, (3) Often, and (4) Almost always.

Data Quality Control

To assure the quality of data, the following measures were undertaken. The questionnaire was adapted from previous studies.^{20,21} The questionnaire was primarily prepared in the English language. Then, it was translated into the local language (ie, Amharic) and back to the English language to keep the consistency of tools. The pre-test was conducted 2 weeks before the actual data collection period by taking 5% of the sample size in Dessie Referral Hospital. Reliability of the questionnaire was assessed (Cronbach's alpha coefficient=0.84). The study participants were selected randomly, which increases the face validity of

the study. Data collectors and supervisors were recruited based on their experience in data collection. The one-day training was given to data collectors and supervisors on the tool and data collection procedures by the principal investigator. Data collectors were instructed to check the completeness of the questionnaire just after its completion. The supervisors were checking the questionnaire for completeness and consistency daily. Moreover, the collected data were coded, cleaned, and explored before analysis.

Data Entry and Analysis

The data were coded, cleaned, and entered into EpiData version 4.2 software and exported to SPSS version 24 for analysis. To explain the study population concerning relevant variables, descriptive statistics such as frequencies and percentages were calculated. Binary logistic regression analysis was carried out to see the relative effects of independent variables on the dependent variable. Then, all variables with $P\text{-value} \leq 0.25$ in the bivariable analysis model were included in the final multivariable analysis model to control for possible confounders. The Hosmer Lemeshow test was used to check model fitness. The adjusted odds ratio was used to interpret the strength of association at 95% CI. A statistical test of association was considered significant at a $p\text{-value} < 0.05$. The result was presented in the form of tables.

Results

Socio-Demographic Characteristics

A total of 211 study participants were enrolled in this study with a response rate of 97.7%. Of these patients, 127 (60.2%) were male and 157 (74.4%) were married. The majority of the study participants 153 (72.5%) were Orthodox Christian religious followers (Table 1).

Prevalence of Preoperative Anxiety

The prevalence of high level of preoperative anxiety among surgical patients in the North Wollo Zone was 102 (48.3%). The result was assessed by using the score of the state-trait anxiety inventory (STAI). One hundred two (102) surgical patients in this study had an STAI score above 44 (Table 2).

Possible Causes of Preoperative Anxiety

The study participants were asked to choose or list their perceived possible contributing factors to the preoperative anxiety. Accordingly, fear of unexplained origin 175

Table 1 Socio-Demographic Characteristics of Elective Surgical Patients Scheduled for Surgery in North Wollo Zone Hospitals, Northeast Ethiopia, 2020

Variables	Categories	Frequency (n=211)
Sex of respondents	Male	127(60.2%)
	Female	84(39.8%)
Age of respondents	15–30	87(41.2%)
	31–45	55(26.1%)
	46–60	27(12.8%)
	>60	42(19.9%)
Religion	Orthodox Christian	153(72.5%)
	Muslim	48(22.7%)
	Protestant	10(4.7%)
Ethnicity	Amhara	182(86.3%)
	Tigray	19(9%)
	Oromo	10(4.7%)
Educational status	Illiterate	41(19.4%)
	Can read and write	43(20.4%)
	Primary school	45(21.3%)
	Secondary school	32(15.2%)
	Higher education	50(23.7%)
Marital status	Married	157(74.4%)
	Unmarried	54 (25.6%)
Occupational status	Government employed	57(27%)
	Daily labor	14(6.6%)
	Housewife	60(28.4%)
	Student	18(8.5%)
	Farmer	52(24.6%)
	Merchant	10(4.7%)
Monthly income (ETB)	500–1000	53(25.1%)
	1001–2000	49(23.2%)
	2001–4000	51(24.2%)
	>4000	58(27.5%)

Abbreviation: ETB, Ethiopian Birr.

(82.9%), fear of death 169 (80.1%), fear of postoperative complications 144 (68.2%), and fear of postoperative pain 118 (55.9%) were the most commonly listed causes of preoperative anxiety (Table 3).

Predictors of Preoperative Anxiety

Binary logistic regression was done to identify factors associated with preoperative anxiety. In Bivariate logistic regression, the variables with a $p\text{-value} < 0.2$ were fear of death, fear of unexplained origin, fear of postoperative pain, fear of dependency, fear of disability, fear of

Table 2 Preoperative Anxiety Among Surgical Patients in North Wollo Zone, Northeast Ethiopia, 2020 (n=211)

S. No	Questions	Not at All n (%)	Somewhat n (%)	Moderately n (%)	Very Much n (%)
1	Did you feel any hand tremor, sweating of hands, feel fear within 24hr before surgery?	56 (26.5)	37 (17.5)	84(39.8)	34(16.1)
2	Did you feel any discomfort in the abdomen within 24hr before surgery?	32 (15.1)	48 (22.7)	86 (40.8)	45 (21.3)
3	Did you feel nausea within 24hr before surgery?	67 (31.7)	81 (38.4)	39 (18.5)	24 (11.4)
4	Did you feel like you cannot clearly understand the procedure that is going to be done?	75 (35.5)	59 (28)	49 (23.2)	28 (13.3)
5	Did you feel afraid within 24hr before surgery?	37 (17.5)	44 (20.9)	96 (45.5)	34 (16.1)
6	Did you have trouble remembering things within 24hr before surgery?	87 (41.2)	55 (26.1)	39 (18.5)	30 (14.2)
7	Did you have any trouble answering questions that you know the answers to within 24hr before surgery?	79 (37.4)	54 (25.6)	44 (20.9)	34 (16.1)
8	Did you have night mares/difficulty sleeping with in 24hr before surgery	69 (32.7)	48 (22.7)	65 (30.8)	29 (13.7)
9	Did you have a problem answering simple questions about yourself within 24hr before surgery?	68 (32.2)	78 (37)	41 (19.4)	24 (11.4)
10	Did you have any trouble deciding on different choices presented to you within 24hs before surgery?	53 (25.1)	74 (35.1)	51 (24.2)	33 (15.6)

complications, fear of medical mistake during surgery, and lack of awareness about surgery. In the multivariable logistic regression analysis, factors that were significantly associated with preoperative anxiety were fear of death, fear of unexplained origin, and fear of postoperative pain. Respondents with fear of death were approximately seven times more likely to become anxious during the preoperative period (AOR=6.72, CI=(2.56, 17.66)) compared with those who had not. Similarly, patients who feared of unexplained origin were five times more likely to develop preoperative anxiety than those who did not have fear (AOR=4.98, 95% (CI: 1.91, 12.97)). Finally, participants with a fear of postoperative pain were four times more likely to develop preoperative anxiety when compared with those who did not have fear (AOR=4.39, 95% (CI=2.17, 8.88)) (Table 4).

Discussion

Anxiety is a feeling of worrying due to anticipation of dangerous phenomena. Higher and extended levels of preoperative anxiety may be associated with life-threatening postoperative complications and increase the risk of postoperative mortality.² Reducing preoperative anxiety is one important strategy to improve patient safety, reduce postoperative complications, and postoperative mortality.²² The current study assessed the prevalence and associated factors of preoperative anxiety among patients scheduled for elective surgery. The overall prevalence of high level of preoperative anxiety among elective surgical patients in

this study was 48.3% as suggested by STAI score greater than 44. This result indicated that approximately half of the patients scheduled for elective surgery experienced high level of preoperative anxiety.

The result of this study was in line with studies conducted in Iran 47%,²³ Nigeria 51%,¹⁰ and in southern Ethiopia 47%.¹⁹ However, the result of this study was lower than the studies done in Pakistan 62%,²⁴ Brazil 53%,¹⁵ Tunisia 67.5%,²⁵ and Rwanda 72.8%.¹⁸ The plausible justification for this variation might be due to the use of different assessment tools and a difference in the methodology part. In the same way, the result of this study was lower than studies conducted in Ethiopia; at the University of Gondar hospital 59.6%,⁹ Jimma University Specialized Teaching Hospital 70.3%,²⁰ and in Debre Markos and Felege Hiwot referral hospitals 61%.²¹ The possible justification for the lower proportion of preoperative anxiety in this study might be because the majority of study participants in this study were in good educational status compared to the above study participants. This helps patients to easily understand preoperative counseling and patients can easily understand the disease, diagnostic procedures, and possible treatment options. Even though we did not find statistical significance between educational status and preoperative anxiety, a recent study done in Turkey and Northwest Ethiopia reported that less educated patients experienced a high level of preoperative anxiety than the educated patients.^{11,21} Additionally, there are some variations in the methodological part.

Table 3 Possible Causes of Preoperative Anxiety Among Surgical Patients in North Wollo Zone, Northeast, Ethiopia, 2020

Variables	Category	Frequency (n=211)
Fear of Death	Yes	169 (80.1%)
	No	42 (19.9%)
Fear of unexplained origin	Yes	175 (82.9%)
	No	36 (17.7%)
Financial losses	Yes	66 (31.3%)
	No	145 (68.7%)
Family issues	Yes	100 (47.4%)
	No	111 (52.6%)
Postoperative pain	Yes	118 (55.9%)
	No	93 (44.1%)
Dependency	Yes	90 (42.7%)
	No	121 (57.3%)
Disability	Yes	100 (47.4%)
	No	111 (52.6%)
Complications	Yes	144 (68.2%)
	No	67 (31.8%)
Cosmetic issues	Yes	46 (21.8%)
	No	165 (78.2%)
Medical mistakes	Yes	106 (50.2%)
	No	105 (49.8%)
Unable to recovery from anesthesia	Yes	105 (49.8%)
	No	106 (50.2%)
Awareness during surgery	Yes	116 (55%)
	No	95 (45%)

The study participants were asked to list their perceived possible contributing factors to preoperative anxiety. Accordingly, fear of unexplained origin 82.9%, fear of death 80.1%, fear of postoperative complications 68.2%, and fear of postoperative pain 55.9% were the most common contributing factors to preoperative anxiety. This result is supported by cross-sectional studies conducted in Pakistan, Nigeria, Northwest Ethiopia, and Southern Ethiopia. In Pakistan, the major contributing factors of preoperative anxiety among surgical patients were fear of postoperative complications 89.6% and fear of postoperative pain 78.8%.⁵ Results in Nigeria showed that surgical patients worried during the preoperative period due to fear of complications 70.6% and fear of postoperative pain 35.5%.¹⁰ A study done in southern Ethiopia showed that the patient's major reason for preoperative anxiety was

fear of death 83.1% and fear of postoperative complications 76.4%.¹⁹ Similarly, a cross-sectional study conducted in Northwest Ethiopia revealed that fear of postoperative complications 52.4% and fear of postoperative pain 50.1% were the most common factors responsible for preoperative anxiety.²¹

Socio-demographic factors such as age, sex, religion, marital status, ethnicity, occupation, monthly income, and educational status have not shown any significant association with preoperative anxiety in the current study. Gender is one of the common independent predictors for anxiety and being female is associated with a high level of anxiety in the preoperative period.^{11,15,26,27} High anxiety among female patients is explained by the fluctuation of estrogen and progesterone hormone levels.²⁸ In this study, female patients experienced a higher frequency of preoperative anxiety than male patients (59.8% Vs 40.2%); however, this was not statistically significant. Educational status has been documented as one of the independent predictors of preoperative anxiety. A study conducted in Turkey and Northwest Ethiopia concluded that less educated people experienced a high level of preoperative anxiety.^{11,21} On the other hand, some studies showed that a high level of preoperative anxiety was observed in patients with high educational status.^{24,29} However, in this study, the educational status of participants did not statistically associate with the level of preoperative anxiety.

In this study, fear of death, fear of unexplained origin, and fear of postoperative pain were significantly associated with preoperative anxiety. Respondents with fear of death were approximately seven times more likely to become anxious during the preoperative period compared with those who have not. A cross-sectional study conducted in Northwest Ethiopia supports this finding.⁹ The majority of our study participants are family managers and they are the major source of income for their families. As a result, it is better to minimize the patient's preoperative anxiety by counseling and providing appropriate information regarding surgery and its possible outcome. Additionally, patients who fear an unexplained origin were five times more likely to develop preoperative anxiety than those who do not have fear. This might be due to the lack of preoperative counseling and psychological support. A study was done in India showed that preoperative teaching could reduce the level of preoperative anxiety among patients scheduled for surgery.⁶ Finally, participants with a fear of postoperative pain were four times more likely to develop preoperative anxiety when

Table 4 Bivariate and Multivariate Logistic Regression Analyses of Factors Associated with Preoperative Anxiety in Surgical Patients, Northeast Ethiopia, 2020

Variables		Anxiety		Bivariate Logistic Regression	Multivariable Logistic Regression	P-value
		Yes	No	COR (95% CI)	AOR (95% CI)	
Fear of death	Yes	95	74	6.42 (2.69, 15.27)	6.72 (2.56, 17.66)	<0.0001
	No	7	35			
Fear of unexplained origin	Yes	94	81	4.06 (1.753, 9.41)	4.98 (1.91, 12.97)	0.001
	No	8	28			
Financial loss	Yes	35	31	1.31 (0.73, 2.35)		
	No	67	78			
Family issue	Yes	49	51	1.05 (0.61, 1.81)		
	No	53	58			
Post-operative pain	Yes	74	44	3.9 (2.18, 6.97)	4.39 (2.17, 8.88)	<0.001
	No	28	65			
Fear of dependency	Yes	50	40	1.66 (0.96, 2.87)	1.13 (0.53, 2.38)	0.758
	No	52	69			
Fear of disability	Yes	58	42	2.1 (1.21, 3.64)	1.98 (0.93, 4.2)	0.077
	No	44	67			
Fear of complications	Yes	83	61	3.44 (1.84, 6.43)	2.1 (0.99, 4.47)	0.053
	No	19	48			
Cosmetic issues	Yes	25	21	1.36 (0.71, 2.62)		
	No	77	88			
Fear of a medical mistake	Yes	56	50	1.44 (0.83, 2.47)	1.1 (0.55, 2.18)	0.785
	No	46	59			
Unable to recover from anesthesia	Yes	54	51	1.28 (0.74, 2.19)		
	No	48	58			
Awareness during surgery	Yes	65	51	1.99 (1.15, 3.46)	1.19 (0.59, 2.37)	0.622
	No	37	58			

compared with those who do not have fear. A study done in the Czech republic showed that fear of postoperative pain was the most common cause of preoperative anxiety in patients scheduled for elective surgery.¹³

Limitation of the Study

There were some limitations to this study that could be addressed by future research. Firstly, as it was a cross-sectional study, I could not draw a cause-and-effect relationship between preoperative anxiety and the identified significant factors. Secondly, the study was based on self-reported information that may be prone to reporting bias. Finally, the study could not compare the level of anxiety preoperatively and postoperatively.

Conclusion

Patients who were scheduled for surgery in North Wollo Zone hospitals had a high level of preoperative anxiety (48.3%). Fear of death, fear of unexplained origin, and fear of postoperative pain were considered as significantly associated factors of preoperative anxiety among elective surgical patients in North Wollo Zone hospitals. The preoperative nursing care focused on appropriate anxiety-reducing methods such as preoperative education, family-centered preparation for surgery, and providing appropriate preoperative information. Additionally, psychological care and medication can be required for surgical patients who develop a high level of preoperative anxiety.

Abbreviations

AOR, adjusted odds ratio; CI, confidence interval; COR, crude odds ratio; ETB, Ethiopian birr; OR, operation room; SPSS, Statistical Package for Social Sciences; STAI, state-trait anxiety inventory.

Data Sharing Statement

All related data have been presented within the manuscript. 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

A letter of ethical clearance and approval was obtained from the institutional review board of Woldia University, College of Health Sciences. Then a letter of permission was obtained from Woldia General Hospital. Written informed consent of respondents was obtained after briefing them about the purpose of the study.

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Author Contributions

The author made substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data; took part in drafting the article or revising it critically for important intellectual content; agreed to submit to the current journal; gave final approval of the version to be published; and agree to be accountable for all aspects of the work.

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Disclosure

The author reports no conflicts of interest for this work.

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