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Preoperative anxiety and associated factors among adult surgical patients in public hospitals, eastern Ethiopia

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Abstract

Objective: This study aimed to assess the prevalence of preoperative anxiety and associated factors among adult surgical patients in public hospitals of eastern Ethiopia from 25 April to 26 May 2022.

Methods: An institutional-based cross-sectional study was undertaken using a systematic sampling technique among 423 participants from patients eligible for elective surgery. The prevalence of preoperative anxiety was assessed using the state and trait anxiety inventory measurement scale. Data were analyzed using SPSS version 26. Descriptive and summary statistics were computed. Binary and multivariable logistic regression were computed. The strength of the association was presented using an adjusted odds ratio with a 95% confidence interval and statistical significance was declared at a p-value < 0.05.

Results: The prevalence of preoperative anxiety among patients scheduled for elective surgery was 51.2%. Being 31–45 aged adult (AOR = 0.36; 95% CI = 0.17, 0.78), having moderate (AOR = 0.46; 95% CI = 0.22, 0.96) and strong social support (AOR = 0.04; 95% CI = 0.02, 0.08), being single (AOR = 0.19; 95% CI = 0.04, 0.89), listening to music (AOR = 0.37; 95% CI = 0.18, 0.74) and finding social and religious support (AOR = 0.15; 95% CI = 0.07, 0.33), and orthopedic surgery (AOR = 0.21; 95% CI = 0.10, 0.43) were significantly associated with lower odds of preoperative anxiety, whereas having fear of death (AOR = 1.16; 95% CI = 0.64, 2.09) was significantly associated with increased odds of preoperative anxiety.

Conclusion: In the current study, the magnitude of preoperative anxiety was high. Being an older adult and having social and treatment support was associated with lower odds of preoperative anxiety. In contrast, lower psychological readiness (fear of death) was associated with increased odds of preoperative anxiety. Patients should be routinely assessed for anxiety during the preoperative appointment, and the proper coping mechanisms and anxiety-reduction approaches should be used. It is also advisable that appropriate policies and procedures for reducing preoperative anxiety should be devised

Keywords

Elective surgery, preoperative anxiety, social and treatment support, state-trait anxiety inventory scale, eastern Ethiopia

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Introduction

Anxiety is the most common psychological reaction among patients awaiting surgeries.[1,2] Preoperative anxiety (POA) is a psychological, physiological, and behavioral state of an uncomfortable or tense unpleasant mood before surgery in response to a potential challenge or threat to a reality that can cause altered hemodynamics.[3] The anxiousness results from the fight or flight of sympathetic activation and begins when the surgical operation is scheduled and peaks when the patient is admitted to the hospital for surgery.[3] Studies indicate the global prevalence of POA among surgical patients is still very high, almost 50%[4,5]; the prevalence being highest in low- and middle-income counties.[4,6]

POA can be caused by different factors including unexpected medical diagnosis, fear of complications and death, physical separation from family, hospitalization, preoperative commands such as fasting, and other physical preoperative training.[4,7–9] Similarly, studies showed age, gender,

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previous experience with the surgical procedure, level of education, the type and extent of the proposed surgical procedure, current health status, and socioeconomic status were found to increase POA.[10]

An elevated and longer level of POA is linked to poorer health outcomes such as delay in wound healing, long-term pain, nausea, vomiting, longer hospital stay, higher healthcare costs, lower patient satisfaction,[11–16] and tachycardia and hypertension.[17] After entering the operating room, patients with anxiety had greater heart rates, a higher risk of hypothermia, and increased systolic blood pressure than patients without anxiety.[18,19] It has been documented that 5% of anxious patients may refuse surgery.[20]

POA detection and identification of relevant factors are critical for faster recovery, shorter hospital stays, lower postoperative analgesic demands, patient satisfaction, and lower healthcare costs with higher productivity.[21] Psychological support and preoperative education have been considered two of the most effective strategies for lowering anxiety levels and increasing the patient's confidence in the surgical team.[22]

There is limited evidence on the proportion of patients affected by POA in Ethiopia, and there is no study conducted on POA in eastern Ethiopia. The purpose of this study is to fill these gaps by quantifying the magnitude and factors related to POA in public hospitals in eastern Ethiopia.

Methods

Study setting and design

A facility-based cross-sectional study was conducted in the public hospitals in the Harari region and Dire Dawa city administration, eastern Ethiopia from 25 April to 26 May 2022. Harari region is one of the 10th regions in Ethiopia which is found in eastern Ethiopia, surrounded by the state of Oromia, and found at a distance of 526 km away from the capital city, Addis Ababa. There are two public hospitals, one compressive specialized University hospital and one general hospital, in the region serving more than 5 million people. Dire Dawa City Administration is one of Ethiopia's two federal city administrations, alongside Addis Ababa. It is located 515 km from the capital city in the country's eastern region. It has two public hospitals, one referral hospital, and one general hospital, serving more than 5 million people. All these public hospitals in eastern Ethiopia provide medical, surgical, pediatric, obstetrics, gynecology, mental, and other services. In both study areas, there are a total of 1803 healthcare providers.

Study population

We randomly selected patients aged ⩾18 years old who were diagnosed and scheduled for elective surgery in the four public hospitals of eastern Ethiopia during the study period. Patients who have a history of anxiety disorders and who were taking any type of anxiolytics were excluded from the study. In addition, we also excluded mentally ill patients.

Sample size determination and sampling procedure

The outcome variable and several factors associated with the outcome variable were considered, and the largest sample size was taken into effect. For this purpose, a single population formula was used to obtain a final sample size of 423 with an assumption of 0.05 margin of error(d), a 95% confidence interval (CI), and a 48.3% estimated proportion of POA (P) taken from a study conducted in Wollo, Northeast Ethiopia.[23]

A systematic random sampling technique was employed to select a total of 423 study participants. The average number of participants in four public hospitals was estimated from last year's monthly reports (Howot Fana Comprehensive Specialized University Hospital (HFCSH) (300), Jugula Hospital (JH) (180), Dire Dawa Referral Hospital (DRH) (235), and Sabian General Hospital (SGH) (155)) before data collection. An average of 870 elective surgery patients were operated on at the four selected public hospitals as estimated from their average flow of cases for the last year month. The sample size was allocated for each hospital proportionally based on the estimated number of patients in each hospital in 1 month. The first participant was recruited from two patients at their hospital by lottery method.

Data collection tools and procedure

The data was collected using the State-Trait Anxiety Inventory Scale (S-STAI),[24] a validated and standardized POA measurement tool that has been derived from many types of literature with certain modifications to improve the comparability of the findings. This tool was divided into five sections (sociodemographic factors, clinical-related factors, study participants' social support, the possible causes of POA, and the state-trait anxiety inventory self-assessment tool: STAI Form Y-1 and STAI Form Y-2 questionnaires). The STAI Form Y is the only tool that can accurately assess POA in adults.

The STAI form is a self-report questionnaire with two subscales. First, the State Anxiety Scale (S-Anxiety) measures current anxiety levels by asking respondents how they are feeling "right now" using items that indicate subjective anxiety sensations, anxiety, uneasiness, fear, and autonomic nervous system activation/arousal. The Trait Anxiety Scale (T-Anxiety) assesses particularly stable aspects of "anxiety proneness," as well as overall states of calm, confidence, and security. Studies showed the STAIs have good reliability and validity across the different normative groups; Cronbach's alpha = 0.86–0.95 and we also conducted a pilot study before actual data collection.[24–26] We also used the Oslo Social

Support Scale (OSSS-3), which is a 3-item self-reported measure of the level of social support. It consists of three items that ask for the number of close confidants, the sense of concern from other people, and the relationship with neighbors with a focus on the accessibility of practical help. The sum score ranges from 3 to 14, with high values representing strong levels and low values representing poor levels of social support.[27] The questionnaire was written in English and then translated into Afan Oromo, Amharic, and Af Somali before being returned to English for consistency. The data were collected by interviewing patients using a structured questionnaire by four qualified diploma nurses, and each patient's data collection took only 20 min. The data collection process were constantly monitored by two supervisors.

Variables and measurements

The primary outcome is POA. The S-STAI contains 20 elements, and the S-Anxiety scale's responses assess the intensity of present emotions "at this time": (1) not at all, (2) somewhat, (3) moderately so, and (4) very much so. Ten statements in the state section of the STAI (Y-1) show anxiety (items 3, 4, 6, 7, 9, 12, 13, 14, 17, and 18), whereas the remaining ten statements (items 1, 2, 5, 8, 10, 11, 15, 16, 19, and 20) represent the patient's relaxed and pleasant mood.[23] For the ten positive S-Anxiety items, a score of four indicates the existence of extreme anxiety, whereas a high grade indicates the lack of anxiety for the remaining 10 negative items for anxiety.

The STAI form Y-2 Trait Anxiety scale is made up of 20 items that assess how the patients feel "regularly." The T-Anxiety test asks participants to rate the frequency of their emotions on a four-point scale: (1) Almost never, (2) sometimes, (3) often, and (4) almost always. The minimum and maximum score range on the S-Anxiety and T-Anxiety scales are 20 to 80. The total score of an individual is the sum of their scores on all items. The presence of anxiety was defined as a score of greater than 44 on the STAI, and absence or no anxiety (STAI score $\leqslant 44$). The value chosen was based on previously published studies.[6,12,23] The secondary outcome variable is factors associated with POA.

Operational definitions

Poor social support: Study participants with a level of 3–8 according to the Oslo social support scale.[8,27]

Moderate social support: Study participants with a level of 9–11 according to the Oslo social support scale.[8,27]

Strong social support: Study participants with a level of 12–14 according to the Oslo social support scale.[8,27]

Elective surgery: Patients who undergo surgical procedures after their appointment.

POA: Is the state of feeling an unlikable disturbing experience of the respondents or study participants before undergoing surgical procedures.[28]

Substance use: Is the improper usage of any type of psychoactive substances (Khat/stimulant leaf, alcohol, and cigarette use within the last 3 months.[8]

Anxiolytics: In our case are anti-anxiety drugs, prescribed by a physician to prevent anxiety and treat anxiety disorders.

State anxiety: Describe the current state of feelings of the patient right now.[29]

Trait anxiety: Describes the feelings of patients in general.[29]

Presence of Anxiety: Patients with levels of anxiety have a score/rating/S-STAI >44 according to the S-STAI for adults.[30]

Absence of anxiety: Patients with an S-STAI score of $\leqslant 44$ according to the S-STAI for adults.[30]

Major surgical operation: In our case, we used major surgery as a procedure that involved the removal of an organ or body part, or the repair of a large body part under spinal or general anesthesia in a major operating room.

Preoperative information: Means the surgeon explained (and the patient understood) the surgical procedure, perioperative policy and procedure, and the medications that will be used during and after the surgery, including potential adverse reactions. This is measured with yes if all the above information was provided or no responses if at least one is provided.

Data quality control measures

The English version questionnaire was translated into a local language (Afan Oromo, Amharic, and Af Somali) by male language instructors for the three languages for data collection and then re-translated back to English to verify the consistency and content of the questionnaire. A pre-test was done on 5% of the sample size at Haramaya General Hospital 1 week before the actual data collection period. Adequate training was given to data collectors and proper supervisors were conducted during data collection. Data were kept in the form of a file in a secure place where no one could access it, except the principal investigator. Moreover, the preparation of this manuscript followed the STROBE guidelines for cross-sectional studies.

Statistical analysis: The data were manually checked for completeness, cleaned, coded, and entered using Epi-Data version 3.1 (The EpiData Association, Odense, Denmark) and exported to SPSS 26 for analysis. Variables were recoded and computed through the transform function of the SPSS and then both descriptive statistics and logistic regression analyses were computed. Any participants with STAI scores >44 were considered as POA cases coded as Yes = 1 and participants with STAI scores $\leqslant 44$ were considered as not having POA cases and coded as No = 0. Independent variables with a p-value of <0.25 in the bivariate analysis were used for multivariable logistic regression with 95% CI. Statistical significance was declared at a p-value of <0.05.

Table 1. Sociodemographic characteristics of adult patients undergoing elective surgery in public hospitals of eastern Ethiopia, 2022 ($n = 418$).

Variables	Categories	Frequency (*N*)	Percent (%)
Sex	Female	216	51.67
	Male	202	48.32
Age	18–30	149	35.64
	31–45	136	32.54
	46–59	63	15.07
	>60	70	16.75
Residence	Urban	229	54.78
	Rural	189	45.21
Marital status	Single	115	27.51
	Married	236	56.46
	Divorced	49	11.72
	Widowed	18	4.31
Religion	Muslim	207	49.52
	Protestant	115	27.51
	Orthodox	87	20.81
	Others[a]	9	2.15
Educational status	Unable to read and write	57	13.88
	Primary education	157	37.56
	Secondary education	138	33.01
	College and above	66	15.79
Occupation	Merchant	114	27.27
	Private employed	106	25.36
	Government employed	76	18.18
	Daily labor	51	12.20
	Others[b]	71	16.99
Average monthly income (in ETB)	500–1000	28	6.70
	1001–2000	77	18.24
	2001–4000	184	44.02
	>4000	129	30.86

[a]Religion: Waqeffata, catholic, traditional.
[b]Occupation: Farmers, butcher man, housewives and jobless.

Results

Sociodemographic characteristics of the respondents

Data from 418 adults were analyzed making an overall response rate of 98.8%. Two hundred sixteen (51.7%) were females, and the median age of the study participants was 36 (±26 IQR) years (Table 1). Two hundred seven (49.5%) were Muslim, 236 (56.5%) were married, and more than half of the participants 229 (54.8%) came from urban. One hundred fourteen (27.3%) and 157 (37.6%) of study participants were merchants and completed primary school, respectively. The average income of the study participants was 3472.914 birr per month.

Social and medical characteristics of the patients

Nearly half of the study participants 205 (49%) had been using psychoactive substances over the last 3 months before their admission and 175 (41.9%) of the participants had a history of chronic medical illness. In addition, 163 (39.0%) had a family history of mental illness and 164 (39.2%) had physician-diagnosed mental illness themselves (Table 2). More than half of the study participants 241 (57.7%) had undergone surgery for the first time. This study revealed that the majority of the participants 311 (74.4%) waited more than 2 days for surgical procedures. In addition, this study showed that 232 (55.5) of the participants were not postponed to other days for elective surgery after being scheduled for an operative procedure. The majority of the study participants 234 (56.0%) got adequate preoperative information. Besides, 273 (65%) study participants were scheduled for minor surgeries, and 153 (36.6%) of them were specifically scheduled for orthopedic surgery, and 258 (61.7%) of them were operated on general anesthesia (Table 2).

Perceived possible cause of POA

The patients were asked about the reasons they worried during the preoperative period, and the top three common

Table 2. Social and medical characteristics of adult patients undergoing elective surgery in public hospitals of eastern Ethiopia, 2022 ($n = 418$).

Variables	Categories	Frequency (*N*)	Percent (%)
Substance use	Yes	205	49.0
	No	213	51.0
Family history of mental illness	Yes	163	39.00
	No	255	61.00
History of previous surgery	Yes	177	42.3
	No	241	57.7
Have chronic illness	Yes	175	41.9
	No	243	58.1
Length of stay in days	<2	107	25.6
	>2	311	74.4
Postponed operation	Yes	186	44.5
	No	232	55.5
Provided information on surgical procedures	Yes	234	56.0
	No	184	44.0
Types of anesthesia	General	258	61.7
	Local	160	38.3
Types of surgical procedures	Orthopedics	153	36.60
	General	128	30.62
	Gynecological	59	14.11
	Urology	58	13.88
	Others*	20	4.78
Percent of patients diagnosed to have anxiety by physicians	Yes	164	39.20
	No	244	60.80

*Others: Plastic surgery, ophthalmic surgery, and neurosurgery.
NB: The physician's diagnosed anxiety status was not done using a standard tool. The data collector did not find and record standard diagnosis tools in patient folders.

reasons for POA were unexpected results of operation 259 (60%), fear of death post-operative pain 248 (59.3%), and need for blood transfusion 222 (53.1%) (Table 3).

The magnitude of POA and coping mechanisms

Two hundred fourteen (51.2%, 95% CI = 46.0%–56.0%) study participants scored S-STAI anxiety inventory score >44 out of 80. The coping mechanisms mentioned by the study participants were listening to music 147 (68.69%), doing nothing than self-blame 140 (65.42%), and looking for social and religious support 131 (61.21%)

Factors associated with the POA

In the bivariable logistic regression, participants' age, sex, marital status, educational status, proposed surgery, social support, types of surgical procedures, types of anesthesia, information provision, fear of death, fear of anesthesia, fear of physical disability, absence from work, information from a negative experience, and fear of unknown were associated with POA at a p-value <0.25. Finally, after checking for multi-collinearity and controlling for potential confounders, participants' age (31–45), marital status, level of social support (strong and moderate), orthopedic surgery, and fear of death remained statistically significantly associated with POA at a p-value <0.05 in multivariable analysis (Table 4).

Study participants between the age of 31–45 (AOR = 0.36; 95% CI = 0.17, 0.78) were 64% less likely to develop POA than participants between the age of 18–30. Being single is associated with 81% (AOR = 0.19; 95% CI = 0.04, 0.89) lower odds of POA than being widowed. Patients who had moderate (AOR = 0.46; 95% CI = 0.22, 0.96) and strong social support (AOR = 0.04; 95% CI = 0.02, 0.08) were 54% and 99.06% less likely to become anxious during the preoperative period, respectively, compared with those who have poor social support. The occurrences of POA cases were decreased by 79% (AOR = 0.21; 95% CI = 0.10, 0.43) among patients who were scheduled for orthopedic surgery compared to general surgery (Table 4). Listening to Music (AOR = 0.37; 95% CI = 0.18, 0.74) and finding social and religious support (AOR = 0.15; 95% CI = 0.07, 0.33) were associated with 63% and 85% decreased odds of POA compared to doing nothing than self-blame respectively. The odds of developing POA were almost two and a half (AOR: 2.47; 95% CI: 1.32, 4.62) times higher among participants who

Table 3. Perceived possible cause of POA in adult patients undergoing elective surgery in public hospitals of eastern Ethiopia, 2022 ($n = 418$).

Variables	Categories	Frequency (*N*)	Percent (%)
Unexpected results of operation	Yes	259	62.0
	No	159	38.0
Fear of death	Yes	248	59.3
	No	170	40.7
Need for blood transfusion	Yes	222	53.1
	No	196	46.9
Fear of anesthesia	Yes	221	52.9
	No	197	47.1
Financial loss due to hospitalization	Yes	219	52.4
	No	199	46.7
Absence from work	Yes	215	51.4
	No	203	48.6
Concern about family	Yes	199	47.6
	No	219	52.4
Post-operative pain	Yes	191	45.7
	No	227	54.3
Fear of unknown	Yes	185	44.3
	No	233	55.7
Cosmetic issues	Yes	180	43.1
	No	238	56.9
Fear of complications	Yes	178	42.6
	No	240	57.4
Unable to recover	Yes	175	41.9
	No	243	58.1
Information from previous negative hospital experiences	Yes	173	41.4
	No	245	58.6
Awareness during surgery	Yes	172	41.1
	No	246	58.9
Fear of physical disability	Yes	166	39.7
	No	252	60.3
Harm from doctor or nurse mistake	Yes	155	37.1
	No	263	62.9
Being received IV fluid	Yes	127	30.4
	No	291	69.6

had a fear of dying compared to participants who had no fear of death (Table 4).

Discussion

This study was conducted to assess the magnitude of POA and associated factors among adult surgical patients in the public hospital of Harari Regional State and Dire Dawa City administration, eastern Ethiopia. According to the results of the current study, more than half of the patients awaiting elective surgery experienced POA, as indicated by an STAI score of more than 44. This study showed that characteristics such as middle adult age, being single, having strong and moderate social support, orthopedic surgery, fear of death, listening to music, and finding social and religious support statistically significantly influenced POA.

The current study indicated that POA is less common than studies conducted in Pakistan,[31] Tunisia,[32] Rwanda,[28] Debre Markos,[8] Gondar,[9] and Jimma.[22] The mentioned discrepancy may be explained by sociocultural variation, different sites of wards admitted, and different study populations. The strong family and social support systems in place in our study area may also be a reason for this study. However, this study's findings were found to be comparable across studies in Brazil,[33] Yirgalem,[6] Debre Berhan,[34] and North Wollo.[23]

However, it is higher than studies from Turkey[35] and Spain.[36] This difference in the current study can be explained by the majority of study participants being younger adults and the use of different assessment procedures in previous studies; for instance, the study done in Spain used the Amsterdam POA and information scale (APAIS) used to evaluate POA.[37] The difference can also be explained by the

Table 4. Bivariable and multivariable logistic regression analysis for factors associated with POA in adult patients undergoing elective surgery in public hospitals of eastern Ethiopia, 2022.

Variables	Category	Anxiety status (POA)		COR (95% CI)	AOR (95% CI)	*p*-value
		Yes	No			
Age	18–30	80	69	1	1	
	31-45	61	75	0.70 (0.44, 1.12)	0.36 (0.17, 0.78)	0.01
	46–59	30	33	0.78 (0.43, 1.41)	0.36 (0.13, 1.00)	0.05
	>60	43	27	1.37 (0.77, 2.45)	(1.20, 1.27)	0.15
Sex	Male	94	108	1	1	1
	Female	120	96	1.44 (0.98, 2.11)	1.68 (0.88, 3.23)	0.12
Marital status	Single	50	65	0.30 (0.10, 0.88)	0.19 (0.04, 0.89)	0.03
	Married	125	111	0.43 (0.15, 1.25)	0.38 (0.09, 1.59)	0.19
	Divorced	26	23	0.43 (0.13, 1.41)	0.30 (0.06, 1.52)	0.15
	Widowed	13	5	1	1	1
Proposed surgery	Minor	123	150	1	1	1
	Major	91	54	2.05 (1.36, 3.10)	1.37 (0.72, 2.64)	0.34
Level of social support	Poor social support	110	18	1	1	1
	Moderate social support	80	38	0.34 (0.18, 0.65)	0.46 (0.22, 0.96)	0.04
	Strong social support	24	148	0.03 (0.01, 0.05)	0.04 (0.02, 0.08)	0.001
Type of surgical procedure	General	88	40	1	1	1
	Gynecology	30	29	0.47 (0.25, 0.88)	0.41 (0.15, 1.11)	0.08
	Orthopedics	54	99	0.25 (0.15, 0.41)	0.21 (0.10, 0.43)	0.001
	Urology	34	24	0.64 (0.34, 1.22)	1.33 (0.52, 3.43)	0.55
	Others*	8	12	3.30 (0.15, 0.80)	0.38 (0.08, 1.72)	0.21
Coping mechanism	Doing nothing than self-blame	100	40	1	1	1
	Listening to music	86	61	0.56 (0.34, 0.92)	0.37 (0.18, 0.74)	0.005
	Find social and religious support	28	103	0.11 (0.06, 0.19)	0.15 (0.07, 0.33)	0.001
Fear of death	No	113	135	1	1	1
	Yes	101	69	1.75 (1.18, 2.59)	2.47 (1.32, 4.62)	
Fear of anesthesia	No	106	115	1	1	1
	Yes	108	89	1.32 (0.90, 1.93)	1.16 (0.64, 2.09)	0.63
Fear of physical disability	No	121	131	1	1	1
	Yes	93	73	1.38 (0.93, 2.04)	1.46 (0.80, 2.67)	0.22
Absence from work	No	115	88	1	1	1
	Yes	99	116	0.65 (0.44, 0.96)	0.77 (0.42, 1.40)	0.34
Information from a negative experience	No	119	126	1	1	1
	Yes	95	78	1.29 (0.87, 1.91)	1.27 (0.69, 2.36)	0.44
Fear of unknown	No	129	104	1	1	1
	Yes	85	100	0.68 (0.46, 1.01)	0.92 (0.50, 1.70)	0.79

1: reference; COR: crude odds ratio; AOR: adjusted odds ratio; POA: preoperative anxiety.
*Significant at *p*-value < 0.25.

psychological support provided in advanced healthcare settings. As stated in the literature, higher level of POA can influence postoperative morbidity and mortality.[13,38] It may necessitate an increase in the anesthetic dose, increased postoperative pain, instability of vital signs, and lengthened hospital stays which in turn result in increased healthcare costs.

This study found that POA was lower in older adult age groups than in younger adult age groups. These findings are consistent with a recent study from North Wollo,[23] which found that POA is correlated with age and declines with aging. This shows that medical providers should focus their POA alleviation treatments on individuals who are young adults. The Rwandan study,[28] also indicated that anxiety levels decreased with age and that younger patients showed higher anxiety levels when compared to older adult patients. This might be explained by the fact that young people have less experience being hospitalized or having surgery. For some young people, being scheduled for surgery may affect their psychological readiness, unlike adults. The increased level of fear of death identified in this study may also explain this finding. Many of the young adults who require hospitalization for surgery continue to work for a better future. In other words, a study conducted in Jimma has shown that age does not significantly affect POA levels.[22] Age-based

psychosocial interventions can better reduce young people's POA. The role of nurses can be paramount here.

Strong and moderate social support was significantly associated with decreased POA per this study's finding. These research results are comparable to those obtained by a study carried out in Rwanda[28] and supported by research done at Yirgalem General Hospital,[6] where participants with strong social support experienced lower levels of POA than those with poor social support during the preoperative period. This might be a result of the significant impact that interpersonal connections have on reducing POA. POA was higher in those with weak social support than in people with strong social support, according to research from Addis Ababa,[39] which was consistent with the results of the current investigation. Social support can be associated with improved psychological readiness and decreased of fear of death. This is because the patient may shift their focus from an anxious emotion to a relaxed mood with social support. In addition to this, Evidence from the study area revealed that there was a strong family bonding culture. These families' bonding enables the clients to express their feelings and thoughts and discuss the positive aspects of life. Therefore, it could reduce POA.

According to this study, POA was significantly influenced by the type of surgery. For instance, patients preparing for orthopedic surgery were 79% less likely to have POA than patients preparing for general surgeries. In contrast to this research, a study from Rwanda[28] found that patients who were scheduled for orthopedic surgery had a 10 times higher likelihood of experiencing clinically significant POA. This discrepancy could be attributable to a difference in psychological intervention or consultation and study populations, the tool used for screening, the way of analysis, and sociodemographic variations. This is because of strong social support in our study areas compared to others.

Contrary to this study according to the study conducted in Sri Lanka, POA was not statistically significantly correlated with the type of procedure. This is perhaps due to being informed about the nature of the disease, the type of treatment, and its side effects, which alter the level of anxiety across the different sections of the population. This is because Sri Lanka is a more developed country than Ethiopia so they can perform preoperative patient preparation as required. This suggests that individuals may pay attention to their health as they wait for elective surgery.[40]

This study found that POA was about two and half times as common among respondents who were in fear of dying. A study from Gondar,[9] Yirgalem,[6] and Debre Berhan[34] supports these findings. This might be due to pathophysiological responses such as hypertension and dysthymias and may cause patients to plan the surgery. This is due to a result of participants' incorrect assumptions that surgery could result in death and adverse anesthetic medication effects. Nursing interventions were found to play a key role for patients who are going to be operated on in their POA.[41] Psychological preparation of patients may help to minimize fear of death or harm following surgical procedures.

Listening to music and finding social and religious support as coping mechanisms were found to reduce the odds of POA. This is supported by research done in the Czech Republic,[42] Israel,[43] Iran,[44] and St. Luke's Catholic Hospital and Nursing College, Wolisso.[45] This could be a result of music having a generally entertaining effect on people.

This study is not without limitations. Controlling all confounders such as biological/genetic and other external factors may limit the validity of the finding. This study also didn't assess the adverse effects of POA. This study also failed to assess the reasons for the postponement of elective surgery. It is advised that researchers carry out a further extensive investigation involving both private and public institutions to identify risk factors for POA in patients having elective surgery.

Conclusion

The prevalence of POA was high in the current study which indicates a high level of public health concern. Being an older adult and having social and treatment support was associated with lower odds of POA. In contrast, lower psychological readiness (fear of death) was associated with increased odds of POA. During the preoperative visit, nursing care should consider the patient's age, the type of operation, and social support. Patients should be routinely assessed for anxiety during the preoperative appointment, and the proper coping mechanisms and anxiety-reduction approaches should be used. The main coping strategies mentioned by patients included listening to music and looking for support from others are beneficial. It is also advisable that appropriate policies and procedures for reducing POA should be devised and hold counseling sessions before surgery is critical. Preoperative nursing care should consider the patient's age, the type of operation, and social support. Each patient's informational needs should be evaluated to give patient-specific care.

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Authors' contributions

RK had made substantial contributions to the conception/design of the research idea, proposal development, acquisition, data collection under the supervision of TA, and TAY, analysis, interpretation of data, and manuscript write-up. TA, TAY, and AT: supervision, revised the article critically, interpreted, and reviewed the

manuscript for the intellectual contents. All authors have read and approved the final manuscript.

Availability of data and materials

Most of the data generated or analyzed during this study are included in this published article. The full datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declaration of conflicting interests

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Ethical considerations

The study was conducted following the principles of the Declaration of Helsinki and the study protocol was approved by the Institutional Health Research Ethics Review Committee (Ref. No. IHRERC/063/2022) of Haramaya University, College of Health and Medical Sciences. A letter of support was written to each public hospital to allow the execution of the research and permission was obtained from the respective hospital administrators. Written informed consent was obtained from all subjects before the study. We obtained written informed consent from illiterate people using thumb signing. Patient information was kept confidential.

Informed consent

Written informed consent was obtained from all subjects before the study. We obtained written informed consent from illiterate people using thumb signing. Patient information was kept confidential.

Trial registration

*Not applicable.

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