Mansoura Nursing Journal (MNJ) Vol. 12. No. 2 – 2025
Print ISSN: 2735 – 4121 Online ISSN : 2735 – 413X

Original Article

Preoperative Anxiety among Geriatric Patients Undergoing Cardiac Catheterization: The Role of Coping Strategies and Social Support

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ABSTRACT

Background: Cardiac catheterization is most common minimally invasive procedure occurring in geriatric patients which accompanied by increasing level of preoperative anxiety. Moreover, there are several factors' predispositions preoperative anxiety, including, social support and coping strategies. **Aim:** Assess preoperative anxiety among geriatric patients undergoing cardiac catheterization, considering the role of coping strategies and social support. A descriptive correlational research design was utilized. **Methed** A convenient sample of 207 geriatric patients was used.**:** This study was conducted in Cardiac Catheterization Unit at Specialized Medical Hospital affiliated to Mansoura University. Four tools were used, Tool I: Structured Interview Sheet, Tool II: Hospital Anxiety and Depression Scale, Tool III: Brief Cope Scale, and Tool IV: Multidimensional Scale of Perceived Social Support. **Results:** The majority (80.7%) of studied geriatric patients had preoperative anxiety before cardiac catheterization and a considerable number of them had moderate level (46.4%). Also, age, geriatric patients had preoperative instruction, social support, problem focused, emotional focused, and dysfunctional coping strategies were a significant independent predictor of preoperative anxiety (Beta-0.141, -0.130, -0.234, -0.095, -0.226, and 0.265) respectively with $p<0.001$ for all. **Conclusion:** Preoperative anxiety was prevailing among studied geriatric patients undergoing cardiac catheterization and a considerable number of them had moderate level. Also, age, geriatric patients had preoperative instruction, social support, problem focused, emotional focused, and dysfunctional coping strategies were a significant independent predictor of preoperative anxiety. **Recommendation:** Preoperative education should be incorporated into routine practice to prepare geriatric patients before cardiac catheterization to alleviate preoperative anxiety.

Keywords: *cardiac catheterization, coping strategies, geriatric patients, preoperative anxiety, social support.*

Introduction

According to United Nations, (2024), any person who aged 65 years or older considered as a geriatric person and stated that the number of geriatric populations is projected for more than double worldwide which will be arising from 761 million in 2021 to 1.6 billion in 2050. Locally, the number of populations aged 65 and older represents 5% of total population (United Nations population fund, 2024). There are 213,000 geriatric women and 147,000 geriatrics men living in Egypt (United Nations Population Fund, 2024).

The aging process causes gradual decline in both functional and structural parts of the cardiovascular system. The heart undergoes specific changes related to aging such as hypertrophy of cardiac muscle, myocardium fibrosis, diastolic abnormalities, stiffness of the arterial walls, dysfunction of endothelial cells. Also. Heart arteries especially coronary artery become more stuffiness, blocked, and more resistant with age, so the ventricles of the heart tend to pump vigorously to accommodate these changes that raises the occurrence of coronary artery disease (Vakka, Warren, & Drosatos, 2023).

Cardiovascular diseases (CVDs) describe as the leading cause of death globally and the most widespread diseases especially in geriatric, which include many conditions such as cerebrovascular disease, coronary artery disease, and heart valve disease which significantly impact negatively on geriatric health (Hua, Xun-Xun, Qian-Yun, & Yu-Jie, 2024). According to the World Health Organization there were 18 million of death related to CVDs in 2008 and expected to become 23 million during 2030 (World Health Organization, 2024). In Egypt CVDs estimated approximately 47.5 percent from all death (Gouda, Abdel-Rahman, loulah, & Aboushady, 2023).

Coronary artery disease (CAD) is a serious heart condition occurring particularly in geriatric population that is primarily caused by reducing blood flow to the heart muscle which commonly results from atherosclerosis (Jalali et al., 2024). Coronary artery disease considered major

CVDs that affecting people in overall the world and the most leading cause of death in developing and developed countries as well, in particular those who age 80 years old or more (Kareem, & Hamza, 2023). The incidence of CAD in Egypt about 8.3% (El-Sayed, Youssef, Hay, & Osman, 2024).

Cardiac catheterization (CC) is minimally invasive procedure associated with inserting long flexible tube (catheter) through a tiny puncture in brachial, femoral, or radial artery via the heart and to reach the aorta artery, then an X-ray used to guide the insertion of the catheter into the heart additionally, a contrast dye injected to permit clearly visualization of heart blood vessels (Da Silva Leão, de Lima, & de Araújo, 2023). In the same line, Wang et al., (2024) stated that CC is performed in cardiac geriatric patients to early diagnose and management of cardiac diseases moreover, used to evaluate CAD, valve abnormalities, and cardiovascular hemodynamics.

One of the major traumatic factors in human life which result in physical and psychological disorder is surgical intervention. Endocrine, metabolic, and immune system disorders result from the normal body reaction to the anxiety that occurred during the surgical procedure (Ertural, Çelik, & Özçelik, 2023). Regardless the type of procedure, preoperative anxiety (POA) can affect any patient scheduled for surgical procedure, which characterized by subjective feeling of tension, restlessness, vague, and apprehension regarding unfamiliar outcome (Agüero‐Millan, Abajas‐Bustillo, & Ortego‐Maté, 2023). Moreover, POA affects between 25% to 80% of geriatric patients who admitted to the hospital for surgery which considered a common issue among geriatric patients (Ugras, Kanat, Yaman, Yilmaz, & Turkmenoglu, 2023).

Preoperative periods range from when the patient is informed to need to perform a surgery and end with the time in which a surgery done. During preoperative phase, POA become higher and reach to the peak in the day prior to a surgical procedure (Lamacraft et al., 2023). In relation to causes of higher level of POA there are various factors such as educational background, gender, age, past surgical experience, fear of postoperative side effect, fear of dying during anesthesia or surgery itself, patients with chronic condition, lack of social support and coping strategies as well (Dibabu et al., 2023).

Coping strategies described as dynamic, mental, and behavioral attempt to manage internal and external stressful situation. Often, positive coping mechanisms have been used to alleviate and control anxiety. There are three fundamental coping strategies which include: problem focused coping strategies, emotional focused coping strategies, dysfunctional focused coping strategies (Loureiro, Peças, Neves, & Antunes, 2024).

Social support is characterized by the help that an individual gets from outside sources during stressful situations like family, friends, and significant others, in several ways such as emotional, informational, and financial support. Geriatrics physical and psychological health can be predicted by the degree of social support. High level of social support from family associated with better psychosocial development which lowers anxiety level, improves self-esteem, and feeling of self-worth (Li, & Li, 2024).

Moreover, high level of POA is considered as an indicator of postoperative complications as postoperative pain and increase morbidity and mortality rate (Gu, Zhang, Wei, & Zhu, 2023). So, gerontological nurses play an important role in caring for geriatric patients as holistic human beings so it is essential to manage patients both physical and psychological requirements (Wang et al., 2022). Similarly, gerontological nurses must be evaluated POA level for geriatric patients, associated risk factors, also, giving adequate, relevant and proper information before surgical procedure (Hertzsprung et al., 2023).

Therefore, one of the significant roles of gerontological nurses is helping geriatric patients adjust to condition and handling POA before procedure. Commonly, pharmacological and nonpharmacological approaches are used to control POA (Bahrami, Hanifi, & Mardani, 2024). Pharmacological techniques such as sedative drugs, furthermore, use several nonpharmacological techniques like coping strategies, relaxation muscle technique, use of guided imagery methods, and diverting attention which resulted in reducing POA level (Yahagi et al., 2024).

Significance of the study:

Most patients have perceived the day of surgery as the most threatening day in their lives, especially geriatric patients undergoing cardiac procedure. So, each geriatric patient should be carefully assessed for anxiety in the preoperative period because most patients scheduled for surgery may not express their anxiety unless asked (Omkaram, Reddy, Murthy, & Chaudhury, 2023).

Social support and coping styles have been proven to be important factors that should be considered before surgery. Nevertheless, few studies have specifically explored these factors integrated and independent effects on preoperative anxiety (Rohmah, Formen, & Saraswati, (2024). Therefore, this study will be conducted to assess preoperative anxiety among geriatric patients undergoing cardiac catheterization, considering the role of coping strategies and social support.

Aim of the study:

The aim of this study was to assess preoperative anxiety among geriatric patients undergoing cardiac catheterization, considering the role of coping strategies and social support.

Research Questions:

- What is the level of preoperative anxiety among geriatric patients undergoing cardiac catheterization?
- What is the type of coping strategies among geriatric patients undergoing cardiac catheterization?
- What is the level of social support among geriatric patients undergoing cardiac catheterization?
- What is the association between coping strategies, social support and preoperative anxiety among geriatric patients undergoing cardiac catheterization?

Subjects and Method:

Sampling Technique: A convenient sample was used to select the study participants, 207 geriatric patients and fulfilling the following inclusion criteria which include, aged 60 years and above of both sex and able to communicate.

Research Design: A descriptive correlational research design was utilized to carry out this study.

Study Setting: This study was conducted in Cardiac Catheterization Unit at Specialized Medical Hospital affiliated to Mansoura University.

Sample size calculation

The sample size for studying Anxiety in Patients Undergoing Cardiac Catheterization, was calculated using research software (https://clincalc.com). Based on the results of a similar previous study done by Afrassa, Kassa, & Legesse, (2022), that noticed a high prevalence of preoperative anxiety among cardiac catheterization by about 70.4% of the patients. At Power (1-β error probability) = 0.80 and α error probability = 0.05. Then the sample size required was 189 geriatric patients and added 10% because of drop out. So, final sample size was 207 geriatric patients.

Tools of data collection

Four tools used to collect data related to the study:

Tool I: Structured Interview Sheet:

This tool was developed by researcher after reviewing the relevant literature and divided into three parts.

Part 1: Demographic characteristics of geriatric patients such as age, gender, marital status, educational level, residence, and living arrangements.

Part 2: Health related data of geriatric patients such as number of chronic diseases, previous surgery, and suffering from heart disease.

Part 3: Preoperative anxiety precipitating items such as fear of postoperative pain, fear of postoperative disability, fear of death, fear of medical surgical mistakes, awareness about the surgery.

Tool II: Hospital Anxiety and Depression Scale (HADS)

Zigmond & Snaith created it in 1983. It is a self-report questionnaire that is frequently used to measure depression and anxiety levels. The patient checked the statements on the scale according to their experiences throughout the previous seven days. Abd Elhameed, (2010) translated this scale into Arabic and verified its validity and reliability. Spearman's correlation coefficient (r = 0.861) was used to examine the tool's dependability utilizing test-retest reliability. In this study the researcher used anxiety subscale and it consists of 7 questions relating to anxiety that are marked "A". For each item, patients are asked to select one of the four possible answers.

Scoring system: Scores ranged from 0 to 3 and the total score is 21 which divided into four levels: normal from 0 to 7, mild from 8 to 10, moderate from 11 to 15, and severe from 16 to 21.

Tool III: Brief Cope Scale:

This scale modified by Bayuo & Agbenorku, (2018), which adopted from Carver, (1997). Moreover, this scale also included 28 items that were assessed on a scale of 1 reflecting ("I hadn't been doing this at all") to 4 reflecting ("I had been doing this a lot") based on the participant's frequency of use. Additionally, a person's thoughts and coping mechanisms in response to a certain circumstance are evaluated. The 14 subscales were categorized into three groups: six items were problem-focused (using instrumental support, active coping, and planning); ten items were emotion-focused (acceptance, humor, religion,

using emotional support, and positive reframing); and twelve items were dysfunctional (behavioral disengagement, venting, self-blame, substance use, denial, and self-distraction). The scale was translated into Arabic and tested for its reliability by means of Cronbach's alpha coefficient (r = 0.81) by Elsayed and Selim (2022).

Scoring system:

- Total score of problem-focused coping strategies obtained by summing up all item scores and ranging from 6 to 24.
- ✓ Low level of problem-focused coping strategies lower than 12, Moderate level of problem-focused coping strategies from 12 to18, High level of problem-focused coping strategies from 18 to 24.
- Total score of emotion-focused coping strategies was ranging from 10 to 40.
- ✓ Low level of emotion focused coping strategies lower than 20, Moderate level of emotion focused coping strategies from 20 to 30, High level of emotion focused coping strategies from 30 to 40.
- Total score of dysfunctional coping strategies was ranging from 12 to 48.
- ✓ Low level of dysfunctional coping strategies lower than 24, Moderate level of dysfunctional coping strategies from 24 to 36, High level of dysfunctional coping strategies from 36 to 48.

Tool IV: Multidimensional Scale of Perceived Social Support (MSPSS):

This scale was developed by (Zimet, Dahlem, Zimet, & Farley, 1988). It is performed to measure the level of social support that one perceives from family, friends, and significant others. It is a Likert scale in which response options vary from 1 (very strongly disagree) to 7 (very strongly agree). Also, questions are divided into three subgroups, four items each related to the source of the social support, namely family, friends or significant others. The MSPSS is a brief of 12-item, with three subscales: Family (items 3, 4, 8, and 11), Friends (items 6, 7, 9, and 12) and Significant others (items 1, 2, 5, and 10). The scale was translated into Arabic and tested for its content validity and reliability (r= 0.88) by El-Hazmy, (2016).

Scoring system: The possible scores range from: Low level of social support from 12 to 48, Moderate level of social support from 49 to 68, High level of social support from 69 to 84.

Data collection process

- An official letter was obtained from the Faculty of Nursing, Mansoura University and directed to the manager of the Cardiac Catheterization Unit at the Specialized Medical Hospital affiliated to Mansoura University to obtain his approval and allow the researcher to carry out the study, also was informed about the purpose of the study and the time of data collection.
- Developing the study tools of data collection: Tool I: (Demographic and Health Related Data Structured Interview Sheet) developed by the researcher based on review of related literature.
- The Arabic version of Tool II (Hospital Anxiety and Depression Scale - HADS), Tool III (Brief Cope Scale) and Tool IV (Multidimensional Scale of Perceived Social Support - MSPSS) were used by the researcher.
- A jury of five experts in the related fields of gerontological nursing revised the study tools (tool I, tool II, tool III, tool IV) to test content validity and feasibility of the developed tools. Consequently, the important modifications were performed.
- pilot study was carried out on 10% (21) of geriatric patients to realize the clarity, possibility, relevancy, comprehensiveness and applicability of the developed tools before conveying large scale study to evaluate the plan and method of current research study also, to determine the time needed to fill the structured interview sheet, and it was excluded from the current study sample and then necessary modifications done accordingly.
- The reliability: Tool II (Hospital Anxiety and Depression Scale - HADS) has been assured by means of Spearman's correlation coefficient (r = 0.861). Tool III (Brief Cope Scale) has been assured by means of Cronbach's alpha coefficient (r = 0.81). Tool IV (Multidimensional Scale of Perceived Social Support - MSPSS) has been assured by means of (r= 0.88)
- Following the required approval taken, the researcher began gathering the data, the researcher used to visit the setting that was chosen above from 9 A.M. to 12 A.M, 3days/week, Saturday, Monday, and Wednesday because these were a reception day in the unit so many patients receive in these days.

- The researcher conducted individual interviews with geriatric patients who met the sampling criteria and accepted to participate in the study. After introducing herself, she explained the study purpose which was to gather the required data using all study tools.
- Based on geriatric patients' cooperation, level of understanding, and the ability to communicate, 20 to 30 minutes would be needed to complete the interview schedule.
- The data collection extended over a period of 6 months; started from the beginning of February 2024 and ended in July 2024.

Ethical Considerations:

The Mansoura University Faculty of Nursing's Research Ethics Committee granted ethical permission. Prior to the study conducted, written informed consent was received from each geriatric patient included in the study after being fully informed about the nature and purpose of the study. The confidentiality of information as well as the privacy of geriatric patients were protected and only used to support the purpose of the study. Each geriatric patient was assured that there would be no fees or penalties associated with their withdrawal from the study and can leave at any time also, their participation is completely voluntary.

Statistical Analysis:

The data collected was analyzed using statistical package of the social science (SPSS) version 21. Qualitative data were described using number and percent. Continuous variables were presented as mean± SD (standard deviation). The independent T test was used to compare between two groups and one way ANOVA test was used for more than two groups comparison. Pearson correlation coefficient (r) was used to correlate between quantitative data. The multivariate linear regression analysis model was used to estimate the association between preoperative anxiety among geriatric patients undergoing cardiac catheterization, demographic characteristics, social support, and coping strategies. In this model preoperative anxiety was considered as a dependent variable where the other variables were considered as an independent predictor. The level of significance was set as $P \leq 0.05$. Graphs were done for data visualization using Microsoft Excel.

Results:

Table (1): Shows the distribution of studied geriatric patients according to their demographic characteristics and their health-related data. This study included 207 geriatric patients undergoing cardiac catheterization. The studied geriatric patients aged from 60 years to less than 75 represented 57.5%, also who age from 75 years to less than 85 represented 40.1%, and 2.4% of them were aged 85 years and more, so the age of studied geriatric patients range from 60 to 85 years old with a mean age of 71.09±7.17 years. Females more prevalent than males, they constituted 54.1% of studied geriatric patients.

Regarding the marital status 76.8% of studied geriatric patients were married, 20.8% were widow and 2.4% were divorced. Concerning educational level, secondary education was prevailing among 30.9%, while university education was only 20.8%, the rest of studied geriatric patients were primary education and read and write that represent 26.1% and 22.2% respectively. According to residence, a considerable number of studied geriatric patients were live in rural areas (61.4%). Also, the majority of studied geriatric patients (93.7%) reported that they are living with their family.

Concerning the number of chronic diseases, more than one third of the studied geriatric patients (34.8%) reported that they had three or more chronic diseases. Regarding exposure to surgery before, it was observed that 39.6% of studied geriatric patients were not exposed to surgery before and 60.4% of them exposed to surgery before. This table also showed that the majority of studied geriatric patients (91.3%) were suffering from heart disease.

Figure (1): Reveals the distribution of studied geriatric patients according to type of cardiac catheterization. It was noted that 72.5% of studied geriatric patients undergoing diagnostic cardiac catheterization, and 27.5% of them undergoing interventional cardiac catheterization.

Figure (2): Represents the precipitating risk factors for preoperative anxiety among the studied geriatric patients. It was founded that most of the studied geriatric patients (73.9%) reported that they had fear of postoperative pain. Moreover, the rate of the studied geriatric patients who had fear of disability, fear of death, and fear of medical surgical errors was 66.2%, 59.9%, and 72.9% respectively. Fear of complication was the most precipitating risk factor for preoperative anxiety that include (74.9%) of the studied geriatric

patients. Among the studied geriatric patients, 22.2% had previous cardiac catheterization, also 67.1% of the studied geriatric patients reported that they fear from the result of cardiac catheterization.

Regarding the feeling inability to recover from anesthesia and received enough information about CC, this table was showed that the rate of the studied geriatric patients was 44.9% and 53.6% respectively. Finally, it was demonstrated that 62.8% of them had preoperative instruction before cardiac catheterization.

Figure 3: Shows the level of preoperative anxiety in the studied geriatric patients undergoing cardiac catheterization. It was observed that 19.3% of the studied geriatric patients were normal without suffering from preoperative anxiety. As well, it was demonstrated that 27.5% of the studied geriatric patients had mild level of preoperative anxiety, 46.4% of them were suffering from moderate level of preoperative anxiety and, only 6.8% of them were suffering from severe level of preoperative anxiety. This indicates that most of the studied geriatric patients (80.7%) were suffering from preoperative anxiety before cardiac catheterization and nearly half of them had moderate level of preoperative anxiety (46.4%) with a mean score of 10.43±3.63.

Table 2: Reveals the perceived social support in the studied geriatric patients undergoing cardiac catheterization. The table illustrates the mean±SD of the perceived social support among the studied geriatric patients undergoing CC. It was appeared that the mean score of perceived social support from family, friends, and significant others of the studied geriatric patients were represented as 20.75±4.61, 18.18±4.59, and 19.56±4.76 respectively with a higher social support from family. Also, this table illustrate the total perceived social support score with mean 58.49±11.59.

Figure 4: Shows the level of perceived social support in the studied geriatric patients undergoing cardiac catheterization. It was revealed that 18.4% of the studied geriatric patients had low level of social support, while large number of them (63.3%) had moderate level of social support, but also 18.4% of them had high level of social support.

Figure 5: Shows the coping strategies subscale in the studied geriatric patients undergoing cardiac catheterization. The figure demonstrated that the mean score of coping strategies subscale. It was represented that religion was the highest coping strategies that used by the studied geriatric patients with the mean score 6.66, followed by the use of instrumental support with the mean score 5.99. Moreover, the lowest coping strategies that used by them was substances abuse that reported with the mean score 3.22 followed by behavioral disengagement with the mean 4.19 score.

Table 3: Shows the level of coping strategies in the studied geriatric patients undergoing cardiac catheterization. It was founded that 49.8% of the studied geriatric patients used high level of problem focused coping strategies, followed by 43% of them used high level of emotional focused coping strategies, while 6.8% of them used high level of dysfunctional coping strategies. This table also demonstrates the total mean± SD of the used coping strategies among the studied geriatric patients that revealed as 72.15±11.51.

It was founded that 5.8% of the studied geriatric patients had a low level of problem focused coping strategies, while 4.3% of them had a low level of emotional focused coping strategies. Also, 31.9% of them had a low level of dysfunctional focused coping strategies.

Figure 6: Illustrates the correlation between total score of preoperative anxiety and social support in the studied geriatric patients undergoing cardiac catheterization. This figure revealed that there was a significant moderate negative correlation between total score of preoperative anxiety and social support (P=<0.001**), this meaning that the studied geriatric patients who had high level of social support had lower level of preoperative anxiety.

Table 4: Displays the correlation between total preoperative anxiety and coping strategies in the studied geriatric patients undergoing cardiac catheterization. This table explained that there was a significant weak negative correlation between total score of preoperative anxiety and the usage of problem focused coping strategies (P<0.001**), this means that geriatric patients who had high level of problem focused coping strategies had lower level of preoperative anxiety.

Moreover, this table showed that there was a significant moderate negative correlation between total score of preoperative anxiety and the usage of emotional focused coping strategies (P<0.001**), this indicates that geriatric patients who had high level of emotional focused coping strategies had lower level of preoperative anxiety.

Otherwise, there was a significant moderate positive correlation between total score of preoperative anxiety and the usage of dysfunctional focused coping strategies (P<0.001**), this means that geriatric patients who had high level of dysfunctional focused coping strategies had higher level of preoperative anxiety.

Table (5): Reveals the multivariate linear regression analysis model for independent predictors of preoperative anxiety among geriatric patients undergoing cardiac catheterization. The table proven that age, had preoperative instruction, social support, problem focused coping strategies, emotion focused coping strategies, and dysfunctional coping strategies were a significant independent predictor of preoperative anxiety (Beta-0.141, -0.130, -0.234, -0.095, -0.226, and 0.265) respectively, with p<0.001 for all.

Table (1): Distribution of Studied Geriatric Batients According to Their Demographic Characteristics and Health-Related Data.

Demographic and health-related data	N= 207	100%
Age (years)		
From 60 years to less than 75	119	57.5
From 75 years to less than 85	83	40.1
From 85 years and more	5	2.4
Mean ± SD (Min – Max)	**71. 09 ± 7.17 (60-85yrs)**	
Sex		
Female	112	54.1
Male	95	45.9
Marital status		
Married	159	76.8
Widow	43	20.8
Divorced	5	2.4
Educational level		
Read and write	46	22.2
Primary education	54	26.1
Secondary education	64	30.9
University education	43	20.8
Residence		
Rural	127	61.4
Urban	80	38.6
Living arrangements		
Living with family	194	93.7
Alone	13	6.3
Number of chronic diseases		
No	7	3.4
One disease	39	18.8
Two diseases	89	43.0
Three and more diseases	72	34.8
Previous surgery		
Yes	125	60.4
No	82	39.6
Suffering from heart disease		
Yes	189	91.3
No	18	8.7

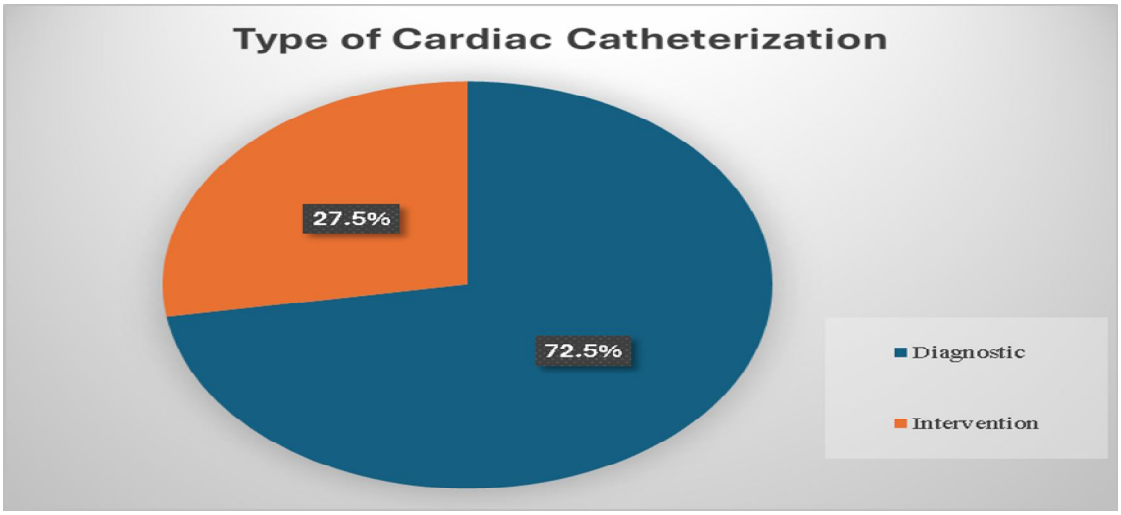


Figure (1): Distribution of Studied Geriatric Patients According to Type of Cardiac Catheterization.

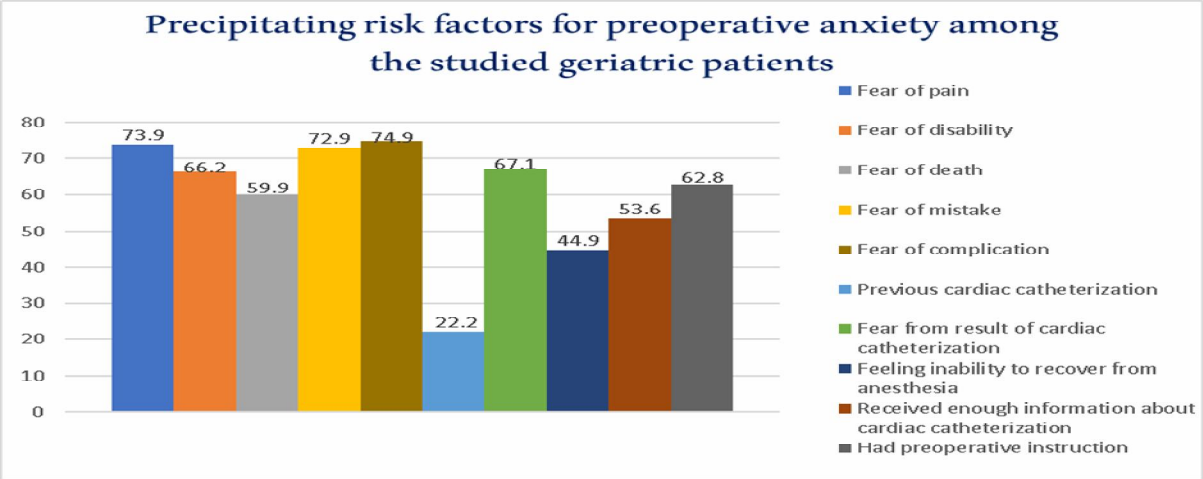


Figure (2): Precipitating Risk Factors for Preoperative Anxiety Among the Studied Geriatric Patients.

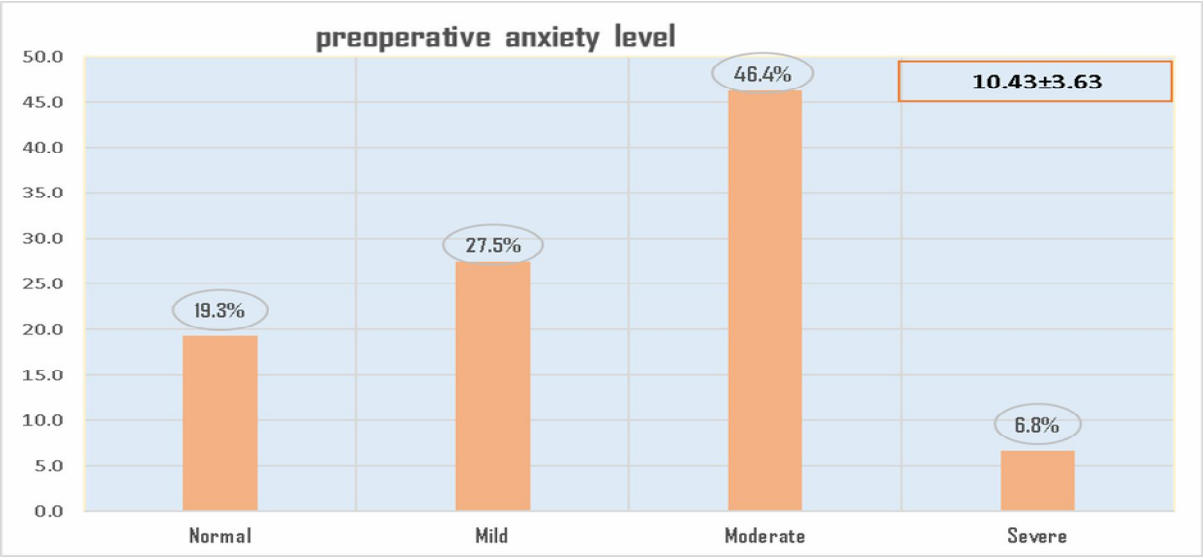


Figure (3): Level of Preoperative Anxiety in the Studied Geriatric Patients Undergoing Cardiac Catheterization (n=207).

Table (2): Perceived Social Support in the Studied Geriatric Patients Undergoing Cardiac Catheterization (n=207)

Subscale	N. Item	Mean ± SD	Possible score
Perceived social support			
Family social support	4	20.75±4.61	4.00-28.00
Friends social support	4	18.18± 4.59	4.00-28.00
Significant others social support	4	19.56±4.76	4.00-28.00
Total perceived social support score	***12***	***58.49±11.59***	***12.00-84.00***

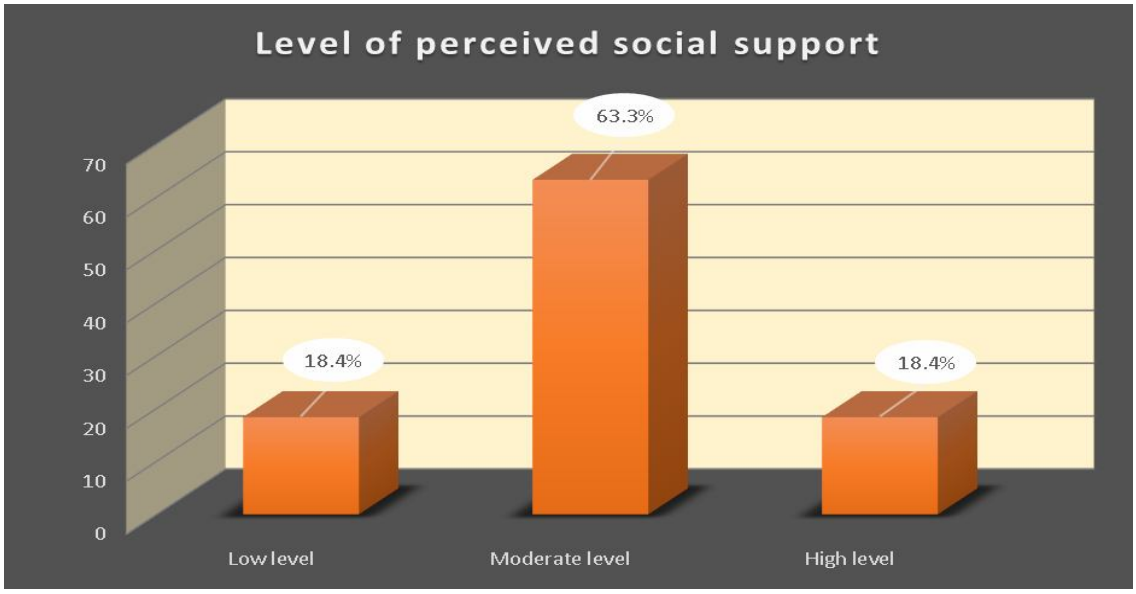
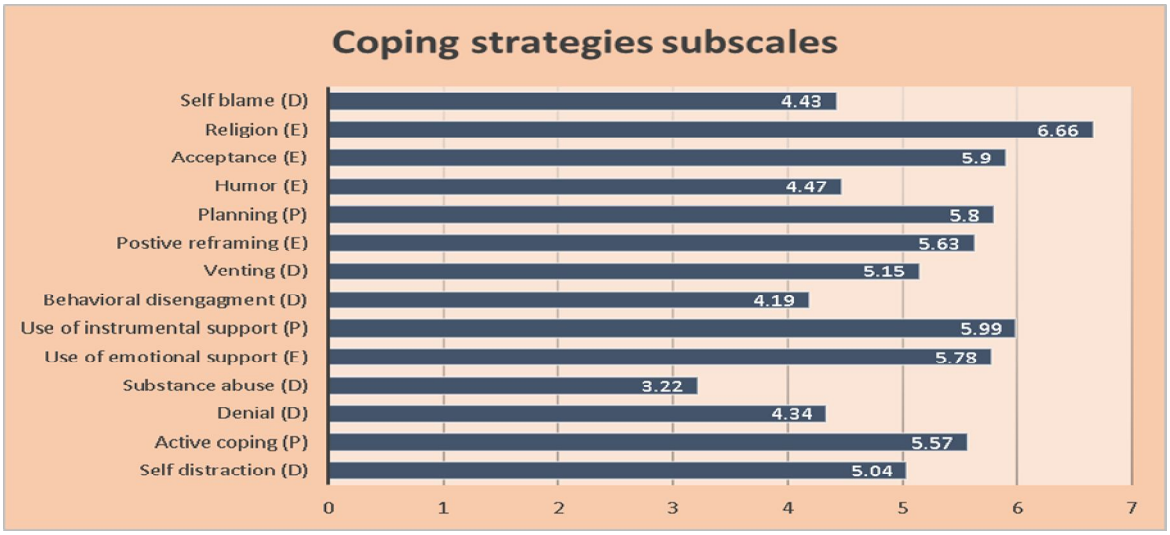


Figure (4): Level of Perceived Social Support in the Studied Geriatric Patients Undergoing Cardiac Catheterization (n=207)



P= Problem focused coping strategies, E= Emotional focused coping strategies, D= Dysfunctional coping strategies, Data presented with mean.

Figure (5): Coping Strategies Subscale in the Studied Geriatric Patients Undergoing Cardiac Catheterization (n=207)

Table (3): Level of Coping Strategies in the Studied Geriatric Patients Undergoing Cardiac Catheterization (n=207)

Coping strategies	N (207)	100%
Problem focused coping strategies		
Low	12	5.8
Moderate	92	44.4
High	103	49.8
Mean ± SD	**17.34±3.56**	
Emotional focused coping strategies		
Low	9	4.3
Moderate	109	52.7
High	89	43.0
Mean ± SD	**28.43±5.35**	
Dysfunctional coping strategies		
Low	66	31.9
Moderate	127	61.4
High	14	6.8
Mean ± SD	**26.36±5.91**	
Total coping score	***72.15± 11.51***	

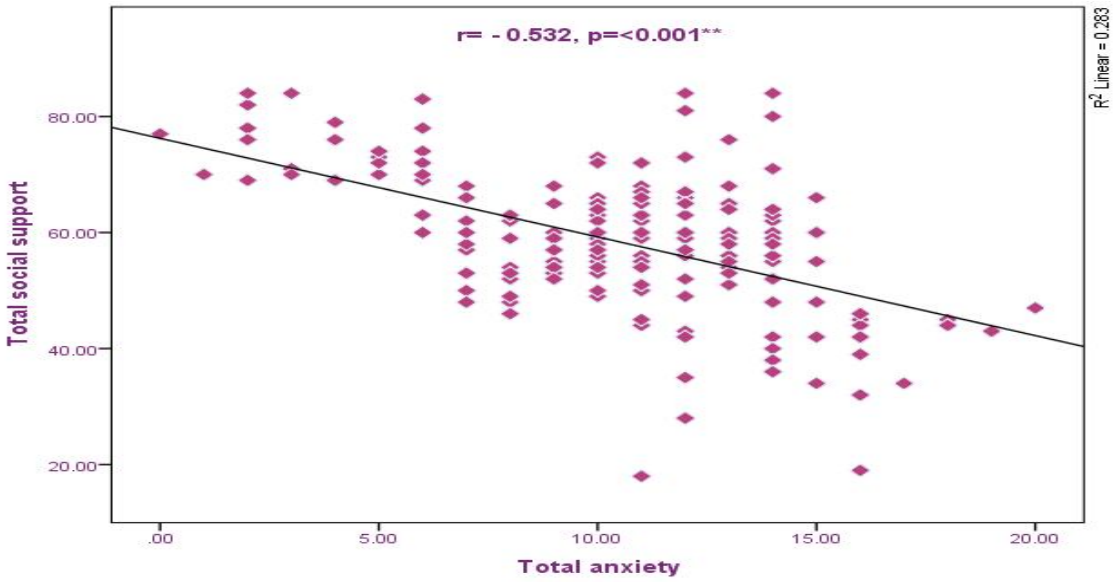


Figure (6): Correlation between total score of preoperative anxiety and social support in the studied geriatric patients undergoing cardiac catheterization.

Table (4): Correlation Between Total Preoperative Anxiety and Coping Strategies in the Studied Geriatric Patients Undergoing Cardiac Catheterization.

Coping strategies		Total preoperative anxiety score
Problem focused coping	r	-0.338
	p	<0.001**
Emotional focused coping	r	-0.457
	p	<0.001**
Dysfunctional coping	r	0.500
	p	<0.001**

r . Pearson Correlation

****. Correlation is significant at the 0.01 level (2-tailed).**

Table (5): Multivariate Linear Regression Analysis Model for Independent Predictors of Preoperative Anxiety Among Geriatric Patients Undergoing Cardiac Catheterization.

Total mean score for preoperative anxiety				
Model[#]	**Beta**	**t**	**P**	**B (95.0% CI)**
Age	-0.141	-2.714	0.007**	-0.846 (-1.462- 0.231)
Sex	0.048	1.012	0.313	0.352 (-0.334-1.038)
Educational level	-0.059	-1.238	0.217	-0.202 (-0.524-0.120)
Number of chronic diseases	0.053	1.102	0.272	0.256 (-0.202-0.714)
Previous Surgery	0.038	0.785	0.433	0.281 (-0.425-0.988)
Fear of Pain	0.097	1.546	0.124	0.799 (-0.221-1.819)
Fear of Disability	0.037	0.575	0.566	0.282 (-0.685-1.248)
Fear of Mistake	0.033	0.586	0.559	0.273 (-0.645-1.191)
Received Enough Information about cardiac catheterization	-0.050	-1.034	0.302	-0.360 (-1.047-0.327)
Had preoperative Instruction	-0.130	-2.685	0.008**	-0.971 (-1.684-.258)
Fear of Complication	0.043	0.684	0.495	0.362 (-0.681-1.405)
Fear of Result of cardiac catheterization	-0.053	-0.893	0.373	-0.406 (-1.302-0.491)
Feeling of Inability to Recover	0.030	0.593	0.554	0.219 (-0.509-0.946)
Social support	-0.234	-4.376	0.001**	-0.073 (-0.106-0.040)
Problem focused coping	-0.095	-1.964	0.05*	-0.097 (-0.195-0.000)
Emotion focused coping	-0.226	-4.485	0.001**	-0.153 (-0.220-0.086)
Dysfunctional coping	0.265	5.346	0.001**	0.163 (0.103-0.223)
R^2 =0.620, F=17.030, P <0.001				

Discussion

Cardiac catheterization (CC), a minimally invasive procedure accompanied by increasing the level of preoperative anxiety significantly specially in geriatric patients. Preoperative anxiety (POA) has both psychological and physiological effects by activation of the hypothalamic pituitary adrenal axis during the perioperative period, so it is important to consider. There are several factors' predispositions POA, including fear of anesthesia, fear of complications, fear of death, fear of pain as well as low social support and coping strategies (Sreevidhya, Mahalakshmi, & Lakshmi, 2024).

This study included 207 geriatric patients undergoing cardiac catheterization. The majority of the studied geriatric patients had POA prior to CC, according to the study's findings. Comorbidities and frailty may be the cause of this, as they may impair the geriatric patient's ability to handle anesthesia and surgery. Additionally, those patients have mentally prepared themselves for negative results following those procedures such as experience pain or discomfort during the procedure and frequently have thoughts of dying. Additionally, they are not accustomed to the environment because patients arrive at the Cardiac Catheterization Unit on the morning of the procedure.

This study found that the prevalence of POA was higher (more than three quarters) than studies

conducted in Brazil by Periañez et al., (2020) and India by Jiwanmall et al., (2020), which found that about half of patients felt anxiety. These findings may be due to cultural differences. Additionally, variations in study methodologies may have been one of the primary reasons for variations in the patients' reported levels of anxiety.

According to the current study's findings, a study conducted in Jordan by Hayajneh, Alhusban, & Rababa, (2022) used the same anxiety scale (HADS) and discovered that the majority of patients had POA before to CC. Otherwise, this result disagreement with a study conducted in Tanzania by Msoma, et al., (2023) which found that most study participants did not have POA.

The current findings also showed that a considerable number of the geriatric patients under study exhibited moderate POA. This could be explained by the fact that the majority of them were married and rely on family for assistance, which contributes to their moderate anxiety levels. This finding is confirmed by a study conducted in Iraq by Ahmed, & Mahmood, (2023), which discovered that the majority of study participants had moderate POA levels. Additionally, a significant portion of research participants had a moderate degree of POA prior to CC, according to a Brazilian study by Murakami, Rua, Santos, & Lopes, (2022). Furthermore, this finding is consistent with a survey conducted in Indonesia by Nasihin, (2023), which reported that the majority of respondents experienced moderate anxiety, with over 25% having mild anxiety and the least had severe anxiety.

On the other hand, a study by Rondonuwu, Kanine, Kapugu, & Sarimin, (2021), that was carried out in Indonesia with the aim of comparing anxiety levels in coronary heart patients before and after cardiac catheterization and found that the majority of the patients had mild anxiety prior to CC. on the other hand, it opposes a study conducted in Indonesia by Achmad et al., (2023), who reported that most respondents' anxiety levels were normal because of their higher education. These discrepancies may result from the use of different assessment instruments, participant characteristics, assessment time, patient personality type, and anxiety classification.

According to the current results, the majority of the geriatric patients under study reported a moderate level of social support, with familial social support being a frequent category among them. The mean±SD score for overall perceived social support was 58.49±11.59. According to the researcher point of view, social support including that of family members can improve health outcomes and the generation of geriatric mainly live with their spouse and extended family. Family members can also offer emotional support and reassurance, which would make the patient feel more comfortable and ready for surgical procedure.

These results align with a study conducted in South Asia by Sharma and Gharti (2019), which sought to measure preoperative anxiety and social support levels, and investigate the relationship between preoperative anxiety and social support. The study found that higher family social support was associated with a mean score of 52.31±9.69. Additionally, this finding is consistent with a study conducted in Indonesia by Khairani, Sari, & Indra, (2023), which discovered that study participants had the highest amount of family social support.

Additionally, this in harmony with a study by Olabisi et al., (2023) that was carried out in Nigeria and found that geriatric patients receive modest amounts of social support from their family, friends, and significant other. While a study conducted in Finland by Kähkönen, Paukkonen, Vähänikkilä, & Oikarinen, (2024), which attempted to examine the sources of social support and its correlations with perceived social support among patients undergoing percutaneous intervention. The study found that most participants had high levels of overall social support.

Understanding coping strategies is crucial to comprehending how the geriatric population handles daily challenges. The current study revealed, that the most common coping strategies among the geriatric patients under investigation was religion, which was followed by the usage of instrumental support. Furthermore, substance abuse and behavioral disengagement were the two least common coping strategies they reported using. According to the researcher, these study findings might be explained by Egyptian religion, culture, and the various difficulties and hardships that geriatric people have during their lives. All of these factors helped them to use problem focused coping followed by emotional coping strategies and dysfunctional coping. Additionally, the majority of the geriatric patients believed that the illness was a gift from God and that there was no need to worry because everything occurred according to God's will.

Furthermore, this is consistent with a study conducted in Tanzania by Msoma et al., (2023) to ascertain the prevalence of preoperative anxiety and predictors among elective surgical patients. The study found that, in the majority of African

nations, religion is one of the common ways used in lowering anxiety were based on person's belief, patients pray or seek spiritual help, also be one way to ensure assurance and hope that lowering anxiety levels. This indicates that, among study participants, religion is one of the most common coping strategies, while substance abuse is thought to be one of the least effective coping strategies.

Additionally, this result revealed that the majority of the studied geriatric patients employed high levels of problem focused coping strategies, emotional focused coping strategies, and dysfunctional coping strategies. This justification of age is linked to experiences that are related to knowledge, the understanding of illnesses and phenomena, and the maturity of geriatric mental processes, which include a greater propensity to employ problem focused coping, followed by emotional focused coping, and dysfunctional coping.

These findings were harmony with those of Olivencia-Carrión et al., (2023), who found that problem-solving and emotionally focused coping strategies are the most often employed coping strategies by individuals with anxiety. Also, these findings are agreement with a study by Taylor, & Carr, (2021) in America, which found that geriatric are more resilient than younger adults in terms of problem-solving techniques and emotional control to deal with hardship. Furthermore, these recent results are consistent with a study by Galiana, Tomás, Fernández, & Oliver, (2020), in Spain, which found that two coping strategy components problem and emotion-focused coping explained a general well-being factor in a sample of the geriatric population.

On the other hand, this finding contradicts a study by Alvi, Tarar, & Sajid, (2022), in Pakistan that evaluated the impact of coping mechanisms on the psychological health of the geriatric and found that geriatrics were more likely to use emotion focused coping strategies to manage their anxiety than problem focused coping. This conclusion also differs from a study conducted in the Netherlands by Boumans et al., (2021), who evaluated the association between age and coping and discovered that geriatric employ more emotion-focused coping methods and younger adults employ more problem focused coping strategies. Furthermore, this is in contrast to a study conducted in Europe by Nagy, & Balázs, (2023), which found that geriatric patients were less likely to adopt problem focused techniques.

Prior to CC, social support is crucial, and the patient's family can significantly impact the reduction of patient anxiety during the preoperative phase. The results of the current study showed a significant moderate negative association between social support and the overall POA score. This suggests that geriatric patients with higher levels of social support experienced lower levels of preoperative anxiety. This could be explained by the fact that social support is linked to better psychological preparation and less fear of dying. This is because social support can help the patient change their attention from an anxious emotion to a calm one. Moreover, there is a strong culture of family closeness. Because of the close family bonding, the geriatric patients are able to talk about the good things in life and share their ideas and feelings. Thus, it might lower POA.

This finding is consistent with a study by Kefelegn, Tolera, Ali, & Assebe, (2023), that sought to identify the prevalence of preoperative anxiety and related issues among surgical patients in eastern Ethiopian public healthcare facilities. The study noticed a significant correlation between reduced POA and social support. Furthermore, this outcome lines up with a study by Aliche, Ifeagwazi, Chukwuorji, & Eze, (2020), that demonstrated a negative correlation among social support and POA, indicating that patients with greater levels of POA are likely to have gotten fewer social support from their social network.

This supported by a study conducted in Ethiopia by Tesfaw, Siyoum, Salelew, & Minichil, (2022), this study tried to determine the prevalence of anxiety and its contributing factors among surgical heart patients who were admitted in order to try to provide the best care possible for these patients. It discovered that among those with weak social support, POA was more prevalent than among those with strong social support. In contrast, a study conducted in Nigeria by Aliche, Ifeagwazi, Eze, (2020), looked at the relationship between surgical anxiety as well as perceived social support among patients slated for heart surgery. They found a weak negative correlation among social support and POA. In contrast, a systematic review and meta-analysis done by Kok, Newton, Jones, & Cunningham, (2023), this systematic review investigated the impact of social support on POA in patients undergoing elective surgery and found no connection between social support and lowering POA.

Present study clarified that there was a significant moderate negative association between the total score of POA and the use of emotional focused coping strategies, as well as a significant weak negative correlation between the use of problem focused coping strategies and the total score of POA. Otherwise, the employment of dysfunctional focused coping strategies was significantly and moderately positively correlated with the POA total score.

According to researcher point of view, emotional focused coping strategies can assist in altering how one reacts to anxiety, whereas problem focused coping strategies seeks to modify or eradicate the cause of anxiety. Thus, while dysfunctional coping techniques, which are regarded as maladaptive coping, result in high levels of POA, patients with high levels of problems and emotional focused coping strategies have low levels of POA. Additionally, employing a multivariate linear regression analysis model, the current study demonstrated that problem, emotional, and dysfunctional focused coping strategies were significant independent predictors of POA.

This finding is corroborated by a study conducted in Nigeria by Rijal, Sae-Sia, & Kitrungrote, (2020), who discovered a positive link between POA and dysfunctional coping also, a negative correlation between emotion focused coping, problem focused coping, and POA. This showed that patients perceived less anxiety the more emotion focused and problem focused coping strategies they employed. Conversely, POA level was higher in those with dysfunctional coping.

The current result proven that age, had preoperative instruction, social support, coping strategies were a significant independent predictor of preoperative anxiety. This was justified by that the current study showed that factor as age, had preoperative instruction, social support, coping strategies had significant relation with POA and when these factors in high level, POA was low, indicating that they were major predictors of POA.

In accordance with these results of the present study, the study done in Zagazig by Abd Allah, Ali, & Abdel-Aziz, (2020), which this study assessed the anxiety degree and factors related to it in geriatric patients undergoing coronary angiography and percutaneous coronary intervention, found that the multiple linear regression models showed that age, social support, coping strategies, had preoperative instruction before procedure were significant predictors of geriatric patients' anxiety score. Also, this result is supported by the study conducted in China by Li, Peng, & Tao, (2023), stating that social support is one of the most useful predictors of anxiety among the interacting elements that have been demonstrated to affect anxiety.

Conclusion

Based on findings of the present study, the majority of studied geriatric patients had preoperative anxiety before cardiac catheterization and a considerable number of them had moderate level of preoperative anxiety. Moreover, large number of them had moderate level of social support and used different types of coping strategies like, problem focused coping strategies, emotional focused coping strategies, and dysfunctional coping strategies, respectively. Also, there are several factors' predispositions preoperative anxiety, including fear of anesthesia, complications, death, postoperative pain as well, low social support and coping strategies. The accessibility of significant level of social support and effectively usage of coping strategies seems to have positive effect on the level of preoperative anxiety among studied geriatric patients undergoing cardiac catheterization.

The following are the main recommendations:

- Preoperative education should be incorporated into routine practice to prepare geriatric patients before cardiac catheterization to alleviate preoperative anxiety.
- Evaluating geriatric patients' psychological needs as well as physiological needs during preoperative period to minimize preoperative anxiety prior to cardiac catheterization.
- Designing a special program to provide geriatric patients undergoing cardiac catheterization with adequate support and effective coping to overcome patients' preoperative anxiety.

Reference

Abd Allah, E. S., Ali, S. A. A., & Abdel-Aziz, H. R. (2020). Anxiety And Its Associated Factors Among Older Patients Undergoing Coronary Angiography and Percutaneous Coronary Intervention. *Journal of the Egyptian Society of Parasitology*, *50*(2), 333-343.

Abd Elhameed, S.H. (2010). Caregivers training and health status outcomes in cerebral stroke elder patients. Published Doctoral Thesis. Faculty of Nursing. Alexandria University.

Achmad, B. F., Setiyarini, S., Sutono, S., Rasyid, F., Fitriawan, A. S., & Kafil, R. F. (2023). Association between Illness Perception and Anxiety Undergoing Percutaneous Coronary Intervention in Patients with Acute Coronary Syndrome: A Pilot Study. *Open Access Macedonian Journal of Medical Sciences*, *11*(G), 105-110.

Afrassa, N., Kassa, R. N., & Legesse, T. G. (2022). Preoperative anxiety and its associated factors among patients undergoing cardiac catheterization at saint peter Specialized Hospital and Addis Cardiac Center, Addis Ababa, Ethiopia. *International Journal of Africa Nursing Sciences, 17*, 100430.

Agüero‐Millan, B., Abajas‐Bustillo, R., & Ortego‐Maté, C. (2023). Efficacy of nonpharmacologic interventions in preoperative anxiety: A systematic review of systematic reviews. *Journal of Clinical Nursing*, *32*(17-18), 6229-6242.

Ahmed, A. K., & Mahmood, N. A. (2023). The impact of preoperative education on reducing anxiety among patients undergoing elective surgery at Shahidan Qaladze Teaching Hospital in Kurdistan Region/Iraq. Mosul Journal of Nursing, 11(1), 59-68.

Aliche, J. C., Ifeagwazi, C. M., Chukwuorji, J. C., & Eze, J. E. (2020). Roles of religious commitment, emotion regulation and social support in preoperative anxiety. *Journal of Religion and Health*, *59*, 905-919.

Aliche, J. C., Ifeagwazi, C. M., Eze, J. E. (2020). Emotional reactivity and surgical anxiety. The protective nature of perceived social support. *Psychology, Health & Medicine* 25(4): 434–445.

Alvi, A. S., Tarar, M. G., & Sajid, I. U. (2022). Assessing death anxiety and its correlates among community dwelling elderly. *Journal of Management Practices, Humanities and Social Sciences*, *6*(2), 59-67.

Bahrami, F., Hanifi, N., & Mardani, A. (2024). Comparison of the Effects of Aromatherapy with Damask Rose and Chamomile Essential Oil on Preoperative Pain and Anxiety in Emergency Orthopedic Surgery: A Randomized Controlled Trial. *Journal of PeriAnesthesia Nursing*.

Bayuo, J., & Agbenorku, P. (2018). Coping strategies among nurses in the Burn Intensive Care Unit: A qualitative study. *Burns Open, 2*(1), 47-52.

Boumans, J., Scheffelaar, A., Van Druten, V. P., Hendriksen, T. H., Nahar-van Venrooij, L. M., & Rozema, A. D. (2021). Coping strategies used by older adults to deal with contact isolation in the hospital during the COVID-19 pandemic. *International Journal of Environmental Research and Public Health*, *18*(14), 7317.

Carver, C. S. (1997). You want to measure coping but your protocol' too long: Consider the brief cope. *International journal of behavioral medicine, 4*(1), 92-100.

Da Silva Leão, M., de Lima, G., & de Araújo, A. H. I. M. (2023). Nursing care for patients submitted to cine coronary angiography and the nurse's role in the vascular sheath removal. *Seven Editor*.

Dibabu, A. M., Ketema, T. G., Beyene, M. M., Belachew, D. Z., Abocherugn, H. G., & Mohammed, A. S. (2023). Preoperative anxiety and associated factors among women admitted for elective obstetric and gynecologic surgery in public hospitals, Southern Ethiopia: a cross-sectional study. *BMC psychiatry*, *23*(1), 728.

El Hazmy, M. (2016). The use of the Internet and emotional relations and social support perceived as the predictors of the psychological isolation. Published master thesis. Nayef University, Riyadh, Saudi Arabia.

Elsayed B, M, E., & Selim, Mo, A, A, T. (2022). Fear, Perceived Stress, Life Satisfaction, and Coping Styles among Community Dwelling Older Adults during COVID-19 Pandemic. *Egyptian Journal of Health Care, 13*(3), 460-476.

Ertural, F., Çelik, G. K., & Özçelik, H. (2023). Effect of oral carbohydrate solution administered before hip arthroplasty on preoperative anxiety and postoperative patient comfort: a randomized controlled trial. *Journal of Peri Anesthesia Nursing*, *38*(3), 461-468.

Galiana, L., Tomás, J. M., Fernández, I., & Oliver, A. (2020). Predicting well-being among the elderly: The role of coping strategies. *Frontiers in psychology*, *11*, 616.

Gu, X., Zhang, Y., Wei, W., & Zhu, J. (2023). Effects of preoperative anxiety on postoperative outcomes and sleep quality in patients undergoing laparoscopic gynecological surgery. *Journal of Clinical Medicine*, *12*(5), 1835.

Hayajneh, A. A., Alhusban, I. M., & Rababa, M. (2022). The Role of Traditional Obesity Parameters in Predicting Frailty among Coronary Artery Disease Patients Undergoing Cardiac Catheterization. *International Journal of Clinical Practice*, *2022*(1), 8676274.

Hertzsprung, N., Krantchev, K., Picht, T., Roethe, A. L., Rubarth, K., Fuellhase, J., ... & Acker, G. (2023). Personalized surgical informed consent with stereoscopic visualization in neurosurgery—real benefit for the patient or unnecessary gimmick? *Acta Neurochirurgica*, *165*(4), 1087-1098.

Hua, S. H. E. N., Xun-Xun, F. E. N. G., Qian-Yun, G. U. O., & Yu-Jie, Z. H. O. U. (2024). Updates of developments in interventional therapy for elderly patients with cardiovascular diseases. *Journal of Geriatric Cardiology: JGC*, *21*(1), 1.

Jalali, A., Hassanzadeh, A., Najafi, M. S., Nayebirad, S., Dashtkoohi, M., Karimi, Z., & Shafiee, A. (2024). Predictors of major adverse cardiac and cerebrovascular events after percutaneous coronary intervention in older adults: a systematic review and meta-analysis. *BMC geriatrics*, *24*(1), 337.

Jiwanmall, M., Jiwanmall, S. A., Williams, A., Kamakshi, S., Sugirtharaj, L., Poornima, K., & Jacob, K. S. (2020). Preoperative anxiety in adult patients undergoing day care surgery: prevalence and associated factors. *Indian journal of psychological medicine*, *42*(1), 87-92.

Kähkönen, O., Paukkonen, L., Vähänikkilä, H., & Oikarinen, A. (2024). Perceived social support among percutaneous coronary intervention patients over a long‐term follow‐up period. *Nursing Open*, *11*(2), e2087.

Kareem, H. M., & Hamza, R. A. (2023). Effectiveness of Clinical Guideline Regarding Post Arterial Sheath Removal on Reduction of Complications in Patients after Cardiac Catheterization: Randomized Control Trial. *Remittances Review*, *8*(4).

Kefelegn, R., Tolera, A., Ali, T., & Assebe, T. (2023). Preoperative anxiety and associated factors among adult surgical patients in public hospitals, eastern Ethiopia. *SAGE Open Medicine*, *11*, 20503121231211648.

Khairani, M., Sari, S. M., & Indra, R. L. (2023). Factors Affecting the Anxiety Level of Pre-Surgical Patients in Hospital. *Journal Riset Kesehatan*, *12*(1), 57-66.

Kok, X. L. F., Newton, J. T., Jones, E. M., & Cunningham, S. J. (2023). Social support and pre-operative anxiety in patients undergoing elective surgical procedures: A systematic review and meta-analysis. *Journal of Health Psychology*, *28*(4), 309-327.

Lamacraft, G., van Rooyen, C., Raubenheimer, L., Arendse, K., Gama, X., Jang, H. G., ... & Osei-Fofie, L. (2023). Prevalence of preoperative anxiety and its contributing factors in adult patients undergoing elective orthopedic surgery at an academic hospital in South Africa: a pilot study. *Southern African Journal of Anesthesia and Analgesia*, *29*(4), 128-134.

Li, Y., Peng, J., & Tao, Y. (2023). Relationship between social support, coping strategy against COVID-19, and anxiety among home-quarantined Chinese university students: A path analysis modeling approach. *Current Psychology*, *42*(13), 10629-10644.

Li, Z., & Li, Q. (2024). How Social Support Affects Resilience in Disadvantaged Students: The Chain-Mediating Roles of School Belonging and Emotional Experience. *Behavioral Sciences*, *14*(2), 114.

Loureiro, F., Peças, D., Neves, A. C., & Antunes, A. V. (2024). Coping strategies and social support in nursing students during clinical practice: A scoping review. *Nursing Open*, *11*(2), e2112.

Msoma, R. A. G. H., Khamis, R. H., Rwanyuma, L. P., Akoko, L. O., Mkulo, A. Z., & Msinde, P. (2023). Prevalence of Pre-Operative Anxiety and Predictors among Elective Surgical Patients and Their Pre-Operative Hemodynamic Changes at Muhimbili National Hospital. *Open Journal of Medical Psychology*, *12*(2), 55-70.

Murakami, L., Rua, E. S., Santos, V. B., & Lopes, J. D. L. (2022). Effectiveness of educational intervention with manual for anxiety and stress reduction among cardiac catheterization patients: controlled clinical trial. *Revista Brasileira de Enfermagem*, *75*, e20210757.

Nagy, L., & Balázs, K. (2023). Typical coping patterns: a person-centered approach to coping. *New Ideas in Psychology*, *70*, 101023.

Nasihin, N. (2023). The Effect of Hand Massage on Reducing the Anxiety Level of Pre-Surgery Clients in Tangerang City Regional Public Hospital. *Poltekita: Journal Ilmu Kesehatan*, *17*(1), 1-7.

Omkaram, S., Reddy, C. G., Murthy, P. S., & Chaudhury, S. (2023). Prevalence of preoperative anxiety in patients posted for surgical procedures and its relation to the doses of anesthetic drugs: A cross-sectional study. Industrial Psychiatry Journal.

Olabisi, O. I., Faronbi, J., Adedeji, P., Ademuyiwa, G., Gambari, Y., & Lasisi, A. (2023). Influence of family and friends' level of social support on psychological symptoms among the older adults in Nigeria. *SAGE Open Nursing*, *9*, 23779608231187778.

Olivencia-Carrión, M. A., Olivencia-Carrión, M. D., Fernández-Daza, M., Zabarain-Cogollo, S., Castro, G. P., & Jiménez-Torres, M. G. (2023, March). Anxiety Levels and Coping Strategies to Deal with COVID-19: A Cross-Cultural Study among the Spanish and Latin American Healthcare Populations. In *Healthcare* (Vol. 11, No. 6, p. 844). MDPI.

Polit, D. F., & Beck, C. T. (2021). *Nursing research: generating and assessing evidence for nursing practice*. Eleventh edition. Philadelphia, Wolters Kluwer.

Rijal, J., Sae-Sia, W., & Kitrungrote, L. (2020). Psychosocial factors associated with transfer anxiety among open heart surgery patients transferred from the intensive care unit to the general ward. *Health*, *12*(12), 1583.

Rohmah, I. A., Formen, A., & Saraswati, S. (2024). The Effects of Self-Acceptance, Coping Strategies, and Social Support on Psychological Well-Being. *Jurnal Bimbingan Konseling*, 32-38.

Rondonuwu, R., Kanine, E., Kapugu, G., & Sarimin, D. S. (2021, October). Anxiety Heart Cateterization of Coronary Heart Disease Patients. In *International Conference on Nursing and Public Health* (Vol. 1, No. 1, pp. 120-128).

Sharma, S., & Gharti, K. (2019). Preoperative anxiety and social support among patients undergoing surgery. *Janapriya Journal of Interdisciplinary Studies*, *8*, 149-159.

Taylor, M. G., & Carr, D. (2021). Psychological resilience and health among older adults: a comparison of personal resources. The Journals of Gerontology: Series B, 76(6), 1241 1250.

Tesfaw, G., Siyoum, M., Salelew, E., & Minichil, W. (2022). Anxiety and the associated factors among admitted surgical and medical patients, Addis Ababa, Ethiopia: a cross-sectional study.

Ugras, G. A., Kanat, C., Yaman, Z., Yilmaz, M., & Turkmenoglu, M. O. (2023). The effects of virtual reality on preoperative anxiety in patients undergoing colorectal and abdominal wall surgery: A randomized controlled trial. *Journal of PeriAnesthesia Nursing*, *38*(2), 277-283.

Vakka, A., Warren, J. S., & Drosatos, K. (2023). Cardiovascular aging: from cellular and molecular changes to therapeutic interventions. *The journal of cardiovascular aging*, *3*(3).

Wang, J. Y., Wei, L. L., Li, H. T., Zhang, Y., Li, Q. Q., Pan, Y. S., ... & Wei, H. (2022). A qualitative exploration of the psychological experience of patients hospitalized with COVID-19. *Holistic nursing practice*, *36*(1), 37-45.

Wang, J., Cui, J., Tu, S., Li, Q., Wang, Y., Zhao, L., ... & Bao, Y. (2024). Early Mobilization after Cardiac Catheterization via Femoral Artery: A Systematic Review and Meta-Analysis. *Reviews in Cardiovascular Medicine*, *25*(5), 152.

World Health Organization (2024). Cardiovascular diseases. Retrieved 20 March 2024 from: https://www.who.int/health-topics/cardiovascular-diseases

Yahagi, M., Hiruta, R., Miyauchi, C., Tanaka, S., Taguchi, A., & Yaguchi, Y. (2024). Comparison of Conventional Anesthesia Nurse Education and an Artificial Intelligence Chatbot (ChatGPT) Intervention on Preoperative Anxiety: A Randomized Controlled Trial. *Journal of PeriAnesthesia Nursing*.

Zigmond, A., Snaith, R. (1983). The Hospital Anxiety and Depression Scale. Acta Psychiatrica Scandinavica; 67: 361- 70.

Zimet, G., Dahlem, N., Zimet, S., Farley, G. (1988). The Multidimensional Scale of Perceived Social Support. Journal of Personality Assessment, 52, 30- 41.