ORIGINAL ARTICLE

Empowerment and Preoperative Anxiety among Patients Undergoing Cardiac Surgery: A Cross Sectional Study

Mohd Azrulhisham Mat Nawi[1,2], Zamzaliza A. Mulud[1], Norfidah Mohamad[1]

[1] Centre for Nursing Studies, Faculty of Health Sciences, Universiti Teknologi MARA, Puncak Alam Campus, Selangor, Malaysia
[2] Cardiothoracic Intensive Care Unit (CICU), Hospital UiTM, Kampus Sg Buloh, 47000 Sungai Buloh, Selangor, Malaysia

ABSTRACT

Introduction: Patients undergoing surgery are often concerned about the outcomes, including losing control over their bodies, losing their capacity to work, experiencing pain, and fearing death, which leads to anxiety. Thus, this study aimed to determine the level of patient empowerment, the level of preoperative anxiety and its association with sociodemographic data, and the predictors for preoperative anxiety. **Methods:** A quantitative cross-sectional study was conducted among cardiac surgery patients at two teaching hospitals (n=168). Data were collected using self-administered questionnaires; the Patient Perception of Empowerment Scale (PPES) and Amsterdam Preoperative Anxiety Information Scale (APAIS). **Results:** Most of the participants showed well empowered (75%), a low level of anxiety (56.5%), and a medium degree of need for information (49.4%). Inferential statistics revealed that sleep disturbances ($p < 0.01$) and gender ($p = 0.02$) were significantly associated with preoperative anxiety in terms of anxiety score. Meanwhile, besides gender and sleep disturbances, smoking status ($p = 0.03$) significantly correlated with the desired information score. Sleep disturbances ($p < 0.01$) and age ($p = 0.03$) was a significant predictor of preoperative anxiety. **Conclusion:** In conclusion, patients should be assessed for the level of preoperative anxiety and level of empowerment as early as they are in the clinic for follow-up before they are planned for cardiac surgery.
Malaysian Journal of Medicine and Health Sciences (2023) 19(SUPP18)28-35. doi:10.47836/mjmhs19.s18.5

Keywords: Anxiety, Cardiac surgery, Fear, Patient empowerment, Preoperative anxiety

Corresponding Author:
Zamzaliza Abdul Mulud, PhD
Email: zamzaliza@uitm.edu.my
Tel: +603 3258 4351

INTRODUCTION

According to the World Health Organisation, cardiovascular diseases (CVD) are one of the leading causes of illness and mortality (1). Department of Statistics Malaysia (2) mentioned that cardiovascular diseases (CVD), specifically ischemic heart disease, remained one of the principal causes of death from 2005 to 2014. Furthermore, according to the data from WHO, Malaysia is ranked 61st in the world for coronary artery disease deaths, totalling 36,729 or 21.86% of all deaths in 2020. Ischemic heart disease (IHD) deaths accounted for 13.5% of all deaths in Malaysia in 2014, followed by pneumonia (12.0%), cerebrovascular illnesses (7.1%), septicemia (6.1%), and transportation accidents (5.6%) (2). In 2018, The Malaysian Burden of Disease study reported that IHD was the most significant cause of premature death, with 17.7% of all deaths (3).

Patients who do not respond to medical treatment, such as medications, frequently require cardiac surgery like coronary artery bypass graft (CABG) surgery. The number of patients undergoing cardiac surgery has increased both internationally and locally. As of 2016, an estimated 1 million patients undergo yearly cardiac surgery worldwide (4). Even though procedures like stent placement and percutaneous transluminal coronary angioplasty are often performed, many patients still need cardiac surgery, precisely a CABG operation, as this treatment increases coronary circulation. Hence, the myocardium receives enough oxygen and nutrients (5).

Cardiac surgery is one of the major operations perceived as a crisis or a life-threatening event for most patients. Therefore, preoperative preparation, including preoperative health education for cardiac surgery patients, plays a vital role, especially in postoperative care and recovery. Preoperative education is defined as assisting the patient to understand and prepare mentally for the surgical procedure and recovery in the postoperative period (6). Thus, patients' education

and preparation before major surgery have positive advantages after surgery and after the discharge phase. Patient empowerment is one of the elements that play an essential role in successful surgery. For patients to manage their diseases, receive treatment, and make decisions about their health, empowerment seeks to improve or grow their physical, mental, or social skills.

According to another researcher, cardiac surgery is a crucial event in an individual's life for those with IHD, which impairs physical functioning and thereby affects the individual's economic, personal, and professional life (6). The postoperative patient may experience fear, anxiety, depression, and other mental health problems. Patients undergoing surgery are often concerned about the outcomes, including losing control over their bodies, losing their capacity to work, experiencing pain, being unable to awaken from anaesthetic, and fearing death (7). Preoperatively, patients may develop worry, including depression, due to a lack of knowledge about the diagnosis and available treatments. Most patients struggle to deal with the operation process because of their anxiety and fear.

Additionally, studies in Nigeria and Tunisia reported that the incidence of preoperative anxiety was 23.3% and 67.5%, respectively (8-9). Preoperative anxiety can have a variety of adverse effects, such as acute myocardial infarction, heart failure, pulmonary oedema, a rising rehospitalisation incidence, poor quality of life, and increased rates of cardiovascular fatalities, all of which are associated with severe postoperative complications, steadily increasing pain relief and anaesthetic utilisation, a prolonged hospital stay, adverse effects on anaesthesia induction and patient recovery, and decreased patient satisfaction with perioperative care (10).

Thus, this study aims 1) to determine the level of preoperative anxiety, 2) to determine the level of patient empowerment, 3) to determine the association between sociodemographic data, patient empowerment and preoperative anxiety in patients undergoing cardiac surgery, 4) to determine the predictors for preoperative anxiety.

MATERIALS AND METHODS

Study design and study setting

This study was conducted at the Cardiothoracic Intensive Care Unit (CICU) of two teaching hospitals in Klang Valley from November 2022 to January 2023. We utilised a cross-sectional quantitative descriptive design to answer all the research questions. This design was used to describe patient empowerment and preoperative anxiety among patients undergoing cardiac surgery and involved 168 samples.

Sample size and sampling

The sample size was calculated using Raosoft Software with a 5% margin of error and 95% confidence level from the total number of populations. The total estimated population in both hospitals was 280. Therefore, based on Raosoft Calculator Software, the sample size required is 163 participants. Purposive sampling was used, and all participants who fulfilled the inclusion criteria were invited to participate in this study.

Instruments

The Amsterdam Preoperative Anxiety Information Scale (APAIS) was used to measure preoperative anxiety levels. This tool was adapted from Boker et al. (11). This questionnaire consists of six items, and these items are rated based on a five-point Likert scale, which is "not at all" (1), "somewhat" (2), "moderate" (3), "moderately high" (4) and "extremely" (5). The higher rate in each item indicates a high level of preoperative anxiety. In this study, we used the Malay version of this questionnaire that Fahmi et al. translated in 2015 (12). The Chronbach alpha values of anxiety and need for information were 0.93 and 0.90, respectively, indicating that the Malay version of APAIS has excellent internal consistency reliability.

Meanwhile, patient empowerment was measured using the Patient Perception Empowerment Scale (PPES) originally developed by Lewin and Piper (13). The original version of the PPES contains 17 items and uses a five-point Likert scale, which ranges from "strongly agree" to "strongly disagree", with a reported Chronbach value of 0.82. In this study, the PPES was translated into Malay using back-to-back translations. The content validity index (CVI) was calculated and showed that the CVI was 0.92 for the translated questionnaire. An internal consistency measure, or Cronbach's alpha, was used to determine the instrument's reliability. A good reliability and acceptable index is judged to have a Cronbach's Alpha score above 0.6 (14). Thus, a value of 0.6 or higher was accepted. In this study, the result of 17 participants was selected for the pilot study. The internal consistency results for each instrument of APAIS and PPES were 0.64 and 0.94, respectively.

Data collection procedures

A list of patients who were scheduled for cardiac surgery was gathered from the Department of Cardiovascular and Thoracic Surgery from both hospitals during the study period. Patients who fulfilled the inclusion criteria were identified, and they were informed about the purpose of this study. Those who agreed and consented to participate were asked to answer a questionnaire.

Ethical approval and permission

The ethical approval to conduct research was obtained from the UiTM Research Ethic Committee (No: REC/11/2021 (UG/MR/872). Besides that, the MREC UMMC approved the study (MREC ID No: 2021917-10595).

Statistical analysis

All data were analysed using Statistical Package for the Social Sciences (SPSS) version 26.0 and based on the study objectives. Thorough checking was done regularly to ensure that all data was entered for all 168 samples. Descriptive statistic analyses were used to determine frequency with percentage for categorical data of sociodemographics and mean with standard deviation for numerical sociodemographic data. Results were expressed as mean and standard deviation or number (%). Besides that, this descriptive analysis was used to analyse the level of preoperative anxiety and the level of patient empowerment. A non-parametric test was done to determine the association between sociodemographic data with patient empowerment and preoperative anxiety. In addition, multiple linear regression (MLR) was used to assess the predictor of preoperative anxiety to determine the strength of association for significant variables for preoperative anxiety. Assumptions check for MLR was made simultaneously during the analysis of MLR. We selected a *p*-value between 0.15 and 0.20 from the bivariate analysis results to ensure crucial variables were entered. Thus, to choose variables for MLR, the variables with *p*-value <0.20 were selected for data analysis.

RESULT

Demographic characteristics

The result showed that most of the participants are male (n=98, 58.3%), married (n=139, 82.7%), completed university education (n=100, 59.5%) and live in urban areas (n=125, 74.4%). Besides that, two-thirds of participants (n=110, 65.5%) consumed tobacco or smoking, most participants (n=136, 81%) did not have a previous history of surgery, and a quarter (n=127, 75.6%) participants had underlying other comorbidities of medical problems. In addition, almost 61.9% (n=104) of participants undergoing CABG, with most of them (n=148, 88.1%) not experiencing any perioperative pain, 74.4% (n=125) of participants did not have a sleep disturbance, and most of them hospitalised 2 to 3 days before surgery. The mean age and BMI values were 53.42 (SD=8.77) and 24.76 (SD=3.15), respectively. Most of the participants stay 2 to 3 days before the actual date of surgery. The other details of sociodemographic characteristics are stated in Table I.

Table I: Distribution of descriptive statistic for sociodemographic data of respondents

Sociodemographic	Response	Result	
		n (%)	Mean (SD)
Gender	Male	98 (58.3)	
	Female	70 (41.7)	
Age			53.42 (8.773)
BMI			24.76 (3.152)
Marital status	Single	9 (5.4)	
	Married	139 (82.7)	
	Divorced	20 (11.9)	
Education	No formal	5 (3)	
	Primary	10 (6)	
	Secondary	53 (31.5)	
	Universities	100 (59.5)	
Residence area	Urban	125 (74.4)	
	Rural	43 (25.6)	
Smoking status	Yes	110 (65.5)	
	No	58 (34.5)	
Previous surgery	Yes	32 (19.0)	
	No	136 (81)	
Other comorbid	Yes	127 (75.6)	
	No	41 (24.4)	
Surgery type	CABG	104 (61.9)	
	Valve surgery	63 (38.1)	
Preoperative pain	Yes	20 (11.9)	
	No	148 (88.1)	
Sleep disturbances	Yes	43 (25.6)	
	No	125 (74.4)	
Preoperative length of stay	1 day	1 (0.6)	
	2 to 3 days	122 (72.6)	
	4 to 7 days	42 (25)	
	> 7 days	3 (1.8)	

CONTINUE

Level of patient empowerment and preoperative anxiety

Based on PPES, all 168 respondents answered this part completely. Overall, most participants were well-empowered (n=126, 75%), while 1.2% of participants were averagely empowered. However, only one participant or 0.6%, showed less than averagely empowered. Meanwhile, the mean anxiety score was 8.54 (SD=289), and the mean for the desired information score was 4.07 (SD=1.49). Most participants showed low anxiety (n=95, 56.5%). Meanwhile, the rest of the participants (n=73, 43.5%) showed high anxiety when they planned for cardiac surgery. On the other hand, nearly half of the participants (n=83 or 49.4%) showed a medium degree of need concerning information about anaesthetics and surgery. Thirty-two participants, or 19%, required little or no need for further information related to anaesthetic and cardiac surgery. However, 31.5% of participants (n=53) reported a high level of need for information pertaining to anaesthetic and surgery which they need to be serious. Table II presents the levels of patient empowerment and anxiety.

Table II: Descriptive Data for Level of Patient Empowerment and Anxiety

Variable	Category		
		n (%)	Mean (SD)
Empowerment			4.38 (0.18)
	Very well empowered	39 (23.2)	
	Well empowered	126 (75)	
	Averagely empowered	2 (1.2)	
	Less than averagely empowered	1 (0.6)	
Anxiety score			8.54 (2.886)
	High level of anxiety	73 (43.5)	
	Low level of anxiety	95 (56.5)	
Desire information score			4.07 (1.493)
	Little or no need	32 (19)	
	Medium degree of need	83 (49.4)	
	High level of need	53 (31.5)	

Association of sociodemographic data with patient empowerment and preoperative anxiety

Inferential statistical data was used to determine the association between sociodemographic data and preoperative anxiety. Table III shows the distribution of results for the association between sociodemographic data and preoperative anxiety score. From the result, only two variables showed significant associations. Firstly, the Mann-Whitney U test revealed that the association between sleep disturbances and anxiety scores was statistically significant ($z = -8.861$, $p < 0.01$). Besides that, based on the Mann-Whitney U test, the variable of gender showed a significant association with anxiety score ($z = -2.386$, $p = 0.02$). Thus, the null hypothesis involving these two variables was rejected.

Table III: Association between sociodemographic data with preoperative anxiety

Sociodemographic	Result				
	Median	z statistic[a]	X^2 (df)[b]	Correlation	*p*-value
	(IQR)			Coefficient[c]	
Gender		- 2.386			0.02*
Male	7.5 (3.5)				
Female	9.625 (4.69)				
Age				-0.102	0.19
BMI				0.036	0.65
Marital status			2.27 (2)		0.32
Single	7.75 (4.0)				
Married	7.75 (3.5)				
Divorced	9.75 (6.13)				
Education			4.546 (3)		0.21
No formal	6.75 (4.63)				
Primary	6.625 (4.44)				
Secondary	7.25 (4.0)				
Universities	8.625 (3.19)				
Residence area		-0.842			0.40
Urban	7.75 (3.5)				
Rural	8.75 (3.5)				
Smoking status		-1.46			0.14
Yes	7.75 (3.5)				
No	7.75 (5.0)				
Previous surgery		-0.889			0.37
Yes	7.5 (5.0)				
No	7.75 (3.44)				

CONTINUE

Table III: Association between sociodemographic data with preoperative anxiety (cont.)

Sociodemographic	Result				
	Median	z statistic[a]	X^2 (df)[b]	Correlation	*p*-value
	(IQR)			Coefficient[c]	
Other comorbid		-0.265			0.79
Yes	7.75 (3.25)				
No	8.5 (3.88)				
Surgery type		-1.052			0.29
CABG	7.75 (3.5)				
Valve	9.13 (4.75)				
Preoperative pain		-1.427			0.15
Yes	8.75 (6.0)				
No	7.75 (3.5)				
Sleep disturbances		-8.861			<0.01*
Yes	11.75 (3.25)				
No	6.75 (2.88)				
Preoperative length of stay			3.543 (3)		0.32
2 – 3 days	7.75 (3.5)				
4 – 7 days	7.75 (3.31)				
More 7 days	6.75 (0.0)				

On the other hand, Table IV presents the distribution of results for the association between sociodemographic data with the desired information score. From the result of non-parametric data analysis, three variables showed significant associations. Based on the Mann-Whitney U test, gender ($z = -3.38$, $p < 0.01$) and sleep disturbances ($z = -8.861$, $p < 0.01$) showed significant association. In addition, data analysis revealed that smoking status also showed a significant association with preoperative anxiety in terms of desired information score ($z = -2.12$, $p = 0.03$).

The analysis of a non-parametric test using Spearman's correlations were run to examine the association between patient empowerment with preoperative anxiety in term of anxiety score and desired information score. As shown in Table V, there was no significant

Table IV: Association between sociodemographic data with preoperative anxiety related to desired information score

Sociodemographic	Result				
	Median (IQR)	z statistic[a]	X^2 (df)[b]	Correlation Coefficient[c]	*p*-value
Gender		-3.338			<0.01*
Male	3.5 (2.0)				
Female	4.5 (2.5)				
Age				-0.136	0.08
BMI				-0.038	0.63
Marital status			1.225 (2)		0.54
Single	4.5 (3.0)				
Married	3.5 (2.0)				
Divorced	4.5 (3.38)				
Education			4.484 (3)		0.21
No formal	3.0 (4.25)				
Primary	3.0 (2.0)				
Secondary	3.5 (2.5)				
Universities	4.5 (2.0)				
Residence area		-0.523			0.60
Urban	3.5 (2.0)				
Rural	4.5 (2.0)				
Smoking status		-2.129			0.03*
Yes	3.5 (2.0)				
No	4.5 (2.5)				
Previous surgery		-0.19			0.85
Yes	3.5 (2.75)				
No	4.5 (2.0)				
Other comorbid		-0.323			0.75
Yes	4.5 (2.0)				
No	3.5 (2.25)				
Surgery type		-1.896			0.05*
CABG	3.5 (2.5)				
Valve	4.5 (2.0)				
Preoperative pain		-1.157			0.25
Yes	4.5 (3.0)				
No	3.75 (2.0)				
Sleep disturbances		-8791			<0.01*
Yes	6.0 (1.5)				
No	3.5 (2.0)				

CONTINUE

Table IV: Association between sociodemographic data with preoperative anxiety related to desired information score (cont.)

Sociodemographic	Result				
	Median (IQR)	z statistic[a]	X^2 (df)[b]	Correlation Coefficient[c]	*p*-value
Preoperative pain		-1.157			0.25
Yes	4.5 (3.0)				
No	3.75 (2.0)				
Sleep disturbances		-8791			<0.01*
Yes	6.0 (1.5)				
No	3.5 (2.0)				
Preoperative length of stay			2.353 (3)		0.50
2 – 3 days	4.0 (2.13)				
4 – 7 days	4.0 (2.0)				
More 7 days	3.0 (0.0)				

association between preoperative anxiety for anxiety score with patient empowerment (rs= - 0.025, p = 0.75) and preoperative anxiety for desired information score with patient empowerment (rs = 0.088, p = 0.26). Based on the findings, it can be concluded that there is no significant association between preoperative anxiety and patient empowerment. Thus, the previous null hypothesis was accepted.

Table V: Association between preoprative anxiety with patient empowerment

Subcale of preoperative anxiety	Patient empowerment	
	Correlation Coefficient[a]	*p*-value
Anxiety score	-0.025	0.752
Desired information score	0.088	0.259

[a]Spearman's Correlation

Predictors for preoperative anxiety

According to the result of multiple linear regression using the forward method in Table VI, the independent variable (sleep disturbances) only showed a significantly predicted anxiety score, F (1,166) = 200.205 (p < .001), which indicates this factor under the study have a significant impact on anxiety score. Moreover, the R2= 0.547 depicts that the model explains 54.7% of the variance in anxiety scores. Additionally, coefficients were further assessed to ascertain the influence of sleep disturbances on the criterion variable (anxiety score). The result revealed that sleep disturbances significantly negatively impact anxiety scores (B = -4.875, t = -14.149, p <0.01).

Table VI: Predictor of anxiety score among patient undergoing cardiac surgery

Variables	Multiple Linear Regression		
	b[a] (95% CI)	*F*-Statistics (df)	*p*-value
Sleep disturbances	-4.875 (-5.555, -4.194)	200.205(1,166)	<0.01*

[a]Adjusted regression coefficient. Coefficient of determination (R^2) = 0.54

DISCUSSION

This study aimed to determine the level of patient empowerment, preoperative anxiety and its association with sociodemographic data, and the predictors for preoperative anxiety among patients undergoing cardiac surgery. Referring to the study result showed that most of the participants experienced low levels of anxiety. A study by Hern6ndez-Palazyn et al. (15) found that 28% of the patients experienced severe preoperative anxiety. Patients planned for coronary artery bypass surgery who were hospitalised before surgery had no prior anaesthetic experience and scored higher on anxiety scales. High levels of preoperative anxiety were independently linked to coronary bypass surgery or might be related to anaesthesia and operation (16). The study results in Spanish hospitals showed that more than 80% of the participants presented with a high level of anxiety, showing that preoperative anxiety is a common occurrence in patients undergoing cardiac surgery (17). These findings are consistent with previous studies in Mexico (18,19). Although the findings of this study indicate that more than half of the participants reported low anxiety levels, more than 43% suggested preoperative anxiety. This number is significant considering that anxiety may lead to adverse consequences postoperation.

Based on the study findings, most of the participants' levels of empowerment were well-empowered, followed by very well-empowered and averagely empowered, and only 1 participant showed less than averagely empowered. The findings from this study can be related to a study by Arvidsson et al. (20). On a few of the patient empowerment subdimensions, the cardiovascular population's mean score was higher, particularly for patient empowerment. According to one interpretation of this study, the cardiac population knows enough to decide on their treatment and when and where to seek assistance if necessary. They are capable of overcoming obstacles and are goal-oriented. Nevertheless, they

are unhappy with some aspects of their self-care and cautiously anticipate a change in their self-care. Even when they are knowledgeable, this can be because they need more motivation.

Cardiac surgery as a major surgery may lead to a stressful psychological situation towards the patient. Thus, it appears that a high level of empowerment aids patients in better managing their circumstances and resolving disease-related issues. This is because individuals who exhibit high levels of empowerment will believe that they can successfully manage significant life events (21).

Involving the patients in the care and management will help the patients to be more cooperative and understand the reason for every management that has been planned. This will boost patient tolerance to treatment and obey all rules to achieve a good recovery process from cardiac surgery. Now that patient empowerment or engagement is being considered, it is evident why self-care and self-management are instances of patient involvement as well as why shared decision-making is an example of patient participation (22).

In addition, other research revealed that gender has a significant association and affects preoperative anxiety fundamentally, with women experiencing higher levels of worry than males (23). In a meta-analysis, women's preoperative anxiety levels were 1.27 times greater than men's (24). These results can be explained by the fact that women express their concern more frequently than males do and that they are less able to take care of their families due to hospitalisation and surgical procedures (25). Furthermore, it is good knowledge that surgical patients who undergo surgery have sleep issues due to discomfort, frequent vital sign checks, and worries about the procedure (26). This study revealed the significant relationship between sleep disturbances and preoperative anxiety. Previous studies have indicated that preoperative sleep issues are significant to various factors, including anxiety, pain, the size and complexity of the surgery, the type and length of the procedure, and the severity of the disease (27).

This study revealed that sleep disturbances are one of the significant negative predictors of preoperative anxiety. This finding was strongly supported by a previous study by Lin et al. (28). Patients typically have varying degrees and types of sleep disturbances throughout the perioperative period, which might negatively impact their postoperative results. Perioperative sleep disturbances can develop due to various risk factors, such as personal aspects, psychological issues, surgical factors, and environmental influences. According to another study (29), sleep disturbances due to anxiety are common and will be sustained after the surgery, whereby patients in the intensive care unit reported decreased sleep quality.

CONCLUSION

This study revealed the level of patient empowerment and preoperative anxiety and determined their association with the sociodemographic data. Evaluation of predictors also has been done. To care for and support the patient before surgery, nurses are essential in determining the factors influencing the patient's preoperative anxiety before cardiac surgery. Clinical nurses should assess each patient's anxiety, stress, and worry as early as they are in the clinic for a follow-up before they are planned for cardiac surgery. Preoperative anxiety assessment and interventions to assist patients with better sleep quality should become a standard practice for patients undergoing cardiac surgery. Thus, healthcare providers can provide the best care for patients preparing for cardiac surgery.

ACKNOWLEDGEMENTS

We want to express our gratitude to Universiti Teknologi MARA and all individuals directly or indirectly involved and contributing to this study's stages. The authors declare that there was no conflict of interest exists

REFERENCES

1. Organisation WH. Cardiovascular Diseases (CVDs): 2017 Update. Retreived on [Internet]. 2017 Dec;13:2022. Available from: http://www.who.int/mediacentre/
2. Department of Statistic Malaysia (2016). Statistics on Causes of Death, Malaysia, 2014. Retreived from https://www.dosm.gov.my/v1/index.php?r=column/3.
3. Khaw WF, Chan Y, Nasaruddin NH, et al. Malaysian burden of disease: years of life lost due to premature deaths. BMC Public Health.2023; 23:1383
4. Veluz JS, Leary MC. Cerebrovascular Complications of Cardiac Surgery. Prim Cerebrovasc Dis Second Ed. 2017;650–5.
5. Zaini NH, Abdullah KL, Raja Mokhtar RA, Chinna K, & Kamaruzzaman SB. Relationship between Psychological Distress and Demographic Characteristics among Patients Undergoing Coronary Artery Bypass Graft (CABG) Surgery. Healthcare (Basel, Switzerland), 2022; 10(9): 1763
6. Ramesh C, Nayak BS, Pai VB, Patil NT, George A, George LS, et al. Effect of Preoperative Education on Postoperative Outcomes Among Patients Undergoing Cardiac Surgery: A Systematic Review and MetaAnalysis. J Perianesthesia Nurs. 2016;32(6):518–29.
7. Ertürk EB, & Ьnlь H. Effects of pre-operative individualized education on anxiety and pain severity in patients following open-heart surgery. International Journal of Health Sciences.2018; 12(4): 26–34.

8. Dagona SS. Prevalence of preoperative anxiety among Hausa patients undergoing elective surgery-a descriptive study. Adv Soc Sci Res J. 2018;5:11.
9. Zammit N, Menzel M, Rania F. Preoperative anxiety in the tertiary care hospitals of Sousse, Tunisia: prevalence and predictors. SOJ Surg. 2018;5(1):1–5.
10. Stamenkovic DM, Rancic NK, Latas MB, Neskovic V, Rondovic GM, Wu JD, et al. Preoperative anxiety Implic Postoper Recover what can we do to Chang our Hist. 2018; 84(11):1307–17.
11. Boker A, Brownell L, Donen N. The Amsterdam preoperative anxiety and information scale provides a simple and reliable measure of preoperative anxiety. Can J Anesth. 2002;49(8):792–8.
12. Mohd Fahmi Z, Lai LL, & Loh PS. Validation of the Malay version of the Amsterdam Preoperative Anxiety and Information Scale (APAIS). The Medical journal of Malaysia.2015;70(4): 243–248.
13. Lewin D, Piper S. Patient empowerment within a coronary care unit: insights for health professionals drawn from a patient satisfaction survey. Intensive Crit Care Nurs. 2007;23(2):89.
14. Nunnally JC, Bernstein IR. Psychometric theory (3rd). McGraw-Hill, New York. 1994;90.
15. Hernández-Palazyn J, Fuentes-Garcна D, Falcyn-Araca L, Roca-Calvo MJ, Burguillos-Lypez S, Doménech-Asensi P, & Jara-Rubio R. Assessment of Preoperative Anxiety in Cardiac Surgery Patients Lacking a History of Anxiety: Contributing Factors and Postoperative Morbidity. Journal of cardiothoracic and vascular anesthesia.2018; 32(1): 236–244.
16. Aust H, Eberhart L, Sturm T, Schuster M, Nestoriuc Y, Brehm F, et al. A cross-sectional study of preoperative anxiety adults. Journal of psychosomatic research.2018;111:133–9.
17. Prado-Olivares J, Chover-Sierra E. Preoperatory Anxiety in Patients Undergoing Cardiac Surgery. Diseases. 2019;7(2):46.
18. Valenzuela-Millбn J, Barrera-Serrano JR, Ornelas-Aguirre JM. Ansiedad preoperatoria en procedimientos anestйsicos. Cirugía y Cirujanos. 2010;78(2):151-156.
19. Castillero Amador Y. Intervenciyn psicolygica en cirugía cardíaca. Avances En Psicología Latinoamericana.2010; 25(1): 52-63.
20. Arvidsson S, Bergman S, Arvidsson B, Fridlund B, Tingstrom P. Effects of a self-care promotion problem-based learning programme in people with rheumatic diseases: a randomised controlled study. J Adv Nurs. 2012;67(7):1500–14.
21. Aslani S, Nasrollah S, Nasrabadi T. Effect of Empowerment on Self-Efficacy of Patients with Ischemic Heart Disease (A Clinical Trial Study). Med Surg Nurs J. 2019;8:1.
22. Nilsson M, From I, Lindwall L. The significance of patient participation in nursing care - a concept analysis. Scand J Caring Sci. 2019;33:244–51.
23. Arlı SK. Evaluation of the preoperative anxiety with APAIS and STAI-I Scales, Hacettepe Univ J Nursing Faculty.2017; 4:38-47.
24. Abate SM, Chekol YA, Basu B. Global prevalence and determinants of preoperative anxiety among surgical patients: A systematic review and meta-analysis. Int J Surg Open. 2020;25:6.
25. Gurler H, Yilmaz M, Turk KE. Preoperative Anxiety Levels in Surgical Patients: A Comparison of Three Different Scale Scores. J PeriAnesthesia Nurs. 2022;37(1):69–74.
26. Mouch CA, Baskin AS, Yearling R, Miller J, Dossett LA. Sleep patterns and quality among inpatients recovering from elective surgery: a mixed-method study. J Surg Res. 254:268–74.
27. Mohammad H, Mohammad AI, Saba A. Sleeping pattern before thoracic surgery: A comparison of baseline and night before surgery. Heliyon. 2019;5:3.
28. Lin D, Huang X, Sun Y, Wei C, Wu A. Perioperative Sleep Disorder: A Review. Front Med (Lausanne). 2021;7:6.
29. Caruana N, McKinley S, Elliott R, Gholizadeh L. Sleep quality during and after cardiothoracic intensive care and psychological health during recovery. J Cardiovasc Nurs. 2018;33:E40-9.