

Original Research

Relationship Between Anxiety Level and Sleep Quality in Patients Pre-Cardiac Surgery at Dr. Kariadi Hospital, Semarang, Indonesia



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Article Info	Abstract
Article history: Received: 18 May 2024 Accepted: 20 July 2024	<p><i>Introduction:</i> Cardiac surgery is a medical procedure that aims to improve the heart's structure and blood vessels. The procedure is performed within 4 to 6 hours. This can cause anxiety in patients and family members. Excessive anxiety can lead to increased blood pressure, tachycardia, depression, and even sleep disturbances before and after cardiac surgery. Poor sleep quality affects quality of life, health status, and activities of daily living. The aim of this study was to determine the relationship between anxiety levels and sleep quality in patients with pre-cardiac surgery.</p>
Keywords: anxiety, cardiac surgical procedures, hospitals, sleep quality	<p><i>Methods:</i> This research was a descriptive correlation with a cross-sectional approach. The convenience sampling technique was used to select 65 respondents for the sample. The Hamilton Anxiety Rating Scale (HARS) questionnaire was used to gather information on anxiety levels. The Pittsburgh Sleep Quality Index (PSQI) questionnaire assessed the respondents' sleep quality before heart surgery. The obtained data was subjected to analysis using the Spearman-Rho test.</p> <p><i>Results:</i> There were 36 respondents (55.38%) who had moderate sleep quality and experienced mild anxiety 28 respondents (43.08%). The Spearman rho correlation test of ρ value was 0.106 in the results. There is no relationship between anxiety level and sleep quality in cardiac pre-surgery patients.</p> <p><i>Conclusion:</i> The majority of patients with pre-cardiac surgery at Dr. Kariadi Hospital Semarang experience anxiety and sleep disorders. Nurses can consider to manage the anxiety and sleep disorders experienced by patients.</p>

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INTRODUCTION

Cardiovascular disease (CVD) persists as the leading cause of mortality and morbidity worldwide. Except for rheumatic heart disease (RHD) and congenital heart disease (CHD), all forms of CVD have been observed to exhibit increased rates of mortality [1]. One of the treatments for CVD is cardiovascular surgery. Cardiovascular surgery is usually required for patients with conditions like heart failure, plaque buildup that partially or completely blocks coronary artery blood flow, damaged heart valves, dilatation or disease of major blood vessels (like the aorta), and irregular heart rhythms [2]. The procedure aims to reduce the risk of disability, physical symptoms, and mortality and to improve the quality of life [3]. A common response among patients undergoing surgical procedures is anxiety. This is also experienced by the patient's family members [4]. Anxiety is an individual's cognitive, affective, physiological, and behavioral response to conditions or events that may occur in the future and are perceived as threatening [5].

Anxiety is a form of adaptive behavior that can assist in coping with stress. Anxiety in patients may result from several factors, including changes in health conditions, a lack of knowledge related to disease conditions, surgical procedures, pain after surgery, potential physical changes, separation from family members, and even death [4], [6]. Anxiety levels are classified into four categories, namely, normal or no anxiety, mild, moderate, and severe [7]. Excessive anxiety can lead to some postoperative disorders, including mental health issues,

hypertension, tachycardia, and an increased risk of bleeding [4], [6]. Furthermore, previous studies have indicated that patients scheduled for cardiovascular surgery exhibit disrupted sleep patterns [3], [8].

Sleep is a basic need of humans. A multitude of factors, including age, gender, diet, and physical and physiological health, influence sleep. Disruption of sleep quality can profoundly impact an individual's quality of life, health, and daily functioning [9]. Previous studies have indicated that disrupted sleep the night before surgery can lead to fatigue, physical impairment, and increased postoperative pain threshold, as well as postoperative patient quality of life [8], [10], [11]. The existing literature on sleep disturbances in patients undergoing surgery is limited. Potential contributing factors include anxiety, pain, the duration of surgery, the care environment, and the severity of the illness [8], [10], [12]. Adequate sleep in patients before surgery can improve quality of life and patient satisfaction with care.

A preliminary study conducted on 11 patients in the Elang 1 ward of Dr. Kariadi Hospital who will undergo heart surgery revealed that their sleep was not satisfactory, not calm, and so when they were still at home one day before, the patients were hospitalized for heart surgery preparation. Consequently, evaluating the quality of sleep of preoperative heart surgery patients is imperative, as each exhibits distinct sleep patterns.

This study aimed to determine the relationship between anxiety levels and sleep (SQ) quality in pre-cardiac surgery patients.

METHODS

Design, Participants, Study Setting

This research is a descriptive correlation study with a cross-sectional research approach. The population of this study comprises all patients scheduled to undergo cardiac surgical procedures, including bypass surgery (CABG), atrial septal defect closure, ventricular septal defect closure, and cardiac valve repair or replacement from February until May 2024 in the Elang 1 ward of Dr. Kariadi Hospital, Semarang. Sampling was conducted using the incidental sampling technique with 65 respondents. The inclusion criteria for the study were adult patients aged 19 years or older who would undergo cardiac surgery. The exclusion criteria included patients who had to cancel their elective cardiac surgery, patients with a history of cardiac surgery, patients who only required a thoracotomy and pediatric patients. Once patients had consented to participate, they were informed of the research procedures and completed a questionnaire. Cardiac surgery Procedures are scheduled on weekdays, Monday through Friday, except weekends and holidays. Two patients, comprising both pediatric and adult patients, are scheduled for cardiac surgery daily.

Instruments

The instruments were divided become three parts. The first section was the demographic of respondents, which includes age, gender, level of education, marital status, and religion. Sections two and three measured anxiety and sleep quality, respectively.

The Hamilton Anxiety Rating Scale (HARS) was employed to assess anxiety levels. The HARS has been demonstrated to be a valid and reliable instrument for measuring anxiety in trial clinic research, with Cronbach's alpha coefficients of 0.93 and 0.97, respectively. The Hamilton Rating Scale for Anxiety (HARS) is a self-report questionnaire composed of 14 items that assess a range of anxiety symptoms. The scale uses a Likert-type format, with values ranging from 0 to 42, and categorizes the severity of anxiety into six levels: no anxiety (values less than 14), mild anxiety (values between 14 and 20), moderate anxiety (values between 21 and 27), severe anxiety (values between 28 and 31), and very severe anxiety (values between 32 and 42) [13].

The Pittsburgh Sleep Quality Index (PSQI) questionnaire evaluated sleep quality [14]. The PSQI questionnaire achieved a Cronbach alpha score of 0.79 and a validity score of 0.89. It demonstrated construct validity through a correlation between the components and the global PSQI score, with a sensitivity of one and a specificity of 0.81. The PSQI questionnaire is a tool used to assess sleep quality over a one-month interval. It comprises 19 questions that evaluate seven domains: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbance, sleep medication use, and daytime dysfunction. Total scores range from 0 to 21, with higher scores indicating poorer sleep quality. Scores of 1-5 indicate good sleep quality, 6-7 indicate mild sleep disturbances, 8-14 indicate moderate sleep disturbances, and 15-21 indicate poor sleep quality.

Data analysis

In this particular investigation, both univariate and bivariate analyses were utilized for the purpose of data analysis. During the univariate analysis, factors such as age, gender, level of education, marital status, religion, sleep quality, and level of anxiety were done. The Spearman-Rho is a non-parametric statistical test utilized in bivariate analysis to determine the association between two variables.

Ethical Considerations

This research was conducted by the ethical standards of the Declaration of Helsinki. It was approved by the Research Ethics Committee of RSUP Dr Kariadi Semarang on January 4, 2024 (1656/ec/kepk-rsdk/2023), and on February 1, 2024, research permission was granted (DP.04.01/ D.X.2/819/2024).

RESULTS

Table 1 above presents a demographic profile of respondents who will undergo heart surgery. The majority of respondents, 19 (29.26%), are between the ages of 33 and 39. Women represent the largest proportion of respondents, with 36 (55.38%). The highest level of education among pre-heart surgery respondents is high school (SMA), with 26 respondents (40.03%). The majority of respondents, 56 (86.15%), were married. A significant proportion, 62 (95.38%), adhered to the Islamic faith. The majority of respondents, 36 (55.38%), self-reported moderate sleep quality. Twenty-eight respondents (43.08%) demonstrated mild anxiety levels before undergoing cardiac surgery.

The following Spearman's rho test showed *p* value of more than 0.05; this allows for the conclusion to be inferred that there is no relationship between anxiety level and sleep quality in patients pre-cardiac surgery.

Table 1
Characteristics of respondents (n=65)

Characteristics of respondents	Frequency	Percent
Age (mean ± SD (43,36 ± 13,08))		
19 – 25 years	7	10,76
26 – 32 years	5	7,69
33 – 39 years	19	29,26
40 – 46 years	9	13,84
47 – 53 years	9	13,84
54 – 60 years	10	15,38
> 60 years	6	9,23
Gender		
Female	36	55,38
Male	29	44,62
Education Level		
Elementary School	20	30,76
Junior high school	9	13,84
Senior high school	26	40,03
Diploma	4	6,15
Undergraduate	5	7,69
Uneducated	1	1,53

Characteristics of respondents	Frequency	Percent
Marital status		
Married	56	86,15
Unmarried	7	10,76
Divorced	2	3,09
Religion or belief		
Islam	62	95,38
Christian	3	4,61
Sleep quality		
Poor	1	1,53
Mild	17	26,15
Moderate	36	55,38
Good	11	16,92
Anxiety level		
Severe anxiety	5	7,69
Moderate anxiety	18	27,69
Mild anxiety	28	43,08
Not anxiety	14	21,54

Table 2
Relationship between anxiety level and sleep quality in pre-cardiac surgery patients

Variables	n	Spearman-rho	p
Anxiety level - sleep quality	65	- 0,202	0,106

DISCUSSION

Characteristics of respondents

According to earlier research by Jones et al. (2022) and Tiwari et al. (2023), patients undergoing cardiac surgery, including those with congenital heart disease diagnosed in adulthood, are typically older than 18 years old. Furthermore, the procedure may lower the chance of side effects and disease-related death [15], [16]. The majority of respondents were women, and previous research has indicated that there is no significant difference in the prevalence of heart disease between men and women. However, women are more likely to experience heart disease in the context of stroke, hypertension, rheumatic heart disease, heart valve disease, endocarditis, and peripheral arterial disease [17].

In previous studies, the majority of respondents of pre-cardiac surgery patients were categorized as having completed primary or secondary education [18]. This study shows that pre-cardiac surgery respondents have the highest level of education in senior high school (SMA). Additionally, respondents in this study were mostly married, totaling 56 respondents (86.15%). This finding aligns with previous studies, which reported that the number of married respondents was more than those unmarried [18]. The fact that the majority of people in Indonesia and Central Java are Muslims is probably one factor contributing to the prevalence of Muslim respondents [19], [20].

This study classified most respondents' sleep quality as moderate, 55.38%. Previous

research has suggested that sleep disturbances that impact sleep quality occur in patients undergoing surgery [21], [22]. Additionally, the respondents were patients with heart problems. Previous studies have indicated that individuals with heart problems tend to experience poor sleep quality [23]. The level of anxiety in the respondents of this study showed a mild anxiety level category. The same results are shown in other studies that state that patients who undergo major surgery, such as cardiac surgery, have psychological disorders, namely anxiety and depression, with mild to severe anxiety levels [21], [24]. Previous research has identified a correlation between a person's religious beliefs and understanding and their level of anxiety. A Muslim who has a good understanding of their religion and believes in God has been found to have a low level of stress and mental health [25].

Relationship between anxiety level and sleep quality

The results of the relationship test, conducted using Spearman's rho test (p 0.106), indicate that there is no statistically significant correlation between anxiety levels and sleep quality in pre-cardiac surgery patients. This finding is consistent with the results of previous research, which demonstrated that there is no significant relationship between anxiety levels and sleep quality in patients who are scheduled to undergo cardiac surgery (bypass surgery (CABG)). This might be explained by the fact that each patient with a cardiac surgery appointment at Dr. Kariadi Hospital Semarang has received initial

information. This allows the patient to prepare for the procedure using more efficient coping mechanisms. Furthermore, the vast majority of participants self-identified as Muslims. Muslims believe that all actions are forms of worship and that obedience to God is paramount [26]. Furthermore, the findings of previous research indicate that women who are married or in a relationship tend to report better sleep quality [27]. This finding aligns with the results of previous research, which indicated that most respondents were female.

In contrast, a different study conducted in 2020 [28] found that anxiety experienced by patients undergoing CABG surgery can negatively impact sleep quality. Sleep quality is defined as the subject's satisfaction with the sleep experience, integrating domains of sleep initiation, maintenance, quantity, and refreshment upon awakening. The study also demonstrates that 78% of respondents experienced sleep disturbances, and 68% of respondents experienced anxiety [28]. These values align with the findings of the aforementioned study.

Researchers have found that respondents who will undergo cardiac surgery are given information at least three to six months before the procedure. This allows respondents to accept their illness and prepare themselves for the possibility of unfortunate outcomes. Additionally, the results demonstrated that some respondents did not experience anxiety or sleep disturbances.

LIMITATIONS

The limitations of this study include the characteristics of respondents, such as previous surgery history, occupation, and the type of surgery to be undergone by respondents. Moreover, the required period is sufficient to obtain the necessary responses, given that cardiac surgery is performed twice daily. Furthermore, there are instances where actions are canceled due to incomplete procedural requirements, such as the completion of supporting diagnostics. In some cases, patients have even died before action is taken.

IMPLICATIONS FOR NURSES

A more comprehensive nursing assessment related to anxiety levels and sleep quality is necessary for patients scheduled for cardiac surgery. Both the quality of nursing care and patient comfort during the time leading up to cardiac surgery procedures would be improved by this assessment.

CONCLUSION

The majority of patients with pre-cardiac surgery at Dr. Kariadi Hospital Semarang experience anxiety and sleep disorders. However, statistical analysis indicates that there is no correlation between anxiety levels and sleep quality.

CONFLICT OF INTEREST

There is no conflict of interest in the research process.

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