FACTORS PREDICTING PREOPERATIVE ANXIETY AMONG ADULT PATIENTS UNDERGOING CARDIAC SURGERY

AIZHEN XING

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR MASTER DEGREE OF NURSING SCIENCE
(INTERNATIONAL PROGRAM)
IN ADULT NURSING PATHWAY
FACULTY OF NURSING
BURAPHA UNIVERSITY
2025

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AIZHEN XING

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรพยาบาลศาสตรมหาบัณฑิต (หลักสูตรนานาชาติ)

คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา

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The Thesis of Aizhen Xing has been approved by the examining committee to be partial fulfillment of the requirements for the Master Degree of Nursing Science (International Program) in Adult Nursing Pathway of Burapha University

Advisory Committee

Principal advisor

.....

(Associate Professor Dr. Pornpat Hengudomsub)

Co-advisor

.....

(Assistant Professor Dr. Panicha Ponpinij)

Examining Committee

.....

Principal examiner

(Associate Professor Dr. Wanpen Pinyopasakul)

.....

Member

(Associate Professor Dr. Pornpat Hengudomsub)

.....

Member

(Assistant Professor Dr. Panicha Ponpinij)

.....

Member

(Assistant Professor Dr. Chutima Chantamit-o-pas)

.....

Dean of the Faculty of Nursing

(Associate Professor Dr. Pornchai Jullamate)

.....

This Thesis has been approved by Graduate School Burapha University to be partial fulfillment of the requirements for the Master Degree of Nursing Science (International Program) in Adult Nursing Pathway of Burapha University

.....

Dean of Graduate School

(Associate Professor Dr. Witawat Jangiam)

.....

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AIZHEN XING : FACTORS PREDICTING PREOPERATIVE ANXIETY AMONG ADULT PATIENTS UNDERGOING CARDIAC SURGERY. ADVISORY COMMITTEE: PORNPAT HENGUDOMSUB, Ph.D. PANICHA PONPINIJ, Ph.D. 2025.

Cardiac surgery is one of the main ways to treat heart disease. Patients undergoing such surgery often experience pre-operative anxiety which possibly affected surgical outcomes. The aim of this study was to investigate preoperative anxiety and its influencing factors in adult patients undergoing elective cardiac surgery. The four predictive factors included patients' fear of surgery, patients' preoperative sleep quality, patients' perceptions of illness severity and patients' perceived social support. The sample consisted of 142 adult patients undergoing elective cardiac surgery at the Department of Cardiac Surgery at the First Affiliated Hospital of Wenzhou Medical University. A simple random sampling technique was used to recruit the sample. Data were collected from October 2023 to March 2024. Research instruments included: 1) Personal information of adult patients undergoing elective cardiac surgery, 2) The short Chinese version of the state-trait anxiety inventory (STAI), 3) The surgical fear questionnaire, 4) The Richards-Campbell sleep questionnaire , 5)The brief illness perception questionnaire , 6)The multidimensional scale of perceived social support. Their reliabilities indicated by Cronbach's Alpha coefficients for questionnaires 2-6 were .778, .795, .757, .797 and .969, respectively.

The descriptive statistical analysis via enter method showed that the average preoperative state anxiety score of sample was 15.98 (SD = 4.95) (>15.5 indicated that the patients had state anxiety). The multiple regression analysis showed that fear of surgery, preoperative sleep quality, perceived social support and perceptions of illness severity,could explain 37.3% of the variance in preoperative anxiety (Adjusted R^2=.373, (F 4, 142)=26.770, p<.05). The strongest predictor was fear of surgery (β=.539,p<.05), followed by preoperative sleep quality (β=-.166,p<.05), and perceived social support (β=-.138,p<.05). Whereas, the perceptions

of illness severity (β =. 009, *p*>. 05) had no statistical significant effect on preoperative anxiety.

The results of this study provide preliminary information on preoperative anxiety and its influencing factors. Developing nursing intervention to alleviate anxiety, patients' fear of surgery, preoperative sleep quality and perceived social support should be taken into account.

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Aizhen Xing

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CHAPTER 1
INTRODUCTION

Background and significance of the study

As the progress of medical advancement, the types of surgical treatment methods for patients with cardiovascular disease were increasing. Statistics from the World Health Organization (WHO) showed that more than 312.9 million of these patients worldwide received surgical treatment every year (Munigangaiah & Davies-Jones, 2024). Cardiac surgery had recently been recognized as an integral part of the national health system, more than 1 million cardiac patients undergoing surgical interventions each year. In high-income countries, an average total cardiac surgical volume of 123.2 per 100,000 population per year was performed. In upper-middle-income countries, 86.1 cardiac surgical procedures per 100,000 population per year, 55.1 for lower-middle-income countries, and 40.2 for low-income countries(Vervoort et al., 2024).

According to statistics from the thoracic and cardiovascular surgery branch of Zhejiang Medical Association (2022), a total of 7,181 cardiac surgical procedures were performed in 35 hospitals in 2018, a total of 7,758 cardiac surgical procedures were performed in 36 hospitals in 2019 and a total of 7,985 cardiac surgeries were performed in 36 hospitals in 2020. Cardiac surgery in Zhejiang province had been increasing for more than 10 years, with an average annual growth rate of 7%(Peng Teng, 2022). The first affiliated hospital of Wenzhou Medical University is a comprehensive class iii ,Grade A hospital, among which the cardiac surgery department can accept 49 patients every day, and routinely carries out coronary artery bypass grafting, valvular plasty and replacement, congenital heart disease surgery and large vessel replacement, etc. The annual average operation volume was 518 in the past 5 years.

While the development of surgical techniques brings gospel to medical treatment and patients, surgery was somehow a kind of trauma after all, and also brings psychological and physical burden to patients. Previous study had shown that anxiety was the most common psychological reaction of patients waiting for various

surgeries before operation, and 25%~80% of patients had anxiety before surgery(Zemła et al. 2019).Patients with heart disease, due to the nature of cardiac pathology, heart surgery was highly traumatic and the outcome was uncertain. Patients usually present additional worries and nervousness (Sarhadi & Abdolahyar, 2024). Niknejad et al. (2019) found that anxiety was one of the major problems faced by patients before cardiac surgery.

Preoperative anxiety was a feeling of worry, nervousness, or unease about something with an uncertain outcome. It impairs a patient's comfort and health (Getahun et al. 2020). Previous study showed that preoperative anxiety was the worst aspect of the perioperative period (Qaddumi et al., 2024). It had been shown to be associated with increased postoperative complications and mortality, and it had also been shown to be an independent predictor of increased postoperative severe pain (Aust et al. 2018).

Furthermore, high preoperative anxiety could lead to negative physiological impact such as increased serum cortisol level, blood pressure and heart rate(Kaur et al., 2023). In addition , because anxious patients report more pain after surgery, the use of analgesics , the risk of infection and complications, and the incidence of sleep problems would be increased, wound healing would be delayed, and hospital stays would be prolonged (Uğraş et al. 2018). Anxiety affects patients' cognition, and painful emotions make them unable to understand surgery-related information, leading to the delay or abandonment of surgery, delaying disease treatment and endangering lives (Tulloch & Rubin 2019).

Cardiac surgery had been linked to high rates of preoperative anxiety (Gomes & Bezerra, 2017). Various studies performed in patients who were scheduled for cardiac surgery had estimated preoperative anxiety as a leading cardiovascular risk factor (Hernández-Palazón et al. 2018). A study at the cardiac surgery department of a tertiary hospital in Valencia, Spain, found that more than 80% of patients waiting for heart surgery had moderate to high levels of anxiety (Prado-Olivares & Chover-Sierra 2019). In addition, a systematic review and meta-analysis found that preoperative anxiety was significantly associated with early postoperative mortality after cardiac surgery. The higher preoperative anxiety level , the higher early postoperative mortality (Takagi et al. 2017; Ji et al. 2022). Cardiac surgery was one of the most

common surgeries performed in developed countries and was considered a high-risk procedure that may threaten life (Fiore & Grande, 2023). There were still few studies on preoperative anxiety factors in specific high-risk cardiac surgery patients. Study recommended that specific preoperative anxiety levels and its related factors should be studied in patients at higher risk, such as those undergoing heart surgery (Jarmoszewicz et al. 2020).

High preoperative anxiety brings many negative effects to patients, so it is crucial to identify the preoperative anxiety level of patients and intervene the factors that affect the preoperative anxiety. A state of patients' anxiety before surgery would affect the overall well-being of patients in hospital, not conducive to a good prognosis of surgery, and prolong the length of hospital stay (Peng et al. 2020). A study of colorectal cancer patients at a Japanese hospital found that high preoperative anxiety levels increased the incidence of postoperative delirium (Wada et al. 2017). A quasi-experimental study showed that patients with pre-surgical anxiety had decreased hospital satisfaction, which also reduced the nurse-patient relationship (Tan et al. 2020). As mentioned thus far, it is a great significance to identify and master patients' preoperative anxiety.

Surgery was a challenging and stressful event, about 80% of surgical patients experienced preoperative anxiety due to fear of pain, fear of complications, or fear of death. Preoperative anxiety induced cardiovascular responses through the release of catecholamine, causing physiological and psychological changes, such as tachycardia, hypertension, and arrhythmia. It could also increase the need for anesthesia, postoperative pain and analgesia requirements (Koo et al. 2020). Amini et al. (2019) also proposed that surgery was also a major potential danger to the patient's health and can cause psychological reactions.

Anxiety was one of the most common emotional problems experienced by patients undergoing surgery. Anxiety could change the thoughts,cognition,feelings, and behavior of patients. Preoperative anxiety was currently being explored by many researchers. The preoperative period caused anxiety for most patients scheduled for surgery. The incidence of preoperative anxiety was generally high, depending on the type of surgery, the gender of the patient, whether the patient was undergoing surgery for the first time, etc.(Alvarez-Garcia &Yaban,2020). A pilot study in the surgery

department of the Medical University of South Carolina (MUSC) ASHLEY River Tower Hospital found that female had a state of high anxiety before surgery (Jaruzel et al. 2019). In a Turkish study of preoperative patients undergoing various types of surgery, it was suggested that preoperative anxiety could have many causes, such as: fear of death,pain, nausea and vomiting; inability to recover from anesthesia; postoperative dependence on others; loss of self-control during anesthesia; separation from loved ones; and uncertainty. This form of anxiety played a crucial role in the postoperative process and lead to increased use of postoperative analgesics (Ertu et al. 2017). An American survey showed that most common stressors that cause preoperative anxiety were lack of knowledge and fear of the unknown (Helms,2020).

Despite the fact that multiple research had been conducted , the preoperative anxiety among patients waiting for surgery still exists especially in patients undergoing major surgery such as heart surgery (Niknejad et al. 2019). A comprehensive review of the existing measures to relieve preoperative anxiety showed that most of them were not targeted and did not reduce the anxiety of patients according to the causes of their anxiety. There was much literature suggesting that preoperative anxiety assessment should be included in the preoperative care routine (Goebel & Mehdorn, 2018).

Therefore, it is vital to obtain information regarding preoperative anxiety among these patients and also its influencing factors. By knowing such details, these would help pave the way for reducing patients' anxiety prior to the surgery by taking into accounts what factors contributed to preoperative anxiety and develop strategies to intervene such factors. According to the systematic review, there were many factors affecting patients' preoperative anxiety. It included the individual factors such as patients ' fear of surgery, preoperative sleep quality, perceptions of illness severity and external factor such as patients' perceived social support(Ali, 2023). Although a number of factors had been proven to be associated with pre-operative high anxiety states, interest in this area continues to grow. Of course, the factors that affect the level of preoperative anxiety of patients vary in different countries and different population(Erkilic et al. 2017). Therefore, this study mainly investigated the preoperative anxiety level of cardiac surgery patients in the First Affiliated Hospital of Wenzhou Medical University in China, and the relationship between preoperative

anxiety and predictive factors: fear of surgery, preoperative sleep quality, perceptions of illness severity and perceived social support.

According to the Transition theory postulated by Meleis et al.(2021), nurses frequently involved various types of patients ' transitions (e.g, immigration transition, health-illness transition, administrative transition, etc.). Therefore, nursing phenomena occur around various life transitions. In this study's context, surgery is a health/illness type of transition that the cardiac patients experienced. According to Meleis (2010), people sometimes go through transitions smoothly and successfully, but frequently have issues, concerns, and/or problems in transitions due to the disequilibrium caused by such changes. Patients experience various physical and mental problems when they go through the transitional process. By recognizing the problems that arise during the transition, nurses can develop appropriate interventions for patients to help them achieve positive outcomes. Just as waiting for surgery for heart disease is a transitional process, patients often experience anxiety during this process. For the transition theory, the transitional conditions include personal, society and community conditions. In this study, patients' fear of surgery,patients' perceptions of illness severity, and patients' preoperative sleep quality are personal conditions, and patients' social support is society and community condition,each conditions interacts and influences each other.

Preoperative anxiety was related to fear in a number of studies. Preoperative anxiety was caused by fear of the surgery (Obuchowska & Konopinska 2021). A survey of preoperative anxiety in cardiac surgery patients showed that patients were anxious due to fear of postoperative pain, inability to be independent, and fear of anesthesia (Hernández-Palazón et al. 2018).The researchers also found that in 187 adults patients awaiting surgery that the most common factor related with preoperative anxiety was fear of complications, which was reported by 52.4% (Mulugeta et al. 2018). A cross-sectional study on Northwest Ethiopia found significant association with preoperative anxiety in fear of death and disability (Woldegerima et al. 2018). However, these studies did not systematically enough to investigate patients' fear of surgery. So, it is necessary to measure patients' fear of surgery through a measure with good psychometric property and evaluate its relationship with preoperative anxiety.

In addition to surgical fear, preoperative sleep quality was another factor affecting patients' preoperative anxiety. Sleep quality affects patients' mood.A study of patients waiting for surgery in Turkey found that less sleep before surgery was associated with higher levels of anxiety(Erkilic et al. 2017). A multicenter survey of perioperative anxiety in China showed a significant relationship between high anxiety and insomnia(Li et al. 2021).Therefore, in this study, It was a challenge to explore the relationship between preoperative sleep quality and anxiety of patients in cardiac surgery, so as to develop good nursing measures.

Another predictive factor of preoperative anxiety was perceptions of illness severity, which was person's perception of the serious consequences of their illness, and stage of treatment. It was worth noticing that illness perception can be identified by every health care providers such as anaesthesiologist , surgeon, psychologist, and nurses by means of interview, using questionnaires or illness drawing (Jarmoszewicz et al. 2020). Kuzminskait et al.(2019) studied incidence and characteristics of preoperative anxiety in patients undergoing elective non-heart surgery, its results showed that preoperative anxiety was related to patients' subjective evaluation of the disease.Perceptions of illness severity was positively associated with anxiety(Chojnacka-Szawłowska et al. 2019). Therefore,patients' perceptions of illness severity could be served as a predictor of preoperative anxiety.

Social support was vital for patients, since social support had impacts on patients' health status, health behavior, and the use of health services(Cohen & McKay,2020). Through improve of the quality of patients' social support , can help improve the mental health outcomes of surgery (Aliche et al. 2020). A study of preoperative anxiety in Chinese colorectal cancer patients found that social support was associated with preoperative anxiety (Yang et al. 2019). According to Bedaso and Ayalew's (2019) study which conducted the study with patients undergoing elective surgery in Ethiopia, the results showed that the strong social support could reduce preoperative anxiety. Perceived social support refers to the level of external support that individuals, perceive and experience in the society, is the personal expectation and assessment of social support, Belief in social support as is possible, that is, to evaluate the perceived social support from the subjective aspect, the good social support can correspondingly arouse a buffer effect, To maintain a peaceful mood and

psychological state (Ning et al. 2022), in contrast to the actual social support, perceived social support reflects a more positive effect on patients(Guan et al. 2018). So, it is meaningful to study the relationship between patients' perceived social support and preoperative anxiety in cardiac surgery patients in China. From the review of literature, it showed that preoperative high anxiety states were more likely to occur in those groups with less social support (Kok & Newton, 2023). The importance of incorporating patients' social support sources such as family and friends into the nursing process as well as the place of family-centered care in the perioperative environment have been highlighted(Ralph & Norris, 2018).

Patients awaiting cardiac surgery generally experience high level of anxiety before surgery (Jarmoszewicz et al. 2020). Preoperative anxiety is described as a vague, uneasy feeling, the exact cause of which is usually non-specific; Due to sympathetic, parasympathetic and endocrine stimulation, these can cause the body to respond to poor hemodynamics. Therefore, if it is not properly managed, this can lead to higher cardiac mortality, induction of anesthesia, and adverse reactions during patient recovery after surgery (Baagil & Gerbershagen, 2023). These adverse reactions are associated with higher postoperative pain, increased consumption of analgesics and anesthetics, longer hospital stays, poor quality of life, and reduced satisfaction with care (Abate, 2020). Therefore, how to strengthen preoperative emotional management of heart surgery patients, reduce preoperative anxiety, so as to reduce postoperative complications and accelerate postoperative rehabilitation has become the focus of this study.

Research objectives

The study aimed to:

1. Describe preoperative anxiety in adult patients undergoing elective cardiac surgery.

2. Describe the patients' fear of surgery, patients' preoperative sleep quality, patients' perceptions of illness severity, and patients' perceived social support before elective cardiac surgery.

3. Examine whether these factors could together predict preoperative anxiety in adult patients undergoing elective cardiac surgery.

Research hypotheses

Fear of surgery, preoperative sleep quality, perceptions of illness severity and perceived social support could combinedly predict preoperative anxiety of adult patients undergoing cardiac surgery in the First Affiliated Hospital of Wenzhou Medical University,China.

Conceptual framework

The conceptual framework in this study was based on the transition theory postulated by Meleis et al. (2000) and related literature reviews. Transition theory was identified as one of the situation-specific theories. Patients were going to various transitions especially health-illness transition,having surgery was one of the patients' transitions. Transition encompassed types and patterns of transitions, properties of transition experiences, transition conditions (facilitators and inhibitors), patterns of response/process and outcome indicators, and nursing therapeutics. Patients with heart disease who were hospitalized and wait for surgical treatment were regarded as a transitional type and process for patients. Along the journey of their transition, patients may have psychological distress such as anxiety that occur during the process of their undergoing operations. From the empirical evidence, preoperative anxiety was one of the most common mood changes in patients waiting for surgery. It was influenced by personal conditions such as cultural beliefs and attitudes, socio-economic status, psychological preparation and knowledge of surgery, community conditions and social conditions. Therefore, knowing how anxious the patients were during such condition should be a prime concern and pave the way for implementing nursing role in facilitating patients ' comfort and mastery in dealing with such transition.

Based on transition theory and the literature reviews, fear of surgery, preoperative sleep quality, perceptions of illness severity, and perceived social support were the selected predictive factors of preoperative anxiety among adult patients undergoing cardiac surgery which were examined in this study. Preoperative sleep quality and perceptions of illness severity and fear of surgery were personal or individual factors, perceived social support was external or societal related factor. Patients waiting for cardiac surgery were in the transition stage. Relevant with the

upcoming surgery and environment, patients had related changes in roles, support systems, health status or abilities, and were prone to preoperative anxiety. Fear of surgery was a condition of transformation, which could promote or inhibit the patient's response pattern to transformation and affected the outcome of transformation. The quality of sleep belongs to the individual condition of the patient's surgical transformation which affects the outcome of such transition. During their adjusted condition, the perception of the severity of the disease belongs to the individual's knowledge condition, patient's cognition of the disease affects the result of patients transition. The patient's perceived social conditions influence the patient's response to the transitional situation. The research conceptual framework in this study was summarized in Figure 1.

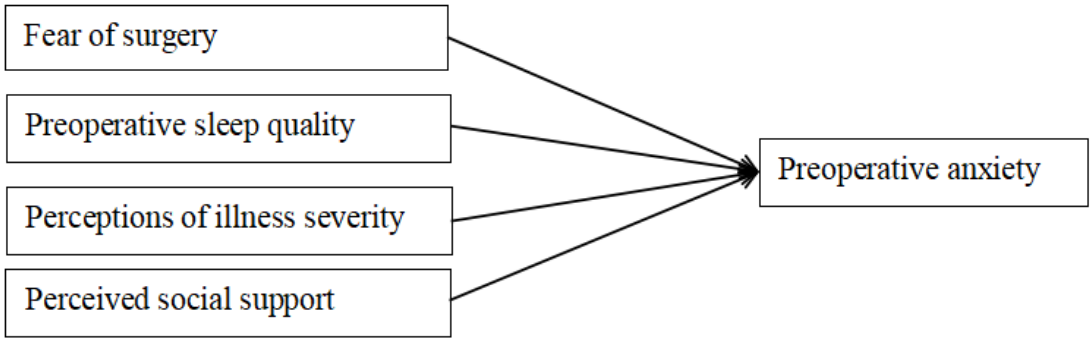

Figure 1 Research conceptual framework

Scope of the study

This study aimed to investigate preoperative anxiety and its influencing factors in adult patients awaiting for cardiac surgery, including fear of surgery, preoperative sleep quality, perceptions of illness severity and perceived social support. The participants included 142 adult patients undergoing cardiac surgery in the Department of Cardiac Surgery of the First Affiliated Hospital of Wenzhou Medical University. The period of data collection was from October, 2023 to March, 2024.

Definitions of terms

Preoperative anxiety refers to a psychological reaction of patients during waiting for cardiac surgery, which is mainly manifested as the worry and concern of the operation. In this study, the short Chinese version of the State-Trait Anxiety Inventory (Du et al. 2022) was used to measure patients' preoperative anxiety.

Fear of surgery refers to a basic, intense emotional response evoked by patients undergoing cardiac surgery, which can cause rapid heartbeat, muscle tension, and general mobilization of the body. Fear is an appropriate short-term response to a currently identifiable threat, while anxiety is a future-oriented long-term response. In this study, The Surgical Fear Questionnaire developed by Theunissen et al. (2014) and translated into Chinese by Yang et al. (2022) was used to evaluate the degree of fear of surgery in cardiac surgery patients before surgery.

Sleep quality is defined as an individual's self-satisfaction with all aspects of the sleep experience. Sleep quality has four attributes: sleep efficiency, sleep latency, sleep duration, and wake after sleep onset. The patients' preoperative sleep quality was measured using the Chinese version of the Richards-Campbell Sleep Questionnaire(RCSQ) translated by Chen and Daihong (2016).

Perceptions of illness severity refers to the negative consequences associated with heart disease as perceived by patients awaiting heart surgery. These consequences may be related to anticipated events that may occur in the future, or they maybe related to the current state and affect the patient's preoperative psychological state. In this study, the Chinese version of The Brief Illness Perception Questionnaire(BIPQ) developed by Lin et al. (2011) was used to measure the perceptions of illness severity of patients before cardiac surgery.

Perceived social support refers to the patient’s perception of receiving help or support (e.g. information, emotion, respect, tangible support) prior to cardiac surgery, which can come from family, friends, and significant others.In this study, patient’s perceived social support was measured using the Multidimensional Scale of Perceived Social Support (MSPSS) developed by Zimet et al. (1991) and translated into Chinese by Jiang (2001).

CHAPTER 2
LITERATURE REVIEW

This chapter includes literature reviews in accordance with preoperative anxiety and its influencing factors including fear of surgery, preoperative sleep quality, perceptions of illness severity, and perceived social support. This chapter describes the contents of the literature review as follows:

1. Heart disease and its surgical treatment

2. The concept of preoperative anxiety of patients undergoing cardiac surgery

3. Factors related to preoperative anxiety in patients undergoing cardiac surgery

1. Heart disease and its surgical treatment including cardiac surgery

Heart disease

Definition

According to the American Heart Association (2023),heart disease describes a range of conditions that affect the heart. It's also called cardiovascular disease, which means heart and blood vessel disease. Heart disease is one of the most significant causes of mortality in the world today (Mohan et al. 2019).

According to Falcon et al.(2022),which published in Magill's Medical Guide ,and based on Research Starters(Falcon 2022):Heart diseases include:(1)Blood vessel disease, such as coronary artery disease;(2)Irregular heartbeats (arrhythmias);(3)congenital heart defects;(4)Disease of the heart muscle;(5)Heart valve disease.

The cause of heart disease

The latest statistics on heart disease and cardiovascular risk factors reported annually by the American Heart Association and the National Institutes of Health include core influences on health behaviors (smoking, physical inactivity) unhealthy diet and weight) and factors detrimental to cardiovascular health (high cholesterol) high blood pressure and high blood sugar(Virani et al. 2020).

Studies have shown that the causes of heart disease include: Lifestyle:

unhealthy lifestyle habits that increase risk of heart disease include eating a diet high in saturated fat, refined carbohydrates and salt, not getting enough physical exercise, drinking too much alcohol, smoking and secondhand smoke, and living a stressful life; genetic factors: certain genes are linked to a higher risk of certain heart diseases, and that an early family history of heart disease increases the risk; Having other medical conditions can raise patients risk of heart diseases, these conditions include: high blood pressure, high cholesterol levels, diabetes, obesity, autoimmune and inflammatory diseases, chronic kidney disease and metabolic syndrome; There are many other factors, such as infection and medications. The risk of heart disease increases with age. Certain factors may affect heart disease risk differently in women than in men. Race/ethnicity: Some groups are at higher risk than others. The cause of heart disease also depends on the type of disease.

Treatment of heart disease

Treatment depends on the type of heart disease. Some common strategies include lifestyle changes, medication and surgery. For example, mild coronary artery disease can be treated with lifestyle changes or medication, while severe heart rhythm problems may require an implanted device, such as a pacemaker. If medical treatments such as lifestyle changes and medication do not respond well, surgery is needed. The type of heart attack and the extent to which the disease damages the heart will determine the treatment recommended by the doctor. Cardiac surgery stands out from other forms of treatment as advances in surgical techniques and materials make cardiac surgery safer and reduce perioperative risks(Santos et al. 2017).

Cardiac surgery

Definition

In the United States and Europe, more than 1 million patients undergo Cardiac surgery each year(Landoni et al. 2017).Cardiac surgery, or cardiovascular surgery, is surgery on the heart or great vessels performed by cardiac surgeons. It is often used to treat complications of ischemic heart disease (for example, with coronary artery bypass grafting); to correct congenital heart disease; or to treat valvular heart disease from various causes, including endocarditis, rheumatic heart disease, and atherosclerosis. It also includes heart transplantation.The purpose of heart surgery is to reduce disability, physical symptoms and morbidity and to improve

quality of life(Salzmann et al. 2020).

Types of cardiac surgery

There are many types of heart surgery. The National Heart, Lung, and Blood Institute, which is part of the National Institutes of Health, lists the following as among the most common cardiac surgical procedures(Anesthesiologists 2023):

Coronary artery bypass grafting (CABG). In CABG — the most common type of heart surgery — the surgeon takes a healthy artery or vein from elsewhere in your body and connects it to supply blood past the blocked coronary artery. The grafted artery or vein bypasses the blocked portion of the coronary artery, creating a new path for blood to flow to the heart muscle. Often, this is done for more than one coronary artery during the same surgery. CABG is sometimes referred to as heart bypass or coronary artery bypass surgery.

Heart valve repair or replacement. Surgeons either repair the valve or replace it with an artificial valve or with a biological valve made from pig, cow, or human heart tissue. One repair option is to insert a catheter through a large blood vessel, guide it to the heart, and inflate and deflate a small balloon at the tip of the catheter to widen a narrow valve.

Insertion of a pacemaker or an implantable cardioverter defibrillator (ICD). Medicine is usually the first treatment option for arrhythmia, a condition in which the heart beats too fast, too slow or with an irregular rhythm. If medication does not work, a surgeon may implant a pacemaker under the skin of the chest or abdomen) with wires that connect it to the heart chambers. The device uses electrical pulses to control the heart rhythm when a sensor detects that it is abnormal. An ICD works similarly, but it sends an electric shock to restore a normal rhythm when it detects a dangerous arrhythmia.

Maze surgery. The surgeon creates a pattern of scar tissue within the upper chambers of the heart to redirect electrical signals along a controlled path to the lower heart chambers. The surgery blocks the stray electrical signals that cause atrial fibrillation — the most common type of serious arrhythmia.

Aneurysm repair. A weak section of the artery or heart wall is replaced with a patch or graft to repair a balloon-like bulge in the artery or wall of the heart muscle. The surgery begins with the surgeon making an incision in the abdomen or chest,

depending on the location of the aneurysm. Then, clamp the arteries above and below the aneurysm to stop blood flow to another part of the aorta. There is still blood in the heart and brain because other blood vessels supply it. Then the aortic bulge will be removed, Doctors will then replace the missing piece with a fiber tube called a graft, and slowly remove the clip to allow blood to flow through the vessel again.Sometimes surgeons don't remove the bulge of the aorta. In some cases, surgeons place the graft inside the blood vessel, like a lining, to reduce pressure on the artery wall. This procedure is called intra-aneurysm suture. If the aneurysm is located in the ascending aorta above the heart, use a heart-lung machine(Institute 2023).

Heart transplant. The diseased heart is removed and replaced with a healthy heart from a deceased donor. Heart transplantation (HTx) has become the standard treatment for patients with end-stage heart failure. Acute graft rejection,which previously severely limited the survival of HTx recipients, has been significantly reduced by improvements in immunosuppressive agents, donor access, surgical techniques, and post-HTx care(Kim et al. 2018).

Insertion of a ventricular assist device (VAD) or total artificial heart(TAH). AVAD is a mechanical pump that supports heart function and blood flow. A TAH replaces the two lower chambers of the heart.

In addition to these surgeries, a minimally invasive alternative to open-heart surgery that is becoming more common is transcatheter structural heart surgery. This involves guiding a long, thin, flexible tube called a catheter to your heart through blood vessels that can be accessed from the groin, thigh, abdomen, chest, neck, or collarbone. A small incision is necessary. This type of surgery includes transcatheter aortic valve implantation to replace a faulty aortic valve with a valve made from animal tissue, MitraClip® placement for mitral valve abnormalities, and WATCHMAN® placement for nonvalvular atrial fibrillation patients.

Adult cardiac surgery

According to the World Health Organization (WHO)) an adult is a person over 19 years of age(Canêo & Neirotti, 2017).Adult cardiac surgery is an essential therapeutic approach to reduce mortality and morbidity in appropriately defined patients(Sousa-Uva et al. 2018).Adult heart disease is mostly acquired, they are

usually busy with study, work and family, often have heart disease symptoms, such as chest tightness, chest pain, to the hospital to check out the heart disease, the need to receive cardiac surgery treatment, which is a great blow and pressure to patients and families, so we should pay special attention to the psychological state of adult heart surgery patients.

Preoperative nursing of cardiac surgery

The urgency of heart surgery determines how long it takes to prepare a patient for surgery. Patients preparing for elective surgery have the most time. Patients undergoing emergency surgery are often taken straight to the operating room, with less preparation. The preparation time for patients needing emergency surgery can range from a few hours to a few days. In either of these cases, as many steps for the patient should be completed as time permits. Patients who are well prepared for surgery have the fewest complications and the fastest recovery.

Preoperative examination:

Patients who will undergo cardiac surgery need to have a health history taken and a baseline physical exam performed. The health history should include questions about chronic health conditions and prior surgeries. Any history of depression or other psychosocial problems should be noted. Heart and lung sounds should be documented. Neurological status should be assessed. Many patients experience alterations in neurological status after cardiac surgery and an accurate pre-op baseline is important for determining changes. Blood pressure should be taken in both arms. Significant differences in blood pressure between arms can signify subclavian stenosis, which may mean the internal mammary artery cannot be used as a bypass conduit. Smoking history should be documented. Patients who have smoked in the past 6 months are at higher risk for pulmonary complications. A thorough pre-op history and exam are important to determine which patients are at higher risk for complications. They are also critical if post-op issues arise and a baseline is needed for comparison.

Laboratory Tests:

A number of laboratory tests should be completed, including a complete blood count, renal and liver function tests, electrolytes, coagulation panel, and arterial blood gases. A urinalysis is usually completed and often a thyroid panel is

drawn.These tests give important information about the patient's risk for complications.Patients with renal or liver disease may need adjustments made to dosages of certain medications. Any infection should be treated prior to surgery whenever possible. Patients with bleeding disorders often require increased use of blood products during and after surgery. Electrolyte abnormalities should be corrected prior to surgery to reduce the risk of arrhythmias. Patients with subclinical hypothyroidism,which occurs without overt symptoms, are more likely to have coronary artery disease. These patients are also more likely to develop certain complications after surgery, such as atrial fibrillation, heart failure, and gastrointestinal complications(Hillis et al. 2011). Pre-op laboratory data are critical to determine patients at risk for complications. For example, patients with pre-op renal insufficiency are at much higher risk of developing renal failure after surgery and a urinalysis may uncover a urinary tract infection that needs to be treated prior to surgery.

Patient and family education

Cardiac surgery is an important event in an individual's life, impairing physical functioning and thereby affecting the economic, personal, and professional life of the individual. Anxiety, depression, and negative thoughts are the psychological factors related to the pathophysiological changes. High levels of anxiety and substantial symptoms of depression may be experienced by the patients who are awaiting cardiac surgery because of worries, fear, and uncertainties about the outcomes of the surgery. Psychological distress can aggravate symptoms of the prevailing cardiovascular disease, harmfully affecting the physiological parameters before and during anesthesia, and can lead to prolonged recovery. Postoperative outcomes of major heart surgery such as severe pain, anxiety, psychological distress, and sleep disturbance are commonly associated with recovery from cardiac surgery.These factors may compromise the effectiveness of treatment and quality of life of the patients(Ramesh et al. 2017).

Pre-op education should include what will happen during surgery. It is especially important for patients to be aware of what it will be like when they awaken from surgery as this decreases anxiety. It is also important for the patient's family to understand the amount and types of medical devices used in the intensive care

unit(ICU). If allowed and time permits, patients and family members should be given a tour of the ICU. It is also important to teach patients and family the length of the usual stay in the ICU and what to expect during that time. Patients may be surprised to learn that they may be asked to get out of bed into a chair as early as the morning after surgery.

Pre-op teaching should also include presence of chest tubes and epicardial wires, early ambulation, need for pain medication, use of an incentive spirometer or other deep breathing exercises, and incision care. This helps mentally prepare the patient and family for post-op recovery.

Psychological Preparation for Cardiac Surgery

Cardiac surgery is a stressful life event associated with physical and psychological impairments such as anxiety, fear, depression, and pain(Feuchtinger et al. 2014).A growing body of evidence points to the importance of preoperative psychological preparation in improving postoperative surgical outcomes, especially for very invasive procedures such as heart surgery(Levett & Grimmett 2019).

The rationality of preoperative psychological preparation lies in changing one or more chronic stress factors to help patients cope with acute stress of heart surgery and improve postoperative prognosis. Postoperative outcomes include not only "classic surgical outcomes" such as mortality, complications, length of stay(LOS)and health care costs, but also patient-reported outcomes such as pain, quality of life, anxiety, depressive symptoms, or satisfaction with medical care. Preoperative psychological preparation can be viewed as "pre-adaptation", which is a term used to obtain optimal surgical outcomes through preoperative methods(McCann et al. 2019). A variety of mechanisms explain why psychological preparation affects the surgical recovery process: cognitive and emotional influences behavior (e.g.) physical activity, medication compliance, compliance, and are therefore associated with recovery. Emotions such as anger or sadness can increase feelings of pain. Stress perception is related to neuro-immune mechanisms and may delay wound healing and increase disease behavior(Broadbent & Koschwanez 2012).Psychological intervention affecting these psychological factors can improve postoperative prognosis (Powell et al. 2016).

"Psychological preparation" includes various techniques for altering

cognition, mood, or behavior that can improve (e.g.) expectations, perceived social support, or reduce (e.g.) depressive symptoms, anxiety, perceived stress, the likelihood of optimal recovery. In an early review, the following types of preoperative psychological intervention were found to be beneficial for surgical patients (Salzmann et al. 2020): providing procedural information (information describing the procedure, time and method of surgery), sensory information (describing the feeling of surgery), behavioral guidance (about what the patient should do) ,Such as information about when the patient should resume normal activities, cognitive interventions (designed to change the patient's view of the surgery); It may include developing different perspectives and distractions, relaxation techniques (systematic instruction of physical and cognitive strategies to increase feelings of relaxation and calm), hypnosis and emotion-centered interventions (designed to enable the patient to regulate and manage emotions, such as understanding and accepting emotions).

Psychological state of patients undergoing cardiac surgery before operation

Patients waiting for heart surgery often face a psychological state of fear, worry and anxiety. Evidence suggests that coronary artery disease is associated with anxiety and depression, sleep disturbances, severe fatigue and emotional complaints because the body and mind are not separate (Loghmani & Monfared ,2018). Kazitani et al. (2018) found that patients waiting for heart surgery had high levels of anxiety,especially those undergoing heart surgery for the first time. Exposure to high levels of stress before surgery can affect bodily function and may worsen symptoms of cardiovascular disease by developing post-traumatic stress disorder, resulting in prolonged recovery time, increased pain after surgery, slower recovery from anesthesia, increased need for medications, and longer hospital stays(Filomeno et al.2020).

2. The concept of preoperative anxiety of patients undergoing cardiac surgery

The concept of preoperative anxiety

Anxiety is the subjective unpleasant feelings of dread over something unlikely to happen, it is often accompanied by restlessness, fatigue, problems in concentration, and muscular tension. During the pre-operation period, surgical

candidates experience situations that stimulate psychological anxiety leading to stress during and after surgery which is known as preoperative anxiety. Preoperative anxiety is often described as an uncomfortable, tense unpleasant mood before surgery, an emotional response to a potential challenge or threat to reality. preoperative anxiety,is a common reaction experienced by patients who are admitted to a hospital for surgery. This condition can cause psychological and physiological adverse effects on both children and adults.

Current status of preoperative anxiety before cardiac surgery

Data on 997 patients waiting for surgery at 12 hospitals in China were analyzed. There were 258 patients (25.9%) with high anxiety before operation. However, this prevalence was lower than previously reported (Aust et al. 2018). This maybe due to differences in anxiety assessment tools. Since more than 40 million surgeries are performed in China every year(Weiser et al. 2016), this means that at least 10.4 million patients have a state of high anxiety. This strongly suggests that anxiety should be given more attention before surgery, rather than focusing solely on physical pain and recovery(Li et al. 2021).Mudgalkar et al. (2022) found that patients undergoing elective heart surgery often experienced preoperative anxiety and had a high level of preoperative anxiety, with nearly 75-80% of patients having severe anxiety before surgery and 10-20% having moderate anxiety.

Patients waiting for surgery generally have a high level of anxiety, especially for major surgeries with high risks such as heart surgery. A descriptive,analytical, cross-sectional study conducted at a tertiary hospital in Spain found that preoperative anxiety was a common phenomenon among patients undergoing heart surgery, as undergoing such a complex procedure can create insecurities in patients, as evidenced by the results, which showed that over 80% of the study sample exhibited significant levels of anxiety(Prado-Olivares & Chover-Sierra 2019). These data are similar to the findings of previous studies such as Valenzuela-Millán et al. (2010), where 76% of subjects showed high anxiety, and Castillero Amador (2010), a study on psychological intervention for heart surgery, where 98% of participants showed anxiety, Forty-eight percent ofthe participants showed high levels of anxiety. In China, there are many scholars who study anxiety before elective surgery, but very few study the anxiety before cardiac surgery alone.Many literatures suggest that preoperative anxiety should

be included in preoperative medical evaluation routine(Celik & Edipoglu 2018), but many medical institutions fail to do, so an preoperative anxiety is often ignored.

The prevalence of preoperative anxiety in China has not been fully investigated. A few small studies involving hundreds of patients have reported a prevalence of preoperative anxiety between 11% and 89%(Ma et al. 2021).However,these studies were primarily single-center studies involving only certain types of surgery, using a variety of anxiety assessment tools. Due to a large degree of heterogeneity between studies, the results cannot be generalized to other patient populations. In a review of the 2015 China Cardiovascular Disease Report, it was noted that the number of cardiovascular surgeries performed annually in China has increased over the past decade. In 2014, 209,765 cardiovascular surgeries were performed on the Chinese mainland(Chen et al. 2017).Therefore, it is necessary to conduct a cross-sectional survey and study on preoperative anxiety of patients undergoing elective cardiac surgery in order to better understand the current situation of preoperative anxiety in cardiac surgery in China.

How to implement preoperative emotional management of patients and relieve preoperative anxiety requires the joint efforts of patients and healthcare system,which requires patients to master and adopt a series of skills, knowledge and coping strategies to cope with their illness and surgical stress. The medical staff should provide continuous help and support to the patient, so that the patient can master and effectively implement the emotional management skills before the cardiac surgery to relieve the preoperative anxiety.

The Transition theory

The main concepts of transition theory proposed by Meleis, Sawyer, Im, Schumacher, and Messias (2000) include: types and patterns of transition, properties of transition experiences, transition conditions (facilitators and inhibitors), patterns of response/process and outcome indicators, and nursing therapeutics. The concept of types of transitions includes four different types: developmental transitions, health and illness transitions, situational transitions, and organizational transitions. Health and illness transitions are events such as surgery, the recovery process, discharge from hospital, and diagnosis of chronic diseases (Meleis & Trangenstein, 1994).Transitional conditions are those that influence the way a person moves

through the transition, facilitating or hindering the achievement of a healthy transition(Schumacher & Meleis, 1994). Transitional conditions are individual, community or social factors that may promote or inhibit the process and outcome of transition. In practice, transition refers to a period of time when there is a recognizable starting point from the first signs of expected, perceived, or demonstrated change; To go through a period of instability, confusion, and pain; And *eventually ends with a new beginning or a period of stability (Meleis et al., 2000).*

Transition is a process or period of change from one state or condition to another. Patients diagnosed with heart disease, requiring surgical treatment, are the transformational nature of the patient's health or disease, which is characterized by change and difference, time span. The transformation of a state of health is a complex multi-dimensional process that causes and affects changes in life, emotions, relationships and the environment. Individuals in transition are highly susceptible to stress and environment, and are susceptible to changes in roles, support systems, health status, or abilities. Preoperative anxiety is one of the most common mood changes in patients waiting for surgery. It is influenced by personal conditions such as cultural beliefs and attitudes, socio-economic status, psychological preparation and knowledge of surgery, community conditions and social conditions.

The transition theory is mainly composed of four core concepts: transformation nature, transformation condition, response mode and nursing therapy, which can interact with each other. Nursing therapy, as an important intervention element, can influence and receive feedback from the other three elements to provide support for improving individual health, and response mode is the main index to evaluate the transformation process and results. The nature of transformation includes the type of transformation, the form of transformation and the characteristics of transformation. The changing conditions include individual factors, community resources and social factors. The response model includes process index and outcome index. Nursing interventions should focus on preventing adverse change, promoting well-being, and managing the experience during change, and should include both assessment and planning and implementation. Nurses play a central role in providing care to people in transition, particularly to individuals, families and communities undergoing changes that trigger the loss of new roles, networks and support systems

(Meleis, 2010). Nurses can contribute to successful transitions by providing information, support and/or direct care, there by helping to prevent disease, reduce health risks, enhance health/well-being, and facilitate the recovery of people in transition. Meleis (2010) asserts that transition is central to the nursing mission. Transition theory suggests that nurses need to consider patients' comfort level and mastery of dealing with change and difference in order to provide adequate and appropriate care for people in transition. Transition theory provides structure for nursing curricula, framework for research questions/hypotheses, and direction for nursing (Im, 2009).Based on Transition theory, this study analyzes the predictive factors of preoperative anxiety in patients undergoing elective cardiac surgery.

3. Factors related to preoperative anxiety in patients undergoing cardiac surgery

Heart disease forces patients to endure pain and discomfort, for whom cardiac surgery represents an intervention that can free them from the risk of heart attack and death, and is characterized by the involvement of the noblest organs recognized as directly related to sustaining life (Gomes et al. 2019). However, the pre-cardiac period represents not only the possibility of cure, but also the possibility of failure (Gomes et al. 2012). The unknown and the possibility of failure aggravate the pain that the patient must face, and as a result, they will have feelings of anxiety. Despite the benefits to the patient, surgery also produces pain in many ways, from the risks of pain and exposure to the patient's daily life, to the uncertainties and limitations involved (Gomes & Silva Bezerra 2017).

Heart surgery is associated with higher rates of preoperative anxiety. Being hospitalized for heart disease and even non-surgical reasons has made a big difference in anxiety levels. The preoperative period is considered to be the stage when individuals become more vulnerable in terms of needs, especially psychological needs, and are more prone to emotional imbalance, pain and fear, which are often transformed into anxiety(Costa et al. 2010). However, anxiety, stress, fear and other negative feelings and emotions require the development of coping and adaptive strategies(Ai et al. 2012). With evidence suggesting that cardiac surgery is a major stressor and has an impact on significant levels of preoperative anxiety, it is extremely important to understand the factors that worsen or alleviate anxiety and the internal or

external patient resources available to the nurse in the intervention(Gomes & Bezerra 2017). Nurses should formulate nursing measures according to the risk factors causing anxiety. So more research should be done to provide evidence of comprehensive care. With the addition of new evidence and the results of detailed research,more excellent care programs can be reformulated.

The high level of anxiety found before heart surgery depends on different variables such as the patient's age and gender, level of research, previous surgical experience, quality of sleep, level of fear of surgery, social support, etc. According to the study of Díez-Álvarez et al. (2012)and Valenzuela-Millán et al. (2010)in Spain,70% of the subjects with high anxiety were female. A study conducted by Kiyohara et al. (2004) and Marín et al. (2015) found a statistically significant negative correlation between preoperative operation-related information received by patients and preoperative anxiety. Ruiz-López et al. (2000)and Fathi et al. (2014) also demonstrated that patients undergoing college study tend to have lower levels of anxiety, and that the more educated they are, the better able they are to understand the information presented, just as those who have already had prior surgical experience know what they will be facing in terms of the anesthesia process and later rehabilitation. Previous studies have also found that preoperative anxiety is related to the type of heart surgery, with patients undergoing coronary artery bypass surgery having higher anxiety scores. Coronary artery bypass surgery was independently associated with higher preoperative anxiety. The most common causes of anxiety are waiting for surgery, fear of not knowing what will happen, fear of not waking up from anesthesia, and fear of being at the mercy of staff during surgery(Hernández-Palazón et al. 2018).Based on the transition theory and through a comprehensive literature review, this study emphasizes four factors that influence anxiety before cardiac surgery, including fear of surgery, preoperative sleep quality, perceptions of illness severity and perceived social support.

Fear of surgery

It is normal for most of people to have some fear about medical procedures, the results of tests and tests, and the state of our health. But for some people, the fear can become excessive and prevent them from undergoing certain medical procedures, such as surgery. It's natural to feel fear when surgery is needed, but therapist

Samantha Chaikin says fear of surgery beyond the expected "typical" level of anxiety can be dangerous and discourage patients from getting needed treatment. Anxiety disorders are diagnosed when the fear is uncontrollable or when it interferes with your ability to function in everyday life and receive appropriate medical care. Before surgery, patients will be afraid of many things related to surgery, fear of unfamiliar hospital environment, fear of losing control of their own body because of surgery,worry about the anesthetic effect, fear of postoperative pain and postoperative recovery,etc. all of which will cause or aggravate the preoperative anxiety of patients waiting for surgery.

Preoperative anxiety can become a psychological problem when patients experience severe fear of surgery and begin to experience physical symptoms such as racing heart, nausea and chest pain(Heisler 2011). Severe anxiety can also be called a panic attack. The causes of surgical anxiety range from fear of the unknown to fear of a bad experience with a previous operation. Surgical anxiety can also be caused by fear of the outcome of the surgery, such as a change in physical appearance, such as a surgical scar about 10cm long on the chest after open-heart surgery. There is also the fear of surgical risk. Heart surgery is a high-risk operation, and patients are often afraid of death or postoperative complications caused by surgery.

The global combined prevalence of preoperative anxiety was reported to be 48% among 14 000 surgical patients. Potential fears of surgical patients include: fear of surgical complications, fear of the duration and extent of disability after surgery, fear of general anesthesia and associated loss of control, and fear of waking up and experiencing discomfort and pain during or after surgery. The type and invasiveness of the planned surgery contributed to the difference in preoperative anxiety levels. According to the literature review, there was a significant positive correlation between surgical fear and preoperative anxiety(Friedrich et al. 2022).

Preoperative sleep quality

Sleep is regarded as one of the basic physiological needs of human beings,which occupies 1/3 of human life and ensures the continuation of health(Dalton & Zafirova 2018).Sleep quality is important for health, affecting quality of life and physiological function (Vandekerckhove & Wang 2018). Perioperative

sleep disorders are a common problem affecting a large number of surgical patients (Lin et al. 2021). About 8.8-79.1% of patients had sleep disorders before surgery (Ida et al. 2019).Sleep quality affects patients' physical and mental health, and poor sleep quality can cause anxiety in patients waiting for surgery (Kulpatcharapong et al. 2020).

Studies have shown that preoperative anxiety is associated with the severity of sleep disorders (Mohammad et al. 2019). The most adverse influencing factors for preoperative sleep quality were fear of surgical unknowns, organ loss, and anxiety about disability following major surgical intervention (Lane & Anne East 2008), with anxiety being one of the most frequently observed psychological responses in patients awaiting surgery (Jiwanmall et al. 2020). Preoperative anxiety and stress are often observed in studies of patients undergoing elective surgery. Sleep disorders and anxiety often occur together (Nowakowski et al. 2020). In a study investigating the effectiveness of preoperative sleep duration on preoperative anxiety levels, shorter sleep duration was associated with increased anxiety levels (Erkilic et al. 2017). A study of patients undergoing hysterectomy found that preoperative anxiety status was significantly associated with poor sleep quality and suggested that sleep quality and anxiety should be assessed using a preoperative assessment scale (Oksuzoglu et al.2022).

Cardiovascular disease (CVD) is one of the highest causes of morbidity,mortality and health care costs worldwide. Recent studies have shown that sleep problems can contribute to the development of cardiovascular disease, and that getting less than 6 hours of sleep increases the risk of cardiovascular disease. In recent years, in addition to various studies showing the impact of short sleep duration on the cardiovascular system, the impact of long-term sleep on the cardiovascular system has also been studied. The disorder of sleep pattern, such as short or long sleep duration,contributes to the development of cardiovascular diseases (Batista Santos et al.2014). One study found that people who slept less than 7 hours per night had a 12% to 35% higher risk of death than those who slept more than 7 hours (Liu & Chen 2019).Sleep deprivation promotes the development of cardiovascular diseases such as vascular calcification, hypertension, atherosclerosis, arrhythmia and myocardial infarction (Savard & Ouellet 2019).

Yildiz et al. (2021) found that cardiovascular surgery patients had higher levels of poor sleep quality and stronger psychological effects of surgery compared to the normal population. For patients waiting for cardiac surgery, the surgical process brings with it pre - and post-operative limitations, which may produce serious anxiety (Gonçalves et al. 2016). The nurse has a significant responsibility to maximize the patient's psychological and physical readiness for surgical intervention and to ensure patient satisfaction. It is an undeniable and important part of the holistic nursing method to improve preoperative sleep quality and reduce preoperative anxiety level of patients.

Perceptions of illness severity

Perceptions of illness severity refers to an individual's recognition of the negative consequences associated with the disease. These consequences maybe related to anticipated events that may occur in the future, or they may be related to current states, such as pre-existing health problems. Severity can be seen as an example of disutility and negative valence, a particular term derived from the Health Beliefs Model (HBM). According to Rosenstock (1974), HBM draws heavily on psychological literature and Lewin's behavioral motivation theory (Lewin et al. 1944). Lewin suggests that behavior depends on two variables :1) the importance an individual places on a particular outcome; 2) The likelihood (" expectation ") that one will succeed in achieving one's goal. Previous research has shown that patients who overestimate their long-term prognosis tend to opt for more aggressive treatments and life-prolonging treatments(Beckwith et al. 2021).

Perceived severity is a belief about the extent of harm from an acquired illness or a harmful state due to a particular action. Perceived threat is a determinant of participation in protected health behavior, which changes only when the disease is considered a threat and it is recognised that adopting protective behavior will stop the risk of the disease (Sukeri et al. 2020).The concept of illness perception is a relevant factor in cardiovascular health behavior (Ashour et al. 2020). A good knowledge or understanding of disease will lead to better adaptive ability, improved overall health status, ability to manage disease more effectively, and reduced stress level (Lotfi-Tokaldany et al. 2019). However, the study of Thagizadeh et al. (2022) on patients with coronary heart disease found that the high average score of patients' perceived

illness severity before surgery would lead to psychological consequences, such as stress, anxiety and depression.

At present, there are few studies on the relationship between illness perception and preoperative anxiety, but the relationship between negative illness perception and negative emotional state in patients with cardiovascular disease has long been studied (Foxwell et al. 2013). Negative illness perception means that patients believe that their disease has serious consequences, severe symptoms, is chronic, and cannot be controlled. In a prospective study involving patients undergoing CABG or PCI, illness perception was associated with anxiety (Monirpoor et al. 2012). Jarmoszewicz et al. (Jarmoszewicz et al. 2020)demonstrated a significant association between preoperative anxiety and negative illness perception. Illness perception should be assessed at an early stage of treatment, and each health care provider (anesthesiologist, surgeon, psychologist, nurse) can determine the patient's disease perception through interviews and questionnaires(Nowicka-Sauer et al. 2018). Anxiety screening and perceptions of illness severity assessment should be performed early in the clinical process, which can identify patients with high anxiety, negative illness perception, and address patients' personal concerns and expectations.

Perceived social support

Social support appeared as a proper noun, first proposed in the 1970s by Caplan (1974), he believes that social support is a continuous social collection,through interaction with others or social groups, to provide opportunities to help understand themselves, face challenges and difficulties of spirit and material assistance and support, so as to relieve the impact of stress on physical and psychological, and increase individual adaptability. The concept was first introduced domestically in the 1980s.However, due to the varied content of social support, the current research conducted by sociologists, epidemiologists and economists often starts from their respective disciplines, leading to the diversity of social support concepts. In general, social support comes from external environments, including material or spiritual support systems provided by relatives, friends, work units, and social groups (Coffey & Coleman 2001). Weber, et al. (2004) proposed that social support generally refers to individuals contacting others or groups through formal or informal means, with information, reassurance and assurance, with functions initially

summed down to four types, including information support, tool support, evaluation support, emotional support .In China, it is more understood as the spiritual and material social support of the family members, friends and other individuals or organizations(Cohen & Hoberman 1983).Perceived social support refers to how individuals perceive friends, family members, and others as sources of material, psychological, and overall support when needed. Perceived social support has been consistently correlated with well-being because perceived levels of support, love and care can provide positive experiences, and high perceived social support is also associated with better physical and mental health outcomes(Ioannou et al. 2019).

Sharma and Gharti (2019) showed that social support was statistically significantly correlated with age, sex, place of residence, standard of living, and type of surgery ($p< 0.05$),preoperative anxiety score was negatively correlated with social support score $r = -0.133$ ($p = 0.005$). Preoperative anxiety decreased with increased family support and support from friends and/or special people. Studies have shown that the higher the social support, the less preoperative anxiety. Preoperative anxiety of patients waiting for surgery is related to demographic characteristics and social support resources. Patients with high levels of social support show less anxiety, less hospital stay and lower dose of anesthetics. In the study of Yilmaz et al. (2012),patients who were visited by relatives and close friends reported reduced anxiety levels. So healthcare providers should identify patients with high anxiety levels) encourage them to talk about their feelings, and offer them more time with their families.

Social support plays an important role in happiness. Similar to other general surgeries, cardiac surgery had a significant effect on perceived social support and anxiety, and perceived social support had a significant negative effect on anxiety.When the perceived social support of patients with heart disease increased, their anxiety levels decreased significantly (Chivukula et al. 2013). Seeking social support is one of the many coping mechanisms adopted by preoperative patients, and social support helps reduce fear and anxiety in patients waiting for CABG (Hughes et al.2004). A well-established social support system around the patient can mitigate the effects of anxiety and manage the psychiatric consequences after surgery(Zyrianova et al. 2006). Chinese people have always attached great importance to friendship and

solidarity, and social support is naturally integrated into the system of family,community and society as a whole. Hospitalization and invasive surgery spontaneously elicit social support from significant others. The hospital management should make use of this cultural medical advantage to strengthen the social support of patients during hospitalization. Patients need the care and sympathy of family members before surgery, and they can let family members accompany them or extend the visiting time of family members. Provide basic training to caregivers in the biopsychosocial care of patients.

Anxiety is common in perioperative patients (Gorsky et al. 2021). Anxiety involves both negative mental and physical changes to future events. In addition to causing an unpleasant perioperative experience, preoperative anxiety was associated with increased use of anesthetics (Uysal et al. 2020), increased postoperative pain (Yilmaz Inal et al. 2021), cognitive impairment (Ma et al. 2021), increased risk of postoperative complications and death (Oteri et al. 2021), and poorer long-term quality of life and survival (Milisen et al. 2020). The prevalence of preoperative anxiety has not been characterized in Chinese patients, In a cross-sectional survey of 5, 191 Chinese adults with elective surgery at 32 tertiary referral centers in China,Preoperative anxiety was relatively common (prevalence of 15.8%) among adult Chinese patients undergoing elective surgeries (Yu et al. 2022), but the majority of surgeries in this study were low risk (72.8%) and medium risk (22.4%, and only 4.8% were considered high risk or very high risk surgeries. The study also found the highest prevalence of preoperative anxiety in patients undergoing heart surgery or obstetrics and gynecology surgery (about 25%). The higher the incidence of preoperative anxiety.

In previous studies on the prevalence of preoperative anxiety in elective patients in China, the prevalence of preoperative anxiety was about 30% in patients with gynecology, orthopedics or heart disease(Milisen et al. 2020), about 20% in patients with gastrointestinal tract (Liu et al. 2021), and about 10% in patients with aesthetic plastic surgery (Wei et al. 2018). The prevalence of preoperative anxiety was as high as 60% in patients awaiting pathological diagnosis of thyroid nodules (Yang et al. 2017). Of course, these data are related to the hospital where the patient is, the preoperative education of the surgical team, and the increase of the acquisition of

surgery and anesthesia knowledge on the Internet, etc. The reputation of a high-grade hospital may alleviate the preoperative anxiety of many patients, and the traditional Chinese culture determines that patients tend to be conservative about negative psychological feelings, and are more likely to show anxiety-related physical discomfort. But the large number of surgical patients in China suggests that millions of patients may experience preoperative anxiety each year. In conclusion, preoperative anxiety is relatively common among Chinese adult patients undergoing elective surgery. Preoperative screening and prevention of anxiety, as well as perioperative education and intervention should be emphasized. In China, further clinical studies are needed to determine appropriate preoperative anxiety assessment methods.

This paper reviews preoperative anxiety-related variables in patients awaiting cardiac surgery,fear of surgery,preoperative sleep quality,perceptions of illness severity and perceived social support, it is found that there are more researches on these four variables, but less researches on the synthesis of these four factors in China. It is suggested that when healthcare and researchers clinically study factors related to preoperative anxiety in patients awaiting heart surgery, they may try to combine the above four factors to explore the possible mediating role more deeply. Through the social support and perceptual control of physiological, environmental and psychological factors, we can work together to improve patient confidence, form correct disease cognition and attitude, relieve preoperative anxiety, reduce postoperative complications, and improve quality of life.

Summary

Cardiac surgery has become the main means of treating heart diseases in China, but preoperative anxiety is common in patients, and emotional management of patients needs to be improved. However, there is currently no unified and mature knowledge system for emotion management and reducing preoperative anxiety in China. The factors influencing preoperative anxiety mainly include demographic,biological,psychological and sociological factors and the relationship between the patient and the health care provider. Although population biological factors can influence preoperative anxiety in cardiac surgery patients, there is little we can do to change this factor. There are few studies on preoperative anxiety in Chinese

cardiac surgery patients, and there is a lack of reliable theoretical support, so there is no mature mode of preoperative anxiety. These are the questions commonly explored by scholars, who constantly explore new ways to relieve preoperative anxiety in cardiac surgery patients,so as to improve the postoperative quality of life of patients and improve hospitalization satisfaction.

Patients undergoing elective heart surgery often experience higher levels of preoperative anxiety. Anxiety is a painful emotion that can cause patients undergoing heart surgery to delay planned procedures. Such delays can be fatal. Preoperative anxiety affects the outcome of surgery, affects mental health,induces hypertension,tachycardia and increased surgical bleeding,etc. These are key factors to consider in cardiac surgery. Preoperative anxiety affects the outcome of surgery. In China,many patients take sedatives before surgery to help them relax,but the decision to do so is usually based on the habits and practices of the institution,but drugs are not the fundamental way to solve the patient's preoperative anxiety,the most important thing is to discover the cause of the patient's anxiety and relieve the patient's preoperative anxiety according to relevant factors.

Preoperative anxiety is common in patients undergoing cardiac surgery,and preoperative anxiety is associated with lower quality of life and cognitive performance,greater information needs,poor memory and attention,longer hospital stay,depressive symptoms,and increased physical disability,as has been confirmed in previous meta-analyses(Oteri et al. 2021). This indicates the clear need for preoperative psychological counseling to make patients feel at ease about the operation. Techniques that provide information,relaxation techniques,sensory approaches,behavioral guidance,cognitive interventions,and techniques based on mood and hypnosis are often described as effective in reducing patients' preoperative anxiety and reducing postoperative pain and length of hospital stay (Yu et al. 2022). The psychological stress of cardiac surgery is high,and patients can benefit from a focused and systematic mental preparation if they are given the knowledge they need to adapt to the negative effects of hospitalization and surgery, and to cope effectively with medications and surgical treatments. The observations drawn from the results of the current study suggest that medical practitioners are ignoring the psychological consequences of illness, treatment and the impact of hospitalization and surgery.

Therefore,it is important that more attention should be paid to these factors so that patients can recover more quickly and improve their quality of life after hospitalization and surgery.

Therefore, in view of the current situation of preoperative anxiety in cardiac surgery,it is necessary to actively explore the relevant influencing factors of preoperative anxiety. In China,especially Wenzhou,there is very limited research on the incidence of anxiety before cardiac surgery and related psychosocial variables.There is no evidence that fear of surgery,preoperative sleep quality,perceptions of illness severity and perceived social support and preoperative anxiety. In this study,to explore the incidence of preoperative anxiety in cardiac surgery patients,Whether fear of surgery,preoperative sleep quality,perceptions of illness severity and perceived social support can be used as predictors of preoperative anxiety,so as to help medical staff better understand the influencing factors of preoperative anxiety and provide theoretical basis for the intervention practice of preoperative anxiety. To help patients relieve preoperative anxiety and speed up recovery.

CHAPTER 3
RESEARCH METHODOLOGY

This chapter explained in details regarding research design, setting, population and sample, instruments, ethical considerations, data collection procedures, and data analysis.

Research design

A predictive correlational study design was employed to explore preoperative anxiety and its influencing factors including patients ' fear of surgery, patients 'preoperative sleep quality, patients' perceptions of illness severity and patients' perceived social support among patients undergoing cardiac surgery.

Population and sample

Population

The target population for this study was adult patients undergoing cardiac elective surgery in the department of cardiac surgery, the First Affiliated Hospital of Wenzhou Medical University. The most common type of cardiac diseases included: valvular heart disease, coronary heart disease and cardiac tumors. The period for data collection was from October, 2023 to March, 2024 .

Patients who need to do elective cardiac surgery were admitted to the hospital 3-7 days before surgery. After admission, preoperative preparation to promote patients ~~f~~prior to the surgery in the best physical condition were initially performed. These included preoperative general examination to prevent surgical risks, premedication if necessary in order to control for ventricular rate and blood pressure, etc.

Sample

The sample was drawn from the target population using simple random sampling technique. The sample was adult patients waiting for elective cardiac surgery in the Department of Cardiac Surgery of the First Affiliated Hospital of Wenzhou Medical University.

Inclusion criteria:

1. Adults patients with heart disease who were undergoing heart surgery for the first time.

2. Patients aged range from 18-60 years old.

3. Patients who had smartphones to scan QR code for answering the questionnaires.

4. Able to understand, read and write Chinese language.

Exclusion criteria:

1. Damage of vital organ function or other serious chronic diseases, such as malignant tumors, severe liver and renal insufficiency, etc.

2.Serious audio-visual impairment, unable to cooperate with this study;

3.Patients diagnosed by a psychiatrist as suffering from anxiety, depression or other mental illnesses.

4.Patients had obstructive sleep apnea as diagnosed by the physician.

5.Patients undergoing heart transplant surgery.

Sample size

The sample size in this study was calculated by using G*Power 3.1.9.2 program. The linear multiple regression was chosen as type of statistical test with an alpha of.05, a power of test .95, and a moderate effect size of .15 (Rodgers & Pustejovsky, 2021). The number of independent variables in this study was 4. Given these, it generated a sample size of 129. To compensate for possible missing data, this study added more 10%. Therefore, the total cases of 142 was finalized for data collection.

Sampling technique

In this study, patients waiting for elective cardiac surgery were selected from the Department of Cardiac Surgery of the First Affiliated Hospital of Wenzhou Medical University. Simple random sampling was used in this study to recruit participants. The sampling procedure were as follow:

1. Submitted the research proposal to get ethical approval from the Ethic

Committee on Human Research of Burapha University(BUU)and the First Affiliated Hospital of Wenzhou Medical University(WMU).

2. Obtained the ethical approval and got a letter from the Dean of the Graduate School, BUU, request permission for data collection from the president of the First Affiliated Hospital of WMU.

4. Patients awaiting heart surgery were admitted to the hospital about 3-7 days before surgery for preoperative preparation. The list of patients for the cardiac surgery was shown one day before the surgery.

5. The researcher saw the lists in advanced prior to the surgery and codeed the patients on the list, then randomly selected the lists of patients who scheduled for cardiac surgery, each participant had an equal chance to be selected. Those who met the inclusion criteria were invited to participate in this study.

6. Then, the researcher met with these selected patients, informed them about the study details, data collection process and their right for human subject protection, obtained informed consent.

7. These randomly selected patients were ask to answere the questionnaire on their own by scanning the QR code using wechat.

Setting of the study

The target population of this study was the patients waiting for elective heart surgery in Wenzhou, China. This study was conducted inpatient in the Cardiac Surgery Department of the First Affiliated Hospital of Wenzhou Medical University. This hospital was a comprehensive Grade iii classification hospital with 3380 beds, among which the cardiac surgery department could accept 49 patients every day, and routinely carried out coronary artery bypass grafting, valvular plasty and replacement, congenital heart disease surgery and large vessel replacement, etc. The surgical operation was scheduled to start at 7:30 am from Monday to Saturday, and the average number of operation was about 3-4 operations per day, and 70-90 heart patients were expected to be operated on each month. The annual average operation was 618 in the past 5 years. A total of 142 patients awaiting surgery was selected for this study. The researchers conducted the study through the use of questionnaires.

Research instruments

The research instruments can be divided into 6 parts as follows: Part I: patients ' general information, Part II : The short Chinese version of the State-Trait Anxiety Inventory (STAI),Part III: The Surgical Fear Questionnaire (SFQ), Part IV: The Richards-Campbell Sleep Questionnaire (RCSQ), Part V: The Brief Illness Perception Questionnaire (BIPQ) and Part VI: The Multidimensional Scale of Perceived Social Support (MSPSS).

Part I: Participants' demographic and background information.

This part included patients ' general information which developed by the researcher to collect demographic and background information of the patients. Data sources were based on patients' self-reports and medical records. The demographic questionnaire included patient's age, gender, place of residence, living status , education level, marital status, number of children, occupation, monthly household income, medical insurance, type of heart disease as diagnosed by the physician, type, date and time of operation, and any comorbidities apart from heart disease.

Part II: The short Chinese version of the State-Trait Anxiety Inventory (STAI)

The State-Trait Anxiety Inventory (STAI) developed by Spielberger et al.(1970) was one of the most commonly used self-report measures of anxiety in research and clinical settings across cultures, but few studies on anxiety in China have used the full version of the Spielberger State-Trait Anxiety Inventory (STAI) due to its length. A Short Chinese Version of the State-Trait Anxiety Inventory developed by Du et al. (2022)was used in this study to investigate the preoperative anxiety level of patients undergoing elective cardiac surgery. The short Chinese version of the STAI contained six items for each subscale,STAI-S-6(reflect state anxiety) and STAI-T-6(reflect trait anxiety), showed excellent reliability and validity, the Cronbach's α was .871, the higher scores indicated more severe anxiety. Positive emotion items in the questionnaire were scored in reverse, that is, 4, 3, 2 and 1 points in sequence. The purpose of this design was to minimize the psychological induction effect of the questionnaire itself. In multiple regression analysis, the STAI-S-6 (state anxiety) score indicated preoperative anxiety in adult patients undergoing cardiac surgery.

Part III: The Surgical Fear Questionnaire (SFQ)

The Surgical Fear Questionnaire (SFQ) was a set of eight items developed by Theunissen et al. (2014) to measure the level of fear experienced by adult patients prior to elective surgery under general anesthesia. The Chinese version of the Surgical Fear questionnaire translated and verified by Yang et al. (2022) was used in this study to investigate the fear of surgery of patients undergoing elective cardiac surgery. It was a self-reported numeric rating scale scored on an eleven-point ranging from 0 (not at all afraid) to 10(very afraid) suitable for general use among all types of adult surgery patients. The SFQ consisted of two subscales: fear of the short-term consequences of surgery (SFQ-S)) involving surgical procedure, anesthesia, pain, and side effects, and fear of the long-term consequences of surgery (SFQ-L),involving health deterioration, surgical failure, recovery, and rehabilitation, with each subscale containing four items, Cronbach's alpha of Chinese version of the Surgical Fear Questionnaire (SFQ-C)was 0.914,alpha of subscale one (SFQ-C-S) was 0.909,and subscale two (SFQ-C-L) was 0.886(Yang et al. 2022).A higher total score indicates a higher level of fear.

Part IV: The Richards-Campbell Sleep Questionnaire (RCSQ)

The RCSQ developed by Richards and colleagues was a simple and reliable questionnaire(Richards et al. 2000)；RCSQ consisted of five items：Sleep depth ,Sleep latency,Awakenings,Returning to sleep and Sleep quality, Each question will be answered on a 100 mm visual simulation scale. Scores range from 0(for the worst possible sleep, to 100(for the best possible sleep). The RCSQ total sleep score was obtained by adding the individual scores for the five sleep items together and dividing by 5. Participants in the lowest quartile (1-25 points) were considered to be poor sleepers, while those in the highest quartile (76-100 points) were considered to be good sleepers (Frisk & Nordström 2003),RCSQ was translated into Chinese by Chen et al. (2019) and verified, was used to investigate preoperative sleep quality in patients undergoing elective cardiac surgery. the Chinese version of the Richards-Campbell Sleep Questionnaire (RCSQ-C) had a Cronbach's α of .923,which showed high reliability. The content validity was .84. RCSQ-C could be used as a routine assessment tool to distinguish good sleepers from poor sleepers and guided nurses to develop appropriate treatment plans to promote sleep.

Part V: The Brief Illness Perception Questionnaire (BIPQ)

The Brief Illness Perception Questionnaire (BIPQ) developed by Broadbent et al.(2006)was considered to be a very short and simple measure of disease perception. The BIPQ was a nine-item questionnaire that assesses a patient's perception of the disease. It included consequences, timelines, personal control,therapeutic control, identification, caring, understanding, and emotional response. All items were rated using a 0 to 10 response scale. An open-ended response item asked patients to list the three most important causal attributions of their illness (item 9),increases in item scores represent linear increases in the dimension measured. The Chinese version of the Brief Illness Perception Questionnaire translated and verified by Lin and Chen et al. (2011) was used in this study to investigate the perceived disease severity of patients undergoing elective cardiac surgery. The Chinese BIPQ had acceptable mutual correlation and retest reliability, with Cronbach α was .757. The BIPQ also allows very simple interpretation of scores: increases in item scores represent linear increases in the dimension measured. The higher the score, the greater the patient's negative illness perception (serious consequences and emotional reactions).

Part VI：The Multidimensional Scale of Perceived Social Support(MSPSS)

The Multidimensional Scale of Perceived Social Support (MSPSS) developed by Zimet et al. in 1988 (Dahlem et al. 1991),and translated into Chinese as well as revised by Chou (2000) was used in this study. The Chinese version of the Multidimensional Scale of Perceived Social Support (C-MSPSS) could assess the overall level of social support that individuals perceive. This scale had 12 items with three dimensions of "support from family", "support from friends support" and "support from significant other". Each of these groups consisted of four items. Items 3,4,8, 11 assessed subscale of support from family. Items 6,7,9, 12 assessed subscale of support from friends. Items 1,2,5, 10 assessed subscale of support from significant other. Items was rated on a 7-point Likert scale that includes "1= Strongly disagree,2= Very disagree,3= Slightly disagree,4= neutral,5= Slightly agree,6=Very agree,7= Strongly agree". The higher the score, the higher the degree of individual social support. According to the range of the score, 12-36 points,37-60 points and 61-84

points represents low social support, medium social support, high social support respectively (Chou,2000). The Cronbach's α was .921, family support and friends was .882 and .886,and .793 for other support dimensions, respectively. The higher score indicated better perception of social support.

Psychometric properties of the instruments

In terms of validity, Chinese version of the short STAI, SFQ, RCSQ, BIPQ and MSPSS had been widely used and validated in previous studies. Therefore, all of mentioned instruments were not validated in this study. However, to ensure the reliabilities of all instruments used, the researcher tested the reliabilities with 30 patients with the same characteristics as the actual participants. Cronbach's α coefficients of short STAI, SFQ,RCSQ,BIPQ and MSPSS obtained from this study were .778,.795,.757,.797 and .969, respectively.

Protection of human rights for subjects

The research proposal was submitted for obtaining ethical approval to the Burapha University Ethics Committee on Human Research (BUU EC) and Institution Review Board (IRB) of BUU and the first affiliated hospital of WMU, the IRB approval code number from BUU and WMU were G-HS047/2566 and KY2023-181. During the data collection process, patients awaiting surgery in cardiac surgery were informed of the confidential and voluntary nature of this study, both orally and in writing. They had the right to withdraw from the study at any time and they were assured that their refusal to participate were not affect the services they received. Participants signed consent forms before collecting data. All the data is stored in a secure location and will be destroyed later after publishing this study. The results of the study was presented as an overview data and was not associated with any individual. The data was used for the purposes of the study only.

Data collection procedures

The data collection procedures in this study was conducted by the researcher as follows:

1. Data collection was conducted after the approval from IRB of Burapha

Ethical committee, and IRB of the first affiliated hospital of WMU. The letter from Faculty of Nursing, BUU was be sent to director of the first affiliated hospital of WMU, Wenzhou, China.

2. After the proposal and ethical approval from Burapha University and from the hospital were approved, data collection procedures were carried out by the researcher.

3. Permission letter from the dean of Graduate affairs, Burapha University was presented to the director of First Affiliated Hospital of Wenzhou Medical University to get permission for data collection.

4. The Director of cardiac surgery, physicians, and nurses were informed of the purpose and method of the study.

5. Simple random sampling was used to select the participants through the list of patients who were set for the operation. The researcher saw the lists and code the patients on the list, then randomly selected who was scheduled for cardiac surgery, each participant had an equal chance to be selected. The procedure was performed by researchers the day before the surgery of patients awaiting for heart surgery.

6. The researcher explained participants about research purposes, method of collecting data, human protection, and asked for participation. Then participants were requested to sign in consent form according to their willingness.

7. Checked whether the selected sample met the inclusion criteria, those who met the inclusion criteria were asked to answering the questionnaire.

8.The participants used the Wechat APP of their smartphones to scan the QR code provided by the researcher and filled out the questionnaire. An electronic data acquisition system was used to collect data and issue questionnaires. When participants have free time, patients were asked to fill out questionnaires including: The demographic questionnaire, the short Chinese version of the State-Trait Anxiety Inventory (STAI), the Surgical Fear Questionnaire (SFQ), Richards-Campbell Sleep Questionnaire (RCSQ), the Brief Illness Perception Questionnaire (BIPQ), and the Multidimensional Scale of Perceived Social Support (MSPSS). It took patients approximately 30 minutes to complete all questionnaires.

8. Patients completed the questionnaires independently and they could ask

the researcher if they had any questions during answering the questionnaires.

9. After the investigation was completed, the database was locked and the specific information was exported by researcher.

Data analysis

The data was entered into a statistical program for analyzing. The alpha level of statistical significance was set at .05. Data analyses was divided into three major parts as follows:

1. Descriptive statistics including frequency, percentage, range, mean, and standard deviation (SD) were used to describe preoperative anxiety, patients' fear of surgery, patients' preoperative sleep quality, patients' perceptions of illness severity and patients' perceived social support among patients undergoing cardiac elective surgery.

2. Pearson's product moment correlation coefficient and partial correlation coefficient was used to explore the association between preoperative anxiety and patients' fear of surgery, patients' preoperative sleep quality, patients' perceptions of illness severity and patients' perceived social support.

For the strength of the size of correlation coefficients was based on Grove et al. (2012), details as follows:

Table 1 Interpretation for the size of correlation coefficients

Strength of relationship	Positive relationship	Negative relationship
Weak relationship	0.00 to < 0.30	0.00 to < - 0.30
Moderate relationship	0.30 to 0.50	- 0.30 to - 0.50
Strong relationship	> 0.50	> - 0.50

3. Standard multiple regression was used to test the effects of selected factors on preoperative anxiety. Prior to the use of this statistics, assumption testing for the use of this analysis was examined first.

4. Assumption testing was conducted, all assumptions testing were met as

follows : 1) The relationship was linear, 2) There was no multicollinearity in the data ,3) The values of the residuals were independent, 4) The variance of the residuals was constant ,5) The values of the residuals were normally distributed, 6) There were no influential cases biasing this model.

CHAPTER 4
RESULTS

This study aimed to study preoperative anxiety and its predictive factors among patients undergoing cardiac elective surgery. These predictive factors consisted of : patients ' fear of surgery, patients 'preoperative sleep quality, patients' perceptions of illness severity and patients' perceived social support . The data were collected from 142 patients with heart disease who came to the department of Cardiac Surgery, the First Affiliated Hospital of Wenzhou Medical University located in Zhejiang Province,China. This chapter presents the results of data analysis which are presented in four parts as follows:

Part I: Description of demographic characteristics of the sample

Part II: Description of the pre-operative anxiety

Part III: Description of factors associated with the pre-operative anxiety

Part IV: Correlation results of all studied variables

Part V: The influence of predicting factors on preoperative anxiety

Part I: Description of demographic characteristics of the sample

Demographic characteristics are shown in Table 2. Most of the participants were 51-60 years old (59.9%), with an average age of 50.39 years (SD=9.94). There were more males (57.7%) than females (42.3%). More than half of the patients lived in the urban areas (65.5%). Most of the patients had primary education (34.5%), followed by junior high school education (33.8%). In terms of marital status, 87.3% were married. 40.8% of respondents reported having two children and 35.9% reported having only one child. Nearly half (47.2%) of the participants had a monthly household income of 10,001-30,000RMB. 89 (62.7%) of the respondents had medical insurance for urban and rural residents, 49 (34.5%) had employee medical insurance, and the remaining 4 (2.8%) paid at their own expense. More than three quarters (75.4%) of the respondents underwent traditional thoracotomy, and the rest underwent thoracoscopic surgery (14. 1%) and interventional procedures (10.5%). Nearly two thirds (62.7%) of the respondents were medically diagnosed as valvular heart disease. 46.5% of the patients had no comorbidities other than heart disease, and the remaining

patients had comorbidities such as hypertension and diabetes.

Table 2 Characteristics of the participants (n= 142)

Characteristics		Frequency (n)	Percentage (%)
Age	18-30 years	11	7.7
	31-50 years	46	32.4
	51-60 years	85	59.9
(Mean=50.39, *SD* = 9.94, Min = 23, Max = 60)			
Gender	Male	82	57.7
	Female	60	42.3
Place of residence	Countryside	49	34.5
	Cities and towns	93	65.5
Living with people	Spouse	68	47.9
	Parents	13	9.2
	Children	15	10.6
	living alone	10	7.0
	Other	9	6.3
	Spouse and children	27	19.0
Education	Illiteracy	18	12.7
	Primary	49	34.5
	Junior high school	48	33.8
	High school or technical secondary school	11	7.7
	College degree or above	16	11.3
Marital status	Married	124	87.3
	Single	7	4.9
	Divorced	9	6.4

Table 2 (Continued)

Characteristics		Frequency (*n*)	Percentage (%)
	Widowed	2	1.4
Number of children	One	51	35.9
	Two	58	40.8
	Three	19	13.5
	Four or more	4	2.8
	None	10	7
Monthly household income	5000-10000 RMB	53	37.3
	10001-30000 RMB	67	47.2
	30001-60000 RMB	22	15.5
(Min=5000,*SD*=13289.88,Median=1000，Max=60000)			
Occupation	Administrative staff	10	7
	Professional and technical staff	17	12
	Worker	45	31.7
	Farmer	20	14.1
	Housework	50	35.2
Medical insurance	Employee medical insurance	49	34.5
	Medical insurance for urban and rural residents	89	62.7
	Own expense	4	2.8
Type of operation	Traditional thoracotomy	107	75.4
	Thoracoscopic surgery	20	14.1
	Interventional operation	15	10.5

Table 2 (Continued)

Characteristics		Frequency (*n*)	Percentage (%)
Type of Heart Disease as diagnosed by the physician	Valvular heart disease	89	62.7
	Cardiac tumor	8	5.7
	Aneurysm of aorta	2	1.4
	Coronary heart disease	9	6.3
	Aortic dissection	7	4.9
	Myocardiopathy	2	1.4
	Congenital heart disease	25	17.6
Comorbidity diseases	No	66	46.5
	Yes	76	53.5
	-Hypertension	25	17.6
	-Diabetes	6	4.2
	-Hypertension+ diabetes)	10	7.0
	-Others	35	24.7

Part II: Description of the preoperative anxiety

The total score of state anxiety of patients undergoing elective cardiac surgery was added from each negative emotion item and the converted positive item by STAI- S-6(State- anxiety), and the total score of trait anxiety was added from each negative emotion item and the converted positive item by STAI-T-6(Trait- anxiety). Higher scores represent more severe state/trait anxiety. According to the research of the short Chinese version of State/Trait Anxiety Inventory, STAI-S-6(State- anxiety) scores >15.5 indicates that the patient had state anxiety,STAI-T-6(Trait- anxiety) score >17.5 indicates that the patient had trait anxiety. State-anxiety has been defined as a transitory emotional response involving unpleasant feelings of tension and apprehensive thoughts, emotional states that people show when they experience a situation specific, as patients awaiting cardiac surgery. Trait-anxiety has been defined as a personality trait referring to individual differences in the likelihood that a person

would experience state anxiety in a stressful situation. In this study, the patient's state anxiety as preoperative anxiety. The mean score of state anxiety (preoperative anxiety) was 15.98 (SD=4.95), and the actual score was 6 to 24. The mean score of trait anxiety was 10.77(SD= 3.66), and the actual score was 6 to 21. From the above analysis, it can be seen that patients developed anxiety because of waiting for cardiac surgery, that is preoperative anxiety; the trait anxiety score is lower than 17.5,indicated that there was no anxiety trait in this population. Details are provided in Table 3.

Table 3 Mean and SD of state anxiety and trait anxiety (*n*= 142)

Variables	Possible range		Actual range		Mean	SD
	Minimum	Maximum	Minimum	Maximum		
-Trait anxiety	6.000	24.000	6.000	21.000	10.77	3.66
-State anxiety	6.000	24.000	6.000	24.000	15.98	4.95

Part III: Description of factors associated with the preoperative anxiety

This study explored four factors associated with preoperative anxiety including patients' fear of surgery, patients' preoperative sleep quality, patients' perceptions of illness severity and patients' perceived social support. The average score of fear of surgery was 46.56 (SD=19.34), which was lower than the central value of possible scores (median = 47). The mean score of preoperative sleep quality was 331.46 (SD=98.99), which was lower than the central value of possible scores (median =331.50). The average score of perceptions of illness severity was 48.2 (SD= 11.26), which was lower than the central value of possible scores (Median=49). The average score of perceived social support was 63.89 (SD=13.69), which was lower than the central value of possible scores (Median=65). All descriptions were shown in Table 4.

Table 4 Means and SD of the factors related to pre-operative anxiety (n = 142)

Variables	Mean	SD	Median	Possible scores	Actual scores
Fear of surgery	46.56	19.34	47	0-80	3-80
Preoperative sleep quality	331.46	98.99	331.50	0-500	1-500
Perceptions of illness severity	48.20	11.26	49	0-80	18-76
Perceived social support	63.89	13.69	65	12-84	12-84

Part IV: Correlation results of all studied variables

Pearson correlation test was used to examine the relationship between perceptions of illness severity, preoperative sleep quality, fear of surgery, perceived social support, trait anxiety and preoperative anxiety (state anxiety). In this study, the VIF value was (1.031-1.105), and the data basically met the assumptions of multiple linear analysis.

From the correlation matrix, patient's ' trait anxiety, patients' fear of surgery ,patient's preoperative sleep quality and patients' perceived social support were significantly correlated with patient's state anxiety(patient's preoperative anxiety). But there is no correlation with patients' perceptions of illness severity. Patients 'trait anxiety was positively correlated with preoperative anxiety(state anxiety) (r =.251, p< .01); Patients' preoperative sleep quality was negatively correlated with preoperative anxiety(state anxiety)(r=-.160,p<.05); Patients' fear of surgery was positively correlated with preoperative anxiety(state anxiety)(r=.565,p<.01) ,and patients' perceived social support was negatively correlated with preoperative anxiety(state anxiety) (r = -.178,p<.05). Patients' perceptions of illness severity was also positively correlated with patients' fear of surgery (r=.207,p<.05), as shown in Table 5.

Table 5 Pearson correlation coefficients between predictors and preoperative anxiety (state anxiety)(n = 142)

Variables	1	2	3	4	5	6
1.Perceptions of illness severity	1					
2.Preoperative sleep quality	-.148	1				
3.Fear of surgery	.207*	.037	1			
4.Perceived social support	.136	.009	-.061	1		
5.State anxiety(preoperative anxiety)	.143	-.160*	.565**	-.178*	1	
6.Trait anxiety	.107	-.077	.146	-.045	.251**	1

Note: * Correlation is significant at the .05 level (2-tailed)

** Correlation is significant at the .01 level (2-tailed)

Part V: The influence of predicting factors on preoperative anxiety(state anxiety)

Through the use of enter method for multiple regression analysis, the state anxiety which indicated preoperative anxiety was served as the dependent variable. First of all, a assumption testing was conducted, and it was found that assumption testing was met for the use of multiple regression statistics as follows:

1. The independent and dependent variables are composed of interval or ratio variables. A total of 4 independent variables were used in this study: perceived illness severity, preoperative sleep quality, fear of surgery, and perceived social support.

2. The fitting degree of the multiple regression model is well, Adjusted R Square=0.373, It means that the results can truly and reliably reflect the association between preoperative anxiety(state anxiety) and perceived illness severity, fear of surgery, perceived social support and preoperative sleep quality.

3. There was no multicollinearity between independent variables, and VIF was 1.031- 1.105(<5.000). Tolerances of the predictive variables and the criterion variable were independent (no autocorrelation). They were tested using Durbin-Watson, equal to 1 .784, which indicated that autocorrelation did not occur because

the value was close to 2, and between 1.5 -2.5.

The presence of multicollinearity was assessed by inspecting the variance of inflation factor (VIF). Considering that the VIF values are not supposed to exceed 10. In this study, the tolerance values of 4 variables were 1.105, 1.034, 1.077, 1.031, indicating that there were all independently from each others.

Table 5 indicate factors influencing preoperative anxiety(state anxiety) through the use of the enter multiple linear regression analysis, whereby the statistical tests were two-tails and performed at a significant level of .05.

From the results shown in Table 5, multiple regression analysis using the enter method revealed that preoperative sleep quality, fear of surgery and perceived social support as the significant predictors of preoperative anxiety. All the variables together explained 37.3% for the variance of preoperative anxiety (with an adjust R^2 of .373). The significant predictors of preoperative anxiety(state anxiety) were preoperative sleep quality (*B*=-.008,*p*<*.05*),fear of surgery(*B*=.138, *p*<*.001*),perceived social support(*B*=-.050,p<.05) . Perceptions of illness severity (*B*=.004,*p*>*.05*) had no significant effect on preoperative anxiety. The summary of the multiple linear regression analysis is presented below in Table 6.

Table 6 Summary of multiple regression analysis of factors influencing the preoperative anxiety indicated by state anxiety(n = 142)

Variables	B	SE	β	t	p-value	VIF
Perceptions of illness severity	.004	.031	.009	.132	.895	1.105
Preoperative sleep quality	-.008	.003	-.166	-2.448	.016	1.034
Fear of surgery	.138	.018	.539	7.793	.000	1.077
Perceived social support	-.050	.024	-.138	-2.046	.043	1.031

Note: R=.629,R^2=.396， Adjust R^2=.373, F=26.770

CHAPTER 5
CONCLUSION AND DISCUSSION

This chapter presents the summary of the study, discussion of research results, study limitations , and suggestions for clinical nursing practice, administrative management, health education and further research.

Summary

The purpose of this cross-sectional design was to describe the preoperative anxiety of adult patients undergoing elective cardiac surgery in Wenzhou, and examined the influence of perceptions of illness severity, preoperative sleep quality, fear of surgery and perceived social support on preoperative anxiety. The target population of this study was 142 adult patients undergoing elective cardiac surgery in the First Affiliated Hospital of Wenzhou Medical University from October 2023 to March 2024.

The results showed that the respondents were more males (57.7%) than females (42.3%), and most of them were 51-60 years old (59.9%), with an average age of 50.39 years (SD=9.94). Most of the patients live in towns (65.5%),married (87.3%), and living with spouse (47.9%). 57.1% of respondents said they had two or more children, 52.8% of the participants in the junior high school education level and above. 62.7% of household income in 10001 ~ 60000 RMB, 97.2% of the patients had medical insurance, 35.2% were housewife, secondly were workers (31.7%) . 62.7% of participants were diagnosed with valve heart disease, and 75.4% of the patients received traditional thoracotomy, 53.5% had at least one kind of comorbidity diseases.

The average score of preoperative anxiety (state anxiety) was 15.98(SD=4.95), and the average score of trait anxiety was 10.77 (SD= 3.66). The results showed that the participants had preoperative anxiety. The average scores of perceptions of illness severity was 48.2 (SD=11.26).The average scores of preoperative sleep quality was 331.46(SD=98.99). The average scores of fear of surgery was 46.56 (SD=19.34).The average scores of perceived social support was 63.89(SD=13.69).

Multiple regression analysis revealed all factors examined could explain 37.3% of the variance in preoperative anxiety((F 4, 142)=26.770, $p< .05$). The best predictor is fear of surgery (β =.539,$p<.001$), followed by preoperative sleep quality(β =-.166, $p<.05$),and perceived social support(β =-.138,$p<.05$). Contrary to expectations, perceptions of illness severity (β =. 009, p>.05) was not significantly influenced preoperative anxiety.

Discussion

The purpose of this study was to evaluate the preoperative anxiety of adult patients undergoing elective cardiac surgery and its influencing factors. This study was guided by transition theory. A simple random sampling method was used to select 142 adult patients undergoing elective cardiac surgery at the Department of Cardiac Surgery, the First Affiliated Hospital of Wenzhou Medical University from October 2023 to March 2024.

Preoperative anxiety of adult patients undergoing elective cardiac surgery

The first objective of this study was to investigate the preoperative anxiety of adult patients undergoing elective cardiac surgery in a hospital in Wenzhou, Zhejiang province. According to relevant studies in China and abroad, the state anxiety score >15.5 indicates that patients had anxiety caused by surgery, and the higher score, the higher level of anxiety. The results of this study showed that the state anxiety score was 15.98, indicating that there was preoperative anxiety in adult patients waiting for elective cardiac surgery. This was similar to the results of preoperative anxiety in patients undergoing elective heart surgery reported in China and abroad (Dursun & Aksu, 2024; Zhang, 2021). In this study, 75.4% of the respondents received traditional thoracotomy, the type of surgery was complex, and the trauma was large. Most of the patients had low education level, 81% were junior high school or below, patients with low education level had weak general medical knowledge, limited access to knowledge, insufficient cognition of surgery, and easy to produce preoperative anxiety (state anxiety). In addition, 53.5% of the patients in this study had other comorbidities in addition to heart disease (e.g., hypertension, diabetes, and in combination). They could possibly worry that chronic diseases would affect the

prognosis of surgery and this could increase their anxiety. In addition, patients with elective surgery needed to wait at least 3-7 days before surgery, and the waiting process was somehow make patients become more anxious (Kefelegn & Tolera, 2023).

This study was consistent with the preoperative anxiety levels conducted in the study of Ke and Tao (2020), the study showed that cardiac surgery had the characteristics of large trauma, long time and high risk, andpreoperative anxiety was common in cardiac surgery patients. In the study of Ji and Wang (2020), it was found that the incidence of preoperative anxiety of patients undergoing cardiac surgery was much higher than other surgical procedures, and the anxiety level of adult patients under the age of 60 wasparticipants of this study were adult patients aged from 18 to 60 years, so age was also one of the factors contributing to the anxiety of patients. Similar to the findings of Yali (2020), preoperative anxiety in cardiac surgery was very common. It is necessary to evaluate such anxiety of patients undergoing cardiac surgery and analyze the common causes of anxiety(Chen & Guizhi, 2020).The results of this study and previous studies both indicate that preoperative anxiety exists in adult cardiac surgery patients undergoing elective surgery. Therefore, it is necessary to explore the factors that affect preoperative anxiety, so as to better implement nursing interventions by taking into account the causes of anxiety and ways to reduce preoperative anxiety.

Based on the Meleis's transition theory, patients waiting for cardiac surgery are in a state of health-disease transition. Patients undergo the transition from health to disease and then having surgery, and then they need to recover after surgery. This series of transition can cause changes in patients' mood, health cognition and behavior. Anxiety is one of the most common modes of patients' response to the situation change of surgical treatment. According to the occurrence sequence of heart disease and treatment, the transformation process includes the entry stage, the passage stage and the departure stage, and the duration and influence degree of each stage are different, often overlapping. The preoperative stage is the entry stage, the postoperative recovery stage is the passage stage, and the recovery stage is the departure stage.

Factors predicting preoperative anxiety

State anxiety can directly reflect the individual's psychological state in a specific time, environment or situation. Trait anxiety is used to describe an individual's innate personality traits. In the present study, state anxiety was equal to preoperative anxiety in adult patients awaiting cardiac surgery, while trait anxiety could reflect whether this group of people had an inherently anxious personality. The results showed that the patients who participated in this study had state anxiety, that is, preoperative anxiety, but had no trait anxiety, which also proved that the anxiety of this population was caused by the operation rather than the anxiety constitution of the patients themselves. The second purpose of this study was to examine predictors of preoperative anxiety. A standard multiple linear regression method was used with all factors entered simultaneously. Multiple regression analysis showed that preoperative sleep quality, fear of surgery, and perceived social support significantly explained 37.3% of the variance in preoperative anxiety (state anxiety). There was a significant effect on patients' preoperative anxiety (state anxiety) (Adj R^2=.373). Significant regression equation ((F 4,142)=26.770,p<.05). The results of this study showed that preoperative sleep quality(β =-.166,p<.05), fear of surgery(β=.539,p<.05) and perceived social support(β=-.138,p<.05) had significant effects on preoperative anxiety(state anxiety) in adult patients undergoing elective cardiac surgery. Contrary to expectations, perceived illness severity(β =.009, p>.05) had no significant effect on preoperative anxiety. In general, the regression model explained 37.3% of the variance in preoperative anxiety (F 4,142=26.770, p<0.05). The best predictor was fear of surgery, followed by preoperative sleep quality and perceived social support.

The results of this study confirmed that fear of surgery had a significant positive effect on preoperative anxiety (state anxiety) (β =.539, p<.01), it was one of the predictors of preoperative anxiety. The predictive value showed that if the standard deviation unit of fear of surgery increased (SD=19.34), the preoperative anxiety (state anxiety) score could increase by 0.539 standard deviation (SD=4.95). The degree of fear of surgery in the population in this study conducted by Salzmann and Euteneuer, (2020). This was directly related to the situational transition of patients facing cardiac surgery, which was high-risk and requires general anesthesia, and patients were afraid

of unbearable pain and anesthesia related adverse reactions such as nausea and vomiting after surgery. Patients undergoing heart surgery fear that the operation would not go well, they would not recover fully or the recovery time would be too long. Adult cardiac surgery patients ' fear generally higher, The higher the fear of surgery is, the more anxious patients are, which affects the prognosis of the patients. This was similar to the results of Doğan's study. Patients with a higher level of fear of surgery have more preoperative anxiety. The greater fear of surgery, the higher preoperative anxiety level (Doğan & Arslan, 2024). This indicates that in the process of disease treatment and education, medical staff should pay attention to reduce patients' fear of surgery, teach patients how to correctly deal with surgical treatment, so that patients can accept surgery calmly.

Preoperative sleep quality was the second factor predicting preoperative anxiety (state anxiety) (β=-.166,*P*<.05). The results of this study showed that the average preoperative sleep quality score of patients waiting for cardiac surgery was 331.46(±98.987). Therefore, the preoperative sleep quality of patients in this study was at a moderate level. It was higher than the study on cardiac surgery patients on other hospital in China (Yang & Lin, 2024), This may be related to the fact that the hospital in this study advocates "quiet ward", which provides patients with a more comfortable and quiet environment. But sleep quality in this study population were lower than the urological surgery patients group studied by Yanan (2024). This may be due to the shorter waiting time for urology whereas cardiac surgery requires a 3-7 day hospital waiting times in the hospital before heart surgery. The findings suggest that patients with heart disease may suffer from poor sleep quality while waiting for surgery. This result is similar to the research results of Liyun (2023) in which the patients were their sleep qualities, then affect the response pattern and health outcome of patients' in the next transition. The amount of sleep well-being was negatively correlated with the level of anxiety in patients ; Preoperative sleep quality and preoperative anxiety affect each other. Poor sleep quality may lead to anxiety, adequate sleep reduces stress, improves mood, and restores the ability to think and remember. when sleep is insufficient, leads to the accumulation of stress, negative emotions, and anxiety. Of course, anxiety can also make people sleep less and even harder to fall asleep. Therefore, we should identify sleep disorders and anxiety in patients with

cardiac surgery as soon as possible, and implement effective nursing intervention to reduce patients' anxiety.

Among the current set of predictors, perceived social support was also significant in predicting preoperative anxiety (state anxiety) (β=-.138, p<.05). The results showed that the total score of perceived social support of cardiac surgery patients was (63.89 ± 13.689), including two dimensions of friend support and family support. Perceived social support of patients before cardiac surgery in this study is at a middle and upper level, which is higher than that of patients with coronary heart disease (60.11 ± 13.97)(Xinmeng, 2023)and lower than that of patients with lung cancer (80.97 ±2.82)(Monti, 2023),This was related to the fact that Chinese people pay more attention to cancer patients, regard as cancer is the most serious disease, so society and family would give cancer patients more support than patients with other types of diseases. The results of this study showed that patients with heart disease may be more willing to accept financial and spiritual support from their family and friends when they are troubled by their disease and waiting for surgery. This result is similar to the research results of Yang et al.(2019),when patients faced the health-disease transition, taking drugs and surgical treatment not only cost money, the patient's confidence to overcome the disease and the willpower to fight the disease was also very important. Economic status was a personal factor of the transition conditions, and abundant social resources can improve the economic conditions of patients and promote the outcome of the transition, the more social support patients received, the lower their preoperative anxiety level.

Social support can help patients reduce their perceived stress and increase their confidence to actively face the disease and surgery. In this study, patients with good perceived social support greatly relieve the patients psychological pressure, alleviate the preoperative anxiety. Therefore, we should pay attention to the role of social support in preoperative anxiety of cardiac surgery, and carry out health education to improve patients' perceived social support ability, improve happiness, and reduce anxiety. In recent years, relevant scholars believe that improving the level of social support of patients is conducive to reducing the preoperative anxiety level of patients, which is of great value for reducing the occurrence of postoperative complications and rehabilitation (Sharma & Gharti,

2019).

In this study, the factor that had no significant effect on preoperative anxiety (state anxiety)was perceptions of illness severity (β=.009, *p* =.895 >.05). Pearson correlation statistics also showed no correlation between this factor and preoperative anxiety(state anxiety), and multiple regression analysis showed no significant effect on preoperative anxiety(state anxiety).Perceptions of illness severity score of adult patients before cardiac surgery was 48.20 ± 11.264, which was at a high perceived level, the results of this study were consistent with those of Jarmoszewicz and Nowicka-Sauer(2020). Illness perception is the ability of patients to analyze and interpret the current situation based on their previous illness experience , this study indicates that patients' understanding of their own disease can not reduce or increase anxiety. The subjects of this study were adult patients waiting for elective cardiac surgery. Most of these patients were chronic disease patients who had been diagnosed with heart disease for at least 3 years and had undergone medical treatment before surgical treatment, so they had a certain understanding of their disease. For patients in this study, the severity of the illness did not transform due to surgical treatment, so it did not affect the outcome of the transformation,preoperative anxiety.So, the knowledge of the disease did not affect the anxiety caused by surgery. Some patients were prepared for surgery during the treatment of the disease, and some patients were surprised by the surgical treatment. But research shows that the formation of disease awareness of individual disease prevention and treatment of all have important influence, and even affect the prognosis of patients and quality of life,therefore, perceptions of illness severity for individual disease management plays a very important role(Hernández-Palaz6n et al., 2018).

Implications for Nursing

With the improvement of living standards, more and more attention has been paid to the medical experience and psychological state of patients. For patients in cardiac surgery, nurses should not only pay attention towards perioperative treatment and nursing care , but should also pay special attention to the emotional state of patients, especially whether they are anxious or not and the factors affecting anxiety. This study found that fear of surgery, preoperative sleep quality, and perceived social

support all significantly predicted preoperative anxiety. Nurses can use these results to design effective interventions. One of the effective ways for nurses to provide more professional intervention and improve patients ’postoperative quality of life is to actively understand the preoperative psychological state of patients. The results showed that nurses could provide beneficial interventions, such as health education and psychological counseling in order to reduce patients' fear of surgery; To improve the sleep quality of patients by improving the hospital environment and creating a quiet atmosphere; Help them to obtain social support, increase perceived social support, and build confidence in the success of surgery and overcoming the disease. This study investigated and analyzed the preoperative anxiety and its influencing factors in adult patients undergoing elective cardiac surgery, and provided a basis for further experimental research design.

Contribution to nursing science

The results of this study contributed to significant reference for clinical nursing practice, nursing education and nursing research. In-depth understanding of preoperative anxiety level and its influencing factors in cardiac surgery patients would be helpful for nurses to provide better nursing and effective nursing intervention, so as to alleviate the preoperative anxiety state of patients and promote postoperative recovery. The results of this study can also be used as an important baseline data for further nursing interventions to reduce preoperative anxiety levels in cardiac surgery patients. Knowing which factors help relieve preoperative anxiety, nurse educators can use the results of this study to teach nursing students.

Limitations in this study

This study had some certain limitations:(1) This study was conducted from only one hospital. Although the hospital is a Grade A provincial hospital in Wenzhou, it may limit the generalization of the findings.(2)The measurement of preoperative anxiety is based on the data obtained from the patient's subjective feelings. It would be more valuable for nursing if there could be objective data to explain the patient's preoperative anxiety together.

Recommendation for future research

The conduct of study with experimental design to examine the effectiveness of interventions to reduce preoperative anxiety in adult patients undergoing cardiac surgery is recommended. It is recommended that multiple data collection settings should be used to approximate the generalization of the findings. In addition, this study relied on subjective data based on patient reports, therefore, it is suggested to explore on objective data such as their physiological response to explore the preoperative anxiety of patients as well.

Conclusion

This study focused on the influencing factors of preoperative anxiety in adult patients undergoing elective cardiac surgery, and found that fear of surgery, preoperative sleep quality and perceived social support had a significant impact on preoperative anxiety. This study will help nurse to apply the results to reduce preoperative anxiety in adult patients undergoing cardiac surgery.

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APPENDIX

APPENDIX A

QUESTIONNAIRE

QUESTIONNAIRE

Part I: General information

Please mark (√) in the appropriate box or write down your answers into the blank (……)

1. Age：(…) years
2. Gender: ( ) Male( ) Female
3. Place of residence:
   ( )countryside
   ( )cities and towns
4. Living with people:
   ( )spouse ( )parents
   ( )children ( )living alone ( )other
5. Education :
   ( )Illiteracy ( )Primary
   ( )junior high school ( )High school or technical secondary school
   ( )College degree or above
6. Marital status:
   ( ) Spouse marriage
   ( ) Single
   ( ) Divorced
   ( ) Widowed
7. Number of children:
   ( )one ( ) two ( ) three ( ) Four or more
8. Occupation (If you have retired) please fill in your pre-retirement career):
   ( )administrative staff
   ( )professional and technical staff
   ( )worker
   ( )farmer
   ( )other

9. Monthly household income:(…..)yuan

10. Medical insurance：

( ) Employee medical insurance

( ) Medical insurance for urban and rural residents

( ) own expense

11. Type of Heart Disease as diagnosed by the physician： (……..)

12. Type of operation： (…….)

Date of operation:(…….)

Time:(…….)

13. Are there any comorbidity diseases apart from Heart Disease:

No( )

Yes,Please specify (……)

Part II: The short chinese version of the State-Trait Anxiety Inventory (STAI)

STAI-S-6

Below are some of the most common statements people use to describe themselves. Read each one and choose based on how you feel most appropriate at the moment. "Not at all" is selected as 1, "some" is selected as 2, "moderate" is selected as 3, and "very obvious" is selected as 4. There is no right or wrong answer, don't spend too much time thinking about any one statement, but give the answer that feels best to you right now.

	Not at all(1)	Some (2)	Moderate (3)	Very obvious(4)
1. I feel comfortable				
2. …….....				
3. I feel safe				

4 ……				
5…….				
6. I'm upset				

STAI-T-6

Below are some of the most common statements people use to describe themselves. Read each one and choose based on how you feel most appropriate at the moment. "Almost never" is 1, "some" is 2, "often" is 3, and "almost always" is 4. There is no right or wrong answer, and don't spend too much time thinking about any one statement, but give the answer you "always" or "usually" give.

	Almost never (1)	Some (2)	Often(3)	Almost always (4)
1. I am content				
2. …….....				
3. I feel safe				
4. My mind is in a state of confusion				
5…….				
6. I felt my difficulties piled up so that I could not overcome them				

Part III: Surgical Fear Questionnaire (SFQ)

This scale assesses your fear of various aspects related to your upcoming surgery. Circle the number that best reflects how you feel right now：

1. I am afraid of the operation

0 1 2 3 4 5 6 7 8 9 10

not at all very

afraid afraid

2. I am afraid of the anaesthesia

0 1 2 3 4 5 6 7 8 9 10

not at all very

afraid afraid

3.....

0 1 2 3 4 5 6 7 8 9 10

not at all very

afraid afraid

4. .....

0 1 2 3 4 5 6 7 8 9 10

not at all very

afraid afraid

5.I am afraid my health will deteriorate because of the operation

0 1 2 3 4 5 6 7 8 9 10

not at all very

afraid afraid

6. I am afraid the operation will fail

0 1 2 3 4 5 6 7 8 9 10

not at all very

afraid afraid

7.I am afraid that I won't recover completely from the operation

0 1 2 3 4 5 6 7 8 9 10

not at all very

afraid afraid

8. I am afraid of the long duration of the rehabilitation after the operation 0 1 2 3 4 5 6 7 8 9 10

not at all very

afraid afraid

Part IV: The Richards-Campbell Sleep Questionnaire (RCSQ)

Please answer each question by marking an "X" on the line. Mark "X" where you think best describes your sleep last night.

1. My sleep last night was:

Light sleep (0)_____Deep sleep (100)

2.Last night, the first time I got to sleep:

Just never could fall asleep (0)_____almost immediately (100)

3.....

awake all night (0)_____ awake very little (100)

4.....

could not get back to sleep (0)_____got back to sleep immediately (100)

5.I would describe my sleep last night as:

Abad night's sleep (0)_____a good night's sleep(100)

Remarks: _____The length is 100mm

Part V:The Brief Illness Perception Questionnaire(BIPQ)

For the following questions, Please circle the number that best corresponds to your views:

1. How much does your illness affect your life?

0 1 2 3 4 5 6 7 8 9 10

no affect severely

at all affects my life

2.....

0 1 2 3 4 5 6 7 8 9 10

a very forever

short time

3.How much control do you feel you have over your illness?

0 1 2 3 4 5 6 7 8 9 10

absolutely extreme

no control amount of control

4.....

0 1 2 3 4 5 6 7 8 9 10

not at all extremely helpful

5.How much do you experience symptoms from your illness?

0 1 2 3 4 5 6 7 8 9 10

no symptoms many severe symptoms

at all

6.How concerned are you about your illness?

0 1 2 3 4 5 6 7 8 9 10

not at extremely concerned

all concerned

7.How well do you feel you understand your illness?

0 1 2 3 4 5 6 7 8 9 10

don’t understand understand very clearly

at all

8.....

0 1 2 3 4 5 6 7 8 9 10

not at all extremely affected emotionally

affected emotionally

Part VI : The Multidimensional Scale of Perceived Social Support (MSPSS)

We are interested in how you feel about the following statements, Read each statement carefully,Indicate how you feel about each statement.

Circle the "1" if you Very Strongly Disagree
Circle the "2" if you Strongly Disagree
Circle the "3" if you Mildly Disagree
Circle the "4" if you are Neutral
Circle the "5" if you Mildly Agree
Circle the "6" if you Strongly Agree
Circle the "7" if you Very Strongly Agree

1. There is a special person who is around when I am in need.	1 2 3 4 5 6 7
2. There is a special person with whom I can share joys and sorrows.	1 2 3 4 5 6 7
3.....	1 2 3 4 5 6 7
4. I get the emotional help and support I need from my family.	1 2 3 4 5 6 7
5.I have a special person who is a real source of comfort to me.	1 2 3 4 5 6 7
6.	1 2 3 4 5 6 7
7. I can count on my friends when things go wrong.	1 2 3 4 5 6 7
8.I can talk about my problems with my family.	1 2 3 4 5 6 7
9.I have friends with whom I can share my joys and sorrows.	1 2 3 4 5 6 7
10.....	1 2 3 4 5 6 7
11.My family is willing to help me make decisions.	1 2 3 4 5 6 7
12. I can talk about my problems with my friends.	1 2 3 4 5 6 7

APPENDIX B

IRB of Burapha University

สำเนา

ที่ IRB3-087/2566

เอกสารรับรองผลการพิจารณาจริยธรรมการวิจัยในมนุษย์
มหาวิทยาลัยบูรพา

คณะกรรมการพิจารณาจริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยบูรพา ได้พิจารณาโครงการวิจัย

รหัสโครงการวิจัย : G-HS047/2566

โครงการวิจัยเรื่อง : Factors predicting preoperative anxiety among adult patients undergoing cardiac surgery

หัวหน้าโครงการวิจัย : MRS.AIZHEN XING

หน่วยงานที่สังกัด : คณะพยาบาลศาสตร์

อาจารย์ที่ปรึกษาโครงการหลัก (สารนิพนธ์/ งานนิพนธ์/ วิทยานิพนธ์/ ดุษฎีนิพนธ์) : รองศาสตราจารย์ ดร.ภรภัทร เธียอุดมทรัพย์

หน่วยงานที่สังกัด : คณะพยาบาลศาสตร์

อาจารย์ที่ปรึกษาโครงการร่วม (สารนิพนธ์/ งานนิพนธ์/ วิทยานิพนธ์/ ดุษฎีนิพนธ์) : ผู้ช่วยศาสตราจารย์ ดร.ปณิชา พลพินิจ

หน่วยงานที่สังกัด : คณะพยาบาลศาสตร์

วิธีพิจารณา : ☐ Exemption Determination ☐ Expedited Reviews ☑ Full Board

BUU Ethics Committee for Human Research has considered the following research protocol according to the ethical principles of human research in which the researchers respect human's right and honor, do not violate right and safety, and do no harms to the research participants.

Therefore, the research protocol is approved (See attached)

1. Form of Human Research Protocol Submission Version 2: 6 September 2023
2. Research Protocol Version 1: 12 June 2023
3. Participant Information Sheet Version 2: 4 September 2023
4. Informed Consent Form Version 1: 4 June 2023
5. Research Instruments Version 1: 12 June 2023
6. Others (if any) Version - : -

วันที่รับรอง : วันที่ 17 เดือน กันยายน พ.ศ. 2566

วันที่หมดอายุ : วันที่ 17 เดือน กันยายน พ.ศ. 2567

สำเนา

ลงนาม ผู้ช่วยศาสตราจารย์ แพทย์หญิงรมร แย้มประทุม
(ผู้ช่วยศาสตราจารย์ แพทย์หญิงรมร แย้มประทุม)
ประธานคณะกรรมการพิจารณาจริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยบูรพา
ชุดที่ 3 (กลุ่มคลินิก/ วิทยาศาสตร์สุขภาพ/ วิทยาศาสตร์และเทคโนโลยี)

** หมายเหตุ การรับรองนี้มีรายละเอียดตามที่ระบุไว้ด้านหลังเอกสารรับรอง **

สำเนา

ผู้วิจัยทุกท่านที่ผ่านการรับรองจริยธรรมการวิจัยในมนุษย์ ต้องปฏิบัติดังต่อไปนี้

1. ดำเนินการวิจัยตามขั้นตอนต่าง ๆ ที่ระบุไว้ในโครงการวิจัยอย่างเคร่งครัด โดยใช้เอกสารชี้แจงผู้เข้าร่วมโครงการวิจัย (Participant Information Sheet) (AF 06-02), เอกสารแสดงความยินยอมของผู้เข้าร่วมโครงการวิจัย (Consent Form) (AF 06-03), แบบสัมภาษณ์ และ/หรือแบบสอบถาม รวมถึงเอกสารอื่น ๆ เช่น ใบประชาสัมพันธ์ หรือประกาศเชิญชวนเข้าร่วมโครงการ เป็นต้น ที่ผ่านการรับรองและประทับตราจากคณะกรรมการพิจารณาจริยธรรมการวิจัยในมนุษย์ มหาวิทยาลัยบูรพา แล้วเท่านั้น
2. ผู้วิจัยมีหน้าที่ส่งแบบรายงานความก้าวหน้าของการวิจัย (Progress Report Form) (AF 09-01) ต่อคณะกรรมการฯ ตามเวลาที่กำหนดหรือเมื่อได้รับการร้องขอ
3. การรับรองโครงการวิจัยของคณะกรรมการฯ มีกำหนด 1 ปี หลังจากวันที่คณะกรรมการฯ มีมติให้การรับรอง หากการวิจัยไม่สามารถดำเนินการเสร็จสิ้นภายในระยะเวลาที่กำหนด ผู้วิจัยสามารถยื่นขอต่ออายุการรับรองโครงการวิจัยอย่างน้อย 30 วัน ก่อนวันหมดอายุตามที่กำหนดไว้ในเอกสารับรองผลการพิจารณาจริยธรรมการวิจัยในมนุษย์
4. หากมีการแก้ไขเพิ่มเติมโครงการวิจัย เช่น เปลี่ยนแปลงหัวหน้าโครงการวิจัย/ เพิ่มเติมผู้ร่วมวิจัย การแก้ไขหรือเพิ่มเติมวิธีดำเนินการวิจัย การแก้ไขการสะกดคำ เป็นต้น ผู้วิจัยจะต้องยื่นขอแก้ไขเพิ่มเติมโครงการวิจัย โดยส่งแบบรายงานการแก้ไขเพิ่มเติมโครงการวิจัย (Amendment Form) (AF 08-01) ต่อคณะกรรมการฯ โดยอ้างอิงรหัสโครงการวิจัยที่ได้รับไว้ และต้องระบุรายละเอียดให้ชัดเจนว่ามีการเปลี่ยนแปลงอะไร อย่างไร และเหตุผลที่ต้องมีการเปลี่ยนแปลง ทั้งนี้ ในกรณีการเปลี่ยนแปลงหัวหน้าโครงการวิจัย/ เพิ่มเติมผู้ร่วมวิจัยท่านใหม่ให้แนบประวัติมาด้วย
5. ผู้วิจัยมีหน้าที่รายงานเหตุการณ์ไม่พึงประสงค์ชนิดร้ายแรงที่เกิดขึ้นกับผู้เข้าร่วมโครงการวิจัย ภายในระยะเวลาที่กำหนดในวิธีดำเนินการมาตรฐาน (Standard Operating Procedures, SOPs) ให้แก่คณะกรรมการฯ ตามแบบรายงานเหตุการณ์ไม่พึงประสงค์ชนิดร้ายแรง (Serious Adverse Event (SAE) Report Form) (AF 10-01)
6. ผู้วิจัยมีหน้าที่รายงานให้คณะกรรมการฯ ทราบ เมื่อมีการยุติโครงการวิจัยก่อนกำหนด หรือการระงับโครงการวิจัยโดยผู้วิจัยหรือผู้สนับสนุนทุนวิจัย พร้อมทั้งคำอธิบายเป็นลายลักษณ์อักษรโดยละเอียดถึงสาเหตุของการยุติหรือระงับโครงการวิจัย ตามแบบรายงานการยุติโครงการวิจัยก่อนกำหนด (Study Termination Memorandum) (AF 12-01)
7. ผู้วิจัยมีหน้าที่ส่งแบบรายงานการไม่ปฏิบัติตามข้อกำหนด (Non-compliance / Protocol Deviation / Protocol Violation Report) (AF 13-01) ให้คณะกรรมการฯ และผู้สนับสนุนทันทีที่ตรวจพบ หรือได้รับรายงานว่ามีการปฏิบัติที่ไม่ตรงกับขั้นตอนที่ระบุไว้ในโครงการวิจัย หรือข้อ กำหนดของคณะกรรมการฯ
8. เมื่อสิ้นสุดโครงการวิจัย ผู้วิจัยมีหน้าที่ส่งแบบรายงานสรุปผลการวิจัย (Final Report) (AF 11-01) ให้คณะกรรมการฯ ทราบ ภายใน 30 วัน หลังจากสิ้นสุดการดำเนินการวิจัย

IRB of the First Affiliated Hospital of Wenzhou Medical University

临床研究伦理委员会

温州医科大学附属第一医院临床研究伦理委员会审查批件

（Review of Ethics Committee in Clinical Research (ECCR) of the First Affiliated Hospital of Wenzhou Medical University）

受理编号 Acceptance Number：KY2023-181　批件号：临床研究伦审 Issuing Number（2023）第（181）号

项目名称 Project	基于 Meleis 转变理论对成人心脏手术患者术前焦虑的预测因素分析 Factors predicting preoperative anxiety among adult patients undergoing cardiac surgery based on Meleis Transition theory		
申办者 Applicant	温州医科大学附属第一医院	试验目的 Objective	临床科研 Clinical research
试验科室 Department	242 病区		
试验项目负责人 Principal Investigator	王珏、邢爱珍		
审查方式和时间 Form and Date	☐ 会议审查 Review Conference，时间：_____ ☑ 快速审查 Fast track，时间：2023 年 8 月 11 日		
审查地点 Review Site	新院 1-4A22 会议室		
审查材料 Documents for Review	1、医学临床科研项目及伦理审查申请表，v1.0 版； 2、临床研究方案，v1.0 版，2023.7.17； 3、受试者知情同意书，v1.0 版，2023.3.1； 4、研究者团队成员目录（职责）； 5、主要研究者、团队成员简历及 GCP 证书，v1.0 版； 6、研究者责任声明； 7、CRF/临床观察表，v1.0 版。		
审查意见 Comments	根据国家卫健委《涉及人的生物医学研究伦理审查办法》(2016)、WMA《赫尔辛基宣言》和 CIOMS《人体生物医学研究国际道德指南》的伦理原则，经本伦理委员会审查，同意该项目开展。 According to the Regulations and Rules of "Ethical Reviews for Biomedical Research Involving Human Subjects" (2016)the National Health Commission of PRC , "Declaration of Helsinki" of WMA, and "International Ethical Guidelines for Human Biomedical Research" of CIOMS , the project was**approved**by **ECCR**.		
主任委员/副主任委员签字 Signature of the **ECCR** Chair	陈学均	签发日期 Date	2023.8.14

版本日期：2021 年 06 月 21 日

温州医科大学附属第一医院临床研究伦理委员会（盖章）
Ethics Committee in Clinical Research of the First Affiliated Hospital of Wenzhou Medical University (Seal)

附注（Note）：

1. 临床研究应在批准之日起 1 年内实施，逾期未实施，本批件自行废止。临床研究过程中将接受伦理委员会的跟踪审查，审查频度为自批准之日起每 12 个月一次。（伦理委员会有权根据临床试验实际开展情况改变跟踪审查频度）
   The clinical study shall be implemented within 1 year from the date of approval. If overdue, the approval for this project shall berevoked. During the implementation of clinical research, tracking review will be conducted by **ECCR**every 12 months fromthe effective date of the initial approval (the ethics committee has the right to change the frequency of trackingreview according to the actual implementation of clinical trials)
2. 请严格遵从已批准的研究方案，如果方案修改需以书面形式报告伦理委员会。经伦理委员会批准后方可执行。
   Please strictly follow the approved research protocol. Any revisions of the protocol must be reported to **ECCR** in written form. It can be conducted only after the modification was approved by **ECCR**.
3. 发生严重不良事件以及影响研究风险受益比的非预期不良事件，须在 24 小时内报告本伦理委员会。
   Serious adverse events and unanticipated adverse events that affect the risk-to-benefit ratio of the project must be reported to **ECCR** within 24 hours.
4. 暂停、方案违背或提前终止临床研究，请及时上报本伦理委员会。
   Anysuspension, project violation or early termination of the clinical research, should be reported to **ECCR** promptly.
5. 完成临床研究，须提交研究完成报告给本伦理委员会。
   Please submit a completion research report to **ECCR** after completion of the project.

签发日期：2021 年 08 月 21 日

临床研究伦理委员会

温州医科大学附属第一医院临床研究伦理委员会委员签到表

会议时间：2023 年 8 月 11 日

会议地点：新院 1-4A22 会议室

审查内容：基于 Meleis 转变理论对成人心脏手术患者术前焦虑的预测因素分析 Factors predicting preoperative anxiety among adult patients undergoing cardiac surgery based on Meleis Transition theory

	性别	工作单位	专 业	职 称	伦理委员会职务	签到
陈容苗	男	温州医科大学附属第一医院	内分泌科	主任医师	主 任	
黄晓颖	女	温州医科大学附属第一医院	呼吸内科	教授/主任医师	副主任	
蔡雪黎	女	温州医科大学附属第一医院	心内科	主任医师	委 员	
徐 卫	男	温州医科大学附属第一医院	预防医学	副主任医师	委 员	
孙彩霞	女	温州医科大学附属第一医院	护 理	主任护师	委 员	
卢明芹	男	温州医科大学附属第一医院	感染科	主任医师	委 员	
陈 雷	男	温州医科大学附属第一医院	骨 科	教授/主任医师	委 员	
郑祥武	男	温州医科大学附属第一医院	放射影像	教授/主任医师	委 员	
林现样	男	温州医科大学附属第一医院	药 学	主任药师	委 员	
俞 康	男	温州医科大学附属第一医院	血液内科	教授/主任医师	委 员	
陈永平	男	温州医科大学附属第一医院	感染科	教授/主任医师	委 员	
张秀华	女	温州医科大学附属第一医院	临床研究中心	主任药师	委 员	
苏小芳	女	浙江震瓯律师事务所	法 律	律 师	委 员	
胡建芬	女	退 休	统计学	高级统计师	委 员	
方 禧	男	温州理工学院	伦理学	讲 师	委 员	

伦理委员会声明：

★ 温州医科大学附属第一医院临床研究伦理委员会组成及工作程序遵循中国 GCP、ICH-GCP 及相关法律法规，其审查过程不受伦理委员会以外任何组织及个人影响。

★ 本伦理委员会各委员已签署保密协议，所有标准操作规程文件、机密信息、会议记录等及其副本的所有权均归伦理委员会。

地址：浙江省温州市瓯海区南白象温州医科大学附属第一医院新院区 邮编：325000
联系电话：0577-55578055 传真：0577-55578033 E-mail:wyyyclinical@126.com

版本日期：2021 年 06 月 21 日

APPENDIX C

Permission for using questionnaires

The short Chinese version of the State-Trait Anxiety Inventory (STAI)

M ^ilQQ 邮箱
I ▼ l-x^1 I 登 Lqgon

简版问卷

发件人：陈晓宇 V17819576397@163.com>
时 间：2023 年 5 月 29 日（星期一）晚上 8:44
收件人：family of us<1130090744@qq.com>

邢同学，你好

贵代表我们课题组同意你在毕业论文中使用我们的简版问卷。目前该量表仍需实践的验证，不知道对于你想测量的是否有帮助。但请留意该问卷只 用于科研用途，不得进行任何盈利形式的活动，如果您有其他方面的应用需求，请联系相关版权方。也请尊重大家各自的工作时间和工作安排。

祝顺利

杜青芸

附件（1个）

普通附件

Short STAI （中文）-2.docx （14.35K）下载

The short Chinese version of the State-Trait Anxiety Inventory (STAI)
Sender:*Xiaoyu Chen* V17819576397@163.com>
*Time:*Monday, May 29, 2023 at 8:44 PM
Receiver:family of us<1130090744@qq.com>

Mr. Xing, hello

On behalf of our research group, we agree that you will use The short Chinese version of the State-Trait Anxiety Inventory (STAI) in your graduation thesis. At present, this scale still needs to be verified in practice, and it is not known whether it is helpful for what you want to measure. However, please note that this questionnaire is only used for scientific research purposes, and no profit-making activities are allowed. If you have other application needs, please contact the relevant copyright owner.

Best regards.

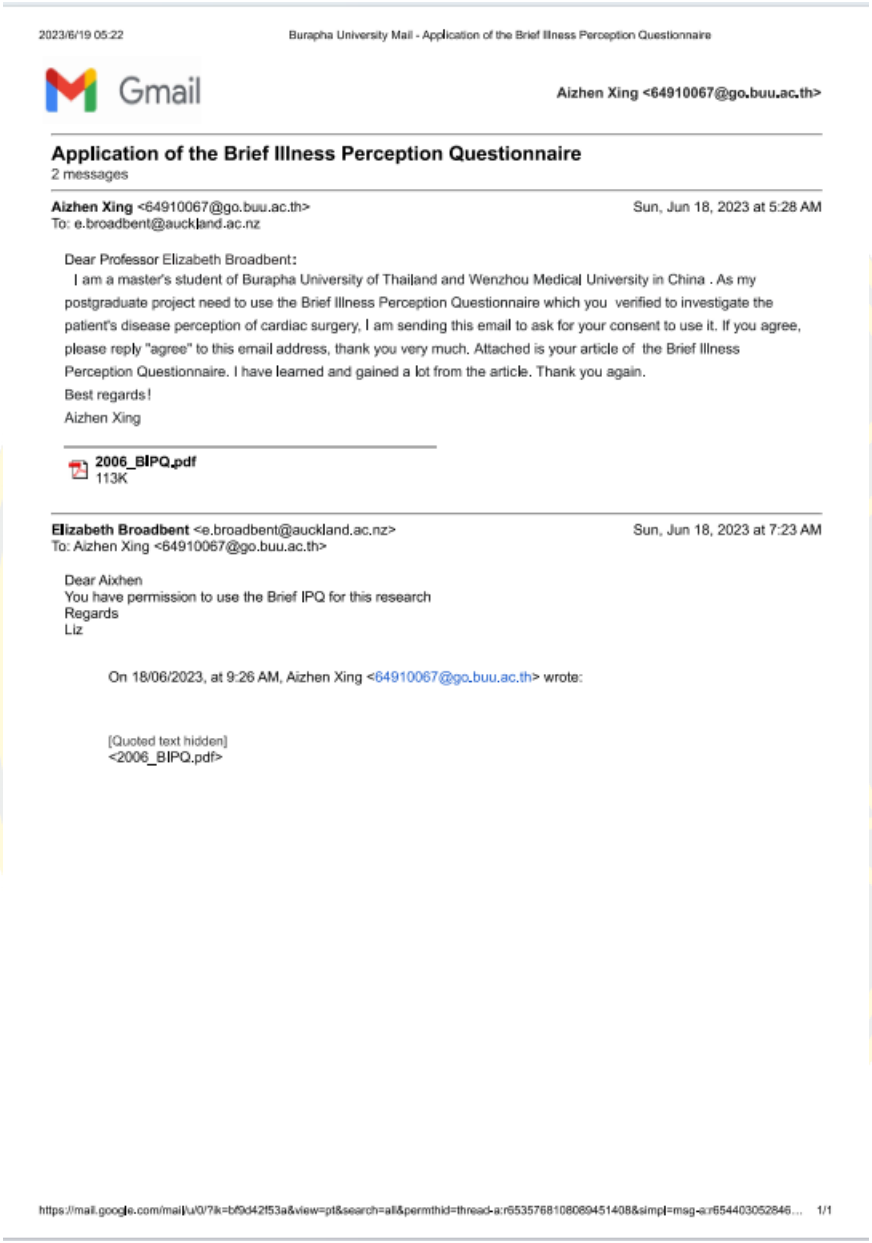
Qingyun Du

Attachment(1)

General attachment

Short STAI (Chinese) -2.docx (14.35K)

Brief illness perception questionnaire



2023/6/19 05:22 Burapha University Mail - Application of the Brief Illness Perception Questionnaire

Gmail

Aizhen Xing <64910067@go.buu.ac.th>

Application of the Brief Illness Perception Questionnaire
2 messages

Aizhen Xing <64910067@go.buu.ac.th> Sun, Jun 18, 2023 at 5:28 AM
To: e.broadbent@auckland.ac.nz

Dear Professor Elizabeth Broadbent:
I am a master's student of Burapha University of Thailand and Wenzhou Medical University in China . As my postgraduate project need to use the Brief Illness Perception Questionnaire which you verified to investigate the patient's disease perception of cardiac surgery, I am sending this email to ask for your consent to use it. If you agree, please reply "agree" to this email address, thank you very much. Attached is your article of the Brief Illness Perception Questionnaire. I have learned and gained a lot from the article. Thank you again.
Best regards!
Aizhen Xing

2006_BIPQ.pdf
113K

Elizabeth Broadbent <e.broadbent@auckland.ac.nz> Sun, Jun 18, 2023 at 7:23 AM
To: Aizhen Xing <64910067@go.buu.ac.th>

Dear Aixhen
You have permission to use the Brief IPQ for this research
Regards
Liz

On 18/06/2023, at 9:26 AM, Aizhen Xing <64910067@go.buu.ac.th> wrote:

[Quoted text hidden]
<2006_BIPQ.pdf>

https://mail.google.com/mail/u/0/?ik=bf9d42f53a&view=pt&search=all&permthid=thread-a:r6535768108089451408&simpl=msg-a:r654403052846... 1/1

Chinese version of the Multidimensional scale of perceived social support

RE: Application of the Chinese version of the Multidimensional scale of perceived social support

发件人：klchou<klchou@eduhk.hk>
时 间：2023年6月11日(星期天) 上午 9:16
收件人：family of us<1130090744@qq.com>

Agree

Attached please find the scale.

From: family of us vll30090744@qq.com>
Sent: 2023年6月M日 6:31 AM
To: CHOU, Kee Lee [APS] <klchou@eduhk.hk>
Subject: Application of the Chinese version of the Multidimensional scale of perceived social support

CAUTION: External email. Do not click links or open attachments unless you recognise the sender and know the content is safe. 警告：外來電郵。如不認識寄件者，或不確定內容是否安全，切勿按下任何連結或開啟任何附件。

Dear Professor Kee-Lee Chou:

I am a nurse in the cardiac Surgery Department of the First Affiliated Hospital of Wenzhou Medical University (My title of a professional post: Supervisor nurse), as my graduate thesis needs to investigate the dimensions of perceived social support of cardiac surgery patients in the First Affiliated Hospital of Wenzhou Medical University, I would like to use the Chinese version of the Multidimensional scale of perceived social support that you translated and verified to measure it. I am hereby sending this email, hoping to obtain your consent. If you agree, please reply"agree" to this email, and hope to get your Chinese version of the questionnaire,thank you very much! Attached is the MSPSS article that you

Chinese version of Richards ■ Campbell Sleep Scale

Re:中文敏理查兹■坎贝尔睡眠量表的应用申请

发件人：yourfriend.l23<yourfriend. 123@163.com> 时 间：2022年12月15日（星期四）下午2:11
收件人：family of usvll30090744@qq.com>

同意

在 2022-12-15 10:48:29, "family of us"<1130090744@qq.com> 写道：

尊敬的中文版理查兹■坎贝尔睡眠量表的翻译和验证作者：

您好，我是温州医科大学附属第一医院心脏夕卜科护士（职称：主管护师），我看到您的XS' Richards-Campbell sleep questionnaire: psychometric properties of Chinese critically ill patients"，详见附件，由于我研究生课题需要用到中文版的理查兹-坎贝尔睡眠量表调查心脏外科 患者的睡眠质量，特发您邮件，想征得您的同意，如果您同意，麻烦您回复“同意”至此邮箱，万分感谢。

祝身体健康，工作顺利！

温州医科大学附属第一医院，邢爱珍

附件（1个）

普通附件

中文版本RCSQ.pdf（198.83K）下载

Re:Application of the Chinese version of Richards ■ Campbell Sleep Scale

Sender:yourfriend.123<yourfriend. 123@163.com> Time:Thursday, December 15, 2022 at 2:11 PM

Agree

At 2022-12-15 10:48:29, "family of us" <1130090744@qq.com> Write:

Dear Translation and Verification of the Chinese version of Richards ■ Campbell Sleep Scale Author:

Hello, I am a nurse in the cardiac Sibu Department of the First Affiliated Hospital of Wenzhou Medical University (title: Supervisor), I see your XS'Richards-Campbell sleep questionnaire: psychometric properties of Chinese critically ill patients ", please refer to the attachment for details. As my postgraduate project requires the Chinese version of Richards-Campbell Sleep Scale to investigate the sleep quality of cardiac surgery patients, I am sending you this email. I want to get your consent. If you agree, please reply "agree" to this email. Thank you very much.

I wish you in good health and smooth work!

The First Affiliated Hospital of Wenzhou Medical University, Aizhen Xing

Attachment(1)

General attachment Chinese version RCSQ.pdf（198.83K）

Chinese version of surgical fear questionnaire

Re:求手术恐惧问卷中文版及应用

发件人：gyyangvgyyang@bjmu.edu.cn> 时 间：2022 年 12 月 14 日（星期三）晚上 11:24 收件人：family of us<1130090744@qq.com>

邢老师您好！

感谢您对我们翻译量表的兴趣。我代表我们的翻译团队授权您在相关的研究中使用该量表。根据我们与量表原作者的协议，您获得翻译团队或原作 者的许可均可以在非商业用途时免费使用该量表的中文版（原作者手中也有我们翻译的中文版）。

请您注意，该授权仅许可您在当前的研究中使用该量表。您不应该将该量表再授权或免费分发给其他研究者用于其他研究。任何研究者想要获取该 量表都应该获得量表原作者或者本团队的授权。

附件是该量表《手术恐惧量表中文版》，请您查收。为让您更好地了解该量表的相关心理学特征，我们随附了该量表的原作者以及翻译者发表的论 文，请您查阅。

谢谢！

杨国勇
YANG Guoyong
MSN (PKU), RN, CNOR

Head Nurse of PACU

Department of Oral and Maxillofacial Surgery

Peking University School and Hospital of Stomatology
Beijing, 100081
P. R. China
gyyang@bjmu.edu.cn
yang.guoyong@ 163 .com

— “原始邮件… “
发件人:"family of us" <1130090744@qq.com>
发送时间:2022-12-14 21:08:05（星期三）
收件人：gyyang <gyyang@bjmu.edu.cn>
抄送:
主题：求手术恐惧问卷中文版及应用

尊敬的杨国勇护士长：

您好，我是温州医科大学附属第一医院心脏外科的护士（职称：主管护师），由于我的研究生课题需要调查心脏夕卜科患者的手术恐惧水平，想使用您翻译并验证的中文版的手术恐惧问卷（the Surgical Fear Questionnaire）,特发您邮件，想征得您的同意，若您同意我使用，麻烦您回复‘‘同意〃至此邮箱，另外，我在网络上较难找到中文版的手术恐惧问卷调查表，您方便发我一份吗？万分感谢！

Re: Application of the Chinese version of surgical fear questionnaire

Sender:gyyangvgyyang@bjmu.edu.cn> Time:December 14, 2022 (Wednesday) at 11:24 PM Receiver:family of us<1130090744@qq.com>

Hello, Mr. Xing!

Thank you for your interest in our translation surgical fear questionnaire scale. On behalf of our translation team, I authorize you to use this scale in your relevant research. In accordance with our agreement with the original author of the Scale, you can use the Chinese version of the scale free of charge for non-commercial use with the permission of the translation team or the original author (the original author also has the Chinese version translated by us) .

Please note that this license only grants you permission to use the scale in your current study. You should not sublicense or distribute the scale free of charge to other researchers for other studies. Any researcher who wishes to obtain the scale should obtain authorization from the original author or the team.

Attached is the Chinese version of the Fear of Surgery Scale, please check. In order to give you a better understanding of the relevant psychological characteristics of the scale, we have attached the paper published by the original author and the translator of the scale for your reference.

Thank you!

Guo-Yong Yang
YANG Guoyong
MSN (PKU), RN, CNOR

Head Nurse of PACU

Department of Oral and Maxillofacial Surgery

Peking University School and Hospital of Stomatology
Beijing, 100081
P. R. China
gyyang@bjmu.edu.cn
yang.guoyong@ 163 .com

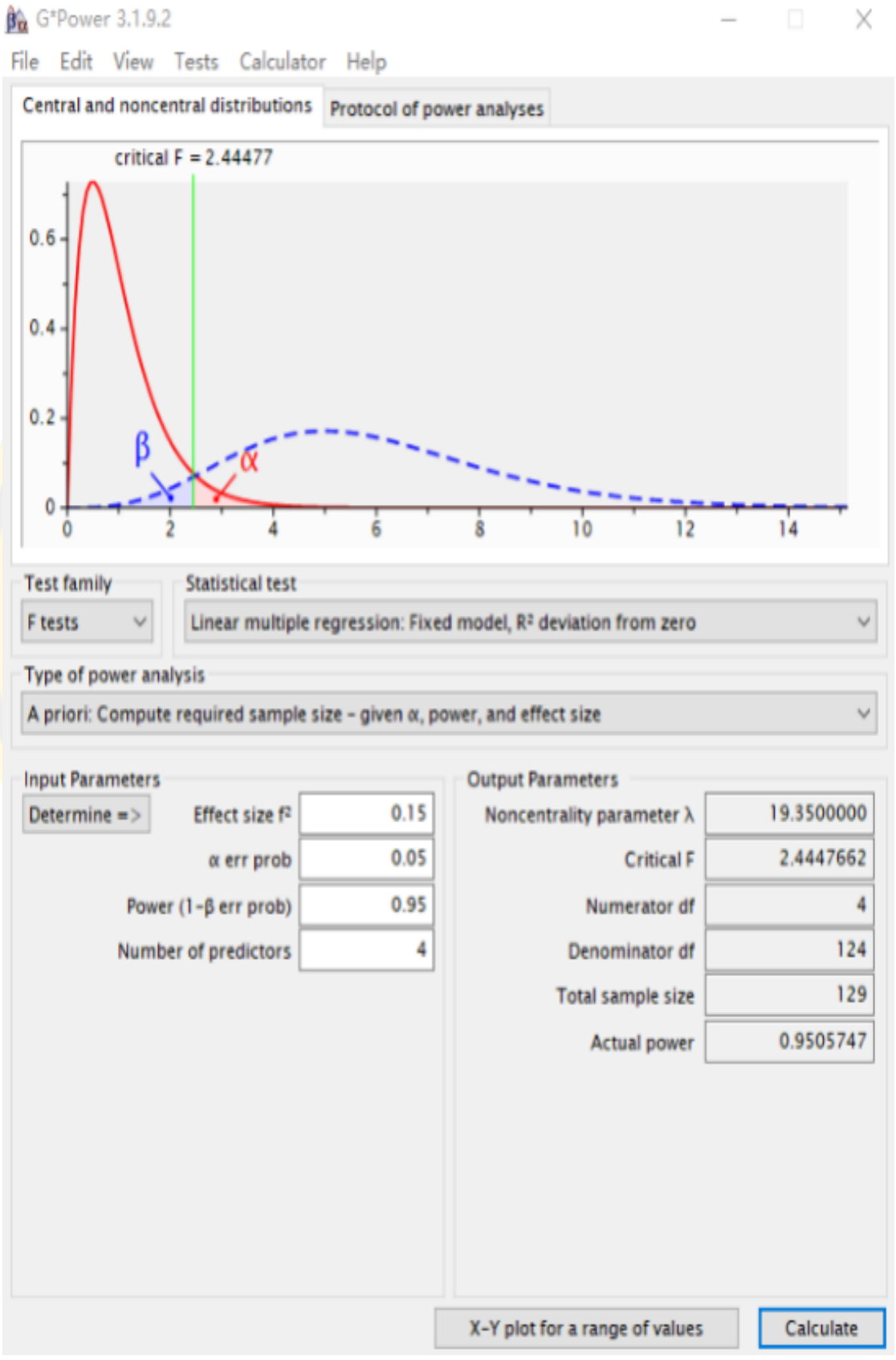
—"original mail…"

Sender:"family of us" <1130090744@qq.com>
Sendtime :2022-12-14 21:08:05 (Wed)
Receiver:gyyang <gyyang@bjmu.edu.cn>
Send a duplicate to:

Topic: Chinese version of Fear of Surgery questionnaire and its application

APPENDIX D

Sample size calculation


G*Power 3.1.9.2
File Edit View Tests Calculator Help
Central and noncentral distributions
Protocol of power analyses
critical F = 2.44477
0.6
0.4
0.2
0
β
α
0 2 4 6 8 10 12 14
Test family
F tests
Statistical test
Linear multiple regression: Fixed model, R² deviation from zero
Type of power analysis
A priori: Compute required sample size – given α, power, and effect size
Input Parameters
Determine =>
Effect size f²
0.15
α err prob
0.05
Power (1–β err prob)
0.95
Number of predictors
4
Output Parameters
Noncentrality parameter λ
19.3500000
Critical F
2.4447662
Numerator df
4
Denominator df
124
Total sample size
129
Actual power
0.9505747
X-Y plot for a range of values
Calculate

BIOGRAPHY

NAME	Aizhen Xing
DATE OF BIRTH	18 September 1990
PLACE OF BIRTH	China
PRESENT ADDRESS	Wenzhou city,Zhejiang province,China
POSITION HELD	Nurse