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Challenges faced by cardiac patients prior to coronary artery bypass grafting: a qualitative study

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Abstract

Background Coronary artery bypass grafting (CABG) is one of the most effective treatments for improving the quality of life in patients with severe coronary artery disease. However, these patients face multiple challenges prior to surgery. This study aims to elucidate the challenges faced by cardiac patients before CABG.

Methods This qualitative study used a conventional content analysis approach. Data were obtained from 26 interviews with 23 individuals, including patients and their families, physicians, and nurses from hospitals in Bushehr and Hamadan, selected through purposive sampling. Data were collected through semi-structured interviews over ten months and analyzed using MAXQDA20 software.

Results A total of 575 initial codes were extracted from the interviews and categorized into 16 subcategories based on similarities and differences. After reviewing and comparing the subcategories, five main categories of challenges faced by cardiac patients prior to coronary artery bypass surgery were identified and conceptually named. These categories included psychological and social stress during the waiting period, financial resource management for treatment, quality of information and communication, heightened need for belonging, and spirituality.

Conclusions Patients prior to coronary artery bypass grafting encounter psychological, financial, social, and spiritual challenges. A precise understanding of these challenges and the provision of psychological and social counseling to patients and their families, financial support and facilitation of treatment costs, improvement of information quality and communication between patients and the healthcare team, strengthening emotional support from family and friends, and attention to patients' spiritual needs by the healthcare team can facilitate decision-making and enhance the quality of life and surgical outcomes.

Keywords Coronary artery bypass, Preoperative care, Preoperative period, Decision-Making, Qualitative research

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Introduction

Coronary artery disease is the most common cause of morbidity and mortality worldwide, placing a significant financial burden on individuals, families, and society [1, 2]. According to the World Heart Federation (WHF), in 2021, cardiovascular disease-related deaths exceeded 20.5 million [3]. In Iran, this disease is highly prevalent and is the leading cause of death [4]. Coronary artery bypass grafting (CABG) is recognized as one of the best treatments for alleviating symptoms and improving the quality of life in patients with severe coronary artery blockages [5, 6]. Annually, over one million CABG surgeries are performed worldwide, with approximately 200,000 of these occurring in the United States [7, 8]. This surgery is particularly common in countries with advanced healthcare systems and access to complex surgical care [9].

The necessity of undergoing CABG surgery has a profound impact on the lives of patients in the preoperative stage, often resulting in feelings of fear, anxiety, depression, and even shock [10–12]. These anxiety and depression symptoms can persist after surgery, leading to a decrease in patients' psychosocial functioning. Additionally, nearly half of patients have trouble in adjusting to life after heart surgery. Candidates for coronary artery bypass surgery go through one of the most challenging periods of their lives. This extraordinary experience affects all aspects of their lives and emotions, presenting them with numerous challenges [13]. Successfully navigating the preoperative period can positively affect surgical outcomes and patients' quality of life. Proper psychological and physical preparation, reducing anxiety and stress, and receiving social and emotional support during this stage can help improve patients' mood and self-confidence, facilitating decision-making regarding surgery. Conversely, if this period is not managed properly, fear and anxiety may increase, leading to a decrease in the patient's ability to accept and comply with the treatment process. This situation can negatively impact patients' quality of life after surgery and even the surgical outcomes, making the recovery period more challenging [12–14].

In their phenomenological study, Kathania et al. (2021) focused on understanding patients' perceptions of CABG surgery during waiting. They identified two main themes: "patients' understanding of the surgery" and "insufficient information about the procedure." Patients emphasized that waiting for CABG surgery is a complex and stressful experience, as they spend a lot of time thinking about their concerns and anticipating threats. The findings suggest that patients in this period have unique attitudes towards the disease and surgery, which require more attention and support from healthcare providers [14].

In a study by Iryanidar et al. (2023), two key themes were found in patients preparing for CABG: "preoperative patient stress" and "the influence of social support on adaptation." The research indicated that patients facing surgery often experience heightened stress, primarily due to concerns about the procedure itself [15]. In a qualitative analysis conducted by Mccann et al. (2023), the focus was on the difficulties encountered by individuals post-heart surgery. The objective was to pinpoint factors that could predict anxiety and psychological stress in these patients, with "the importance of preoperative education" and "cardiac rehabilitation" emerging as the main themes. This study underscores the significance of recognizing preoperative challenges, the necessity of education and support, and the impact of these elements on patients' psychological well-being [16]. van Dieën et al. (2024) conducted a qualitative phenomenological study examining the experiences and perceptions of elderly patients and their caregivers before heart surgery. The main themes of the study included "patients' daily functioning," "social expectations of caregivers," and "existential uncertainty," highlighting the challenges perceived by patients and their families before surgery. This study emphasizes the importance of paying attention to the experiences and concerns of patients and their caregivers in the decision-making process [17].

In general, undergoing CABG for patients is a complex and multifactorial process influenced by the level of healthcare knowledge, family support, proper interaction with the healthcare team, and each country's cultural, political, and economic backgrounds. Previous studies on CABG surgery have primarily focused on patients' general perceptions and preoperative stress. However, these studies have not comprehensively examined the barriers and facilitators in the decision-making process for CABG surgery across different cultural and healthcare contexts [14–17]. Conducting qualitative research will lead to a deeper understanding of the challenges faced by cardiac patients before undergoing CABG surgery. This research is of particular importance in Iran. Iran's social, cultural, and economic conditions may have unique impacts on patients' experiences that have not been fully examined in previous studies. Each individual's perception of reality is shaped based on their experiences; therefore, researchers can only understand the meaning of a phenomenon from their perspective by entering the world of individuals' experiences [18–20].

The decision-making process for undergoing surgery is influenced by interactions with others and is context-dependent, shaped by the experiences of the target community. Consequently, quantitative studies often fail to accurately capture the associated challenges. Additionally, no similar research has been conducted in this field in Iran. This study addresses a central research question:

What challenges and barriers do patients with coronary artery obstruction encounter during the preoperative period when deciding to undergo CABG surgery, and what factors facilitate this decision? Consequently, the study aims to identify both the barriers and facilitators in the decision-making process for CABG surgery.

Methods

Study design

This qualitative study employed a conventional content analysis approach to examine the challenges faced by cardiac patients prior to CABG. Conventional content analysis is a method used to interpret textual content through systematic coding and identifying themes or patterns. This approach is particularly useful for extracting meaningful and deep patterns from patients' experiences, making it practical for exploring challenges related to the preoperative period of CABG [21].

Study setting

The study took place in 2024 at the Heart Hospital of Bushehr and the Farshchian Heart Center in Hamadan, Iran. The selection of two centers with different geographical locations was aimed at maximizing sample diversity and enhancing the transferability of the findings. These two facilities are well-known for their specialized care and treatment of patients requiring CABG surgery. They were chosen for their extensive experience in treating cardiac patients and their ability to reach the target population effectively.

Participants

In this study, the patients were the main participants; however, including doctors and nurses could enhance the richness of the information and help confirm or challenge the statements made by the patients. Due to their professional experience and ongoing observation of patients in various conditions, healthcare professionals can identify factors that patients may not be able to fully articulate. Also, the family members of the patients were pivotal figures, playing a critical role in directly interacting with the patients. They were instrumental in identifying, managing, and resolving the challenges of the preoperative period. Their involvement significantly enriched the data collected. The experiences of these individuals were also incorporated into the analysis. The participants in this study included 23 individuals (14 men and 9 women) consisting of patients (pre- and post-CABG surgery), family members of patients, nurses, and heart doctors who were selected through purposive sampling. Patients in the post-operative phase of coronary artery bypass surgery were also included in the study due to their ability to recall and share their experiences from the pre-operative period. These individuals, who have gone through the waiting stage before surgery, can provide valuable insights into the challenges, concerns, and needs they faced at that time.

The inclusion criteria for the study were as follows: patients diagnosed with coronary artery obstruction who require CABG surgery and are in the preoperative stage or have undergone the surgery within the last three months, willingness to share experiences, proficiency in the Persian language, adequate auditory, speech, and cognitive abilities, and having undergone elective surgery. Exclusion criteria included emergency conditions during the interview leading to inability to continue cooperation, unwillingness to continue the interview, and reluctance to use information after the interview. Participants were purposively selected based on gender, age, educational levels, patients who had undergone surgery, patients undergoing pre-surgery procedures, hesitant patients, patients who had declined surgery, and different ethnicities to ensure maximum diversity in data collection. Sampling continued until data saturation was reached. To enrich the data, interviews were also conducted with individuals highly experienced in the subject, such as nurses, doctors, and family members of patients.

Patients participating in the study were asked to share their experiences regarding the factors that influenced their decisions to proceed with, postpone, refuse surgery, or change hospitals for their CABG surgery. They were asked to discuss their experiences regarding both the facilitating factors and the obstacles in their decision-making process.

Data collection

Data were collected through semi-structured interviews until data saturation was achieved. Saturation occurred after 20 interviews. To confirm this, three additional interviews were conducted, which verified that saturation had indeed been reached, as the new data did not introduce any novel information to the existing categories or subcategories, nor did any new codes or concepts emerge. Patient interviews were conducted face-to-face in private rooms at hospitals in Bushehr and Hamadan to provide participants with a calm, safe, distraction-free environment. Interviews with surgeons and nurses were also held in hospital conference rooms to maintain privacy and focus on the topic. Each interview lasted between 35 and 55 min. Prior to the interviews, informed written consent was obtained from participants, and the study's objectives and privacy measures were thoroughly explained. Participants consented to have their interviews audio-recorded. The data collection process was conducted over a period of ten months, from January to October 2024.

The main researcher conducted all the interviews, starting with warm-up questions to create a comfortable

atmosphere for discussion. For example, patients were asked, "Can you please introduce yourself and share a little about your background?" The interviews then transitioned to a general question directed at the patients: "Please describe your experiences from the moment you learned you needed CABG until the surgery." Based on the patients' responses, additional questions were posed, including: "What concerns did you experience during this period?" "What role did family, friends, and the healthcare team play during this transition?" "What information did you receive about the surgery and the subsequent processes, and was this information sufficient and helpful?" "What expectations did you have from the healthcare team and the health system during this time, and were those expectations met?" and "What factors influenced your decision-making?" Follow-up questions were also asked as needed to clarify the patients' responses, such as, "What do you mean by that?" "Can you provide an example?" or "Could you elaborate further?"

Data analysis

The recorded interviews were transcribed accurately and then transferred to MAXQDA 20 software to facilitate data management. Data analysis was conducted concurrently with data collection using the conventional qualitative content analysis method that Hsieh [22], Shannon, Erlingsson [23], and Brysiewicz described. This method involves inductive coding of the data and extracting main categories from the raw data.

In the first phase of the study, the transcribed texts were carefully read to gain an overall understanding of the content. The text was then divided into smaller parts (i.e., semantic units) for further analysis.

In the next stage, open coding was conducted, during which meaningful units were labeled concisely and compactly without affecting the content of the text. Each meaningful unit was assigned a specific code (descriptive or interpretive). After open coding, the codes were categorized by comparing their differences and similarities into subgroups. These subgroups were then grouped and summarized into categories with similar themes. This process allowed for a deeper identification and analysis of main themes and patterns, providing researchers with a better understanding of the challenges faced by patients and their impact on the decision-making process before surgery.

Rigor (Trustworthiness)

Lincoln and Guba's criteria, which include credibility, dependability, confirmability, and transferability, were applied to verify the trustworthiness of the results [24].

The credibility of the data was established through long-term engagement with the study topic by researchers and validation of the consistency of themes and categories extracted from the study with the experiences of 4 participating patients. To enhance dependability, a limited review of research literature in this field was conducted at the beginning of the study to prevent researchers' bias in the data analysis process, and themes and categories were extracted from participants' statements. Confirmability was ensured through note-taking, peer review, and data re-examination. Transferability was established by comparing the study findings with the experiences of 3 non-participating patients and involving patients. Family members of diverse ages, genders, educational backgrounds, surgical and non-surgical cases, and direct quotes and examples from the data were provided [25].

Results

The study ultimately included a total of 23 participants. This cohort consisted of 16 patients, with a mean age of 61 years (±9.67), in addition to 2 family members, 2 nurses, and 3 physicians. Detailed demographic characteristics of the participants are presented in Table 1.

The present study aims to elucidate the challenges faced by cardiac patients before coronary artery bypass grafting (CABG). The initial coding resulted in 575 primary codes, which were classified based on their similarities and differences, leading to the creation of 16 subcategories. Upon further review and comparison of the subcategories, 5 categories were identified and were conceptually and abstractly named according to their nature (Table 2). These categories include (1) Psychological and Social Stresses during the Waiting Period (2) Financial Resource Management in Treatment (3) Quality of Information and Communication (4) Highlighting the need to belong (5) Spiritualism.

Category 1: psychological and social stress during the waiting period

This category refers to the psychological and social pressures experienced by heart patients during the waiting period for CABG surgery. These patients endure significant psychological stressors such as anxiety, stress, depression, fear, distrust, and social isolation, which can severely impact their decision-making regarding surgery. Severe anxiety may lead to fear of surgical complications and uncertain outcomes, causing patients to hesitate and postpone treatment actions. Depression can also result in reduced motivation and energy necessary for pursuing treatment, making it more challenging to comprehend the benefits of surgery. Distrust in the healthcare team and local systems can diminish the ability to concentrate and analyze information, leading to concerns about the quality of life after surgery. Additionally, feelings of social isolation and withdrawal from social activities may

Table 1 Demographic characteristics of participants

Group	Characteristic	Details
Patients	Gender	10 males and 6 females
	Age	37 to 78 years (Mean ± SD 61 ± 9.67 years)
	Marital Status	2 single, 19 married, and 2 divorced
	Education Level	From 5th grade to bachelor's degree
	Length of Stay in hospital	7 to 35 days (Mean ± SD 10.56 ± 6.74 days)
	Number of Admissions in hospitals	1 to 8 times (Mean ± SD 2.81 ± 1.72 times)
	Insurance status	12 patients had insurance, while 4 patients were uninsured.
	Supplementary insurance status	Only 4 of the patients had supplementary insurance:
	Ward	4 in ICU, 6 in Cardiac Rehabilitation Clinic, 2 in Angiography, 2 in Cardiology, 2 in CCU
	Place of Residence	9 urban and 7 rural
	Occupation	5 employees, 4 homemakers, 6 retired
	Household monthly income	7 to 20 million Tomans (Mean ± SD 11.81 ± 3.15 million Tomans)
Family	Gender	1 male and 1 female
	Education	Bachelor's degree and diploma
	Age	31 and 45 years (Mean ± SD 38.00 ± 9.90 years)
	Occupation	Employee and housewife
	Marital Status	Single and married
Nurses	Gender	2 females
	Education	Bachelor's degree
	Work Experience	16 and 18 years
	Age	42 to 44 years
	Marital Status	Married
Doctors	Gender	3 individuals including 2 cardiac surgeons and 1 cardiologist
	Work Experience	23 years, 14 years, and 20 years
	Marital Status	Married
	Age	48 to 59 years

Table 2 Themes and categories derived from data analysis

Category	Subcategory	Frequency of Codes
Psychological and Social Stress During the Waiting Period	Fears and Psychological Concerns Before Surgery	45
	Social Isolation and Decreased Support	49
	Distrust in the Healthcare Team and Local Systems	33
	Concerns About the Impact of Surgery on Quality of Life	32
Financial Resource Management in Treatment	Economic Pressures from Treatment Costs	55
	Concerns About Financial Future and Disability	38
	Concerns About Insufficient Insurance Coverage	29
Quality of Information and Communication	Previous Positive and Negative Experiences with Hospitals and Treatment	34
	Communication Issues and Lack of Coordination in the Healthcare Team	36
	Lack of Sufficient Information about the Surgical Process and Complications	31
Highlighting the need to belong	Need for Emotional Support from Family and Friends	35
	Importance of Social Support in Surgical Decision-Making	32
	Impact of Social Support on Patients' Mental Well-Being	35
Spiritualism	Coping with Death Anxiety	30
	Utilizing Spirituality and Religion for Stress Reduction	33
	Spiritual Support from Family	28

reduce emotional and social support, which is essential for coping with stress and anxiety before surgery. The reduction of this support places further psychological pressure on patients, negatively affecting their decision-making quality, psychological readiness for surgery, and, ultimately, the treatment outcome.

Fears and psychological concerns before surgery

Fears significantly affect the attitudes and mental states of patients. This subcategory includes two sections: anxiety and general concerns, as well as fear of postoperative complications. It refers to the severe anxiety patients experience before surgery. Patients may fear the unknown outcomes of the surgery, the possibility of death, and related complications. These concerns can lead to insomnia, severe anxiety, and decreased concentration, making decision-making about the surgery challenging. Fear of postoperative complications can also affect the patient's quality of life, causing them to be more cautious in their daily activities.

For instance, a 58-year-old patient stated:

"When I heard I needed heart surgery, it was very distressing. I was afraid of the potential complications after the surgery and whether it would be successful. These worries caused my insomnia, and I couldn't even sleep well for a single night." (Patient 5).

Also, one patient stated:

"I was constantly worried about whether I would survive the surgery and how my life would change afterward" (Patient7).

Social isolation and decreased support

This refers to the feelings of loneliness and reduced social interactions that patients experience during this critical period. Due to their worries and anxieties related to surgery, patients may withdraw from social activities and have less contact with friends and family. This isolation can lead to a decrease in emotional and social support, which is crucial for coping with stress and anxiety before surgery. Patients might feel that others cannot fully understand their situation, increasing their loneliness. Additionally, they may hesitate to ask for help and support due to concerns about the emotional and financial burden they place on their family and friends. This lack of social support can negatively affect their mental health, increasing their anxiety and stress.

A 48-year-old man expressed:
"My family was always there for me, but I often felt lonely. I felt like there was no doctor, nurse, or someone who could come and say what my pain was, or what I should do" (Patient 13).

Distrust in the healthcare team and local systems

Patients' distrust of local healthcare systems may lead them to prefer larger medical centers. This distrust often stems from insufficient information medical teams provide, a cultural tendency to seek treatment in bigger cities or dissatisfaction with the quality of available services. Consequently, patients may feel uncertain about undergoing surgery. This distrust can heighten feelings of insecurity and worry and reduce their cooperation in treatment, creating additional challenges in their care.

A 59-year-old man said:

"Despite my inner desire, my family insisted that I go to a hospital in a larger city because of the cultural belief in our town that larger hospitals are better" (Patient14).

Concerns about the impact of surgery on quality of life

Patients are concerned about the impact of surgery on their daily activities, work, and social interactions. These worries stem from uncertainty about the outcomes of the surgery, possible side effects, and the recovery process. Patients are especially anxious about how these changes will affect their regular routines, causing feelings of vulnerability and insecurity. These concerns can hinder their motivation to resume normal activities post-surgery, potentially prolonging their recovery and resulting in feelings of depression and helplessness.

For example, a 63-year-old woman expressed:

"I am concerned that following the surgery, I may struggle to complete my daily activities. My biggest fear is not being able to resume my usual routine, and these concerns have greatly impacted my overall well-being and mood." (P15).

Category 2: financial resource management in treatment

Financial resource management in healthcare refers to planning and controlling the costs associated with medical care, which is particularly crucial in CABG. Financial challenges include economic pressures from treatment costs, concerns about future financial stability and disability, and insufficient insurance coverage. These pressures can deter patients from accepting necessary treatments and increase their financial insecurity.

Concerns about financial stability and potential disability can deter patients from opting for surgery, especially when they have insufficient insurance coverage, which increases their financial strain and mental stress. Financial assistance to alleviate these worries can empower patients to make informed decisions and stay committed to their treatment. Proper financial management not only influences patients' recovery but also significantly enhances their overall well-being.

Economic pressures from treatment costs

Economic pressures stemming from treatment costs are a primary concern for patients, significantly affecting their financial situation, especially given the high expenses of surgery and treatment. This issue becomes particularly problematic for patients who cannot return to work after treatment, as they must manage medical and living expenses. These financial challenges can lead to feelings of insecurity and stress, influencing their decision-making regarding surgery. Such worries may not only discourage patients from proceeding with surgery but can also negatively impact their recovery process, presenting additional challenges in their treatment.

One participant experiencing these pressures explained:

> *"The news of needing open-heart surgery filled me with fear and anxiety. The prospect of the surgery itself was daunting, but what really weighed on my mind was the exorbitant cost of the procedure and subsequent treatment. To make matters worse, the realization that I would be unable to work and earn income during my recovery added to my financial stress. Balancing these financial burdens with everyday living expenses made the situation even more challenging. (Patient3)".*
> *One family member commented on the financial situation:*
> *"We tried to be there for him emotionally, but the financial burden was overwhelming, and we didn't know how to help him cope with his fears" (Patient's family1).*

The heart surgeon said:

> *"Some patients back out of the decision to undergo surgery as soon as they hear about the treatment costs". (Heart surgeon1)*

Concerns about financial future and disability

This subcategory addresses patients' worries regarding the impact of surgery on their work status and financial future. Many patients fear that they may not be able to return to work after the procedure, leading to potential disability and a decrease or loss of income. This concern is particularly pronounced among those responsible for supporting their families. The fear of not being able to meet living expenses and facing financial difficulties increases stress and anxiety, which can adversely affect patients' mental health. These psychological pressures can diminish patients' confidence and impair their ability to make rational decisions regarding surgery. Consequently, patients may delay or even forgo surgery due to fears about their financial future and disability, jeopardizing their quality of life, prognosis, and recovery.

Concerns about insufficient insurance coverage

This subcategory focuses on patients' insurance challenges in covering surgical costs. In many cases, health insurance does not fully cover expenses, forcing patients to seek alternative resources to pay for their treatment, which adds further financial strain. They may need to explore options like borrowing from friends and family or taking out loans. This financial challenge not only impacts their decision-making regarding surgery but may also lead to delays in treatment or even opting out of surgery altogether. Such financial pressures can disrupt patients' logical decision-making processes and expose them to more difficult circumstances.

One participant who was hesitant about heart surgery stated:

> *"After undergoing heart surgery, my employer doubts my ability to carry out strenuous tasks as a laborer. However, my insurance claims I can resume work in six months and will not receive disability benefits. I find myself caught in a dilemma between my employer and the insurance company, fearing that termination from my job could leave me without income and in a financial predicament." (Patient4).*

Category 3: quality of information and communication

During the waiting period for surgery, patients face numerous questions and uncertainties about the treatment process and its potential complications. A lack of adequate information and insufficient communication with the healthcare team can profoundly affect patients' experiences and decision-making. This category is divided into three main subcategories:

Previous positive and negative experiences with hospitals and treatment

Patients' past experiences, whether positive or negative, can significantly influence their attitudes toward the new treatment process. Those with positive surgical or treatment histories approach subsequent procedures more confidently. Conversely, patients with negative experiences may feel fear and anxiety, leading to hesitation in their decision-making. Positive past experiences often enhance patients' motivation and willingness to trust their healthcare team. In contrast, negative experiences can create confusion and distrust toward medical professionals, adversely affecting their mental well-being.

For instance, one participant shared:

> *"At first, I didn't know whether to undergo the surgery or where to have it done. However, after talk-*

ing to a friend who had coronary bypass surgery at our local hospital and hearing about their positive experience, I felt more confident about my decision" (patient 11).

Communication Issues and Lack of Coordination in the Healthcare Team.

Communication and lack of coordination within the healthcare team refer to conflicting responses and disagreements among medical and nursing staff. These challenges can lead to patient confusion and a sense of uncertainty regarding their treatment process. Patients may feel frustrated by inconsistent answers to their questions, which can draw attention to the disorganization and communication weaknesses within the healthcare team. This lack of coordination can result in increased stress and anxiety for patients, creating a sense of insecurity. Consequently, patients may hesitate in making decisions related to their treatment and *distance themselves from trusting their healthcare team.*

A 63-year-old man said:

"When I asked the nurses about the surgery, each of them gave me different answers. One suggested having the surgery here, another recommended going to Shiraz, one said a particular doctor was good, while another claimed that doctor wasn't reliable at all. This really left me feeling confused." (Patient 6).

Lack of sufficient information about the surgical process and complications

It refers to the lack of clarity and transparency in providing medical information to patients. This challenge can lead to increased confusion and fear of the unknown in patients. Patients typically want to know the details of the surgery, including its benefits, risks, and side effects, and a lack of this information can cause anxiety and feelings of insecurity. This lack of information can affect patients' decision-making and make them doubt their treatment choices. Not knowing the details and consequences of the operation and the lack of clear information about the complications after the surgery may lead to the aggravation of fears and worries.

One of the nurses stated regarding this matter:

"Many patients come to us with a lot of anxiety, and we try to reassure them, but sometimes the lack of clear communication from the medical team makes it harder for them to trust us" (Nurse2).

Category 4: highlighting the need to belong

The study focuses on understanding the needs and worries of patients when it comes to receiving social and emotional support, particularly before surgery. It highlights the significance of strong human connections and a feeling of belonging to loved ones during the pre-surgery phase. This section demonstrates how emotional support can significantly alleviate the anxiety and stress patients may experience when deciding to proceed with surgery. Patients in the preoperative phase greatly benefit from the presence and support of their family members to help them navigate these difficult times. These supports not only help reduce concerns about surgery but are also effective in strengthening patients' self-confidence and decision-making quality. In the following, the subcategories related to this class, including "the need for emotional support from family and friends," "the importance of social support in deciding on surgery," and "the impact of social support on the patient's mental state will be discussed."

Need for emotional support from family and friends

This subcategory emphasizes the importance of emotional support from family and friends during the critical pre-surgical period. Patients often face intense feelings of anxiety and fear, and having loved ones as a source of comfort and strength can significantly aid in managing these challenges. From the patient's perspective, this support creates a safe and reassuring environment, allowing them to express their emotions and cope with their worries more effectively. The need for emotional support is particularly pronounced before surgery, as patients seek emotional closeness and guidance from their loved ones.

This type of support can effectively alleviate anxiety and fear surrounding surgery. Additionally, after the surgery, this support aids in a quicker recovery and assists patients in navigating postoperative difficulties. The sense of belonging and love from loved ones enhances their resilience and motivation.

One participant, a 54-year-old woman, explained:

"Discovering that I required open-heart surgery was a frightening experience. My family's unwavering support gave me the strength and comfort I needed to navigate this challenging period. I am grateful for their presence during this difficult time. "(Patient 10).

Importance of social support in surgical decision-making

This subcategory highlights the impact of social support on patients' decision-making processes regarding surgery. In the preoperative period, patients often face uncertainty and doubt about undergoing procedures such as coronary artery bypass surgery, necessitating the companionship and support of their loved ones. Social support plays a crucial role in clarifying this path for them. From the patients' perspective, consultation and support from family, friends, and healthcare professionals are

valuable sources of information and reassurance, facilitating more confident and effective decision-making.

This social support remains vital post-surgery, helping patients cope with the consequences of surgery and their new circumstances and alleviating feelings of loneliness and uncertainty.

A 64-year-old man said:
"I was very hesitant about whether to have the surgery or not, but the conversations and support from my family helped me make the final decision. They assured me that no matter what happens, they will be there for me" (Patient 9).

Impact of social support on patients' mental well-being

This subcategory examines the effects of social support on patients' mental health, demonstrating a direct correlation between social support and their psychological well-being. Patients report that the presence and support of loved ones can significantly reduce fear, anxiety, and stress, fostering feelings of security, confidence, and strength. Such support creates a safe emotional network that assists patients during challenging times. After surgery, continued support encourages patients to navigate their recovery process with hope and confidence. This support accelerates healing, enhances quality of life, and reduces feelings of loneliness and isolation.

A 48-year-old man stated:

"After the surgery, when my friends came to visit and asked how I was doing, I felt like I was recovering faster. Their presence gave me strength and motivation to be stronger and cope with the post-operative challenges" (Patient 13).

Category 5: spiritualism

This category explores how patients turn to spirituality to cope with emotional and spiritual challenges before undergoing CABG. During this vulnerable time, patients strive to find peace and hope amidst the fears and anxieties associated with the surgery, using spirituality and religion as tools to achieve emotional stability. The class is divided into three main sub-classes that address various aspects of patients' experiences in this area. Ultimately, spirituality can serve as a protective barrier that helps patients navigate the worries and anxieties of surgery, empowering them to confront these challenges with a more positive outlook.

Coping with death anxiety

This subcategory addresses patients' fears and concerns about their future and their potential impact on their families. Patients often worry about the consequences of surgical failure, which can profoundly affect their mental well-being.

From the patients' perspective, death anxiety can lead to insomnia and heightened stress levels. Consequently, many turn to spirituality and prayer to cope with these feelings. In the preoperative phase, such worries may manifest as negative thoughts and hopelessness. However, trusting a higher power can help them manage these anxieties and maintain hope.

One participant shared: "Initially, I was filled with fear and anxiety, especially about the prospect of death. The weight of these emotions made it difficult for me to sleep and caused constant stress as I worried about my family. Turning to prayer and reading the Quran helped to ease my mind, and I found comfort in feeling the presence of God within me." (Patient 1).

Utilizing spirituality and religion for stress reduction

This subcategory focuses on how patients utilize spirituality and religion to reduce stress and promote peace. For some patients, prayer and reading the Quran provide comfort and calmness, helping them to overcome despair and worries. These practices are beneficial before surgery, helping patients manage negative emotions and maintain a positive mindset. Spirituality helps patients deal with challenges and improves their relationships with loved ones, creating a stronger emotional support system.

Spiritual support from family

This subcategory addresses the spiritual support provided to patients by their families and friends and its impact on their morale and hope. According to patients, having spiritual support from loved ones can significantly boost their confidence and optimism during the preoperative period. Such support can offer patients security and strength, allowing them to approach their treatment process with greater assurance.

One participant explained: "My family and friends always visited me, prayed for me, and transmitted positive energy. This support encouraged me and increased my hope, making me feel less alone" (Patient 15).

Discussion

This study aimed to clarify the barriers and facilitators that patients with coronary artery disease faced when making decisions about undergoing CABG surgery prior to the procedure. By examining the experiences and feelings of both patients and other individuals involved, the study reveals various challenges, including psychological, social, financial, emotional, and spiritual difficulties.

These challenges have been found to substantially influence patients' decision-making processes and the overall success of their surgical procedures.

This study examines the psychological and social stress experienced by patients awaiting CABG surgery, with a specific focus on the social obstacles they encounter. The results reveal that patients often struggle with high levels of anxiety and depression stemming from worries about potential complications during surgery and their postoperative quality of life. These emotions affect patients' decision-making regarding the procedure and hinder their recovery and treatment outcomes. Additionally, feelings of distrust towards the medical team and social isolation can exacerbate psychological stress, making it more difficult for patients to cope and prepare for surgery. This study's results emphasize that addressing patients' social needs during waiting can enhance the treatment process and surgical outcomes. Therefore, designing appropriate support and counseling programs for these patients is of great importance. Attention to these aspects can help reduce anxiety and improve the quality of life for patients before and after the surgery, ultimately leading to better treatment outcomes.

The findings of this study align with previous research; for instance, a study by Iryanidar et al. (2023) investigated the psychological challenges faced by patients on the brink of CABG surgery and found that patients typically experience high levels of stress, with concerns about the surgery itself identified as the primary source of this stress. These findings underscore the need for a deeper understanding of the psychological and social challenges patients face to provide adequate and effective support.

Similarly, a study conducted by Sarhadi et al. (2023) revealed that patients in the pre-surgery decision-making process for heart surgery face specific concerns, including fears and psychological worries stemming from the surgical procedure and feelings of social isolation, which impact their mental health. Thus, identifying and understanding CABG patients' psychological and social pressures is of special significance [26]. Our findings further support this conclusion but also reveal that financial challenges, such as inadequate insurance coverage and concerns about post-surgery employment, add an additional layer of complexity to patients' decision-making processes. This highlights the need for future studies to adopt a more comprehensive approach that integrates financial and psychological factors.

The results of the study by Darville et al. (2023) clearly highlight the importance of managing the psychological challenges faced by patients. This study shows that psychological challenges, particularly anxiety and concerns related to surgery, play a significant role in patients' experiences. Worries such as fears of surgical complications, postoperative pain, and the unknowns of the recovery period can significantly heighten feelings of anxiety and stress in patients, thereby impacting their mental health. Patients must understand and manage these psychological and social challenges before surgery [27]. Our study builds on this by suggesting that healthcare providers should not only address psychological challenges but also provide clear information about the financial and logistical aspects of surgery. For example, offering detailed explanations about insurance coverage, recovery timelines, and potential employment impacts can help alleviate some of the anxiety associated with uncertainty.

Financial resource management in treatment, especially in CABG

Financial resource management in treatment, particularly regarding CABG, is one of the fundamental challenges for patients, significantly impacting their quality of life and treatment processes. The findings of this study indicate that economic pressures arising from treatment costs and concerns about financial futures directly affect patients' feelings of security and mental health. These challenges are particularly pronounced for patients who cannot return to work post-surgery, serving as a source of stress and anxiety. Patients, fearing their inability to cover living expenses and the potential decrease in income, may avoid necessary treatments or decide to postpone surgery. Insufficient insurance coverage and financial difficulties may lead them to make choices that jeopardize their physical and mental health.

These factors include high costs, insurance limitations during illness, and temporary contracts that may lead to job loss in sickness. Additionally, income uncertainty can create significant financial concerns for patients [28]. Furthermore, the studies by Åhlin et al. (2023), Sarhadi et al. (2024), and Xu et al. (2024) emphasize the financial, insurance, and employment-related challenges faced by patients. These challenges, which encompass treatment costs, insurance restrictions, and job insecurity, can have a substantial impact on patients' mental health and quality of life. Research indicates that in the preoperative period, financial concerns may increase stress and anxiety among patients, thereby affecting their treatment outcomes [26–30].

To deepen understanding, a comparative analysis of challenges across different countries or regions of Iran is essential. For example, Pourhabib et al. (2022) identified the lack of financial and organizational support for patients following CABG as one of the primary challenges they face. These findings are consistent with our study, underscoring the importance of social and institutional support in addressing post-surgical challenges. Their recommendation for collaboration among the Ministry of Labor, Social Welfare, Health, and insurance

organizations aligns with our findings regarding the significance of financial and institutional support [31].

To effectively tackle the various challenges that patients encounter, it's important to create tailored interventions that take regional and cultural differences into account. In areas where institutional support is limited, community-based initiatives and family involvement can have a meaningful impact. Programs should focus on helping patients understand their insurance policies, find financial assistance options, and prepare for potential income disruptions during recovery. These initiatives are crucial, as they can significantly alleviate financial stress and improve patients' overall well-being. Additionally, it is essential to develop and implement strategies that reduce financial burdens and provide clear information about insurance coverage, ultimately leading to better health outcomes for patients.

In this study, the category of "information quality and communication" clearly demonstrates that a lack of information and communication issues can have profound negative effects on the mental health of cardiac patients prior to CABG surgery. Patients face significant uncertainties and concerns regarding the treatment process and its complications during the waiting period. Their previous experiences with healthcare services, whether positive or negative, shape their attitudes toward upcoming treatments. This uncertainty may reduce patients' confidence in making treatment decisions, leading to increased anxiety and stress. Communication problems and lack of coordination within the healthcare team further exacerbate these feelings, as conflicting responses from medical staff can create confusion and insecurity among patients.

Additionally, insufficient information about the details of the surgery and its complications can negatively impact patients' decision-making quality, pushing them towards dissatisfaction and a decline in their quality of life. These findings highlight the importance of providing clear and effective information by the medical team to improve the treatment experience and reduce related anxieties.

To improve communication within the healthcare team, we recommend promoting Shared Decision-Making (SDM) between patients and healthcare providers, which enhances patient trust and alleviates concerns. Implementing standardized communication protocols, such as the SBAR model (Situation, Background, Assessment, and Recommendation), can also provide more accurate and transparent information. Additionally, interdisciplinary training programs should be established to enhance team coordination and collaboration among physicians, nurses, and other staff members through clinical simulations and workshops. Finally, we suggest holding regular interdisciplinary meetings where all team members, including surgeons, nurses, anesthesiologists, and social workers, can discuss patient cases and align on treatment plans. This approach ensures that patients receive consistent and coherent information, reducing their anxiety and improving their trust in the medical team.

Similar results have been observed in other studies. For instance, a study by Kathania et al. (2021) revealed that "lack of information about surgery" was one of the key themes reported by cardiac patients undergoing open-heart surgery. This lack of information increased their anxiety and stress during the waiting period. Additionally, in another study by Sarhadi et al. (2024), patients reported stress related to "hospital factors" and "self-care," which could indirectly stem from inadequate communication and coordination among the healthcare team members. These findings confirm that poor coordination and ineffective communication within the healthcare team can act as stress intensifiers for patients before surgery, significantly influencing their overall treatment experience [14, 30]. Our study supports these conclusions but also emphasizes the need for cultural sensitivity in communication. For example, in some cultures, patients may rely heavily on family members for decision-making, and healthcare providers should adapt their communication strategies to include family members in the discussion process.

This study clearly emphasizes the importance of spirituality for cardiac patients in the preoperative period of CABG. The results indicate that during this critical phase, patients have a profound need for the companionship and support of their loved ones to cope with the intense emotions of anxiety and fear. Emotional support from family and friends helps reduce patients' stress and worries, enhances their confidence, and improves their decision-making quality. These findings align with psychological theories suggesting that a sense of belonging and social support can directly impact mental health and quality of life.

Especially when patients face uncertainty and doubt regarding the treatment process, having a strong support network provides them with a greater sense of security and peace, ultimately contributing to better treatment outcomes. Furthermore, the results show that this type of support is crucial before surgery and plays an essential role in the recovery process and adaptation to new circumstances following the operation.

Therefore, addressing patients' emotional and social needs and creating a supportive environment can be considered a key strategy in cardiac patients' treatment and recovery process. For instance, in a study conducted by Salzmann et al. (2024), the need for "personal conversation" was identified as one of the primary coping mechanisms for reducing preoperative anxiety. This finding

underscores the importance of communication, social, and emotional support in alleviating anxiety and stress before surgery [32]. These results align with the findings of Iryanidar et al. (2023), which also identified the need for emotional support as a major challenge for patients during the waiting period for surgery. This study clearly highlights the significance of emotional and social support, demonstrating that such support can effectively facilitate patients' psychological adjustment in the preoperative period [15].

This study reveals that patients prior to CABG surgery, rely on spirituality and faith in God as key resources for coping with stress and anxiety. During this critical period, spirituality and religious beliefs serve as a protective shield, providing patients with a sense of security and peace. However, this can also present challenges for some patients, as cultural backgrounds, religious beliefs, and personal experiences vary, influencing the extent and manner in which they use spirituality to cope with anxiety. These findings underscore the importance of religious beliefs in the treatment and recovery process and highlight the need to address challenges related to the use of spirituality and faith among patients from diverse backgrounds and beliefs.

Furthermore, the study emphasizes the necessity of developing appropriate and flexible support programs that can cater to the specific needs of patients, considering their diverse cultural and religious backgrounds. Recent studies corroborate this connection; for instance, Azar et al. (2022) and Sarhadi et al. (2024) also highlighted that patients rely on spirituality and faith in God to cope with stress and anxiety before undergoing CABG surgery. However, conflicts between religious and cultural beliefs may prevent some patients from fully benefiting from these resources. In particular, some patients experience confusion due to these conflicts. Additionally, spiritual and religious challenges can influence how patients engage with their spiritual resources, especially in different cultural contexts. These findings highlight the critical need to address the challenges associated with using spirituality and faith in God among patients from diverse backgrounds and beliefs [26, 33].

Studies such as those by Iryanidar (2023), Sarhadi (2024), Darville (2023), Salzmann (2023), and van Dieën (2024) have explored the challenges faced by cardiac patients prior to CABG surgery. The results of our study align with these investigations, showing that the challenges encountered by cardiac patients in Iran are similar to those in other countries. However, distinct cultural and social differences have also been observed [15, 17, 26, 27, 32].

Social support is a key factor in increasing patients' resilience against psychological stress before surgery. This study's findings suggest that a lack of social and emotional support can negatively impact patient decision-making and mental well-being. To improve this situation, hospitals can offer educational programs for families to guide them in providing emotional and practical support to patients. Additionally, forming support groups where former patients share their experiences with those preparing for surgery can help reduce fear and anxiety. Furthermore, integrating psychosocial interventions into the treatment process—such as psychological counseling and social work services—can assist patients in managing stress and fostering a sense of belonging. Finally, access to spiritual support services through chaplains or faith-based programs can enhance patients' psychological well-being and strengthen their sense of hope when facing surgery.

Limitation

Despite efforts for accuracy and comprehensiveness, this study was accompanied by several limitations. One limitation of the present study is the exclusion of emergency patients, whose experiences might differ significantly from those of elective patients. Additionally, conducting interviews postoperatively may influence the patients' preoperative experiences due to the effects of the surgery and its outcomes. Furthermore, relying solely on interviews as the method of data collection is another limitation, as it may not capture the full breadth of patient experiences.

Suggestions for future research

To better understand the challenges faced by patients with CABG, multicenter studies with larger populations should be conducted to obtain more generalizable results and investigate cultural and regional differences. Future research should delve into the experiences of patients in reducing anxiety and stress and the impact of these experiences on postoperative quality of life, as well as focus on the role of family and community support and patients' experiences with the healthcare team. Psychological and educational support programs based on patient experiences, especially in cost management, can help improve treatment outcomes and patient satisfaction. In Iran, challenges such as weak communication with the healthcare team and emphasis on spirituality and reliance on God are more prevalent compared to other countries, while in other parts of the world, there is more emphasis on psychological and social interventions and access to support resources. Therefore, considering these cultural and contextual differences when designing treatment programs is essential.

Conclusion

The findings of this study highlight the multifaceted challenges faced by cardiac patients before undergoing CABG surgery, emphasizing psychological stress, financial concerns, communication barriers, social support needs, and the role of spirituality. To address these issues, healthcare teams should implement structured interventions that enhance patient support and preparedness. Strategies such as interdisciplinary training programs, structured communication models like SBAR, and shared decision-making frameworks can improve the quality and consistency of information provided to patients. Moreover, financial counseling and support programs should be integrated into preoperative care to alleviate economic burdens and enhance patients' confidence in pursuing treatment.

Recognizing the cultural diversity of patients is essential in tailoring these interventions. Healthcare providers should adopt culturally sensitive approaches that respect patients' beliefs, values, and decision-making processes. This includes considering spiritual needs, family involvement, and culturally relevant communication methods to build trust and improve patient outcomes. By implementing these patient-centered strategies, healthcare teams can reduce preoperative anxiety, enhance decision-making quality, and ultimately improve both the surgical experience and recovery process for cardiac patients.

Abbreviations

CABG	Coronary artery bypass graft
WHF	World Heart Federation
P	Participant
SDM	Shared Decision-Making
SBAR	Situation, Background, Assessment, and Recommendation

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Author contributions

All authors contributed to the design of the study. S.E and A. A. interviewed all professionals. E.S, T. HS., and S.E conducted the data analyses. E.S and T. HS. supervised the study. All authors contributed to the writing up of this manuscript and approved the final version.

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Data availability

The datasets analyzed during the current study are available from the corresponding author upon request.

Declarations

Ethics approval and consent to participate

This study was part of a doctoral thesis in cardiac nursing approved by the Ethics Committee and Research Council of Technology at Hamadan University of Medical Sciences (IR.UMSHA.REC.1401.985). All participants were informed about the objectives and stages of the study, as well as the recording of interview audio, and their participation was completely voluntary. Confidentiality of information, privacy, the right to withdraw at any time, and the request for interview transcripts were also guaranteed. Written informed consent was obtained for participation in the study, audio recording, and the publication of the results. The study adhered to the principles of the Declaration of Helsinki.

Consent for publication

Not Applicable.

Competing interests

The authors declare no competing interests.

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