



## Stressors in open-heart surgery patients: A qualitative study

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### Case Series

#### Abstract

**BACKGROUND:** Open-heart surgery is a stressful experience for the patients and their families. From the moment that patients are told they must undergo surgery until discharge, they experience different degrees of worry and nervousness. This study was conducted with the aim of identifying stress factors in heart surgery patients.

**METHODS:** This study was performed using a qualitative method on 21 participants (14 patients and 7 caregivers). The research environment was open-heart surgery wards of two educational hospitals in Ahwaz (south of Iran) in 2017. The participants were selected through purposive sampling. The data were collected through semi-structured interviews, and then, analyzed using the qualitative approach of content analysis proposed by Graneheim and Lundman (2004).

**RESULTS:** As a result of data analysis, the 5 themes of “physical stressors”, “self-care stressors”, “psychological stressors”, “religious stressors”, and “hospital stressors” were obtained. These themes were the result of the patients’ experiences and dimensions of patients’ perceptions regarding stressors in open-heart surgery.

**CONCLUSION:** Stress in patients undergoing open-heart surgery is a contextual and relative concept and a subjective experience, which is experienced as a sense of worry. Identifying and clarifying stressors in open-heart surgery patients for nurses is vital, like a key for improving care quality. Nursing managers in clinical practice can also benefit from these findings regarding heart surgery in improving the care quality and professional performance of nurses.

**Keywords:** Cardiac Surgical Procedures, Stress, Psychological, Stressor Related Disorders, Qualitative Research

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#### Introduction

Coronary artery bypass graft (CABG) and/or valve repair/replacement are the most common surgical interventions for cardiovascular diseases (CVDs).<sup>1</sup> In Iran, 35-50 thousand heart surgery operations are performed annually.<sup>2</sup> Although open heart surgery is a successful interventional technique in cardiovascular care and treatment, it is a stressful and life-threatening experience accompanied by fear and anxiety for many patients and their families.<sup>3</sup> During this hard period, patients face various physical, psychological, and social stressors and experience a great deal of worry.<sup>4,5</sup> In this regard, studies have shown that confronting numerous stressors from the time of diagnosis until discharge, and lack of fulfillment of physical, psychological, and educational needs cause a sense of shock, disbelief, anger, fear of death, and threat in patients and their families.<sup>3,6</sup> Therefore, understanding updating stressors

experienced by open heart surgery patients throughout the whole procedure of diagnosis, treatment, and discharge is essential.<sup>6</sup>

The main issue that aggravates vulnerability in patients is receiving undesirable and unsuitable care, which is not in line with their needs.<sup>7</sup> Doering et al.<sup>8</sup> found that patients undergoing open heart surgery request to be acknowledged as a human by their physicians and nurses during the recovery period; they manage pain, sleep, and other physical problems accurately, and give them care information at the time of discharge.

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The medical team should also know that these patients need different types of information.<sup>8</sup>

Controlling and managing stress and stressors experienced by sick patients should be undertaken by all care providers in the medical team. Attention to this issue will assist in the identification of stressors patients experience during critical care. It will also provide care providers, especially nurses, with a greater insight into the perception of patients about stressors. It can be said that by providing care and more effective and satisfactory interventions, nurses provide the ground for stress mitigation. Managing stressors in heart surgery patients may shorten their hospitalization duration and have a better effect on their improvement and recovery process.<sup>9</sup>

According to studies, the content of cares and interventions may often be based on nurses' perceptions about stressors, not on patients' perceptions. Thus, nurses prioritize patients' problems according to their own perceptions, and perform planned cares accordingly.<sup>10</sup> Using their self-designed instrument to measure stressors in two groups, CABG patients and nurses, Carr and Powers concluded that the nurses' opinions are different from that of patients.<sup>11</sup> In addition, nurses had considered some items as strong stressors for the patients, while the patients themselves had given lower scores to those items.<sup>11</sup>

Regarding the determination of perceived stressors in heart surgery patients and nurses, Yarcheski and Knapp-Spooner concluded that opinions differed and patients had given a higher score to "being far from house and workplace", while nurses had considered "death resulting from disease or surgery" as highly stressful.<sup>12</sup> Overall, nurses had given higher scores to stressful items.<sup>12</sup>

In other words, if nurses' perceptions about the patients' stress are in contrast to the real perceived stress by the patient, they will offer less effective intervention to eliminate or mitigate stressors in patients. Nurses should be able to evaluate stressors in patients accurately to provide the necessary care and focus on their interventions more effectively.<sup>13</sup> Moreover, in different cultures, there is a different perception about stress and stressors. Furthermore, in these various cultures, people act differently in responding to the perceived stresses and apply different solutions to cope with them.<sup>14</sup>

Open-heart surgery nurses take care of patients in different situations in special clinical environments; thus, irrespective of the special conditions of any disease, to understand the real experiences and emotions of patients in clinical

practice and promote nursing quality, the concept of stressors should be clarified using individual experiences, i.e., the group of patients undergoing heart surgery. Therefore, conducting qualitative research seems to be essential in the context of Iran. This study was performed with the aim of discovering stressors in open-heart surgery patients.

This study aimed to identify and describe stress factors in heart surgery patients.

## Materials and Methods

A qualitative design, based on the content analysis approach, was used for data collection and analysis of the perspectives of Iranian open-heart surgery patients regarding stress factors. Qualitative research aims to explore complex phenomena experienced by clinicians, healthcare providers, policymakers, and consumers in the healthcare system.<sup>15</sup>

The study participants consisted of 21 individuals (14 patients and 7 care provider) who were selected using purposeful sampling. The research environment was the open-heart surgery wards of two educational hospitals in Ahwaz, Iran, from May 2016 to March 2017. The inclusion criteria were hospitalization after undergoing heart surgical operation for the first time, a minimum age of 18 years, consciousness, the ability to talk, and willingness to restate experiences to the researcher. Among the care providers, all individuals in the medical team including informal caregivers, nurses, and physicians were interviewed.

To achieve a comprehensive description of the experiences of participants in the pre-operative and post-operative process or different caregivers, a maximum variation in sampling in terms of age, gender, level of education, type of open-heart surgery, and socioeconomic status was used.<sup>16</sup>

Semi-structured interviews were conducted by the first author (SS). The data were collected using in-depth interviews from May 2016 to March 2017. Following a literature review and input from members of the research team, a semi-structured interview guide was developed. The interview guide was tested in a pilot study with 3 participants. All interviews with the patients were performed at their bedside. Other participants were interviewed in the office of the open-heart surgery wards. Before the interview, explanations were given about the objective of the study, information confidentiality, and recording the interviews.

The main questions used in the interview were: "Please restate your experience about open-heart surgery" or "What were your concerns when they

said you should be operated?”. Furthermore, the open question used in interviews with the care providers was “According to your experience, what are the concerns of heart surgery patients from hospitalization to discharge?” This was followed by asking follow-up questions based on the responses and information given by the participant to better clarify the studied concept.

The interviews lasted 20-90 minutes and were audio recorded using a digital recorder, transcribed verbatim, checked for accuracy, corrected, and coded. The transcribed interviews were analyzed using the content analysis approach. Content analysis is used commonly in nursing. Through content analysis, it is possible to distill words into fewer content-related categories.<sup>17</sup> During the data analysis, the interviews were read several times to gain a sense of the whole. The text was divided into meaning units, which were condensed. The condensed meaning units were abstracted and labeled with codes. The codes were sorted into subcategories and categories based on comparisons regarding their similarities and differences. Finally, themes, as the expression of the latent content of the text, emerged.<sup>18</sup> Themes and subthemes that described the open-heart surgery patients’ perspectives on providing stress factors were identified.

For establishing trustworthiness, quoting Guba & Lincoln, Streubert and Carpenter propounded four criteria including credibility, dependability, confirmability, and transferability.<sup>19</sup> To enhance data credibility, prolonged engagement with the research subject and data, and member check (giving back some of the interviews after coding to the participants to investigate the extent of consensus over codes among researchers and participants for comparison) were conducted. For dependability, the researcher recorded and reported the stages and procedure of the research carefully, so that others could also follow up on the research. In addition, confirmability was measured through external check controls, who were familiar with qualitative research. This means that parts of the interview text along with the relevant codes and classes emerged were investigated and confirmed by two observers familiar with qualitative research. For transferability, maximum variation sampling technique, i.e., selection of participants in terms of gender, age, marital status, education, hospitalization duration, type of heart surgery, and occupation, was used.

The Ethics Committee of Ahvaz Jundishapur University of Medical Sciences, Iran, approved the

study's research proposal (IR.AJUMS.REC.2016.386). The official permits were issued by the university and hospital before data collection. Participation in the study was based on the principle of autonomy, and it was performed on the ground of informed consent and willingness to participate in the interview. In addition, the participants were informed that their identity would be kept confidential when the research findings are reported.

## Results

Overall, 21 interviews were performed, 14 with heart surgery patients (8 women and 6 men) and 7 with caregivers (3 informal caregivers, 3 nurses, and 1 heart surgeon). The mean age of the patients was  $48.64 \pm 15.42$  years, and they were mostly women (57.1%), married (86.7%), and had undergone CABG surgery (71.4%). Educational level of the caregivers consisted of 1 person with diploma, 2 with primary education, 3 with a bachelor's degree, and 1 with a PhD (Table 1).

As a result of data analysis, 17 subclasses and the 5 themes of “physical stressors”, “self-care stressors”, “psychological stressors”, “religious stressors”, and “hospital stressors” were obtained, which were a result of experience and understanding the dimensions of open-heart surgery patients about stressors (Table 2).

**Physical stressors:** Open-heart surgery is a stressful experience threatening all dimensions of life of many patients and their families. Examples of the characteristics of this theme are stress resulting from physical inconvenience towards medical equipment as well as therapeutic and care procedures, incidence of physical complications or limitations, and restrained eating and drinking. The experience of the participants indicated that passing periods during hospitalization in intubation state, connection of tubes and drains, and their special limitations and incidence of surgical complications including bleeding off the drains, nausea, vomiting, insomnia and anorexia, thirst, and fear of injections and blood tests were accompanied with fear and worry for all patients.

*“A thing was in my mouth, which was very annoying. It was choking me. I felt like I was gradually dying. When they withdrew it, it was as if they took a heavy body out of my chest and I was relieved. The two tubes on my two sides did not let me move. I had to sleep straight and turn my eyes left and right to look. I was really bothered (Male patient)”*

*“The main problem of patients is related to tracheal tube. They feel that there is a tube in their mouth and most of them say they are being choked [Intensive care unit (ICU) nurse]”*

**Table 1.** The characteristics of participants

No	Relationship	Gender	Age	Marital status	Educational level	Occupation	Type of surgery	length of hospitalization
1	Patient	Female	54	Married	Illiterate	Housewife	CABG	5
2	Patient	Female	66	Married	Higher education	pensionary	CABG	10
3	Patient	Female	56	Married	diploma	housewife	CABG	10
4	Patient	Male	38	Married	Middle school	unemployed	ASD	5
5	Patient	Male	70	Married	Elementary	pensionary	CABG	10
6	Patient	Male	50	Married	Higher education	employee	CABG	6
7	Patient	Female	44	Married	Higher education	employee	CABG	8
8	Patient	Female	65	Married	Middle school	Housewife	CABG	9
9	Patient	Female	18	Single	High school	Student	V.R	10
10	Patient	Male	54	Married	Middle school	Unemployed	CABG	5
11	Patient	Male	37	Married	Middle school	Worker	V.R	5
12	Patient	Male	63	Married	Diploma	Pensioner	CABG	5
13	Patient	Female	28	Single	Diploma	Housewife	Aortic dissection	8
14	Patient	Female	38	Married	Diploma	Housewife	CABG	8
15	Informal caregiver	Female	40	Married	Diploma	Housewife		
16	Informal caregiver	Female	47	Married	Elementary	Housewife		
17	Informal caregiver	Female	45	Married	Elementary	Housewife		
18	Formal caregiver	Female	40	Married	Higher education	Nurse		
19	Formal caregiver	Female	35	Married	Higher education	Nurse		
20	Formal caregiver	Female	30	Single	Higher education	Nurse		
21	Formal caregiver	Male	48	Married	Higher education	Surgeon		

CABG: Coronary artery bypass graft; ASD: Atrial septal defect; VR:

*“They did not give us water. We did not eat. When I was revived, I pointed with my hand and said water, but they only dropped some warm water on my tongue. I felt intensely nauseous and dizzy (Female patient)”.*

**Self-care stressors:** This theme represents a set of stressors that overshadow the health of the patient both potentially and in practice. It disrupts self-care in open-heart surgery patients, and originates in apprehension about personal hygiene, inability to care for oneself, and lack of awareness

of the situation and its complications.

*“You are not clean. You have not taken a bath., The fact that your body and your clothes are dirty is another cause for stress. Before my surgery, I went to the bathroom and washed my hair. It was difficult for me to accept having dirty hair. It has been several days since I have taken a bath and my clothes have not been changed. This piece of clothing contains thousands of microbes. If it touches my stitches and bandage, I may be infected (Female patient)”.*

**Table 2.** The table of the main classes and subclasses

Main classes (themes)	Subscales (subclasses)
Physical stressors	Physical complications Physical inconvenience due to medical equipment Physical limitations Limitations in eating and drinking Physical inconvenience due to procedures
Self-care stressors	Self-care defect Concern over personal hygiene Lack of complete awareness of the situation and its complications
Psychological stressors	Death anxiety Waiting anxiety Anxiety due to altered body image Stress due to impairment in fulfilling roles Ambiguity in health
Religious stressors	Limitations in performing religious practice Concern over Hijab and suitable coverage
Hospital stressors	Concern over financial costs Defective welfare facilities Stresses of the medical team

Lack of awareness of the situation is the result of lack of clear response to the patients' questions, lack of explanation of the necessity of performing care and therapeutic measures, lack of explanation of surgical results, lack of education about self-care, etc. All of these causes suggest negligence on the part of nurses in educating the patient, which is the cause of complaints by and confusion in patients and stress among them.

*"I have these concerns as to what I should do after the surgery that will be good for me (Female patient)".*

*"They mostly ask me: 'When should I come to the clinic?'; 'When can I take a bath?'; 'What should we eat?'; 'Will you prescribe medication for me or not?'; 'Should I come to see you after?'; 'Can I walk or not?'; 'Can I have just or not?'; 'Should I use a mask or not?'; 'Should I wear socks or not?'" (Heart surgeon)".*

**Psychological stressors:** This theme represents a set of the stressors that overshadow the emotional stability of the patient both potentially and in practice, and disrupts psychological balance of open-heart surgery patients. It is interwoven with concepts such as death anxiety, expectation anxiety, bodily image threat, impaired role playing, and ambiguity in health. Surgical operation was a cause of terror and fear for most patients.

*"Before the surgery, I had no hope of surviving even one day or one hour after the surgery (Male patient)".*

The patients inability to play their roles and fulfill previous responsibilities in the family or society induced severe fear and concern among them.

*"I think what I should do now, compared to the past when I did many things in the house. I wonder if I would be able to hang the curtain again. I did all the household chores and moved all the furniture on my own. I do not think I will be able to do any of that any more (Female patient)".*

With the incidence of disease and patients' dire need for surgery, most patients were worried about the costs. Not being able to return to their previous job and finding a job in line with their physical situation, especially for male patients who have an important role in the financial status of the family, was extremely worrisome.

*"I am preoccupied with my children, since I have become defective and cannot work. My children are young, and they will soon grow older and want facilities. They want to study; being empty-handed is no use (Male patient)".*

A negative and ambiguous view of one's health after the surgery is a cause of concern and distress in patients.

*"A patient who has undergone open-heart surgery is not the previous healthy person. This means that they are disabled in terms of their job, life, entertainment activities, marital life,*

*children, and almost everything else (Male patient)".*

Corruption of the bodily image in young patients, especially women who have the anxiety of a scar on their chest, is a cause for concern. In this regard, one of the participants said: *"I am afraid that the surgical wound will remain on my body; if it remains, it is really bad (Female patient)".*

*"Most young women complain about the chest scar (Heart surgeon)".*

**Religious stressors:** Religious stressors are a set of factors that practically prevents patients from performing their religious practices appropriately. It is characterized by stress due to religious limitations such as preoccupation with performing religious practices as well as concern over Hijab and suitable coverage.

*"If you do not say your prayers for some days, you are dirty and unclean; it is really difficult. (Male patient)".*

*"Hospital clothes are not good at all. One does not have a good coverage. I cannot have a good Hijab, and this bothers me (Female patient)".*

**Hospital stressors:** The stress resulting from hospitalization in the treatment unit is due to shortage of welfare facilities, anxieties caused by the medical team, and concerns over the cost.

Unfavorable atmosphere of the ward including contamination and common toilets, unpleasant odors, low food quality, lack of warm water for bathing, and dirtiness of the ward have caused the patients worry and fear of infection of the surgical wound.

*"Yesterday, I told the ward's officer that this ward is not hygienic at all. You say that nobody should come here and touch us, and not to pass over the red line, but all contamination exists in the ward. The ground is covered with soil. The toilets are dirty. We have to use these toilets, but there is only one for both men and women, and it is dirty and terrible. Its terrible odor has overwhelmed the whole ward. We have undergone open-heart surgery; any moment the slightest infection may be transmitted to us. This really annoys me (Female patient)".*

Stresses related to the medical team are another characteristic of this theme, which originates in neglecting patients' spiritual and physical needs, lack of easy access to nurses, and undesirable behavior of the medical team. The expectation of all patients is care and attention to their care needs by the nurse.

Provision of care procedures hastily by the nurse without previous justification, due to forgetfulness, delay, and lack of quick and timely presence were very stressful and worrisome for the patients.

*"I am not satisfied with the ward. You have to ask them to come and dress the wound, to do this and that. You have to ask for a set of clean clothes. I am not satisfied with this ward. During eating, the nurse is in a hurry to take my*

*blood pressure. All this upsets me (Female patient)*”.

Furthermore, all patients consider presence and easy availability of the nurse as a source of reliability, sense of security, and protection. If he or she is not present and does not monitor the patients constantly, the patients have a sense of fear and danger.

*“There are four of us, who have undergone open-heart surgery, in this room. They should check us every one hour or half an hour, but unfortunately, no one comes. I want to be assured that a person is looking after me at all times. Two nights ago, when I got sick, I looked around for 20 minutes hoping that someone may come (Male patient)”*.

With the incidence of disease and the patients’ dire need for surgery, most patients were concerned about provision of costs. Inability to pay the cost of surgery and hospital and not having financial supports (insurance services, work support, etc.) intensified this situation.

*“We have problems in paying the cost of surgery; 800,000 Tomans should be paid in advance, but we were only able to pay around 400,000 Tomans. My father is a farmer; we do not have anything. After discharge, we should also pay 2 million Tomans. We do not have insurance coverage. Last night, I told my brother that I feel pity for my father who has to pay this cost. I wish I was fine and did not have to give this money. It is difficult for my father to pay this cost (Female patient)”*.

*“My daughter worries about hospital costs. Her father is unemployed; we are not covered by insurance (A patient’s mother)”*.

## Discussion

The findings of this study include concepts, which in relation to each other represent a set of worries and stresses among heart surgery patients in the hospital environment.

Analysis of the participants’ experiences indicated that from the time of diagnosis until surgery and discharge, patients experience anxiety, stress, and worries in different ways in different care situations (being hospitalized in the heart surgery ward, and transference to the operation room and ICU). In the present study, hospitalization in the ICU, inability to talk and express emotions due to intubation, limited activity and dependence on others due to closure of hands and connection of tubes and drains, and extreme thirst were experiences that filled patients with worry.

Confirming this finding, Yava et al. also reported that the perceived stressors for patients in the ICU included fear of death, inability to talk, pain, thirst, and sleep problems.<sup>20</sup>

Most of the patients in this study wanted to

receive knowledge and education required for the status of their disease and surgery, type and manner of food and drug consumption, therapeutic and care measures, and the method of self-care. If these needs were not fulfilled, they experienced a sense of fear and danger. Considering facilitator and preventive factors in the program for clearing open-heart surgery patients, Lapum et al. stated that patients feel that they are not prepared enough to return home. Therefore, some of them experience psychological problems, complications, and rehospitalization.<sup>1</sup> Blair et al. found that the most common findings obtained from interviews with patients and their caregivers was a need for a guideline and instructions regarding diet, and education about physical activities after cardiac problems and consumed medications.<sup>21</sup> Furthermore, Shafipour et al. reported that the shortage of information causes increased worry among patients.<sup>3</sup> Moreover, in the study by Mooney et al., half of the participants refused to receive information about heart surgery, as with further search for information and increased awareness, their fear intensified.<sup>22</sup>

In the present study, by hearing surgical operation, most patients were shocked and experienced a sense of fear of death. Similar to our results, in some studies, the first reaction of open-heart surgery patients has been shock and fear of death.<sup>6,23</sup> Nevertheless, in other studies, patients experienced less psychological stress in comparison to their caregivers. However, most of them were very much willing to communicate with other patients who had experienced heart disease like them.<sup>21</sup>

In the present study, the waiting time before the surgical operation caused anxiety in the patients. Studies have shown that the functional and psychological status of patients is aggravated when they become candidates for heart surgery.<sup>24</sup> Pre-operation intervention should be performed to manage the stress of waiting for surgery, as the anticipation is the main concern of patients and highly stressful for them.<sup>23</sup>

The patients in the present study were concerned with the probability of being unable to play their previous role and fulfill their responsibilities in the family and society. Not being able to return to their previous job and provide for their family financially was the main concern of all male patients. They were terrified of the uncertainty of their future status. Research has shown that male patients worry about changes in their life situations and working conditions after their surgery.<sup>3,25</sup> Blair

et al. noted financial issues, poor health care insurance, and absence of income when the patient's spouse is also unable to work as major concerns of cardiac patients and their caregivers.<sup>21</sup>

Young female patients are concerned with the scar on their chest and legs. It seems that the concern with altered mental image of the body was very important to these patients as with other concerns. Kantoch et al. reported that a visible surgical wound such as a heart surgery wound may bring about psychological impairment.<sup>26</sup> It can threaten different aspects of life including bodily image, self-concept, emotional stability, social roles, and lifestyle. Changes in the bodily image and its psychological effects cause identity insecurity, diminished self-esteem, increased emotional stresses, and lowered sexual attractiveness.<sup>26</sup>

With the unfulfillment of religious needs, the patients felt guilty and constantly sought forgiveness from God. They were upset about the uncleanness of their clothes and body, not having complete Hijab, and not saying their prayers, which caused diminished peace in these patients. Studies have indicated that in CABG patients, performing religious practices is effective in mitigating complications and shortening the hospitalization duration.<sup>27</sup>

In the present study, most patients were dissatisfied with and worried about nutritional services. Studies on satisfaction of patients with nutritional services suggest that hospital managers should seriously attend to this issue. Development of a suitable plan for the quality of foods and constant programs is essential.<sup>28</sup>

Patients' dissatisfaction with hygiene in the ward toilets and their poignant odors brought about their preoccupation with surgical wound infection. The participants requested adherence to hygiene, removal of unpleasant odors, and provision of a hygienic environment devoid of any contamination from the ward personnel to attain a safe and non-infective environment.

Aslan and Tosun reported that heart surgery patients who had felt a "poignant odor" in the ICU had experienced a greater sense of fear in comparison to those who had not felt such an odor. This finding can explain the fact that "odor" is a powerful component of the environment. Removal of "unpleasant odors" is one of the most important issues that should be taken into consideration in designing hospital environments. Use of aromatherapy as a strategy to improve the conditions related to odor has been emphasized.<sup>29</sup>

Patients in this study sought peace and special care by the nurses. They believed that heart surgery is different from other surgeries, and it demands a special care by the personnel and medical team. Timely presence, providing proper education, and treating patients suitably are essential. In the absence of nurses or with irregular monitoring by the nurse, the patients felt insecure. Molazem et al. reported that general surgery patients feel secure in the presence of nurses, and feel a sense of danger in their absence.<sup>30</sup> Indeed, patients consider nurses' visits as especially important and physical presence of nurse brings about relief for them more than mere simple care.

### Conclusion

The main emphasis of this paper was the investigation of perceptions of open-heart surgery patients regarding stressors from hospitalization to discharge. Identification of these experiences suggests that stress is a contextual and relative concept, and a subjective experience in open-heart surgery patients, which is felt as a sense of worry. This experience may emerge with one or several physical manifestations, hygiene concerns or psychological stresses, religious stresses, or stresses associated with the hospital environment.

Therefore, based on what the patients have said, the results obtained from this study allow for the understanding of stressful situations. These findings should be taken into consideration in nursing care programs to mitigate the effect of these stressors. Accordingly, identifying and clarifying stressors in heart surgery patients for nurses is crucial, like a key for improving care quality. Nursing managers in clinical practice can also benefit from these findings in the area of heart surgery for the improvement of care quality and professional performance of nurses. Nurse educators need to remain cognizant of these factors as they prepare future nurses to care for heart surgery patients in the Persian culture. It should be noted that this study was carried out in the Persian cultural context; therefore, the transferability of the results needs further exploration in future studies in other cultures.

The limitation of the study was that the participants were over 18 years of age; therefore, the results are not applicable to children and adolescents.

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### Conflict of Interests

Authors have no conflict of interests.

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