

# CUIDADO É FUNDAMENTAL

Escola de Enfermagem Alfredo Pinto – UNIRIO

RESEARCH

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## PERCEIVED STRESS OF PATIENTS IN THE PREOPERATIVE PERIOD OF CARDIAC SURGERIES

*Estresse percebido de pacientes no pré-operatório de cirurgias cardíacas**Estrés percibido de los pacientes en el preoperatorio de cirugías cardíacas***Gabriela Torniziolo do Amaral<sup>1</sup>** **Paolla Algarte Fernandes<sup>2</sup>** **Suellen Rodrigues de Oliveira Maier<sup>3</sup>** **João Paulo Ferreira Rodrigues<sup>4</sup>** **Carina Aparecida Marosti Dessotte<sup>5</sup>** 

### ABSTRACT

**Objective:** to evaluate patients' perception of stress in the preoperative period of cardiac surgeries. **Method:** cross-sectional study with patients undergoing coronary artery bypass graft surgery, surgeries to correct valvular heart disease and surgeries to correct aortic diseases. Data collection was carried out through individual interviews and consultation of the participants' medical records. To assess the perception of stress, the Perception of Stress Scale was used, consisting of ten items answered on an ordinal scale from zero to five points, with scores ranging from 0 to 40 points, with higher values indicating greater symptoms. **Results:** 26 patients predominantly with valvopathy, female, with overweight/obesity and arterial hypertension participated in the study. Regarding perceived stress, the average score found in the sample was 16.7, ranging from two to 30 points. **Conclusion:** we concluded that the patients presented low symptoms of stress in the preoperative period of cardiac surgeries.

**DESCRIPTORS:** Perioperative nursing; Stress, physiological; Cardiac surgical procedures.

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## RESUMO

**Objetivo:** avaliar a percepção de estresse de pacientes no pré-operatório de cirurgias cardíacas. **Método:** estudo transversal com pacientes submetidos à cirurgia de revascularização do miocárdio, cirurgias para correção de valvopatias e cirurgias para correção das doenças de aorta. A coleta foi realizada por meio de entrevistas individuais e consulta aos prontuários dos participantes. Para a avaliação da percepção de estresse, foi utilizada a Escala de Percepção de Estresse, composta por dez itens respondidos numa escala ordinal de zero a cinco pontos, com escores variando de 0 a 40 pontos, com maiores valores indicando maior sintomatologia. **Resultados:** participaram do estudo 26 pacientes predominantemente valvopatas, do sexo feminino, com sobrepeso/obesidade e hipertensão arterial. Quanto ao estresse percebido, a média do escore encontrada na amostra foi de 16,7, variando de dois a 30 pontos. **Conclusão:** concluímos que os pacientes apresentaram baixos sintomas de estresse no pré-operatório de cirurgias cardíacas.

**DESCRITORES:** Enfermagem perioperatória; Estresse fisiológico; Procedimentos cirúrgicos cardíacos.

## RESUMEN

**Objetivos:** evaluar la percepción de estrés de los pacientes en el preoperatorio de cirugías cardíacas. **Método:** estudio transversal con pacientes sometidos a cirugía de revascularización miocárdica, cirugías de corrección de valvulopatías y cirugías de corrección de enfermedades de la aorta. La recolección de datos se realizó a través de entrevistas individuales. Para evaluar la percepción de estrés se utilizó la Escala de Percepción de Estrés, compuesta por diez ítems respondidos en una escala ordinal de cero a cinco puntos, con puntajes van de 0 a 40 puntos, siendo los valores más altos indicativos de mayor sintomatología. **Resultados:** participaron del estudio 26 pacientes predominantemente con valvopatía, del sexo femenino, con sobrepeso/obesidad e hipertensión arterial. En cuanto al estrés percibido, la puntuación media encontrada en la muestra fue de 16,7, variando entre dos y 30 puntos. **Conclusión:** concluimos que los pacientes presentaron síntomas bajos de estrés en el preoperatorio de cirugías cardíacas.

**DESCRIPTORES:** Enfermería perioperatoria; Estrés fisiológico; Procedimientos quirúrgicos cardíacos.

## INTRODUCTION

According to the World Health Organization, non-communicable diseases, especially cardiovascular diseases (CVD), are the leading cause of death in the world.<sup>1</sup> In Portuguese-speaking countries, ischemic heart disease has been the leading cause of death, and the most relevant attributable risk factors were hypertension and diabetes mellitus for the development of CVD.<sup>2</sup>

In Brazil, the financial costs of treating CVD, such as hypertension, heart failure, myocardial infarction and atrial fibrillation, are high, with myocardial infarction causing the greatest cost to the health system, exceeding twenty billion reais in 2015,<sup>3</sup> encompassing health care in the clinical and perioperative context.

Currently, different forms of treatment for some CVDs are available. There is an increase in minimally invasive treatments, such as percutaneous transluminal angioplasty, transcatheter valve implantation, balloon valvuloplasty, among others. However, conventional surgical treatment, in some cases, may still be the only treatment available for many people.<sup>4</sup>

According to the Department of Informatics of the Unified Health System (DATASUS), in 2018, 20,674 coronary artery bypass graft (CABG) surgeries were performed, 9,805 surgeries to correct heart valve diseases and 5,526 surgeries to correct aortic diseases, showing the high number of surgical procedures still in place today.<sup>5</sup> From the establishment of the Covid-19 pandemic in Brazil, in March 2020, there was a significant reduction in the number of surgical procedures performed, since it was necessary to redirect the care of health services due to the

need to maintain preventive and protective measures in order to avoid contagion, elective procedures were suspended, with only urgent and emergency care being guaranteed, which may have contributed to complications arising from the impossibility of surgical treatment during the pandemic.<sup>6-7</sup>

Despite the advent of the pandemic, it is important to emphasize that the indication of cardiac surgery has a limiting character in the lives of patients, since it represents risks, while remaining without it can cause death.<sup>8</sup> Thus, the stress of these patients is inevitable, and the postoperative evolution can be impaired in those patients who do not develop adequate coping strategies.<sup>9</sup>

The evaluation of stress in patients in the perioperative period of medium and major surgeries has been the subject of some studies,<sup>10-13</sup> including studies with patients in the postoperative period of cardiac surgery, due to the high chances of presenting it in one of its four phases, alertness, resistance, near-exhaustion and exhaustion.<sup>9</sup>

In the surgical patient's attempt to manage the stressful stimuli inherent in the anesthetic-surgical procedure, the General Adaptation Syndrome (GAS) may be triggered. GAS involves the development of adaptive manifestations of the body as a defense mechanism against stress.<sup>14</sup>

Surgical patients may experience physical and emotional distress as early as the preoperative period, which can be confirmed by interviews, physical examination and specialist examination. Some may feel euphoric and in crisis due to the indication of the surgical procedure. In parallel to these symptoms,

the patient may experience severe psychological disturbances due to the uncertainty of the results of complementary tests. In these situations, the adrenal glands are hyperstimulated by the hypothalamus, causing increased release of noradrenaline into the circulation. This hormonal discharge may last for days or even weeks. After the anesthetic-surgical procedure, the adrenals may go into exhaustion, and consequently present hypofunction. Thus, between seven and 15 days after the procedure, the patient returns to euphoria and in the third week, it is expected that he/she has already overcome the stressors.<sup>14</sup>

Another important aspect to be considered is the individuality of each patient. Patients' perception and coping with the indication and performance of the anesthetic-surgical procedure vary from person to person, and are directly related to the sum of previous experiences. It is also worth mentioning that the physiological response to stress can influence postoperative outcomes. The impact of preoperative stress on the postoperative course may increase the risk of undesired outcomes as well as the length of hospital stay.<sup>9</sup>

After a vast literature review, studies were found focused mostly on the evaluation of perceived stress in the postoperative period of major surgeries, including cardiac surgeries, which reinforces the relevance of evaluating the perception of stress of patients in the preoperative period of cardiac surgeries, as it is a major surgery, and the very meaning that the heart brings with it, as the main organ of the body. In view of the above, the present study aimed to evaluate the perception of stress of patients in the preoperative period of cardiac surgery.

## METHOD

This is a descriptive observational study,<sup>15</sup> cross-sectional, carried out with patients during the preoperative period of coronary artery bypass grafting (CABG), surgeries to correct valvular heart disease (repair and replacement) and surgeries to correct aortic diseases (aneurysm and dissection), admitted to the surgical clinic inpatient units of a university hospital in the interior of São Paulo, between October 2019 and March 2020. The Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) was used to prepare the manuscript.<sup>16</sup>

A consecutive and non-probabilistic sample was made up of patients of both sexes, aged over 18 years, who were hospitalized in the preoperative period of cardiac surgeries (coronary artery bypass grafting, surgeries for the correction of valve diseases and surgeries for the correction of aortic diseases), regardless of whether it was the first surgery or reoperation, and who had the elective scheduling of their surgeries more than 12 hours in advance.

Patients who were not cognitively able to answer the questionnaires on the day of data collection were excluded, for which the following questions were used: "What is today's date?", "What is your age?", "What day of the week are we?", "What is the name of the place we are at the moment?"; and "What is your full name?" and "What is the name of the city where you

were born?"<sup>17</sup> Patients who made mistakes or were unable to answer three or more questions were withdrawn from the study.

The research followed all the ethical precepts of the Resolution of the National Health Council n.466 of December 12, 2012, and received approval by the Research Ethics Committee of the Ribeirão Preto Nursing School, under favorable opinion No. 3,480,523 and Certification of Presentation and Ethical Appreciation (CAAE): 13989819.0.00005393. Patients were invited to participate in the research and upon acceptance the Informed Consent Form (ICF) was signed in two copies, one copy for the patient and the other will be filed by the researcher.

Data collection occurred through individual interviews and consultation of the medical records of the participants in the preoperative period, the day before the cardiac surgery, in the surgical wards of the hospital. Data were collected for sociodemographic and clinical characterization and stress assessment.

For the sociodemographic and clinical characterization of the participants, an instrument was developed based on the literature review and clinical experience of the authors, containing sociodemographic data: dates of birth, hospitalization and interview, gender, presence of partner, education, professional status, monthly family income, number of people who depend on income and age, the latter being calculated from subtracting the date of birth from the date of interview; and clinical data: presence of associated diseases, lifestyle habits (smoking), medications used in the perioperative period (psychotropic drugs), surgery performed and number of surgeries (first surgery or reoperation). The use of psychotropic drugs was investigated, since the aim was to evaluate the subjective construct by means of scalar instruments.

To assess the perception of stress, the "Stress Perception Scale (EPS-10)"<sup>18</sup> was used in its version adapted to Portuguese.<sup>19</sup> It consists of ten items evaluated using a five-point ordinal scale: (0) never, (1) almost never, (2) sometimes, (3) infrequently and (4) very frequently. To answer the items, the patient considered the last 30 days. Items 4, 5, 7 and 8 are positive and for this reason they were reversed. After reversal, all items must be added together. The score is obtained with the sum of all items and can range from 0 - 40, with higher values indicating greater perceived stress.

Data were entered into the IBM SPSS program version 22.0 for Windows (SPSS, Inc., Chicago, IL, USA) for descriptive analysis of the study variables. Simple frequency descriptive analyses were performed for nominal or categorical variables, and central tendency (mean and median) and dispersion (standard deviation) analyses for numerical variables.

## RESULTS

A total of 26 patients participated in the study. The sociodemographic characterization of the sample is described in Table 1, with emphasis on the variables: gender, age, presence of a partner, schooling, monthly income, dependents of income and professional status.

**Table 1** - Characterization of participants. Ribeirão Preto, SP, Brazil, 2020

Variable	Mean (SD)*	n (%)
Gender		
Female		16 (61,5)
Age	60,1 (10,0)	
Presence of a partner		
With Companion		14 (53,8)
Education (completed years)	5,8 (4,8)	
Monthly Income (in BRL)	R\$1.783,4 (2.071,7)	
Income Dependent Persons	2,4 (1,3)	
Professional Status		
Inactive		19 (73,1)

Mean (SD)\*: Mean (Standard Deviation)

We observed that most patients were female, lived with a partner and were inactive at the time of hospitalization. We also found that the patients had low income and education.

Table 2 describes the clinical and surgical variables of the patients.

The majority of the patients had valvular heart disease and were already overweight/obese and had systemic hypertension preoperatively. It was also observed that 15.4% of the patients made continuous use of psychopharmaceuticals.

Regarding the number of surgeries, we found that the majority underwent the first cardiac surgery (n=23.0; 88.5%).

Regarding perceived stress, the mean score found in the sample was 16.7 (Standard Deviation=7.4; median=17.5), ranging from two to 30.

The frequency of response to the scale items is shown in Table 3.

**Table 2** - Clinical and surgical variables of the participants. Ribeirão Preto, SP, Brazil, 2020

Variable	n (%)
Presence of associated diseases	
Overweight/obesity	21 (80,8)
Systemic Arterial Hypertension	18 (69,2)
Dyslipidemia	09 (34,6)
Mellitus Diabetes	09 (34,6)
Atrial Fibrillation	03 (11,5)
Smoking	
Pregress	15 (57,7)
Current	01 (3,8)
Use of psychopharmaceuticals	
At home	04 (15,4)
Surgery performed	
Correction of valvular heart disease	17 (65,4)
Myocardial revascularization	08 (30,8)
Combined*	01 (3,8)

Combined\* = Valvular heart disease repair concomitant with myocardial revascularization.

**Table 3** - Description of the frequency of response of the items of the "Stress Perception Scale (EPS-10)". Ribeirão Preto, SP, Brazil, 2020

Question	Never n (%)	Almost never n (%)	Sometimes n (%)	Infrequent n (%)	Very frequent n (%)
1. How often have you been upset because of something that happened unexpectedly?	08 (30,8)	03 (11,5)	07 (26,9)	03 (11,5)	05 (19,2)
2. How often have you felt that you were unable to control important things in your life?	08 (30,8)	03 (11,5)	07 (26,9)	05 (19,2)	03 (11,5)

3. How often have you been nervous or stressed?	05 (19,2)	03 (11,5)	07 (26,9)	06 (23,1)	05 (19,2)
4. How often were you confident in your ability to deal with your personal problems?	0	01 (3,8)	04 (15,4)	06 (23,1)	15 (57,7)
5. How often did you feel that things happened the way you expected?	04 (15,4)	04 (15,4)	06 (23,1)	05 (19,2)	07 (26,9)
6. How often did you feel you could not cope with all the things you had to do?	04 (15,4)	03 (11,5)	10 (38,5)	03 (11,5)	06 (23,1)
7. How often have you been able to control irritations in your life?	01 (3,8)	01 (3,8)	10 (38,5)	05 (19,2)	09 (34,6)
8. How often did you feel that all aspects of your life were under control?	02 (7,7)	04 (15,4)	05 (19,2)	05 (19,2)	10 (38,5)
9. How often have you been angry because of things that were out of your control?	05 (19,2)	03 (11,5)	04 (15,4)	06 (23,1)	08 (30,8)
10. How often have you felt that problems have piled up so much that you could not solve them?	10 (38,5)	03 (11,5)	04 (15,4)	03 (11,5)	06 (23,1)

## DISCUSSION

The objective of evaluating the perception of stress of patients in the preoperative period of cardiac surgery was achieved, since the mean total score of the items that make up the scale was 16.7 points, indicating the perception of stress in the participants.

It is important to emphasize that the sample was numerically unrepresentative, due to the interruption of data collection, due to the global pandemic scenario by Covid-19, which restricted the researchers' access to the hospitalization units of the hospital. Because we are evaluating a subjective construct, we chose to end the data collection phase and work with the data from the sample presented on screen. However, the findings may collaborate with future studies, since in the national literature there is a scarcity of

studies that reveal the subjective construct in question in patients in the preoperative period of cardiac surgery.

The sociodemographic characteristics of the sample are in agreement with other studies<sup>20-22</sup> that evaluated the stressors and perceptions of patients about the preoperative period of cardiac surgery, where there is a predominance of married patients, professionally inactive and with low education and monthly income. However, in the present study the female gender was predominant, differently from what was found in the literature.<sup>8,13,20</sup>

In a study that evaluated the relationship between perceived stress with coping and stressors of patients in preoperative myocardial revascularization, the mean age found was 60.1 years, being identical with the mean age of the present investigation, evidencing a group of elderly patients.<sup>13</sup>

Among the associated diseases presented by the patients, overweight/obesity was the most frequent (80.8%), followed by SAH (69.2%), dyslipidemia (34.6%) and diabetes mellitus (34.6%). In other studies in the literature, SAH was also the most frequently found comorbidity, along with obesity, dyslipidemia and diabetes mellitus.<sup>12,21-22</sup>

In the study that aimed to identify the epidemiological profile and point out the complications in the postoperative period, the authors stated that mortality from cardiovascular diseases increases progressively with elevated blood pressure and obesity.<sup>14</sup> In addition, the relative risk of mortality was higher for patients who had diabetes when compared to the healthy population, and may become even higher in the presence of other associated diseases.<sup>23</sup>

It is also worth noting that CVDs are the main causes of morbidity and mortality in Brazil, being considered a major public health problem. Dyslipidemias are among the most important risk factors for cardiovascular disease, integrating the set of chronic-degenerative diseases most representative in this group.<sup>1</sup>

Regarding lifestyle, most reported smoking at some point in their lives. Smoking is the main risk factor for death from chronic non-communicable diseases, responsible for six million deaths per year. This risk factor is associated with 10% of adult deaths from heart disease.<sup>1</sup>

Regarding the type of surgery performed, the correction of valvular heart disease was predominant, unlike other studies in the literature, which showed myocardial revascularization as the most frequent type of cardiac surgery.<sup>20</sup>

Cardiac surgeries are considered interventions of choice in many cases of heart disease. Advances in the clinical treatment of heart disease have been notorious in recent years, especially with the adoption of increasingly less invasive approaches, however, in many cases, major interventions are the only possibility to ensure patient survival.<sup>11</sup>

Aspects related to physical limitation in the preoperative period, anxiety prior to the surgical act and fear regarding the postoperative period, tend to trigger stress in patients waiting for surgical intervention.<sup>24-25</sup>

Stress is considered a negative factor in the course of any disease, especially in the perioperative context, as it can impair the treatment and quality of life of patients after surgical intervention.<sup>24</sup> The preoperative period for cardiac patients is a stressful time and is related to intrinsic factors to the surgical intervention, since there are feelings of fear related to pain, postoperative complications and even death.<sup>25-26</sup> However, there are stressors beyond the disease and the surgical procedure to be considered, such as facing economic problems related to work and the degree of family dependence before and after cardiac surgery.<sup>13</sup>

It was observed that the Stress Perception Scale (EPS-10) used in this study revealed the perception of stress in the preoperative period, from the questions that reflected the existence of stressors related to factors extrinsic to the disease, since 10 (30.8%) participants stated the existence of accumulated problems without conditions for resolution, at the time of application of the questionnaire. However, aspects related to confidence, balance about adversities, related to

the disease or not, and control over life aspects in general were positively evaluated by the participants.

The mean score was 16.7 points, considering zero as the minimum score and a maximum score of 40 points. The median was 17.5 points, with a range of 0 to 30 points. Evidence found in the literature showed the existence of preoperative stress in patients undergoing coronary artery bypass grafting in a study conducted in southeastern Brazil, with a mean score of 20.5 points, with a standard deviation of 8.2 and a minimum score of 3 and a maximum of 39 points, using the Perceived Stress Scale (PSS-14).<sup>13</sup>

Corroborating the findings of the study on screen, another study conducted in a municipality in the interior of São Paulo, Brazil, revealed the existence of stress, through the Perceived Stress Scale (PSS-10), in a group of 52 patients, candidates for transplants, in the preoperative period, with an average score of 12.1, standard deviation of 5.62, with 48 patients with scores below 20 points and only 4 patients with a score above 20 points.<sup>24</sup>

However, another study conducted in a capital city in northeastern Brazil, using the Perceived Stress Scale (PSS) with elderly patients in the pre- and postoperative period, revealed the existence of stress, mostly in the postoperative period, and the perceived stress was revealed only from the results of the application of the Lipp Inventory of Stress Symptoms for Adults (LISSA).<sup>10</sup>

In this perspective, the study on screen reaffirms the existence of stress in patients in the preoperative period of cardiac surgery in the sample studied, with mean values close to 20 points, as a cutoff score for the characterization of stress perceived by the patients of that study.<sup>24</sup> However, the study only revealed the existence of stress in a descriptive way, without the application of other instruments that could show whether the perceived stress is intrinsic to the disease, to the surgical procedure or to factors extrinsic to the disease, such as the withdrawal from work activities due to the disease, which has a negative impact on financial life, and the dependence on family members at the present time and after the surgical act.<sup>13</sup>

Another study<sup>8</sup> revealed the existence of stress, however, aspects related to little or no information about the perioperative period favored the development of anxiety and potentiated the emergence of stress in the preoperative period. However, in this study, the subjective aspect that may have potentiated stress was not revealed from the application of the Perceived Stress Scale (PSS). It is believed that the extrinsic adversities of the disease tend to compromise the mental health of patients in the preoperative period, given that they can have negative repercussions on health and quality of life in the postoperative period.

The study has limitations related to the cross-sectional design and sample size that did not allow generalized inferences about stress in patients in the preoperative period of cardiac surgery.

## CONCLUSION

Considering that the total score ranges from 0 to 40, we can conclude that patients had low scores that referred to the stress perceived in the preoperative period of cardiac surgery.

However, it is known that the presence of stress is directly related to the response of the General Adaptation Syndrome, which may cause losses in the recovery of patients in the immediate postoperative period of cardiac surgery, which reinforces the need to provide information to patients and family members about the disease, the surgical procedure and the stages of recovery, with a view to minimizing intrinsic and extrinsic stressors to hospitalization.

Based on the findings, we suggest the realization of analytical observational studies, which allow to verify the existence of intrinsic events to the clinical condition that may collaborate to the triggering of stress in the preoperative period of cardiac surgery.

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