Lifestyle and Pain Perception of Adults in the Pre-cardiac Surgery Period

Estilo de Vida e Percepção da Dor de Adultos no Período Pré Cirurgia Cardíaca
Estilo de Vida y Percepción del Dolor en Adultos en el Período Preoperatorio de Cirugía Cardíaca

RESUMO
O estudo avaliou o estilo de vida e a percepção da dor em adultos no período pré-operatório de cirurgia cardíaca, em um hospital de referência no interior do Rio Grande do Sul, Brasil. Foi um estudo descritivo e transversal, realizado entre maio e agosto de 2022, com 26 participantes (idade média 61 anos), predominando o sexo feminino (n = 15). Foram utilizados questionários para coletar dados sociodemográficos, perfil clínico, percepção da dor (Questionário de Dor de McGill versão curta e Escala Visual Analógica) e estilo de vida (Estilo de Vida Fantástico). A média do índice de massa corporal indicou sobrepeso em ambos os sexos (29,06 ± 5,66). A maioria dos sujeitos relatou dor moderada (n = 15). Mulheres apresentaram melhores escores de estilo de vida (p = 0,016), destacando-se nos domínios Nutrição (p = 0,016) e Álcool (p = 0,004). Os resultados sugerem hábitos mais saudáveis entre mulheres comparadas aos homens.
DESCRITORES: Cirurgia Cardíaca; Avaliação da Dor; Doenças Cardiovasculares; Estilo de Vida.

ABSTRACT
The study evaluated the lifestyle and pain perception of adults in the preoperative period of cardiac surgery at a referral hospital in the interior of Rio Grande do Sul, Brazil. It was a descriptive, cross-sectional study conducted between May and August 2022 with 26 participants (mean age 61 years), mostly female (n = 15). Questionnaires were used to collect sociodemographic data, clinical profiles, pain perception (Short-Form McGill Pain Questionnaire and Visual Analogue Scale), and lifestyle (FANTASTIC Lifestyle Questionnaire). The average body mass index indicated overweight in both sexes (29.06 ± 5.66). Most subjects reported moderate pain (n = 15). Women showed better lifestyle scores (p = 0.016), especially in the Nutrition (p = 0.016) and Alcohol (p = 0.004) domains. The results suggest healthier habits among women compared to men.
DESCRIPTORS: Cardiac Surgery; Pain Assessment; Cardiovascular Diseases; Lifestyle.

RESUMEN
El estudio evaluó el estilo de vida y la percepción del dolor en adultos durante el período preoperatorio de cirugía cardíaca en un hospital de referencia en el interior de Río Grande del Sur, Brasil. Fue un estudio descriptivo y transversal realizado entre mayo y agosto de 2022 con 26 participantes (edad media 61 años), predominando el sexo femenino (n = 15). Se utilizaron cuestionarios para recopilar datos sociodemográficos, perfiles clínicos, percepción del dolor (Cuestionario de Dolor de McGill versión corta y Escala Visual Analógica) y estilo de vida (Cuestionario de Estilo de Vida FANTÁSTICO). El índice de masa corporal promedio indicó sobrepeso en ambos sexos (29,06 ± 5,66). La mayoría de los sujetos reportó dolor moderado (n = 15). Las mujeres obtuvieron mejores puntuaciones en estilo de vida (p = 0,016), destacándose en los dominios Nutrición (p = 0,016) y Alcohol (p = 0,004). Los resultados sugieren hábitos más saludables en mujeres comparadas con los hombres.
DESCRIPTORES: Cirugía Cardíaca; Evaluación del Dolor; Enfermedades Cardiovasculares; Estilo de Vida.

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INTRODUCTION

Cardiovascular diseases (CVD) have become an extremely important public health problem. In the case of Brazil, CVD has been the leading cause of mortality since the 1960s, which indicates the need for a variety of studies on the subject. [1] There are several CVDs and their causes can be multiple. Several factors are known to increase cardiovascular risk, such as obesity, systemic arterial hypertension (SAH), dyslipidemia and a sedentary lifestyle, among others[2]. The types and degrees of involvement are decisive in defining treatment, which can be clinical or surgical. Cardiac surgeries are highly complex procedures that involve a period of critical care that requires appropriate treatment, considering that cardiac surgery can alter physical and functional conditions, bringing repercussions to the body and instability of the clinical picture, from the preoperative hospitalization[3].

Lifestyle is a determining factor in maintaining cardiovascular health. It is estimated that 80% of deaths from cardiovascular diseases in the world could be avoided with lifestyle changes alone. In absolute terms, the WHO warns that up to 5 million deaths a year could be avoided if the population worldwide were more physically active4. In the Brazilian population, evidence indicates a proportional increase in CVDs due to the growth of four main lifestyle-related risk factors, which include: tobacco use, unhealthy diet, physical inactivity and excessive consumption of alcoholic beverages[5]. Knowing the lifestyle of the subjects, even in the preoperative period, is important for postoperative planning, including hospital discharge, since changing behavior is fundamental to the long-term success of the treatment.

When the disease is already established and the indication for treatment is surgery, assessing the patient's pain in the preoperative period is extremely important, as it is an instrument for a comprehensive understanding of the subject's state of health and can provide relevant information for clinical decisions. Pain produces a series of clinical responses that can alter the subjects' vital functions[6], the patient's self-reported perception of pain can be an important tool for a comprehensive understanding of the pain phenomenon, and can provide relevant information for clinical decision-making, in order to make the approaches more resolutive[7].

Although these factors, lifestyle and pain, are important for understanding and characterizing CVDs with an indication for surgical treatment and for supporting interdisciplinary actions from the perspective of comprehensive patient care, the comparison between them in the preoperative period of cardiac surgery is still little described in the scientific literature, since studies in the postoperative period are more present[8]. In view of this, we sought to evaluate the lifestyle and perception of pain of subjects admitted for cardiac surgery in a teaching hospital in southern Brazil,

METHOD

This is a descriptive exploratory cross-sectional study, carried out with adult patients in the preoperative period of elective cardiac surgery and developed in accordance with the Guidelines and Regulatory Norms for Research Involving Human Beings according to the Resolution of the National Health Council (CNS) No. 466/2012 and approved by the Research Ethics Committee under opinion No. 5746827 and CAAE 54192121.0.0000.5343. Participants were selected by convenience sample, of both sexes, evaluated between May and August 2022. During this period, 42 cardiac surgeries were carried out at the hospital, but for this study it was possible to carry out 26 evaluations, due to the period in which the researchers were able to be present on site. The study included subjects over the age of 18 who had been admitted for cardiac surgery, such as: coronary artery bypass grafting (CABG), also known as cardiac by-pass; valve disease repair (VD), also known as valve repair or valve replacement (TV); and aortic artery disease repair (AAD). The study site was a philanthropic teaching hospital in the interior of the state of Rio Grande do Sul, which is a reference in high-complexity cardiovascular care.

The researchers recruited the sub-

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jects using the operating room diary, since it was possible to find out from the diary the dates on which each subject would have their surgery and which bed the patient had been admitted to. After this, a careful analysis of each patient's medical records was carried out, so patients who did not present all the data requested, or who had cognitive deficits and/or language difficulties, were excluded from the study beforehand. Two subjects were excluded from the sample during the medical records assessment phase. In this way, suitable subjects were invited to take part in the study, resulting in 26 subjects being assessed, 8 of whom agreed to take part only when a family member was present, so it was necessary to go to the patient's place of hospitalization more often to carry out the assessment. The patient was admitted 24 hours before surgery, so there was little time to apply the instruments. The assessment took place the day before surgery and lasted an average of 40 minutes. An anamnesis was taken of the subjects before the instruments were applied to identify their clinical profile, by analyzing pre-existing morbidities and clinical variables (age, gender, weight, height, body mass index - BMI). BMI was assessed using the subjects' self-reported weight and height. To assess pain perception, the short version of the McGill Questionnaire was used, which was translated into Portuguese and validated by Costa et al9. The questionnaire has 15 questions and each question contains the following options: no perception of pain; a slight perception of pain; moderate pain; severe pain. Pain is then classified in its sensory and affective dimensions, along with a visual analog scale (VAS)[9], which assesses the overall intensity of pain in recent days and a six-item scale with a global description of intensity.

To assess lifestyle, the "Fantastic Lifestyle" questionnaire was used, validated for Portuguese by Rodriguez Añez et al[10]. The instrument has 25 questions and each question has a score from 0 to 4, divided into nine domains: 1) family and friends; 2) physical activity; 3) nutrition; 4) tobacco and drugs; 5) alcohol; 6) sleep, seat belt, stress and safe sex; 7) type of behavior; 8) introspection; 9) work. The questionnaire was administered in a dialogical way to ensure that the subjects understood it better. In this way, the applicator read out the questions and then the alternatives. The sum of the points resulted in a total score that classifies individuals into categories according to their lifestyle status: "Excellent" (85 to 100 points), "Very good" (70 to 84 points), "Good" (55 to 69 points), "Fair" (35 to 54 points) and "Needs improvement" (0 to 34 points). For this study, each domain was also analyzed individually, in order to assess which domains had the best and worst scores perceived by the subjects in relation to lifestyle. To do this, the average score of the subjects participating in each domain was calculated, which made it possible to analyze them individually in terms of their scores.

The data was analyzed using the JASP 0.14 software. The normality of the quantitative variables was assessed using the Shapiro-Wilk test. The quantitative variables were described as mean and standard deviation. The Chi-square test was used to evaluate categorical data. To evaluate and compare the variables Gender, Pain, BMI, Type of Surgery and Age Group of the sample, the STUDENT T-test and ANOVA were used for those with a normal distribution and Kruskal-Wallis for those with an asymmetric distribution, with a significance level of $p<0.05$. Categorical variables were expressed as absolute and relative frequencies.

RESULTS

26 subjects took part in the study with an average age of 61± 9.95 years, more than half of them female (n= 15). The most prevalent profession was Farmer (n= 9), followed by the Retired category (n= 7), and the most prevalent municipality of residence was Cachoeira do Sul (n= 8) (Table 1).

Table 1: Sociodemographic characterization of subjects undergoing heart surgery at a teaching hospital in Rio Grande do Sul.

		Male	Female	Total
		n (%)	n (%)	n (%)
No. of subjects		11 (42,31)	15 (57,69)	26 (100,00)
Age_		62 ± 5,98	60,2 ± 12,24	61,0 ± 9,95
Age group	< 60	6 (54,54)	6 (46,66)	13
	> 60	5 (45,45)	8 (53,33)	13
Profession	Farmer	6 (54,54)	3 (20,00)	9 (34,61)
	Retired	2 (18,18)	5 (33,33)	7 (26,92)
	General services	2 (18,18)	3 (20,00)	5 (19,23)
	Other	1 (9,09)	4 (26,26)	5 (19,23)
Municipality of residence	Cachoeira do Sul	2 (18,18)	6 (40,00)	8 (30,76)
	Santa Cruz do Sul	-	6 (40,00)	6 (23,07)
	Venâncio Aires	3 (27,27)	-	3 (11,53)
	Pantano Grande	1 (9,09)	1 (6,67)	2 (7,69)
	Other cities	5 (45,45)	2 (13,34)	7 (26,88)

Survey data
Legend: _average±SD

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The clinical profile of the subjects (Table 2) was based on the type of surgery performed and previous morbidities. The most common surgeries were CABG (n= 8), DV (n= 8) and CABG and DV in the same hospitalization (n= 6). When analyzing BMI, the subjects of both sexes were classified as overweight (29.06± 5.66). With regard to the number of previous morbidities, a minority did not have any associated conditions (n= 2), the majority of the sample (n= 15) had three or more diseases associated with CVD, the most prevalent being: SAH (n= 20), Coronary Artery Disease (CAD) (n= 16) and Dyslipidemia (n= 12). There was a significant difference between women and men in the Other variable (p= 0.001), indicating that women had a higher prevalence of other types of morbidity than men. Family history was another relevant aspect, with the majority of subjects reporting this characteristic in the family (n= 16).

Table 2: Clinical profile of subjects undergoing heart surgery at a teaching hospital in Rio Grande do Sul.

		Male	Female	Total	p
		n (%)	n (%)	n (%)	
Type of surgery	CABG	4 (36,36)	4 (26,66)	8 (30,76)	0,904*
	DV	3 (27,27)	5 (33,33)	8 (30,76)	
	DAA	2 (18,18)	2 (13,33)	4 (15,38)	
	CRM + DV	2 (18,18)	4 (26,66)	6 (23,07)	
BMI_		29,87 ± 4,37	28,47 ± 6,52	29,06 ± 5,66	0,287#
N° Morbidities		2 (18,18)	-	2 (7,69)	0,087*
	None	5 (45,45)	4 (26,66)	9 (34,61)	
	One or two	4 (36,36)	11 (73,32)	15 (57,69)	
Morbidities	Three or more	7 (63,63)	13 (86,66)	20 (76,92)	0,169*
	SAH	6 (54,54)	10 (66,66)	16 (61,53)	0,530*
	DAC	3 (27,27)	9 (60,00)	12 (46,15)	0,098*
	Dyslipidemia	3 (27,27)	4 (26,66)	7 26,92)	0,973*
	DM	1 (9,09)	1 (6,66)	2 (7,69)	0,819*
	Cancer	2 (18,18)	13 (86,66)	15 (57,69)	0,001*
Family history	Other	6 (54,54)	10 (66,66)	16 (61,53)	0,530*
	Yes	5 (45,45)	5 (33,33)	10 (38,46)	

Survey data
Legend: _mean±SD; *Qui Square; #Kruskal-Wallis; CABG: Coronary Artery Bypass Grafting; VD: Valvular Disease; AAD: Aortic Artery Disease; BMI: Body Mass Index; SAH; Systemic Arterial Hypertension; CAD: Coronary Artery Disease; DM: Diabetes Mellitus.

In the lifestyle assessment (Table 3), the subjects were classified as Very Good (n= 7), Good (n= 10) and Fair (n= 9), and when comparing these results by gender, a significant difference was found (p = 0.010). There were no results for the Needs Improvement and Excellent statuses in this study. In relation to the domains, the Nutrition (p= 0.016) and Alcohol (p = 0.004) domains showed a significant difference when comparing the sexes, while the other results were similar. In 8 domains, females obtained higher scores compared to males, who only obtained a slightly higher score in the Work domain.

Table 3: Lifestyle of subjects undergoing heart surgery at a teaching hospital in Rio Grande do Sul.

		Male	Female	Total	p
		n (%)	n (%)	n (%)	
Lifestyle status	Very good	2 (18,18)	5 (33,33)	7 (26,90)	0,010*
	Good	3 (27,27)	7 (46,66)	10 (38,50)	
	Fair	6 (54,54)	3 (20,00)	9 (34,60)	
Domains_	Family and Friends	63,63 ± 28,89	78,33 ± 17,33	72,11 ± 22,16	0,070^
	Physical activity	32,95 ± 21,84	48,33 ± 23,08	41,82 ± 23,43	0,050^
	Nutrition	30,29 ± 13,08	46,86 ± 21,36	39,85 ± 19,84	0,016^

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Domains_	Tobacco and Toxics	74,65 ± 16,94	77,50 ± 12,45	76,29 ± 14,27	0,313^
	Alcohol	68,86 ± 36,70	97,54 ± 5,23	84,92 ± 28,05	0,004^
	Sleep, Safety Safe Sex	60,50 ± 15,53	63,00 ± 17,19	62,00 ± 16,26	0,467^
	Type of Behavior	22,72 ± 13,48	40,00 ± 25,96	32,69 ± 22,93	0,028^
	Introspection	57,51 ± 18,46	59,47 ± 26,56	58,61 ± 22,91	0,381^
	Work	97,72 ± 7,53	93,33 ± 11,43	95,19 ± 10,04	0,140^

Survey data
Legend: _ mean±SD; * Chi-square; ^ Student's t-test; The lifestyle statuses "needs improvement" and "excellent" had no results in the sample.

The study evaluated different types and intensities of pain in men and women in the preoperative period of heart surgery. The majority of participants reported moderate pain or no pain, regardless of gender. For general pain (VAS), 57.7% (n = 15) felt moderate pain, with similar percentages between men and women. For throbbing pain, most felt no pain, but some women reported severe pain more often than men. In heavy pain, most women felt no pain, while some men reported mild pain. Other types of pain, such as sharp, nauseating, cutting and tiring pain, also showed variations in intensity, but the differences between the sexes were not statistically significant. Overall, the results indicate that the perception of pain is similar between men and women in this group, with no relevant differences in the types and intensities assessed.

When investigating the association between lifestyle scores and demographic and clinical variables (Table 4), it was observed that women had better lifestyle scores in relation to men (p = 0.016). However, when comparing the lifestyle score with Pain, BMI, Type of Surgery and Age Group, the results were similar and did not indicate significant differences, considering a significance level of p<0.05. This may be due to the small sample size.

Table 4: Comparison between the lifestyle score and demographic and clinical variables of subjects undergoing heart surgery in a teaching hospital, RS.

		mean±SD	P
Sex	Male	56,45 ± 8,74	0,016^
	Female	64,93 ± 9,72	
Pain	Mild	67,20 ± 13,95	0,447"
	Moderate	60,73 ± 9,13	
	Intense	58,00 ± 8,39	
BMI	Underweight	52,00 ± 1,14	0,056#
	Ideal weight	70,00 ± 4,52	
	Overweight	60,05 ± 10,21	
Type of Surgery	CABG	60,87 ± 9,07	0,201"
	DV	67,25 ± 12,33	
	DAA	57,75 ± 6,39	
	CRM+DV	56,50 ± 7,81	
Age group	< 60	61,92 ± 11,92	0,611^
	> 60	60,76 ± 8,308	

Research data
Legend: BMI: Body Mass Index; CABG: Coronary Artery Bypass Grafting; VD: Valvular Disease; AAD: Aortic Artery Disease; Student's ^T test was used to compare the lifestyle score with gender and age group; the non-parametric #Kruskal-Wallis test was used for BMI; the parametric "ANOVA" test was used to compare the lifestyle score with Pain and Type of Surgery.

DISCUSSION

This study found that during the evaluation period, the 26 subjects hospitalized for elective heart surgery had a mean age of 61±9.95 years, which corroborates the notion that aging increases the risk of heart disease[5;11]. The most prevalent profession found, Farmer, may be related to the region where the institution in which the research was carried out is located, which has farming as its main economic activity[12]. The second group was made up of retired people, which is related to the average age of the participants. Estimating prevalence and investigating sociodemographic, health and lifestyle factors is important, as CVD can be associated with these factors[13]. Most of the participants in this study were women,

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similar to other recent studies[14-15], which indicate the process of feminization of ageing, resulting from women's longer life expectancy.

Among the subjects in this study, the most common type of surgery performed was CABG and DV, corresponding to the most frequent procedures in the country in the case of CVD with an indication for surgical treatment. Using the SIH/SUS database, Oliveira et al1assessed the number of hospitalizations in Brazil between 2008 and 2018 and reported that of the 1,149,602 surgical/interventional cardiovascular procedures performed in the period, coronary angioplasty accounted for 66% (755,557), followed by CABG (21%, 244,105) and heart valve surgery (8%, 88,280).

Another result to be highlighted in this study was the number of participants who were overweight and the prevalence of associated diseases, the most frequently reported being hypertension (n= 20), CAD (n= 16) and dyslipidemia (n= 12), as well as family history, reported by the majority of subjects. These findings are similar to studies carried out by other authors[16;17] which highlight the simultaneity of risk factors as something common among CVDs. SAH is the main risk factor for CVD and is a clinical condition with a high prevalence associated with high mortality risks[16]. The population analyzed in the study was classified as overweight according to their average BMI (29.06± 5.66). Although BMI may underestimate body fat because it does not differentiate between body fat and muscle mass, it is an index frequently used in epidemiological studies as a predictor of overweight, obesity and energy malnutrition in non-athletes, and is recommended as a nutritional indicator by the WHO. Obesity can be associated with a higher incidence of developing risk factors related to cardiovascular diseases[17].

The Malta study [18] highlights smoking, alcohol abuse, physical inactivity and the consumption of high-fat, energy-dense foods as risk factors for CVD. However, in the assessment of the Tobacco and Alcohol domains in this study, the scores were high, not showing these domains as a risk factor for the subjects in this study. On the other hand, the Physical Activity, Nutrition and Type of Behavior domains had the lowest scores, a result that corroborates the idea that physical inactivity and consumption of unhealthy foods can be risk factors for CVD. Cassiano et al[14] point out that the impact of physical activity on people's lives deserves careful consideration in the context of Physical Education. Physical activity can help increase muscle strength, lower blood pressure, develop psychological and social aspects, reduce stress and improve motor, cognitive and socialization functions19. Scientific evidence shows that non-drug measures such as regular physical activity and proper nutrition, including the adoption of healthier habits, are initial and relevant strategies that can help in the treatment of conditions associated with CVD[20].

Other studies have associated physical inactivity as a significant risk factor for CAD, due to the increase in body weight and the decompensation it can cause, including an increase in triglycerides and a reduction in HDL-c, the ratio of which is an indicator of cardiovascular risk[15; 21]. Adherence to regular physical activity has favorable effects on the modification and control of many of these risk factors, and it is recommended that physical exercise be performed, preferably five times a week, lasting at least 30 minutes. The practice of exercise is a fundamental tool for avoiding the risks related to CVD, it can speed up the recovery process and restore the functional capacity of those affected, through a structured protocol that has been built up since the pre-surgical period[22].

The effects of regular exercise can be acute or chronic. The acute effect is the immediate response the body receives after a training session. This action can last up to 24 hours and increases blood flow, resting metabolic rate and endothelial function, among other things. The chronic effect is achieved by repeated acute effects, which can be observed at rest, such as the resting bradycardia seen in athletes who do predominantly aerobic activities. These repeated responses can help to reduce blood pressure levels, blood glucose levels, inflammatory markers, among others. In this way, regular exercise acts as a powerful tool for primary and secondary prevention. Primary prevention is aimed at limiting the incidence of cardiovascular disease, through actions to control risk factors and their causes, as a way of protecting and promoting health. Secondary prevention aims to reduce the damage and a new cardiovascular event for those affected by the disease, through changes in habits and lifestyle, medical monitoring through tests and the use of medication to improve the quality of life and survival of this population[22].

On the pain scale, the majority of the subjects assessed reported a moderate perception of pain, while the most common pain reported was severe pain. Measuring pain is also important in the preoperative period, although this discussion is scarce in the literature for this period, appearing more in studies related to the postoperative period. When properly assessed, this factor allows the multidisciplinary team to organize the best course of action for the individual's care[8]. The work of a multidisciplinary team is extremely important to increase the quality of care, as the different professions that make up this team can formulate actions that include pain management, prevent-

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ing pain sensations from harming the patient during hospitalization before surgery[8].

In the present study, although most of the results were similar, probably due to the limited sample size, it was observed that the female participants had better lifestyle scores, better scores in the nutrition and alcohol domains, which may suggest that women have better eating habits and consume less alcohol than men. This finding corroborates data from another study[23], whose results indicated that women had healthier eating habits, a higher rate of moderate-vigorous physical activity and a lower rate of smoking and obesity than men.

Other studies examining the relationship and effectiveness of lifestyle interventions have shown benefits in reducing the risk of mortality and improving the vascular health of individuals[24], which may indicate that a healthy lifestyle is associated with a lower risk of CVD and mortality[25] and that lifestyle analysis may be important for planning the treatment of individuals undergoing heart surgery.

This study has some limitations, such as the short collection period (4 months) and the fact that it was carried out in just one hospital, which resulted in a small sample. It is therefore recommended that future research be carried out with larger samples and in different contexts. Despite these limitations, the results suggest that women tend to adopt healthier lifestyle habits, with lower alcohol consumption and a better dietary pattern compared to men. As for the perception of pain in the preoperative period, the majority of participants reported moderate pain. These findings highlight the importance of knowledge about lifestyle and pain perception to support interdisciplinary interventions, promoting more comprehensive and individualized care for hospitalized patients.

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