

CLINICAL PROFILE OF WOMEN SUBMITTED TO MYOCARDIAL REVASCULARIZATION SURGERY AND VALVE EXCHANGE

PERFIL CLÍNICO DE MULHERES SUBMETIDAS À CIRURGIA DE REVASCULARIZAÇÃO DO MIOCÁRDIO E TROCA VALVAR

PERFIL CLÍNICO DE LAS MUJERES SOMETIDAS A LA CIRUGÍA DE REVASCULARIZACIÓN MIOCÁRDICA E INTERCAMBIO DE VÁLVULAS

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How to cite this article: Gutierrez ED, Rocha LP, Brum NA, Yasin JCM, Carvalho DP, Brum RG. Clinical profile of women submitted to myocardial revascularization surgery and valve exchange. Rev baiana enferm. 2020;34:e38509.

Objective: to describe the clinical profile of women undergoing myocardial revascularization surgery and valve replacement. **Method:** documentary, retrospective, analytical, quantitative study, conducted with 131 medical records of patients submitted to cardiac surgery in a hospital in southern Rio Grande do Sul. Data were collected in 2018. The data were analyzed by chi-square tests and Spearman's correlation test. The significance level of 5% was considered for all statistical tests ($p < 0.05$). **Results:** there were significant associations in the clinical characteristics for smoking, obesity and recent acute myocardial infarction ($p = 0.009$, 0.017 and 0.029 , respectively). **Conclusion:** the findings showed important characteristics of a significant group of patients, stressing the attention that should be attributed to health prevention activities and control of risk factors in women, mainly due to the association of climacteric and the development of cardiovascular diseases.

Descriptors: Women's Health. Cardiovascular Disease. Myocardial Revascularization. Heart Valves. Nursing.

Objetivo: descrever o perfil clínico de mulheres submetidas à cirurgia de revascularização do miocárdio e troca valvar. *Método:* estudo documental, retrospectivo, analítico, quantitativo, realizado em 131 prontuários de pacientes submetidas à cirurgia cardíaca em um hospital no sul do Rio Grande do Sul. A coleta de dados foi realizada no ano de 2018. Os dados foram analisados pelos testes de Qui-quadrado e o teste de Correlação de Spearman. Foi

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considerado o nível de significância de 5% para todos os testes estatísticos ($p < 0,05$). Resultados: verificou-se que houve associações significativas nas características clínicas para tabagismo, obesidade e infarto agudo do miocárdio recente ($p = 0,009$, $0,017$ e $0,029$, respectivamente). Conclusão: os achados mostraram características importantes de um grupo significativo de pacientes, sinalizando a atenção que deve ser atribuída às atividades de prevenção da saúde e controle dos fatores de risco nas mulheres, principalmente pela associação do climatério e o desenvolvimento de doenças cardiovasculares.

Descritores: Saúde da Mulher. Doenças Cardiovasculares. Revascularização Miocárdica. Válvulas Cardíacas. Enfermagem.

Objetivo: describir el perfil clínico de las mujeres sometidas a cirugía de revascularización miocárdica e intercambio de válvulas. Método: estudio documental, retrospectivo, analítico, cuantitativo, realizado con 131 registros médicos de pacientes sometidas a cirugía cardíaca en un hospital en el sur de Rio Grande do Sul. Los datos se recogieron en 2018. Los datos fueron analizados por pruebas de chi-cuadrado y prueba de correlación de Spearman. El nivel de significancia del 5% se consideró para todas las pruebas estadísticas ($p < 0,05$). Resultados: se encontró que había asociaciones significativas en las características clínicas para el tabaquismo, la obesidad y el infarto agudo de miocardio reciente ($p = 0,009$, $0,017$ y $0,029$, respectivamente). Conclusión: los hallazgos mostraron características importantes de un grupo significativo de pacientes, señalando la atención que debe atribuirse a las actividades de prevención de la salud y el control de los factores de riesgo en las mujeres, principalmente debido a la asociación de las enfermedades climáticas y el desarrollo de enfermedades cardiovasculares.

Descriptorios: Salud de la Mujer. Enfermedad Cardiovascular. Revascularización Miocárdica. Válvulas Cardíacas. Enfermería.

Introduction

With the change in lifestyle and the aging of the population, the incidence of cardiovascular diseases (CVD) has increased, especially in females⁽¹⁾. According to the Ministry of Health (MH), acute myocardial infarction (AMI) and cerebrovascular accident are the main causes of death in Brazil among women aged over 50 years. Although the risk of breast cancer is the main concern of women, the higher incidence of death in females refers to CVD (index of 53%), when compared to breast cancer (index of 4%)⁽²⁾.

The marked growth of CVD among females may be associated with differences in how diseases develop between females and males. Women usually present atypical symptoms of acute coronary syndrome (ACS), which can be confused with other diseases, making the diagnosis more difficult⁽¹⁾. Commonly, "typical" symptoms during AMI include chest pain with irradiation to the left arm, substernal chest pain, and diaphoresis. However, women with ACS tend to have nonspecific symptoms, such as localized pain in the neck and shoulder regions, shortness of breath, nausea, indisposition, and unexplained fatigue. These symptoms are

constantly called "atypical", but in fact they are typical for women⁽³⁾.

CVD is associated with aging and lifestyle. These are risk factors for the development of coronary artery disease (CAD), systemic arterial hypertension (SAH), smoking, dyslipidemias, obesity, diabetes mellitus (DM), family history and sedentary lifestyle⁽³⁾; however, in women, some of these factors have a more pronounced effect⁽¹⁾.

Furthermore, women are subject to specific causes, such as hypertension in the pregnancy cycle, gestational diabetes, and preterm delivery, which are related to increased cardiovascular risk in the long term. Another aggravating factor is the protection of the hormone estrogen, which stimulates vessel dilation, facilitating blood flow, and in menopause, it decreases, which contributes to the increased risk of developing CVD⁽²⁻³⁾. In women treated with radiotherapy for breast cancer, there is also a high risk of developing CAD⁽²⁾.

Despite the significant risk, the unawareness of CVD is seen by women themselves and health professionals as one of the main threats to women's health⁽⁴⁾. Results of an international

study showed that only 45% of women were aware that CVD are the main causes of death in females⁽⁵⁾. The unawareness and identification of symptoms in women usually leads to a late response in the search for care for timely treatment, which may also reflect the late referral of women to cardiac surgery⁽³⁻⁴⁾.

Thus, cardiac surgery should be performed when the expected survival benefits or health outcomes related to symptoms, functional status and quality of life exceed the expected negative consequences of the procedure⁽⁶⁾. The most performed cardiac surgeries in Brazil are myocardial revascularization surgery (MRS) and valvulopathies corrections⁽⁷⁾. All treatments aim to improve cardiac function, relieve angina symptoms and improve patients' quality of life⁽⁸⁾.

In view of this scenario, the present study raised the following question: What is the clinical and epidemiological profile of women undergoing myocardial revascularization surgery and valve replacement? The knowledge of the clinical and epidemiological characteristics of women who underwent cardiac surgery enables the elaboration of strategic planning aimed at the quality of nursing care and patient safety in the postoperative period of cardiac surgery, allowing intervening according to the patient's needs, promoting rapid recovery and early hospital discharge. In addition, they can contribute to defining prevention and control strategies after surgery, specifically aimed at female patients.

In view of the above, this study aimed to describe the clinical profile of women undergoing myocardial revascularization surgery and valve replacement.

Method

Documentary, retrospective, descriptive, analytical study, with quantitative approach, carried out in a reference hospital in cardiology in southern Brazil. To perform the sample calculation, the number of procedures/year= 240 was considered. The StatCalc program of Epi Info version 7 was used, using the 95% confidence level, obtaining a

minimum sample of 291 medical records. The sample was selected in a non-probabilistic manner for convenience. There was the review of 391 medical records of patients undergoing cardiac surgery in the past five years (2013-2017). Of the 391 medical records reviewed, three were excluded due to incomplete information; thus, the sample studied consisted of 388 medical records. Of this total population, a cutout was performed, in which only female patients who underwent myocardial revascularization or valve replacement surgery were selected between January 2013 and December 2017, aged 18 years or older, totaling 131 patients. The exclusion criteria were surgeries performed on male patients and illegible medical records that did not allow the correct identification of information.

For data collection, a structured instrument was used, which included the sociodemographic characteristics of the patient (gender, age, occupation, city of origin), clinical history (smoking, hypertension, diabetes mellitus, previous history of acute myocardial infarction, recent acute myocardial infarction (less than 90 days), unstable angina, congestive heart failure, chronic renal failure, ischemic heart disease, chronic obstructive pulmonary disease and left ventricular ejection fraction) and surgery information (type of cardiac surgery performed and type of complication in the immediate postoperative period). Data were collected in 2018. The paper records were manually reviewed at the hospital's own Medical Archiving Service (SAME).

The data were entered and organized using the double typing technique for data quality control and subsequently submitted to statistical analysis using the Software Statistical Package for the Social Sciences (SPSS), version 21.0, in which they were tabulated and analyzed using descriptive and inferential statistics and presented as tables. In the descriptive analysis, absolute and relative frequencies were performed: mean, standard deviation, maximum and minimum. In the inferential statistical analysis, the Chi-square test was used to verify the associations between females and clinical characteristics. The correlation between risk

factors, complications in the immediate postoperative period and in-hospital death was performed by Spearman's correlation test. The significance level of 5% was considered for all statistical tests ($p < 0.05$).

The study was approved by the Research Ethics Committee (CEP) in the Health Area, under Opinion n. 127/2018, respecting the recommendations of Resolution n. 446/12 of the National Health Council, and CAAE: 90845518.9.3002.5303. To ensure the patients' anonymity, the instruments were identified by numbers and the data treated in a grouped way. The waiver of the Informed Consent Form (ICF) was requested because the study used secondary data collection.

Results

The results found reveal that 131 (33.8%) women who participated in the study had a minimum age of 21 years and a maximum of 86 years, with a mean age of 60.89 (± 13.9) years. Regarding marital status, 63 (48.1%) were married and 106 (80.9%) from the municipality of Rio Grande (RS). Regarding occupation, 50 (38.2%) were retired.

Table 1 shows that, when compared to females with clinical characteristics, there was a significant association for smoking, obesity and recent acute myocardial infarction ($p = 0.009$, 0.017 and 0.029, respectively).

Table 1 – Association between female sex and clinical characteristics. Rio Grande, Rio Grande do Sul, Brazil, 2018 (N= 131)

Clinical Characteristics	Yes n(%)	No n(%)	p-value
Smoking	41 (32.8)	64 (41.6)	0.009*
Body Mass Index			
Normal	39 (32.2)		
Overweight	49 (28.2)		0.017*
Obesity	42 (47.2)		
Diabetes <i>Mellitus</i>	51 (38.1)	78 (31.6)	0.424
Systemic Arterial Hypertension	108 (32.0)	20 (47.6)	0.132
Previous Acute Myocardial Infarction	37 (33.6)	90 (33.1)	0.228
Recent Acute Myocardial Infarction (< 90 days)	10 (19.6)	120 (35.7)	0.029*
Unstable Angina	14 (42.4)	117 (33.1)	0.335
Congestive Heart Failure	7 (29.2)	121 (33.7)	0.413
Chronic Renal Failure	4 (23.5)	126 (34.1)	0.590
Ischemic Heart Disease	32 (37.6)	98 (32.8)	0.657
Chronic Obstructive Pulmonary Disease	8 (36.4)	121 (33.4)	0.757
Left Ventricular Ejection Fraction			
Moderate	22 (26.5)		
Severe	1 (12.5)		
Good	92 (36.7)		0.276

Source: Created by the authors.

Note:

* $p < 0.05$ referring to Chi-square.

Regarding the procedures performed, of the 131 women, 82 (62.6%) underwent MRS, 15 (11.5%) mitral valve replacement and nine (6.9%), aortic valve replacement.

Table 2 shows the results of Spearman's correlation tests. Significant correlations were observed ($p < 0.01$ and $p < 0.05$) between age, in both the immediate postoperative and in-hospital death complications. Another risk

factor that presented a significant correlation in in-hospital death was weight and blood transfusion. When analyzing the BMI risk

factor, there was no significant correlation for complications in the immediate postoperative period and in-hospital death.

Table 2 – Spearman's correlation for risk factors, complication in the immediate postoperative period and in-hospital death. Rio Grande, Rio Grande do Sul, Brazil, 2018 (N = 131)

Risk Factors	Immediate postoperative complications	In-hospital death
	<i>p-value</i>	<i>p-value</i>
Age	0.095 [†]	0.004 [†]
Weight	0.665	0.017 [*]
Body Mass Index	0.890	0.296
Blood Transfusion	0.516	0.001 [†]

Source: Created by the authors.

Notes:

[†]p < 0.01; ^{*}p < 0.05.

Discussion

In the scientific environment, epidemiological studies have presented a strong meaning, as they present an overview of the health situation that might allow developing of public policies and strategies to fight or control diseases. In the literature, there are many publications on the profile of patients undergoing cardiac surgery; however, regional and local differences in these populations should be taken into account for health planning purposes⁽⁹⁾. In this sense, the results presented in this study can provide an analysis of the local reality on the clinical and epidemiological characteristics of female patients submitted to cardiac surgery.

Patients submitted to MRS and valve replacement were predominantly female (33.8%) and elderly women (60.89 years), an infrequent result found in the literature, because studies indicate the predominance of males and elderly men in myocardial revascularization surgeries, for example⁽¹⁰⁻¹¹⁾. Women have different profiles and risk factors compared to men and are more likely to have systemic autoimmune diseases associated with accelerated atherosclerosis and increased cardiac risk⁽¹²⁾. In addition, studies show that several factors related to the female gender increase cardiac risk in women, such as estrogen deficiency, polycystic ovary syndrome and premature menopause⁽¹³⁻¹⁴⁾.

Regarding occupation, the participants were mostly retired (38.2%). Due to the increasing prevalence of CAD and increased survival, the number of older patients in retirement conditions who perform cardiac surgery has been increasing⁽¹⁰⁾. Regarding marital status, 48.1% of the participants in this study were married, corroborating results found in a similar study⁽¹⁾.

CAD can be avoided with measures to control risk factors. Risk factors are SAH, smoking, dyslipidemias, obesity, DM, family history and sedentary lifestyle. In this study, when comparing female sex to clinical characteristics, the results showed that there were significant differences for smoking (p=0.009). Another study⁽¹⁵⁾ demonstrated a similar result, in which 36% of the patients studied had a previous history of smoking. After smoking, risk factors with higher prevalence presented in the literature are SAH and DM, which, in this study, had no significant correlation. Traditional risk factors, such as diabetes and hypertension, extracted from studies that emphasize men, may underestimate the risk of ischemic heart disease in women⁽³⁾.

Regarding obesity (p=0.017), over the years, changes in the female biophysical profile, particularly observed in the climacteric phase, result from weight gain, increased body fat due to obesity and changes in the composition and distribution of adipose tissue⁽¹⁾. Similar results were found in a recent study, which

showed that 80.6% of women were overweight, of whom 29.9% were overweight and 50.7% were obese⁽¹⁶⁾. Weight gain among climacteric women may be associated with both progressive hypoestrogenism that characterizes this phase and result from lifestyle among the elderly, which tends to be inadequate, considering that this age group commonly has little consumption of fruits and vegetables and sedentary lifestyle⁽¹⁵⁾.

Another factor that presented a significant correlation was recent AMI, below 90 days, ($p=0.029$). A study⁽¹⁰⁾ that evaluated 82 patients submitted to cardiac surgery in a hospital in southern Rio de Janeiro (RJ) found data close to that of the present study: 23.17% of patients suffered AMI in the past 90 days before surgery, which proves the association between cardiac ischemic disease and cardiovascular surgery⁽¹⁰⁾.

In view of the procedures performed, this study identified that 82 (62.6%) women underwent MRS, 15 (11.5%) mitral valve replacement, and nine (6.9%) aortic valve replacement. MRS is one of the treatments of choice for patients with coronary artery disease and is one of the most performed cardiac surgeries in Brazil, which represents 77% of all surgeries performed in both public hospitals and philanthropic or private hospitals⁽¹⁷⁾. The number of cardiac surgeries is also high in North American centers. In 2010, seven million patients underwent some type of cardiac surgery, a number that only loses to obstetric procedures⁽¹⁸⁾.

Heart valve implants are procedures aimed at the treatment of heart diseases that usually occur due to advanced age or complications resulting from rheumatic fever⁽¹⁹⁾. The most common valve diseases are stenosis and mitral insufficiency in rheumatic disease, being more frequent in young patients, and aortic stenosis, more frequent in elderly patients, due to calcifications associated with smoking, dyslipidemia and SAH⁽²⁰⁾.

Regarding the correlation between age x postoperative complication and age x in-hospital death, there were significant differences ($p=0.095$ and 0.004 , respectively). The patient's health conditions prior to surgery play an important role in their recovery. Moreover, the high number of comorbidities associated with risk

factors, such as advanced age, ischemic heart disease and previous surgeries, contribute to the development of postoperative complications and the need for greater stay in the intensive care unit, which also contributes to increased hospital costs⁽²¹⁾. Moreover, this finding may be related to the increasing number of people aged 60 years or older indicated for surgery. Advanced age is a risk predictor for mortality in patients undergoing MRS⁽⁴⁾.

Another risk factor that presented a significant correlation for in-hospital death was weight ($p=0.017$). Weight has attracted the attention of researchers, especially concerning perimenopause obesity, which, in addition to affecting a considerable number of women, has been shown to be a risk factor for mortality at this age, stressing cardiovascular diseases⁽¹⁶⁾. Some authors believe that this phenomenon is caused by decreased ovarian function and the consequent estrogen deficiency, which interferes unfavorably in the profile of plasma lipoproteins and in the distribution of adipose tissue. In addition, it may also be associated with unhealthy lifestyle habits and the genetic predisposition of each woman⁽²²⁾.

Blood transfusion in this study showed a significant correlation ($p=0.001$) for in-hospital death, which was similar to the results of the study⁽²³⁾ that observed that blood transfusion was an independent predictor of mortality ($p<0.001$). The authors concluded that transfused patients have higher mortality and consider that transfusion is one of the few modifiable factors and should be reconsidered in cardiac surgery, as it may worsen the prognosis of surgery. Thus, strategies to prevent transfusion should be encouraged⁽²³⁾.

Upon analyzing the BMI risk factor, there was no significant difference for complications in the immediate postoperative period and in-hospital death. BMI in females can reach higher values between 50 and 59 years, a period that is coincident with menopause. Nevertheless, the impact on women's health and the determinant factors of the higher prevalence of obesity among the female population are not yet fully known⁽²⁴⁾.

Considering the importance of the results obtained, despite the inclusion of 131 patients, the present study presents as a limitation its development in only one institution. More studies should be conducted in other institutions and with the male population for possible comparisons.

The study corroborates nursing care for greater knowledge about the sociodemographic and clinical characteristics of women undergoing myocardial revascularization surgery and valve replacement and reinforces the importance of developing strategies for controlling post-surgery injuries aimed at female patients. In addition, it contributes to the elaboration of protocols with systematized behaviors, aiming to promote preventive work integrated to clinical treatment. Moreover, the study corroborates scientific research, as it allows the deepening and innovation in the production of knowledge, providing information that supports nurses to understand and recognize the clinical profile of women submitted to MRS and valve replacement, as well as presents a field for further researches in perioperative nursing care of patients undergoing cardiac surgeries.

Conclusion

The results found reveal that 33.8% of the women who participated in the study were aged 60 to 89 years. There was a significant association for smoking, obesity and recent AMI ($p=0.009$, 0.017 and 0.029 , respectively) when compared to females with clinical characteristics. Significant correlations were identified ($p<0.01$ and $p<0.05$) between age in both the complication in the immediate postoperative period and in-hospital death. When analyzing the BMI risk factor, there was no significant correlation for complications in the immediate postoperative period and in-hospital death.

The findings of this research showed important characteristics of a significant group of patients, signaling the attention that should be attributed to health prevention activities and control of risk factors in women, mainly due to the association of climacteric and the development

of cardiovascular diseases. Although health promotion actions are implemented, they do not focus on the specificity of the target audience, taking into account preoperative clinical characteristics.

The analysis of these data contributes to the expansion of knowledge on the subject, because there were no similar data in the national literature. Further researches should be conducted in other institutions, considering different factors of the local context and with a larger population.

Collaborations:

1 – conception, design, analysis and interpretation of data: Évilin Diniz Gutierrez, Janaína Cassana Mello Yasin, Deciane Pintalena de Carvalho and Raissa Garcia Brum;

2 – writing of the article and relevant critical review of the intellectual content: Évilin Diniz Gutierrez, Laureлизe Pereira Rocha, Aline Neutzling Brum, Janaína Cassana Mello Yasin, Deciane Pintalena de Carvalho and Raissa Garcia Brum;

3 – final approval of the version to be published: Évilin Diniz Gutierrez, Laureлизe Pereira Rocha, Aline Neutzling Brum, Janaína Cassana Mello Yasin, Deciane Pintalena de Carvalho and Raissa Garcia Brum.

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Received: April 2, 2020

Approved: May 12, 2020

Published: October 9, 2020



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