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ORIGINAL ARTICLE

IMPACT OF MYOCARDIAL REVASCULARIZATION SURGERY ON QUALITY OF LIFE*

IMPACTO DA CIRURGIA DE REVASCULARIZAÇÃO MIOCÁRDICA NA QUALIDADE DE VIDA

IMPACTO DE LA CIRUGÍA DE REVASCULARIZACIÓN DE MIOCARDIO EN LA CALIDAD DE VIDA

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ABSTRACT

Objective: to assess the impact of Myocardial Revascularization Surgery on health-related quality of life. ***Method:*** this is a quantitative, observational, longitudinal, prospective study, with 51 participants submitted to MRVS, through the application of questionnaires to assess health-related quality of life EuroQol-3L (EQ-5D-3L) and MacNew QLMI. Data was organized in an Excel® spreadsheet, validating them by double typing and exporting them to SPSS, version 17.0. ***Results:*** 51 participants were included, of which 74.5% were male, 54.9% were elderly ≥ 60 years old, 62.7% had self-reported skin color, 76.4% had acute myocardial infarction, 72 , 5% had Systemic Arterial Hypertension, 82.4% were sedentary, 54.9%, ex-smokers and 45.1%, alcoholics. In the dimensions of the EQ-5D-3L, there was an improvement in the quality of life regarding the anxiety / depression domain (p = 0.000) and the Visual Analogue Scale identified an improvement in health status (p = 0.005). The MacNew QLMI questionnaire demonstrated an improvement in the quality of life in the following domains: emotional (p = 0.000); physical (p = 0.000) and social (p = 0.000). ***Conclusion:*** there was an improvement in the HRQoL analyzed by the generic and specific questionnaires after six months after the MRVS operation. ***Descriptors*:** Quality of Life; Thoracic Surgery; Myocardial Revascularization; Coronary Disease; Myocardial Infarction; Comparative Study.

RESUMO

Objetivo*:** avaliar o impacto da Cirurgia de Revascularização do Miocárdio na qualidade de vida relacionada à saúde. ***Método*:** trata-se de um estudo quantitativo, observacional, longitudinal, prospectivo, com 51 participantes submetidos à CRVM, por meio da aplicação dos questionários para avaliar a qualidade de vida relacionada à saúde EuroQol-3L (EQ-5D-3L) e MacNew QLMI. Organizaram-se os dados em planilha *Excel*®, validando-os por dupla digitação e exportando-os para o *SPSS*, versão 17.0. ***Resultados*:** incluíram-se 51 participantes, sendo 74,5% do sexo masculino, 54,9% compostos por idosos ≥ 60 anos, 62,7% com cor da pele autorreferida branca, 76,4% tiveram infarto agudo do miocárdio, 72,5% apresentavam Hipertensão Arterial Sistêmica, 82,4% eram sedentários, 54,9%, ex-tabagistas e 45,1%, etilistas. Evidenciou-se, nas dimensões do EQ-5D-3L, melhora da qualidade de vida quanto ao domínio ansiedade/depressão (p = 0,000) e a Escala Visual Analógica identificou melhora do estado de saúde (p = 0,005). Demonstrou-se, no questionário MacNew QLMI, melhora da qualidade de vida nos domínios: emocional (p = 0,000); físico (p = 0,000) e social (p = 0,000). ***Conclusão: evidenciou-se melhora da QVRS analisada pelos questionários genérico e específico após transcorrer seis meses do pós-operatório de CRVM. ***Descritores*:** Qualidade de Vida; Cirurgia Torácica; Revascularização Miocárdica; Coronariopatia; Infarto do Miocárdio; Estudo Comparativo.

RESUMEN

Objetivo: evaluar el impacto de la cirugía de revascularización de miocardio en la calidad de vida relacionada con la salud. ***Método:*** este es un estudio cuantitativo, observacional, longitudinal, prospectivo, con 51 participantes sometidos a CRVM, mediante la aplicación de cuestionarios para evaluar la calidad de vida relacionada con la salud, EuroQol-3L (EQ-5D-3L) y MacNew QLMI. Los datos se organizaron en una hoja de cálculo *Excel*®, validada por doble tipeo y exportada a SPSS, versión 17.0. ***Resultados:*** se incluyeron 51 participantes, hombres (74.5%), ancianos ≥ 60 años (54.9%), color de piel autoinformado blanco (62.7%), infarto agudo de miocardio (76.4%), hipertensión arterial sistémica (72,5%), inactividad física (82,4%), tabaquismo (54,9%) y alcoholismo (45,1%). Las dimensiones del EQ-5D-3L mostraron una mejora en la calidad de vida con respecto al dominio de ansiedad / depresión (p = 0,000) y la Escala Analógica Visual identificó una mejora en el estado de salud (p = 0,005). El cuestionario MacNew QLMI demostró una mejora en la calidad de vida en los dominios: emocional (p = 0,000); física (p = 0.000) y social (p = 0.000). ***Conclusión:*** hubo una mejora en la CVRS analizada por los cuestionarios genéricos y específicos, seis meses después del postoperatorio de CABG. ***Descriptores*:** Calidad de Vida; Cirugía Torácica; Revascularización Miocárdica; Enfermedad Coronaria; Infarto del Miocardio; Estudio Comparativo.

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INTRODUCTION

Cardiovascular Diseases (CVD) are the main group of Chronic Noncommunicable Diseases (CNCD), with a high rate of morbidity and mortality and surgical interventions on a global scale.[1-3] It is revealed that, in 2016, there were 41 million deaths due to CNCDs worldwide, and of these, 17.9 million were caused by CVDs, corresponding to 44% of global deaths.[4]

It has been suggested, by estimates, that if this factor persists until 2020, CVDs will have increased their disability factor adjusted in disability adjusted life years (DALYs), from 85 million to 150 million people worldwide, which will negatively impact global productivity.[5]

According to data obtained by the Department of Informatics of the Brazilian Unified Health System (DATASUS), in a decade, 2006 to 2016, CVDs were responsible for 3.6 million deaths, where the largest records were Southeast Region, totaling 1.7 million and North Region, with 934,847 thousand deaths.[6] It should be added that the main causes of death in this period were due to Ischemic Heart Diseases (IHD) and Cerebrovascular Diseases (CVDV), corresponding to 31.9% and 30.1% of the causes, respectively.[6]

According to Cardiometer records, an indicator of cardiac mortality projected by the Brazilian Society of Cardiology, that every 1.5 minutes a death from CVD occurs in the country, that is, every year, CVD will be responsible for more than 300 thousand deaths in Brazil, which made it a serious public health problem, mainly due to its limiting factor and morbidity.[7-8]

In view of the magnitude of CNCDs, especially CVDs, the Strategic Actions Plan for Coping CNCDs in Brazil, 2011-2022, from the Ministry of Health (MH). The objective of this plan is to prepare the country to face and eradicate CNCDs and, among one of its main goals, there is the proposal to reduce the premature mortality rate (<70 years) due to CNCDs by 2% per year.[9]

According to a study on the projection of premature mortality from CNCDs in Brazil for 2025, a significant decrease in the number of deaths due to CNCDs has been observed, with CVDs showing a 3.4% reduction in deaths per year. It is estimated that, if this reductive factor continues, by 2025 20.5% of premature deaths due to CNCDs will be accounted for, corroborating the goal of a 2% reduction in the mortality rate.[10]

Risk factors for CVD work as an obstacle to therapeutic efficiency, health promotion and Quality of Life (QOL), being subdivided into modifiable and non-modifiable: non-modifiable, intrinsic factors, include gender, age and heredity;[11] modifiable factors, extrinsic factors, are associated with lifestyle, comprising smoking, unbalanced nutrition, dyslipidemia, physical inactivity and obesity, which significantly increase the risk of Systemic Arterial Hypertension (SAH), Diabetes Mellitus (DM) and atherosclerotic disease. In addition, psychosocial factors such as stress, anxiety and depression stand out, which impact a worse prognosis and loss of QOL.[11] It is inferred, therefore, that the reduction of modifiable risk factors and the control and monitoring of non-modifiable risk factors are in line with the main means of reducing the rate of CVD in the population, consolidating the goal of reducing CNCD in effect in the plan national.[10]

CVDs benefit from well-established clinical and / or surgical treatments that seek to recover the functional capacity of the heart, minimize symptoms and enable the individual to reinsert themselves into their usual activities.[12]

Cardiac surgery is classified in the literature in three types: substitutive (valve changes and transplants); reconstructive (myocardial revascularization and aortic, mitral and tricuspid valve repair) and corrective (closure of arterial ducts, atrial and ventricular septum).[13] In Brazil, in 2017, 195,744 surgeries of the circulatory system were performed through the Unified Health System (UHS), with expenses equivalent to 1.5 million, in which the Myocardial Revascularization Surgery (MRVS) was the most performed.[6]

It is pointed out that, among cardiac surgeries, MRVS, in addition to being one of the most indicated procedures for the treatment of Coronary Artery Disease (CAD), also has the best prognosis and increased patient survival.[14] Studies have shown, however, even with good results, that the hospital environment concomitant with long-term hospitalizations, readmissions and, consequently, changes in lifestyle, contributes negatively to the loss of autonomy and QOL.[15-6]

QOL is a polysemic term based on three fundamental principles: subjectivity (conception of the individual), multidimensionality (physical, psychological and social dimensions) and bipolarity (positive and negative dimensions).[17]

In the health field, an attempt was made to obtain the best concept for QOL in the expression Health Related Quality of Life (HRQoL), which is interrelated to the subjectivity of the individual in the face of his clinical condition and the possible impacts caused by it, and may be associated with and influenced by sociodemographic factors, lifestyle, access and adherence to health services.[18]

It is detailed, according to the literature, that HRQoL "refers to the various aspects of a person's life that are affected by changes in their health status, and that are significant for their QOL",[19] as well as "the individual's perception of his position in life, in the context of the culture and value

system in which he lives, and in relation to his goals, expectations, standards and concerns".[20]

It resulted in the need to measure HRQoL in the construction of assessment instruments capable of quantifying health status before and after treatment,[21] among them, the generic measurement instruments, which can be applied to a wide variety of pathologies / clinical conditions, such as the Euro Quality of Life Instrument-5D-3L (EuroQol - EQ-5D-3L) and the measurement instruments such as the Quality of Life after Myocardial Infarction MacNew (MacNew QLMI) questionnaire.

The use of instruments and methods for assessing QoL in the health area has become an important resource for multidimensional and subjective studies from the patient's biopsychosocial perspective, as it is thus possible to monitor their rehabilitation and provide assistance without restriction to data regarding disease.[22]

The analysis of HRQoL is conducive to an important variable in clinical practice, since this investigation can result in changes in care practices and in the consolidation of new paradigms in the health-disease process, being, therefore, capable of impacting health by providing a holistic view of the individual.

Thus, it can be considered that cardiac surgery can interfere in the individual's health, as well as in his HRQoL, impacting physical, social and emotional dimensions.

OBJECTIVE

- To assess the impact of Myocardial Revascularization Surgery on health-related quality of life.

METHOD

This is a quantitative, observational, longitudinal, prospective study in the sectors of Internal Medicine, Coronary Care Unit, Chest Pain Unit, Intensive Care Unit and Cardiology Outpatient of a reference hospital in medium and high complexity and the largest provider of services by the Unified Health System (UHS) located in the Southeast region of Brazil.

In the sample size calculation, a determination coefficient was considered in a multiple linear regression model, with the level of significance or type I error and type II error, resulting, therefore, in a 95% a priori statistical power. Using the PASS application (Power Analysis and Sample Size), version 2002, the values described above were introduced, obtaining a minimum sample size of n = 79, already considering a sampling loss of 20% (refusals in participate). This calculation was performed according to the total number of thoracic surgeries in 2015 (Total surgeries: 107) by the Hospital Information Management - Statistics and Hospital Information Sector. The statistical formula that allows calculating this score is represented in equation 1.

Equation 1:

$$N = \frac{N.Z^2.p.(1-p)}{Z^2.p.(1-p) + e^2.(N-1)}$$

The study included 51 participants aged 18 years or over, of both sexes, submitted to MRVS and who agreed to participate in the study by signing the Informed Consent Term (FICT). Twenty-eight participants were excluded: undergoing other types of thoracic surgery (n = 16); hemodynamic instability (n = 6); post-MRVS death (n = 5) and cognitive impairment (n = 1) attested by the Mini Mental State Examination (MMSE).[23]

For data collection, a semi-structured instrument by the researchers was used, containing sociodemographic variables (age, sex, self-reported color, education in years of study and working conditions), clinical (comorbidities): DM, SAH, obesity, acute myocardial infarction) and lifestyle (physical activity, smoking and drinking).

Physical / mental integrity, privacy, autonomy, justice and well-being of the participants involved were guaranteed through the adoption of ethical principles established by Resolution 466/12 of the National Health Council (NHC). All those who met the inclusion criteria in their beds were approached, inviting them to participate in this study by signing the FICT, which established the purpose of the study, voluntary participation, respect for privacy and data confidentiality.

Two instruments were used to assess quality of life: EQ-5D-3L and MacNew QLMI. The study was structured in two phases: phase 1 comprised T0 time (before surgery) and phase 2, T1 time (six months after cardiac surgery).

Phase 1 (T0) took place in an outpatient and / or hospital environment, where the first contact with participants eligible for the study was established, this phase being directed to the signing of the FICT and the application of data collection questionnaires: Mini Mental State Examination (MMSE); sociodemographic / clinical / lifestyle habits; EuroQol EQ-5D-3L and MacNew QLMI.

Phase 2 was idealized to investigate the interference of MRVS in HRQoL after six months of the surgical procedure. This phase was carried out

in the outpatient and hospital settings (cases of readmissions), and it is also necessary to implement a new data collection technique, via telephone monitoring, by providing the questionnaires to the participants and scheduling appropriate days and times for data collection when it was not possible at the hospital level. At that time, the EuroQol EQ-5D-3L and MacNew QLMI questionnaires were applied.

It is explained that the Mini Mental State Examination (MMSE) is a neuropsychological test developed by Folstein and collaborators, published in 1975, being one of the instruments for cognitive screening worldwide used, of easy and fast applicability,[23] which is not suitable as a diagnostic tool, but for investigating cognitive impairment and, therefore, can be applied by any professional of the multi-professional team.[24]

Its structure consists of 11 tests capable of evaluating domains related to: temporal and spatial orientation; to immediate memory; calculation; evocation and language (naming, repetition, command, interpretation, writing and drawing transcription).[24] It is added that the total score of the MMSE is 30 points, in which the best desired values are between 27 and 30 points.[24]

Please note that the EuroQol EQ-5D-3L is a generic measurement instrument designed to assess QOL,[25] which consists of five dimensions - mobility, personal care, usual activities, pain / malaise and anxiety / depression - assessed by three levels of severity: level 1 - no problem; level 2 - moderate problems and level 3 - serious problems.[25]

The EQ-5D is based both on the descriptive system defined by (35) = 243, that is, it is capable of evaluating 243 different health states, and on the Visual Analog Scale (VAS).[25-6]

In this way, the EQ-5D-3L's descriptive system consists of five dimensions: mobility; personal cares; usual activities; pain / malaise and anxiety / depression. These dimensions are evaluated by three levels of severity: level 1 - no problems / none; level 2 - some problems / moderate; level 3 - extreme / severe problems.[26] Numbers were used only to make it possible to discern the severity levels of each dimension in the statistical analysis, having no arithmetic properties and / or cardinal value. Thus, the analysis is based on the frequency of responses from each domain in relation to the levels of evaluation.[25-6]

In the second part of the EQ-5D-3L, the Visual Analog Scale (VAS), graded from zero to 100, in which values close to 100 suggest a good state of health imaginable and close to zero, a worse state of health.[23] VAS values are presented in the analyzes preferably through a measure of trend and dispersion, as cardinal values are not adopted.[26]

For the specific assessment of HRQoL, the MacNew QLMI instrument was used, which is an instrument used for the evaluation of a patient with heart disease, developed by McMaster, in 1993. Currently, it can also be used in patients with angina and heart failure.[21]

MacNew QLMI consists of 327 items presented on a Likert scale and distributed in three domains (emotional, physical and social), with an increasing score from one to seven, with seven being the maximum allowed score in each domain, corresponding to a high HRQoL, and one to the minimum allowed score, corresponding to the low HRQoL.[21,27-8] The results are interpreted through variable grouping one to seven at intervals, being: 1-3 (low HRQoL); 3-5 (moderate HRQoL) and 5-7 (high HRQoL), its global score being obtained by calculating the arithmetic mean of the domains presented.[27-8]

The data obtained was organized in a spreadsheet in the Excel® Program, validated by double typing and later exported to the Statistical Package for Social Science (SPSS), version 17.0, for statistical analysis.

The normal distribution of quantitative variables was verified using the Kolmogorov-Smirnov test. Continuous variables that presented normal distribution with mean ± standard deviation were described, in addition to including minimum and maximum values.

To compare the times (T0 and T1) of the variables of the quality of life instruments, the paired T-test was used. As a significance level, $\alpha = 0.05$ was adopted.

This study was approved by the Research Ethics Committee of the Federal University of Uberlândia under Consubstantiated Opinion No. 1,715,990 and CAAE No. 55110616.9.0000.5152.

RESULTS

In terms of sociodemographic data (Table 1), 51 participants were included, predominantly male (38; 74.5%), elderly ≥ 60 years old (28; 54.9%), self-reported skin color (32; 62.7%). It can be seen, according to the data, that men had more years of study (19; 37.3%) compared to women (2; 3.9%), as well as in active working condition, 22 men (43, 1%) and three women (5.9%).

Table 1. Distribution of 51 participants according to sociodemographic and gender variables. Uberlândia (MG), Brazil, 2019.

Characterization	Female n (%)	Male n (%)
Age group (years)		
18-59	4 (7.8)	19 (37.3)
≥ 60	9 (17.6)	19 (37.3)
Skin color (self-reported)		
White	5 (9.8)	27 (52.9)
Brown	6 (11.8)	8 (15.7)
Black	2 (3.9)	3 (5.9)
Education (years of study)		
1-4	6 (11.8)	5 (9.8)
5-9	5 (9.8)	14 (27.5)
10-13	2 (3.9)	19 (37.3)
Work conditions		
Inactive	1 (2.0)	4 (7.8)
Active	3 (5.9)	22 (43.2)
Retired	9 (17.6)	12 (23.5)
Total	13 (25.5)	38 (74.5)

Table 2 shows the distribution of clinical variables and lifestyle habits, indicating that the most prevalent comorbidities, in decreasing order, were acute myocardial infarction (39; 76.4%), SAH (37; 72.5 %), DM (25; 49.0%) and obesity (10; 19.6%) and, in relation to lifestyle, 82.4% are sedentary, 94.1% stated they are not smokers and, of these, 54.9 % are ex-smokers, 45.1% reported using alcohol and 7.9% are ex-alcoholics.

Table 2. Distribution of 51 participants according to comorbidities, lifestyle and sex. Uberlândia (MG), Brazil, 2019.

Variables	Female n (%)	Male n (%)
Diabetes Mellitus		
Yes	5 (9.8)	20 (39.2)
No	8 (15.7)	18 (35.3)
Systemic Arterial Hypertension		
Yes	12 (23.5)	25 (49.0)
No	1 (2.0)	13 (25.5)
Acute myocardial infarction		
Yes	9 (17.6)	30 (58.8)
No	4 (7.8)	8 (15.7)
Obesity		
Yes	2 (3.9)	8 (15.7)
No	11 (21.6)	30 (58.8)
Physical activity		
Yes	-	9 (17.6)
No	13 (25.5)	29 (56.9)
Smoking		
Yes	-	3 (5.9)
No	5 (9.8)	15 (29.4)
Ex-smoker	8 (15.7)	20 (39.2)
Drinking		
Sim	3 (5.9)	20 (39.2)
Não	7 (13.7)	17 (33.3)
Ex-drinker	3 (5.9)	1 (2.0)
Total	13 (25.5)	38 (74.5)

When analyzing the QOL of the participants, using the EQ-5D-3L questionnaire, using the T test, results that found a statistically significant difference between the anxiety / depression domain (p = 0.000) between the times T0 and T1. In this domain, it was found that, in T0, 58.8% of the participants had moderate problems and 9.8%, with serious problems. It should be added that, after six months of MVRS, in T1, there was a decrease in participants with severe to moderate problems, with 74.5% without any problem (Table 3).

Table 3. Comparison between domains and assessment levels of the EQ-5D-3L questionnaire at times T0 and T1 (n = 51). Uberlândia (MG), Brazil, 2019.

Domains EQ-5D-3L	Levels of evaluation	T0 n (%)	T1 n (%)	P Value*
Mobility	None	48 (94.1)	49 (96.1)	0.420
	Moderate	2 (3.9)	2 (3.9)	
	Severe	1 (2.0)	-	
Personal care	None	48 (94.1)	50 (98.0)	0.261
	Moderate	2 (3.9)	1 (2.0)	
	Severe	1 (2.0)	-	
Usual activities	None	46 (90.2)	44 (86.3)	0.785
	Moderate	4 (7.8)	7 (13.7)	
	Severe	1 (2.0)	-	
Pain/ malaise	None	33 (64.7)	41 (80.4)	0.180
	Moderate	18 (35.3)	9 (17.6)	
	Severe	-	1 (2.0)	
Anxiety/depression	None	16 (31.4)	38 (74.5)	0.000*
	Moderate	30 (58.8)	12 (23.5)	
	Severe	5 (9.8)	1 (2.0)	

* Paired t-test p <0.05.

In the results obtained by the VAS, the following values of mean and standard deviation were observed in T0 (74.5 ± 14.1) and T1 (82.5 ± 17.1), showing a statistically significant difference (p = 0.005), showing an improvement in health status after six months of CRVM (Table 4).

Table 4. Mean and standard deviation measured by the Visual Analogue Scale at times T0 and T1 (n = 51). Uberlândia (MG), Brazil, 2020.

T0 Average±SD	T1 Average±SD	P Value*
74.5±14.1	82.5±17.1	0.005*

*Paired t-test p <0.0. SD = standard deviation.

Table 5 presents the results obtained through categorization, paired T test, mean and standard deviation, from the domains and levels of assessment of the MacNew QLMI questionnaire, at times T0 and T1. It was found that most participants had high HRQoL after six months of MVRS, with a statistically significant difference between the times T0 and T1 in the emotional (p = 0.000), physical (p = 0.000) and social (p = 0.000) domains. High averages were always maintained and domains.

Table 5. Comparison between domains and levels of evaluation of the MacNew QLMI questionnaire at times T0 and T1 (n = 51). Uberlândia (MG), Brazil, 2020.

MacNew Domains	Levels of evaluation	T0 n (%)	Average±SD	T1 n (%)	Average±SD	P Value *
Emotional	Low	2 (3.9)	5.30±1.00	-	6.27±0.82	0.000*
	Moderate	14 (27.5)		6 (11.8)		
	Elevated	35 (68.6)		45 (88.2)		
Physical	Low	-	5.86±0.50	-	6.65±0.53	0.000*
	Moderate	4 (7.8)		1 (2.0)		
	Elevated	47 (92.2)		50 (98.0)		
Social	Low	1 (2.0)	5.44±0.74	-	6.44±0.53	0.000*
	Moderate	9 (17.6)		3 (5.9)		
	Elevated	41 (80.4)		48 (94.1)		

* paired t-test p <0.05. SD = standard deviation.

The results shown in table 6 refer to the associations between sociodemographic and clinical variables with HRQoL measured by the MacNew QLMI questionnaire. There was a statistically significant difference between the following variables: male gender (p = 0.019), age group ≤ 59 years (p = 0.022) and self-reported skin color (p = 0.023). There was, by all, better quality of life in the emotional domain and participants without DM had better quality of life both in the emotional (p = 0.004) and in the social domain (p = 0.011).

Table 6. Comparison between times T0 and T1 between the domains of the MacNew QLMI questionnaire and socioeconomic variables and comorbidity (n = 51). Uberlândia (MG), Brazil, 2019.

Domains / Variables**	EMOTIONAL					PHYSICAL					SOCIAL				
	T0		T1		P	T0		T1		P	T0		T1		P
	Av	SD	Av	SD	value*	Av	SD	Av	SD	value*	Av	SD	Av	SD	value*
Sex															
Female	2.46	0.66	2.77	0.43	0.104	2.77	0.43	2.92	0.27	0.337	2.62	0.65	3.00	0.00	0.054
Male	2.71	0.51	2.92	0.27	0.019*	2.97	0.16	3.00	0.00	0.324	2.84	0.37	2.92	0.27	0.324
Age group															
≤59 years	2.70	0.47	2.91	0.28	0.022*	2.96	0.20	3.00	0.00	0.328	2.83	0.38	2.91	0.28	0.426
≥60 years	2.61	0.62	2.86	0.35	0.050	2.89	0.31	2.96	0.18	0.326	2.75	0.51	2.96	0.18	0.056
Skin color															
White	2.72	0.52	2.91	0.29	0.032*	2.94	0.24	3.00	0.00	0.161	2.81	0.39	2.93	0.24	0.161
Non-white	2.53	0.61	2.84	0.37	0.055	2.89	0.31	2.95	0.22	0.578	2.74	0.56	2.94	0.22	0.163
Diabetes Melittus															
Yes	2.72	0.45	2.84	0.37	0.265	2.92	0.27	3.00	0.00	0.161	2.80	0.50	2.88	0.33	0.538
No	2.58	0.64	2.92	0.27	0.004*	2.92	0.27	2.96	0.19	0.574	2.77	0.43	3.00	0.00	0.011*

*Paired t-test p <0.05. Av = mean. SD = standard deviation. ** The correlation T could not be calculated in the other variables of lifestyle and clinical variables because the difference in standard error was equal to zero.

DISCUSSION

The prevalence of males submitted to MVRS and the age range ≥ 60 years was also evidenced by other authors.[13, 29-30]

In an epidemiological study referring to cardiovascular risk factors, it was found that males have a high prevalence of predisposition to chronic diseases, especially cardiovascular diseases, as well as greater vulnerability to mortality.[31] This factor is based on the bases of the socio-cultural construction of gender, translated into the concept of strength, invulnerability and virility, which may imply greater resistance to health care, in addition to greater susceptibility to risk factors, such as smoking, alcoholism, physical inactivity and obesity.[31]

It is known that Primary Health Care (PHC) is the main resource aimed at the protection, promotion, prevention of diseases, with other purposes to assist in therapeutic monitoring, diagnosis, rehabilitation and health maintenance.

It is pointed out that, nowadays, one of the main obstacles of public health is to increase its scope in the scope of men's health care, and it is necessary to break barriers linked to the incompatibility of schedules of Basic Health Units with the work hours of users, demand for time in attendance, lack of specialties aimed at the male sex and his insufficient self-care and the difficulty of establishing a link with the unit, because, commonly, the Basic Health Unit (BHU) is seen by men as an environment for the care of children, women and the elderly.[32]

It is pointed out that the low adherence of males in primary care implies both their chronification and the need for specialized care, resulting in physical, social, emotional and financial stress for the maintenance of health and quality of life.[31,33] In view of this reality, in 2009, the National Policy for Integral Men's Health Care (NPIMHC) was created, with principles and guidelines that guarantee the right to health based on equity and integrality of care, breaking with gender stereotypes, reduction of morbidity and mortality and implementation of public policies that mainly aim at preventing diseases and promoting health, so that this public's access to health services can be increased, allowing for early detection of diseases.[29,33]

Remember that, although men are more predisposed to serious and chronic diseases, especially cardiovascular diseases, and a greater tendency to indicate MVRS, the risk among women after menopause is extremely high, especially among those over the age of 50 and / or carriers of CAD, which results in a worse prognosis with twice the risk for mortality in the first weeks and first year after cardiovascular event.[34-6]

It is noted that the same risk factor for sex was also observed between age, which increases progressively over the years and is closely related to the development of atherosclerosis, as well as its complications.[13]

By reducing the birth rate, improving living conditions and advances in the health area, Brazilians have increased their life expectancy, which will cause an increase in the elderly population by 2040. It is expected, according to estimates based on data provided by the Brazilian Institute of Geography and Statistics (2015) that, until that date, the population has reached the mark of 153 elderly people for every 100 young people.[37]

It is described that aging can follow the natural (senescence) or pathological (senility) course, which is the predictor of frailty and functional decline related to both loss of autonomy and independence. Senility may include comorbidities, especially chronic ones, which will require specialized care as they progress, thus constituting a public health problem, which exposes the need to readjust the social security and health system so that they can meet needs imposed by the demographic transition of the population, in order to guarantee a healthy aging and avoid the depletion of the resources of the health network.[37]

It is noted that there was a prevalence of white self-reported color, as observed in the literature,[30,34] and, although black skin color is related to the prevalence of cardiovascular disease, 38 there is still no consensus in the literature on this premise.[39]

The findings in the literature were corroborated by the high level of education and active working conditions recorded by men.[34] CVDs are closely correlated to sociodemographic and economic characteristics, prevailing in populations with less purchasing and cultural power, interfering negatively in the implementation of educational activities, self-care measures, understanding of the health status and clinical treatment of participants.[28-9,38] Compared with other demographic factors, the low educational level is directly related to the higher prevalence of cardiovascular risk factors and mortality, since it can interfere with adherence and maintenance of the therapeutic regimen.[40]

In relation to working conditions, most of the active working conditions of men were composed, as well as the highest level of education. It was found, in a study on the gender relationship with education that the inclusion of women in the labor market occurred through two unequal poles, being expressed by the occupation of terrible quality due to the low educational level or better positions in the market due to the high level of instruction.[41]

The following variables were studied in the analysis of comorbidities and lifestyle: acute myocardial infarction; SAH; DM; obesity; physical activity; smoking and alcohol consumption, with all these variables prevailing predominantly in this research among males, which corroborated other studies.[31]

Due to the number of cases of acute myocardial infarction in this research, especially among males, estimates made about the involvement of people in Brazil annually by this comorbidity, totaling 300 thousand per year, with approximately 80% of cases evolving death in the first 24 hours after symptom manifestations.[42]

It is known that acute myocardial infarction is an acute coronary syndrome that causes the death of myocardial cells through ischemic processes, which result in a deleterious relationship involving the decrease in oxygen supply and its great metabolic demand, resulting in the depletion of compensatory mechanisms, having as main precursor atherosclerosis.[43]

It is explained that atherosclerosis is a CAD that causes endothelial lesion and formation of atheromatous plaques on the vessel wall, resulting in the narrowing of its light, which may come off and originate an embolic event that can often be fatal if not treated early.[44]

In Brazil, 32.5% of adults are affected by SAH, corresponding to 36 million of the population, and its complications have an effect on 50% of deaths from cardiovascular disease, causing a significant impact on productivity and family income, especially when related to DM.[45]

It is believed, due to its generally asymptomatic manifestation and its high mortality rates, that SAH requires a focus on primary care, since, at this stage, it will be possible to employ means directed to screening, early diagnosis, health education, adherence to drug and non-drug treatment, in order to promote protection and prevention against the onset of CVD and / or worsening of the clinical condition.[38]

Remember that DM is a metabolic disease resulting from insulin resistance in the body or due to its deficient production in the pancreas, which implies high glucose levels in the blood circulation, which may result in cardiovascular events that will increase the morbidity and mortality of its patients, mainly due to the progression of atherosclerosis.[46]

DM is generally associated with secondary risk factors, such as obesity, physical inactivity, SAH, dyslipidemia, among others, and the reduction of these risks, together with adequate glycemic control, consists of an effective approach to control the load of this disease and reduce its impact on cardiovascular health, leading to better quality of life and healthy aging of the population.[46]

It is noteworthy that, although the participants in this research were mostly classified without obesity, the physical inactivity observed in this study, especially among men, confers a risk factor for overweight and the development of obesity. The development of obesity is related to an unbalanced diet, excessive alcohol consumption, smoking and genetic factors, thus exposing the need to implement diets with nutritional monitoring and lifestyle changes.[11,31]

Unsatisfactory physical activity was shown in most of the sample, especially among males. For this reason, the need to implement diets and lifestyle changes with the practice of regular physical activity and at a defined pace is expressed, as, in addition to promoting the development of interpersonal relationships, it also contributes to weight control , blood glucose, blood pressure and lipid profile.[5,11]

In relation to smoking and alcohol consumption, there was prevalence among males. Smoking has been pointed out in the literature as the main cause of CAD, with a three times greater risk of acute myocardial infarction at ages older than 50 years and six times greater in 60 years or more, increasing the risk factor for ischemic heart disease progressively in relation to the amount of cigarettes and smoking time. In addition, the transfer can prevent the risk of possible re-hospitalizations after cardiac surgery.[5,11,28]

Smoking cessation for more than three weeks can positively influence the healing of the surgical wound, since the vasoconstrictor properties of cigarettes can decrease blood supply and, consequently, the narrowing of the diameter of the vessels, and negatively influence the appearance of symptoms of physical, psychological and behavioral abstinence, which may lead to the establishment of pain and malaise during this period.[47]

It is warned that alcohol consumption is among the main causes of increased blood pressure, stroke, CVD and arrhythmias.[36,38] The cessation of such addictions is recommended as one of the main strategies to guarantee the effectiveness and durability of the health recovery of the re-vascularized patient.[48]

It is based on the prevention of cardiovascular diseases, especially acute myocardial infarction, on the early detection and approach of modifiable risk factors: smoking; unbalanced nutrition; dyslipidemia; sedentary lifestyle and obesity, which significantly increase the risk for SAH, DM and atherosclerotic disease.[11]

The general analysis of health-related quality of life resulted, through the association of the EuroQol EQ-5D-3L questionnaire between times T0

and T1, in a statistically significant difference (p <0.05) between the anxiety / depression domain.

It is noted, with regard to the anxiety and depression domain, at time T0, that the problems found were mostly moderate, corroborating another study.[49] On the other hand, T1 time was represented mostly without problems, which may be related to the reduction of depressive symptoms and anxiety after the cardiac procedure, since, in the preoperative and immediate postoperative periods, patients are vulnerable, delivered to the care of health professionals and surrounded by feelings of imminent risk of death, especially due to the fact that they remain for recovery in the Intensive Care Unit, which, in itself, is an environment that can awaken fear, restlessness, delirium, among others, mainly because it is a closed and highly complex sector.

Cardiac surgery contributes to the manifestation of depressive symptoms in the preoperative period, especially among individuals who are predisposed to depression, so that the symptoms of this disease tend to increase in the immediate postoperative period and decrease in the late postoperative period that is, three months after the surgical procedure.[34]

The necessary anxiety and depression is evaluated not only in terms of therapeutic efficiency and cardiac rehabilitation, but also in the establishment of coping and reduction of medicalization, through the creation and implementation of individual intervention strategies, promoting autonomy and protagonism to the patient, so that they can understand all the steps that will be necessary in a clinical intervention and that, in this way, they can act actively during his process of hospital and post-hospital recovery.

It is believed that a way to minimize the effects of anxiety and depressive symptoms is consistent with the stimulation of family participation during the hospital stay, especially in the ICU, assessing the need for extended visits, psychological monitoring, as well as the promotion of a calm environment, illuminated, which allows the patient to orient himself in terms of time and space, minimizing the risk of developing delirium.

It is pointed out that, although this study did not find a statistically significant difference (p> 0.05) between the domains mobility, personal care, habitual activities and pain / malaise, the assessment levels remained predominantly without problems.

The mobility domain was maintained with high scores for the level of evaluation without problems, at times T0 and T1, in contrast to findings in the literature.[29] This fact can be justified according to the characteristic of the surgical intervention studied, being the MVRS a procedure considered to have a good prognosis.[14] Another point is made with the period in which this evaluation was performed, since, as it comprises the preoperative and postoperative periods (after six months), the recovery time of the participants ends up being longer.

Regarding the personal care domain, it is described as the individual's ability to perform actions related to self-care, clothing and personal hygiene. In this regard, the results were shown with high scores for the absence of problems, and the same factor was observed in another study, which showed, through statistically significant data, this relationship.[29]

It is detailed that the performance of usual activities, for example, work activities, studies, domestic, family or leisure activities, also kept their scores high, however, without significant difference, which can also be explained by the times understood by the analysis of this study linked to longer post-surgical recovery time. The same was observed in the domain of pain and malaise.

During the immediate postoperative period of a cardiovascular procedure, the patient is closely monitored, with limited movement and devices that can provide pain and / or discomfort, such as the orotracheal tube for mechanical ventilation, peripheral and central access, temporary pacemaker, drain and bladder catheter. It contributes, due to the absence of risk factors that can delay recovery and postpone the stay or provide hospital readmission, for a better quality of life during the period of hospitalization and hospital discharge, therefore, health professionals should prioritize the autonomy of patient care, as well as encouraging self-care and perception of health, preserving their independence.[50]

The data obtained by the Visual Analogue Scale showed an increase between the averages as a function of time. Thus, it was found, when analyzing the times, improvement in health-related quality of life in the postoperative period, evidenced by the statistically significant difference (p <0.05) between times T0 and T1. It was related to, in the literature,[20] the best health status obtained in VAS directly to the greater absence of limitations / problems in EuroQol EQ-5D-3L, which results in a better quality of life.

It is noted, according to the results obtained by MacNew QLMI in times T0 and T1, that the health-related quality of life of the participants improved after six months of MVRS, corroborating the findings of other authors,[27] justified by the statistically significant difference (p <0.05) between the times T0 and T1 of the emotional, physical and social domains.

It was pointed out, by studies, that hospitalization due to the need for a surgical intervention, both because of the existing risks

and the feelings experienced, favors the establishment of physical and psychological stressors, which are capable of generating anxiety and depression during the pre and postoperative period, negatively influencing the individual's HRQoL.[15-6] This relationship was also proven in the findings of the EuroQol EQ-5D-3L questionnaire in this study.

Due to the high scores of health-related quality of life in all domains of the MacNew QLMI at time T1, the high quality of life of the participants after six months of the surgical procedure has elapsed, and this factor may be related to the period of recovery of the participants' daily activities, phase that coincides with the remission of CAD-related problems, mainly precordial pain and dyspnea present in acute myocardial infarction, resulting in greater freedom of movement, resumption of social contact and recovery of the emotional domain.[27,51]

It is revealed, according to research carried out on the participants' daily lives after MVRS, that factors such as limitations imposed by heart disease, socioeconomic problems, anxiety / depression, uninterrupted medical monitoring, loss of libido, difficulty in accessing health services and continuous use medications can result in low adherence to treatment and result in a worse health-related quality of life.[4]

It was found, in analyzes carried out between the association of sex with quality of life, that males have better emotional quality of life when compared to females.

It would be, according to the social construction, the female sex prone to pain that can be tolerated, also marked by her maternal instinct and geared towards greater support for the care directed to family and friends, while the male sex would be related as a breadwinner and resistant to pain.[52] Due to this stereotype, health care and recognition in the face of the need to seek health services are made difficult in such a way that, when cardiovascular disease is discovered in females, its limitations and problems are capable of negatively influencing relationships physical, social and above all emotional, since they lead to changes in lifestyle, decreased work activities, premature break with social life, higher prevalence of poverty, low level of education, recurrent personal stressors, deficit in social support and overload of social roles, resulting in end, in suffering.[16,52]

It was evidenced, in view of this assumption, in a study, that 25.8% of women are often medicalized with psychotropic substances in comparison with men, where only 7.5% receive these medications. This condition can also be related to the ease among the female sex in recognizing the need for intervention regarding the symptoms presented by a given clinical condition, as well as their high adherence to health services.[16]

The age group ≤ 59 years presented a better emotional quality of life, with a statistically significant difference ($p < 0.05$) compared with the elderly. It is believed that this may be related to the fact that this age group is active, with a low burden of disease and with a greater physical predisposition.

It is understood that aging is a phase of transformation, where physical, psychological and emotional changes undergo constant changes, requiring family support and the affection of loved ones, so that such a transition is made in a healthy way.[52] It is inferred, however, that the emergence of fragility and the decline in global functionalities, such as activities of advanced daily life, instrumental and basic, until functional decline, are consequences of pathological aging, which can culminate in the process of institutionalization, loss of autonomy and independence, prolonged hospitalization and readmissions, resulting in a worse quality of physical, social and especially emotional life, especially when the elderly is subjected to major surgical procedures, such as MVRS.[52]

The skin color was statistically significant ($p < 0.05$) in the emotional domain, and the self-reported white color had a better emotional quality of life. Studies that suggested that people with self-reported white skin color are predisposed to emotional decline, above all, the prevalence of depressive symptoms, however, this result should not be attributed solely to skin color, since economic and social inequalities of the population studied must also be assessed.[53]

The DM clinical variable showed a statistically significant difference ($p < 0.05$) in the emotional and social domains, and those who do not have such comorbidity had a better quality of life. DM is associated with CVD, predisposing to a worse emotional, physical and social quality of life, considering its limiting and disabling factors.[54]

It is reported that, in this study, there were no statistically significant differences between the associations of the MacNew QLMI questionnaire between the variables: acute myocardial infarction; SAH; obesity; physical activity; smoking; alcoholism; schooling and working condition. However, it should be added that the lack of such a relationship cannot make the analysis and association of these variables unviable, since they configure risk factors that predict quality of life and CVD.

It was noted, through the analyses carried out using the MacNew QLMI questionnaire, the need to expand the scope of studies with its use and, mainly, its dissemination in studies related to other heart diseases.

The following are limitations of the study: deaths; lack of resources / stoppage of the university hospital in the period of data collection; emotional instability and withdrawals from research participants; incomplete and / or missing items in the medical records and absence of participants when attending postoperative consultations.

It should be noted that, during this study, the deaths recorded made it impossible to maintain the participants in the analysis of the second phase, time T1.

Due to the lack of resources and stoppages that occurred at the university hospital during the period of data collection, the impact was not only financially for the institution, but also operational, resulting in a decrease in surgical procedures, affecting the adhesion of new participants and postponing the data collection time.

Due to the emotional instability of some participants, it was not possible to finish the application of the questionnaires, resulting in their exclusion, as well as the abandonment of continuing in the next stage of the research.

This resulted, due to absences in outpatient consultations, in a complicating factor for updating the collection data, requiring the implementation of new means to contact the participants, such as telephone monitoring.

It was not possible, due to the missing items in the filling of the medical record, as well as the lack of data provided by the participants, the analysis of other possible variables, such as salary income.

CONCLUSION

It was proved, in this study, through the application of generic and specific questionnaires that HRQoL improved after six months of the post-operative period of MVRS, especially between the emotional, physical, social, anxiety / depression and health status domains.

It was revealed, by the association between sociodemographic variables, comorbidities and lifestyle with quality of life, that the male sex has a better emotional quality of life, as well as the age group ≤ 59 years and the self-reported skin color white, and that non-DM patients, in addition to having a better quality of emotional life, also have a better quality of social life.

It is warned that cardiac surgery as a form of treatment is not a curative intervention and must be accompanied by other pharmacological and non-pharmacological therapeutic measures, such as lifestyle changes, aiming at controlling the progression of coronary disease, ensuring the best quality of life.

It is expressed, by the predominance of males in this study and the cardiovascular risk factors, the need to implement and comply with public policies aimed at the promotion, prevention and protection of health, intensifying the capture of this public in primary care, which is characterized low adherence to health services.

Through the work developed with HRQoL, a greater understanding of the subjectivity of others and how it is able to impact health was allowed, emphasizing the importance of care not being directed only to pathological aspects, but also to biopsychosocial and the patient's knowledge as a whole, author of their life, valuing their autonomy.

CONTRIBUTIONS

It is informed that all authors contributed equally in the design of the research project, collection, analysis and discussion of data, as well as in the writing and critical review of the content with intellectual contribution and in the approval of the final version of the study.

CONFLICT OF INTERESTS

Nothing to declare.

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