








# Quality of life assessment after acute myocardial infarction

## Avaliação da qualidade de vida após infarto agudo do miocárdio

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### ABSTRACT

**Objective:** to evaluate the quality of life after acute myocardial infarction, highlighting the differences by sex. **Methods:** analytical, observational study with 273 patients. For collection, a multidimensional assessment instrument was used for heart attacks. Data collected in a cardiology referral hospital, in which the t Student test was applied for analysis. **Results:** the majority were male (67.0%), with a mean age of 63.6 years, with a family history of heart attack (64.5%). The average quality of life score was 0.45, with 1.00 being the worst score. Dependence (0.82) and physical activity (0.50) were the worst assessed domains; and side effects (0.27) and diet (0.36), the best. The female gender had the worst averages (0.52,  $p < 0.05$ ), with emphasis on physical activity (0.58), emotion (0.49) and insecurity (0.44). **Conclusion:** impairments in quality of life were found after myocardial infarction, in which the dependency domain was the most compromised. The female sex had worse scores. **Descriptors:** Myocardial Infarction; Quality of Life; Acute Coronary Syndrome; Surveys and Questionnaires.

### RESUMO

**Objetivo:** avaliar a qualidade de vida após infarto agudo do miocárdio, destacando as diferenças por sexo. **Métodos:** estudo analítico, observacional, com 273 pacientes. Para coleta, utilizou-se de instrumento de avaliação multidimensional para infartados. Dados coletados em hospital de referência em cardiologia, nos quais se aplicaram o teste t Student para análises. **Resultados:** maioria do sexo masculino (67,0%), média de 63,6 anos de idade, possuindo histórico familiar de infarto (64,5%). O escore médio de qualidade de vida foi 0,45, sendo 1,00 o pior escore. Dependência (0,82) e atividade física (0,50) foram os piores domínios avaliados; e efeitos colaterais (0,27) e dieta (0,36), os melhores. O sexo feminino apresentou piores médias (0,52,  $p < 0,05$ ), com destaque para atividade física (0,58), emoção (0,49) e insegurança (0,44). **Conclusão:** constataram-se prejuízos na qualidade de vida, após infarto do miocárdio, em que o domínio dependência foi o mais comprometido. O sexo feminino apresentou piores escores. **Descritores:** Infarto do Miocárdio; Qualidade de Vida; Síndrome Coronariana Aguda; Inquéritos e Questionários.

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## Introduction

Quality of life is a subjective and multidimensional conception of the individual in relation to life experiences, this perception being directly associated with cultural and values issues, in which one lives and establishes the goals involving the level of contentment achieved in the physical, emotional and social sphere<sup>(1)</sup>. This concept is considered a new paradigm that influences decision-making and health policy planning. The maintenance of quality of life is the expected result of public policies and the effectiveness of care practices for health promotion, prevention, diagnosis, treatment, recovery and rehabilitation of diseases and, also, for guaranteeing terminality, especially in chronic health conditions<sup>(2-3)</sup>.

Thus, it is a fact that the harmful lifestyle, influenced by modernity and globalization, affects the living conditions of the population, contributing to the manifestation of cardiovascular signs and symptoms. The level of stress, unhealthy eating, the absence of physical activity practices and other various conditions are considered risk factors for cardiovascular diseases<sup>(4-5)</sup>.

Among chronic conditions, cardiovascular diseases deserve to be highlighted, due to the rates of mortality and morbidity in the world panorama, having a significant prevalence nowadays, being considered one of the greatest endemics in history. Despite improvements and advances in diagnosis and treatment, these diseases are responsible for 35.0% of deaths in Brazil, among which, acute myocardial infarction stands out as the main cause of mortality<sup>(6-8)</sup>.

In this context, it is of great relevance to assess the conception of patients in relation to the impact of the disease on daily life, especially in aspects considered negative, such as limitations. Assessing such conditions in patients, after myocardial infarction, has been an effective way of establishing the impact of therapeutic interventions, especially when there is no prognosis for cure<sup>(9-11)</sup>. Understanding the ways that impact quality of life is a subsidy for the design

of interventions that make it possible to improve the perception of well-being<sup>(12-13)</sup>.

The measurement of quality of life in infarcted patients must be more associated with the positive aspects than with the possible negative impacts that this disease can generate in the process of diagnosis, treatment and rehabilitation. The primary objective of this measurement is to assess the limitations experienced by infarcted patients. For this, it is necessary to apply instruments that are sensitive to capture these changes. Thus, the decision to use a multidimensional instrument, with a holistic approach, is essential to assess quality of life<sup>(14-15)</sup>.

Assessing quality of life, in multiple facets, has been an indicator of great relevance for health practices, which impacts care decisions<sup>(3)</sup>. Studies using specific questionnaires to assess quality of life in heart attacks are few in Brazil<sup>(1,3,10)</sup>. This assessment is important to ensure individualized treatment, centered on the individual, with the objective of approaches that can promote the rehabilitation and reintegration of patients into the routine of daily life<sup>(5)</sup>.

There is evidence that, after myocardial infarction, women have lower health-related quality of life scores than men, this added to the higher number of comorbidities<sup>(2,6)</sup>. These findings are quite worrying, as they are associated with the recurrence of cardiovascular events in this specific group<sup>(8-9)</sup>. Understanding how quality of life presents itself to women, through specificities, makes it possible to develop gender-equitable approaches to health care.

Thus, the objective was to assess the quality of life after acute myocardial infarction, highlighting the differences by sex.

## Methods

It is an observational, analytical study with patients who suffered acute myocardial infarction. The sample calculation was based on the Central Limit Theorem and the Law of Large Numbers, considering the incidence of the disease in the last year, with a

95% confidence interval, with an alpha error of 5%, requiring a minimum of a sample composition of 260 participants. Data were collected from June 2015 to October 2016, in an inpatient unit and outpatient clinic of a philanthropic hospital, a reference in cardiology, in Espírito Santo, Brazil.

As inclusion criteria, the sample included patients with a medical diagnosis of acute myocardial infarction, registered in medical records, and readmitted patients, due to complications. The patient should be lucid, with the possibility of verbalization and, after reading, be in accordance with the Informed Consent Form. Lucidity was verified by the ability to answer simple questions of identification and guidance in relation to time and space. Patients who were drowsy, dizzy or in a coma and those whose last episode of myocardial infarction had occurred less than five days were excluded.

Data were collected through interviews. The collection instrument was divided into two parts, the first with the objective of characterizing the sample in relation to the socioeconomic profile and cardiovascular risk factors; and the second form for assessing quality of life, using the Myocardial Infarction Dimensional Assessment Scale (MIDAS), whose version adapted for Brazilian Portuguese was called the *Escala de Avaliação Multidimensional para Infartados*<sup>(10)</sup>. As a socioeconomic profile, the variables sex, ethnicity, education level and marital status were described; with regard to cardiovascular risk factors, the following were evaluated: perception of stress and anxiety, habit of consuming alcoholic beverages and cigarettes, physical activity, personal history of hypertension, diabetes mellitus, dyslipidemia and family history of acute myocardial infarction. After data collection, the answers were coded and typed in an Excel® spreadsheet, with double verification, and exported to the statistical program.

Data were collected by three fellows, undergraduate students, under the supervision of the principal researcher. They were trained on the collection instrument and participated in a pilot study, which included

application of the instrument among the participants and application to nine cardiac patients, who did not compose this sample.

The Multidimensional Assessment Scale for Infarcted Patients is a specific quality of life instrument for infarcted patients, composed of 35 questions, divided into seven domains (physical activity, insecurity, emotional reaction, dependence, diet, medication concerns and side effects), adapted for application in Brazil and with evidence of validity and reliability, with Cronbach's Alpha of 0.85<sup>(10-11)</sup>.

Each of the 35 questions has five answer options, which are scored on a scale of zero to four, which indicate from the absence of symptoms, characterized by the alternative "never" (scoring zero) to those that show greater severity (scoring four). In this way, each domain is transformed into an interval from zero (the best health status) to one (worst score). The general score of the instrument can then be calculated by the simple average of the scores obtained in each domain<sup>(10)</sup>.

Data collection in relation to risk factors was based on the patient's report, through the interview and/or association of data contained in medical records, such as prescribed medication and laboratory tests. It was considered that the person who practiced physical exercises maintained the frequency of at least three moments of activities, with a minimum duration of 40 minutes per week; frequent alcohol consumption those who drank more than three drinks per week; and a smoker who had a habit of smoking in any amount.

For statistical analysis, the Statistical Package for Social Science, version 17, Minitab 16 and Excel Office 2018 were adopted. t Student test was applied for comparison of means, due to the sample's normality characteristic, verified by the Shapiro-Wilk, in which the value of  $W = 0.98$  and  $p=0.180$  was obtained.

The approval of the project by the Ethics and Research Committee of the proposing institution is registered in the Presentation Certificate for Ethical Appreciation No. 42456915.8.0000.5068 and opinion

No. 992,216/2015, complying with the ethical principles recommended by Resolution 466/12, of the National Council of Cheers.

## Results

273 patients participated. The average age in the sample was 63.6 years, ranging from 38 to 91 years, with a standard deviation of 10.8. Regarding gender, 183 (67.0%) participants were male, 116 were white (42.5%), with low educational level (69.9% did not finish elementary school) and 185 (67.8%) married.

Among the risk factors, systemic arterial hypertension had a higher prevalence, with 201 (73.6%) patients with this disease. As for diabetes mellitus and dyslipidemia, there was proportionality in the distribution, with 128 (46.9%) and 113 (41.4%), respectively.

With regard to lifestyle, 148 (55%) drank alcoholic beverages, of these, 43 (16.5%) still maintained the habit. The majority used cigarettes (64.1%), of these, 45 (16.5%) still remained on the consumption. Regarding the practice of physical exercise, 182 (66.7%) reported not practicing at any time, this being a habit of life in 91 (33.3%) infarcted. Another risk factor that was related to cardiovascular diseases was the habit of snoring, in which it was found that 114 (41.8%) of the interviewees reported snoring habitually.

When asked about feeling depressed, 110 (40.3%) of the patients replied that they had never felt depressed, however, 69 (25.3%) replied that they often felt depressed. Regarding stress, 98 (35.9%) reported that they felt stressed at times and 85 (31.3%) reported being stressed frequently.

The family history also showed a statistical difference, with 176 (64.5%) of the patients claiming to have first-degree relatives who suffered acute myocardial infarction ( $p < 0.010$ ). Regarding the change in quality of life after infarction, 142 (52.0%) patients answered that there was a worsening of quality of life.

When applying the Multidimensional Assess-

ment Scale for Heart Attack, it was possible to assess quality of life. The general score was 0.45. The domains that presented the worst score in relation to quality of life were: dependence (0.82), physical activity (0.50) and medication (0.41). The domains that had the best scores were side effects (0.27) and diet (0.36), as shown in Table 1, in which the scores by domain are presented, with a difference of mean by sex.

**Table 1** – Average of the domains of the Multidimensional Assessment Scale for Heart Attack. Vila Velha, ES, Brazil, 2019 (n=273)

Domains/Gender	Average	Standard deviation	Minimum	Maximum	*p-value
Physical activity					
Male	0.46	0.18	0.00	0.88	
Female	0.58	0.21	0.17	1.00	<0.010
General	0.50	0.19	0.00	1.00	
Insecurity					
Male	0.33	0.25	0.00	1.00	
Female	0.44	0.32	0.00	1.00	0.040
General	0.37	0.28	0.00	1.00	
Emotion					
Male	0.36	0.24	0.00	1.00	
Female	0.49	0.25	0.00	1.00	<0.010
General	0.40	0.25	0.00	1.00	
Dependency					
Male	0.80	0.30	0.00	1.00	
Female	0.86	0.24	0.00	1.00	0.120
General	0.82	0.28	0.00	1.00	
Diet					
Male	0.33	0.32	0.00	1.00	
Female	0.41	0.33	0.00	1.00	0.060
General	0.36	0.32	0.00	1.00	
Medication					
Male	0.39	0.30	0.00	1.00	
Female	0.44	0.29	0.00	1.00	0.190
General	0.41	0.30	0.00	1.00	
Side effects					
Male	0.25	0.31	0.00	1.00	
Female	0.33	0.32	0.00	1.00	0.040
General	0.27	0.31	0.00	1.00	
Overall score					
Male	0.42	0.13	0.04	0.77	
Female	0.51	0.14	0.17	0.93	<0.010
General	0.45	0.14	0.04	0.93	

\*t Student test

When performing the analysis of the means of the MIDAS domains, evaluating the difference of means by sex, a statistical difference was found between the scores scored by the male and female genders. The female gender had the worst quality of life scores in the domains of physical activity (0.58;  $p < 0.010$ ), emotion (0.49;  $p < 0.010$ ), insecurity (0.44;  $p = 0.040$ ) and side effects (0.33;  $p = 0.040$ ). The other domains also presented worse averages in relation to males; however, there were no statistically significant differences between the averages.

## Discussion

As a limitation, it is possible to highlight the impossibility of assessing the before and after the infarction, which could offer a greater subsidy in relation to changes in quality of life. Another restriction was associated with risk factors that, in the majority, were verified in the medical record or in the patient's report. In addition, the use of the observational cross-sectional study does not allow establishing the cause and effect relationship between the variables investigated.

Through this study, the domains whose quality of life scores had better and worse scores were described; this helps in the decision making of the health professional, since quality of life is a health indicator. When listing cardiovascular risk factors in this specific group; primary care and other health promotion programs are also subsidized for the establishment of primary prevention measures and control of modifiable cardiovascular risk factors, in addition to highlighting the importance of assistance planning, in a different way for women, to reduce disparities in quality of life scores.

Most of the patients were male, the most propitious group for infarction, due to the higher number of risk factors<sup>(8,16-19)</sup>. The predominant risk factors were the family history of acute myocardial infarction and arterial hypertension. It is known that genetic factors

have a positive correlation with the conditions of cardiovascular dysfunctions and the worsening of the morbidities that arise in the process of illness. Family history is considered a non-modifiable risk factor, therefore, individuals with this risk factor need to be monitored and guided as to healthy living practices<sup>(9,12)</sup>. Most of the sample consisted of hypertensive patients and were undergoing continuous treatment. These data are similar to the findings of another study carried out in the Southern Region of Brazil, in which the objective was to evaluate the overlap of cardiovascular risk factors in a patient with atherosclerotic disease<sup>(4,8)</sup>.

Systemic arterial hypertension, in addition to isolated disease, is an important risk factor, whose permanence determines a worse prognosis, after acute myocardial infarction, both in the short and long term. In Brazil, it is the most prevalent disease in adults, and its relationship with cardiovascular diseases is progressive, regardless of other risk factors<sup>(5,8,16,19)</sup>. Hypertension increases the incidence of strokes, as well as other cardiovascular diseases, after infarction<sup>(14-16)</sup>.

After the infarction, many patients have difficulties to return to perform activities of daily living, a fact justified by the high percentage of sedentary lifestyle in the sample, in addition to mobility limitations<sup>(7)</sup>. Sedentary lifestyle is often related to everyday behavior, resulting from the comforts of modern life, which, in turn, drives the emergence of cardiovascular problems and influences the conditions of obesity, overweight, dyslipidemia and diabetes<sup>(16-17)</sup>. In addition, this difficulty may also be related to the low prevalence of frequent practice of leisure time<sup>(7,9,13)</sup>.

In a similar study, when correlating smoking with the other risk factors for infarction, it is highlighted that this is the risk factor more susceptible to modification and that women smokers are at greater risk (50.0%) of suffering a heart attack than men, especially in the ages above 55 years<sup>(2,4,8,16)</sup>. However, in men who, in addition to being smokers, have alcohol

consumption and little practice of physical activities, this value increases, becoming the most vulnerable group to infarction. The maintenance of these and other risk factors are of concern, as it increases the morbidities resulting from this pathology, as well as new cardiovascular problems<sup>(18)</sup>.

After acute myocardial infarction, the mortality rate tends to decrease over time, if monitoring strategies are established for these patients. In the first year, this rate is around 11.0%, decreasing to 8.6% after 18 months of follow-up. The main causes of death are heart failure and arrhythmias due to infarction recurrence<sup>(19-20)</sup>.

Most patients report changes in lifestyle after a heart attack. However, even with these changes, it is noted that there is still maintenance of cardiovascular risk factors, as previously discussed. Quality of life permeates the subjectivity of each individual about their own perception of life. This indicator is increasingly valued for the evaluation of therapeutic resources used in the health area. For measurement, specific instruments have been created and validated for pathologies such as MIDAS in relation to acute myocardial infarction<sup>(10-14)</sup>.

The scores found for quality of life are in line with another study, in which the quality of life of patients was evaluated, after seven years of the acute coronary event, in which they concluded that the quality of life improved after this period of time, in practically all aspects related to this dimension of health<sup>(13)</sup>. This finding may be associated with the fact that, over time, there is an improvement in quality of life<sup>(2,6)</sup>, however, it is known that, in the first year, after myocardial infarction, the female sex presents worse scores, probably due to the higher number of comorbidities<sup>(6,8)</sup>.

Patients who did not have specific interventions at the ideal time tend to have a worsening of quality of life after myocardial infarction<sup>(11)</sup>. Although there are not many studies presenting the comparison between sex for quality of life, what has been observed is that females have worse scores<sup>(2,4,14)</sup>, a fact also observed in

other chronic diseases<sup>(17)</sup>.

When assessing, in a generic way, what impacts the quality of life of the population, five variables stand out that directly correlate with these scores in the female sex: age (the older women have the worst quality of life score), occupation (referring to domestic and professional activities), severity of the disease, leading to a higher number of complications, marital status and socioeconomic category. Regarding males, three variables make this association: social support, health control and self-esteem. Thus, the profile of patients may be associated with this worse perception of quality of life<sup>(4,3)</sup>.

When evaluating the quality of life in young patients who suffered myocardial infarction, it was observed that women had more comorbidities and the scores for quality of life, when applying a generic instrument, were worse when compared to men. Another study found an association between females and worse results for physical and mental health, in addition to greater physical limitations<sup>(2)</sup>.

Infarcted women ended up observing in their daily lives the distancing of close people, causing social isolation and making daily life even more difficult. This result may reflect the disability imposed by the underlying cardiac disease itself. Thus, it is possible for women to have more residual symptoms and worse quality of life after a heart attack. This information is important to identify opportunities for improvement in the treatment of coronary artery disease in women<sup>(2,14)</sup>.

The fact of having confidence in dealing with problems has a strong correlation not only with the classification of quality of life, but also impacts the determination of lifestyle and, consequently, the adoption of habits. Thus, it is noted the importance of working and investigating the emotional aspects of patients, after acute myocardial infarction<sup>(3,9-10)</sup>.

The feeling of being useless and displaced has a negative correlation in relation to the classification of quality of life. The more the patient presents these

feelings, the worse the conception about the quality of life itself. Likewise, symptoms such as leg pain, chest pain, vertigo also have effects on the health condition of patients, aspects that need to be evaluated during therapy<sup>(7,9)</sup>.

Leisure, as a form of social interaction, new friendships, support from loved ones and not overprotection, make the patient feel better. Family support is essential in this recovery process, as well as the establishment of a support network, which helps in sharing and diluting negative feelings<sup>(7,13,17)</sup>.

## Conclusion

Patients, after acute myocardial infarction, showed impairments in quality of life, whose domains of dependence, physical activity and medication were the most affected. Female patients had the worst perceptions about quality of life, in all domains and in the general score, thus requiring attention to a significant difference in the domains of physical activity, emotion, insecurity and side effects.

## Collaborations

Fiorin BH, Moreira RSL and Luna Filho B contributed with the design of the project, analysis and interpretation of data, writing of the article, relevant critical review of the intellectual content and final approval of the version to be published. Lopes AB, Sipolatti WGR, Furieri LB and Fioresi M collaborated with a relevant critical review of the intellectual content and final approval of the version to be published.

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