artigo

Cunha, B. C. S., Glória, L. M., Falcão, L. F. M.
Anxiety and functional capacity of patients in the pre-operative and post-operative of myocardial revascularization surgery

Anxiety and functional capacity of patients in the pre-operative and post-operative of myocardial revascularization surgery

Ansiedade e capacidade funcional de pacientes no pré-operatório e pós-operatório de cirurgia de revascularização do miocárdio
Ansiedad y capacidad funcional de pacientes en el preoperatorio y postoperatorio de cirugía de revascularización miocárdica

RESUMO

Objetivo: Avaliar a ansiedade e capacidade funcional nos pré-operatórios e pós-operatório da cirurgia de revascularização do miocárdio. Métodos: Pesquisa de caráter transversal e observacional realizada no período de dezembro/2018 a dezembro/2019. Foram incluídos pacientes em pré-operatório e pós-operatório de CRM, secundário ao infarto. Utilizou-se dois instrumentos: Questionário de Ansiedade Cardíaca e o Teste de Caminhada de 6 minutos. Resultados: Avaliou-se 41 pacientes, 25 (69%) do sexo masculino. A ansiedade no pré e pós-operatório mostrou significância estatística em ambos os sexos. O TC6' apresentou $p \leq 0,05$ na avaliação pré e pós-operatória, no sexo masculino e feminino quando avaliados separadamente, com DTC6'significativamente menor no pós-operatório. Conclusão: Níveis de ansiedade e redução da capacidade funcional foram observados em pacientes no pré e pós-operatório de CRM, podendo trazer importantes prejuízos para esse grupo. No entanto, sugerem-se estudos com a ampliação da amostra para confirmação dos dados obtidos.
DESCRITORES: Doenças Cardiovasculares; Revascularização; Miocárdio; Ansiedade, Capacidade Funcional.

ABSTRACT

Objective: To assess anxiety and functional capacity in the preoperative and postoperative periods of coronary artery bypass graft surgery. Methods: Cross-sectional and observational survey conducted from december/2018 to december/2019. Patients in preoperative and postoperative CABG secondary to infarction were included. Two instruments were used: Heart Anxiety Questionnaire and the 6-minute walk test. Results: 41 patients were evaluated, 25 (69%) males. Pre- and postoperative anxiety showed statistical significance in both sexes. The 6MWT' presented $p \leq 0.05$ in the pre- and postoperative evaluation, in males and females when evaluated separately, with a significantly lower 6MWT in the postoperative period. Conclusion: Levels of anxiety and reduced functional capacity were observed in patients in the pre- and postoperative period of CABG, which could cause significant harm to this group. However, studies with the expansion of the sample are suggested to confirm the data obtained.
DESCRIPTORS: Cardiovascular Diseases; Revascularization; Myocardium; Anxiety, Functional Capacity.

RESUMEN

Objetivo: Evaluar la ansiedad y la capacidad funcional en el preoperatorio y postoperatorio de cirugía de revascularización miocárdica. Métodos: Investigación transversal y observacional realizada de diciembre/2018 a diciembre/2019. Se incluyeron pacientes en preoperatorio y postoperatorio de CABG secundaria a infarto. Se utilizaron dos instrumentos: el Cuestionario de Ansiedad Cardíaca y la prueba de marcha de 6 minutos. Resultados: Se evaluaron 41 pacientes, 25 (69%) eran del sexo masculino. La ansiedad en el pre y postoperatorio mostró significación estadística en ambos sexos. El 6MWT mostró $p \leq 0.05$ en la evaluación pre y postoperatoria, en hombres y mujeres cuando se evaluó por separado, con un 6MWD significativamente menor en el postoperatorio. Conclusión: Se observaron niveles de ansiedad y capacidad funcional reducida en pacientes en el pre y posoperatorio de CABG, lo que puede traer perjuicios significativos para este grupo. Sin embargo, se sugieren estudios con ampliación de la muestra para confirmar los datos obtenidos.
DESCRIPTORES: Enfermedades Cardiovasculares; revascularización; miocardio; Ansiedad, Capacidad Funcional.

Bianca Caroline Silva da Cunha
Physiotherapist, State University of Pará, Faculty of Physiotherapy and Occupational Therapy, Pará, PA, Brazil, Specialist in cardiovascular health care, Bachelor of Physiotherapy.
ORCID:0000-0002-8468-6016

Luzielma Macêdo Glória
Physiotherapist, Federal University of Pará, Faculty of Physiotherapy and Occupational Therapy, Pará, PA, Brazil, Master in Amazonian Health, Bachelor of Physiotherapy.
ORCID: 0000-0001-5409-4354

Luiz Fábio Magno Falcão
Physical Therapist, State University of Pará, Faculty of Physical Therapy and Occupational Therapy, Pará, PA, Brazil, Doctor in Virology from the Evandro Chagas Institute, Bachelor of Physical Therapy.
ORCID: 0000-0001-8391-2694

INTRODUCTION

Cardiovascular diseases (CVD) are among the main causes of morbidity and mortality, in Brazil they are the first cause of death, representing about 20% of all deaths in individuals over 30 years of age. The high prevalence of these is mainly due to the association of a lifestyle with great exposure to risk factors and the increase in the longevity of the population. [1]

The costs of hospitalizations for cardiovascular diseases are considered the largest among the causes of hospital admissions in Brazil and recent data from the IBGE show that Brazil is rapidly changing its age structure, increasing the proportion of elderly people and the life expectancy of Brazilians. Aging is responsible for increasing the incidence of CVD and, consequently, its costs exponentially. [1,2]

Cardiac surgery (CS) is still the treatment of choice for many patients with cardiovascular disease, despite technological advances in minimally invasive procedures. Among the different types of CS, Myocardial Revascularization Surgery (MRS) stands out, as it is currently one of the most performed surgical procedures worldwide; aiming to relieve symptoms, prevent Acute Myocardial Infarction (AMI), increase life expectancy and improve its quality. [2]

After MRS, a mortality rate of 24.4% is estimated in seven years of follow-up. In assessing the risk of mortality in patients undergoing cardiac surgery, scores have been proposed, considering a series of variables such as the presence of comorbidities, degree of cardiac and respiratory impairment in the pre- and postoperative periods, etc. [3]

It is important to consider that these factors are also related to the level of functional capacity of these individuals, understood as the combined potential of the cardiovascular, respiratory and musculoskeletal systems in the physical performance of individuals. Thus, it is understood that the lower the levels of functional capacity, the higher the mortality rate, hence the importance of this assessment. [4]

As for the psychological condition, patients in the postoperative period of CC usually present symptoms of anxiety, depression and fear, with negative expectations about the future. Among the psychological diagnoses made in patients undergoing CC, anxiety is one of the most common, and can have negative effects on postoperative recovery. Patients who suffer from anxiety in the preoperative period tend to have this anxiety exacerbated in the postoperative period, commonly generating depressive conditions, poor recovery and exacerbation of pain. [5]

Cardiac surgery generates suffering for the individual in many ways. In the biological sphere, patients are subjected to the sensation of pain, infections, invasive interventions and risk of death. In the social field, patients temporarily withdraw from socializing with family and friends for the length of hospital stay, limiting their autonomy and reducing or extinguishing work activities. [6]

Identifying how the patient faces and deals with the situation of waiting for cardiac surgery is an important aspect for the professionals who assist them. Knowing about the presence of defense mechanisms and how the patient responds to the situation is important both preoperatively and postoperatively. The decrease in functional capacity in the post-cardiac surgery period is known and demonstrated in several studies [7,8], however, all the mechanisms that can lead to a decrease in this capacity are not clear. Thus, the present study aims to assess the levels of anxiety and functional capacity of patients in the pre and postoperative period of coronary artery bypass graft surgery.

METHODS

Cross-sectional and observational research carried out at Fundação Hospital de Clínicas Gaspar Vianna (FHCGV), from December 2018 to December 2019.

In this study, the precepts of the Declaration of Helsinki and the Nuremberg Code and the Norms for Research involving human beings (Res. CNS 466/12) of the National Health Council were respected. Thus, the study was approved by the Research Ethics Committee of the FHCGV under Opinion No. 3,710,327 and CAAE: 25609419.4.0000.0016 and all research participants signed an informed consent form.

To calculate the sample size, a pilot study was carried out with 10 patients. The t test was used for two dependent samples and the means (μ) and standard deviations (s) of the distance covered in the 6-minute walk test (6MWT) and the scores of the anxiety questionnaire were considered. The power of the test was 90%, confidence interval of 95% and alpha level of 0.05 to obtain the final sample.

Patients in the preoperative and postoperative periods of coronary artery bypass graft surgery, secondary to infarction, hemodynamically stable, of both sexes and

artigo

Cunha, B. C. S., Glória, L. M., Falcão, L. F. M.
Anxiety and functional capacity of patients in the pre-operative and post-operative of myocardial revascularization surgery

any ethnicity were included. Volunteers who underwent re-interventions or other concomitant surgeries, who use antidepressants, who had complex or potentially serious arrhythmias such as atrial/ventricular fibrillation, implanted pacemakers, menopausal women, diagnosed with cognitive limitations, neurological or orthopedic disorders and/or that the individual does not accept to participate in the study. Patients who had absolute contraindications for performing the 6MWT: recent acute myocardial infarction and unstable angina; were also excluded from the study.

The research began with the collection of data from the volunteers through an evaluation form for the characterization of the sample, after which the two instruments were applied: the first was the Cardiac Anxiety Questionnaire (CAQ), Cordeiro et al., [7] which is composed of eighteen items (questions) that assess the frequency of monitoring cardiac symptoms associated with fear. The patient should answer the questions using the following scores: (0=never; 1=rarely; 2=sometimes; 3=often; 4=always).

And the second was the 6-Minute Walk Test (6MWT), Santos et al.,[8] that assesses the functional capacity and, for the accomplishment of the same, the patients were instructed on the test to be performed. Before and after the test, the BORG scale was applied, which aims to measure the sensation of dyspnea and fatigue in the lower limbs (LL), for this purpose, patients chose a number between 6 (no exertion) and 20 (maximum exertion) before and immediately after the test.

The test site was a flat, hard surface corridor, without deviations or obstacles, of 30 meters, with markings every 3 meters. For patient monitoring, professionals had a stopwatch, oxygen, sphygmomanometer, defibrillator and oximeter. The patient was seated for 10 minutes before the start of the test, at which time the baseline parameters were recorded.

Before the test it was explained what it consists of and what is intended. The patient was instructed to walk as fast as pos-

As for the psychological condition, patients in the postoperative period of CC usually present symptoms of anxiety, depression and fear, with negative expectations about the future. Among the psychological diagnoses made in patients undergoing CC, anxiety is one of the most common, and can have negative effects on postoperative recovery.

sible, with a step that was his own, being able to stop or lean over and then resume walking. At every minute, he was informed if the patient is doing well, and how much time is left, and he was encouraged through encouraging phrases. If the patient requires supplemental oxygen, this will be excluded from the study to avoid bias formation.

The aforementioned assessments were performed in the first preoperative month and in the first postoperative week of patients undergoing coronary artery bypass graft surgery.

Data was stored in Excel 2007™ software (Microsoft Corporation, Redmond, USA) and analyzed in Graphpad Prism software version 5.0™ (GraphPad software, Inc., San Diego, USA). The Shapiro-Wilk test was used to assess the normal distribution. Student's t test for paired samples was used to treat normally distributed variables and ANOVA for comparison. An α level of 0.05 was adopted to reject the null hypothesis.

RESULTS

The study included 41 patients in the pre and postoperative period of coronary artery bypass graft surgery. Patients had a mean age of 62.12 years, with a higher frequency between 61 and 70 years 19 (46.6%), as shown in Table 1.

In addition, there was a prevalence of 25 (69%) male patients undergoing CABG, the majority being men. It was observed that 19 (46.3%) live in the capital, most of the sample of patients is married 25 (60.9%), the most prevalent profession was self-employed 10 (24.3%) and the schooling that stood out was High School 22 (26.8%) (Table 1).

As for the Cardiac Anxiety Questionnaire, it is described in tables 2, 3 and 4. In table 2, which describes both sexes, the result showed statistical significance in all domains (p<0.05), as well as in table 3 which describes the female gender. In table 4, the only domain that did not show statistical relevance was the domain "Frequently" that showed p>0.05.

artigo

Cunha, B. C. S., Glória, L. M., Falcão, L. F. M.
Anxiety and functional capacity of patients in the pre-operative and post-operative of myocardial revascularization surgery

Table 1 – General characteristics of patients undergoing coronary artery bypass graft surgery.		
SAMPLE CHARACTERISTICS		
Variables	**Absolute Number**	**Relative Frequency**
Age		
30 – 40	2	4,87
41 – 50	2	4,87
51 – 60	12	29,2
61 – 70	19	46,3
71 – 80	6	14,6
Gender		
Male	25	69
Female	16	31
Origin		
Capital	19	46,3
Metropolitan region	6	14,6
Interior	16	39
Marital Status		
Married	25	60,9
Single	11	26,8
Widowed	3	7,3
Divorced	2	4,8
Profession		
Self-employed	10	24,3
Housekeeper	6	14,6
Others	25	61,1
Education		
Illiterate	14	34,1
Elementary school	4	9,7
High school	22	53,6
Incomplete Higher education	1	2,4
Complete Higher education	0	0

Source: Data from the 2018/2019 Survey. Data expressed as frequency and percentage.

DISCUSSION

Preoperative anxiety is common in patients undergoing coronary artery bypass graft surgery and is, in most cases, underdiagnosed by the team, causing the appropriate interventions to be not offered to this group of patients, which can lead to a decrease in the improvement of the individual's stay and comfort in the hospital.[9] In our study, we noticed that although psychological care is offered to all patients who are admitted to the hospital, specific instruments to assess the presence of anxiety are not part of the institution's protocols, which can contribute to the underdiagnosis of the disease.

The study by Radomile [10] also confirms the need to obtain a more accurate diagnosis of anxiety. According to this study, normal preoperative anxiety is often not differentiated by the team of anxiety disorders, since these are persistent and do not show a decrease after the surgical procedure. Thus, a thorough evaluation and differentiation between anxiety and anxiety disorders is necessary.

artigo

Cunha, B. C. S., Glória, L. M., Falcão, L. F. M.
Anxiety and functional capacity of patients in the pre-operative and post-operative of myocardial revascularization surgery

Table 2 – Degree of anxiety related to cardiac causes, in both sexes, before and after coronary artery bypass graft surgery

CARDIAC ANXIETY QUESTIONNAIRE (BOTH GENDERS)			
	Pre MRS	Post MRS	P Value
CAQ (R)	3,72±2,91	3,90±2,97	0,000*
CAQ (S)	5,45±5,43	7,80±5,14	0,000*
CAQ (O)	9,77±8,3	9,52±8,59	0,002*
CAQ (A)	16,50±12,29	13,05±11,57	0,000*
CAQ (Total)	35,50±12,04	33,77±15,51	0,000*

Source: Data from the 2018/2019 Survey. Data expressed as mean and standard deviation. Anova test (p≤0,05). MRS: Myocardial Revascularization Surgery. CAQ: Cardiac Anxiety Questionnaire. R: Rarely. S: Sometimes. O: Often. A: Always

Table 3 – Degree of anxiety related to cardiac causes, in females, before and after coronary artery bypass graft surgery.

CARDIAC ANXIETY QUESTIONNAIRE (FEMALE)			
	Pre MRS	Post MRS	P Value
CAQ (R)	3,60±3,15	4,32±2,85	0,000*
CAQ (S)	4,64±,42	7,64±4,35	0,041*
CAQ (O)	11,14±7,38	9,21±8,59	0,022*
CAQ (A)	15,28±11,57	12,14±10,18	0,000*
CAQ (Total)	34,75±2,53	32,60±14,20	0,000*

Source: Data from the 2018/2019 Survey. Data expressed as mean and standard deviation. Anova test (p≤0,05). MRS: Myocardial Revascularization Surgery. CAQ: Cardiac Anxiety Questionnaire. R: Rarely. S: Sometimes. O: Often. A: Always

Table 4 – Degree of anxiety related to cardiac causes, in females, before and after coronary artery bypass graft surgery.

CARDIAC ANXIETY QUESTIONNAIRE (MALE)			
	Pre MRS	Post MRS	P Value
QAC (R)	4,15±2,33	3,15±3,13	0,020*
QAC (A)	6,76±7,14	8,00±6,58	0,007*
QAC (F)	6,30±8,55	9,69±8,75	0,190
QAC (S)	18,76±13,50	14,00±14,60	0,006*
QAC (Total)	36,00±11,14	34,84±18,80	0,001*

Source: Data from the 2018/2019 Survey. Data expressed as mean and standard deviation. Anova test (p≤0,05). MRS: Myocardial Revascularization Surgery. CAQ: Cardiac Anxiety Questionnaire. R: Rarely. S: Sometimes. O: Often. A: Always

Table 5 – Values obtained in the 6-minute walk test, associated with sex, before and after coronary artery bypass graft surgery.

6-MINUTE WALK TEST AND ITS RELATIONSHIP TO GENDER			
Variables	Pre MRS	Post MRS	P Value
Both genders	361,70±81,77	300,02± 92,37	0,393
Male	388,00±77,08	332,71±77,67	0,000*
Female	299,07±78,82	291,07±75,99	0,000*

Source: Data from the 2018/2019 Survey. Data expressed as mean and standard deviation. Anova test (p≤0,05). 6MWT: Six-minute walk test.

artigo

Cunha, B. C. S., Glória, L. M., Falcão, L. F. M.
Anxiety and functional capacity of patients in the pre-operative and post-operative of myocardial revascularization surgery

Garbossa et al[11]., performed a randomized clinical trial with 51 patients, divided into 2 groups, the intervention group received guidance on surgical procedures and breathing exercises in the preoperative period, as a result, it was found that the anxiety levels of patients undergoing myocardial revascularization were lower in those patients who received guidance. However, in the control group, the difference between anxiety scores before and after surgery was also significant (p=0.003), which corroborates the findings of our study, which also obtained statistically significant differences in the pre and postoperative groups regarding anxiety scores (p=0.0001*).

In the study by Garbossa et al[11]., females were more anxious in the preoperative period compared to males (p=0.058), data that corroborate our study, which showed that males and females presented high levels of anxiety (p<0.05) and that females showed a slight difference, but greater (p=0.0001) in anxiety levels, when compared to males (p=0.0010).

A longitudinal, prospective study carried out on a sample of 100 patients undergoing cardiac surgery found a 32% incidence of anxiety, as it was observed that preoperative anxiety was related to higher levels of postoperative pain and longer patient stay in the Intensive Care Unit. Being under 65 years old was the only significant risk factor for the development of anxiety in this research. [12] Our study did not identify the percentage of patients who actually have or do not have anxiety, since the chosen instrument (CAQ) identifies levels of anxiety, not the presence or absence of it, therefore, this instrument should preferably be used in two assessments, so that anxiety values can be compared, as was done in our study.

A prospective cohort study with 25 patients evaluated whether there is a change in the degree of cardiac anxiety before and after cardiac surgery. The results showed a significant reduction in the degree of cardiac anxiety in patients undergoing cardiac surgery when comparing the pre-surgical and post-surgical periods. [13] This study showed significant similarities with our

study, which also evaluated preoperative and postoperative anxiety changes with similar results, as our sample also showed a reduction in postoperative anxiety levels.

The study by Pessi et al. [14], also with the same objective, corroborates our study, showing that all patients presented some level of anxiety, being classified as: 14.2 mild level, 42.8 moderate level and intense level.

On the other hand, the study by Santos et al. [15], performed with 100 patients in the preoperative period of cardiac surgery showed low levels of anxiety, depression and preoperative stress and there were no statistically significant correlations in the levels of anxiety, of depression and stress in the preoperative period of the surgical patient according to sex, age, marital status, profession, or the fact of having had previous surgeries or not. Another study, which also aimed to investigate the presence of anxiety in the preoperative period, showed that 44.3% of patients had anxiety. [16]

Regarding the assessment of functional capacity, some authors claim that the 6MWT is a reliable measure to predict increased mortality among cardiac patients, with a distance of less than 300 meters being a strong indicator of poor prognosis. [17,18]

Some studies [19,20] aimed to estimate the minimum clinically important difference in the 6MWT value in certain patient profiles. Gremeaux et al. 16, observed a value of 25 meters in patients in a Cardiovascular Rehabilitation program and Shoemaker et al. 20, detected a clinically important difference of 30 meters in patients with heart failure. In our study, the difference between the pre- and postoperative 6MWT values was 61.6 meters, which can be explained by a number of factors, among them the time the patient remained confined to bed before the test was performed and the discomfort caused by the removal of the saphenous vein in the lower limbs, a common complaint reported by the patients in the sample studied.

A study [21] carried out in 20 hospitals in 3 countries, which included a sample of 898 patients with chronic heart failure, who underwent the 6MWT,

observed that patients who walked less than 350 meters had a higher risk of death when compared to those who walked more than 450 meters in the same type of walking test. Other studies [22,23] also used the distance of 350 meters as a cut-off point in patients with chronic heart failure and pulmonary arterial hypertension, to assess prognosis and mortality. In our study, the average walk was 361.7 meters in the preoperative period and 300 meters in the postoperative period, when both genders were evaluated.

In the study by Baptista et al. [24], which evaluated the usefulness of the six-minute walk test as a prognostic indicator of quality of life in patients undergoing myocardial revascularization, improvement in functional capacity was observed only in a group of patients who walked less than 350 meters, these patients in the preoperative period were more debilitated and when asked questions in the functional capacity domain, such as: climbing stairs, sweeping the house, showering, squatting, walking a block and even a kilometer in the last four weeks, many of them were unable to perform most of these activities without getting tired, or even unable to do so. In the postoperative period, they reported improvement in performing these activities. In our study, the results differ, since the highest means were found in the preoperative period when compared to the postoperative period, this fact can be explained by the fact that the postoperative evaluation in the study by Baptista et al., took place two months after MRS, while in the present study this assessment took place 7 days after surgery, causing the recovery time to be shorter and consequently the distance covered in the 6MWT.

Still evaluating the pre and postoperative period, the study by Ximenes et al. [25,] used a sample of 34 patients undergoing MRS and observed a significant reduction in the performance of the 6MWT after MRS, with a smaller decline in the group submitted to an early resistance exercise program, results that corroborate the present study. The reduction in functional capacity in the postoperative period of

cardiac surgery, which is reflected in the reduction in ambulation capacity, was also found in the study by Oliveira, [26] in addition, he identified determinants of 6MWT and proposed testing a predictive equation for 6MWD at hospital discharge of patients undergoing cardiac surgery.

It is important to consider that several factors can influence the distance covered in the 6MWT by patients in the postoperative period. The study by Siqueira and Guedes [27] showed that individuals with prolonged hospitalization have more deleterious effects resulting from immobility, in addition to greater clinical impairment, contributing to the lower exercise tolerance evidenced by the distance on the 6MWT. Our study showed a lower mean distance covered on the 6MWT than other studies, however the length of stay in the hospital unit studied can reach up to 120 days, which increases the effects of immobility, as described in the previous study. Another study [28] demonstrates that both muscle strength and aerobic capacity are important factors for performance in ambulation tests.

Cacciatore et al. [29], in their study, which aimed to verify the role of the 6MWT and EF in the mortality of 882 patients undergoing CR after MRS, concluded that a distance of less than 300 meters was a predictor of mortality in individuals over 65 years after MRS in a period of 42.9±14.1 months, suggesting that greater and equal distances were a more accurate marker than a ventricular ejection fraction greater than 50% , in determining mortality among elderly individuals. In our study, more than half of our sample consisted of patients aged over 65 years, and even with the distance traveled being collected 7 days after MRS, the average distance covered was not less than 300 meters, it is believed that over the months this distance tends to increase, coinciding with a greater recovery of these patients and a reduction in mortality.

It can be observed that in the studied sample, anxiety was present in both sexes and that this compromises the functional capacity of patients in the pre and postoperative period of MRS.

CONCLUSION

The high prevalence of anxiety found in the pre and postoperative period of patients undergoing cardiac surgery suggests that a multiprofessional and interdisciplinary approach is necessary in this type of patient, aiming to adequately meet their psychological demands.

As for functional capacity, it was noted that it presented a significant reduction in the postoperative period, which can interfere with the performance of activities of daily living independently, causing damage to the physical, mental and social health of patients.

We therefore suggest carrying out more studies with high methodological rigor and considerable sample size, which analyze anxiety levels, both in the ward and in the Intensive Care Units, as well as apply the 6MWT, in the pre and postoperative period of myocardial revascularization surgery, verifying, mainly, the prognostic value of these tests, in this specific population.

REFERENCES

Medeiros FRA, Maciel APF, Pimenta HB, Caldeira AP. Prevalência de comportamentos e fatores de risco para doenças cardiovasculares em população de hipertensos no norte de Minas Gerais, Brasil. Rev Fund Care Online 2018;10(1):90-96.

2. Siqueira ASE, Siqueira-filho AG, LAND MGP. Análise do impacto econômico das doenças cardiovasculares nos últimos cinco anos no Brasil. Arq Bras Cardiol. 2017;109(1):39-46.

3. Campkin LM, Boyd JM, Campbell DJT. Coronary Artery Disease Patient Perspectives on Exercise Participation. J Cardiopulm Rehabil Prev. 2017;37(5):305-314.

4. Santos PMR, Ricci NA, Suster EAB, Paisani DM, Chiavegato LD. Effects of early mobilization in patients after cardiac surgery: a systematic review. Physiotherapy. 2017;103(1):1-12.

5. Frasure-Smith N, Lespérance F. Depression and anxiety as predictors of 2-year cardiac Events in patients with stable coronary artery disease. Arch Gen Psychiatry. 2008; 65(1):62-71.

6. Santana JJR, Fernandes LFB, Zanin, CR, Waeteman, CM, Soares M. Grupo educativo de cirurgia cardíaca em um hospital universitário: impacto psicológico. Estudos de Psicologia (Campinas). 2010;27(1):31-39.

7. Cordeiro ALL, Freire L, Mendes Júnior R, Bastos A, Carvalho S, Melo T, et al. Aplicação do questionário de ansiedade cardíaca no pós-operatório de cirurgia cardíaca. Revista Brasileira de Prescrição e Fisiologia do Exercício. 2015; 9(56):592-596.

8. Santos VM, Nasrala NE, Nazario MPS, Bittencourt WS, Salício MA, Nasrala MLS. Capacidade funcional e força muscular de pacientes submetidos à revascularização do miocárdio. Journal of Health Sciences.2018; 20(1):45-49.

9. Tromp F, Dulmen S, Weert J. Interdisciplinary preoperative patient education in cardiac surgery. J ADV NURS. 2004;47(2):212-22.

10. Barbosa V, Radomile M. Ansiedade pré-operatória no hospital geral. Rev Virtual de Psicologia Hospitalar e da Saúde. 2006;2(3):45-50.

11. Garbossa A. Efeitos de orientações fisioterapêuticas sobre a ansiedade de pacientes submetidos à cirurgia de revascularização miocárdica. Rev Bras Cir Cardiovasc. 2009;24(3):359-366.

12. Navarro-García MA, Marín-Fernández B, de Carlos-Alegre V, Martínez-Oroz A, Martorell-Gurucharri A, Ordoñez-Ortigosa E, et al. Preoperative mood disorders in patients undergoing cardiac surgery: risk factors and postoperative morbidity in the intensive care unit. Rev Esp Cardiol. 2011;64(11):1005-10.

13. Cordeiro ALL, Borges DL, Peruna MP, Guimarães AR, Cacau LA. Correlação entre a duração da internação hospitalar

artigo

Cunha, B. C. S., Glória, L. M., Falcão, L. F. M.

Anxiety and functional capacity of patients in the pre-operative and post-operative of myocardial revascularization surgery

REFERENCES

e a velocidade da marcha em pacientes submetidos à cirurgia cardíaca. International Journal of Cardiovascular Sciences. 2017;30(2):123-127.

14. Pessi E, Losso ARS, Schwalm MT, Dagostin VS, Soratto MT. Ansiedade em pacientes no pós-operatório de cirurgia cardíaca. Caçador, 2017;6(1):174-187.

15. Santos M, Martins J, Oliveira, L. A ansiedade, depressão e stresse no pré-operatório do doente cirúrgico. Revista de Enfermagem. 2014;4(3):7-15.

16. Marcolino JAM, Suzuki FM, Alli LAC, Gozzani JL, Mathias LAST. Medida da ansiedade e da depressão em pacientes no pré-operatório. Estudo comparativo. Rev Bras Anestesiol. 2007;57(2):157-166.

17. Fumagalli E, Oliveira MAR, Ferreira MS, Santos CIS. Utilização do teste de caminhada de 6 minutos no manejo da hipertensão pulmonar. Arq Bras Cardiol. 2010;95(1):10-13.

18. Morales-Blanhir JE, Vidal CDP, Romero MJR, Castro MMG, Villegas AL, Zamboni M. Six-minute walk test: a valuable tool for assessing pulmonary impairment. J Bras Pneumol. 2011;37(1):110-117.

19. Gremeaux V, Troisgros O, Benaïm S, Hannequin A, Laurent Y, Casillas JM, et al. Determining the minimal clinically important difference for the six-minute walk test and the 200-meter fast-walk test during cardiac rehabilitation program in coronary artery disease patients after acute coronary syndrome. Arch Phys Med Rehabil. 2011;92(4):611-9.

20. Shoemaker MJ, Curtis AB, Vangsnes E, Dickinson MG. Clinically meaningful change estimates for the six-minute walk test and daily activity in individuals with chronic heart failure. Cardiopulm Phys Ther J. 2013;24(3):21-9.

21. Bittner V, Weiner DH, Yusuf S, Rogers WJ, McIntyre KM, Bangdiwala SI, et al. Prediction of mortality and morbidity with a 6-minute walk test in patients with left ventricular dysfunction. JAMA. 1993;270(14):1702-7.

22. Rasekaba T, Lee AL, Naughton MT, Williams TJ, Holland AE. The six-minute walk test: a useful metric for the cardiopulmonary patient. Intern Med J. 2009;39(8):495-501.

23. Cote CG, Casanova C, Marín JM, Lopez MV, Pinto-Plata V, Oca MM, et al. Validation and comparison of reference equations for the 6-min walk distance test. Eur Respir J. 2008;31(3):571-8.

24. Baptista, VC, Palhares, LC, Oliveira PPM, Filho LMS, Vilarinho KAS, Severino ESBO, et al. Teste de caminhada de seis minutos como ferramenta para avaliar a qualidade de vida em pacientes submetidos à cirurgia de revascularização miocárdica. Rev Bras Cir Cardiovasc. 2012;27(2):231-9.

25. Ximenes N. Effects of Resistance Exercise Applied Early After Coronary Artery Bypass Grafting: a Randomized Controlled Trial. Braz J Cardiovasc Surg. 2015;30(6):620-5.

26. Oliveira G. Determinantes da distância percorrida no teste de caminhada de 6 minutos em pacientes submetidos á cirurgia cardíaca. Universidade Federal de Sergipe. 2014. Dissertação de Mestrado em Ciências da Saúde.

27. Siqueira J, Guedes L. Teste de caminhada de seis minutos na fase hospitalar do pós-operatório de revascularização do miocárdio: Revisão de literatura - 2016. Trabalho de Pós Graduação em Fisioterapia Hospitalar.

28. Hernández-Luis R, Martín-Ponce E, Monereo-Muñoz M, Quintero-Platt G, Odeh-Santana S, González-Reimers E, et al. Prognostic value of physical function tests and muscle mass in elderly hospitalized patients. A prospective observacional study. Geriatr Gerontol Int. 2018; 18(1):57-64.

29. Cacciatore F, Abete P, Mazzella F, Furgi G, Nicolino A, Longobardi G, et al. Six-minute walking test but not ejection fraction predicts mortality in elderly patients undergoing cardiac rehabilitation following coronary artery bypass grafting. Eur J Prev Cardiol. 2012;19(6):1401-9.