Original Article

Patients' with coronary arterial disease' adherence to pharmacological and non-pharmacological therapy*

Adesão medicamentosa e não medicamentosa de pacientes com doença arterial coronariana

Adhesión a la terapia medicamentosa y no medicamentosa de pacientes con enfermedad arterial coronaria

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ABSTRACT

Objectives: To determine whether patients with coronary artery disease adhere to pharmacological and non-pharmacological therapy and to identify factors that might influence these patients' adherence to the therapies. **Methods**: A cross-sectional study was used. The sample consisted of 92 patients who had their first myocardium infarction. Adherence to pharmacological therapy was determined with Morisky test. Adherence to non-pharmacological therapy was evaluated though lifestyle modifications. **Results**: The majority of the participants (64.1%) were male and had a mean age of 56.4 (SD = 10.9) years. More than a half of them (56.5%) adhered to pharmacological therapy while 40.2% of participants adhered to non-pharmacological therapy. **Conclusion**: The results show low levels of adherence to recommended therapy for secondary prevention of coronary arterial disease.

Keywords: Coronary artery disease/therapy; Coronary artery disease/drug therapy; Patient compliance; Patient care team; Myocardial ischemia

RESUMO

Objetivos: Verificar a adesão à terapêutica farmacológica e não farmacológica de pacientes atendidos por uma equipe multidisciplinar, em um ambulatório de prevenção secundária da doença arterial coronariana, bem como identificar fatores que possam interferir na adesão. **Métodos:** Estudo transversal que avaliou a adesão farmacológica através do teste de Morisky e a não farmacológica, através das modificações no estilo de vida em pacientes após primeiro infarto. **Resultados:** Dos 92 pacientes avaliados, 64,1% eram homens e a média de idade foi de 56,4±10,9 anos. Adesão à terapêutica farmacológica foi verificada em 56,5% e adesão à não farmacológica, em 40,2% dos pacientes. **Conclusão:** Os resultados demonstraram pacientes com baixa aderência à terapêutica de prevenção secundária da doença arterial coronariana.

Descritores: Doença da artéria coronariana/terapia; Doença da artéria coronariana/quimioterapia; Cooperação do paciente; Equipe de assistência ao paciente; Isquemia miocárdica

RESUMEN

Objetivos: Verificar la adhesión a la terapia farmacológica y no farmacológica de pacientes atendidos por un equipo multidisciplinario, en un consultorio externo de prevención secundaria de la enfermedad arterial coronaria, así como identificar factores que puedan interferir en la adhesión. **Métodos:** En este estudio transversal se evaluó la adhesión farmacológica a través del test de Morisky y la no farmacológica, a través de las modificaciones en el estilo de vida en pacientes después del primer infarto. **Resultados:** De los 92 pacientes evaluados, el 64,1% eran hombres y el promedio de edad fue de 56,4±10,9 años. La adhesión a la terapia farmacológica fue verificada en el 56,5% y la adhesión a la no farmacológica, en el 40,2% de los pacientes. **Conclusión:** Los resultados demostraron la presencia de pacientes con baja adherencia a la terapia de prevención secundaria de la enfermedad arterial coronaria.

Descriptores: Enfermedad de la arteria coronaria/terapia; Enfermedad de la arteria coronária/quimioterapia; Cooperación del paciente; Grupo de atención al paciente; Isquemia miocárdica

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INTRODUCTION

Knowledge that coronary artery disease (CAD) is a multifactorial disease leads researchers to adopt a global approach towards risk factors, aiming to reduce coronary events. The prognosis of CAD does not depend exclusively on the pharmacological therapy employed, but also on essential non-pharmacological aspects of treatment. The therapy usually provided to patients, after a cardiac event, involves lifestyle changing measures, in addition to the intake of drugs, such as platelet anti-aggregating agents, angiotensin converting enzyme inhibitors and beta-blockers, aiming to reduce the occurrence of coronary events[1].

Adherence to treatment presupposes an irrevocable commitment to the guidance of a multidisciplinary team, without which the success of the expected treatment cannot be assessed[2]. Adherence is a complex behavioral process, strongly influenced by the environment, health professionals and medical and nursing care. Non-adherence prevents the therapeutic objectives to be achieved and can become a source of frustration among professionals in the area[3]. Literature data have shown that, when patients become aware of their diseases, physiopathological mechanisms, triggering and risk factors, logic and treatment benefits, among other aspects, they show better adherence to treatment, especially when managed in a multidisciplinary way[2-3].

The work of a multidisciplinary team becomes important when providing guidance on non-pharmacological therapeutic measures, contributing to the understanding of the disease, assessment of signs and symptoms, promotion of healthy habits, importance of lifestyle change, and use of drugs and their adverse effects, in addition to the encouragement of patient participation in self-care programs. Performance of nurses in a multidisciplinary team, following world norms of disease management, becomes necessary in health promotion and protection, as well as in recovery, helping individuals to remain healthy, promoting self-care and improving their quality of life. This study aimed to assess adherence to pharmacological and non-pharmacological therapies of patients cared for by a multidisciplinary team, in a CAD secondary prevention outpatient clinic, as well as to identify factors that can interfere with this adherence.

METHODS

This study had a cross-sectional design and was performed between April and September 2006, in the CAD secondary prevention outpatient clinic of the *Instituto de Cardiologia do Rio Grande do Sul* (RS – Rio Grande do Sul Cardiology Institute). The following individuals were included consecutively: those aged ≥18 years, of both sexes, with the diagnosis of first acute myocardial infarction (AMI), which led to the hospitalization and the beginning of outpatient follow-up in the above mentioned institution, characterized by regular visits with a multiprofessional team and acceptance of participation in the study. During the nursing visit, patients were approached by one of the researchers, aiming at each one's participation in the work. Exclusion criteria were thus defined: patients with serious co-morbidities, such as a history of cerebrovascular accident, neoplasias, and incapacitating limitations that damage the understanding of recommendations made by the multidisciplinary team. There were no exclusions and the outpatient clinic visits were individualized. The first visit occurred about 30 days, the second about 60 days, and the third about 90 days after the date of discharge, due to the hospitalization for first AMI. All patients were cared for by a multidisciplinary team, comprised by nurses, nutritionists, doctors and psychologists. The nursing visit was made with the purpose of identifying changes in the health-disease process and adherence to treatment, and of enabling guidance that can contribute to prevention of CAD risk factors and to health recovery and promotion.

For data collection, an instrument was designed to obtain the following general information: data on the history of the current disease, previous clinical history, medication in use and presence of CAD changeable and non-changeable risk factors, included in the patient's medical records. During outpatient visits, a complete physical examination and assessment of blood pressure and anthropometric measurements, abdominal circumference and body mass index were performed to monitor clinical evidence associated with cardiovascular rehabilitation and control of risk factors. Laboratorial examinations were collected, such as: glycemia, total cholesterol, triglycerides (TG) and HDL-C. LDL-C was obtained through Friedewald's formula, used in the cases when the TG value is lower than 400 mg/dl (LDL-C = Total Cholesterol – HDL-C – 20% TG)(4). When the TG value was higher than 400 mg/dL, LDL-C dose was performed by direct laboratorial technique. In patients with diagnosis of diabetes, capillary glycemia was also tested. Parameters considered normal, established as goal for the patients, were thus defined:

- Abdominal Circumference: Women < 88cm and men < 102cm(5)
- Body Mass Index (BMI): between 19 and 25 kg/m2(5)
- Total Cholesterol <200mg/dL, TG < 150mg/dL; LDL-C: <100mg/dL and <70 mg/dL in very high risk patients; HDL-C ≥45mg/dL(6)
- Arterial Pressure: ≤130/85 mmHg(7-8)

- Diabetes Mellitus: casual glycemia < 200 mg/dL, or HbA1c <7 %(9).

However, laboratorial exams of lipid and glycemic profile were not included in the assessment of adherence, as results were available after the outpatient clinic visit.

To analyze adherence of patients to the treatment proposed, items were classified into pharmacological and non-pharmacological therapies:

Adherence to pharmacological therapy: Morisky Test was applied, as it enables the assessment of the level of adherence to the prescribed drug therapy, in addition to patient behavior in relation to daily drug use[10]. Previous studies showed the usefulness of this test, which has been translated and validated in Brazil[11-12]. The test is comprised of four questions about medications, in which a positive answer to any of the questions considers the patient as non-adherent: have you ever forgotten to take your medication? Are you careless at times about taking your medication? When you feel better, do you stop taking the medication? When you feel worse, do you stop taking the medication?

Adherence to non-pharmacological therapy: a total of six variables related to modifiable habits, considered important for CAD treatment, were defined, based on the team's professional performance in the secondary prevention outpatient clinic – two cardiologists, one nurse and two nutritionists specialized in cardiology, from the aspects associated with therapy adherence in the context of chronic diseases[2-3] and founded on what is recommended by the *Sociedade Brasileira de Cardiologia* (Brazilian Society of Cardiology), concerning post-AMI secondary prevention[13-14]. For each of the variables, one point was attributed, totaling six points:

- Changes in food habits: initial nutritional assessment involved a 24-hour record of nutrients consumed, in addition to an anthropometric assessment. Guidance on changes in food habits included caloric intake adequacy (when necessary), decrease in the consumption of saturated and trans-saturated fats, decrease in sodium intake and increase in the consumption of fruits and vegetables.

- Obesity: classified using the BMI, with the following classifications[5]: eutrophy (18.5-24.9 kg/m2), overweight (25.0-29.9 kg/m2), class I obesity (30.0-34.9 kg/m2), class II obesity (35.0-40 kg/m2) and class III obesity (> 40 kg/m2).

- Physical activity: it was considered regular when performed at least four times a week, during 30 minutes[6].

- Smoking: patients who smoked any amount and with any frequency were considered smokers. Ex-smokers were those who stopped smoking when there was a coronary event (minimum of 30 days) and who did not relapse in the follow-up period.

- Systemic arterial pressure (SAP) check-up: When the patient checked their SAP regularly (once a week), recorded on paper, and given at the moment of discharge.

- Regularity of visits with the multidisciplinary team: this item was observed from the chart used to make appointments and from medical records. Patients who were absent in any of the visits or decided not to be cared for by one of the professionals were considered as irregularity in the visits and were not scored.

According to these six variables (6 points), a cut-off point was established. Those who totaled > 4 points were considered adherent (A) and those with a score ≤ 4 points were non-adherent (NA), from the clinical judgment and consensus among researchers and the multiprofessional team working in the outpatient clinic, and based on the previously mentioned aspects.

Factors that could interfere with adherence to the recommended therapy were identified, based on the observation by the team or reports from non-adherent patients during visits, categorized according to the World Health Organization[15]:

- Individual factors (ineffective knowledge about the disease and treatment; deficit in self-esteem, motivation or optimism; altered perception of health status or need of treatment, beliefs and expectations; little understanding of guidance received);

- Socioeconomic factors (low socioeconomic level, minimum or absent schooling, unemployment, high cost of treatment, living far from health services);

- Chronic disease (severity of symptoms and progression of disease, physical and emotional incapacity and/or limitation, presence of comorbidities, difficulty in performing effective treatment);

- Factors associated with the health system (complexity of therapeutic regimen, duration of treatment, frequent changes in drug treatment, side effects, treatment priority and comorbidities, immediate results due to therapeutic benefits). Each patient reported one or more difficulties.

This project was approved by the institution's Research Ethics Committee, registered under number 3850 with the Research Unit, and only the 92 patients who signed an Informed Consent Form participated in the study. Data were analyzed with the help of the Statistical Package for Social Sciences (SPSS) software, version 14.0. Category variables were described as absolute and relative frequencies, and the continuous variables, as mean and standard deviation. To observe the relationship between socio-demographic and clinical variables and pharmacological and non-pharmacological adherence, Pearson chi-square test and Student t test were

used. The magnitude of effect was measured by calculating the prevalence ratio and 95% confidence interval.

RESULTS

A total of 92 patients were included, of which 64.1% were males and 78.3% were married. Mean age was 56.4±10.9 years and mean level of education was 6.4±3.9 years. Income was up to two monthly minimum wages among 66.3% of the population studied, with lack of work activity in 47.8% of cases. Follow-up of patients was performed through outpatient clinic visits.

Mean BMI was 27.1±4.2 kg/m2, and 47.8% of the sample were overweight. Abdominal obesity was present in the majority of men (59.3%) and women (69.7%), sedentarism in 75% of the sample and the mean amount of drugs taken per patient was 4.9±1.2. Prevalent comorbidities were systemic arterial hypertension, followed by dyslipidemia and diabetes mellitus, as shown on Table 1.

Adherence associated with pharmacological and non-pharmacological therapies

By analyzing adherence to the pharmacological therapy proposed, 56.5% of patients assessed were considered adherent. As regards non-pharmacological adherence, the majority of the sample were considered non-adherent (59.8%). Results show there are no significant differences between the groups when compared in terms of socio-demographic characteristics.

Even though there was no statistically significant difference, non-pharmacological adherence shows a predominance of patients who are male, married, retired, with an income of up to two minimum wages, and in their third outpatient clinic visit. In contrast, when analyzing pharmacological adherence, patients who were female and younger adults, in addition to the characteristics previously mentioned, predominated. These results are shown on Table 2.

Factors that may interfere with adherence to therapy

Individual factors were prevalent, with 50.9% of unsatisfactory knowledge about the disease, 32.7% of deficit in self-esteem, and 21.8% of low perception of the real need for treatment. Socioeconomic factors were also evidenced, of which 14.5% were due to the high cost of therapy, and 18.2% due to low level of education. As regards the factors associated with the disease chronicity, 11% reported physical or emotional incapacity and/or limitations. In terms of difficulties associated with the public health system, 23.6% of patients mentioned great drug distribution precariousness.

Table 1 – Clinical and socio-demographic variables of patients cared for in a CAD secondary prevention outpatient clinic – Porto Alegre (RS), 2006

Variables	N	(%)
Male sex*	59	(64.1)
Age†	56.4 ± 10.9	
White	85	(92.4)
Level of education (years) †	6.4 ± 3.9	
Married	72	(78.3)
Professional status		
Retired	44	(47.8)
Active	32	(34.8)
Income		
Up to two minimum wages	61	(66.3)
> two minimum wages	31	(33.7)
Follow-up		
1st visit	32	(34.8)
2nd visit	19	(20.7)
≥ three visits	41	(44.6)
Body mass index (kg/m²) †	27.1±4.2	
Eutrophy (18.5 a 24.9)	29	(31.5)
Overweight (25.0 a 29.9)	44	(47.8)
Class I obesity (30.0 a 34.9)	15	(16.3)
Class II obesity (35.0 a 40)	3	(3.3)
Class III obesity (> 40)	1	(1.1)
Abdominal obesity		
Male (> 94)	35	(59.3)
Female (> 80)	23	(69.7)
Amount of medication†	4.9 ±1.2	
Systemic arterial hypertension	92	(100)
Dyslipidemia	88	(95.7)
Sedentarism	69	(75.0)
Family history of CAD	66	(71.7)
Diabetes mellitus	22	(23.9)
Smoking	18	(19.6)

* Category variables expressed as n (%),† Continuous variables as mean ± standard deviation. CAD = Coronary Artery Disease

As regards the pharmacological therapy employed, 14.5% reported having felt certain side effects after using the medications, and 12.7% reported the complexity of the therapeutic regimen.

DISCUSSION

The present study showed that 56.5% and 40.2% of patients cared for in the *Instituto de Cardiologia do Rio Grande do Sul* CAD secondary prevention outpatient clinic adhered to pharmacological and non-pharmacological treatment respectively. Some authors[16] mentioned that, among patients who entered a health care system, more than 1/3 give up their treatment, especially in the first months. When patients find themselves in the follow-up period, drug intake is usually about 50%. Adherence to losing weight and stopping smoking is considerably lower, with indices below 10%. Investigations worldwide

Table 2 – Adherence to pharmacological and non-pharmacological therapies of patients cared for in the CAD secondary prevention outpatient clinic – Porto Alegre (RS), 2006

Variables	Non-pharmacological adherence		P value	Pharmacological adherence		P value
	NA ≤4	A > 4		NA	A	
	55 (59.8)	37 (40.2)		40(43.5)	52(56,5)	
Sex*						
Male	33(60)	26(70.3)	0.43‡	15(37.5)	18(34,6)	0,94
Female	22(40)	11(29.7)		25(62.5)	34(65,4)	
Age†	56.6±10.1	56.3± 12	0.90§	58.1±10.5	55,2±11,0	0,21
Level of education (years)	6.2±4.0	6.7±3.9	0.55	5.9±4.3	6,8±3,7	0,29
Marital status						
Married	45(81.8)	27(73)		33(82.5)	39(75)	
Single	6(10.9)	6(16.2)	0.60	4(10)	8(15,4)	0,67
Widowed	4(7.3)	4(10.8)		3(7.5)	5(9,6)	
Professional status						
Active	20(36.4)	12(37.5)	0.15	16(40)	16(30,8)	0,12
Retired	27(49.1)	17(45.9)		21(52.5)	23(44,2)	
Income						
Up to 2 MW	39(65.4)	22(59.4)	0.36	28(70)	33(63,5)	0,66
≥ 3 MW	16(29.1)	15(40.5)		12(30)	19(36,5)	
Outpatient follow-up						
1st visit	20(36.4)	12(32.4)		16(40)	16(30,8)	
2nd visit	13(23.6)	6(16.2)	0.51	7(17.5)	12(23,1)	0,61
≥ 3 visits	22(40)	19(51.3)		17(42.5)	24(46,1)	

* Category variables expressed in percentages (%), †continuous variables expressed as mean ± standard deviation. ‡Pearson chi-square test; §Student t test. A = adherent group; NA = non-adherent group; MW = minimum wage.

have shown the importance of research on drug treatment adherence and lifestyle changes of patients with CAD. Studies point to the need to change lifestyles as a significant variable to determine patient behavior. The greater the changes patients need to make in their habits or lifestyle due to treatment (stopping smoking and alcohol consumption, diet restrictions, need to exercise), the lower the likelihood to adhere to treatment. Success of any secondary preventive intervention is directly associated with treatment adherence[15,17].

Findings from this study also showed a predominance of the male sex, with a mean age of 56 years. This fact agrees with FRICAS's control-case study[18], performed in 20 centers in Brazil, which analyzed risk factors for infarction, showing greater occurrence of coronary syndromes in men with a mean age of 58 years. It is observed that CAD affects younger patients more and more often, which does not mean older people have lower risks, once the increase in longevity enables greater periods of exposure to risk factors and, consequently, difficulties in maintaining adherence to treatment. The literature describes that, in general, young adult patients show lower adherence when compared to elderly patients. In addition, when there is low adherence among children and elderly people, this is probably associated with care dependency[2,18].

By assessing the sample's level of education, results revealed a low number of years of education of about six years. Some authors state that socioeconomic conditions, such as financial difficulties, low level of education and family income can be limiting factors for treatment adherence, as well as a higher risk of new hospitalizations[19-20]. In this study, the majority of patients did not adhere to the non-pharmacological therapy, revealing an undervaluing of the need for preventive change of life habits to control risk factors. This finding points to the need to recognize patients' values, beliefs and cultural practices, so they can be more effectively managed by the multidisciplinary team. The fact that CAD is a chronic and silent disease from the point of view of specific symptomatology, influences the adherence process[3,19]. On the other hand, the majority of patients adhere to the pharmacological management more than to the self-care measures that comprise the disease's non-pharmacological management. This leads researchers to infer that patients may not be convinced of the real importance of changing some of their habits, only expecting medications to control the risk factors and prevent new coronary events.

Clinical trials show that the mean adherence rate of patients with chronic diseases varies between 43% and 78%, substantially increasing when there is rigor in the selection and care given to these patients[21]. However, for chronic diseases, such as arterial hypertension and hypercholesterolemia, there is still a great and persistent gap between the evidence-based recommendations and

the care patients are given[22]. The complexity of the pharmacological regimen, the amount of pills and the number of daily doses of drugs used are factors that directly influence adherence to treatment. These data emphasize literature studies that describe low socioeconomic conditions as a limiting factor for drug access and acquisition[2,9,15]. In this case, the multidisciplinary team must be attentive to patients' possible misunderstanding, so that they can effectively provide information about the benefit of the use of medication combined with non-pharmacological management. A study on cardiac rehabilitation suggests that a contributing factor to improve therapy maintenance would be the possibility of counting on family support, as this helps the patient to understand the importance of changing life habits[23].

Among the factors for non-adherence to the proposed therapy, most frequently mentioned by patients in this study, were the individual (unsatisfactory knowledge about the disease, deficit in self-esteem and low perception of the real need for treatment), socioeconomic and therapeutic factors, such as precariousness of drug distribution by the public health system. Data from similar studies show the same difficulties found by this study, such as the patient's lack of knowledge about the disease; lack of motivation to treat it, when it is asymptomatic and chronic; low socioeconomic level; cultural aspects and beliefs acquired from family experiences; low self-esteem; high cost of drugs; and the occurrence of undesirable side effects[3,15,19,21]. The factors identified need to be thoroughly discussed by the multidisciplinary team, once they provide subsidies to seek new strategies, aiming to improve adherence and minimize the risks of a new coronary event, contributing to the patients' quality of life. As this is a prevalence study, analyzing data at only one moment is a limitation. It is suggested that a larger sample of patients should be followed during a certain period, aiming to observe adherence throughout time.

CONCLUSION

Findings from this study point to a sample of patients with low adherence to the therapy, especially in terms of the disease's non-pharmacological management. These findings showed that there was no association between socio-demographic aspects and adherence. However, multiple factors can influence low adherence to therapy, whether it is pharmacological or non-pharmacological, of patients cared for in a CAD secondary prevention outpatient clinic. Among these factors, there are individual, socioeconomic and therapeutic factors, difficulties with the health system, and presence of chronic diseases. One challenge remains: the development of measures that can improve, in practice, patients' adherence to the treatment recommended. Educational interventions and motivational strategies must be implemented using a more effective approach, thus bringing greater benefits to the population.

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