



Risk factors identified in users subject to cardiac catheterization

Luciana Rodrigues Vasconcelos¹, Francisca Elisângela Teixeira Lima¹, Fernanda Jorge Magalhães² and Shéri da Karanini Paz de Oliveira²

¹Departamento de Enfermagem, Universidade Federal do Ceará, Rua Alexandre Baraúna, 1115, 60430-160, Fortaleza, Ceará, Brazil.

²Programa de Pós-graduação em Enfermagem, Universidade Federal do Ceará, Fortaleza, Ceará, Brazil. *Author for correspondence. E-mail: fernandajmagalhaes@yahoo.com.br

ABSTRACT. The objective was to identify risk factors for cardiovascular disease present in patients undergoing cardiac catheterization. Documentary study, a retrospective, quantitative nature. Developed in the hemodynamic of a public hospital in Fortaleza, Ceará State, Brazil. We analyzed the records of 1269 patients undergoing cardiac catheterization. The data was collected by a program called *teleficha* existing in that hospital. Data were organized in tables and graphs. The study was approved by the Ethics Committee. The results were: 819 (65%) patients were male and the average age was 62 years old. It was identified as risk factors: hypertension (73%), dyslipidemia (44%), smoking (37%), heredity (25%) and diabetes mellitus (16%). It was concluded that existed a high prevalence of risk factors for cardiovascular disease in the population studied, showing the need for health education programs, aimed to clarify and control the risk factors of cardiovascular diseases.

Keywords: risk factors, cardiac catheterization, coronary artery disease, nursing.

Fatores de risco identificados em usuários submetidos ao cateterismo cardíaco

RESUMO. O objetivo foi identificar os fatores de risco para a doença cardiovascular presentes nos usuários submetidos ao cateterismo cardíaco. Estudo documental, retrospectivo, de natureza quantitativa. Desenvolvido no serviço de hemodinâmica de um hospital público, Fortaleza, Estado do Ceará, Brasil. Foram analisados 1269 cadastros de usuários submetidos ao procedimento de cateterismo cardíaco. A coleta de dados ocorreu por um programa chamado *teleficha* existente no referido hospital. Os dados foram organizados em tabelas e gráficos. O estudo foi aprovado pelo comitê de ética. Os resultados obtidos foram: 819 (65%) usuários eram do sexo masculino; a média de idade foi de 62 anos. Identificaram-se como fatores de risco: hipertensão (73%), dislipidemia (44%), tabagismo (37%), fatores hereditários (25%) e *diabetes mellitus* (16%). Concluiu-se que havia uma elevada prevalência de fatores de risco para a doença cardiovascular na população estudada, mostrando a necessidade de criar programas de educação em saúde, visando esclarecer e controlar os fatores de risco de doenças cardiovasculares.

Palavras-chave: fatores de risco, cateterismo cardíaco, doença da artéria coronariana, enfermagem.

Introduction

Coronary Artery Disease (CAD) affects adults in all areas of the world, accounting for a large portion of hospital admissions, which may cause death or deficits in functional capacity (LIMA et al., 2010).

Among the DACs, there is atherosclerosis being the most frequent pathological condition of the coronary arteries, characterized by abnormal accumulation of lipid and fibrous tissue in vascular wall. Atherosclerosis can lead to myocardial ischemia diagnosed by history and physical examination as well as the use of ancillary tests such as cardiac catheterization, which is considered an effective diagnostic and therapeutic method (SMELTZER; BARE, 2009).

The development of atherosclerosis is usually associated with one or more risk factors, regarding the aspect of personal behavior or lifestyle, environmental exposure, or inborn or inherited characteristic, which, based on epidemiological evidence, is associated with the occurrence of the disease (WOODS et al., 2005).

Risk factors are characteristics present in a person who is not sick, but, statistically, with increased chance of developing the disease. The greater the number of risk factors, the greater the probability of developing the disease. Among the factors related to the development of such diseases, there are non-modifiable factors such as inherited genetic characteristics, as well as gender and age, and modifiable factors: smoking, cholesterol, high blood pressure (hypertension), sedentary lifestyle, obesity,

Diabetes Mellitus (DM), oral contraceptive use, stress and atherosclerosis, among others (STABELINI et al., 2008; GIROTTTO et al., 2009).

Therefore, it becomes essential the monitoring of cardiovascular risk factors in the Brazilian population, since there are reports of high rates of mortality from cardiovascular disease (CVD), which accounted for 63% of deaths worldwide in 2008 (BRASIL, 2011). In Brazil, cardiovascular diseases accounted for 28.2% of these deaths, of which ischemic heart disease were the most frequent with 29.9% of the causes of mortality (BRASIL, 2008).

These data reinforce the importance of controlling risk factors for CVD, also in users undergoing coronary intervention, requiring the adoption of measures for promoting and protecting health, as well as early diagnosis and treatment of these users (GIROTTTO et al., 2009). Therefore, it is necessary that the healthcare team particularly nurses, to monitor risk factors and use of health education strategies to promote the health of users who have undergone cardiac catheterization, to avoid other health problems and complications.

The prevention and control of these cardiovascular risk factors are considered methods of low cost and high efficiency, being analyzed as important contributions to the establishment of strategies aimed at reducing its prevalence and, consequently, the occurrence and progression of CVD in users undergoing intervention coronary artery disease.

Given the information, answers were searched to the following questions: what risk factors present users undergoing cardiac catheterization? What is the relationship between cardiovascular risk factors present in users undergoing cardiac catheterization?

In this perspective, it is believed that the study is valuable for promoting cardiovascular health of the population, since the findings may contribute to the multidisciplinary team to establish educational strategies for health promotion and prevention of other complications of CVD in users already performed coronary intervention.

Therefore, it is crucial to highlight the importance of guidelines for health education of the multidisciplinary health care team, especially nurses, in order to raise awareness among users who already underwent cardiac catheterization. So, that they modify their lifestyles, increasing the adherence, to prevent complications and thereby improve the quality of life.

In this context, the objective was to identify the main cardiovascular risk factors present in users submitted to cardiac catheterization and analyze the relationship of age and sex of users undergoing cardiac catheterization with cardiovascular risk factors.

Material and methods

It is a documental, retrospective study, conducted in a hemodynamic service of a tertiary care hospital, covenant with the Unified Health System, reference in cardiopulmonary diseases, located in Fortaleza, Ceará State, Brazil.

The 1269 documentary sources were records of users undergoing the procedure of cardiac catheterization in the hemodynamic of that institution for a period of two years.

The data was collected by consulting the Teleficha Program, which refers to the electronic medical record which contains personal information of registered users. The information available in the program were related to sociodemographic data (sex, age, education, family income), the clinical (risk factors, complications, extent of disease, type of procedure), and other observations specific to each user. However, in seeking to achieve its objectives, rose only coronary risk factors such as gender, age, hypertension, diabetes mellitus, dyslipidemia, smoking and heredity, since they are variables corresponding to the cardiovascular risk factors.

The data were transcribed, tabulated and organized into an Excel spreadsheet in 2007 and subsequently presented in tables and figures, interpreted and substantiated in the literature on topic. Data analysis was performed by analytical descriptive statistical procedures, using the calculated frequency and percentage.

The ethical and legal issues have been attended, according to the Resolution no. 196/96 (BRASIL, 1996), with a view that was initially approved by the Ethics Committee of that institution under protocol n° 292/05, and was authorized by the coordinator service to the development of the study, allowing access to information in the program *Teleficha*. The coordinator authorized to achieve the same by signing a Statement of Custodian.

Results

To analyze the results, were initially exposed categorical variables of characterization of the users undergoing coronary intervention. Soon after, followed with cardiovascular risk factors of the users.

As for the characterization data of users, 819 (64.5%) users were male and 450 (35.5%) females, whose average age was 62 years old.

As regards to the cardiovascular risk factors, it was found that over 90% of the individuals treated at the service presented a risk factor. It should be noted that a combination of two or more risk favors was present in 75% of females and 70% of males.

Figure 1 shows the distribution of cardiovascular risk factors present in the users who underwent cardiac catheterization.

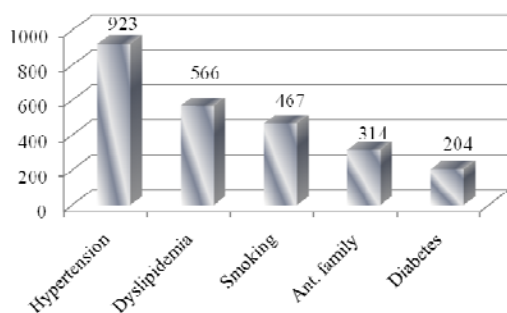


Figure 1. Distribution of users submitted to cardiac catheterization according to the presence of cardiovascular risk factors. Fortaleza, 2006. n = 1269.

In the evaluation of the main cardiovascular risk factors in existing users who have undergone cardiac catheterization, it was found, as shown in Figure 1, that of 1269 assisted by the service users, 923 (73%) had hypertension, 566 (44%) dyslipidemia, 467 (37%) were smokers, 314 (25%) had cardiovascular and hereditary factors 204 (16%) had DM.

It is noteworthy that among these five risk factors present in the users, two (smoking and dyslipidemia) are considered preventable, two (hypertension and diabetes) are controllable chronic diseases, and only one, the presence of family history, is considered not modifiable.

The Table 1 shows the distribution of users who underwent coronary intervention and their relationship to cardiovascular risk factors such as gender, age and heredity, as well as chronic degenerative diseases such as hypertension and diabetes, and lifestyle habits such as smoking and dyslipidemia.

Table 1. Distribution of users undergoing cardiac catheterization according to cardiovascular risk factors according to age and sex. Fortaleza, 2006. n = 1269.

Gender	Male					Female					Total	
	HAS	DM	Tab.	Her.	Dis.	HAS	DM	Tab.	Her.	Dis.	f	%
FR Age (years)												
< 45	37	7	35	24	26	15	2	13	9	9	177	13.9
45-54	130	27	94	51	83	49	14	31	20	34	533	42.0
55-64	173	31	102	77	103	105	25	52	27	71	766	60.3
≥ 65	236	46	100	63	133	178	52	40	43	107	865	68.1
Total	576	111	331	215	345	347	93	136	99	221	2,341	184.3

male predominance of 68.5% against 31.5% in women.

Diabetes Mellitus, found in 16% of users, was associated with increased incidence of CAD in men and women throughout their life time. It was observed that the number of cases of DM was more pronounced in females, whereas for every 100 women attended the service, 21 were carriers of the disease. And among men for every 100 users, 14 were diabetic. On the other hand, when analyzing the group of people located within the total population of diabetics, we found a greater number of diabetic male 111 (54.4%) versus 93 (45.6%) were female.

When categorizing the diabetic population by age and sex, there was predominance of males up to 54 years old, when, thereafter, there was an increasing trend of cases in females between 55 and 64 years old, surpassing the number of cases in men at advanced ages (> 65 years old).

Results and discussion

A study realized in Minas Gerais, Brazil, found in a household survey for the monitoring of cardiovascular risk factors in 217 men between 20 and 49 years old 43.3% had overweight / obese, 28% were sedentary and 24% had hypertension, which indicates a high prevalence of men with risk factors for CVD, underscoring the importance of integration of these strategies in primary care (VAN EYKEN; MORAIS, 2009).

When comparing the frequency of coronary events in different age groups and both sexes, it was shown that the number of users with CAD increased significantly with age in both sexes may, however, affects adults and young people, especially if the individual possessed the combination of two or more risk factors (VAN EYKEN; MORAES, 2009, DUARTE et al., 2007).

Lacerda et al. (2010) corroborate a study conducted in Fortaleza-Ceará, showing that 48.2% of clients assisted in the age group 40-59 years old had a hypertensive crisis. These data emphasize the need to alert health professionals about the importance of registration as a source of information to know and understand the characteristics of these clients in order to rethink strategies for control and prevention of CVD.

When comparing the DAC with sex and age, made sure that with increasing age, there is a reduction of coronary events in men and increased in women, whereas the percentage of male users

with CAD who underwent the procedure cardiac catheterization, had a decrease with advancing age, 76% aged below 45 years old to 59% aged over 65 years old.

Users with the opposite occurred, with an increase of 24% in women younger than 45 years old, to 41% in those aged > 65 years old. Given these data, we can see that the reproductive events in women have a potential impact on CHD risk.

This finding can be explained by possible physiological differences, such as symptoms caused by menopause, such as irritability and depression, or even in the behavioral and psychological factors, such as fear of weight gain, low social support, personal and family problems, confidence in tobacco control negative affect or stress, among others.

To this end, we agree with Bittner (2009) when commenting on the incidence and prevalence of CAD and higher in postmenopausal than in premenopausal women. This association may be due to ovarian aging and the reduction of endogenous estrogen hormones, including measures of lifestyle. Thus, it becomes essential the orientation to women about the trend of increased CVD risk factors during menopause, they should be advised to highlight the changes in lifestyle and increase the frequency of monitoring such risk factors, in order to combat such increases during this period.

These findings are consistent also with the study of Fernandes et al. (2008), which showed a high incidence of coronary heart disease in postmenopausal women. In fact, in women of the same age, CAD is two to three times more in women after menopause than those in premenopausal women. Between 45-64 years old, 1:9 women have some form of cardiovascular disease, while this ratio becomes 1:3 after 65 years of age. At each decade of life, the mortality rate for females increases from three to fivefold.

Such data were expected, since the aging causes changes in the integrity of the lining of the arterial walls (arteriosclerosis), thus preventing blood flow and tissue nutrition. The atherosclerosis that accompanies aging may compromise tissue perfusion, because the hardening of the arteries drives the increase in peripheral vascular resistance. These changes are usually sufficient to decrease oxygen and increase the myocardial oxygen consumption (SMELTZER; BARE, 2009).

The distribution of cases of hypertension, when considering different age groups, shows a clearly increasing trend for both sexes to the extent that there is an increasing age. The level of blood pressure increases in proportion, the incidence of

fatal CHD and nonfatal myocardial infarction, thus pointing to the need for preventive and therapeutic measures for cardiovascular disease (CONCEIÇÃO et al., 2006).

Hypertension was the risk factor most prevalent among users who have undergone cardiac catheterization. It is emphasized that epidemiological studies have established a direct relationship between the increase in blood pressure and incidence of atherosclerotic events such as stroke, myocardial infarction, angina and sudden death (SANTOS NETO et al., 2005).

In both sexes, there is a proportional increase in the number of dyslipidemic individuals with advancing age, and from the 55 years old the percentage of the presence of this risk factor in female population exceeds considerably the percentage male, by the fact that, usually this age, she loses the protective effect of estrogen with menopause (MEDEIROS, 2008).

However, case-control study in São Paulo showed that serum total cholesterol was not a predictor for the occurrence of AMI. Mean levels of total cholesterol among cases were similar to controls (195.74 vs. 195.46 mg dL⁻¹) (AVEZUM et al., 2005).

Smoking is one of the most important modifiable risk factors for developing coronary artery disease (CAD), responsible for 80,000 deaths to 120 thousands year⁻¹ (CONCEIÇÃO et al., 2006). The incidence of myocardial infarction is six times higher in women and three times higher in men who smoke at least 20 cigarettes day⁻¹, compared with individuals who never smoked (MOARREAF, 2004).

On average, male smokers die 13.2 years earlier than nonsmokers, and women smokers die 14.5 years earlier than non-smokers. Cigarette smokers are two to four times more likely to develop CHD, double the risk for stroke and 10 times more likely to develop atherosclerosis than non-smokers. Smoking results in twice to three times higher risk of dying from CHD (HEART DISEASE AND STROKE STATISTICS, 2009).

A study conducted in Londrina, Paraná State, found a prevalence of family history of cardiovascular disease in 30.9% of the sample, with similar values, 31.9 and 30.3% for men and women, respectively (GIROTTTO et al., 2009).

The family history constitutes a risk factor unmodifiable and independent, because people with first-degree relatives with coronary heart disease are at increased risk of developing CAD than the general population. The identification of this risk factor is of great importance to enhance the observation of these users about the risk of cardiovascular disease (GIROTTTO et al., 2009).

Cardiovascular disease accounts for up to 80% of deaths in individuals with type 2 diabetes. In fact, the relative risk of death from cardiovascular events, adjusted for age, diabetes is three times higher than the general population. Women, who usually have lower risk of cardiovascular disease than men, are of greater risk if they are diabetic. The DM gives a 3-7 times greater risk of CHD for women compared to nondiabetic, unlike men where the risk is only 2-3 times higher. It gives also a risk of 1.8 to 6 times greater for stroke and peripheral vascular disease (FERNANDES et al., 2008, YOUNG et al., 2009).

Diabetics who have already developed coronary heart disease deserve special attention with regular monitoring, and frequent monitoring of blood glucose levels, since it is the only way to minimize the risk of new clinical episodes.

It is therefore of paramount importance that users perform self-care practice to avoid and / or control cardiovascular risk factors, preventing coronary events.

Therefore, given the magnitude of the prevalence of cardiovascular risk factors, it is necessary to intensify strategies for disease prevention and health promotion, as well as improve the emergency care of patients with CHD risk (MARTINS et al., 2011). The cardiovascular risk factors identified in this study are established in the literature and its prevalence varies according to the population investigated. Thus, it is essential to the study of these factors for this group of high cardiovascular risk, for users who have undergone cardiac catheterization.

Agrees, therefore, with Musaiger and Al-Hazzaa (2012), which emphasize the need for control and monitoring of risk factors for chronic diseases such as CVD. A competence of the multidisciplinary healthcare team to produce health promotion strategies, such as programs that focus on education through the various types of communications, needing to be of long-term and sustainable, as well as provide inclusion of all segments of the community. We emphasize the importance of integration of government and private sectors for the development and implementation of such programs, and major components such as healthy eating, physical activity and a lifestyle benefit, in addition to preventing damaging agents such as smoking.

Conclusion

Cardiac catheterization is one of the most common procedures performed in patients with CAD users. It was possible in this study to identify the main cardiovascular risk factors present in 1269 underwent cardiac catheterization users, such as hypertension (73%), dyslipidemia (44%), smoking

(37%), presence of family history of heart disease (25%) and diabetes mellitus (16%). As for the relationship between age and sex, it was concluded the prevalence of women with one or more risk factors and men aged over 65 years who had hypertension, and dyslipidemia were smokers. Given the high prevalence of risk factors in this population, realized the importance of the multidisciplinary team to adopt educational strategies to reduce the prevalence of chronic diseases, and the prevention of complications and death.

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