

# SOCIODEMOGRAPHIC CHARACTERISTICS OF PATIENTS UNDERGOING CORONARY ARTERY BYPASS GRAFTING

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*A study extracted from the thesis project titled "Incidence of cardiovascular events in patients submitted to coronary artery bypass grafting" developed in the post-graduate course in Human Medicine and Health (CPgMSH) at Escola Bahiana de Medicina e Saúde Pública. Area of Concentration: Clinical Medicine, Cardiovascular Disease Research Group*

## Resumo

**Introdução:** A cirurgia de revascularização miocárdica restaura a circulação coronária em áreas isquêmicas, prevenindo necrose muscular, crônica e/ou aguda, preservando e/ou melhorando a função ventricular e prolongando a vida com qualidade. **Objetivo:** Descrever as características sociodemográficas de pacientes revascularizados em um hospital público de referência em cardiologia. **Método:** estudo transversal, descritivo e analítico, com avaliação e coleta de dados de 165 pacientes no pré-operatório, de fevereiro de 2012 a março de 2013. **Resultados:** Os principais dados incluíram: homens, 102(61,8%), idade de 62,69±9,26 anos (42 a 84), 37(22,4%) <60 anos; mulheres, 63(38,2%), idade 62,16 ±8,52anos (40 a 77), 25(15,2%) <60 anos; 107(64,9%) casados ou união estável, raça/cor auto declarada parda/morena em 102(61,8%), escolaridade limitada ao ensino fundamental em 105(63,6%); renda familiar ≤ a um salário mínimo em 136(82,5%), 95(57,6%) aposentados/

pensionistas, atividade laboral doméstica em 44 (26,7%) mulheres, entre 46 a 77 anos, e católicos 111 (67,4%). Conclusão: População de baixa escolaridade e baixa renda, valendo ressaltar o percentual de indivíduos com idade < 60 anos e idade mínima de 40 anos, caracterizando pobreza como fator de risco importante de doença arterial coronária.

*Palavras-chave:* Perfil de Saúde, Revascularização Miocárdica, Cardiopatias, Cirurgia.

## Abstract

**Introduction:** Coronary artery bypass grafting restores the coronary circulation in ischemic areas, preventing muscle necrosis, chronic and acute, preserving and/or improving ventricular function, prolonging life and improving its quality considerably. **Objective:** To describe the demographic characteristics of patients undergoing myocardial revascularization in a reference public hospital with excellent reputation in cardiology. **Method:** Descriptive and analytical cross-sectional transversal study with evaluation and data collection of 165 patients preoperatively, February 2012 to March 2013. **Results:** The main data included: men, 102 (61.8%), age  $62.69 \pm 9.26$  years (42 to 84), 37 (22.5%) 60 years; women, 63 (38.2%), age  $62.16 \pm 8.52$  years (40 to 77), 25 (15.2%) <60 years; 107 (64.9%) married or common-law marriage, race/color self-declared as brown/dark-skinned in 102 (61.8%), limited schooling at elementary school in 105 (63.6%); family income  $\leq$  minimum wage in 136 (82.5%) and 95 (57.5 %) retirees/pensioners, domestic labor activity in 44 (26.7 %) women, between 46 to 77 years, and Catholic 111 (67,4 %). **Conclusion:** Population with low education and low income, with emphasis to the percentage of individuals aged <60 years and minimum age of 40 years, characterizing poverty as major risk factor of coronary artery disease.

*Keywords:* Health Profile; Myocardial Revascularization; Heart Diseases; Surgery.

## INTRODUCTION

Atherosclerosis represents a chronic degenerative and obstructive inflammatory process that affects, preferentially, the walls of the large and average sized arteries of organs which concentrate a greater flow of blood under high pressure: heart, brain and kidneys.<sup>(1)</sup> In relation to coronary artery disease (CAD), its clinical evolution leads to acute manifestations such as myocardial infarction and chronic or unstable angina, stable angina, and which may require undergoing coronary artery bypass grafting, for adequate treatment.<sup>(2)</sup>

Nevertheless, the benefits of this technological evolution are limited to the measure in which they do not directly interfere with the etiopathogenesis of the disease affecting the evolution of the atherosclerosis, which depends upon the arterial aging process and

the control of risk factors, such as central body obesity, arterial hypertension, dyslipidemia and diabetes. In relation to the generation of these factors, the importance of the ways of life should be emphasized, mainly eating habits, lack of physical exercise and psychological stress, all of which occur in the various different social classes of the Brazilian population today, and which receive significant influence from the socio-economic characteristics of each of these.<sup>(3)</sup> Accordingly, the successful outcome of this type of surgery depends, also, on the knowledge about the socio-economic profile of the population being attended, in order that the adaptations and changes in this population may contribute to decrease risks in the post-operative progress of coronary atherosclerosis.

In the present study, performed in a public hospital of the Unified Health System (SUS) network, the analysis of the socio-economic conditions had the purpose of improved awareness, in this social background, which are the most prevailing risk factors in order to offer guidance to patients and family members with reference to changes in their ways of life, in accordance with their actual possibilities. To this end, an assessment was made of the social and demographic variables such as gender, age, civil status, self-declared race/color, schooling, family income, work activity, employment and religion, all of which are possible to associate to the increase in the occurrence of CAD.

## PRIMARY OBJECTIVE

Describe the pre-operation socio-demographic profile of patients submitted to coronary artery bypass grafting.

## METHODS

The selection and inclusions of patients occurred between February/2012 and March/2013, at Hospital Ana Nery, a hospital of reference in cardiology of the SUS network, in Salvador-Bahia.

Patients of both genders were included, with ages of 18 years or above, in pre-operation process for coronary artery bypass grafting (CABG), hospitalization phase, with satisfactory communication capacity.

During the period of inclusion, 165 (66.5%) patients were randomly selected and studied, out of a total 248

submitted to CABG during the 14-month period. This number exceeds in representativeness the 145 that would be necessary to represent them in a confidence interval of de 95%, with  $\alpha=0.05$  (Sample, Version 3, PEPI).

The socio-demographic variables of interest were: gender, age, civil status, self-declared race/color, schooling, family income, employment situation, work activity and religion. Family income was evaluated in accordance with the official minimum wage, which varied between 622 and 678 Brazilian reais, in accordance with annual readjustment, justified by the period of admission of patients, between 2012 and 2013.

Continuous variables were expressed in absolute frequency, percentage, average and standard deviation, in accordance with the symmetry of distribution and categorical variables in absolute frequency and percentages. Comparison between averages used the t-test for independent samples. The calculations were performed using the Statistical Package for the Social Sciences (SPSS), version 15. Comparison between two proportions was made using Primer of Biostatistics, version 3.02.

The study was approved by the Ethical Committee in Research of Escola Bahiana de Medicina e Saúde Pública, registered under number 147/2011 on August 17, 2011 and all the participants signed the TCLE.

## RESULTS

Table 1 illustrates the main socio-demographic variables of the 165 patients submitted to coronary artery bypass grafting.

**Table 1** - Key demographic data of 165 patients undergoing coronary artery bypass grafting in a public Hospital. Salvador -Bahia, 2014.

(continued)

VARIABLES	N	%
<b>GENDER</b>		
Male	102	61.8%*
Female	63	38.2%

**Table 1** - Key demographic data of 165 patients undergoing coronary artery bypass grafting in a public Hospital. Salvador -Bahia, 2014.

(conclusion)

VARIABLES	N	%
<b>AGE **</b>		
<60 years	62	37.6%
Men	37	22.4%
Women	25	15.2%
≥ 60 years	103	62.4%*
Men	65	39.4%
Women	38	23.0%
<b>CIVIL STATUS</b>		
Married or common-law marriage	107	64.9%*
Single/Separated	36	21.8%
Widow/Widower	22	13.3%
<b>SELF-DECLARED RACE/COLOR</b>		
White	34	20.6%
Black	27	16.4%
Brown/Dark	102	61.8%*
Unknown	02	1.2%
<b>SCHOOLING</b>		
Never studied	29	17.7%
Elementary	105	63.6%*
Secondary	24	14.5%
Higher Education	07	4.2%
<b>FAMILY INCOME****</b>		
No income	05	3.0%
≤1 minimum wage ***	136	82.5%*
<b>EMPLOYMENT</b>		
Retired/Pensioner	95	57.6%*
Working	49	29.7%
No working activity	21	12.7%
<b>RELIGION</b>		
Catholic	111	67.4%*
Protestant	43	27.2%
Other beliefs	03	1.8%
Atheist	06	3.6%
<b>TOTAL</b>	<b>165</b>	<b>100%</b>

\*P≤0.005; \*\*Age: 62.48 ± 8.9 years; \*\*\*Minimum wage varied between 622.00 and 678.00 Brazilian reais; \*\*\*\*\*(N) = 141

There was a significant predominance of the male gender, 102 (61.8%) vs. 63 (38.2%) of the female gender, p=0.015, without significant difference of

age of men and women, 62.59±9.08 vs. 61.60±8.87 years, respectively. In relation to age distribution, the percentage of elderly people was significantly higher,

103 (62.4.0%) vs. 62 (37.6%),  $p=0.003$ , respectively. Nevertheless, despite the percentage of elderly having also been high in both genders, there was no significant difference between  $\geq 60$  years and  $< 60$  years: 65 (39.4%) vs. 37 (22.4%),  $p=0.124$ , for males and 38 (23.0%) vs. 25(15.2%) for females,  $p=0.648$ .

With reference to the civil status, there was significant preponderance of married or common-law marriage in relation to the set of single and widows/widowers, 107(64.9%) vs. 58(35,1%), respectively,  $p=0,000$ . A similar fact occurred in relation to self-declared ethnicity, brown/dark skinned vs. black and white, 102 (61,8%) vs. 61(37.0%), respectively,  $p=0.003$ . Schooling demonstrated a significant majority with only elementary education, 105 (63.6%), while a minority had high school, 24(14.5%) and only 7(4.2%) with higher education, totaling 105 (63.6%) vs. 31 (19%), respectively,  $p= 0.000$ ; 29 (17.1%), a similar percentage to those with high school and higher education, never studied, were completely illiterate or only knew how to sign their names.

Income equal to or below minimum wage was informed by 136(82.5%), with significant statistical difference when compared to 24(14.5%) receiving higher income,  $p=0.000$ . In relation to remuneration/employment activity of the patients before surgery, 95 (57.6%) were retired or pensioners, while 49(29.7%) had some sort of work activity,  $p=0,004$ . Among these occupations there were some defined as housekeepers (26.7%), general services (21.8%), rural (21.8%), commercial (15,8%), electro-mechanical (5.5%) and basic healthcare (1.2%). In this study, Christianity was preponderant, with 111 (67.4%) Catholics vs. 45 (27.2%) Protestants,  $p=0.000$ .

## DISCUSSION

The data of this study demonstrates that a sample of patients submitted to coronary artery bypass grafting in a public hospital of the SUS network, a reference in cardiology for the State of Bahia, is constituted mostly by elderly, predominantly male, which is consistent with the data from national literature.<sup>(4)(7)</sup>

Thus, these findings are in accordance with the results of studies performed in 04 public hospitals in

Rio de Janeiro which revealed, also, a preponderance of male gender (68.1%), with a prevalence 2.1 times greater than women and age groups predominantly over 60 years (57,8%).<sup>(4)</sup> Particularly, a study comparing the clinical and surgical profile among two groups of patients submitted to coronary artery bypass in a 10 year interval<sup>(8)</sup> demonstrated that patients presently submitted to coronary artery bypass are older and in worse clinical conditions (cardiac and systemic) than those operated over 10 years ago. This increase in the average age of surgical patients could be due to advances in clinical therapy and percutaneous treatment techniques, delaying the age for coronary artery bypass.

Nevertheless, when the percentage of men and women below the age of 60 years is compared to those with 60 or more years, although less, do not differ significantly, indicating prematurity of CAD, also in this social level, which fact deserves the attention from a clinical and epidemiological point of view. This is because it indicates, in this population, the need for identification and early control of the CAD risk factors.

Regarding the civil status, predominance was for married or common-law marriage. Similar information was verified in 97 patients submitted to coronary artery bypass, in which 88.7% lived with their spouses and with their children, of which 79.4% were married.<sup>(6)</sup>

Another variable analyzed was self-declared race/color in compliance with the standards of Instituto Brasileiro de Geografia e Estatística (IBGE), in which ethnic groups are self-declared based on the skin color, according to five options: black, brown, white, yellow or indigenous.<sup>(9)</sup> In the present research, 61.6% self-declared themselves as brown skinned, resulting from the high proportion of miscegenation among whites, blacks and indigenous people, with predominance of the first two, during the colonial period which cascaded to date. In view of the slow social evolution of this segment of the Brazilian population, mainly in the North/Northeast and large centers such as Rio de Janeiro and São Paul, it is difficult to hold responsible a genetic propensity of the brown and black ethnicity for the high prevalence of arterial coronary disease risk factors, with emphasis to hypertension and obesity, once the low social conditions of the majority of these can be associated to the high consumption of salt and

saturated fat, despite a daily energetic consumption of under 2,000 calories.

Another aspect to consider is the predominance of people with low schooling, where 64.0% have only elementary school and 17.1% illiterate, being able only to write their names. A research performed in Salvador-BA, focused on socio-economic aspects of patients undergoing coronary artery bypass grafting, evidenced the predominance of low schooling (until elementary school) in 95% of 391 men and 97% of 577 women.<sup>(10)</sup> A more recent study revealed the same predominance of people with low schooling, with 53.0% until elementary school and 34.0% illiterate.<sup>(3)</sup> This information leads us to reflect about the low level of schooling in the great majority of the patients undergoing cardiac surgeries, which is certainly related to the lack of knowledge and awareness about prevention and control of CAD risk factors.

With reference to family income, it was predominantly below minimum wage. This amount is equivalent to the findings in a study developed in Fortaleza-CE, with 55.1% of the 176 patients with family income below or equal to the minimum wage.<sup>(6)</sup>

Concerning the employment situation of patients before coronary artery bypass surgery, it was identified that the majority of the patients were retired and/or pensioners. This information is in accordance with the research performed in Fortaleza-CE,<sup>(6)</sup> where 50.0% were retired and only 44.9% developed some kind of work activity.<sup>(6)</sup>

The demographic census of 2010, by the IBGE, pointed out that 64.4% of Brazilians declared themselves as Catholic and 22.2% as Protestants,<sup>(11)</sup> which information is in accordance with this research, where most (67.4%) declared to be Catholic, which is in accordance with the tradition of Brazil as a Catholic country.

The findings of this study may be compared to those revealed in earlier researches, according to which the population submitted to coronary artery bypass grafting in public hospitals presented homogeneous socio-economic characteristics, with the majority being brown skilled and under conditions of social inequality evidenced by the low schooling and family income, as well as the high rate of professional

inactivity, due to retirement or unemployment, which findings are presented as an enhancer of the risk of CAD.<sup>(3),(7),(12)</sup>

Furthermore, together with other data from national literature, it is demonstrated that a reorganization of the Brazilian public assistance system is essential, with the aim of detecting and controlling risk factors of chronic cardiovascular diseases in this unprotected population, due to its socio-demographic conditions, where improvement is necessary for the successful outcome of the preventive practice. In turn, the latter must be improved and executed through the education of health professionals and of the social area, including doctors, nurses, physiotherapists, nutritionists, psychologists, dentists, social assistants and other required by their specific area of activity, in order to work, as a multi-professional team, hierarchically in a growing degree of care from the primary to the greater complexity, effectively promoting health, followed by prevention of primary risk factors and, finally, of the secondary risks.

## CONCLUSION

The population of patients undergoing coronary artery bypass grafting in this public hospital of Salvador, BA, a state reference in cardiology, is characterized by a male predominance, brown skinned ethnic, low schooling, low income, stable family structure, Catholic and in their majority pensioners. An important epidemiological aspect is the percentage of men and women with coronary artery bypass between the ages of 40 and 60, indicating the necessity of a prevention policy for CAD encompassing all social levels, in which clinical manifestations are also premature among the poor.

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