

## EPIDEMIOLOGICAL PROFILE OF THE POPULATION WHO UNDERWENT MYOCARDIAL REVASCULARIZATION AND ACCESS TO THE UNIFIED HEALTH SYSTEM

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**ABSTRACT:** The present study aimed to describe the epidemiological profile of a population who underwent myocardial revascularization surgery and gain insight on how this population accesses the health services for promotion, prevention, treatment and rehabilitation. Descriptive cross-sectional study with a sample of 99 participants conducted between March 2013 and February 2014. Concerning the profile of the participants, 70 (70.7%) were men, 61 (61.6%) were married, 53 (53.59%) were retired, 86 (86.9%) lived in the Metropolitan region and had an average age of 61.3 ( $\pm$  8.5) and a mean schooling of six years ( $\pm$  3.4). The prevalent comorbidities were Systemic Arterial Hypertension, 84 (84.8%) and Diabetes Mellitus, 42 (42.4%). Regarding access to health services, 49 (49.4%) were admitted to a hospital and 31 (31.3%) were assisted at a Basic Health Unit (BHU). Strategic actions aimed to facilitate access of this population to health services and their monitoring, especially in Primary Health Care (PHC), before and after myocardial revascularization surgery, is needed.

**DESCRIPTORS:** Health Profile; Access to Health Services; Unified Health System; Thoracic surgery; Nursing.

### PERFIL EPIDEMIOLÓGICO DA POPULAÇÃO SUBMETIDA À REVASCULARIZAÇÃO CARDÍACA E ACESSO AO SISTEMA ÚNICO DE SAÚDE

**RESUMO:** O objetivo deste estudo foi descrever o perfil epidemiológico de uma população submetida à revascularização cardíaca e compreender como esta população acessa os serviços de saúde para promoção, prevenção, tratamento e reabilitação. Estudo descritivo, transversal, amostra de 99 participantes, entre março de 2013 e fevereiro de 2014. Em relação ao perfil, 70 (70,7%) homens, 61 (61,6%) casados, 53 (53,5%) aposentados, 86 (86,9%) procedentes da região metropolitana, com idade média de 61,3 ( $\pm$ 8,5) e média de anos de estudos de seis ( $\pm$ 3,4), as comorbidades prevalentes foram Hipertensão Arterial Sistêmica 84 (84,8%) e Diabetes Mellitus 42 (42,4%). Referente ao Acesso aos serviços de saúde, 49 (49,4%) acessaram o hospital e 31 (31,3%) a Unidade Básica de Saúde. Observa-se a necessidade de ações estratégicas que facilitem o acesso e acompanhamento desta população aos serviços de saúde, em especial na Atenção primária à saúde, antes e após a revascularização cardíaca.

**DESCRIPTORIOS:** Perfil de Saúde; Acesso aos Serviços de Saúde; Sistema Único de Saúde; Cirurgia Torácica; Enfermagem.

### PERFIL EPIDEMIOLÓGICO DE LA POBLACIÓN SOMETIDA A LA REVASCULARIZACIÓN CARDÍACA Y ACCESO AL SISTEMA ÚNICO DE SALUD

**RESUMEN:** Estudio cuyo intento fue describir el perfil epidemiológico de una población sometida a revascularización cardíaca y comprender como esa población tiene acceso a los servicios de salud para promoción, prevención, tratamiento y rehabilitación. Estudio descriptivo, transversal, con 99 participantes, realizado entre marzo de 2013 y febrero de 2014. Acerca de las constataciones sobre el perfil, fueron 70 (70,7%) hombres, 61 (61,6%) casados, 53 (53,5%) jubilados, 86 (86,9%) que vinieron de la región metropolitana, con edad media de 61,3 ( $\pm$ 8,5) y media de años de estudios de seis ( $\pm$ 3,4), las comorbilidades prevalentes fueron Hipertensión Arterial Sistémica 84 (84,8%) y Diabetes Mellitus 42 (42,4%). Acerca del acceso a los servicios de salud, 49 (49,4%) fueron al hospital y 31 (31,3%) a la Unidad Básica de Salud. Se observa la necesidad de acciones estratégicas que faciliten el acceso y el acompañamiento de esa población a los servicios de salud, principalmente en la Atención básica a la salud, antes y después de la revascularización cardíaca.

**DESCRIPTORIOS:** Perfil de Salud; Acceso a los Servicios de Salud; Sistema Único de Salud; Cirugía Torácica; Enfermería.

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## ● INTRODUCTION

Cardiovascular diseases (CVD) are among the main causes of morbidity and mortality in Brazil and worldwide. The multifactor causes, demonstrated in the epidemiological profile, are heredity factors and association with risk factors<sup>(1)</sup>. CVD can be treated clinically or surgically. Coronary artery by-pass graft surgery (CABG) is the most common surgical treatment of ischemic heart disease<sup>(2)</sup>.

However, given the substantial worsening of the health status of patients undergoing cardiac intervention, especially CABG, over the past decades, increasing the risk for complications and mortality, proposals of actions targeted to prevention, treatment and rehabilitation of patients with CVD have become more frequent<sup>(2)</sup>.

The Unified Health System (SUS), established by Brazil's Federal Constitution of 1988, is based on universal access to care, integrality (comprehensiveness) and continuity of care and equality of health practices and processes. Access to health is therefore understood as a broader concept of care that meets the health needs of a given population of a given territory<sup>(3)</sup>.

Timely access and continuity of care are universal indicators for measuring the quality of access to PHC. Timely access concerns the service's ability to meet the user's health needs, avoiding the high costs involved in referrals to emergency services. Continuity of care is the user's access to a health professional of a referral center to monitor his/her health status, wherever necessary, establishing ties and ensuring individualized care<sup>(4)</sup>. Limited access to health services and to subsequent follow-up causes worsening or chronicity of the health condition<sup>(5-6)</sup>.

Therefore, nurses and other health professionals should be able to recognize the epidemiological profile of patients who underwent myocardial revascularization and the health needs of this population, so that nursing care can be delivered in a creative, human-centered and interactive way, concerned with the comprehensiveness of the human being and promoting self-care<sup>(7)</sup>.

Several studies have described the epidemiological profile of patients who underwent CABG. However, this study attempted to present an expanded profile including data on the access of this population to health services, for monitoring before and after diagnosis of CVD.

Thus, the following question was proposed: What is the epidemiological profile of a population who underwent cardiac revascularization in a cardiovascular referral institution of the state of Santa Catarina and how does this population access health services under the Unified Health System for the monitoring of their health status? The present study aimed to describe the epidemiological profile of a population who underwent cardiac revascularization and find out how this population accesses the health services for the promotion, prevention, treatment and rehabilitation.

## ● METHODOLOGY

Descriptive, prospective study with a cross-sectional design developed in a public hospital that is a referral center for cardiovascular care in southern Brazil. Data was collected in two stages.

In the first stage, the sample consisted of 99 patients, and inclusion the criterion was patients admitted to the institution waiting for CABG surgery and the exclusion criterion was patients with problems that made them incapable of completing the questionnaire. From March 2013 to February 2014, 110 patients underwent CABG. Of these, 11 patients did not agree to participate in the study or were excluded based on the exclusion criterion, which resulted in a 10% sample loss. A structured questionnaire was used for data collection. Information that could not be provided by the participants was collected from the medical records, with the appropriate authorization.

For data analysis in the first stage, the frequencies and percentages for qualitative measures and the means for quantitative measures were assessed in the first stage, considering the following variables: Identification and Sociodemographic (age, gender, marital status, origin, education, occupation); Comorbidities Associated to Coronary Artery Disease (CAD) - (high blood pressure (hypertension), diabetes mellitus (DM), chronic obstructive pulmonary disease (COPD), cerebrovascular disease, kidney

failure and others); Risk Factors for CAD (high blood pressure, high blood glucose levels, dyslipidemia, smoking, family history, and others); and Access to health services for promotion, prevention, treatment and rehabilitation (patient accesses and uses the basic health unit of referral, health service chosen by the patient, center for diagnostic tests, drug treatment administered for the cardiovascular disease, patient obtains the drugs required for the treatment at the public network, participates in groups or health activities in the basic health unit (BHU), undergoes cardiac rehabilitation (for those who have undergone myocardial revascularization).

In the second stage, the sample was random and composed of eight patients who participated in the first stage. The interviews were conducted in March and April 2014, with the use of a semi-structured questionnaire to gain greater insight on aspects addressed in the first stage of the study. Thematic Content analysis was used, which includes a systematic process of pre-analysis, exploration of material, processing of results and interpretation of data was used in data analysis <sup>(8)</sup>.

The first stage or pre-analysis included operationalization and systematization of the material <sup>(8)</sup>, to allow for systematic exploration and formulation of hypotheses and objectives. The second stage, exploration of material, is essentially a coding operation based on previously established rules <sup>(8)</sup>. The volume of raw information is reduced and only significant words or phrases are maintained. Data was rearranged according to the similarity and diversity of ideas. In the third stage, thematic analysis, the results are processed and interpreted so as to best represent the data <sup>(8)</sup>. Data saturation was used to avoid little relevant data. Data was organized with the use of NVivo 10 software.

The study is part of a macroproject entitled "Paciente cardíaco revascularizado: processo de referência e contrarreferência dos serviços de saúde de Santa Catarina" (Cardiac patient who underwent myocardial revascularization: reference and counter-reference process of health care services of Santa Catarina) approved by the Research Ethics Committee of Universidade Federal de Santa Catarina (CEPSH / UFSC) under no 120,184 in 2012. In To ensure the anonymity of the participants, the statements were identified by letter "E" followed by an ordinal number corresponding to the order of the interview.

## ● RESULTS

According to the Identification and Sociodemographic variables, of the total number of participants in the study, 70 (70.7%) were men, 61 (61%) were married, 53 (53.5%) were retired, and most of them, 86 (86.9%), lived in the Metropolitan region of the state of Santa Catarina. Regarding their professional occupation before retirement, 14 (14.1%) were masons, 11 (11.1%) were housewives and 11 (11.1%) provided general services. The other professions accounted for less than 10% of the total. The average age of the participants was 61.3 ( $\pm$  8.5) years and the average number of years of education was six ( $\pm$  3.4), according to Table 1.

Comorbidities Associated with CAD were prevalent in 84 (84.8%) of the participants and DM in 42 (42.4%). The main risk factors for CAD were systemic arterial pressure in 85 patients (85.9%), family history in 65 (65.7%) and dyslipidemia in 63 (63.6%), as shown in Table 1.

Table 1 – Identification and sociodemographic characteristics, associated comorbidities and risk factors for CAD. Florianópolis, SC, Brazil, 2014 (n=99) (continues)

Characteristics	n	%
Gender		
Female	29	29.3
Male	70	70.7
Marital status		
Not married	8	8.1
Married	61	61.6
Widowed	15	15.2

Divorced	15	15.2
From		
Grande Florianopolis area	86	86.9
Itajaí Valley	1	1
South	6	6.1
Planalto	1	1
Not reported	5	5
Occupation		
Self-employed	21	21.2
Employee with a formal contract	11	11.1
Unemployed	3	3
Retired	53	53.5
Not reported	11	11.2
Age		
Less than 50 years	8	8
50 to 60 years	40	40.4
61 to 70 years	36	36.3
71 to 80 years	13	13.1
Over 80 years	2	2
Years of schooling		
Less than 1 year	5	5
From 1 to 3 years	10	10.1
From 4 to 6 years	47	47.4
From 7 to 9 years	20	20.2
More than 9 years	17	17.1
Comorbidities associated to CAD †		
Systemic Hypertension	84	84.8
Diabetes mellitus	42	42.4
Kidney failure	10	10.1
Cerebrovascular disease	9	9.1
Obstructive Pulmonary Disease	8	8.1
Others	16	16.1
Risk factors for CAD †		
Systemic hypertension	85	85.9
Family history	65	65.7
Dyslipidemia	63	63.6
Smoking	54	54.5
High blood glucose levels	40	40.4
Others	18	18.1

Source: Research data. Legend: †Coronary Arterial Disease.

The low level of education of the study population (most participants had few schooling years and had lower skilled jobs that demanded little or no training) may affect their knowledge about health and the adoption of healthy habits throughout their lives. These habits could minimize the risk of development or the aggravation of preventable diseases, such as hypertension and diabetes, dyslipidemia, among others, with impact on the identification of signs and symptoms of CAD. Some statements are shown below:

*I've been experiencing this for several years ... when I started walking, I felt a chest pain. As it was not*

*strong, I could stand the pain, and thought it was normal. I did not think it could be a heart problem. (E1)*

*It started with a "burning" in the chest and I thought it was nothing serious and kept working, living my life normally. Suddenly, the pain worsened and I "had a heart attack" but did not know that it was a "heart attack." (E2)*

Concerning the Access to health services for promotion, prevention, treatment and rehabilitation, the respondents sought the following health services, when needed: 49 (49.4%) went to the hospital, 31 (31.3%) sought the BHU, 13 (13.1%), three sought the (3%) polyclinics and one (1%) sought an emergency care unit (ECU), two (2.2%) of them did not inform.

Regarding the access and use of the referral BHU, 74 (74.7%) participants reported that the sometimes sought the BHU and 86 (86.8%) participants reported using exclusively the SUS, with all the diagnostic tests for CAD performed at the public health network, while 12 (12.1%) also used the private network, one (1%) did not report.

Despite the significant number of participants who reported access to SUS services for consultations or diagnostic tests, the testimonies reveal that there is no regular monitoring of health status in PHC, demonstrating the difficulty in accessing health care, as shown below:

*I was not monitored. I went to the ECU a few times, but it was sporadic. Before the heart problem I have never sought any health service [referring to health monitoring]. It's difficult, because I never manage to get an appointment soon. Then we sometimes fail to attend these appointments. (E3)*

*[...] one doctor sees you one day, then another doctor sees you another day. In the main health unit, doctors are available every day, but in the neighborhoods, it is once a week, and it is not always the same doctor. (E4)*

The long time taken to get an appointment with the general practitioner or a specialist in the health network is stressed in the statements. The patients seek emergency health services or private services to be seen by a doctor. When they get an appointment with a specialist in the private service, scheduling of expensive laboratory tests requested at these services is made at Primary Health Care units. It was found that some respondents who were attempting to schedule an appointment with a specialist at the SUS had to seek the high complexity emergency service before they managed to schedule that appointment. Some related statements follow:

*At the health unit, the general practitioner merely said that I should be treated by a cardiologist and gave me a letter of referral to make an appointment with a cardiologist. The appointment with the cardiologist in a polyclinic should be arranged at the health unit. So, I left the referral letter at the health unit. It's been three months since then and I am still waiting for the appointment. In the meantime, I had had to be seen here [at the hospital] because of an emergency and not for that appointment. (E5)*

*I had a medical appointment at the health unit, but the appointments [with the cardiologist], were private, because I could not wait much long. However, the expensive laboratory tests in the referral letters should be scheduled at the health unit. (E6)*

Of the participants, 71 (71.7%) said they were undergoing drug treatment for CVD or due to associated comorbidities and had to undergo drug therapy in the public health network. Although most respondents said they had received drugs at PHC, it does not mean that 100% of the drugs required for treatment were purchased there, since PHC usually lacks standardized drugs. This situation favors the discontinuity of drug treatment and the progression of CAD, since these patients cannot afford the treatment, according to the following statement:

*The explanation for the unavailability of a given drug was always the same: due to the low stock levels of the drug at the municipal health department distribution to the health unit was not possible. So I had to look for the drug in another health unit or finally buy the drug myself. (E7)*

Regarding rehabilitation activities, only 11 (11.3%) participants reported integrating CVD-related therapy groups at the BHU (hypertension, diabetes, physical conditioning). Of the 20 (20.2%) who underwent myocardial revascularization surgery (CABG and primary angioplasty) of this study, six

(30.7%) performed cardiac rehabilitation and of these, five (83.3%) at the referral hospital and one (%) at the BHU.

The poor physical structure in the facilities and the lack of personnel to monitor patients after revascularization in PHC result in low adherence to cardiovascular rehabilitation and difficulties in patient adaptation to a new lifestyle, as reported:

*I took some medicines for a while but quit taking them at a later time. I did not seek the health service for physical (clinical) or dietary monitoring. I kept eating the foods that I used to before the surgery, that is, foods with high content of fat, feijoadas, barbecue, among others. Then, three months ago I've experienced pain, malaise, trouble breathing and so I came here [to the hospital]. (E8)*

Lack of monitoring of individuals with CVD or those who underwent CABG in Primary Health Care (PHC) contributes to no adherence to treatment and the onset of new cardiovascular events/need for another myocardial revascularization surgery.

## ● DISCUSSION

The results obtained here corroborate studies on the epidemiological profile of patients undergoing CABG in which there was a prevalence of males (70.7%, 67%, 68.5%), with an average age of 50-75 years<sup>(5-7,2)</sup>. Few studies reported a prevalence of women<sup>(9)</sup> or individuals under the age of 50 years<sup>(10)</sup> among participants who underwent CABG, which indicates a prevalent population of elderly male individuals.

Studies also revealed that the profile of patients undergoing CABG was that of individuals with low educational level, who had completed only primary school, or about five years of schooling<sup>(9,11-12)</sup>, and already retired<sup>(11)</sup>. Most of them had lower-skilled, low paying jobs (earned up to three minimum wages) or were housewives, in the case of women<sup>(9)</sup>.

A study that investigated the time taken by patients with acute myocardial infarction to get to the emergency services revealed that, despite the low educational level of the population, the recognition of signs and symptoms of AMI was a decisive factor for the timely search for specialized care<sup>(13)</sup>. In the present study, delay in seeking timely medical care was related to the patients' inability to recognize signs and symptoms of cardiovascular disorders.

Regarding marital status, over 60% of the respondents were married, corroborating the results of similar studies<sup>(9-10)</sup>. In four studies most patients lived in the Metropolitan region, i.e., near the hospital<sup>(9,11)</sup>, which may be related to greater access to high complexity services.

The reason why some respondents in this study sought hospitals for health interferences was related to the difficulty in getting appointments with the general practitioner in the BHU and with a specialist in medium complexity services. A study on the obstacles to access to PHC, such as unavailability of a physician in the BHU and insufficient availability of appointments with specialists and access to more sophisticated exams, which delayed care to users, aggravating their health conditions<sup>(5)</sup>. It was found that PHC services fail to adequately perform their health management role that involves the delivery of resolute, integral and humanized care. Therefore, a fruitful dialogue between the various professionals of the different health services in the SUS is needed<sup>(14)</sup>.

The focus of health care systems on acute exacerbation of diseases, rather than on the chronicity of these diseases can also explain why patients seek higher complexity services<sup>(15)</sup>. Users usually seek medical emergencies when they believe they have a severe condition or that they will not get satisfactory care at PHC<sup>(16)</sup>.

In Brazil, studies with patients undergoing CABG show that over 50% of the subjects had preexisting diseases, especially hypertension and diabetes<sup>(12,17-18)</sup>. Similar studies have shown that more than half of the participants with coronary artery disease undergoing CABG had risk factors for CVD, predominantly high blood pressure, followed by dyslipidemia, diabetes mellitus, smoking<sup>(9,19-20)</sup> and family history of CVD<sup>(17,20)</sup>.

Thus, health monitoring is important for the prevention and control of CVD risk factors and

associated comorbidities, through the implementation of integrated and intersector interventions for health promotion and CVD prevention, individually and collectively. It helps people change risk behaviors, promoting the adoption of healthy lifestyle habits<sup>(21)</sup>. Health professionals can contribute or (fail to contribute) to patients' greater adherence to practices targeted at reducing risk factors such as eating habits, physical inactivity, stress, obesity, with more effective control of the disease<sup>(22)</sup>.

Despite the increased access to health services, data on pharmaceutical care reveal that in only 45% of the appointments in which the doctors prescribed drugs, through the SUS, the patients obtained 100% of the prescribed drugs<sup>(23)</sup>. The average availability of medicines in PHC in Brazil is 58.5%, which is considered low<sup>(24)</sup>. In this regard, a study found that more than 50% of the population obtains prescribed drugs at public health service pharmacies<sup>(25)</sup>. The lack of medicines in PHC services is the primary cause of user dissatisfaction and a factor that interferes with access to health services<sup>(26)</sup>. Low adherence to drug treatment prescribed for CVD is directly related to high rates of mortality and hospital readmission<sup>(27)</sup>.

A study found that 18% of patients in the preoperative period of CABG had undergone this surgery before and 12% had previously undergone a percutaneous intervention surgery<sup>(9)</sup>. Adherence to cardiac rehabilitation groups is generally low, as shown in this study, demonstrating the need to stimulate and encourage the participation of patients who underwent CABG, as well as of patients with risk factors for CAD<sup>(28)</sup>.

In this regard, health education, the availability of activities targeted to the promotion of health or reduction of risks of diseases and worsening of health conditions, with the support of the multidisciplinary team at PHC services, are indispensable. Support groups aim at promoting health, focusing on improving the quality of life, sharing experiences and establishing ties. However, this is not obtained due to lack of infrastructure, professionals and because of other pressing demands, and because of the persistence of the curative focus of the healthcare system<sup>(29)</sup>.

One limitation of this study is the fact that it was developed in a southern Brazilian state, which does not allow the generalization of the findings to the rest of the country. Therefore, further studies are needed to investigate the profile and access to health services of the population undergoing CABG in other regions.

## ● CONCLUSION

The epidemiological profile of the patients was as follows: married men, retired, who lived in the Metropolitan region of the State, with an average age of 61.3 years and six years of schooling. Systemic arterial hypertension was the main comorbidity followed by diabetes mellitus, and therefore the main risk factors were higher blood pressure and high blood glucose levels.

Regarding access to SUS services destined to health promotion, prevention, treatment and rehabilitation of CVD, the hospital's emergency department was the main entry point to the SUS, due to acute exacerbation of CAD, difficult access to appointments with a general practitioner at PHC and with a specialist in referral centers. Although most participants reported using PHC services for medical consultations and diagnostic tests, the lack of drugs and therapy groups in the postoperative period are factors that make access to health services and patient monitoring difficult in this scenario.

These findings provide support to nurses and other health professionals, especially in the context of PHC, where strategic actions that facilitate timely access to health monitoring services are needed, considering the epidemiological profile of this population and the need for early identification of risk factors and diagnosis of CAD, as well as access to cardiovascular rehabilitation practices following CABG, which need to be explored in this context.

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