

# Trend analysis of male mortality in Rio de Janeiro: contribution of nursing

*Análise da tendência da mortalidade masculina no Rio de Janeiro: contribuição da enfermagem*

*Análisis de la tendencia de mortalidad masculina en Rio de Janeiro: contribución de enfermería*

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## ABSTRACT

**Objective:** To analyze trends in mortality among men in the city of Rio de Janeiro, by group of causes between 1996 and 2011.

**Methods:** A descriptive study of time series using data of male deaths among residents in the city of Rio de Janeiro, in the period 1996-2011, for large groups of causes. Data were analyzed with Excel 2010 and Statistical Package for Social Sciences software (SPSS) version 22.0. **Results:** The mortality trend by large groups of causes among men in the city of Rio de Janeiro is decreasing, with differences between groups of causes. However, these men remain ill over the years. **Conclusion:** The National Men's Health Policy should be more sensitive to this reality, offering health care that is able to more fully recognize the health needs of this audience.

**Keywords:** Public Health Nursing; Men's Health; Epidemiology; Primary Health Care.

## RESUMO

**Objetivo:** Analisar a tendência de mortalidade entre homens no Município do Rio de Janeiro, por grupo de causas, entre 1996 e 2011. **Métodos:** Estudo descritivo de série temporal, utilizando dados de óbitos masculinos de residentes no Município do Rio de Janeiro, no período de 1996 a 2011, para grandes grupos de causas. Os dados foram analisados com os softwares *Excel 2010* e *Statistical Package for the Social Sciences* (SPSS) versão 22.0. **Resultados:** A tendência da mortalidade por grandes grupos de causas entre homens no Município do Rio de Janeiro está decrescendo, com diferença entre os grupos de causas. Porém, estes homens seguem adoecidos com o passar dos anos. **Conclusão:** A Política Nacional de Atenção à Saúde do Homem deve estar mais sensível a esta realidade, ofertando uma atenção em saúde capaz de reconhecer mais integralmente as necessidades de saúde desse público.

**Palavras-chave:** Enfermagem em Saúde Pública; Saúde do Homem; Epidemiologia; Atenção Primária à Saúde.

## RESUMEN

**Objetivo:** Analizar las tendencias de la mortalidad entre hombres en la ciudad de Rio de Janeiro, por grupo de causas entre 1996 y 2011. **Métodos:** Estudio descriptivo de serie temporal, se utilizaron datos de óbitos masculinos. Se analizaron los datos con el software *Excel 2010* y *Statistical Package para Ciencias Sociales* (SPSS), versión 22.0. **Resultados:** La tendencia de la mortalidad por grandes grupos de causas entre los hombres en la ciudad de Rio de Janeiro está disminuyendo, con diferencias entre grupos de causas. Sin embargo, estos hombres siguen enfermos a lo largo de los años. **Conclusión:** La Política Nacional de Salud de los hombres debe ser más sensible a esta realidad, ofreciendo una atención en salud capaz de reconocer más plenamente las necesidades de salud de esta audiencia.

**Palabras-clave:** Enfermería en Salud Pública; Salud del Hombre; Epidemiología; Atención Primaria de Salud.

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## INTRODUCTION

Social changes, allied with transformations in the demographic structure, led to a change in the morbidity and mortality profile of the male population. Known as epidemiological transition, this change represented a drop in the mortality rate due to acute problems and a relative increase in the chronic conditions. Particularly Brazil has an atypical profile, in which the health situation is marked by a triple disease burden, with infectious and parasitary diseases and reproductive health problems, including external causes and chronic conditions<sup>1</sup>. The City of Rio de Janeiro, the second Brazilian capital in terms of population, shares the same national profile. This modification in the health profile of the male population takes the form of changes in the health service usage pattern and of increased spending, in view of the need for technological incorporation for the purpose of their treatment, even if the adherence to health services is historically lower in the male group, mainly to primary health care<sup>2</sup>.

In the course of the recently started 21<sup>st</sup> century, man's health has been the target of intense debates in health surveillance and care instances, at all action levels (federal, state and municipal). The main political response to this new demand is the National Comprehensive Men's Health Care Policy (PNAISH), established in Ordinance N<sup>o</sup> 1.994, on August 27<sup>th</sup> 2009<sup>3</sup>. According to its baseline document, the main objective of the PNAISH is to promote the improvement of the male population's health conditions in Brazil, through rational coping with the risk factors and facilitated access to integral health care actions and services<sup>4</sup>.

The analysis of diseases' secular trend permits not only the establishment of hypotheses about the factors involved in the processes responsible for these diseases, but also the assessment of public health measures and actions, and also of the reflection of the better quality of life in the population's health, among other factors.

The objective in this paper is to analyze the mortality trend among men in the City of Rio de Janeiro, per group of causes, between 1996 and 2011, with a view to supporting the care actions of the Men's Health Policy in the health service network.

## MATERIALS AND METHOD

A descriptive time series was developed, using data on male deaths, living in the city of Rio de Janeiro between 1996 and 2011.

The deaths per groups of causes were obtained directly from the database, Mortality Information System, a public, free and open-access database of the Unified Health System (SUS), organized and maintained by the Brazilian government's

Ministry of Health (DATASUS/MS)<sup>5</sup>. The excerpt as from 1996 was chosen due to the international code change. As from 1996, the ICD-10 (International Classification of Diseases-10) came into force. In order to avoid differences in the coding, only one ICD was adopted. The following groups of causes were considered: Infectious and Parasitic Diseases, Neoplasms, Metabolic Diseases, Diseases of the Circulatory System, Diseases of the Respiratory System and External Causes.

First, the mortality rates were calculated for each group. Next, these rates were standardized using the mean population during the period, as proposed by Segi<sup>6</sup>. Then, dispersion diagrams of the mortality rates were obtained according to the calendar years of study with a view to visualizing the distribution of the rates over time.

To develop the modeling process, the standardized mortality rates per group of causes among men were analyzed as the dependent variable (y), and the years of study as the independent variable (x). For the trend analysis, the linear regression models were chosen through simple linear regression. Therefore, the time variable was centralized at the midpoint of the historical series, in accordance with the method by Kleinbaum et al<sup>7</sup>.

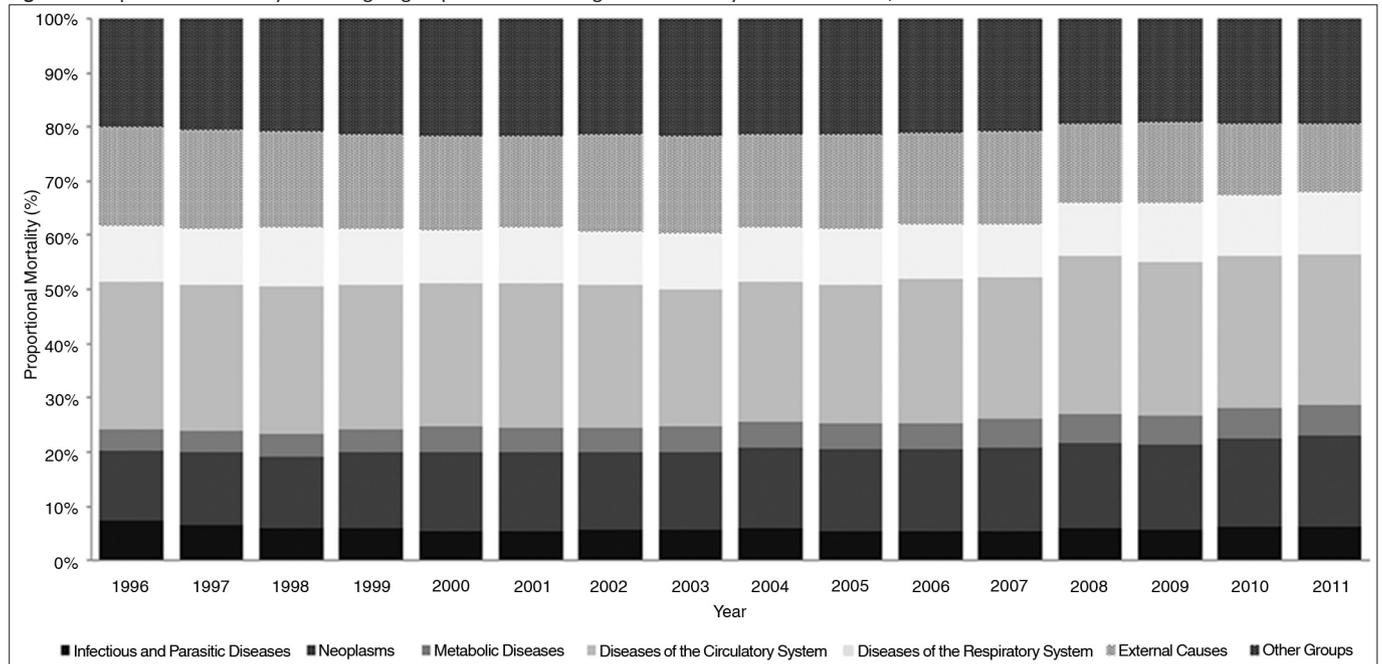
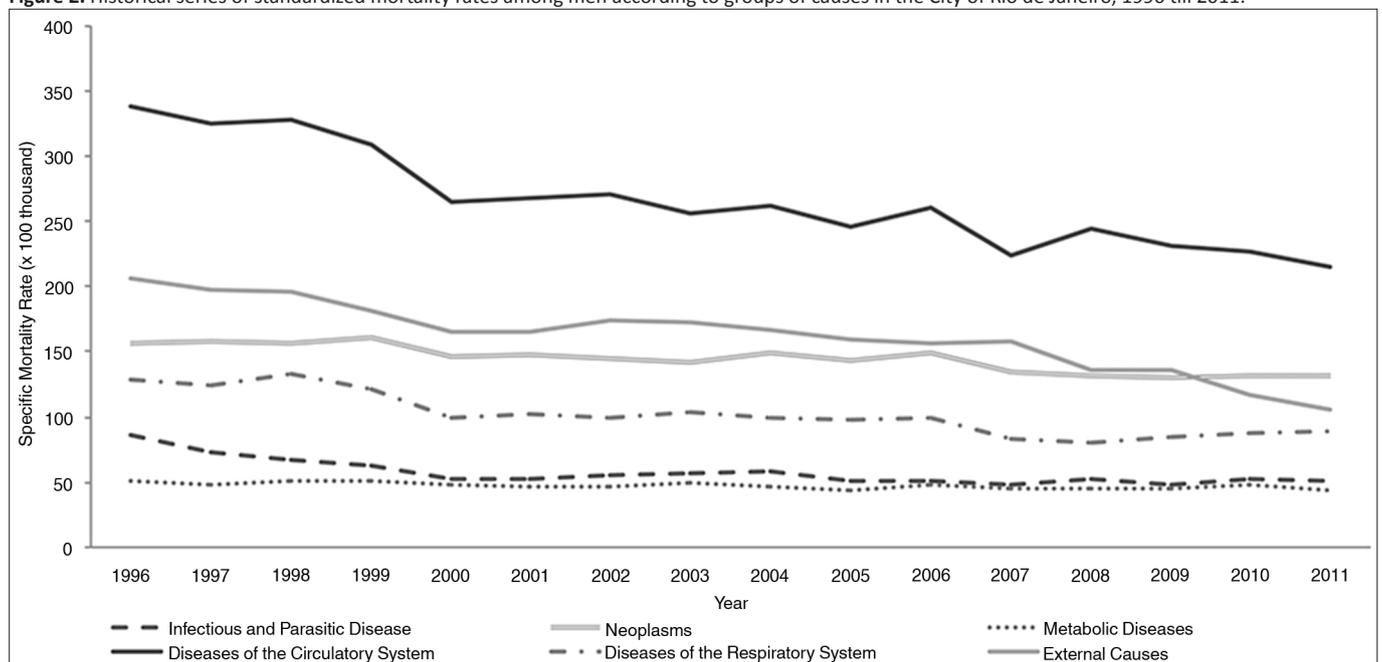
The choice of the best model was based on the significance level (*p*) and on the residue analysis. The statistical significance of the trend model was admitted at *p* < 0.05. The data in this study were analyzed with the help of the softwares Excel 2010 and Statistical Package for the Social Sciences (SPSS) version 22.0.

## RESULTS

All deaths were analyzed in the selected groups of causes, observing the contribution of each group to the total mortality rate, as well as the temporal trend of the mortality rate for each. In general, the contribution of each remained similar across the period. The external causes showed the greatest decline in the contribution throughout the period, dropping by 6.03%, while the neoplasms increased their contribution in the proportional mortality by 4.13% (Figure 1).

The trend analysis of the mortality rates per groups of causes showed a downward trend for all. It is highlighted that, in the period, the external causes, which in 1996 ranked second in causes of mortality, dropped to the third place since 2010 and were replaced by the neoplasms (Figure 2).

The rates of external causes showed the greatest drop (48.74%). The same group also showed the most explanatory models (with the highest determination coefficient, and therefore the greatest linearity in the downward movement) ( $R^2 = 0.90$ ), followed by the diseases of the circulatory system ( $R^2 = 0.87$ ). In all groups, despite the fluctuations, the mortality rate dropped (Table 1).

**Figure 1.** Proportional mortality according to group of causes among men in the City of Rio de Janeiro, 1996-2011.**Figure 2.** Historical series of standardized mortality rates among men according to groups of causes in the City of Rio de Janeiro, 1996 till 2011.

## DISCUSSION

The role of the epidemiological transition in the city of Rio de Janeiro is undeniable. It should be considered, however, that the mortality drop does not necessarily follow the reduction in the incidence and prevalence rates of diseases and health problems. If these frequency measures do not have the same speed, what emerges is a growing demand for health

services, whether through the cure of transmissible diseases or through palliative treatment or the damage reduction of chronic conditions.

The drop in mortality rates found in this study, involving the diseases of the circulatory system, are in accordance with those found for Brazil (20% reduction in morbidity and mortality rate in the last decade, mainly in relation to chronic diseases of the circulatory and respiratory systems)<sup>8</sup>. Data from

**Table 1.** Standardized mortality rates among men according to groups of causes, in the City of Rio de Janeiro, from 1996 till 2011

Group of Causes	Model	R <sup>2</sup> (%)	p value	Trend	Tax reduction (%)
External Causes	y = 209.27-5.54x	0.90	< 0.001	Decreasing and constant	-48.74
Infectious and Parasitic Diseases	y = 71.57-1.69x	0.61	< 0.001	Decreasing and constant	-40.39
Diseases of the Circulatory System	y = 331.44-7.62x	0.87	< 0.001	Decreasing and constant	-36.56
Diseases of the Respiratory System	y = 128.31-3.07x	0.79	< 0.001	Decreasing and constant	-30.38
Neoplasms	y = 161.51-1.98x	0.82	< 0.001	Decreasing and constant	-15.78
Metabolic Diseases	y = 50.55-0.39x	0.59	< 0.001	Decreasing and constant	-14.15

p: significance level; R<sup>2</sup>: determination coefficient.

the Surveillance of risk and Protection Factors for Chronic Diseases by Telephone Survey<sup>9</sup> show that 25.4% of the adult men (≥ 18 years) interviewed from Rio de Janeiro mentioned a medical diagnosis of arterial hypertension<sup>10</sup>.

This reduction may have been influenced by the actions resulting from the Strategic Action Plan for Coping with Non-Transmissible Chronic Diseases (NTCD), launched by the Ministry of Health in 2011, with a view to preparing the country to cope with and stem the NTCD, diseases of the circulatory system (cerebrovascular accident, stroke, arterial hypertension), cancer, diabetes and diseases of the respiratory system in the next ten years. Some of the actions deriving from the plan are focused on food (agreements with the food industry to reduce the trans fat content, besides voluntary agreements on salt reduction targets by 10% per year in bread, pasta and, until the end of 2011, in the other food groups); expansion of primary care (through expanded access, considering that health promotion, surveillance, prevention, care and longitudinal monitoring of users are fundamental to improve the treatment response of NTCD users); free distribution of medicines for arterial hypertension and diabetes, having distributed more than 3.7 million treatments until April 2011, increasing the medication access for hypertensive and diabetic individuals by 70%); besides the promotion of physical exercise at the primary care services and public squares with the implementation of the program Academia Carioca and interventions that hamper the access to alcohol and tobacco<sup>8</sup>.

In the same sense, in Brazil, the demographic, epidemiological and nutritional transition processes contributes to the greater risk of developing chronic illnesses in the population; as regards the metabolic diseases, however, the Nutritional Transition is most closely related to the progressive increase in overweight, obesity and consequent metabolic diseases, as it involves the changes in the dietary pattern and in the sedentariness of modern life<sup>10</sup>.

The downward trend in the mortality rates for which the basic cause was related to metabolic diseases may have

been influenced by the actions of the Strategic Action Plan for Coping with NTCD, as diabetes shares four risk factors with other chronic conditions (diseases of the circulatory system, cancer and chronic respiratory diseases), which are smoking, lack of physical exercise, unhealthy eating and drinking. All of these factors are targets of interventions like the encouragement to reduce the consumption of polyunsaturated fats and the intake of foods rich in saturated fats to reduce the cholesterol level; and the promotion of physical exercise in articulation with Primary Health Care<sup>8</sup>.

Data presented by Vigitel 2012 show that, among the adult men (≥ 18 years) interviewed in Rio de Janeiro, 54.7% referred overweight (BMI ≥ 25 kg/m<sup>2</sup>); 17.1% obesity (BMI ≥ 30 kg/m<sup>2</sup>); 43.2% referred practicing physical exercise as recommended and 7.1% a medical diagnosis of diabetes<sup>9</sup>.

The study of cancer and its demographic distribution reflects the populations' living conditions and the development of society. Some factors have directly interfered in the epidemiological configuration of cancer, such as the life expectancy at birth, the age composition and the population's internal migration.

The case of cancer mortality in the City of Rio de Janeiro reflects all of these paradigms because it involves a mixed epidemiological profile, with high cancer mortality rates in developed and non-developed countries. Malign tumors are the second cause of death in Rio de Janeiro and have caused about 19 thousand deaths in the states in 2012 alone. Data from the National Institute of Cancer estimated 47,820 new cases of cancer for 2013 and more than 20 thousand deaths<sup>11</sup>.

The reduction of the cancer-related mortality particularly in Rio de Janeiro and in other Brazilian States in 2006-2011, reflected countless national actions towards prevention and early diagnosis, besides the improvement of the access and therapeutic measures. In the attempt to improve this situation, in December 2013, the SES-RJ launched the State Plan for Cancer Control, Prevention and Care (PECC) with a view to the current analysis of cancer care in the state, aiming to elaborate

proposals for a new cancer care model in the state, including promotion and disease prevention actions, early diagnosis, surgical, radiotherapeutic and chemotherapeutic treatment, disease records, education, primary care, regulation, palliative care and information systems<sup>12</sup>.

Therefore, the PECC will count on an online platform to help and map the disease in the state, called Geocâncer. In the future, this base can permit access to information about the disease and, in the next 10 years, it can help to reduce the time between the diagnosis and the start of the treatment, so as to increase the chances of cure and disease control, and so as to facilitate the access in all regions of the state, organizing the geographic distribution of the services to contribute to improve the treatment result and the patients' quality of life.

The important reduction of deaths due to infectious diseases, especially diarrhea, undeniable influenced the rapid and significant transformations in the demographic structure and the changes in the morbidity and mortality patterns in the 20<sup>th</sup> century. Although the levels of infectious diseases have drastically dropped in recent decades, they continue as a public health problem.

Despite the drop in some isolated periods, the vaccine coverages have demonstrated the successful primary prevention of many illnesses like hepatitis B, whooping cough and measles. In addition, measures against water-transmitted diseases and those related to sanitation issues (like diarrheas) have shown efficient. Some of these diseases, however, although infectious, have become chronic and are still difficult to control, thus contributing through their great burden. Especially in the city of Rio de Janeiro, whose prevalence levels of HIV infection are high, the incidence and mortality rates of tuberculosis remain high when compared to the rest of the country. This relation becomes very relevant as they demand prolonged treatment and are frequent associated with unhealthy work environments or life habits sometimes related to the male gender<sup>13</sup>.

About the diseases of the circulatory system, Brazil ranks eighth globally in terms of asthma prevalence, with estimates for school-aged children and adolescents ranging from less than 10 to more than 20% in different cities studied, depending on the region and age range considered. Estimates on the prevalence of chronic obstructive pulmonary disease (COPD) have been primarily based on mortality statistics, which represents an under-diagnosis. Nevertheless, these estimates show that the morbidity and mortality by COPD are increasing in many regions. COPD affects 210 million people and is the fourth cause of mortality and represents 4.8% of deaths around the world<sup>14</sup>.

No current analysis news is available about the behavior of the subtypes of respiratory illnesses in the city of Rio de Janeiro. A Brazilian pattern is considered to exist through, like

what was found in Salvador, where hospitalizations dropped between 1998 and 2009, particularly the steady drop of asthma, a reduction with stationing of pneumonias and stability in CPOD. One group, particularly CPOD, is directly related with typically male exposures, such as smoking (whose prevalence is higher in the male than in the female gender) and occupational exposures (particularly those related to civil construction, which are typically male)<sup>15</sup>.

Accidents and violence have increasingly gained importance in the Brazilian epidemiological profile. In 1930, the external causes ranked sixth in the classification of deaths by defined causes in the Brazilian population, representing 2.6% of deaths, rising to the third place in the ranking of deaths by known causes in 2002 (14.9% of total deaths). Gender and age differences should also be considered, which illustrate the importance of health surveillance actions.

In a study aimed at assessing mortality by external causes in men living in Minas Gerais between 1999 and 2008, identifying this causal group's behavior in the course of the time series, an increase in male mortality was observed in all years of the study period, from 82.7 deaths/100,000 in 1999 to 95.7 deaths/100,000 in 2008, representing a 15.7% rise in the risk of death by external causes. Young adults (20 to 39 years) were the most frequent victims of external causes. As regards transportation accidents, an increase in the mortality coefficients is noticed, mainly between 2000 and 2007. Suicide and homicide rates rose<sup>16</sup>. In the final year of the observation, however, the rates dropped and approached the results found in this study.

The health care systems are deliberate social responses to the population's health needs. Therefore, the discussion of an organization proposal of the Unified Health System (SUS) should start by analyzing what health needs are expressed in the Brazilian population. The Brazilians' health situation is analyzed in its demographic and epidemiological aspects<sup>17</sup>.

In general, what is observed is the drop of male morbidity and mortality rates, which are considered high in relation to female rates, as a result of an improvement in men's health condition. Nevertheless, men attend health services less than women and, when they do so, in general, the disease has already reached an aggravated stage, often beyond cure. Thus, the tasks of the Men's Health Policy are much more related to organizing, implementing, qualifying and humanizing comprehensive men's health care, within the guiding principles of the SUS across the Brazilian territory, aiming to facilitate this population's access to comprehensive health care services in primary care, which grants the policy a more comprehensive role in men's health care<sup>18</sup>.

As men increasingly experience chronic disease situations, their health need or demands increase, which is not always welcomed at the services. About the users' acknowledgement

of this need, the primary care services fundamentally need to be available to respond to these needs. Considering that many of them are chronic, the search for health services is not cure but care-related, not always involving high technology, but greater complexity, demanding technical-scientific skill from health professionals to cope with these demands, but mainly a humanized posture of effective welcoming to the population. To the extent that the services offered correspond to the variety of male health needs, the users' bond with the services and the team professionals may increase.

In this sense, the respect for men's autonomy represents one of the phases of the individual care plan. This task includes the sensitization of men for the continuity of treatment at primary health care units, characterizing the longitudinality of care, with more active and less prescriptive practices in this process, valuing co-accountability for a balanced health. At these services, the nurses clearly possess greater professional autonomy, mainly when receiving the men for welcoming and risk classification. They are not always able to longitudinally monitor each user through as, in general, the men visit the services with acute demands, and few actually bond with the services or teams.

The PNAISH acknowledges that men access the health system through specialized care. In this sense, the availability of strategies to welcome these men's health demands in primary care is fundamental, especially when considering family health as the organizer of the health care network. This demonstrates the nurses' contribution, in view of their role as articulators among the team members, who welcome the demands, classify the severity of the demands and are often the professionals who immediately guide or set strategies to solve the health problems identified.

In addition, the importance of nursing actions in different types of prevention should be highlighted: the nurses take part in strategies to reduce the exposure to risk factors like smoking and drinking, and also perform educative actions to modify habits like sedentariness and inappropriate diet; they work to promote an early diagnosis in areas like the fight against colon and breast cancer; participate in rehabilitation actions in the public health sphere, in areas like the reduction of alcohol and drugs consumption; and, finally, they systemize the conduct in palliative actions. All of these actions can and are organized as part of primary care services, which today has turned into one of the most attractive fields of nursing work, with a closer bond with the population and the possibility of longitudinal health monitoring in the different parts of the lifecycle.

Therefore, it is fundamental the main obstacles for the inclusion of men in the health service routine, considering the particularities of men in their health-disease process and the challenges for Nursing to cope with them in Primary Health Care.

## CONCLUSION

Based on this study, it could be observed that the mortality trend by large causal groups among men in the city of Rio de Janeiro is dropping. Nevertheless, the literature does not show the same situation for the incidence of diseases, leading to the supposition that male adult men are getting ill and surviving longer, but ill. This reality demands a different posture from health services, particularly in primary health care, with regard to the welcoming and bonding of these subjects, aiming to enhance the care for this population group, whose adherence to any health intervention is historically more difficult.

Therefore, epidemiological information serves as the base of health planning. In that sense, this paper argues in favor of keeping in mind a detailed analysis of men's health situation in the City of Rio de Janeiro, so that the Policy can truly be implemented with problem-solving power for this demographic group, which not only has a distinguished epidemiological profile, but historically demonstrates greater difficulty to access the health service.

Therefore, the service needs to heed the male reality, marked by institutional access difficulties to combine their work hours with the consulting services and health education groups' agendas, the difficulty to acknowledge their own situation of vulnerability and the adherence to any type of treatment that involves changes in life habits and social interaction.

The National Men's Health Care Policy in practice at the health services can and should be more sensitive to this reality, so that the services can offer health care that is capable of more comprehensively recognizing the health needs of this specific population. It is fundamental to acknowledge the limitations of the specifically disease-centered approaches, favoring health promotion practices, breaking the access barriers and putting in practice the Unified Health System's principles of equity and integrality with the creativity and sensitivity this group demands.

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