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# Factors associated to medical consultations by elderly adults in southern Brazil: a population based study

*Fatores associados à realização de consultas médicas por idosos no Sul do Brasil: estudo de base populacional*

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**ABSTRACT:** *Objective:* To analyze the prevalence of medical consultations in the last three months among elderly adults and associated factors. *Methods:* A cross-sectional, population-based study was carried out with 1,705 elderly adults (60+ years of age) in the urban region of Florianópolis, Santa Catarina, Brazil, in 2009 and 2010. The sampling selection was performed in two stages. The sample was complex, with census tracts as primary and households as secondary sampling units. For association analysis, Poisson regression was performed using predisposing factors, enabling factors and need as independent variables, according to Andersen's theoretical model. *Results:* The response rate was 89.2%. The prevalence of medical appointments by elderly adults was 70.4% (95%CI = 67.5 - 73.4). Factors associated with higher prevalence of medical consultations in the crude analysis were female gender, accumulation of chronic diseases, negative self-perception of health, and report of chronic pain. The multivariate analysis showed that having at least one chronic disease and negative self-perception of health was positively associated with the outcome. *Conclusion:* Only variables from the need dimension were associated with medical consultations, indicating an equal use of this service.

*Keywords:* Health services. Delivery of health care. Office visits. Aged. Epidemiology. Cross-sectional studies.

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**RESUMO:** *Objetivo:* Analisar a prevalência de consultas médicas nos últimos três meses e os fatores associados entre idosos. *Métodos:* Estudo transversal de base populacional com 1.705 idosos com 60 anos ou mais, residentes na área urbana do município de Florianópolis, Santa Catarina, em 2009 e 2010. A amostra foi complexa, sendo os setores censitários as unidades primárias de amostragem e os domicílios o segundo estágio. Para análise de associação foi realizada a regressão de Poisson, tendo como variáveis independentes fatores predisponentes, capacitantes e de necessidade, segundo modelo teórico de Andersen. *Resultados:* A taxa de resposta foi de 89,2%. A prevalência de consultas médicas foi de 70,4% (intervalo de confiança de 95% 67,5 –73,4). Na análise bruta associaram-se com maior prevalência de consultas médicas o sexo feminino, o maior acúmulo de doenças crônicas, a autopercepção negativa de saúde e o relato de dor crônica. A análise multivariável identificou que possuir pelo menos uma doença crônica e ter autopercepção de saúde negativa estiveram associados positivamente ao desfecho. *Conclusão:* Apenas variáveis da dimensão de necessidade se associaram ao desfecho, apontando para uma igualdade no uso desse serviço.

*Palavras-chave:* Serviços de saúde. Assistência à saúde. Visita a consultório médico. Idoso. Epidemiologia. Estudos transversais.

## INTRODUCTION

The proportion of people aged 60 and older is growing faster than the rate of any other age group in several regions of the world. By 2025, there will be approximately 1.2 billion people over 60 years old in the world, and it is estimated that by 2050 this figure will reach about 2 billion, 80% of whom will be living in developing countries[1]. A similar picture is observed in Brazil. The country experienced a marked and rapid fertility decline in the second half of the twentieth century, which, combined with the decrease in mortality and increased life expectancy, has led to an accelerated process of population aging[2,3]. In 1960, the Brazilians who were 60 years or older accounted for 4.7% of the population, a figure which reached 8.5% in 2000 and 10.8% in 2010[4].

The scenario of an aging population in the country brings new challenges to society, with increased demand for health and social security services, thus making new demands on the organization and planning of these systems[5]. In the health sector, epidemiological studies have identified increased consumption of services and higher cost of hospitalizations among the elderly compared to younger patients[6,7].

In the international literature, the study of the prevalence of medical visits, considered as the proportion of subjects who underwent medical consultation in a pre-set range of

time, is vast, and studies conducted in Australia, Canada, Mexico[10], Brazil[6,11] and Costa Rica[12] Costa Rica show an increasing demand for medical services by the elderly, and the prevalence of consultations is higher with increasing age.

In Brazil, data on hospital morbidity, use of health services, occurrence of notifiable diseases and mortality can be obtained through official health information systems, such as the National Inpatient System (SIH), Information System on Notifiable Diseases (SINAN), the Mortality Information System (SIM) and the Outpatient Information System (SIA). Although these systems generally provide good quality data and extensive epidemiological and managerial relevance, their records are limited for the calculation of prevalence rates of use of health services and associated factors. In some cases, only data on the use of public health services are registered. In addition, outpatient and hospitalization data are registered by procedure and there are limitations, such as sub-registries. Thus, in addition to records from official information systems, population-based studies are essential.

In Brazil, there are few population-based studies on the prevalence and associated factors of medical appointments in the elderly[6,11,13,14]. Among those already conducted, the prevalence ranged from 51.1%[13], in a recall period of 3 months, and 83.3%, considering the previous 12 months[14]. Regarding associated factors, also incorporating the international literature, it was found that older females[6,9,10,13-16], with more education[6,9,10,15], higher income[6,9,10,13-16], with private health insurance[15-18], who reported chronic disease[6,8,9,12,14,15,18-21], greater degree of dependency[10] and poorer perception health[9,12,14,18,19,22] had a higher prevalence of medical consultations. Also, a negative association of medical consultation was found with the habit of smoking[6] and an increase in the prevalence of the outcome among married[6,16,19] and widowed[15] and among those who reported white skin[6,16].

Advancing in the knowledge of factors associated with the use of health care services is a key element in the design of health policies, since they interfere in pubic and private health budgets, as well as in the planning of services in the industry[9]. Florianópolis, Santa Catarina, is the third Brazilian capital with the highest rate of aging of the country[23], and the production of information on outpatient care utilization among the elderly and factors associated with it, in a more advanced context of demographic transition, is of great relevance. The aim of this study is to describe the prevalence and test the association between medical visits among the elderly in the past three months, as well as socioeconomic, demographic, health service use, lifestyle and health condition characteristics.

## METHODS

This study is part of a larger project entitled EpiFloripa Seniors. It is a cross-sectional, population-based survey with elderly (aged 60 years or more) conducted in the urban area of the municipality of Florianópolis in 2009 and 2010. It aimed to study the living

and health conditions of the elderly population the municipality. Florianópolis presented a municipal human development index (MHDI) of 0.875 in 2000 and life expectancy at birth was of 72.8 years in the same year[24].

To calculate the sample size, the Epi-Info software, version 6.04 was used. The reference population was adopted based on estimates of the elderly population of Florianopolis in 2009 (44.460 elderly), with a confidence level of 95%, expected prevalence of the phenomenon being investigated in the population of 50%, provided sampling error of 4 percentage points, sampling design effect (deff) equal to 2, increases of 20% for estimated losses and 15% for control of confounding factors. A total sample size of 1,599 people was obtained. Due to the availability of financial resources, the sample was expanded to 1,911 people. The statistical power of the sample was calculated a posteriori. The sample allowed the identification of a minimum relative risk of 1.47, considering power of 80%, alpha error of 5%, unexposed:exposed data ratio of 2:3 (distribution of chronic disease) and unexposed prevalence of 14.6%.

The sampling procedure was performed in two stages. The primary sampling units were census tracts, according to the 2000 demographic census conducted by the Brazilian Institute of Geography and Statistics (IBGE)[25]. Households constituted the secondary sampling units. There were 420 urban residential census tracts in the municipality. Initially, 60 were selected using a random selection. Given the need for a larger sample, 20 additional tracts were subsequently drawn, with a total of 80 selected tracts. The 420 census tracts were stratified into deciles according to the average income of the household head, and eight sectors in each stratum were drawn. As the most current IBGE census was dated nine years before the completion of the scope of this study, it was necessary to perform the counting of permanent private households in each of the sectors drawn again. Thus, the sectors with less than 100 households were grouped and sectors with more than 500 households were divided, considering the proximity of the geographical region and income decile of the sectors. After the upgrade, groupings and divisions, a total of 83 sectors was obtained.

All residents of selected households whose age was 60 years or older at the time of the interview were potential study participants. As this is a population-based study with a household sample, institutionalized individuals (nursing homes, hospitals, etc.) were excluded.

Residential households in which the individuals eligible for the were not found or did not meet the interviewer in one of his four visits, always at different times, with one being at night or at noon and two on weekends, were considered as losses. Individuals who chose not to participate were considered as refusals. Losses and refusals were not replaced.

Data collection was conducted between the months of September 2009 and June 2010. Prior to field, a pre-test of the questionnaire was conducted with 20 elderly, and a pilot study with 99 elderly in census tracts not sampled for the study itself. The interviews were conducted face to face using a mobile electronic device (Personal

Digital Assistants – PDAs). The maximum duration of the interview was 1 hour and 30 minutes. Weekly, the quality control of survey data was conducted, reapplying simplified questionnaires containing 16 key questions by telephone to 10% of the interviewed subjects, randomly chosen.

The dependent variable of this study was self-reported medical visits in the past three months, obtained by the following question: "In the last three months, have you consulted with a doctor?". The independent variables analyzed in this study were based on the Andersen conceptual model[26]. According to the author, predisposing factors refer to individual characteristics that can increase the chance of use of health services, for example, gender and age. The enabling factors relate to the ability of the individual to seek and be served by health services. Therefore, both are directly linked to economic conditions and the provision of services such as personal income, health plans, family support and availability, proximity and amount of services offered. Finally, need factors are linked to people's subjective perceptions and their health status.

In the present study, the predisposing variables were: gender, age (60 – 69, 70 – 79 and 80+) and self-reported skin color (white, brown or black). The yellow (n = 12) and red (n = 16) colors were excluded from the analysis due to their low frequency. The enabling variables used were: per capita household income in quartiles, with 1st quartile (BRL 0.00 to 327.50), 2nd quartile (BRL 327.51 to 700.00), 3rd quartile (BRL 700.01 to 1,500.00) and 4th quartile (BRL 1,500.01 to 5,000.00); schooling in years (0 – 4 years, 5 – 8 years, 9 – 11 years and 12 or more years); and possession of private health insurance (yes or no). Finally, the health need variables verified were: presence of chronic disease (none, one, two or more), self-rated positive health (very good and good) or negative (regular, poor and terrible) and chronic pain (yes or no). The mean value of the Brazilian Real for the period was BRL 1 = USD 0.56.

Initially, a descriptive analysis was performed. The prevalence of medical consultations was estimated for the population as a whole and according to the explanatory variables. The type of service used (public or private), place of care (health center, doctor's office, clinic or office of a company or union, outpatient office or clinic, hospital outpatient clinic, emergency room or home care) and the main reasons for the demand for medical consultation (accident or injury, illness, clean bill of health, routine consultation, other preventive care and nonspecific symptoms) were also described.

Then, the analysis of association between the outcome and independent variables was performed through Poisson regression. First, a bivariate analysis was conducted, and then a multivariate analysis, obtaining the prevalence ratios (PR) and their respective confidence intervals of 95% (95%CI) as measures of association. In the multivariate analysis, the variables with $p < 0.20$ were included in the crude analysis, according to the increasing order of p-value, following the forward stepwise method. In the final model, variables with $p < 0.05$ were maintained. In this model, the predisposing, enabling and need factors were used as proposed by Andersen[26].

The Stata 9.0 software was used for data analysis, and the sample weights and the design effect were considered. The project was approved by the Ethics Committee in Research of Universidade Federal de Santa Catarina and followed the Resolution 196/96 of the Brazilian Health Council. There are no conflicts of interest in this study.

## RESULTS

The response rate for the study was 89.2%, with a total of 1,705 people actually interviewed. Table 1 shows the distribution of the sample, with the majority of the elderly being female (63.9%) and just over half being in the youngest age group. Regarding education, 44% of seniors had between 0 and 4 years of education and 63.8% had health insurance. About health conditions, nearly three-quarters reported two or more chronic diseases and the majority perceived their health as very good or good.

Table 1 also presents the prevalence of use of medical services according to the variables analyzed. Among the respondents, 70.4% (95%CI 67.5 – 73.4) had consulted with the doctor during the previous three months. The prevalence of the outcome was higher among those who had more than two chronic diseases (76.0%) compared to those who reported no chronic disease (43.1%), and higher among those who reported chronic pain (78.4%) compared to those who did not report (66.0%).

Just over half of the consultations were routine (54.7%) and one in four was due to illness (26.9%) (Table 2). The main place for seeking care was the doctor's office, followed by health centers and outpatient offices or clinics. Nearly two out of three visits were with specialists (64.8%). Regarding the type of service, most of it was by by private health care (48.7%), followed by consultations in the Unified Health System (SUS) (41.4%).

In the crude analysis of association tests between the outcome and the independent variables, were associated with higher prevalence of medical consultations: being female, having a greater accumulation of chronic diseases, negative self-perception of health and reports of chronic pain (Table 3). In the multivariate analysis, the association of gender with the outcome lost statistical significance, and only need factors remained associated. It was observed that the prevalence of medical visits was 67% higher among those who reported two or more chronic diseases and 14% higher in those with negative self-rated health compared to those who had no chronic disease and positively evaluated their health, respectively. Gender and chronic pain were confounded by self-rated health and the presence of chronic diseases, losing association after adjustment.

## DISCUSSION

In the present study, it was found that the prevalence of medical consultations in the last three months was of 70.4% in Florianópolis in 2009 and 2010. Predisposing

Table 1. Description of the sample studied and prevalence of medical consultations according to enabling, predisposing and need factors in the elderly population. Florianópolis, 2009 – 2010.

| Variables* | Sample n (%) | Prevalence of medical consultations | 95%CI |
|---|---|---|---|
| **Predisposing** | | | |
| Gender | | | |
| Female | 1.089 (63.9) | 73.0 | 69.1 – 77.0 |
| Male | 616 (36.1) | 66.1 | 61.1 – 71.2 |
| Age range | | | |
| 60 to 69 | 854 (50.1) | 69.0 | 64.8 – 73.1 |
| 70 to 79 | 612 (35.9) | 72.3 | 67.6 – 77.0 |
| 80 and over | 239 (14.0) | 71.2 | 65.2 – 77.2 |
| Skin color | | | |
| White | 1.444 (87.0) | 70.7 | 67.8 – 73.6 |
| Brown | 131 (8.0) | 70.9 | 60.5 – 81.5 |
| Black | 84 (5.0) | 67.5 | 55.9 – 79.0 |
| **Enabling** | | | |
| Schooling | | | |
| 12 or more | 394 (23.3) | 72.5 | 64.8 – 80.1 |
| 9 to 11 | 324 (13.8) | 64.1 | 54.8 – 73.5 |
| 5 to 8 | 321 (18.9) | 74.8 | 69.1 – 80.5 |
| 0 to 4 | 745 (44.0) | 69.7 | 65.9 – 73.5 |
| Income quartiles | | | |
| 1st quartile (lower) | 418 (24.5) | 73.1 | 66.7 – 79.6 |
| 2st quartile | 425 (24.9) | 67.1 | 62.3 – 72.0 |
| 3st quartile | 435 (25.5) | 70.3 | 65.7 – 74.9 |
| 4st quartile | 427 (25.1) | 71.2 | 65.1 – 77.2 |
| Private health plan | | | |
| Yes | 1.087 (63.8) | 71.6 | 67.8 – 75.5 |
| No | 618 (36.2) | 68.2 | 63.5-72.9 |
| **Health need** | | | |
| Chronic diseases | | | |
| None | 147 (8.7) | 43.1 | 34.2 – 52.1 |
| 1 | 293 (17.4) | 60.7 | 55.8 – 65.7 |
| 2 or more | 1.245 (73.9) | 76.0 | 72.9 – 79.2 |
| Self-rated health | | | |
| Positive | 860 (51.2) | 63.5 | 59.3-67.6 |
| Negative | 821 (48.8) | 78.1 | 74.7 – 81.6 |
| Chronic pain | | | |
| No | 1.083 (63.5) | 66.0 | 62.0 – 70.0 |
| Yes | 622 (36.5) | 78.4 | 74.5 – 82.4 |

*All analyzes were performed considering the sample weights and design effect; 95%CI: confidence interval of 95%.

Table 2. Characteristics related to the prevalence of medical consultations in the three months prior to the survey. Florianópolis, 2009 – 2010.

| Variables* | Prevalence of consultations (%) | 95%CI |
|---|---|---|
| Reason of last consultation | | |
| Accident or injury | 4.9 | 2.6 – 7.2 |
| Disease | 26.9 | 23.0 – 30.8 |
| Clean bill of health | 0.5 | 0.1 – 0.9 |
| Routine consultation | 54.7 | 50.2 – 59.1 |
| Other preventive care | 7.4 | 5.0 – 9.9 |
| Specific symptoms | 5.6 | 3.8 – 7.4 |
| Place of care | | |
| Health center | 30.1 | 25.5 – 34.8 |
| Doctor's office | 34.6 | 26.8 – 42.2 |
| Clinic or office of a company or union | 3.3 | 1.2 – 5.4 |
| Outpatient office or clinic | 20.7 | 15.5 – 25.9 |
| Hospital outpatient clinic | 6.5 | 4.3 – 8.8 |
| Emergency room | 3.0 | 1.6 – 4.4 |
| Home care | 1.8 | 0.8 – 2.7 |
| Type of care | | |
| Consultation with general practitioner | 33.5 | 28.1 – 38.7 |
| Consultation with specialist | 64.8 | 59.3 – 70.1 |
| Referral to emergency or hospitalization | 1.2 | 0.3 – 2.0 |
| Only an appointment | 0.5 | 0.0 – 1.0 |
| Type of health service | | |
| Public (Unified Health System - SUS) | 41.4 | 35.4 – 47.5 |
| Private | 9.9 | 6.5 – 13.2 |
| By Health Plan | 48.7 | 42.3 – 55.1 |

*All analyzes were performed considering the sample weights and design effect; 95%CI: confidence interval of 95%.

and enabling variables were not associated with use of medical consultations by the population studied. Regarding the variables of need for health, self-rated health and chronic diseases were associated with outcome.

The prevalence of medical visits in this study was high. Analyzing this outcome with the same recall period, Pinheiro and Travassos[13] identified prevalence of 60% in the area of Copacabana and Meier, in the municipality of Rio de Janeiro. Other national and

Table 3. Poisson regression analysis of the crude and adjusted prevalence of medical consultations according to predisposing, enabling and need factors in the elderly population. Florianópolis, 2009-2010.

| Variables* | Crude analysis | | | Adjusted analysis | | |
|---|---|---|---|---|---|---|
| | PR | 95%CI | p-value | PR | 95%CI | p-value |
| **Predisposing** | | | | | | |
| Gender | | | 0.044 | | | 0.364 |
| Male | 1.00 | | | 1.00 | | |
| Female | 1.10 | 1.00 – 1.22 | | 1.04 | 0.95 – 1.15 | |
| Age range | | | 0.369 | #EXCL | | |
| 60 to 69 | 1.00 | | | | | |
| 70 to 79 | 1.05 | 0.96 – 1.14 | | | | |
| 80 and over | 1.03 | 0.93 – 1.15 | | | | |
| Skin color | | | 0.699 | #EXCL | | |
| White | 1.00 | | | | | |
| Brown | 1.00 | 0.87 – 1.15 | | | | |
| Black | 0.95 | 0.80 – 1.14 | | | | |
| **Enabling** | | | | | | |
| Schooling | | | 0.880 | #EXCL | | |
| 12 or more | 1.00 | | | | | |
| 9 to 11 | 0.88 | 0.73 – 1.07 | | | | |
| 5 to 8 | 1.03 | 0.92 – 1.16 | | | | |
| 0 to 4 | 0.96 | 0.86 – 1.08 | | | | |
| Income quartiles | | | 0.809 | #EXCL | | |
| 1st quartile (lower) | 1.00 | | | | | |
| 2st quartile | 0.92 | 0.82 – 1.03 | | | | |
| 3st quartile | 0.96 | 0.86 – 1.07 | | | | |
| 4st quartiles | 0.97 | 0.86 – 1.10 | | | | |
| Private health plan | | | 0.277 | #EXCL | | |
| No | 1.00 | | | | | |
| Yes | 1.05 | 0.96 – 1.15 | | | | |
| **Need** | | | | | | |
| Chronic diseases | | | < 0.001 | | | <0.001 |
| None | 1.00 | | | 1.00 | | |
| 1 | 1.41 | 1.14 – 1.74 | | 1.39 | 1.13 – 1.72 | |
| 2 or more | 1.76 | 1.44 – 2.15 | | 1.67 | 1.37 – 2.04 | |
| Self-rated health | | | < 0.001 | | | <0.001 |
| Positive | 1.00 | | | 1.00 | | |
| Negative | 1.23 | 1.14 – 1.32 | | 1.14 | 1.07 – 1.22 | |
| Chronic pain | | | < 0.001 | | | 0.119 |
| No | 1.00 | | | 1.00 | | |
| Yes | 1.19 | 1.10 – 1.28 | | 1.07 | 0.98 – 1.16 | |

*All analyzes were performed considering the sample weights and design effect; PR: prevalence ratio; 95%CI: confidence interval of 95%; #EXCL: variable not included for presenting p > 0.200 in the crude analysis.

international research used the last 12 months as the recall period, preventing direct comparisons with the present study. While the SABE Project[14] identified a prevalence of medical visits of 83.3% in the last year in São Paulo, a use of medical consultation between 88[9] and 23%[12] was observed in countries like United States[15], Canada[9], New Zealand[16], Mexico[10,27] and Costa Rica[12].

It is possible that the high prevalence of consultations in Florianopolis is partially influenced by the high population income[24] and comprehensive coverage of health plans compared to other municipalities, which in many cases expands the network of professionals and possibilities of consultations. Another hypothesis that may partially explain the high prevalence of consultations in the city studied is the growing trend in population coverage of the Family Health Strategy (FHS) in Florianopolis, which was of 28.8% in 1999, 61.7% in 2005 and 77.6% in 2008[28]. It can be understood that, potentially, this high coverage of FHS offers greater ease of access to primary care services and, consequently, to medical consultations

The data obtained showed no association between sex and medical consultations, similar to what was observed in a study conducted in Canada in 2005[9] and cross-sectional study in Latin America, China, India and Nigeria (2003-2005) with seniors[29]. However, most studies on the subject found a positive association between elderly females and higher prevalence of medical consultations, which reproduces the pattern of greater use of health services among women[10,11,15,17,22,27].

Also, there was no association between medical consultations and age, differently from the reports in most of the literature on the subject, in which it was found that seniors in more advanced ages had a higher prevalence of medical visits[8,9,10,11,22]. Skin color was also not associated with the outcome, but in studies by Costa et al.[6], Scott et al.[16] and Burt and Schappert[20] a positive association was found between reporting white skin and having a higher prevalence of medical consultations. Different results were found in the United States, where people of black color had higher rates of outpatient medical consultations[17]. There is the possibility that these findings were not evident in this study due to the fact that the sample does not have statistical power to test the association between these variables, or the possibility that this inequality in use of medical services does not occur in the municipality studied

Among the enabling factors, the variables per capita income and education were not associated with the outcome. However, several studies[6,13,15,16] have often found this positive association, as in the study by Chen[15], in which the level of poverty was the only enabling factor that was statistically significant, and the lower the income, the lower the use of medical services. Still on socioeconomic factors, studies found that the higher the education level, the greater the number of medical visits[6,15]. The possession of private health insurance was not associated in the final model. However, a U.S. study[15] indicates that, regarding the enabling factors, having a private plan beyond Medicare increased the odds of using medical services. An important factor to note is that health systems which fund private medical services risk excluding the poorest elderly and those

without financial stability[29]. However, this was not observed in Florianópolis, and there was no inequality in income, education and color in the use of medical consultation, which may indirectly indicate a positive aspect of the municipality's health services in general, because these socioeconomic and demographic factors, as well as the possession of private health insurance, did not modulate the prevalence of medical visits in the previous three months.

This study found that self-reported health status and the presence of chronic diseases were the main determinants of the utilization of medical services, corroborating the reports by Scott et al[16], in New Zealand. Also according to a study in Rio de Janeiro, the most important factor in explaining the variation in use of health services by the elderly was need[13], similar to results found in a study in Athens, Greece, where the need factor measured by the self-perception of health was the largest contributor to the variation in use of medical services[22]. Other studies found a positive association between the variables of need, such as the presence of at least one chronic condition and poorer health perception and the outcome[6,8,9,12,15,18,20-22].

It is noteworthy that nearly six in ten consultations were held in the private sector, either by direct payment or health plan. The high population coverage of health plans in the city has certainly contributed to this pattern of use. When analyzing Brazil as a whole, Veras and Parahyba[30] identified that the largest proportion of health care in the elderly were held in the public sector.

Another point to note was the high prevalence of consultations with specialists. Because the elderly reported that a large proportion of the consultations was routine and over 90% of them reported at least one chronic disease, one can assume that the monitoring of these diseases are mostly performed with specialists.

The potential access to health services is defined by the enabling factors, and the effectiveness of access is the actual use of health services. If access to services occurs in an equitable manner, the factor of need should be the main determinant in the use, whereas predisposing and enabling factors should represent a small proportion of the variation in use of services. Access to health services can be considered fair if the need factor is the primary determinant of use[26].

A limitation of this study was the difficulty in validating the outcome due to the potential for recall bias, which may lead to an underestimation or overestimation of the outcome and explanatory variables, such as the prevalence of chronic diseases. But the use of a shorter recall period on measuring the outcome (3 months), different from the period used in other studies, up to 12 months, tends to minimize the possibility of this bias. However, only prevalence studies with the same study period allow direct comparisons. Furthermore, it is noteworthy that this study restricted its analysis to the prevalence of medical consultations, which can not be understood as the only measure of contact of the elderly with health services. They can also use them through consultations with other professionals in vaccination campaigns, to measure blood glucose levels and blood pressure, among other things. Among the advantages, the high response rate,

with losses homogeneously distributed throughout the sample, can be emphasized. Also, it can be emphasized that the sample distribution by gender and age group was similar to that estimated by IBGE for the county in 2009.

## CONCLUSION

The results point to an equitable distribution in use of medical services, since what determines the use of factors is essentially the need of the elderly, and not factors such as income, education and health care. Not even predisposing factors such as gender, age and skin color.

Information about the health conditions of the elderly is useful for monitoring and planning the supply and the type of care in medical health care services. Andersen[26] reported the need to go beyond whether or not the person will regularly seek for a source of care, it is necessary to understand how the organization of health care works, thereby improving the ability to explain and predict its use, since health services are part of a large sector of the economy.

For knowledge of the profile of consumption of health services, it is necessary to keep track of and monitor the predisposing, enabling, and need factors through health information, which constitutes an important form of supporting management of services[31].

The results of this study indicated that, in the municipality analyzed, the enabling factors did not modulate the prevalence of medical visits, and additional studies are needed on the place of service to identify aspects that facilitate the use of medical visits by the elderly. In addition, public policies should be designed to population groups that require more medical visits, such as people with chronic diseases and negative self-rated health.

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