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Utilization of medical services in the public health system in the Southern Brazil

ABSTRACT

OBJECTIVE: To estimate the prevalence and analyze factors associated with the utilization of medical services in the public health system.

METHODS: Cross-sectional population-based study with 2,706 individuals aged 20-69 years carried out in Pelotas, Southern Brazil, in 2008. A systematic sampling with probability proportional to the number of households in each sector was adopted. The outcome was defined by the combination of the questions related to medical consultation in the previous three months and place. The exposure variables were: sex, age, marital status, level of schooling, family income, self-reported hospital admission in the previous year, having a regular physician, self-perception of health, and the main reason for the last consultation. Descriptive analysis was stratified by sex and the analytical statistics included the use of the Wald test for tendency and heterogeneity in the crude analysis and Poisson regression with robust variance in the adjusted analysis, taking into consideration cluster sampling.

RESULTS: The prevalence of utilization of medical services in the three previous months was 60.6%, almost half of these (42.0%, 95%CI: 36.6;47.5) in public services. The most utilized public services were the primary care units (49.5%). In the adjusted analysis stratified by sex, men with advanced age and young women had higher probability of using the medical services in the public system. In both sexes, low level of schooling, low *per capita* family income, not having a regular physician and hospital admission in the previous year were associated with the outcome.

CONCLUSIONS: Despite the expressive reduction in the utilization of medical health services in the public system in the last 15 years, the public services are now reaching a previously unassisted portion of the population (individuals with low income and schooling).

DESCRIPTORS: Health Services, utilization. State Health Care Coverage. Health Services Needs and Demand. Socioeconomic Factors. Cross-Sectional Studies.

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INTRODUCTION

The creation of Sistema Único de Saúde (SUS –National Health System) initiated the structuring of the Brazilian public health system. Officially established with the promulgation of the seventh Constitution of the Federative Republic of Brazil (1988), SUS instituted principles and guidelines, committed to considering health as a right of all and a duty of the State.

Throughout the last years, SUS underwent important transformations, centered on the amplification of the population's access to the health services. In 1994,

the Ministry of Health created the Programa Saúde da Família (PSF – Family Health Program).[a] Initially formulated as a program, it was defined as Estratégia Saúde da Família (ESF – Family Health Strategy) in 1997, with the challenge of promoting the reorientation of healthcare practices and actions in an integral and continuous form in the communities.

So that healthcare is able to follow the principles of SUS, it is necessary to perform evaluations of the objectives and goals of the public health policies that have been reached. According to Santos & Victora,[11] the quality of the healthcare offered to the populations is an ethical question. It is not ethical to offer care whose impact has not been scientifically proved, or whose quality is inferior to the recommended standards. In this sense, two research areas are opened in the health services with complementary natures: investigations that test the efficacy of new care procedures or strategies, and investigations that evaluate the result of these interventions on the health of users and of the population as a whole.[11]

Public health policies should be supported by objective information backed up by scientific evidence. Public Health and Epidemiology have an important role in the development of research and collection of information coming from the surveillance systems, which enable the systematic evaluation of the magnitude, scope, characteristics and consequences of diseases. Health inquiries also inform public policy managers about the main problems and inequities experienced by the population. The translation of scientific evidences into policies and practices is fundamental to user protection.[6]

Among the factors that make the population use the health services, female sex and advanced age are well established in the literature.[2,3,7] On the other hand, the association between use of health services and other demographic, socioeconomic and behavior variables, such as marital status, family income, level of schooling and having a regular physician, is still controversial and varies according to the place of origin of the data. In this sense, it is necessary that the managers, guided by information that is representative of the community, define administrative priorities for the provision of adequate infrastructure and assistance for the population.

The present study aimed to estimate the prevalence and identify factors associated with the utilization of medical services in the public health system.

METHODS

Cross-sectional population-based study with a sample of individuals aged 20-69 years from the urban zone of Pelotas (southern Brazil), carried out from October 2007 to January 2008. This study is part of a large health inquiry that aims to estimate the prevalence of non-communicable diseases, life habits, knowledge of, access to and utilization of health services. Pelotas has approximately 339,000 inhabitants and, at the time the study was conducted, its healthcare structure was constituted of a Primary Care network with 37 Primary Care Units, 17 of which had ESF. Secondary care was represented by six outpatient clinics, six psychosocial care centers and one emergency care unit. The tertiary level was formed by five general hospitals.

The following parameters and estimates were employed for sample calculation: 95% confidence level, acceptable error of three percentage points, prevalence of medical consultations in the public health system in the three previous months of 50% and an additional 10% for losses and refusals. Considering the average of two adults per household, it was necessary to include a minimum of 1,309 households in the study. Therefore, the estimated sample for the prevalence of medical consultations in the public health system in the three previous months was of 2,616 individuals.

Two-stage cluster sampling was performed, having as primary sampling units the census tracts defined by Instituto Brasileiro de Geografia e Estatística[b] in the 2000 census and, as secondary sampling units, the households. The systematic sampling strategy was adopted, with probability proportional to the number of households of the sector. The 404 residential census tracts of the city were listed in ascending order according to the average monthly income of the head of the family. Households selection was performed according to the following logic: we divided the total number of households of each sector by the number of households to be achieved, obtaining the sampling fraction. Next, a number situated between one and this number was drawn, and this was the first household of the sector to be included. Finally, we added the sampling fraction up to the end of the course of the sector. Due to the possibility that the population data were outdated, the drawn sectors were updated through the counting of the number of households. In each drawn sector, 11 households were sampled on average. At the end, 126 sectors and 1,534 households were included in the study, and 12 of them were excluded because they were occupied exclusively by inhabitants younger than 20 years.

The outcome "medical consultation in the public health system in the three previous months" was defined by the combination of two questions: "Since <*three months ago*>, how many times did you consult a doctor?", and

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[a] Ministério da Saúde. Programa Saúde da Família. Saúde dentro de casa. Brasília; 1994.
[b] Instituto Brasileiro de Geografia e Estatística. Resultados da Amostra do Censo Demográfico, 2000 - Malha municipal digital do Brasil: situação em 2001. Rio de Janeiro; 2004.

"Where did you have your last medical consultation?". Medical consultations in the public health system were considered to be those performed at healthcare units, outpatient clinics of the two Schools of Medicine of the city and of the hospitals, emergency care unit, specialties center and psychosocial care centers. We decided on the interval of three months before the interview in order to minimize recall errors and to ensure comparability to findings of other recently published articles.[2,3]

The evaluated exposure variables were: sex; age (complete years); marital status; level of schooling (complete years); family income (minimum wages); self-reported hospital admission in the previous year; having a regular physician (having been consulting the same physician for at least two years); self-perception of health and main reason for the last consultation. The variable reason for consultation was collected in an open form and was subsequently categorized into acute problem, chronic problem, administrative problem or preventive consultation. This categorization was independently performed by two family and community physicians. The discordant cases were analyzed by a third evaluator.

After applying descriptive statistics stratified by sex, due to the difference in health services utilization between sexes,[2,3] the analytical statistics included the use of the Wald test for tendency and heterogeneity in the crude analysis and Poisson regression with robust variance in the adjusted analysis, taking cluster sampling into consideration. For statistical modeling, the strategy of backwards selection was adopted, as well as $p \leq 0.20$ for permanence in the model to control for confusion. Figure 1 presents the analysis model used for the evaluation of possible associations between the independent variables and medical consultation in the public health system.

Data collection was performed through a standardized pre-codified questionnaire administered by 30 interviewers that were adequately trained. Losses and refusals were defined after interview failure in at least three visits to the household, in distinct days and times. Quality control was performed by re-visit in 10% of the sample, with administration of a simplified version of the research instrument.

After revision and codification, the questionnaires were doubly keyboarded using the software EpiInfo, version 6.04, with automatic checking of inconsistencies. Data analysis was performed in the Stata 9.0 program.

The study was approved by the Ethics Committee of the Faculdade de Medicina da Universidade Federal de Pelotas under the protocol OF089/07 on October 17, 2007.

RESULTS

Of 2,884 eligible subjects for the study, 178 (6.2%) were considered losses or refusals. The majority of the sample was of the female sex (56.7%) and had a partner (62.5%). The mean age was 41.1 years (standard-deviation – sd = 13.7) and more than 80% of the interviewees had level of schooling up to complete secondary education. The sample of men and women was similar concerning demographic and socioeconomic characteristics, except for the predominance of older women as compared to men, and of married men or with partner (Table 1).

The prevalence of medical health services utilization in the three previous months was 60.6% (n = 1,249). Of these, 521 individuals (42%) referred consulting in the public system. The general prevalence of consultation in public health services in the three previous months was 42.0% (95%CI 36.6;47.5). No statistically significant difference was observed between sexes, with prevalence of medical consultations of 45.6% (95%CI 39.3;52.0) and 35.1% (95%CI 29.3;41.0) for women and men, respectively.

The most used public services in the last medical consultation were the healthcare units (49.5%) and the outpatient clinics of the schools of medicine and of the hospitals (18.2% each), followed by the emergency care unit (8.6%). There was also no statistically significant difference between sexes.

In the study, 331 different answers were given to reasons for consultation. They were grouped into acute reasons (n = 165), chronic reasons (n = 119), preventive reasons (n = 40) and administrative reasons (n = 7). Among the acute reasons, the most reported were lumbar and joint pain (2.1% of the consultations each). Among the chronic reasons, consultations due to arterial hypertension (10%) and depression (3.6%) were the most frequent. As regards prevention consultations, the most common were the gynecological ones (4%) and checkups (2.4%) (Figure 2).

In the crude analysis, for the male sex, the outcome was indirectly associated with increase in age (p = 0.002) and inversely associated with level of schooling, *per capita* family income and self-perception of health (p < 0.001). The probability of consulting in the public system was 59% higher among individuals without a regular physician when compared to those who mentioned having a regular physician (p = 0.01). Men who reported hospitalization in the previous year consulted more than those who were not hospitalized (p = 0.02). In turn, in the adjusted analysis, the associations between the outcome and the variables age, level of schooling, family income, regular physician and hospital admission remained statistically significant and in the same direction (Table 2).
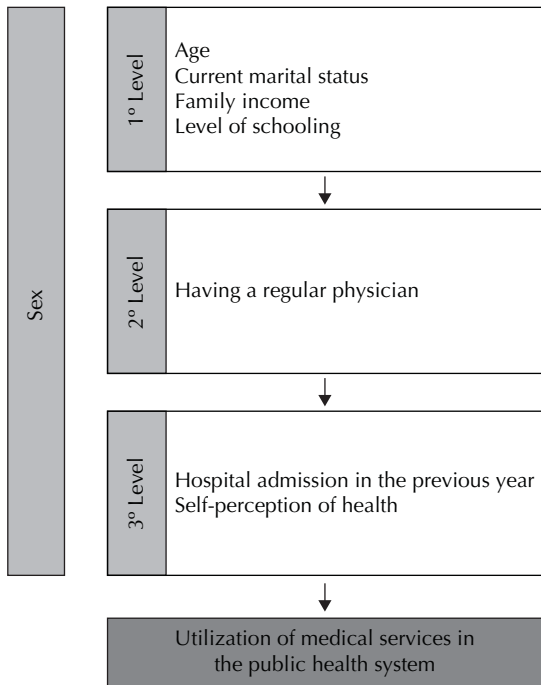
Figure 1. Analysis model of the utilization of medical services in the public health system. Pelotas, Southern Brazil, 2008.

Health services utilization was inversely associated with level of schooling, family income and self-perception of health for the female sex in the crude analysis (Table 3). Women who mentioned not having a regular physician presented a 64% higher probability of consulting when compared to women who reported having a regular physician. In the adjusted analysis, decrease in age group, lower levels of schooling, *per capita* family income, not having a regular physician and having been hospitalized in the previous year were associated with the outcome.

DISCUSSION

The prevalence of medical consultation in the public health system of Pelotas decreased in the last 15 years. A population-based study[3] conducted in a sample of 1,500 individuals from March to June 1992 found prevalence of 50% of medical consultations in the public and philanthropic system; in the present study, the prevalence was 42% (p < 0.001). The present study employed the same sample selection logistic and the same data collection methodology, which strengthens the comparability of results of prevalence of public services use in Pelotas. One of the possible explanations for this reduction in consultations in the public
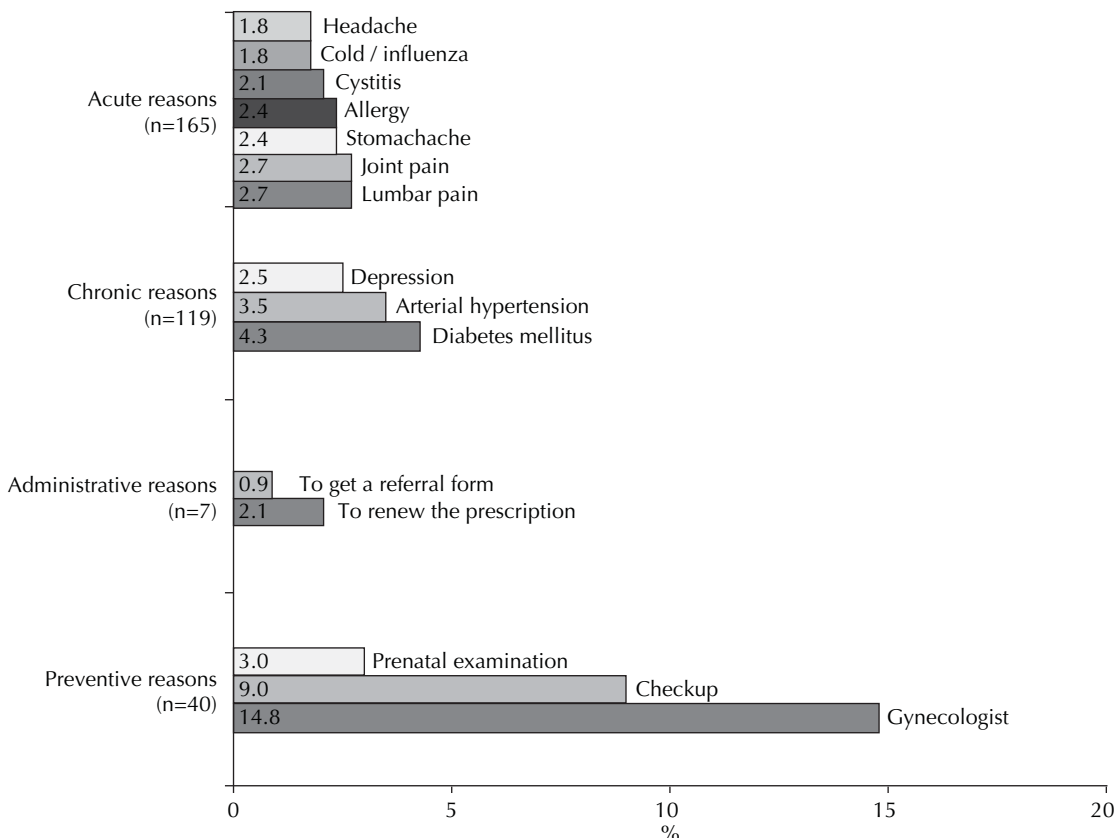

Figure 2. Main reasons for consultation in the public health services in the three previous months (n = 331 reasons). Pelotas, Southern Brazil, 2008.

Table 1. Demographic and socioeconomic characteristics according to sex. Pelotas, Southern Brazil, 2008.

Variable	Total		Men (n = 1,172)		Women (n = 1,534)		p[a]
	n	%	n	%	n	%	
Age (complete years)							0,02
20 to 29	707	26.1	328	28.0	379	24.7	
30 to 39	584	21.6	254	21.7	330	21.5	
40 to 49	593	21.9	265	22.6	328	21.4	
50 to 59	497	18.4	210	17.9	287	18.7	
60 to 69	325	12.0	115	9.8	210	13.7	
Current marital status							< 0.001
With partner	1,692	62.5	796	68.0	896	58.4	
Without partner	1,013	37.5	375	32.0	638	42.6	
Level of schooling (complete years)							0.19
0 to 4	540	20.0	225	19.2	315	20.5	
5 to 8	874	32.3	398	34.0	476	31.0	
9 to 11	761	28.1	336	28.7	425	27.8	
≥ 12	531	19.6	213	18.2	318	20.7	
Family income (minimum wages)[b]	1,893	75.5					0.35
0 to 5	286	11.4	807	74.7	1,086	76.2	
5,1 to 8	327	13.1	120	11.1	166	11.6	
>8	707	26.1	153	14.2	174	12.2	

[a] Pearson's chi-square
[b] Variable with the highest number of ignored observations for men (n = 92) and women (n = 108).

system is the increase in the coverage of healthcare plans in the city in the last 15 years. In 2005, 43.8% of healthcare plan coverage was estimated among adult individuals in the city.[4]

The present study did not find differences in medical services utilization between sexes. This datum disagrees with the largest part of national and international studies on the use of public or private health services, which report higher utilization of medical consultations among women.[2,3,7] Men enter into the health system by means of specialized care, which results in the aggravation of the morbidity due to delayed assistance and higher cost to SUS. In view of this, the Ministry of Health created the National Policy of Integral Care for Men's Health in 2009, aiming to qualify the health of the male population.[c]

Individuals aged 60-69 years reported greater utilization of the private and contracted system compared to the public one, even after adjustment for income, in complementary descriptive analyses. This is more evident among women, as an inverse tendency between age group and public health system utilization is observed. The expansion of the coverage of healthcare plans may be one of the possible explanations for this inversion. A study published by Fernandes et al[5] showed that, although the family health unit has programmed demand and is responsible for the people belonging to its catchment area,[d] practically half of the patients decided not to go to the unit located in their neighborhood. This choice might be motivated by market demand: many people who did not use the local family health unit were covered by a healthcare plan or had a more favorable socioeconomic level, generating conditions of choice and purchase of services.[5]

Higher prevalence of medical consultations was observed among married men or with partner (37.1%) when compared to single men or without partners (30.7%), although this difference was not statistically significant (p = 0.62). In 2004, Parslow raised the hypothesis that married men or men with partners are influenced by their companions to attend more the medical services,[9] but the literature about this association is controversial.

Family income and level of schooling remained inversely associated with the utilization of the public

[c] Ministério da Saúde. Secretaria de Atenção À Saúde. Departamento de Atenção Básica. Política Nacional de Atenção Integral à Saúde do Homem. Brasília; 2009.
[d] Ministério da Saúde. Departamento de Atenção Básica. Atenção básica e a saúde da família. Brasília; 2004 [cited 2007 Feb 6]. Available from: http://dtr2004.saude.gov.br/dab/atencaobasica.php

Table 2. Description, crude and adjusted analysis of male users of public medical services in the three previous months. Pelotas, Southern Brazil, 2008.

Variable	Utilization of public medical service		Crude analysis		Adjusted analysis	
	n	%	PR (CI95%)	p	PR (CI95%)	p
Age (complete years)				0.002*		0.04*
20 to 29	30	26.3	1		1	
30 to 39	25	25.8	0.98 (0.58;1.67)		0.95 (0.60; 1.49)	
40 to 49	32	41.6	1.58 (1.03;2.42)		1.36 (0.88;2.10)	
50 to 59	38	46.3	1.76 (1.14; 2.71)		1.26 (0.81;1.98)	
60 to 69	25	43.9	1.66 (1.03;2.69)		1.46 (0.97;2.21)	
Current marital status				0.26		0.62
With partner	112	37.1	1.21 (0.86;1.69)		1.09 (0.78;1.52)	
Without partner	38	30.7	1		1	
Level of schooling (complete years)				< 0.001*		< 0.001*
0 to 4	45	62.5	6.94 (3.03;15.90)		2.98 (1.48;6.00)	
5 to 8	58	47.9	5.32 (2.35;12.06)		2.46 (1.20;5.04)	
9 to 11	38	28.4	3.15 (1.36;7.29)		1.80 (0.89;3.67)	
≥ 12	9	9.0	1		1	
Family income (minimum wages)				< 0.001*		< 0.001*
0 to 5	132	47.1	16.5 (3.8;71.54)		10.83 (2.56;45.82)	
5,1 to 8	8	17.3	6.09 (1.21;30.47)		5.11 (1.04;25.15)	
> 8	2	2.9	1		1	
Having a regular physician				0.01		0.009
No	109	40.8	1.59 (1.11;2.29)		1.55 (1.12;2.15)	
Yes	41	25.6	1		1	
Hospital admission (previous year)				0.02		0.04
No	125	33.1	1		1	
Yes	25	51.0	1.54 (1.08;2.21)		1.34 (1.02;1.75)	
Self-perception of health				< 0.001*		0.22*
Excellent/very good	32	27.4	1		1	
Good	45	24.5	0.89 (0.59;1.35)		0.67 (0.45;0.99)	
Regular/poor	73	57.9	2.12 (1.46;3.08)		1.13 (0.73;1.75)	

PR: prevalence ratio; 95%CI: 95% confidence interval; * Linear tendency p value

health system, even after adjusted analysis, a fact that was also evidenced in a previous study carried out in the same city.[3] Inverse association between income, level of schooling and public services utilization can be explained by the fact that the choice and use of the type of health service vary according to socioeconomic level, besides the amplification of the public system, which has been reaching a portion of the population that used to be unassisted.[3,5]

One of the attributes of Primary Care postulated by Starfield[12] is the continuity of care, directly influenced by the existence of a regular physician who knows the individual, his family and the social context in which he is inserted. Mendoza-Sassi & Beria,[8] in a population-based study, showed that having a regular

physician was associated with a 51% higher probability of having undergone clinical breast examination and a 62% higher probability of having performed cervical cancer prevention during the previous year, compared to women without a regular physician. Among men, for the same period, the probability of having been submitted to a prostate examination increased by 98%. The prevalence of having a regular physician is low (37%) and directly associated with socioeconomic factors.[8] More than 70% of the men who had consultations reported having a regular physician in the present study. This seems to have influenced positively the prevalence of consultations, even though this variable did not maintain its association with the outcome after the adjusted analysis among men (p = 0.009).

Table 3. Description, crude and adjusted analysis of female users of public medical services in the three previous months. Pelotas, Southern Brazil, 2008.

Variable	Utilization of public medical service		Crude analysis		Adjusted analysis	
	n	%	PR (CI95%)	p	PR (CI95%)	p
Age (complete years)				0,64		< 0,001*
20 to 29	86	46.0	1		1	
30 to 39	72	43.4	0.94 (0.72;1.23)		0.95 (0.74;1.20)	
40 to 49	82	52.9	1.15 (0.89;1.48)		0.95 (0.77;1.16)	
50 to 59	74	43.5	0.94 (0.72;1.25)		0.72 (0.57;0.91)	
60 to 69	57	42.2	0.92 (0.67;1.25)		0.61 (0.47;0.79)	
Current marital status				0.48		0.29
With partner	212	44.4	0.94 (0.79;1.12)		0.91 (0.77;1.08)	
Without partner	159	47.3	1		1	
Level of schooling (complete years)				< 0.001*		< 0.001*
0 to 4	120	73.6	7.22 (4.76;10.95)		4.46 (2.78;7.17)	
5 to 8	145	61.9	6.08 (4.09;9.04)		3.54 (2.25;5.58)	
9 to 11	85	40.5	3.97 (2.61;6.04)		2.33 (1.46;3.71)	
≥ 12	21	10.2	1		1	
Family income (minimum wages)				< 0.001*		< 0.001*
0 to 5	317	59.0	5.68 (3.07;10.51)		3.32 (1.73;6.38)	
5,1 to 8	20	21.7	2.09 (0.83;5.27)		1.76 (0.72;4.30)	
> 8	13	10.4	1		1	
Having a regular physician				< 0.001		0.001
No	219	58.2	1.64 (1.34;2.02)		1.33 (1.13;1.56)	
Yes	159	35.4	1		1	
Hospital admission (previous year)				0.16		0.02
No	314	44.5	1		1	
Yes	57	53.3	1.20 (0.93;1.54)		1.32 (1.05;1.64)	
Self-perception of health				< 0.001*		0.08
Excellent/very good	47	24.9	1		1	
Good	136	43.7	1.76 (1.35;2.29)		1.14 (0.86;1.53)	
Regular/poor	187	59.9	2.41 (1.81;3.21)		1.26 (0.95;1.67)	

PR: prevalence ratio; CI95%: confidence interval; * Linear tendency p value

A positive association was observed between report on hospital admission in the previous year and utilization of the public health system for both sexes. Similar results were reported by Capilheira et al, who showed a 46% higher probability of medical consultation among individuals hospitalized in the public, contracted or private system.[2]

More than half of the individuals who mentioned consultations in the three previous months classified their health as regular or poor, but this association lost statistical significance after the adjusted analysis among men and among women. Another study carried out in Pelotas showed that the tendency of medical consultations in excess (more than four consultations in one year) was associated with worse self-perception of health, even after adjustment (p < 0.001).[2]

Half of the medical consultations of the public health system took place at the healthcare units, followed by outpatient clinics of universities, specialties center and the emergency care unit (46%). This high prevalence of consultations at outpatient clinics of universities can be attributed to the existence of two schools of medicine in the city, which usually complements health assistance, increasing the prevalence of consultations in the public system. According to data from Pesquisa Nacional por Amostra de Domicílios (National Household Sample Survey) of 2003, the primary care services (healthcare units and centers) were responsible for 9.8 million assistances (39.1%) in the fifteen days before the interview, followed by private outpatient clinics, outpatient clinics of companies, unions and hospitals, in addition to the emergency care unit, with 7.6 million assistances (30.3%) and private offices, with 6.9 million assistances

(27.3%). Drugstores were mentioned as the place of 378 thousand assistances (1.5%).[e]

White et al[15] showed that, in a population of one thousand people aged 15 years or older, after the period of one month, 750 will have health problems. The largest part will deal with their problems without looking for a physician, 250 will look for the general practitioner, of whom only five will be referred to the secondary level (outpatient clinics and emergency care unit) and nine, to the tertiary level of healthcare (hospitals). Although the healthcare units constitute half of the consultation places mentioned in this study, we cannot state that they were used as an entrance door to SUS, because the study did not evaluate whether the consultation was related to the beginning of a process or continuity of assistance in a reference system.

The consultations due to acute problems were in higher number than the others for both sexes. An on-demand diagnosis study carried out in the Community Health Service of Porto Alegre, Southern Brazil, presented results that were similar to the present ones. The main reasons for consultation due to chronic disease were systemic arterial hypertension and depression; among the acute motives, lumbar pain and upper air pathway infection; and, regarding prevention, gynecological exams and prenatal care.[13]

The reasons that make the individuals choose one place or another as entrance door to SUS were not explored in the current study. A previous evaluation conducted in the same city about the criteria used by pregnant women to choose the place in which to receive prenatal assistance showed that the choice of the healthcare units was attributed only to geographical proximity.[10] The mothers who mentioned quality of prenatal care as choice criterion did not choose to have follow-up in the healthcare units of the city. Such decision is explained by two studies on the quality of prenatal care in Pelotas that argue that the quality of the consultations in the public sector is worse than that of the consultations in the contracted network or the private ones.[1,14]

The short recall period that was used, the population-based outline with systematic sampling strategy and probability proportional to the number of households in the sector, the low percentage of losses/refusals and the primary data source strengthen the internal validity of the study and the capacity of generalization of its findings to the planning of health services of other medium-sized cities.

The present study shows that measures in the local health system are necessary to qualify the assistance, aiming to improve the attraction of users by the municipality's primary care, as well as the quality of the care provided for the population. The promotion of the regular physician in the population, for example, is a measure that is capable of improving the access to the health services and the quality of assistance, especially in the poorer groups. The principle of equity seems to be met, since the largest part of the users of the public health system belong to the less favored social classes and have low level of schooling.

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