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Pattern of health services utilization by adults of the Pelotas birth cohort from 1982 to 2004-5, Southern Brazil

ABSTRACT

OBJECTIVE: To describe the pattern of health services utilization by young adults.

METHODS: Longitudinal study in Pelotas (Southern Brazil), in which the individuals were identified at birth in 1982 and followed up until 23 years of age. The outcome was defined by information collected about visits to health professionals that were attended in the year before the interview, between 2004 and 2005. The places where the visits occurred were categorized as public, private or belonging to health plan systems. Descriptive analyses were carried out for utilization and type of health service. Poisson Regression was employed in the adjusted analysis.

RESULTS: Of the interviewees, 72.0% visited health professionals in the year before the interview; 86.2% (95% CI 84.7;87.7) of the women and 59.3% (95% CI 57.3;61.3) of the men. Even when gynecological visits were excluded, the women still attended more visits than the men, 68.4% (95% CI 66.4;70.4). Health services utilization was more frequent among interviewees of better socioeconomic level. A difference of lower use in relation to non-white skin color was observed only among male youths. There were differences regarding the type of professional visited by men and women and also according to family income. Men and women used more frequently the public system, the health plan system and, in a smaller proportion, the private system.

CONCLUSIONS: The socioeconomic situation influenced the utilization and the type of health service, with men and women classified as "poor at the moment", which indicates lower utilization of services. Such socioeconomic differences may indicate difficulties in the access to the health system.

DESCRIPTORS: Adult. Health Services, utilization. Health Services Coverage. Socioeconomic Factors. Gender and Health. Cohort Studies. Brazil.

INTRODUCTION

Universal access to high quality healthcare reduces inequalities between the poor and the rich.[8] There is evidence that primary care helps to prevent morbi-mortality, being responsible for a more equitable distribution of health among populations.[13] The use of epidemiological investigation into the performance and utilization of health services is essential, as it produces knowledge about health systems and services and provides subsidies for the design of policies and the improvement in their quality.[14]

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Maternal and child health care has been studied in the birth cohorts of Pelotas.[3,4,7,16] In 1982, maternal and child health already seemed adequate in quantitative terms: there was a network of public services in which mothers could receive prenatal care and children could be assisted in their needs of curative and preventive care. However, poor mothers and children with high morbimortality risk presented indicators showing that coverage – enrolment and number of prenatal visits, deliveries performed by doctors, vaccinal coverage and number of preventive visits in the first year of life – was significantly reduced when compared to the one received by mothers and children of higher purchasing power and lower risk.[16]

The patterns of health services utilization during pregnancy, delivery and in the first year of life were studied again when children belonging to the 1982 and 1993 cohorts were compared.[4] The analysis revealed data referring to two distinct moments of the process of sanitary reform that occurred in the municipality of Pelotas, with an increase in the offer of health services between the two periods. In the second cohort, there was an increase in the number of prenatal visits and a higher proportion of women had started the prenatal assistance before the fifth month of gestation.[4] During this period of 11 years, higher proportions of deliveries assisted by doctors and cesarean sections were also observed. Concerning child health, although there was an expansion in the vaccinal coverage, a lower average number of visits was observed in the children from the 1993 cohort. Nevertheless, the annual average number of visits was higher than ten, exceeding the seven visits recommended by the Ministry of Health.[4] Despite the fact that the majority of the indicators showed high patterns of assistance consumption and indicated improvements during the period, the evaluation of the socioeconomic indicators revealed that the health services continued to concentrate efforts on the population strata with higher socioeconomic level. These findings strengthened the social differences that had already been observed in the assistance to mothers and children belonging to the 1982 cohort and confirmed Hart's Inverse Care Law (1971).[6]

A more recent study[3] of the three birth cohorts of Pelotas (1982, 1993 and 2004) showed that improvements in the maternal and child health conditions have occurred in all levels of income, gestational risk and insurance public system affiliation. However, increases in the services' coverage were stronger in the low income group, and these levels were already high in 1982 in the families of higher family income. [3]

The present study aimed to describe the pattern of health services utilization by young adults.

METHODS

Methodological information about the study of birth cohort in Pelotas has been published.[1,18,19]

In the perinatal study conducted in 1982, all children born in the maternity hospitals of Pelotas (responsible for more than 99% of the deliveries) were recruited and their mothers, interviewed. Information on maternal and child health was collected, including prenatal and delivery care. In these interviews, socioeconomic and demographic information of the mothers of the children belonging to the cohort study was also collected. In view of the fact that at the time of the perinatal study the universality of health care had not been implemented yet, the insurance public system affiliation at the moment of delivery was investigated.

Data referring to health services utilization were collected in the last follow-up of the entire cohort, performed in 2004 and 2005, when the youths were approximately 23 years old, by means of interviews.

The outcome was considered to be the health service utilization, defined by visits to doctors (general practitioner, gynecologist, psychiatrist or another specialist), psychologists and nutritionists, attended in the year before the interview. Information about the reason and the place of each visit was also collected. The places where the visits took place were categorized as public, private and belonging to health plan systems. The services that were considered as public services were state-owned or those affiliated with *Sistema Único de Saúde* (SUS – National Health System); private services were those in which the price of the visits was totally paid by the interviewee; and the last category was when the interviewee mentioned adhesion to some health plan system, either collective or individual.

Skin color was self-classified by the interviewees. The variable family income change between 1982 and 2004-5 was constructed by using tertiles transition in these periods. The interviewees were classified in the following categories: always poor (those belonging to the lower tertile of income both in 1982 and in 2004-5); poor → non-poor (lower tertile to middle or upper tertile); non-poor → poor (middle or upper tertile to lower tertile); and never poor (middle or upper tertile in 1982 and 2004-5). Schooling was measured in complete years of study.

Descriptive analyses were conducted for health service utilization and type. Studies carried out in Brazil have shown that women have attended more healthcare visits than men, justifying a sex-stratified analysis.[9,15]

The sex-stratified analysis took into account skin color, family income in 1982, family income change between 1982 and 2004-5, and youth's schooling at the age of 23.

Crude and adjusted Poisson Regression analyses were carried out, focusing on the effects of those variables on healthcare visit attendance. The adjusted analysis was performed with a model in which the variables were included in a hierarchical manner. Thus, in the first level

of the adjusted analysis, skin color and family income in 1982 were included. Income change between 1982 and 2004-5 was also analyzed, adjusted for skin color. In the subsequent levels of the analysis, the variables that presented level of significance p<0.2 were maintained. All the variables determining the youth's schooling were included in the last level of the adjusted analysis.

Oral informed consent was obtained from the people responsible for the children in the 1982-1986 phases of the study, as this was the common practice at the time, when there was no ethics committee at *Universidade Federal de Pelotas*. In the recent phases, the Committee for Ethics in Research of the University, affiliated to *Conselho Nacional de Ética em Pesquisa* (CONEP – National Council for Ethics in Research), approved the study, and the written informed consent was obtained from the participants.

RESULTS

A total of 72% of the interviewees visited health professionals in the year before the interview: 86.2% (CI 95% 84.7;87.7) of the women and 59.3% (CI 95% 57.3;61.3) of the men. When gynecological visits were excluded, the women continued attending more visits than the men, 68.4% (CI 95% 66.4;70.4).

The main reasons for visits referred by the interviewees were classified as factors influencing health status (manifestations classified according to the nomenclature of the International Classification of Diseases – 10th revision) (39.1%), signs and symptoms considered abnormal (19,1%), diseases of the respiratory system (10.7%), mental disorders (5.4%), external causes (4.3%) and diseases of the skin (4.1%).

Health service utilization was more frequent among White youths with family income between 6.1 and 10 minimum wages in 1982, as well as those who were classified as poor in 1982 or 2004-5. Lower proportion of medical visits at the age of 23 was observed among youths who had been born with low weight, but this difference was not statistically significant. The visit to a health professional was more frequent among youths who completed high school (Table 1).

Table 1. Prevalence of health service utilization by young adults according to sociodemographic variables. Pelotas, Southern Brazil, 1982 to 2004-5.

Variable	n	%	Man		Woman	
			n	%	n	%
Skin color*,**		<0.001***		<0.001***		0.003***
White	3,238	74.5	1,658	62.2	1,580	87.5
Black or Mixed	908	66.2	471	50.5	437	83.1
Family income -1982(MW)**		<0.001****		<0.001****		0.006****
≤ 1	852	64.3	438	48.9	414	80.7
1.1 to 3	2,126	72.8	1,095	59.3	1,031	87.2
3.1 to 6	800	75.1	417	63.1	383	88.3
6.1 to 10	252	80.6	130	73.1	122	88.5
> 10	244	79.5	123	70.7	121	88.4
Income change (1982 → 2004-5)**		<0.001****		<0.001****		<0.001****
Always poor	708	64.4	335	47.5	373	79.6
Non-poor → poor	714	69.6	360	53.8	374	84.0
Poor → non-poor	665	68.6	340	54.7	305	84.9
Never poor	2,209	76.9	1,178	65.6	1,031	89.7
Youth's schooling (years)**		<0.001****		<0.001****		<0.001****
0 - 4	350	58.9	209	46.9	141	76.6
5 - 8	1,208	61.3	718	47.2	490	82.0
9 - 11	2,069	76.9	1,010	65.0	1,059	88.2
≥ 12	669	85.1	276	79.0	393	89.3
Total*****	4,296	72.3	2,213	59.3	2,083	86.2

MW: Minimum wage
* 150 interviewees self-classified themselves as yellow or Indians
** Of 4,297 interviewees in 2004-5 there was lack of information for up to 23 people (0.5% of the interviewees)
*** Chi-square test for heterogeneity
**** Chi-square test for linear tendency
***** For one interviewee in 2004-5, there was no information about health service utilization

Table 2. Crude and adjusted analyses of the independent variables about health services utilization among male youths. Pelotas, Southern Brazil, 1982 to 2004-5.

Variable	Crude analysis			Adjusted analysis*		
	PR	95% CI	p	PR	95% CI	p
Skin color			<0.001**			0.003**
White	1	-		1	-	
Black or Mixed	0.81	0.74; 0.90		0.95	0.91; 0.99	
Family income-1982 (MW)			<0.001***			<0.001***
≤1.0	0.69	0.60;0.80		0.73	0.63;0.85	
1.1-3.0	0.84	0.74;0.95		0.86	0.76;0.98	
3.1-6.0	0.89	0.78;1.02		0.90	0.79;1.03	
6.1-10.0	1.03	0.89;1.21		1.04	0.89;1.21	
> 10.0	1	-		1	-	
Income change (1982 → 2004-5)			<0.001***			<0.001***
Always poor	0.72	0.64;0.82		0.75	0.67;0.87	
Non-poor → poor	0.82	0.74;0.91		0.83	0.74;0.92	
Poor → non-poor	0.83	0.75;0.92		0.87	0.78;0.97	
Never poor	1	-		1	-	
Youth's schooling (years)****			<0.001***			<0.001***
0 - 4	0.59	0.50;0.69		0.64	0.54;0.75	
5 - 8	0.60	0.54;0.66		0.62	0.55;0.69	
9 - 11	0.82	0.76;0.89		0.83	0.76;0.91	
≥12	1	-		1	-	

MW: Minimum wage
* First level variables (skin color and family income in 1982) were adjusted among themselves and maintained in the analysis model with p<0.2. Income change was adjusted for skin color.
** Wald test for heterogeneity
*** Wald test for linear tendency
**** Youth's schooling was adjusted for skin color and family income in 1982.

Table 1 shows that the results of the association between the independent variables and health services utilization according to the sex of the interviewee were similar to what had been observed for the entire group.

In the adjusted analysis, Black and Mixed men and those who were poor in 1982 and 2004-5 attended less visits in the year before the interview. Health services utilization was directly proportional to the increase in the youth's schooling (Table 2).

Women's results were similar to men's regarding family income, income change and youth's schooling. On the other hand, in the adjusted analysis, no relation was observed between skin color and the proportion of women who attended visits in the year before the interview (Table 3).

When the type of professional that was visited was analyzed according to family income and interviewee's sex, it was observed that the proportion of visits to general practitioners was similar across the different groups of family income. On the other hand, the proportion of visits to specialists was four times bigger among the men who belonged to the highest income group, compared to those of lowest family income in 1982. Visits to psychiatrist, psychologist and nutritionist were less frequent among men and differed regarding family income, as the proportions of visits to these professionals were higher among youths with higher family income (Figure 1).

Figure 1 shows that the proportion of visits to general practitioners decreased with the increase in the women's family income, and, inversely, there was an increase in the proportion of visits to other specialists according to the increase in income. Concerning visits to gynecologists, the proportions were similar across the distinct groups of family income. Similarly to what was observed among men, the proportions of visits to psychiatrists, psychologists and nutritionists were lower than 10% in all groups, achieving 10% only among women from the highest family income groups.

Table 3. Crude and adjusted analyses of the independent variables about health services utilization among female youths. Pelotas, Southern Brazil, 1982 to 2004-5.

Variable	Gross analysis			Adjusted analysis*		
	PR	CI 95%	p	PR	CI 95%	p
Skin color			0.03**			0.11**
White	1			1		
Black or Mixed	0.95	0.91; 0.99		0.96	0.92; 1.01	
Family income-1982 (MW)			0.006***			0.03***
≤1.0	0.91	0.84;0.99		0.93	0.86;1.01	
1.1-3.0	0.99	0.92;1.06		1.00	0.93;1.07	
3.1-6.0	1.00	0.93;1.07		1.00	0.93;1.08	
6.1-10.0	1.00	0.91;1.10		1.00	0.92;1.10	
>10.0	1	-		1	-	
Income change(1982 → 2004-5)			<0.001***			<0.001***
Always poor	0.89	0.84;0.94		0.90	0.85;0.95	
Non-poor → poor	0.94	0.89;0.98		0.94	0.89;0.99	
Poor → non-poor	0.95	0.90;1.00		0.96	0.91;1.01	
Never poor	1	-		1	-	
Youth's schooling (years)			<0.001***			0.003***
0 - 4	0.90	0.80;1.00		0.89	0.80;0.98	
5 - 8	0.90	0.90;1.00		0.94	0.88;1.00	
9 - 11	1.00	0.90;1.00		0.99	0.95;1.04	
≥ 12	1	-		1	-	

MW: Minimum wage
* First level variables (skin color and family income in 1982) were adjusted among themselves and maintained in the analysis model with p<0.2. Income change was adjusted for skin color.
** Wald test for heterogeneity
*** Wald test for linear tendency
**** Youth's schooling was adjusted for skin color and family income in 1982.

As for the type of health service used, men and women attended visits more frequently in the public system, in the health plan system and, in a lower proportion, in the private system. Proportionally, the men attended more visits in the private system than the women (Figure 2).

The analysis of the type of health service used in the year before the interview according to change in family income also indicated differences between the categories. The utilization of the public system predominated among approximately half of the interviewees classified in the category middle or high income. This category also contained the largest proportions of utilization of the private services and health plan systems (Figure 3).

In each type of analyzed service, public, private or health plan system, a utilization gradient was observed according to the category of income change. For example, the percentage of 3.1% of those who always were in the lower category of income and used the private services rose to 8.9% among those who descended from the middle or upper category to the lower one, rose to 11% among those who ascended from the lower category in 1982 to the middle or upper category in 2005, until it achieved 12.3% among those who were always classified in the middle or upper category. The income change gradients were also observed in the public system. For example, while 83.3% of the interviewees who always were in the low category of income used the public system, the percentage was 67 among those who descended, decreasing to 61.6% among those who ascended from the low category in 1982 to the middle or upper category in 2004-5, achieving 50.0% among those who were always classified in the middle or upper categories. The percentage of utilization of health plan systems also showed differences according to the categories of income change (Figure 3).

DISCUSSION

Youths tend to suffer accidents, violence and have problems deriving from the consumption of licit or illicit drugs. Data from *Sistema de Informações de Mortalidade* (Mortality Information System) reveal that in the state of Rio Grande do Sul, 2,390 individuals between 20 and 29 years of age died in the year 2000. Of these, 1,416 (59.2%) deaths were classified as

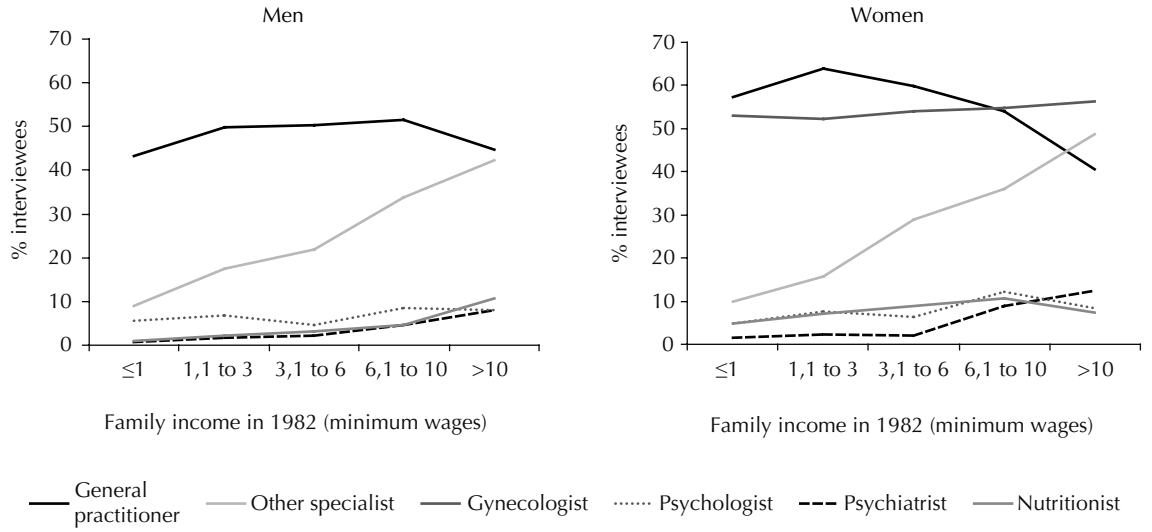

Figure 1. Specialization of the visited health professional according to family income in 1982 among youths. Pelotas, Southern Brazil, 1982 to 2004-5.

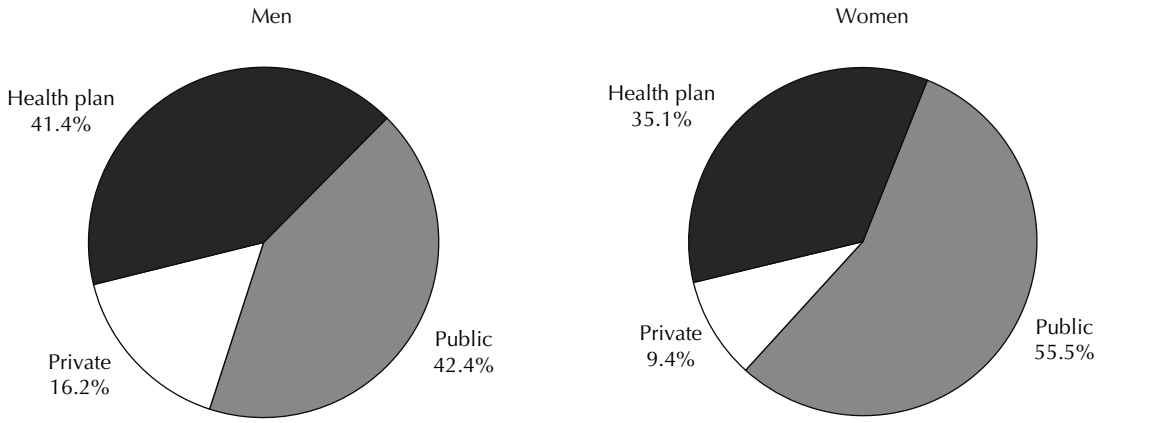

Figure 2. Type of health service used in the last year according to the interviewee's sex. Pelotas, Southern Brazil, 1982 to 2004-5.

external causes of morbidity and mortality. In no other age group, during the year 2000, deaths due to external causes had the same importance. The sex-stratified analysis showed that of the 1,416 deaths due to external causes, 1,271 (89.7%) were of men. Even though the predominance of violent deaths among men is evident, external causes are also the main cause of death among women, reaching 27% in the age group 20-29 years.[a] In the present study, external causes are one of the five main reasons for visits to the health services. However, in Brazil, morbimortality in this age group is very low compared to the others and there are differences in the offer of health services to women and men. Thus, there are no specific health programs targeted at the male population, while women can benefit from health interventions such as prenatal visits, prevention of gynecologic cancer and family planning. Even in a population of young adults, who are less likely to have diseases, the results of the present study showed that the women attended more visits than the men.

The comparison of the percentages of health services utilization between the population of the Pelotas cohort and another national study revealed differences. Data from *Pesquisa Nacional por Amostra de Domicílios* (PNAD – National Survey by Household Sampling), carried out in 1998 by *Instituto Brasileiro de Geografia e Estatística* (Brazilian Institute of Geography and Statistics), showed that 36% of the men and 56.1% of

[a] Ministério da Saúde. Secretaria de Vigilância à Saúde. Sistema de Informações sobre mortalidade [internet]. Brasília; 2007. [accessed on 2007 Mar 10]. Available from: http://tabnet.datasus.gov.br/cgi/idb2007/matriz.htm#mort

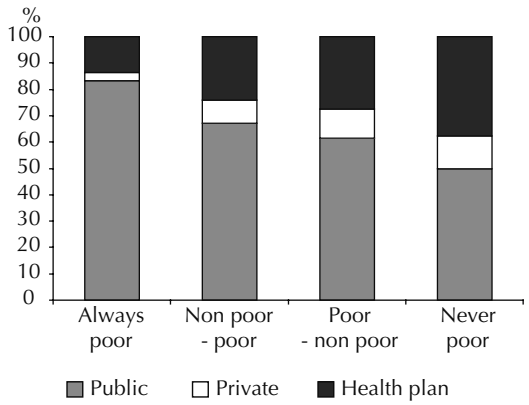

Figure 3. Type of health service used according to family income change. Pelotas, Southern Brazil, 1982 to 2004-5.

the women between 15 and 24 years of age, residing in urban zones in Brazil, had attended a medical visit in the last 12 months.[10] Thus, by means of the confidence intervals, it was verified that both the men and the women from the cohort obtained a percentage of visits that was higher than the one found in the country.

Studies about health services utilization can contribute to the organization of assistance, since they allow to establish levels of coverage and to identify excluded population groups. The attributes, for example, that define the quality of health services from the collective point of view are: easy access, equitable distribution of care and effective care at a financial cost that is affordable to society.[2]

The Federal Constitution institutes that the National Health System must offer universal, integral, equitable care and that services must be organized regionally and hierarchically. Both definitions are similar regarding easy access and equitable care.

The analysis per type of professional showed differences mainly in relation to access to the medical specializations by people with higher income. Nevertheless, there is evidence that shows that, for common specific diseases, the care provided by general practitioners are as good as that provided by specialists, and even better when the quality measures (for example, the ones that produce an impact on prevention) are generic. For less common conditions, the care offered by general practitioners with the support of specialists can be better. However, for rare situations the care provided by specialists is indispensable.[13] Thus, this finding may be explained by the difficulty in having access to certain specializations and by cultural factors of better care judgment on the part of the user.

In the adjusted analysis of the present study, the results confirmed that the socioeconomic situation evaluated by means of income change had an effect on health services utilization in the last year, both in men and in women. The existence of differences between these socioeconomic variables may indicate difficulties in having access to the health system, which is surprising in view of the offer of health services in Pelotas. The primary care coverage in Pelotas has been established since the 1980s, and has the participation of units of the Municipal Health Department, of the State Health Department and of two universities. A population-based study about the outpatient health service utilization by the adult population of Pelotas in 1992 presented high average of visits (3.0 visits per inhabitant/year).[5] Such analysis did not show differences concerning the average number of visits between the economic class categories (classification of *Associação Brasileiras de Empresas de Pesquisa* - Brazilian Association of Research Companies) and social class categories (Bronfman's classification) that represented the socioeconomic variables. However, the study showed significant differences between types of health services and socioeconomic categories. Among the individuals who attended visits in the last three months, 30% used the health plan systems, 29% used the public system and 41% the private system or philanthropic services.[5] In 2004, the public health network in Pelotas comprehended 56 basic health units - approximately 30% of the units offered by *Programa Saúde da Família* (Family Health Program) -, besides insurance system health services. In almost all the municipality's neighborhoods and communities, there are public health services, which could justify high percentages of visits in all categories of the income change variable.

The equity principle presupposes that the populations that are most vulnerable socially or that present recognized risks to health should have priority in treatment.[19] Equity is based on the assumption that the individuals are different; therefore, they deserve different treatment that eliminates or reduces inequality. Studies conducted in Pelotas have revealed lack of equity in health.[11,12] However, we observe that the differences due to the socioeconomic situation for certain actions tend to decrease as less disadvantaged individuals achieved larger coverage. The inequities decrease when the richer individuals obtain new minimum levels for the coverage indicators, and then the poor start to have larger access to interventions.[17] Therefore, the finding concerning the reduction in access observed among men and women who are "poor at the moment" may suggest lack of equity for population groups, and consequently, the need to reorganize the health services.

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