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Original Article

Urban-rural disparity in health services utilization in a small municipality

Disparidade urbano-rural na utilização de serviços de saúde em município de pequeno porte

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ABSTRACT

Objective: to analyze the existence of urban-rural disparity in health services utilization by people living in a small municipality. **Methods:** cross-sectional study with a representative random sample of people aged 18 years and older in the urban area (n=1.235) and the entire population of a rural district (n=190). The Health Services Utilization questionnaire, from the National Household Survey in Brazil, was used. The analysis considered logistic regression models to examine factors associated with health services utilization within 30 days prior to the study. **Results:** the utilization rate by people in urban area was significantly higher than in rural area (45.0% vs 15.8%). Women and people who reported symptoms of diseases and diagnosis of hypertension were more likely to use health services. **Conclusion:** under the same municipal health organization, people living in the rural area have lower health services utilization when compared to those living in the urban area.

Descriptors: Health Services; Facilities and Services Utilization; Rural Population; Urban Population.

RESUMO

Objetivo: analisar a existência de disparidade urbano-rural na utilização de serviços de saúde por pessoas vivendo em um município de pequeno porte. **Métodos:** estudo epidemiológico transversal com amostra representativa e aleatória de pessoas com 18 anos ou mais de idade na área urbana (n=1.235) e toda a população de um distrito rural (n=190). Utilizou-se o questionário sobre utilização de serviços da Pesquisa Nacional por Amostra de Domicílios. A análise considerou modelos de regressão logística para examinar fatores associados à utilização nos 30 dias anteriores ao estudo. **Resultados:** a taxa de utilização pelas pessoas da área urbana foi significativamente maior que da área rural (45,0% *vs* 15,8%). Mulheres e aqueles que reportaram sintomas de doenças no período e hipertensão arterial tiveram mais chances de utilização. **Conclusão:** pessoas residentes em área rural utilizam menos serviços de saúde quando comparadas àquelas da área urbana quando estão sob a mesma organização municipal de saúde.

Descritores: Serviços de Saúde; Utilização de Instalações e Serviços; População Rural; População Urbana.

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Introduction

Since a long time, health services utilization has been considered an important indicator of the health condition[1]. Although the health conditions of the Brazilian population have considerably improved over the past three decades[2], there are still important differences between people living in rural areas and people living in urban areas[3-4].

Although many factors contribute to these differences, including socioeconomic aspects, access to health services is a crucial element[5]. Even today, 30 years after the current Federal Constitution provided that health is a right of all citizens and a duty of the State, serious disparities in the use of health services persist[6].

Already in the early 1990s, with the creation of the Organic Health Laws, in an attempt to respond to the precepts of the new Constitution, the municipalities became the immediate responsible for executing the main actions and offering services for the access of their citizens to healthcare, configuring a decentralized management model. But, although home-based and nationwide studies have unquestionably contributed to the understanding of urban-rural disparities in health services utilization, the evidences have not been considered in planning or in the allocation of healthcare resources[1]. As an aggravating factor, small municipalities may be offering equally restrictive conditions to healthcare access for people living in both urban and rural areas.

Given this situation and considering that the association between health services utilization and the urban-rural condition may be masked in large-scale evaluations, it is necessary to explore the issue from the perspective of the same health system in small municipalities. The evaluation of the use of health services that are under the same municipal organization could, to some extent, control the factors related with the offer of health services.

Knowing the health services utilization is essential to a proper care planning and monitoring of universal and equitable coverage of health services within municipalities[7]. A comprehensive knowledge of barriers to the use of health services in municipal areas is a key point to the design of interventions aimed at increasing healthcare coverage. Eliminating access-related disparities should be a goal to improve the health status of populations. Therefore, to achieve this goal, it is necessary to measure problematics in the local context of municipalities. Thus, this study aimed to analyze the existence of urban-rural disparity in health services utilization by people living in a small municipality.

Methods

This is a cross-sectional study. Individuals aged 18 years and over, residents in the urban and rural area of a small municipality located in the Jequitinhonha Valley, approximately 700 km from the state capital of Minas Gerais, Brazil, were included in the study. The municipality was chosen for convenience, because the authors carry out other research there. The municipality had a population of just over 24.000 inhabitants, and 16.079 lived in the urban area. Those living in rural areas, about 30.0%, were distributed in five districts and adjacent communities.

Regarding the structure of health services in the municipality, the urban area had five primary healthcare units and a Family Health Strategy team worked in each. Healthcare of the rural population was provided by a mobile Family Health Strategy task team, with weekly or biweekly visits in the districts and communities. Community Healthcare Agents and Licensed Practical Nurse remained in the districts. The municipality also had a Psychosocial Care Center and, for low-complexity care and emergency attention, a philanthropic hospital. The macro-regional reference for medium and high complexity attention was Teófilo Otoni, a city located 225 km away.

In the urban area, the studied population was selected in three stages in order to obtain a representative sample. First, a survey was performed on the

number of households registered by primary healthcare units, considering data from the *Sistema de Informação da Atenção Básica* (Primary Care Information System), followed by the calculation of the minimum representative sample which totaled 1.229 households (Table 1).

Table 1 - Sample calculation of the number of households to be studied in the urban area according to primary healthcare units. Jequitinhonha, MG, Brazil, 2015

Primary Healthcare Units	Number of registered households	Minimum sample of households
I	1.450	304
II	560	228
III	702	248
IV	651	244
V	450	207
Total	3.813	1.229

For the sample calculation, performed in the Epi Info version 6.0 software, an expected frequency of 50%, an error of 5% and a confidence interval of 95% were considered. Predicting losses, the sample was increased by 20.0%, totaling 1.475 urban households. Then, a random sampling of these households by primary healthcare units was performed in the same software, considering a 95% confidence level, in order to select those to be visited. In the third stage, by simple random sampling, during a home visit, a resident aged 18 years or older in each of the selected households was drawn, even if it was necessary to return to the residence for the interview, considering up to three attempts if the selected person was not present. Losses totaled 240 households/individuals and were motivated by refusals and not finding the selected individual after the three attempts. At the end, the urban sample had 1.235 participants, one for each household visited.

In the rural area, all individuals in the studied age group residing in one of the districts located 70 km from the urban area, were invited to participate. The eligible population was 218 residents, distributed in 176 households. The selection criteria of the rural sample differed from the urban one due to the similar characteristics of the services offered, to the rural population, with only one healthcare team present through all the locations, according to the same healthcare model. Losses in the rural area totaled 28 people, the reasons being refusal and not finding the individual after three attempts. Therefore, the rural population studied consisted of 190 people.

Data were collected from January to December 2010. A questionnaire was used to obtain demographic (gender and age), socioeconomic (education, monthly family income, number of people in the family, receiving government financial aid and health insurance) and health conditions information (self-perceived problems with health or disease symptoms within 30 days prior to interview, self-perception of general health status, and self-reported diagnosis of chronic diseases). For data on health services utilization in the 30 days prior to the interview, the supplementary questionnaire on Access and Use of Health Services in Brazil from the National Household Survey was used. The data collection team consisted of undergraduate and graduate students from the Nursing School of the Federal University of Minas Gerais, previously trained, using portable and digital collection equipment (Personal Digital Assistant - model Dell-Axim X50). After being collected, the data were transferred to a conference bank still in the study area. Thus, a preliminary evaluation of the data was performed in order to identify errors and lack of information. When necessary, the collection team returned to the households for to correct information or inconsistencies. The data were transferred to analysis in duplicate with subsequent comparison to eliminate the possibility of errors in this process.

The dependent variable (outcome) in the data analysis was health services utilization within 30 days prior to the interview, regardless of whether they were public or private services. Participants were classified into two categories: those who used any he-

alth service and those who did not use health services during this period.

Independent variables were selected based on a behavioral model of healthcare utilization advocated since the 1970s and still frequently used[8]. As variables related to predisposing factors, age, sex and education level were adopted. Those related to enabling factors were family income, government financial aid, health insurance coverage and urban-rural housing. Factors related to health status were general health status perception, the presence of disease symptoms in the last 30 days and self-report of diagnoses of chronic diseases (arterial hypertension or others).

Analyzes were performed using the Statistical Package for Social Sciences software for Windows, version 17.0. Initially, to compare health services utilization, as well as the explanatory variables between residents in urban and rural areas, the chi-square test was used. Subsequently, logistic regression models were used to analyze possible urban-rural disparities in health services utilization, controlling them by confounding variables[8]. The statistical significance level was set at 5% ($p<0.05$).

The study was approved by the Research Ethics Committee of the Federal University of Minas Gerais under Opinion nº 0174,0,203,000-10.

Results

A total of 1.425 people participated in the study (1.235 in the urban area and 190 in the rural area). The health services utilization rate by urban residents was significantly higher than by rural residents (45.0% vs 15.8%, $p<0.001$) (Table 2). Compared to rural participants, those in the urban area were represented by a larger number of women, older people, with a higher education level, a higher *per capita* monthly family income and greater healthcare insurance coverage. There was a higher proportion of people from the urban area diagnosed with arterial hypertension (36.7% vs 23.2%, $p<0.001$). Self-perception of symptoms indicating health problems within 30 days prior to the interview, as well as self-referral to regular, poor or very poor general health status over the same period or to other chronic diseases, was not different between the two types of areas.

Table 2 - Descriptive statistics of the studied population according to place of residence (urban and rural areas). Jequitinhonha, MG, Brazil, 2015 (n=1.425)

Variables	Urban area (n = 1.235)	Rural area (n = 190)	p*
	n (%)	n (%)	
Dependent variable			
Health services utilization in the last 30 days	556 (45.0)	30 (15.8)	<0.001
Independent variables			
Sex, female	791 (64.0)	99 (52.1)	0.002
Age, ≥ 50 years old	575 (46.6)	71 (37.4)	0.018
Education, 0 to 4 years of study	692 (56.0)	144 (75.8)	<0.001
Per capita monthly family income, ≤1/2 minimum wage	94 (9.0)	27 (14.3)	0.024
Government financial aid	432 (35.0)	98 (51.6)	<0.001
Health insurance coverage	238 (19.3)	11 (5.8)	<0.001
Self-perception of health problems in the last 30 days	617 (50.0)	91 (47.9)	0.596
Self-perception of health status as regular, poor or very poor	397 (32.1)	72 (37.9)	0.116
Self-reported arterial hypertension	453 (36.7)	44 (23.2)	<0.001
Other chronic disease†	170 (13.8)	19 (10.0)	0.154

*Chi-square test was used to compare health service utilization as well as independent variables between urban and rural residents; †except arterial hypertension

Two different multivariate logistic regression models were considered for the analysis of health services utilization (Table 3). The basic model (model 1) considered only the location variable (urban/rural). In the complete model (model 2), all independent variables were included in the regression analysis with the location variable.

Table 3 - Logistic regression analysis for health services utilization. Jequitinhonha, MG, Brazil, 2015 (n=1.425)

Variables	Model 1	p*	Model 2	p
	OR (95% CI)		OR (95% CI)	
Location				
Rural	-		-	
Urban	1.34 (1.26-1.42)	<0.001	1.31 (1.23-1.39)	<0.001
Sex				
Male			-	
Female			1.07 (1.01-1.13)	0.008
Age (years)				
18 to 49			-	
≥ 50			1.02 (0.95-1.08)	0.534
Educational level (years)				
0 to 4			-	
≥ 5			0.99 (0.93-1.05)	0.851
Per capita monthly family income (minimum wage)				
≤1/2			-	
>1/2			1.03 (0.94-1.12)	0.460
Government financial aid			0.99 (0.94-1.05)	0.977
Health insurance coverage			0.97 (0.89-1.05)	0.519
Health problems in the last 30 days			1.27 (1.20-1.34)	<0.001
Regular, poor or very poor health status			1.03 (0.97-1.09)	0.244
Arterial hypertension			1.19 (1.11-1.27)	<0.001
Other chronic disease†			1.02 (0.94-1.11)	0.532

*Logistic regression (binomial distribution with robust estimator); †except arterial hypertension; OR = odds ratio; CI = confidence interval

In the logistic regression model 1, which considered only the place of residence, it was shown that urban dwellers were more likely to use health services than rural (OR = 1.34; 95% CI: 1.26-1.42). After adjusting for all independent studied variables, in model 2, the odds ratio for residence in the urban area decreased from 1.34 to 1.31 but maintaining statistical significance (p<0.001). This indicates that urban residents were more likely to use health services (OR = 1.31; 95% CI: 1.23-1.39), even after controlling for possible confounding variables. Additionally, women, people who have had disease symptoms and those diagnosed with hypertension also used health services more.

Discussion

Although access to health services in Brazil has increased over the last three decades[9], the present study confirmed there are still disparities in utilization. People living in the rural area have lower health services utilization than those living in the urban area in the same municipality. Before going further in the discussion of the results, it is necessary to inform the limitations assumed by this study. One of them was the comparison of the utilization between the two areas considering a dichotomous variable (urban/rural) disregarding the degrees of rurality. Studies using this binary indicator are less likely to find differences in utilization measures than those that consider a gradual and more specific urban-rural continuum. Also, this study uses self-reported morbidity to assess chronic diseases, adopting no means for data verification or confirmation, thus incurring information bias. However, there is evidence of the validity of results that use measurements of individuals who claim to have chronic diseases[10]. Other features not included in this research may also have influenced the identified difference in health services utilization, such as those related to services, and should be considered in future studies.

The magnitude of differences in health services utilization between urban and rural populations depends, among other factors, on the measure of access used and how rural and urban environments are characterized. Nevertheless, most studies conducted either in Brazil or in other countries have found this same inequality relationship[7-8].

The rationale for considering the context of the one municipal health system for the analysis of inequities in health services utilization lies in the fact that supply strategies are designed by municipal managers without a clear normative strategy model. Not even the National Policy of Primary Healthcare sets the guidelines for organizing Primary Care for people living in rural areas[11]. In this decentralized healthcare context, information about access and use of health

services by the rural population is critical for efficient local healthcare management, particularly in municipalities with poor health indicators[1].

Currently, Brazilian municipalities adopt different strategies to ensure rural and urban citizens access to healthcare. While urban primary healthcare services often rely on physicians, nurses and other professionals on a daily basis during the week, healthcare in rural areas is sporadic – provided on a weekly, biweekly, monthly or even non-periodically basis. In many rural areas, when healthcare is provided, it is focused exclusively on medical appointments without other types of care. Situations in which Certified Nursing Assistants or Licensed Practical Nurses work without the supervision of a Registered Nurse are not rare in rural areas and may endanger people's health[12]. Understanding the determinants and factors associated with health services utilization is fundamental in the design and provision of carefully targeted services and may determine the economy of scarce municipal financial resources, as well as the improvement of the population's health status[1]. In addition, some political and economic challenges faced by municipal governments will further justify more attention to health services utilization. These challenges include the effects of the long-term fiscal austerity measures adopted since 2016 that will substantially reduce expenditure on social welfare programs over the next 20 years in Brazil[13].

Besides inadequate infrastructure and reduced availability of healthcare services, the long distances to be traveled, transportation difficulties and low income are factors that may contribute to the reduction in the health services utilization by people living in rural areas [5]. Barriers imposed by geographical "inaccessibility" and unavailability of health services in rural areas have been described as the most important predictors of the utilization by people living in these areas[5].

Of the studied factors related to predisposition, gender was the only one significantly associated with health services use. Like other studies[8], the present research showed that women use more health services than men. There are several possible explanations for this finding[14]. Among these, gender differences in health services utilization may be related to the often stereotyped individual attitudes of men and women to their own vulnerabilities and perceived well-being, in addition to their reproduction-related needs. Moreover, public health services, on which the absolute majority of the studied people depend, promote the greater provision of preventive care for women than for men. However, it should be noted that the urban population had significantly more women than the rural population and may have behaved as a confounding variable in the analysis.

The utilization of health services was also related to people's health status, admittedly the most important factor in determining the demand for healthcare in urban or rural areas[9]. Usually, people with hypertension, due to the need for control, collaborated to increase the demand and utilization of health services. Particularly, public health services in Brazil provide considerable care for the population with hypertension, leading to greater use by these people[15]. The higher prevalence of people with self-reported hypertension in the urban area may have contributed to the more frequent use of health services by this population. This finding, which indicates a lower prevalence of hypertension in rural people, corroborates other studies[16-17] and may be related to greater difficulty in accessing the diagnosis, and not necessarily with better health conditions. The greater access difficulty to health services in times of perceived need may favor the use of medicinal plants and culturally based healthcare practices on beliefs and religiosity, interfering with the course of the disease[18].

Even with the advances accumulated after the establishment of the *Sistema* ***Único*** *de Saúde* (Unified Health System)[9], it is necessary to admit that the access and use of health services by people in rural areas of Brazil are still far below to what is necessary for

a society with a universal health system. As demonstrated, the rural population is deprived of the healthcare capacities and opportunities they would like to have, being fundamental prerogatives of achieving true human development. It is worth mentioning that, most likely, the situation of inequalities portrayed is a longstanding organizational and structural problem of the municipalities. This difference between urban and rural areas suggests that access policies should be strengthened in order to address health inequities.

Conclusion

Although the Federal Constitution provides for universal and equal access to healthcare services, the present study showed there is an urban-rural disparity in the use of these services by people living in the same small municipality. Under the same municipal health organization, people living in rural areas have lower utilization of health services when compared to those living in urban areas.

Collaborations

Vieira EWR, Dutra IR and Cerqueira LJ contributed to the analysis and data interpretation, writing of the article and final approval of the version to be published. Gazzinelli A contributed to the conception and design, relevant critical review of the intellectual content and final approval of the version to be published.

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