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Associated Factors and Use of Health Services by Elderly Men in Northeast Brazil

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Abstract

The objective of the research was to analyze the factors associated with the use of health services by elderly men in the Northeast region of Brazil. Cross-sectional analytical study with a secondary database of elderly men ($n = 3238$). The dependent variable was composed of the profiles of the use of health services and the independent variables were factors of predisposition, capacity, and health need. The statistical association and effect were performed using the Rao-Scott test with $p < 0.05$ and multinomial logistic regression. Elderly men with worse social indicators had a risk effect for using medium/high complexity services and those who had better health indicators were associated with sporadic medical appointment, revealing that healthcare for elderly men is centered on curative and rehabilitative care and that the use of health services is associated with the worst social indicators.

Keywords: Health Services, Health of the Elderly, Men's Health, Cross-Sectional Studies

1. Introduction

The demographic transition is marked by a reduction in fertility and mortality and results, along with the epidemiological transition, in population aging. According to United Nations projections, the elderly population in Brazil will increase from 3.1% in 1970 to 19% in 2050. The increase in the elderly population generates the need for a new social, economic and health organization [1].

In this sense, it is observed that the elderly are major users of health services [2] and that this use has increased in recent years [3, 4]. Although in Brazil the National Health Policy for the Elderly and the National Policy for Comprehensive Care to Men's Health (PNAISH, in Portuguese) have been instituted which aim to organize, implement, qualify and humanize comprehensive healthcare for the elderly and the men, respectively, the demand for health services by this public are still low.

The use of health services represents the center of the health systems functioning and comprises all direct or indirect contact with health services. This process

results from the interaction of the individual's behavior who seeks for care and the professional who leads him within the health system [5].

Andersen [6], in his classic model for the use of health services [7], points out the influence of access in the use of health services as mediated by individual factors, defined as predisposing factors (those that exist before the emergence of the health problem and affect the predisposition of people to use the services), enabling factors (the means available to obtain healthcare) and health needs (the health conditions perceived by people or diagnosed by health professionals).

Several studies show that men, in general, have more severe and chronic diseases than women [8–10]. Despite male rates responding significantly in the morbidity and mortality data, the presence of men in primary health care services is lower than that of women [11, 12] and although there is a wide discussion about masculinity in the health area, with research that refers to the need to reflect on this topic addressing to understand the risks to men's health [8, 13–16], there are few studies that explore the use of health services by elderly men and the associated epidemiological and socioeconomic factors.

Such data scarcity occurs especially in the Northeast of Brazil, a socioeconomically unequal region comparing to other regions of the country [17], making it necessary to analyze the theme. Thus, the present study analyzed the factors associated with the use of health services by elderly men in the Northeast region of Brazil.

2. Method

This is a cross-sectional, population-based study in the Northeast of Brazil, which used secondary data from the National Health Survey (PNS, in Portuguese), conducted by the Brazilian Institute of Geography and Statistics (IBGE, in Portuguese) in 2013. PNS is a household survey with national coverage, which was designed to represent the adult population, based on cluster sampling. Details of the design and sample selection process can be found in the PNS reports [18–24].

Altogether, 60.202 households in Brazil were visited and interviews conducted with individuals aged 18 years or older. A total of 205.546 individuals responded to the survey, among which 23.815 were elderly, and of these, 10.541 were male, 3238 from the Northeast [20]. This study included elderly male individuals (60 years of age or older) living in the Northeast region selected by the PNS-IBGE sampling process. Elderly men with missing information in the database were excluded.

The dependent variable of this study corresponded to the health service profile used by elderly men and was composed of ten questions from the PNS referring to the set of the use of health services. These questions were grouped and categorized through Latent Class Analysis (LCA) and were presented, after analysis, in a single health service use variable that represents a variety of phenomena to explain the outcome.

The LCA is a statistical approach that identifies distinct mutually exclusive groups (latent classes) based on the response patterns of categorical variables [25]. LCA works with heterogeneous data in which individuals are classified in the group by similar characteristics, that is, it is considered that individuals come from the same population and that the trajectory can be extrapolated to an entire population as well as the covariables that affect the trajectory will influence individuals in the same way [26]. Latent classes or trajectories aim to estimate the size and number of latent classes, the probability of the response of each individual and to assign latent class association to individuals in the population [27].

The independent variables were the PNS questions related to predisposing factors, capacity, and health needs of elderly men, organized according to the classic theoretical model for the Use of Health Services [7].

Predisposing factors were: North-eastern states; Condition of responsible or not for the domicile; Age; Color or race; Marital status; and Able to read and write. The capacity factors were: Possession of health insurance; and Participation in organized social activities (clubs, community or religious groups, elderly living centers). The necessity factors were: Diagnosis of any chronic, physical, or mental illness; Degree of difficulty in eating, bathing, use the bathroom, dressing, walking at home, lying, or getting out of bed, sitting or getting up from the chair, shopping, managing finances, taking medicine, go the doctor, and go out alone by transport; Occurrence of a fall in the last 12 months; and Perceived health status.

Regarding the variables referring to Basic and Instrumental Activities of Daily Living (ADLs and IADLs, respectively) there are some validated instruments [28–30] that evaluate these activities, however, not all the questions used in these scales were used in the PNS, such as urinary and fecal continence and the difficulty to use the phone. Thus, the set of questions that assessed ADLs and IADLs could not be grouped according to the instruments. As a result, the twelve variables referring to the degrees of difficulty to perform the ADLs and IADLs were also studied using the LCA method to form a single variable of the difficulty level to perform ADLs and IADLs.

To assess the latent class model and identify the number of classes that better define the object of study, some statistical criteria were considered. The first is entropy, the probability that the individual is perfectly classified in a particular latent class, whose measures can vary between 0 and 1, and the closer to 1 the value is, the more appropriate the model will be, indicating a good classification of the individual in the class [31].

Other criteria were considered such as the Akaike Information Criterion (AIC), Bayesian Information Criterion (BIC) and adjusted BIC, used for assessing the model's adjustments. In the analysis, the lower the value of AIC, BIC and adjusted BIC, the more suitable the model will be [32]. To assess the evolution of the testing model, the likelihood tests were used considering $p < 0.05$ as statistically significant values.

In this article, five models were tested, with two, three, four, five and six latent classes, to identify the number of classes that best represents the object of study according to the aforementioned statistical criteria. Weights and strata from the database for the LCA were considered.

In the descriptive statistical analysis, the quantitative variable corresponding to age was presented as a measure of central tendency and dispersion, with a 95% Confidence Interval (CI) being calculated. Qualitative variables were presented in the form of a frequency table and 95% CI.

In analytical statistics, the presence of an association between independent variables and the dependent variable (categorized through Latent Class Analysis) was investigated using the Rao-Scott test used in complex samples [33]. The significance level was 5%. The effect measures of the factors on the dependent variable were expressed by Odds Ratio (OR) and calculated by simple and multiple models of multinomial logistic regression, following the theoretical model of Health Services Utilization [7] from the assumption of the hierarchical approach.

Initially, a simple analysis was carried out on the blocks of predisposing factors, capacity factors and health needs. Within each block, variables with $p < 0.25$ were tested in multiple models [34]. In the end, the variables with $p < 0.05$ remained in the model for each block and were considered adjustment factors for the subsequent blocks.

The PNS-IBGE database is in the public domain and is available on the IBGE website (<http://www.ibge.gov.br>). The statistical programs used were IBM SPSS Statistics version 20 for data analysis, and Mplus 7.31 to establish latent classes in Latent Class Analysis (LCA).

The National Health Research (PNS) project was approved by the National Commission for Ethics in Research for Human Beings, of the National Health Council, under commission’s opinion number 328159, on June 26, 2013. The Informed Consent Forms of the research participants were signed on the interviewers’ handheld computers. The research project in this article did not require submission to the Ethics and Research Committee since it was subsidized by secondary data in the public domain.

3. Results

From the five models tested, the one that instituted four latent classes was the one with the best entropy, adjustment criteria and evolution of the testing model, in addition to greater parsimony in the regression model (Table 1). The four latent classes were identified and titled according to the observed response patterns: 1 - “Use of health services in the last two weeks” (3.2%; 95% CI 2.5–4.1%); 2 - “Use of health services for appointment in primary care” (12.6%; 95% CI 11.2–14.3%); 3 - “Use of health services for sporadic medical appointment” (77.0%; 95% CI 75.0–78.9%); and 4 - “Use of health services only for hospitalization in the last year” (7.1%; 95% CI 5.8–8.7%).

In the analysis of ADLs and IADLs, the model with three classes was selected, as it had a p-value <0.05, the highest entropy value and the lowest values of AIC, BIC and adjusted BIC. The three latent classes entitled were: 1 - “Without difficulty to perform ADLs and IADLs”; 2 - “Intermediate degree of difficulty to perform ADLs and IADLs”; 3 - “High degree of difficulty to perform ADLs and IADLs”.

In this study, 3238 elderly men were included. Most were from the state of Bahia (24.7%) followed by Ceará (18.0%) and were responsible for the household in which they lived (72.2%). The median age was 68 years old (1st quartile 63 years and 3rd quartile 74 years), and 51.2% of elderly men were above the median age. The most frequent color/race was “non-white” (71.8%); 64.2% were married and 57.5% could read and write.

Statistical Criteria	Number of Classes				
	2	3	4	5	6
AIC	103678.091	92431.330	89423.056	88908.037	88625.293
BIC	104092.083	93055.950	90258.304	89953.913	89881.797
Adjusted BIC	103910.945	92782.654	89892.850	89496.301	89332.026
Entropy	1.000	1.000	1.000	0.936	0.941
Vuong-Lo-Mendell-Rubin - LRT	p = 0.0000	p = 0.0000	p = 0.0000	p = 0.0000	p = 0.2148
Lo-Mendell-Rubin - LRT	p = 0.0000	p = 0.0000	p = 0.0000	p = 0.0000	p = 0.2164

AIC Akaike Information Criterion; BIC Bayesian Information Criterion; LRT Likelihood Test.
Source: The authors.
Bold font indicates the selected model.

Table 1.
Results of adequacy and adjustment of each of the tested models of the latent classes of use of health services, 2021.

Variable	Use of health services in the last two weeks % (IC95%)	Use of health services for appointment in primary care % (IC95%)	Use of health services for sporadic medical appointment % (IC95%)	Use of health services only for hospitalization in the last year % (IC95%)	p-value
Block 1 - Predisposing Factors					
State of the Northeast Region					0.672
Maranhão	1.9 (0.6–5.3)	14.4 (9.9–20.4)	74.8 (67.9–80.7)	8.9 (5.1–15.2)	
Piauí	2.3 (1.0–5.2)	12.9 (9.6–17.2)	78.3 (73.6–82.4)	6.5 (4.2–10.0)	
Ceará	4.0 (2.5–6.3)	10.1 (7.3–13.9)	78.6 (74.4–82.4)	7.3 (5.0–10.5)	
Rio Grande do Norte	4.8 (2.3–9.5)	14.5 (10.6–19.6)	76.6 (70.7–81.7)	4.1 (2.5–6.6)	
Paraíba	4.6 (2.2–9.3)	12.4 (8.6–17.6)	73.7 (67.2–79.3)	9.3 (5.9–14.3)	
Pernambuco	3.0 (1.7–5.2)	12.9 (9.6–17.2)	78.2 (73.4–82.4)	5.8 (3.7–9.1)	
Alagoas	2.2 (0.9–4.9)	14.3 (10.2–19.7)	79.6 (73.5–84.6)	3.9 (2.2–6.8)	
Sergipe	1.3 (0.5–3.1)	16.2 (11.8–21.7)	75.2 (68.8–80.7)	7.3 (4.6–11.5)	
Bahia	3.4 (1.7–6.7)	12.2 (8.6–17.1)	75.7 (69.5–81.0)	8.6 (5.2–14.0)	
Condition of the elderly person at home					0.006*
Responsible for the household	3.1 (2.2–4.3)	13.4 (11.7–15.4)	77.6 (75.1–79.9)	5.8 (4.6–7.3)	
Not responsible for the household	3.5 (2.3–5.3)	10.6 (7.9–14.1)	75.0 (70.3–79.1)	10.9 (7.8–15.2) †	
Age					0.484
Below the median	3.6 (2.5–5.0)	12.3 (10.2–14.8)	76.1 (72.9–79.0)	8.1 (6.4–10.2)	
Above the median	2.9 (1.9–4.3)	13.0 (11.0–15.4)	77.6 (74.7–80.4)	6.4 (4.8–8.6)	
Color/Race					0.698
White	4.0 (2.5–6.4)	12.8 (10.2–15.9)	76.3 (72.5–79.7)	6.9 (5.2–9.2)	
Not white	2.9 (2.1–4.0)	12.6 (10.9–14.6)	77.1 (74.6–79.4)	7.4 (5.7–9.4)	
Marital status					0.095
Married	3.7 (2.7–5.1) †	12.0 (10.3–14.0)	78.2 (75.7–80.5)	6.1 (4.8–7.6)	
Separately / Judicially Disqualified	4.2 (1.5–11.3)	22.2 (9.6–43.6)	70.7 (51.5–84.6)	2.8 (0.8–9.9)	
Divorced	2.3 (0.7–7.7)	10.5 (5.2–20.1)	79.7 (67.8–88.0)	7.4 (2.7–19.0)	
Widower	2.1 (1.0–4.6)	11.9 (8.0–17.4)	76.4 (69.8–82.0)	9.5 (6.1–14.6)	
Not married	2.2 (1.2–4.0)	14.5 (10.7–19.3)	73.0 (67.4–78.0)	10.3 (6.8–15.3)	

Variable	Use of health services in the last two weeks % (IC95%)	Use of health services for appointment in primary care % (IC95%)	Use of health services for sporadic medical appointment % (IC95%)	Use of health services only for hospitalization in the last year % (IC95%)	p-value
Can read and write					0.002*
Yes	4.2 (3.1–5.7)†	13.5 (11.4–15.8)	76.7 (73.8–79.4)	5.6 (4.3–7.3)	
No	1.9 (1.2–3.1)	11.6 (9.4–14.2)	77.1 (73.6–80.1)	9.4 (7.1–12.5) †	
Block 2 - Capacity Factors					
Health insurance					0.005*
Yes	6.9 (4.4–10.6)†	14.0 (10.3–18.8)	71.2 (64.2–77.3)	8.0 (5.1–12.2)	
No	2.6 (1.9–3.6)	12.4 (10.8–14.3)	77.9 (75.7–79.9)	7.1 (5.7–8.9)	
Participation in organized social activities					0.898
Yes	2.6 (1.3–5.0)	13.1 (9.5–17.7)	76.4 (70.5–81.4)	7.9 (4.8–12.7)	
No	3.3 (2.5–4.4)	12.6 (10.9–14.5)	76.9 (74.6–79.1)	7.1 (5.8–8.8)	
Block 3 - Necessity Factors					
Diagnosis of chronic, physical, or mental illness					0.00*
Yes	5.8 (4.1–8.1)†	17.9 (15.0–21.3)†	66.9 (62.5–70.9)	9.5 (7.1–12.4) †	
No	2.0 (1.4–3.0)	10.2 (8.5–12.2)	81.6 (79.1–83.9) †	6.2 (4.7–8.2)	
Difficulty level to perform ADLs and IADLs					0.00*
No difficulty	2.1 (1.5–3.1)	12.1 (10.5–14.0)	80.1 (77.8–82.2) †	5.6 (4.4–7.2)	
Intermediate degree of difficulty	6.5 (4.2–9.9) †	14.4 (10.4–19.7)	67.5 (61.6–72.8)	11.6 (8.3–15.8)†	
High degree of difficulty	12.9 (6.7–23.2) †	16.4 (9.2–27.4)	46.3 (34.4–58.6)	24.5 (15.4–36.7)†	
Fall in the last 12 months					0.00*
Yes	11.6 (6.0–21.4) †	19.0 (12.3–28.2)	58.6 (48.0–68.4)	10.8 (6.6–17.2)	
No	2.7 (2.0–3.5)	12.2 (10.7–13.9)	78.1 (75.9–80.1) †	7.0 (5.7–8.6)	
Perceived health status					0.278
Very good	8.0 (2.1–26.5)	12.3 (6.7–21.5)	70.7 (57.4–81.1)	9.0 (4.6–16.9)	
Good	3.4 (2.3–4.9)	13.5 (10.7–16.9)	75.0 (71.0–78.6)	8.1 (5.9–11.0)	

Variable	Use of health services in the last two weeks % (IC95%)	Use of health services for appointment in primary care % (IC95%)	Use of health services for sporadic medical appointment % (IC95%)	Use of health services only for hospitalization in the last year % (IC95%)	p-value
Regular	2.8 (1.9–4.2)	12.0 (10.1–14.4)	78.5 (75.4–81.2)	6.6 (4.9–8.9)	
Bad	1.6 (0.7–3.4)	14.0 (9.7–19.7)	78.2 (72.1–83.3)	6.2 (4.0–9.7)	
Too bad-do not know how to answer	8.0 (3.3–18.1)	7.9 (4.0–15.1)	75.6 (62.8–85.0)	8.5 (2.8–22.9)	

95% CI - 95% confidence interval.
ADLs: Basic Activities of Daily Living; IADLs: Instrumental Activities of Daily Living.
* $p < 0.05$ (Rao and Scott test).
†Standardized residual >1.96.
Source: The authors.
Bold font indicates statistical significance (p-value column) and/or dependency between categories (% columns).

Table 2.
Descriptive and analytical analysis of the use of health services by elderly men according to blocks of variables analyzed. Northeast, Brazil, 2021.

Regarding the possession of health insurance, 85.1% did not have it. Most elderly men did not participate in organized social activities (85.1%), had no diagnosis of chronic, physical, or mental illness (67.8%), had no difficulty in performing ADLs and IADLs (80.0%) and it did report a fall in the last year (93.7%). The perceptions of regular (46.4%) and good (34.6%) health status were the most frequent.

After the description of the dependent variable generated by the LCA, composed of four classes, a descriptive and analytical analysis of the independent variables was performed according to the dependent variable (**Table 2**).

The results of the simple and multiple multinomial logistic regression analysis according to each block of associated factors studied are shown in **Tables 3** and **4**, respectively. The use of services in primary care was considered as a reference category for the dependent variable.

In the simple logistic regression analysis, from the 12 variables analyzed, 7 had p-values < 0.25 (**Table 3**) and were tested in the multiple model. By the end, six variables remained statistically significant, $p < 0.05$ (**Table 4**). In the multiple logistic regression to Block 1, elderly men not responsible for the home were approximately 2 times more likely to use the services for sporadic medical appointment compared to the appointment in primary care. Regarding being able to read and write, those who were not were approximately 1.8 times more likely to use the services only for hospitalization compared to the appointment in primary care.

In the analysis of Block 2, after adjusting the variables for Block 1, elderly men who did not have health insurance had about 54% less chance of using health services in the last two weeks compared to use in primary care.

In the last block, after adjusting the variables for Blocks 1 and 2, those who were not diagnosed with a chronic, physical, or mental illness had about 2 times more chance of using the services for a sporadic medical appointment. Those who did not have difficulty in performing ADLs and IADLs had approximately 79% less chance of using the services in the last two weeks and of being admitted in the last year compared to the appointment in primary care. Elderly men who did not report a fall in the last year were 1.9 times more likely to have a sporadic medical appointment compared to the primary care appointment.

Variable	Use of health services in the last two weeks OR (IC95%)	Use of health services for sporadic medical appointment OR (IC95%)	Use of health services only for hospitalization in the last year OR (IC95%)	p-value
Block 1 - Predisposing Factors				
Condition of the elderly person at home				0.020*
Responsible for the household	1.00	1.00	1.00	
Not responsible for the household	1.56 (0.83–2.96)	1.25 (0.86–1.82)	2.25 (1.31–3.87)†	
Marital status				0.459
Married	1.00	1.00	1.00	
Separately / Judicially Disqualified	0.57 (0.14–2.38)	0.49 (0.18–1.34)	0.26 (0.05–1.25)	
Divorced	0.63 (0.15–2.73)	1.19 (0.54–2.61)	1.53 (0.42–5.64)	
Widower	0.61 (0.24–1.57)	0.95 (0.59–1.53)	1.40 (0.70–2.77)	
Not married	0.51 (0.23–1.13)	0.73 (0.48–1.10)	1.12 (0.63–2.00)	
Can read and write				0.011*
Yes	1.00	1.00	1.00	
No	0.57 (0.29–1.09)	1.19 (0.87–1.64)	1.78 (1.09–2.90)†	
Block 2 - Capacity Factors				
Health insurance				0.004*
Yes	1.00	1.00	1.00	
No	0.42 (0.22–0.81) †	1.23 (0.82–1.86)	1.00 (0.58–1.73)	
Block 3 - Necessity Factors				
Diagnosis of chronic, physical, or mental illness				0.00*
Yes	1.00	1.00	1.00	
No	0.72 (0.38–1.36)	2.06 (1.49–2.85) †	1.33 (0.79–2.24)	
Difficulty level to perform ADLs and IADLs				0.00*
No difficulty	0.28 (0.10–0.77) †	1.77 (0.84–3.73)	0.28 (0.12–0.65) †	
Intermediate degree of difficulty	0.61 (0.21–1.76)	1.51 (0.68–3.35)	0.53 (0.21–1.38)	
High degree of difficulty	1.00	1.00	1.00	
Fall in the last 12 months				0.026*

Variable	Use of health services in the last two weeks OR (IC95%)	Use of health services for sporadic medical appointment OR (IC95%)	Use of health services only for hospitalization in the last year OR (IC95%)	p-value
Yes	1.00	1.00	1.00	
No	0.47 (0.18–1.20)	1.92 (1.04–3.54) †	1.24 (0.62–2.48)	

OR - odds ratio; 95% CI - 95% confidence interval.

ADLs: Basic Activities of Daily Living; IADLs: Instrumental Activities of Daily Living.

* $p < 0.05$.

†Category of the variable with $p < 0.05$.

Source: The authors.

Bold font indicates statistical significance.

Table 3.
Values of gross odds ratio and confidence interval obtained by simple analysis for the association between the variables presented in the hierarchical model and the use of the health service for appointment in primary care, 2021.

Variable	Use of health services in the last two weeks OR (IC95%)	Use of health services for sporadic medical appointment OR (IC95%)	Use of health services only for hospitalization in the last year OR (IC95%)	p-value
Block 1 - Predisposing Factors ^a				
Condition of the elderly person at home				0.119
Responsible for the household	1.00	1.00	1.00	
Not responsible for the household	1.02 (0.52–2.01)	1.40 (0.94–2.08)	1.97 (1.07–3.65)†	
Can read and write				0.009*
Yes	1.00	1.00	1.00	
No	0.52 (0.26–1.06)	1.10 (0.80–1.50)	1.79 (1.07–3.00)†	
Block 2 - Capacity Factors ^b				
Health insurance				0.048*
Yes	1.00	1.00	1.00	
No	0.46 (0.23–0.93)†	1.07 (0.68–1.68)	0.71 (0.39–1.28)	
Block 3 - Necessity Factors ^c				
Diagnosis of chronic, physical, or mental illness				0.000*
Yes	1.00	1.00	1.00	
No	0.86 (0.44–1.68)	2.04 (1.48–2.82)†	1.30 (0.76–2.20)	
Difficulty level to perform ADLs and IADLs				0.000*
No difficulty	0.21 (0.07–0.65)†	2.17 (1.02–4.64)†	0.44 (0.18–1.10)	

Variable	Use of health services in the last two weeks OR (IC95%)	Use of health services for sporadic medical appointment OR (IC95%)	Use of health services only for hospitalization in the last year OR (IC95%)	p-value
Intermediate degree of difficulty	0.53 (0.18–1.54)	1.73 (0.76–3.95)	0.68 (0.25–1.86)	
High degree of difficulty	1.00	1.00	1.00	
Fall in the last 12 months				0.020*
Yes	1.00	1.00	1.00	
No	0.46 (0.16–1.28)	1.93 (1.06–3.52)†	1.32 (0.65–2.72)	

OR - odds ratio; 95% CI - 95% confidence interval.
ADLs: Basic Activities of Daily Living; IADLs: Instrumental Activities of Daily Living.
* $p < 0.05$.
†Category of the variable with $p < 0.05$.
^aAdjusted by the variables in Block 1 – Predisposing Factors.
^bAdjusted by the variables in Block 1 - Predisposing Factors and Block 2 - Capacity Factors.
^cAdjusted for the variables in Block 1 - Predisposing Factors, Block 2 - Capacity Factors and Block 3 - Necessity Factors.
Source: The authors.
Bold font indicates statistical significance.

Table 4.
Values of adjusted odds ratio and confidence intervals obtained by multinominal logistic regression analysis for the association between the use of health services and the appointment in primary care and the three blocks of variables analyzed, 2021.

4. Discussion

According to the World Report on Aging and Health, the aging of the population demands a comprehensive public health action; however, the debate on the topic has been insufficient, even though there is sufficient evidence to act urgently at present [35]. When it comes to the aging of the male population, the situation becomes more worrying, as research is even scarcer.

In this study, the profile of the use of health services for elderly men in the Northeast of Brazil was analyzed through the LCA, which instituted four distinct classes of use profile based on the response patterns of the categorical variables of the PNS and allowed to study the phenomenon comprising the various aspects that involve the theme, with an innovative and safe statistical methodology, infrequently applied in epidemiological studies. Previous studies [36–39] defined the dependent variable by a single question about the use of health services that did not address the phenomenon in its entirety and complexity.

Regarding the latent classes, it was identified that most elderly men used the health service for sporadic medical appointments in the last year (77%), that is, they are not frequent users of the services. Only 12.6% used the services for appointment in Primary Care, and a minority was admitted in the last year or used the services of medium and high complexity in the last two weeks.

According to the National Primary Care Policy (PNAB, in Portuguese), primary care should be the user’s main gateway to the Brazilian public health system and the communication center of the Health Care Network [40]. This fact was not found among elderly men in the Northeast of Brazil, and it is noteworthy that the search

for healthcare by this population usually occurs much less than the female population [41]. Several studies have proven the fact that, compared to women, men are more vulnerable to diseases, especially to serious and chronic illnesses, in addition to dying earlier [8, 10, 38, 42].

In the hierarchical analysis of Block 1, elderly men who cannot read and write were about 1.8 times more likely to be hospitalized than to carry out appointments in primary care. According to studies of inequalities from the database of the Health, Well-Being, and Aging survey in Latin America [43, 44], elderly people with less education have worse health status due to worse habits, greater exclusion and lower level of information and socioeconomic conditions to access the health network early, which implies the use of services in more serious health conditions, such as hospitalization.

It was also analyzed the fact of being responsible or not for the home, identifying that those who were not responsible were approximately 2 times more likely to use the services for hospitalization compared to the appointment in primary care. This finding is lined with what PNAISH [45] presents: an issue pointed out by men for not looking for health services is linked to their position as the provider, claiming that the hours of services functioning coincide with their working time. In this sense, being responsible for the home keeps men away from preventive health services, which can result in the use of medium and high complexity services. However, in this research, the use of these services was related to men not responsible for the home.

In the analysis of Block 2, elderly men in the Northeast who had no health insurance had 54% less chance of using health services in the last two weeks compared to use in primary care. One study showed that having a referral doctor for routine care was strongly associated with having health insurance: 69.8% of individuals with health insurance declared that they had a referral doctor in contrast to 31.6% without insurance [38]. This may be because individuals with more serious health problems are more likely to buy health insurance (a phenomenon known in economic theory as adverse selection) [46]. Another possibility is that having health insurance increases the use of health services, especially for preventive or routine appointments [46].

Regarding the last block, elderly men who were not diagnosed with chronic, physical, or mental illness were approximately 2 times more likely to use the services for sporadic medical appointment. This demonstrates that the absence of clinical diagnosis is a conditioning factor for not using health services frequently. In a study carried out with sample data from the National Household Sample Survey, it was concluded that the probability of having had at least one medical appointment in the last 12 months was about 3 times higher among people with chronic diseases [47]. According to PNAISH, male entry into the health system occurs mainly through ambulatory and hospital care, which sets up a profile that favors morbidity aggravation due to the late search for care [45].

The prevalence of functional limitation varies between countries and according to the criterion adopted for its definition [48, 49]. A widely used definition is the reporting of difficulties in performing ADLs and IADLs. In this study, elderly men in the Northeast who had no difficulty in performing ADLs and IADLs were about 79% less likely to use the services in the past two weeks and 2.1 times more likely to check sporadically compared to the use in primary care.

These data corroborate with a study that identified the factors associated with the use of health services by elderly people with chronic diseases, which concluded that medical appointment among elderly people who are functionally incapable was 30% more prevalent when compared to those without functional limitations [50].

Regarding the occurrence of falls, those who did not suffer any type of fall in the last year were 1.9 times more likely to have a sporadic medical appointment

compared to the appointment in primary care. A study carried out in four Brazilian states concluded that men, even in different social contexts, prefer to delay the search for assistance as much as possible and only do so when they are no longer able to deal with their symptoms alone [41]. This fact reinforces that, if elderly men do not have clinical complications, they do not use health services frequently, mainly in a preventive way.

As a methodological limitation, this study presented common restrictions to research using secondary databases, namely: the variables and objectives studied in the PNS database have already been established, which prevented new variables from being included; and long questionnaires, such as those applied in the PNS, can generate memory bias, in which the participant forgets or loses the desire to report past events.

However, despite the intrinsic limitations to the methodological design, this article is an essential contribution to the study of the aging of the male population in Northeast Brazil, with the possibility of a new look at the theme and can serve as an instrument for planning and institution of actions and public policies for this population.

Finally, it reinforces the importance of research on human aging aimed at the male population, as this study identified that healthcare and the use of health services by elderly men in Northeast Brazil are focused to medium and high complexity and in the presence of diseases or functional disabilities. Thus, intra-sectoral and inter-sectoral policies and actions should encourage the contact of the elderly male population with health services at an early stage, especially in Primary Care, addressing to reduce gender disparities in healthcare.

5. Conclusion

This study identified that healthcare and the use of health services by elderly men in Northeast Brazil are focused to medium and high complexity and in the presence of diseases or functional disabilities. Thus, intra-sectoral and inter-sectoral policies and actions should encourage the contact of the elderly male population with health services at an early stage, especially in Primary Care, addressing to reduce gender disparities in healthcare, and further studies should be carried out to analyze and reinforce the importance of research on human aging aimed at the male population.

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