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Functional limitation on elderly people in the northeast and the feminization of old in urban and rural areas of Brazil

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ABSTRACT. Population aging in Brazil increases on a large scale due to declining fertility and mortality. This phenomenon can be influenced by several factors (demographic, biological and social), making them determinants for the health conditions of the elderly populations residing in different geographic areas. The present study aims to identify the functional limitation in elderly residents of urban and rural areas of Brazil. This is a descriptive epidemiological study with a quantitative approach. It was evidenced that the functional limitation for activities of daily living and instrumental activities of daily living are concentrated in the northeast region, mainly in the urban area. The following states presented the highest proportions of daily life activity limitation in urban areas: Alagoas (11.60%), Rio Grande do Norte (10.95%), Pernambuco (10.36%) and Paraíba (9.62%). For activities of daily living in the rural area were found in the states of Paraíba (12.19%), Maranhão (8.93%), Piauí (8.85%) and then Pernambuco (7.24%). Data from the functional limitation for instrumental activities of daily living again highlighted the Northeast region, with the states of Rio Grande do Norte (26.01%), Paraíba (25.96%), Maranhão (25.72%) and Alagoas (24.57%). Lastly, it was verified that the elderly woman exhibits greater proportions of functional limitation in relation to the elderly of the masculine sex, standing out again the northeastern region of the country.

Keywords: functional limitation; aging; urban population; rural population; feminization of old age.

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Introduction

Population aging and declining fertility are phenomena that occur worldwide, abruptly expanding the world's elderly population. According to the World Health Organization (WHO), the population over 60 years will exceed the 2 billion mark by the year 2050, and results in challenges for the integrality and assistance of the elderly, with the purpose of promoting aging with fewer limitations for carrying out activities of daily living (ADL) and enhancing functional capacity (Ministério da Saúde, 2015).

Faced with this reality in the world, Brazil also presents a scenario of demographic transition characterized by high life expectancy and low fertility due to the transformations of modern society, with advances in medicine and women inserted in the labor market (Vieira, Soares, Cardoso, & Souza, 2017).

According to the Instituto Brasileiro de Geografia e Estatística – IBGE (Brazilian Institute of Geography and Statistics), the Brazilian population has aged, and grew 18% in the last 5 years, surpassing the mark of 30 million elderly people in Brazil in 2017 (Manual para Utilização da Caderneta de Saúde da Pessoa Idosa, 2018).

In this perspective, it is possible to accentuate the existing problems in public health, due to the growing demand of elderly people in health systems, with chronic non-communicable diseases (NCDs), leading to the decline or loss of functional capacity (Chan, 2014).

The epidemiological transition characterized by the substitution of communicable diseases (TD) for chronic non-communicable diseases (CNCD), mainly affects the elderly, changing the patterns of morbidity and mortality, and consequently impairing functional capacity (Vanzella, Nascimento, & Santos, 2014).

Functional capacity is defined as the ability to perform simple or complex daily tasks, necessary for an independent life, in which the elderly carry out these activities without the help of other people, autonomously, developing the ability to make decisions and manage their own lives, with autonomy and independence (Vieira et al., 2017).

Therefore, if there is a decline in functional capacity, there will also be prejudice to the performance of self-care, such as activities of daily living (ADL), which are basic care, such as personal hygiene, for example, and instrumental activities of daily living (IADL), that are related to social life, interfering in independence. Both limitations for ADL and IADL damage the health and well-being of the elderly (Goldstein, 2016).

These functional limitations affect elderly people from all over Brazil, in different regional areas, whether residents of urban or rural areas. The deficiency in the assistance of health services in rural areas, for example, and the stress in large urban centers, are factors that allow the reflection about aging and the focus on the problems faced, as well as the functional limitations existing among the elderly population in the urban and rural areas of Brazil (Blanco, Castilho, Blanco, & Cortez, 2014).

When there is a deficit in functional capacity, there will be damage to activities of daily living and, consequently, loss of autonomy and independence, becoming dependent on other people. Given this, what are the challenges faced by elderly people in Brazil living in rural and urban areas, and what are their limitations in carrying out their daily activities?

The present study aimed to identify the functional limitation of elderly people who live in rural and urban areas in Brazil.

Material and methods

This is a descriptive epidemiological study with a quantitative approach. The epidemiological study occurs when the unit of study to be observed is the population or a group of people who belong to a defined geographic area, in a given period, being the ideal study for raising hypotheses and assessing the social and environmental context that may interfere with the health of the studied population (Bonita, Beaglehole, & Kjellström, 2010).

The descriptive study is based on the analysis, recording and interpretation of data collection for a given population or sample studied, analyzing and investigating the health conditions that interfere in the health-disease process, which may interfere with the health conditions of the studied population (Bonita et al., 2010).

Quantitative studies are methods that quantify data collected for the analysis of results, where the researcher does not interfere in the results (Bonita et al., 2010).

Data were collected through the Sistema de Indicadores de Saúde e Acompanhamento de Políticas do Idoso – SISAP (System of Health Indicators and Monitoring of Elderly Policies), available in the Pesquisa Nacional de Saúde – PNS (National Health Survey). SISAP is a tool that aims to monitor and follow up interventions in the health situation of the elderly population at the federal, state and municipal levels. Through indicators and data collection, it is possible to disseminate relevant information about the aging process, essential for health care and possible interventions for the better quality of life of the elderly (Fiocruz, 2011).

For the present study, the dimension for health status and the indicators for functional status and the variables are described in Table 1. Then the data collected through SISAP were transferred to the TABWIN tool, where the data are analyzed using thematic maps and graphs. Data collection took place in September 2018 and data were tabulated in February 2019 (Fiocruz, 2011).

Results and discussion

As shown in Figure 1, the states with the highest proportions of elderly residents in urban areas with functional limitations to perform ADL were the states of Rio Grande do Norte, Pernambuco and Alagoas, located in the Northeast of Brazil, while in the Midwest, the state of Mato Grosso.

In Figure 2 the state of the Northeast region with the largest proportions is the state of Paraíba, and in the Southeast the states of Rio de Janeiro and Minas Gerais showed the highest proportions of functional limitations.

Figure 3 refers to the functional limitation for IADL in elderly people living in urban areas of Brazil, and the states with the highest proportion were Rio Grande do Norte, Paraíba, Alagoas and Maranhão.

Table 2 shows the proportion of elderly people with functional limitations for the northeastern region in relation to the implementation of ADL and IADL in urban and rural areas. In the Northeast, the states with

the highest proportion of functional limitations for ADL in the urban area were Rio Grande do Norte and Pernambuco, and in the rural area Paraíba and Maranhão stood out.

Table 1. Functional limitation indicators.

Indicator	Calculus method	Interpretation
Proportion of elderly people living in urban areas with functional limitations to perform activities of daily living (ADL)	NUMERATOR: Elderly people who live in rural areas and answered options 1 (Cannot do it) or 2 (Have great difficulty) to at least one of the following questions: 1) Eat alone with a plate placed in front of you, including holding a fork, cutting food and drinking from a glass? 2) Bathing alone including getting in and out of the shower or bath? 3) Go to the bathroom alone including sitting and getting up from the toilet? 4) Dress yourself, including putting on socks and shoes, zipping up, and closing and opening buttons? 5) Walking home alone from one room to another in the house, on the same floor, as from the bedroom to the living room and kitchen? 6) Lie down or get out of bed alone? DENOMINATOR: Elderly population living in urban areas x 100	Estimates the percentage of elderly people living in urban areas who report having functional limitations to perform Activities of Daily Living (ADL), which consists of not being able to perform any or having great difficulty in performing ADL. It is a summary measure that indicates limitation or lack of autonomy to exercise activities of daily living. This indicator reflects elderly people in situations of fragility.
Proportion of elderly people living in rural areas with functional limitations to perform activities of daily living (ADL)	NUMERATOR: Elderly people who live in rural areas and answered options 1 (Cannot do it) or 2 (Have great difficulty) to at least one of the following questions: 1) Eat alone with a plate placed in front of you, including holding a fork, cutting food and drinking from a glass? 2) Bathing alone including getting in and out of the shower or bath? 3) Go to the bathroom alone including sitting and getting up from the toilet? 4) Dress yourself, including putting on socks and shoes, zipping up, and closing and opening buttons? 5) Walking home alone from one room to another in the house, on the same floor, as from the bedroom to the living room and kitchen? 6) Laying down or getting out of bed alone? DENOMINATOR: Elderly population living in rural areas x 100	Estimates the percentage of elderly people living in rural areas who report having functional limitations to perform Activities of Daily Living (ADL), which consists of not being able to perform any or having great difficulty in performing ADL. It is a summary measure that indicates limitation or lack of autonomy to exercise activities of daily living. This indicator reflects elderly people in situations of fragility.
Proportion of elderly people with functional limitations to perform instrumental activities of daily living (IADL)	NUMERATOR: Elderly people aged 60 or over, who answered options 1 (can't do it) or 2 (has great difficulty) to the following questions: 1) Shopping alone, for example for food, clothing or medicine? 2) Manage finances alone (take care of your own money)? 3) Take the medication alone? 4) Leave alone using a transport such as bus, subway, taxi, car, etc. DENOMINATOR: Total population of elderly X100	Estimates the percentage of elderly people with functional limitations to perform Instrumental Activities of Daily Living (IADL), which consists of not being able to perform any or having great difficulty in performing IADL.

Source: Sistema de Indicadores de Saúde e Acompanhamento de Políticas do Idoso [SISAP] (2019).

Figures 4 and 5 show the graphs of residents in urban and rural areas, respectively, with functional limitations for ADL in the five most relevant states by sex. In Figure 4 we obtained results similar to Figure 5, however in the state of Maranhão and in Rio Grande do Norte it presented balance between the proportions of limitation for both sexes.

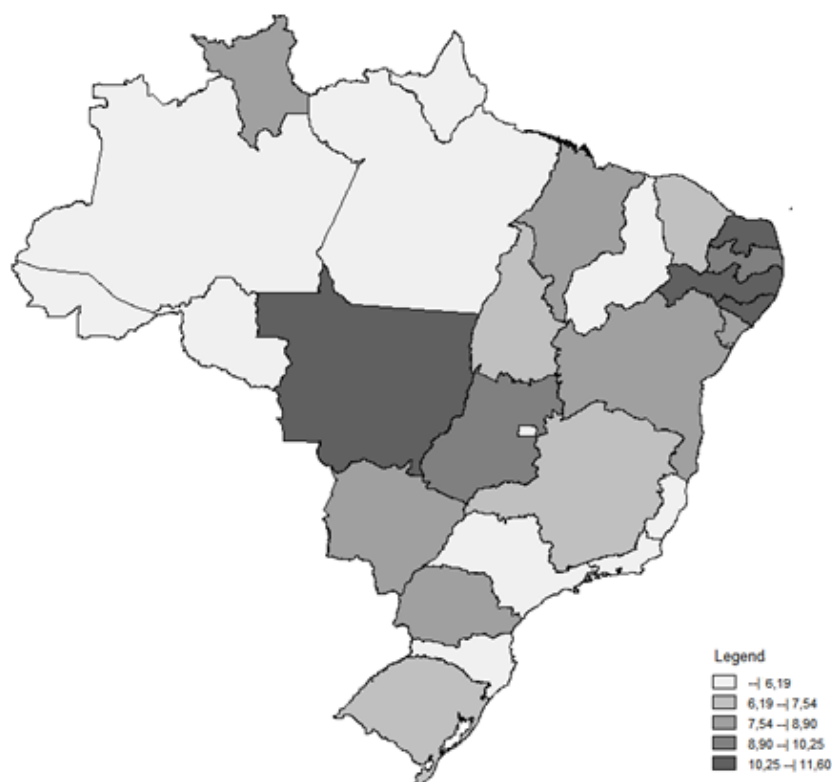


Figure 1. Thematic map of the proportion of elderly people living in an urban area with functional limitations to perform Activities of Daily Living (ADL) in Brazil, Natal-RN, 2019.

Source: SISAP (2019).

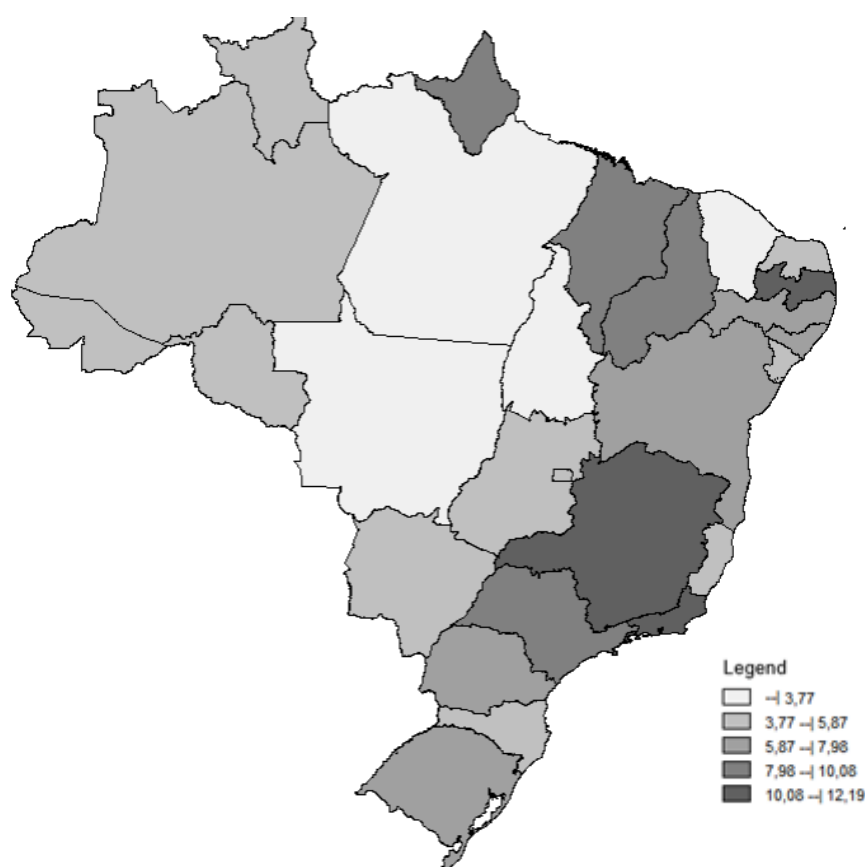


Figure 2. Thematic map of the proportion of elderly people living in rural areas with functional limitations to perform Activities of Daily Living (ADL) in Brazil, Natal-RN, 2019.

Source: SISAP (2019).

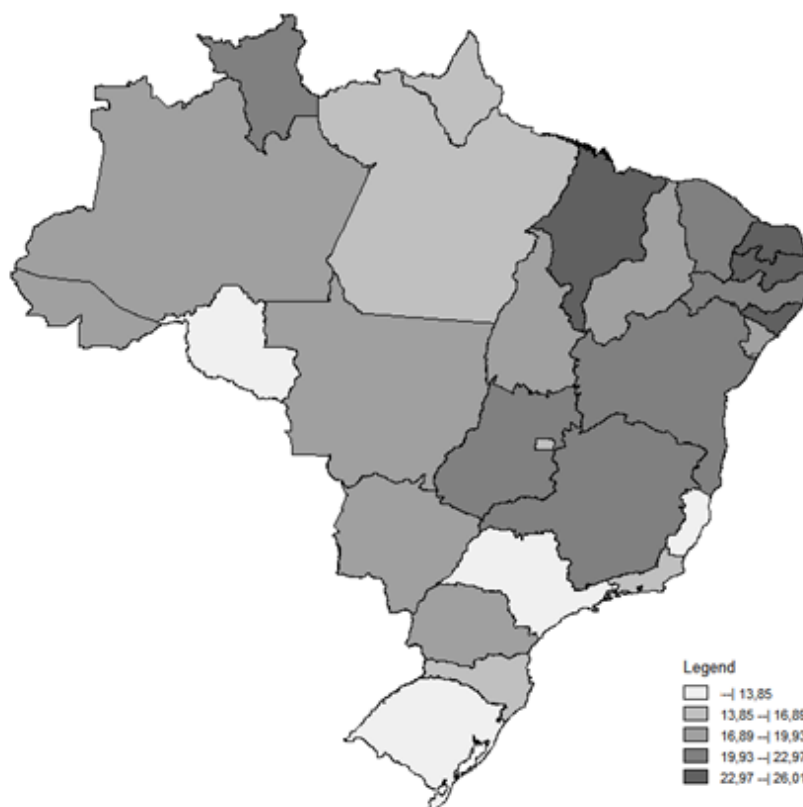


Figure 3. Thematic map of the proportion of elderly people with functional limitations to perform Instrumental Activities of Daily Living (IADL) in Brazil, Natal-RN, 2019.

Source: SISAP (2019).

Table 2. Proportion of elderly people with functional limitations for ADL and IADL by States in Brazil, Natal-RN, 2019.

FU	Proportion of elderly residents in urban areas with functional limitations for (ADL)	Proportion of elderly residents in rural areas with functional limitations for (ADL)	Proportion of elderly people with functional limitation for (IADL)
AL	11,60	6,54	24,57
BA	8,65	6,40	21,62
CE	7,48	3,61	20,30
MA	8,67	8,93	25,72
PB	9,62	12,19	25,96
PE	10,36	7,24	19,95
PI	5,54	8,85	19,48
RN	10,95	4,45	26,01
SE	8,77	4,60	18,03

Source: SISAP (2019).

Based on the results achieved, it was found that it is possible to discuss two main points in the present study, firstly the functional limitation among the elderly in Brazil is mainly concentrated in the Northeastern region of the country, and mainly in urban areas for ADL limitations. The second point is the functional limitation of the elderly women in relation to the elderly male population, which explains the phenomenon of the feminization of old age, that is, the predominance of women in the elderly population.

The Northeastern region of Brazil, according to Instituto Brasileiro de Geografia e Estatística (IBGE, 2015), is the second most populated region by Brazilians, according to the PNAD survey conducted in 2015, behind only the Southeast region. In this same survey, the urbanization concentration process was evaluated, rising from 82.5% in 2005 to 84.7% in 2015 (Ministério da Saúde, 2015).

Although the Northeast is the second most populous region in Brazil, throughout history it has faced great challenges, generating consequences such as low economic development, high unemployment rates, population exodus to rural centers and inequality between other regions (Oliveira-Figueiredo, Felisbino-Mendes, Malta, & Velásquez-Meléndez, 2017).

In the Northeast, the illiteracy rate is the highest in the country, totaling 18.9% in 2013. This reality of illiteracy is higher among the elderly, exceeding 27% in the elderly over 65 years. In view of this reality, we can highlight that inequality prevails between the states of the Northeast, and that it reflects on the health conditions of the elderly, due to greater proportions of limitation in the states of the Northeast (Oliveira-Figueiredo, Felisbino-Mendes, Malta, & Velásquez-Meléndez, 2017).

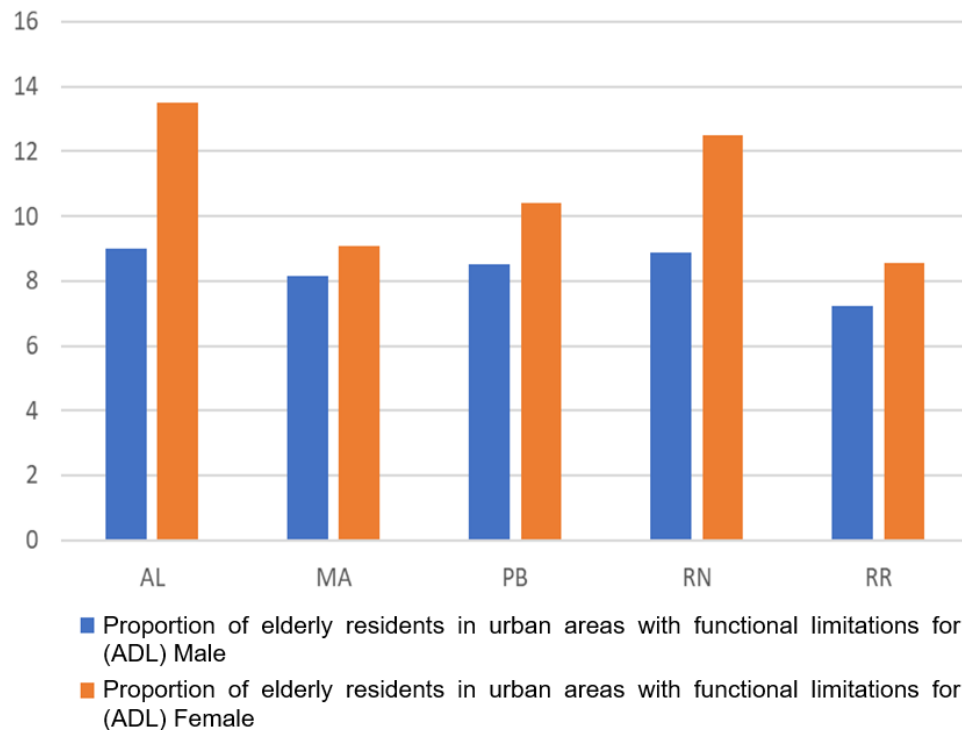


Figure 4. Graph with proportion of elderly residents in urban areas with functional limitations for ADL in the five most relevant states by sex, in Brazil, Natal-RN, 2019.

Source: SISAP (2019).

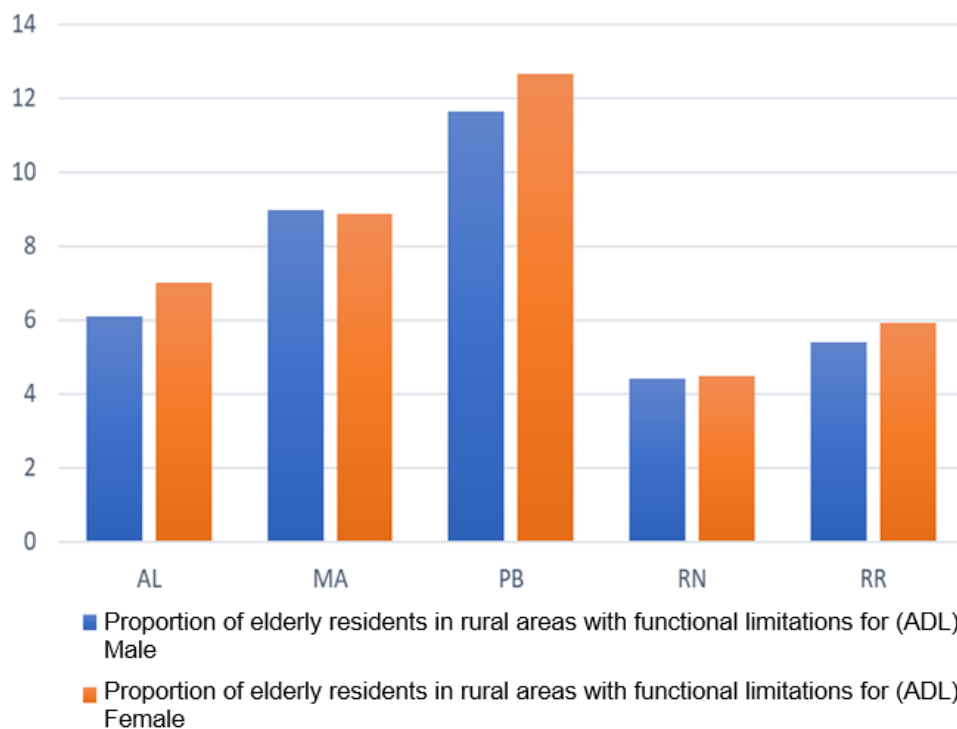


Figure 5. Graph with proportion of elderly people living in rural areas with functional limitations for ADL in the five most relevant states, by sex, in Brazil, Natal-RN, 2019.

Source: SISAP (2019).

According to the results of the present study, the states in the Northeast region that had the greatest proportions of limitation were the states of Rio Grande do Norte and Paraíba. According to Oliveira-Figueiredo et al. (2017), Paraíba is the second among the federative units with the highest number of households registered in the *Unidade de Saúde da Família* (Family Health Unit).

However, the state of Rio Grande do Norte is the third state with the lowest proportion of registered households, behind only Bahia and Pernambuco, which can increase the percentage of functional limitations in the state in percentage (Oliveira-Figueiredo et al., 2017).

According to Freitas, Beleza, Furtado, Fernandes, and Soares (2018), the health conditions of the elderly in the state of Paraíba worsened between 2000 and 2010. The number of elderly people who declared some kind of mental and motor disability, difficulty in seeing and listening, which resulted in the decline of their activities of daily living, limiting autonomy. The same study also showed a high growth of the elderly who live alone (Freitas et al., 2018).

According to the Pesquisa Nacional por Amostra de Domicílios – PNAD (National Household Sample Survey), Rio de Janeiro is the state with the largest share of the elderly population in Brazil, with 18.7% in 2016. The second most aged state is Rio Grande do Sul, with a percentage 17.8% of elderly people over 60 years old. In the Southeast, Minas Gerais and São Paulo have an above average population aging, on the other hand, states in the North have a younger age structure (Ministério da Saúde, 2015).

It is also relevant to highlight in the present study the highest proportions of elderly people with limitations for ADLs in urban areas. According to Rodrigues, Rocha, Vasconcelos and Diniz (2015), the elderly in rural areas in the Northeast region are at an advantage compared to those in urban centers, they present themselves with healthier lifestyles, such as food and less tobacco consumption. In addition to developing active behavior, performed through manual labor in daily life.

According to Tavares, Ribeiro, Ferreira, Martins and Pegorari (2015), the elderly who live in rural areas may face resistance regarding accessibility to health services, absence of care professionals, difficulties with public transport and geographical isolation. However, in the urban area, the elderly octogenarians were impacted in terms of health and quality of life, despite the precarious socioeconomic conditions in the rural area.

Knowing about the greatest functional limitation of the elderly in urban centers, it is necessary that public policies are focused on comprehensive care for these elderly, ensuring accessibility and mobility, as guaranteed by the constitution. Offering facilities for public transport, so that these elderly are not excluded from social life and perform their IADL's, being a fundamental point for the quality of life (Blanco, Castilho, Blanco, & Cortez, 2014).

As a result of the impairment of functional limitation, often the loss of mobility and lack of postural balance, increases the risk of falls during the performance of the ADLs. According to Ferreira et al. (2016), complications with falls are the main causes of death in the elderly over 65 years.

Thus, it is necessary to monitor the Estratégias de Saúde da Família - ESF (Family Health Strategies) in the most remote areas of rural areas, in order to identify functional limitations and problems that interfere with health conditions, promoting comprehensive and continuous care (Tavares et al., 2015).

The second aspect to be discussed in the present study is the functional limitation present in elderly women over 60 years. According to IBGE, life expectancy at birth in 2019 is 80 years for women and 73 years for men. It appears that women live an average of seven years longer than men, which contributes to the phenomenon of the feminization of old age (Instituto Brasileiro de Geografia e Estatística [IBGE], 2010).

In addition to the higher life expectancy among the elderly, there is a factor that also explains the feminization of old age: the greater number of widows among them. Usually, such widows do not return to a second marriage or affective relationship, unlike men, who remarry younger women (Stedile, Martini, & Schmidt, 2017).

Elderly women face numerous challenges throughout their lives, reaching senility with a lower salary, lower retirement, deficiency in health care, loneliness due to widowhood, family dependency and social isolation (Almeida, Tavares Mafra, Silva, & Kanso, 2015).

It is worth mentioning that the life expectancy of women is higher than that of men, but with poor health conditions, with a higher prevalence of functional limitations, which implies autonomy and independence to carry out their daily life activities, limitations are often associated chronic non-communicable diseases (Brito, Fernandes, Coqueiro, Jesus, & Freitas, 2014).

Among the risk factors for the health of the elderly, falls are observed, which leads to functional decline and health problems. Nascimento and Tavares (2016) conducted a survey that found that the highest rates

of falls were related to women, and a high prevalence of falls among elderly people living in urban areas of Brazil.

In view of this reality, it is necessary to train health professionals, through training and continuing education, for the best assistance to the elderly. In relation to health services that serve elderly women, it is important to develop policies that take into account the differences in aging in their various contexts, enabling comprehensive care (Almeida, Tavares Mafra, Silva, & Kanso, 2015).

As a strategy for comprehensive care for the elderly, the Ministry of Health developed the booklet for the elderly, which allows monitoring health conditions and life habits, identifying vulnerability through information, and providing guidance for self-care (Manual para Utilização da Caderneta de Saúde da Pessoa Idosa, 2018).

Therefore, in the context of the multiprofessional health team, it is worth highlighting the role of nurses in primary care, which is extremely relevant for the care of the elderly. The nurse conducts nursing consultations focused on individualized care, expanding the look at the health-disease process, promoting health promotion, preventing injuries and risk of falls, strengthening the bond with the elderly and filling out the handbook of the elderly person (Freitas & Santos, 2014).

Conclusion

The analysis of the research data allowed to identify greater proportions of functional limitations in elderly people in the Northeast region, especially in the urban area. This population has impaired autonomy and independence, due to limitations for ADLs and IADLs, reflecting on health conditions and consequently declining quality of life for the elderly.

The study also reaffirmed the phenomenon of the feminization of old age, in which the elderly stood out with a higher percentage of limitations in relation to the elderly in the most relevant states by sex., which puts them in a situation of fragility and vulnerability.

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