

HEALTH CONDITIONS OF ELDERLY INDIVIDUALS WITH MOBILITY RESTRICTIONS ASSISTED BY PRIMARY CARE

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Highlights:

1. The research addresses the situation of elderly individuals vulnerable due to mobility restrictions, a topic with scarce literature in the country. Additionally, there is a lack of specific data on this reality in Ijuí, RS, Brazil. The innovative aspect of the research lies in analyzing this current issue, providing a detailed insight into the situation of the elderly population facing mobility restrictions.
2. Interdisciplinarity serves as a crucial tool for promoting the health of the elderly. The research findings have helped identify and understand the real needs of this population, enabling healthcare teams, managers, and policymakers to contribute effectively to a life of better quality and dignity until the end of life.
3. The results of this study underscore the importance of understanding the profile of this population to achieve an effective health coefficient. The insights gained can serve as a basis for implementing programs, planning strategies, and interventions tailored to the local reality, focusing on the specific needs of the community.

PRE-PROOF

(as accepted)

This is a preliminary, unedited version of a manuscript that has been accepted for publication in *Revista Contexto & Saúde*. As a service to our readers, we are making this initial version of the manuscript available, as accepted. The article will still be reviewed, formatted and approved by the authors before being published in its final form.

<http://dx.doi.org/10.21527/2176-7114.2024.48.15594>

How to cite:

Henicka R de O, Winkelmann ER, Berlezi EM. Health conditions of elderly individuals with mobility restrictions assisted by primary care. *Rev. Contexto & Saúde*, 2024;24(48): e15594

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ABSTRACT

With the aging of the population, the morbidity and mortality profile of the Brazilian population has faced important and worrying changes, especially since the most prevalent diseases are those with the potential to generate disabilities and, consequently, reduce mobility. This epidemiological scenario calls for a critical look at the Brazilian health system. The aim of this study is to produce a diagnosis of the living and health conditions of elderly individuals with mobility restrictions who are assisted by Primary Health Care. Cross-sectional study carried out from August 2021 to December 2022 in the municipality of Ijuí/RS/Brazil with elderly individuals who are bedridden at home or with restricted mobility through interviews at home about general living and health conditions. Sample of 195 elderly individuals; 65.6% were women, 53.3% were aged 80 or over; 21% were in wheelchairs, 55.9% were housebound and 21.3% were bedridden; more than a third of the elderly individuals had some degree of dependence in carrying out daily activities; 74.4% of the elderly individuals needed a caregiver; 95.4% of the elderly individuals used medication continuously. In conclusion, the diagnosis of the health conditions of elderly individuals with mobility restrictions assisted by Primary Health Care shows a situation of dependency that requires the promotion of public policies.

Keywords: aging, mobility, elderly, health promotion.

INTRODUCTION

The trend towards the aging of the Brazilian population has continued at an increasing pace in recent years. According to projections by the Brazilian Institute of Geography and Statistics (IBGE, as per its Portuguese acronym), there was an increase of 7.5 million new elderly citizens in the country between 2012 and 2020, which means an increase of 29.5% in this age group. It is also estimated that, by 2060, a quarter of the population will be over 60, equivalent to 58.2 million elderly citizens.¹

With this demographic explosion, there is great concern about the health conditions of this population group, considering that indicators show an increase in chronic-degenerative diseases, with a high risk of early death and impaired functional capacity associated with

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mobility disorders that can compromise the autonomy, independence and, significantly, the quality of life of these individuals.^{2,3}

The concept of functional capacity is the condition of maintaining physical and mental abilities for independent and autonomous living; this is considered, from the point of view of public health, to be the most appropriate concept for instrumentalizing and operationalizing health care for the elderly individual.⁴ In practice, this condition is commonly assessed by measures of limitations in activities of daily living, thus involving basic and instrumental activities of daily living (BADL and IADL, respectively) and mobility.⁵ Functional physical mobility comprises several fundamental functions, such as postural variations, carrying, moving or manipulating objects, walking, running, using means of transportation and executive functions that are required for individuals to carry out activities of daily living and social participation.³

Mobility impairment can occur as a result of diseases, the aging process and environmental characteristics, as well as socioeconomic and demographic aspects, in addition to often having progressive characteristics and varying severity. In Brazil, in 2015, the prevalence of limited physical mobility was 15% among adults aged 60 and over, and 24% considering only the elderly citizens aged 70 and over.⁶

In this setting, an increase in the number of elderly individuals with mobility restrictions and a high degree of dependency is expected.⁷ This epidemiological scenario instigates a critical look at the Brazilian health system, which is prepared to act in situations of exacerbation of chronic diseases, but is not organized to care for the individual from an interdisciplinary and integral perspective.⁸ The care offered, especially to frail elderly individuals with multiple chronic health conditions, disabilities or complex needs, is often fragmented, ineffective and discontinuous, which can make their health condition even worse.⁹

Early identification of the factors that lead to a decline in functional capacity can help to prevent mobility restrictions and functional dependence in this group. The World Health Organization (WHO) recommends that the development of health policies in the area of aging should be based on the determinants of health, where social, economic, behavioral, personal, cultural and environmental factors, as well as access to services, influence the health of the elderly individuals.¹⁰

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Nevertheless, population studies describing the living conditions and health of the elderly population with mobility restrictions are scarce. The gained knowledge can be used to implement programs, plan strategies and interventions that are appropriate to the reality and focus on local needs. In this context, the aim of the study was to produce a diagnosis of the living and health conditions of elderly individuals with mobility restrictions assisted by Primary Health Care (PHC) in a municipality in the countryside of the state of Rio Grande do Sul, Brazil.

METHODS

This is a descriptive cross-sectional study based on the database of the institutional research project: “*Analysis of information systems for the diagnosis of the state of health of the population of the municipality of Ijuí/RS-Brazil*”, approved by the ethics committee for research with human beings of the Regional University of the Northwest of the State of Rio Grande do Sul – UNIJUÍ, under substantiated opinion n° 5.019.922 and CAAE n° 51638321.0.0000.5350. This is a Research-Service Project developed in technical-scientific cooperation between the Regional University of the Northwest of the State of Rio Grande do Sul and the Municipal Health Department of Ijuí/RS/Brazil. The data analyzed is from August 2021 to December 2022, collected in the Family Health Strategies (FHS) in the urban area of that municipality of Ijuí (Figure 1).

Figure 1: Location of the municipality of Ijuí on the map of the State of Rio Grande do Sul –



Brazil.

Source: IBGE (<https://cidades.ibge.gov.br/brasil/rs/ijui/panorama>).

The study population is made up of elderly individuals aged ≥ 60 years, males and females, primary health care users, with active registration in the Municipal Health Information System (SIMUS, as per its Portuguese acronym) Ijuí/RS/Brazil.

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For this study, it was decided to select a purposive sample in which the study participants were included according to the following criteria: active registration with the Family Health Strategy; having some degree of mobility restriction that limited leaving the home; being a wheelchair user; being bedridden; being able to communicate and being oriented to answer the assessment instrument, observed based on spatial-temporal orientation with simple questions: day of the week, month of the year, season of the year; having a caregiver for more than 30 days who could answer the instrument. Individuals who were not at home after two sequential visits were excluded, as were the elderly individuals who had undergone a clinical and/or surgical procedure that indicated a reduction in mobility or who had been bedridden for less than 30 days.

The study was carried out in the municipality of Ijuí, located in the South of Brazil and in the Northwest region of the state of Rio Grande do Sul, with a population of 84,726 according to the 2022¹¹ census (<https://cidades.ibge.gov.br/brasil/rs/ijui/panorama>) and an aging rate of close to 14%. The municipality has no official information on individuals with mobility restrictions that limit their ability to leave the house, wheelchair users and bedridden individuals.

In order to gain access to the study population, the research team had the support of the Municipal Health Department to mediate communication with the FHS teams, as follows:

- The FHS teams helped with the survey of individuals in the area with some degree of mobility restriction;
- Once they had their names and addresses, the data was collected at home;
- In order to check some information, such as diagnosis and medication, the patient's electronic medical record was accessed through the Integrated Municipal Health System (SIMUS, as per its Portuguese acronym).

For data collection, a structured instrument was used, prepared by the researchers, and applied in the form of an interview. It covers the following aspects: history of comorbidities, diseases and events; general health conditions (bladder catheter, urine collector, ostomy, oxygen therapy, medication and nutritional aspects) and performance in activities of daily living due to mobility conditions in the elderly population.

In order to analyze the data, the elderly individuals were stratified according to their mobility status into: bed-restricted; housebound and wheelchair-restricted. Bed-restricted

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individuals are unable to exercise self-care partially or totally, requiring assistance to carry out activities of daily living. Homebound individuals are considered to be those with varying degrees of temporary or permanent incapacity, which makes them less willing to seek health services at the different levels of Primary Health Care (PHC).¹² Wheelchair-restricted individuals are those who constantly use a wheelchair to get around.

The data was analyzed using the software named Statistical Package for the Social Sciences (SPSS23.0®). Descriptive analysis tools were applied according to the nature of the variables: quantitative or qualitative. Descriptive measures of central tendency (mean, median) and dispersion and variability (95% CI, standard deviation, variance and amplitude, among others) were used.

RESULTS

The sample consisted of 195 elderly individuals with a mean age of 80.2 ± 9.2 (95% CI 78.9 - 81.5) assisted by nine (9) family strategy units; 128 (65.6%) were women; 104 (53.3%) were aged ≥ 80 years; 104 (53.3%) were widowed; 149 (76.4%) went to school; 119 (61.1%) had up to 7 years of schooling; and 157 (80.5%) earned between one and three minimum wages.



Figure 2: Flowchart of the study participants.

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With regard to mobility, 41 (21%) of the elderly individuals were in a wheelchair, 109 (55.9%) were housebound and 45 (23.1%) were bedridden; the mean ages according to mobility condition were respectively 80.8 ± 9.0 (95% CI 83.6 - 77.9), 80.8 ± 9.2 (95% CI 83.6 - 77.9), 79.9 ± 9.8 (95% CI 82.9 - 77.0) years. Table 1 shows the distribution of mobility conditions according to gender and age group. It can be seen that mobility conditions are similarly distributed between men and women and in the under and over 80 age groups.

Table 1: Mobility conditions in the elderly individuals according to gender and age group (n=195).
Data 2021-2022 Ijuí/RS/Brazil.

	Mobility condition		
	Bedridden n (%)	Wheelchair n (%)	Housebound n (%)
Gender			
Female	30 (23.4)	24 (18.8)	74 (57.8)
Male	15 (22.4)	17 (25.4)	35 (52.2)
Age group			
Up to 79 years	19 (20.9)	19 (20.9)	53 (58.2)
≥ 80 years	26 (25.0)	22 (21.2)	56 (53.8)
Total	45 (23.1)	41 (21.0)	109 (55.9)

Source: Research data (2021-2022).

With regard to the need for a caregiver, 145 (74.4%) of the elderly individuals need a caregiver; 125 (86.8%) are family caregivers. Of those dependent on a caregiver, 40 (27.6%) are wheelchair users, 63 (43.4%) are housebound and 42 (29.0%) are bedridden.

Of the comorbidity conditions, diseases and events (Table 2), the following stand out: hypertension; back and joint problems, forgetfulness, stroke and previous fracture. These conditions affect a third or more of the elderly individuals.

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Table 2: History of the presence of comorbidities, diseases and events due to mobility conditions in the elderly individuals (n=195). Data 2021-2022 Ijuí/RS/Brazil.

	Total	Bedridden n(%)	Wheelchair n(%)	Housebound n(%)
Diabetes Mellitus	57 (29.2)	11 (24.4)	14 (34.1)	32 (29.4)
Hypercholesterolemia	52 (26.7)	12 (26.7)	10 (24.4)	30 (27.5)
Systemic arterial hypertension	135 (69.2)	27 (60.0)	28 (68.3)	80 (73.4)
Stroke	60 (30.8)	23 (51.1)	11 (26.8)	23 (51.1)
Parkinson's disease	31 (15.1)	11 (24.4)	8 (19.5)	12 (11.0)
Heart disease (AMI)	43 (22.1)	13 (28.9)	5 (12.2)	25 (22.9)
Rheumatoid arthritis	35 (17.9)	8 (17.8)	7 (17.1)	20 (18.3)
Thyroid disease	29 (14.9)	6 (13.3)	6 (14.6)	17 (15.6)
Angina on exertion	41 (21)	9 (20.0)	7 (17.1)	25 (22.9)
Forgetfulness of recent events	108 (55.4)	29 (64.4)	24 (58.5)	55 (50.5)
Back or joint problems	108 (55.4)	19 (42.2)	23 (56.1)	66 (60.6)
Osteoporosis	44 (22,6)	9 (20,0)	8 (19,5)	27 (24,8)
Previous fracture	57 (29,2)	13 (28,9)	11 (26,8)	33 (30,3)
Hip fracture	16 (8,2)	5 (11,1)	4 (9,8)	7 (6,4)

Source: Research data (2021-2022).

Still on general health conditions, 8 (4.1%) use a bladder catheter, 9 (4.6%) use a urine collector, 2 (1%) have an ostomy; 13 (6.7%) need oxygen. Regarding the frequency of medication use, 186 (95.4%) of the elderly individuals use continuous medication. Of these, 102 (54.8%) are housebound, 40 (21.5%) are wheelchair users and 44 (23.1%) are bedridden. This means that 93.6% of housebound individuals, 97.6% wheelchair users and 97.8% bedridden make frequent use of medication.

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Table 3 shows the distribution of the number of medications used continuously and nutritional aspects in the last three months.

Table 3: Distribution of medication frequency and nutritional aspects by mobility conditions in the elderly individuals. Data 2021-2022 Ijuí/RS/Brazil.

	Total	Bedridden n(%)	Wheelchair n(%)	Housebound n(%)
Medications				
1 to 3 medications	40 (20.5)	7 (17.9)	6 (15.4)	27 (66.7)
3 to 5 medications	63 (32.3)	18(28.6)	13 (20.6)	32 (50.8)
Over 5 medications	77 (39.5)	17 (22.1)	20 (26.0)	40(51.9)
Nutritional aspects – Food intake				
Decrease in food intake in the last 3 months	58 (29.7)	23 (51.1)	13 (31.7)	22 (20.2)
Nutritional aspects – Chewing				
Chews all types of food	131 (67.2)	17 (37.8)	26 (63.4)	88 (80.8)
Cannot chew any type of food	13 (6.6)	9 (20.0)	3 (7.3)	1 (0.9)
Only chews pasty food	21 (10.8)	12 (26.7)	5 (12.2)	4 (3.7)
Has difficulty with solid foods	30 (15.4)	7 (35.3)	7 (17.1)	16 (14.7)

Source: Research data (2021-2022).

When assessing the ability to carry out activities of daily living (ADL) (Table 4), it can be seen that more than a third of the elderly individuals need help to take a bath, do not use the toilet to urinate or defecate and have some degree of difficulty in terms of feeding themselves or are unable to feed themselves.

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Table 4: Analysis of performance in activities of daily living by mobility conditions in the elderly individuals.
Data 2021-2022 Ijuí/RS/Brazil.

Activities of daily living (ADL)	Total n(%)	Bedridden n(%)	Wheelchair n(%)	Housebound n(%)
Bathes alone using the shower	124 (63.5)	33 (75)	28 (68.3)	63 (57.3)
Bathed in bed by caregiver	43 (22.0)	18 (40.9)	9 (22.0)	16 (14.5)
Does he/she use the toilet to defecate and urinate?	121 (62.0)	6 (13.3)	14 (34.1)	101 (92.7)
He/she feed himself/herself without difficulty	120 (61.5)	8 (17.8)	21 (51.2)	91 (83.5)
In terms of communication: does he/she speak?	170 (87.1)	34 (77.3)	39 (95.1)	97 (88.2)
In terms of communication: does he/she listen?	177(90.7)	38 (86.4)	37 (90.2)	102(92.7)
In terms of communication: does he/she understand?	171(87.6)	35 (79.5)	38 (92.7)	98 (89.1)

Source: Research data (2021-2022).

DISCUSSION

This study provides a diagnosis of the living conditions and health of elderly citizens with mobility restrictions assisted by Primary Health Care, based on an analysis of 195 elderly individuals. The results show that more than half of the elderly individuals are aged 80 or over, and the majority are women. Many of these elderly individuals are in a condition of dependency, either in a wheelchair or bedridden, although the majority are housebound; a third of the elderly individuals have some degree of dependency in carrying out daily activities; the majority need a caregiver and almost all use medication continuously.

Mobility is an important indicator of functional independence in the elderly population. This study produced a diagnosis of the living conditions and health of elderly citizens with mobility restrictions assisted by Primary Health Care in the municipality of

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Ijuí/RS, assessing the number of elderly individuals who were bedridden, housebound and wheelchair users, as well as their associated factors.

When assessing the living and health conditions of this population group, social, cognitive, physical and psychosocial determinants were shown to be factors that intervene in the health and mobility conditions of these elderly individuals assisted by Primary Health Care. It was found that, among the older population (80 years and over), females, those with low levels of schooling, those with multimorbidity and those dependent on a caregiver, there were the individuals with the greatest movement limitations.

With regard to social characteristics, lower levels of schooling were associated with restricted mobility. Previous studies^{13,7} have shown that individuals with a low level of schooling are more likely to suffer from illnesses and disabilities, due to limited access to health information. Illiteracy has a cumulative burden, since it reflects, throughout life, in less self-care and self-perception about their state of health and understanding about diseases, resulting, consequently, in less search for health services, late diagnosis and timely treatment, which can worsen diseases and result in more serious limitations.¹⁴

In addition, illiterate individuals have more unfavorable social determinants of health, such as lower income,¹⁴ a predictor of restricted mobility, which was also found in this study. Although these variables are considered non-modifiable risk factors, results such as those of this study point to the need for greater attention to be paid to the population groups most vulnerable to health problems because they are at a social disadvantage. They therefore support the promotion of strategies that seek greater equity in access to health and social care services and programs.

Corroborating the health and mobility profile of the elderly individuals in the study, the World Health Organization¹⁵ considers that elderly individuals with the following characteristics are in a situation of vulnerability: age over 80; living alone; single women or widows; living in Long-Stay Institutions for the Elderly (LSIE); socially isolated; childless; with severe limitations or physical, motor, psychological and neurological disabilities; couples over 65 when one of the spouses is disabled or ill; and those living with scarce resources.

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Limited living space and a decline in mobility are related to disability, poorer quality of life, risk of falls and mortality in the elderly population.¹⁶ Mobility is an essential component for maintaining independence and an active lifestyle among the elderly citizens. On the other hand, reduced mobility leads to problems with mental health and cognitive function in the elderly population, thus affecting quality of life.¹⁷

In the study by Curcio et al.,¹⁸ with 150 men and 150 women aged between 65 and 74 from two Latin American countries using the Life Space instrument from the University of Alabama at Birmingham (UAB), low levels of schooling, low income, depressive symptoms and low performance in cognitive tests were associated with lower scores on the Life Space instrument, i.e., they were more dependent. In this instrument, mobility is measured inside the home as part of domestic activities, as well as mobility outside the home, such as buying daily consumer goods, visiting neighborhood facilities for health care or recreation, as well as maintaining social relationships. Considering these aspects, our population shows a significant and limiting level of mobility restriction for activities of daily living and instrumental activities of daily living.

Our studies revealed that health inequalities had an especially detrimental impact on women at all degrees of mobility, which not only face more limitations than men, but also over more years, since they live longer. According to a study that analyzed data from 28,943 elderly Brazilians participating in the National Household Sample Survey (PNAD, as per its Portuguese acronym), dated 1998, more than 60% of this population had some self-reported difficulty with mobility tasks; and, among women, this prevalence exceeded 80%.¹⁹ Another more recent study that analyzed the prevalence of self-reported functional mobility limitations and associated factors in the period between 2000 and 2015 in elderly Brazilians found that women had a prevalence of mobility limitations around 20% to 30% higher than men.³ Nascimento et al.³ also indicate the influence of some chronic conditions, especially stroke, osteoarticular diseases and complaints of pain in this process of mobility impairment, which were also observed in this study.

Chronic non-communicable diseases are known to have a direct impact on the ability to move and mobility, especially cerebrovascular diseases, which are characterized by neurological deficits resulting from heart attacks or hemorrhages in the brain.²⁰ Our results showed that this condition is related to being bedridden and housebound.

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Other health conditions that were also associated with restricted mobility in the elderly individuals analyzed were osteoarticular diseases. Osteoarticular diseases, such as osteoarthritis, are characterized by inflammatory processes and structural damage to the body's joints, causing pain and reduced range of motion. Some of the main joints affected are the knees and hips, structures that are directly related to locomotion.²¹

These diseases and their restriction of movement are closely linked to pain. The literature²² shows that pain, whether of musculoskeletal, neurological, diabetic or cardiovascular etiology, has often been associated with mobility limitations in the elderly population.

The sum of chronic diseases contributes to a chain of alterations that culminate in physical inactivity, immobility, depression and other adverse health conditions.³ The condition of being bedridden is considered the greatest degree of mobility limitation. In this study, 23% of the elderly individuals investigated were in this condition. A study using secondary data from the 2013²³ National Health Survey included individuals aged ≥ 60 years ($n=11,177$) and approximately 5% of the elderly individuals investigated were bedridden. Male, illiterate individuals with multimorbidity, episodes of stroke, diagnosis of systemic arterial hypertension and hypercholesterolemia were the most likely to be bedridden, as well as those who had sought health care in the last two weeks, required hospitalization and emergency care at home in the last 12 months and who had a negative self-perception of general health and depression.

In this context, it is also worth discussing the caregivers of these dependent elderly individuals. The Pan American Health Organization (PAHO) draws attention to the fact that, at the same time as there is an increase in the older and more dependent population, there is a significant shortage of formal and informal caregivers and, specifically, trained health professionals.

According to PAHO, it is estimated that the number of individuals needing long-term care will more than triple in the region over the next three decades. It will rise from eight million today to 27 to 30 million by 2050. In our study, 74.4% of the elderly individuals need a caregiver and the vast majority of them are cared for by a family member.

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In the literature, the elderly caregiver already has a well-defined profile: women aged between 30 and 49, as well as elderly individuals who care for others. Gender is a social determinant that is considered in order to understand how this profile is determined.^{24,25}

This condition highlights the gender inequality in care and the greater chance of illness among women who work and care for the elderly individuals and their children at the same time. Providing care for dependent elderly individuals is fundamental, but the quality of life of both the person being cared for and the caregiver must be guaranteed. The role of family caregiver faces some challenges, such as: the arduous, lonely and invisible financial and social limitations he/she faces in order to maintain the routine of caring for the dependent elderly individual; the physical and psychological strain, which is greater when it comes to caring for elderly individuals with cognitive and behavioral demands; the greater the degree of dependence of the elderly individual, the greater the burden; the lack of support from other family members, the lack of guidance to meet the needs of loved ones and time for themselves are often cited as obstacles by caregivers in studies.^{26,27}

This study has an important scientific benefit in terms of diagnosing this population. The strength of our study was to describe the characteristics of the elderly population assisted by primary care in terms of its general health and mobility conditions, which opens doors to identifying and understanding its needs so that health teams, managers and legislators can contribute to a life with more quality and dignity until the finiteness. However, one can list possible limitations in the study, including: 1) a cross-sectional study, which makes it difficult to establish causal relationships between mobility restriction and individual and environmental factors; 2) the target population was limited to an urban area in a municipality in the countryside of Rio Grande do Sul, and it is unclear whether the results can be generalized at a national level; therefore, more studies are needed.

There is a need to map and identify frail and vulnerable individuals, as well as their health conditions, in order to cover the demographic changes resulting from longevity and, above all, to rethink the future of communities as a warning, mentioning that societies need to redirect the focus of their actions towards a long-lived society. The need to rebuild social and health policies contributes to expanding knowledge and, consequently, filling important scientific gaps.

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CONCLUSION

The diagnosis of the health conditions of elderly individuals with mobility restrictions assisted by Primary Care shows a situation of dependency that requires the promotion of public policies.

The results produced a diagnosis of the living and health conditions of elderly individuals with mobility restrictions assisted by Primary Care in the municipality of Ijuí/RS/Brazil, indicating the influence of physical, cognitive and socioeconomic determinants as intervening factors in the health and mobility conditions of these elderly citizens. In a context of accelerated population aging, these results provide relevant information for the promotion of public policies aimed at preventing the decline in mobility, with increased access to the most vulnerable groups.

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Submitted: January 30, 2024

Accepted: April 9, 2024

Published: July 1, 2024

Contributions from the authors:

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All the authors have approved the final version of the text.

Conflict of interest: No conflict of interest.

There is no financing.

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Editor: Dr. Christiane de Fátima Colet

Editor-in-chief: Dr. Adriane Cristina Bernat Kolankiewicz

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