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VULNERABILITY AND HEALTH CONDITIONS OF ELDERLY PEOPLE CARED FOR IN PRIMARY CARE

VULNERABILIDADE E CONDIÇÕES DE SAÚDE DE PESSOAS IDOSAS ATENDIDAS NA ATENÇÃO BÁSICA

VULNERABILIDAD Y CONDICIONES DE SALUD DE LAS PERSONAS MAYORES ATENDIDAS EM ATENCIÓN PRIMARIA

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ABSTRACT: Population aging in Brazil has intensified the demand for comprehensive care in Primary Health Care, especially regarding the identification and management of vulnerability among older adults. This study aimed to analyze the association between vulnerability and health conditions in elderly individuals assisted in Primary Health Care. It is an exploratory, quantitative study conducted with 225 older adults, using the Mini-Mental State Examination (MMSE), the Barthel Index, the VES-13 Scale, and the Edmonton Frailty Scale. The results revealed that vulnerability was significantly associated with functional dependence. On the other hand, independence in Basic Activities of Daily Living (BADLs), preserved cognition, and the absence of frailty were identified as protective factors. It is concluded that strategies aimed at maintaining functionality and cognition should be prioritized in Primary Health Care in order to prevent health deterioration and to promote autonomy and quality of life for the elderly population.

KEYWORDS: Vulnerability. Aging. Primary health care.

RESUMO*: *O envelhecimento populacional no Brasil tem intensificado a demanda por cuidados integrais na Atenção Básica, especialmente no que se refere à identificação e ao manejo da vulnerabilidade em pessoas idosas. Este estudo teve como objetivo analisar a associação entre vulnerabilidade e condições de saúde de idosos atendidos na Atenção Básica. Trata-se de uma pesquisa exploratória, de abordagem quantitativa, realizada com 225 idosos, utilizando os instrumentos Mini-Exame do Estado Mental (MEEM), Índice de Barthel, Escala VES-13 e Escala de Fragilidade de Edmonton. Os resultados revelaram que a vulnerabilidade esteve significativamente associada à dependência funcional. Por outro lado, a independência nas Atividades Básicas de Vida Diária (ABVDs), a cognição preservada e a ausência de fragilidade mostraram-se fatores protetores. Conclui-se que estratégias voltadas à manutenção da funcionalidade e da cognição devem ser priorizadas na Atenção Básica, a fim de prevenir agravos e promover a autonomia e a qualidade de vida da população idosa.

PALAVRAS-CHAVE*: *Vulnerabilidade. Envelhecimento. Atenção primária.

RESUMEN:* *El envejecimiento poblacional en Brasil ha intensificado la demanda de cuidados integrales en la Atención Básica, especialmente en lo que respecta a la identificación y el manejo de la vulnerabilidad en personas mayores. Este estudio tuvo como objetivo analizar la asociación entre vulnerabilidad y condiciones de salud de personas mayores atendidas en la Atención Básica. Se trata de una investigación exploratoria, con enfoque cuantitativo, realizada con 225 personas mayores, utilizando los instrumentos Mini Examen del Estado Mental (MEEM), Índice de Barthel, Escala VES-13 y Escala de Fragilidad de Edmonton. Los resultados revelaron que la vulnerabilidad estuvo significativamente asociada con la dependencia funcional. Por otro lado, la independencia en las Actividades Básicas de la Vida Diaria (ABVD), la cognición preservada y la ausencia de fragilidad se mostraron como factores protectores. Se concluye que deben priorizarse estrategias orientadas al mantenimiento de la funcionalidad y la cognición en la Atención Básica, con el fin de prevenir complicaciones y promover la autonomía y la calidad de vida de la población mayor.

PALABRAS CLAVE:* *Vulnerabilidad. Envejecimiento. Atención primaria.

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INTRODUCTION

The world has undergone significant changes in its demographic and epidemiological landscape due to the marked increase in the number of elderly individuals and the prevalence of chronic diseases (Aguiar et al., 2023). The aging process, considered complex and gradual, is influenced by various intrinsic and extrinsic factors, with repercussions for social, pension, and health services (Cabral et al., 2024).

Longevity is accompanied by physiological changes that impair physical and functional capacity, rendering individuals vulnerable to various pathological conditions (Cipriani et al., 2023). In the context of the Brazilian population, it is estimated that 70% of older adults have at least one chronic disease (Lima-Costa et al., 2018), which predisposes them to vulnerability associated with functional limitations (Chaves et al., 2021).

It is worth noting that vulnerability is a multidimensional aspect in the assessment of older adults and is understood as a risk process concerning general health conditions, with a direct impact on their quality of life (Cipriani et al., 2023; Dias et al., 2023). Vulnerability can be defined as a condition of increased risk of functional decline and death among older individuals (Aguiar et al., 2023), according to the authors of the Vulnerable Elders Survey (VES-13), which was developed to screen for vulnerable elderly people in the community.

This study aims to analyze the association between vulnerability and health conditions among older adults assisted in Primary Health Care. This analysis is justified by the need to identify factors that contribute to the deterioration of the living and health conditions of this population, thereby supporting preventive and care-oriented actions within the scope of primary care.

METHODOLOGY

This is an exploratory-descriptive study with a quantitative approach, conducted in a Family Health Unit (FHU) located in the municipality of Jequié, Bahia (BA), Brazil.

The sample consisted of 225 individuals aged 60 years or older and registered at the FHU. Individuals with any type of cognitive limitation that prevented them from understanding and responding to the research instruments were excluded. A score < 17 on the MMSE was used as the cutoff point (Bertolucci et al., 1994).

The research instrument consisted of the following tools: MMSE (Bertolucci et al., 1994), Sociodemographic and Health Conditions Questionnaire, Barthel Index (Mahoney & Barthel, 1965), Lawton and Brody Scale (Lawton & Brody, 1969), VES-13 Scale (Maia et al., 2012), and Edmonton Frail Scale (EFS) (Rolfson et al., 2006).

The MMSE, used to assess cognitive function, comprises questions grouped into seven categories that evaluate spatial and temporal orientation, immediate and delayed memory, calculation, language (naming, repetition, comprehension, writing), and visual constructive capacity. Scores range from a minimum of zero to a maximum of 30 points (Bertolucci et al., 1994).

The sociodemographic variables and health conditions studied included: age group, sex, marital status, education level, household income, current employment status, presence of pain, pain intensity, pain location, presence of chronic diseases, and medications in use.

The Barthel Index assesses basic activities of daily living (feeding, bathing, dressing, personal hygiene, bladder and bowel control, toilet use, transferring from bed to chair, walking, and climbing stairs), with scores ranging from zero to 100. It is categorized as follows: independence (100 points); mild dependence (60 to 95 points); moderate dependence (40 to 55 points); severe dependence (20 to 35 points); and total dependence (less than 20 points) (Mahoney & Barthel, 1965).

In addition to basic daily activities, the Lawton and Brody Scale evaluates instrumental activities (using the telephone, transportation, shopping, meal preparation, housekeeping, medication management, and financial management). Scores range from zero to 21, categorized as follows: total dependence (≤ 5 points); partial dependence (> 5 and < 21 points); and independence (21 points) (Lawton & Brody, 1969).

To assess physical vulnerability, the VES-13 was used, which consists of four indicators: age, self-reported health status, physical limitation, and (functional) disability, comprising a total of 13 items. The final score ranges from zero to ten points and classifies older adults into three risk categories for frailty: robust older adults (score ≤ 2); pre-frail older adults (score 3–6); and frail older adults (score 7–10) (Mahoney & Barthel, 1965).

Frailty was assessed using the EFS, which enables the evaluation of older individuals at risk of or already experiencing frailty. The EFS assesses various aspects of health and function in older adults, such as cognition, general health status, functional independence, social support, and others. Based on the total score, older adults are classified as follows: 0 to 4 points – not frail; 5 to 6 points – apparently vulnerable; 7 to 8 points – mildly frail; 9 to 10 points – moderately frail; 11 or more points – severely frail (Rolfson et al., 2006).

Data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 21.0. Descriptive statistical analyses were performed, along with the chi-square test ($\chi 2$), and Odds Ratio estimates, considering a significance level of $p \leq 0.05$ and a 95% confidence interval.

Prevalence Ratios were estimated using a Poisson regression model for data analysis. The accepted Confidence Interval (CI) for this study was 95%, and statistically significant results were considered at a p-value ≤ 0.05.

The study was approved by the Research Ethics Committee of the Independent Faculty of the Northeast, under protocol number 4.351.219. All older adults who participated in the study signed an Informed Consent Form.

RESULTS

In the present study, a higher prevalence of female participants was observed (65.8%), most of whom were between 60 and 68 years old (51.1%), had a partner (51.1%), had formal education (92.0%), reported an income of two or more minimum wages (51.1%), and were retired (65.8%) (Table 1).

Table 1: Characteristics of older adults according to sociodemographic data. Jequié, Bahia, Brazil, 2025

	No	%
Sex		
Female	148	65,8
Male	77	34,2
Age group		
60 to 68 years	115	51,1
Over 68 years	110	48,9
Marital status		
With partner	115	51,1
Without partner	110	48,9
Education level		
No formal education	18	8,0
With formal education	207	92,0
Household income		
Up to one minimum wage	110	48,9
Two or more minimum wages	115	51,1
Current employment status		
Retired	148	65,8
Employed	77	34,2
Total	**225**	**100,0**

Source: research data.

Regarding health conditions, a higher distribution of older adults was observed with the presence of pain (69.3%), pain located in two or more body segments (36.4%), presence of more than one chronic disease (52.4%), pain intensity ranging from none to mild (61.3%), use of medication (85.8%), classified as dependent in Instrumental Activities of Daily Living (IADLs) (99.1%) and dependent in BADLs (76.5%). In terms of vulnerability, a considerable percentage of older adults were classified as vulnerable (40.0%) (Table 2).

Table 2: Characteristics of older adults according to health conditions. Jequié, Bahia, Brazil, 2025

	N	%
Vulnerability		
Not vulnerable	135	60,0
Vulnerable	90	40,0
Presence of Chronic Disease		
One chronic disease	107	47,6
More than one chronic disease	118	52,4
Medication Use		
Yes	193	85,8
No	32	14,2
Presence of Pain		
Yes	156	69,3
No	69	30,7
Pain Location		
No pain	71	31,6
One body segment	72	32
Two or more body segments	82	36,4
Pain Intensity		
None to mild	138	61,3
Moderate to severe	87	38,7
BADLs		
Independent	52	23,1
Dependent	173	76,9
IADL		
Independent	2	0,9
Dependent	223	99,1
Nutritional Status		
Normal	151	67,1
Altered	74	32,9
Frailty		
Not frail	182	80,9
Frail	43	19,1
Depressive Symptoms		
No depressive symptoms	180	80
With depressive symptoms	45	20
MMSE		
No cognitive impairment	79	42
With cognitive impairment	109	58

Fall Risk		
No risk of falls	70	31,1
At risk of falls	155	68,9

Note. BADLs: Basic Activities of Daily Living; IADL: Instrumental Activities of Daily Living; MMSE: Mini-Mental State Examination.
Source: research data.

In the inferential analysis, factors associated with vulnerability in older adults were assessed. Chronic diseases, in the crude model, showed a significant association for individuals with more than one chronic condition (RP = 0.62; CI = 0.44–0.88; p < 0.01); however, this association was not maintained in the adjusted model (RP = 0.95; CI = 0.67–1,34; p = 0.77).

BADLs showed a significant association in both the crude model (PR = 0.40; CI = 0.30–0.52; p < 0.001) and the adjusted model (PR = 0.73; CI = 0.55–0.97; p < 0.04). Functional independence in BADLs was associated with a protective factor against vulnerability in older adults, highlighting its relevance in outcomes.

The absence of frailty was one of the most significant factors, with a strong association in the crude model (PR = 0.26; CI = 0.20–0.33; p < 0.001) as well as in the adjusted model (PR = 0.47; CI = 0.35–0.64; p < 0.001), indicating its importance as an independent protective factor.

Altered nutritional status was significant in the crude model (PR = 0.71; CI = 0.52–0.98; p = 0.08), but this association did not remain in the adjusted model (PR = 0.89; CI = 0.65–1.21; p = 0.46), suggesting that other factors may influence the relationship between nutritional status and vulnerability.

Cognitive impairment, assessed by the MMSE, showed a significant association in both the crude model (PR = 0.30; CI = 0.18–0.49; p < 0.001) and the adjusted model (PR = 0.42; CI = 0.25–0.71; p < 0.002), being a relevant factor for vulnerability.

On the other hand, variables such as medication use, presence of pain, pain intensity, and risk of falling showed p-values < 0.20 in the crude model but lost significance in the adjusted model (p > 0.05), indicating that they do not have an independent association with vulnerability after controlling for other variables.

Table 3: Association between vulnerability and health conditions in older adults. Jequié, Bahia, Brazil, 2025

Variables	Vulnerability			
	Crude PR		Adjusted PR	
	IC95%	P	IC95%	p
Chronic Diseases				
One disease	0,62 (0,44–0,88)	< 0,01	0,95 (0,67–1,34)	0,77
> One disease	1		1	
Use of Medications				
No	0,42 (0,20–0,89)	< 0,03	1,20 (0,62–2,33)	0,58
Yes	1		1	
Presence of Pain				
No	0,66 (0,44–0,99)	< 0,05	0,91 (0,59–1,39)	0,66
Yes	1		1	
Pain Intensity				
Absent/mild	0,64 (0,47–0,89)	< 0,01	0,94 (0,65–1,38)	0,78
Moderate/severe	1		1	
BADLs				
Independent	**0,40 (0,30–0,52)**	**< 0,001**	**0,73 (0,55–0,97)**	**< 0,04***
Dependent	**1**		**1**	
IADL				
Independent	1,23 (0,30–4,99)	0,76		
Dependent	1			
Nutritional Status				
Normal	0,71 (0,52–0,98)	< 0,04	0,89(0,65–1,21)	0,46
Altered	1		1	
Frailty				
Not present	**0,26 (0,20–0,33)**	**< 0,001**	**0,47(0,35–0,64)**	**< 0,001***
Present	**1**		**1**	
Depressive Symptoms				
Without depressive symptoms	0,66 (0,48–0,91)	< 0,02	0,95 (0,68–1,33)	0,77
With depressive symptoms	1		1	
MMSE				
No cognitive impairment	**0,30 (0,18–0,49)**	**< 0,001**	**0,42 (0,25–0,71)**	**< 0,002***
With cognitive impairment	**1**			
Fall Risk				
No	0,54 (0,35–084)	< 0,01	0,87(0,56–1,35)	0,54
Yes	1			

Note. RP: Prevalence Ratio; CI: Confidence Interval; *p > 0.05; BADLs: Basic Activities of Daily Living; IADLs: Instrumental Activities of Daily Living; MMSE: Mini-Mental State Examination.
Source: research data.

DISCUSSION

The term "vulnerability" means "the possibility of being harmed" (Sousa et al., 2022). In the context of health, particularly in studies involving older adults, it generally refers to "the condition of an individual who, for some reason, is unable to take advantage of available opportunities in various dimensions in order to improve their well-being or prevent its deterioration" (Barbosa & Fernandes, 2020, p. 2).

This study found a significant prevalence of older adults experiencing vulnerability, a finding supported by a study conducted in Várzea Grande (MT), which identified a vulnerability prevalence of 49% (Oliveira et al., 2021).

This high prevalence of vulnerability among Brazilian older adults may be explained, among other factors, by the socioeconomic challenges faced by developing countries, which cause the aging process to occur unevenly and differently across individuals (Moura et al., 2023).

In the present study, independence in performing BADLs proved to be a protective factor against vulnerability, with a statistically significant association in the adjusted analysis. This finding is consistent with the literature, which indicates that the functional capacity of older adults—along with their level of independence, autonomy, and quality of life—is a key determinant in classifying individuals as more vulnerable (Rodrigues & Alvarenga, 2021; Santos et al., 2022).

A study conducted by Barbosa et al. (2017), involving older adults supported by the Family Health Strategy in João Pessoa (PB), revealed that a large portion of vulnerable older adults had difficulty performing BADLs such as crossing a room (80.3%) and bathing independently (74.7%).

These results reinforce the notion that vulnerability is directly linked to the level of functional dependence in older adults. Moreover, vulnerability can impair an older person's autonomy—that is, their ability to make decisions about their own life and to engage socially (Perseguino et al., 2021).

In this context, frailty emerges as a crucial factor, as the results showed that non-frail older adults had a lower risk of becoming vulnerable. Frailty is a clinical condition with multiple causes and associated factors, characterized by physical, cognitive, and social decline (Freitas et al., 2020). However, it is important to note that while frailty is a risk factor for vulnerability, it is not exclusively a consequence of the aging process, as will be discussed below.

Frailty refers to a state of physical and functional vulnerability, with a higher risk of adverse events, which can affect individuals at any stage of life. In old age, frail older adults are more likely to experience falls, functional incapacity, hospitalization risks, and mortality. Therefore, they require frequent care to prevent negative clinical outcomes (Dias et al., 2023).

These factors are crucial to understanding the relationship between frailty and vulnerability, as frailty increases the risk of dependency and death.

These factors may help explain the findings of this study, since frailty is a multidimensional condition involving a loss of resilience to external stressors, which heightens the risk of dependency and/or death, thereby contributing to increased vulnerability (Aguiar et al., 2023). Nevertheless, frailty is not limited to physical aspects; it also includes psychological components that, if left unaddressed, may further exacerbate the vulnerability of older adults.

Maintaining the health of older adults, therefore, involves not only physical aspects but also the consideration of psychological factors. The psychological changes that occur during the aging process can reduce an individual's ability to adapt to their environment, making them more vulnerable. This emotional and psychological dimension is essential for a comprehensive understanding of frailty and vulnerability, as discussed in previous sections (Perseguino et al., 2021).

In this regard, cognitive impairment is another detrimental outcome associated with the aging process. These are cognitive changes that occur over time, and although not necessarily quantifiable, they are gradual and progressive. In current discussions on vulnerability, topics involving cognitive impairment are frequent and treated as a public health alert (Freitas et al., 2020).

Supporting the findings in the literature, older adults in this study who did not present cognitive impairment were less likely to be classified as vulnerable. With increasing age, cognitive changes stemming from the physiological aging process are common. However, when these changes become more intense than usual, they can impair the older person's ability to carry out everyday tasks, reduce their autonomy, and increase caregiver burden. Such impairments may indicate the onset of more severe conditions such as dementia and depressive disorders, significantly affecting the older adult's participation in family life and social interaction (Rodrigues & Alvarenga, 2021).

Although this study provided valuable insights into the vulnerability and health conditions of older adults receiving care in Primary Health Care, certain limitations must be acknowledged. The study sample was limited to older adults residing in Jequié (BA), which may restrict the generalizability of the findings to other regions of Brazil. Moreover, the use of self-report instruments, such as the frailty scale, may introduce bias, as responses can be influenced by the participants' subjective perceptions.

Future research could explore the relationship between vulnerability and health conditions in various regions of the country, using more diverse samples to enhance the representativeness of the results. It would also be worthwhile to investigate the impact of specific interventions on frailty among older adults, with a focus on rehabilitation programs and psychological support.

FINAL CONSIDERATIONS

The results of the present study indicate that vulnerability among older adults receiving care in Primary Health Care is associated with difficulties in performing BADLs. On the other hand, functional independence, preservation of cognitive status, and absence of frailty appear as significant protective factors against vulnerability, contributing to the autonomy and quality of life of the elderly population.

These findings directly address the research objective by identifying the main factors associated with vulnerability, providing valuable insights for clinical practice and the planning of interventions within the Primary Health Care (PHC) context. In this sense, it is essential that PHC professionals conduct regular assessments using validated instruments to detect early signs of functional dependence, cognitive decline, and frailty.

Based on the data obtained, it is recommended to develop interdisciplinary actions aimed at maintaining functionality, such as physical rehabilitation programs, cognitive stimulation, and psychosocial support. Furthermore, health education strategies that involve family members and caregivers may also contribute to preventing vulnerability and promoting autonomy.

As an improvement, it is suggested that screening protocols for frailty and cognition be implemented in primary care services, with adequate training for professionals to manage these conditions. Public policies that promote healthy aging—focused on the prevention of disabilities and the strengthening of social support networks—should be prioritized.

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