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FRAGILIDADE E RISCO DE OSTEOPOROSE EM IDOSOS INSTITUCIONALIZADOS: UM ESTUDO QUANTITATIVO
FRAGILITY AND RISK OF OSTEOPOROSIS AMONG INSTITUTIONALIZED OLDER ADULTS: A QUANTITATIVE STUDY
FRAGILIDAD Y RIESGO DE OSTEOPOROSIS EN ANCIANOS INSTITUCIONALIZADOS: UN ESTUDIO CUANTITATIVO

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RESUMO

Introdução: O envelhecimento populacional é um fenómeno global, associado ao aumento da prevalência de condições clínicas nas quais se incluem a osteoporose e a fragilidade, causas significativas de morbilidade e mortalidade em idosos. A compreensão dos fatores de risco que contribuem para estas condições é fundamental para desenvolver estratégias de intervenção e prevenção eficazes, particularmente em populações mais vulneráveis, como os idosos residentes em Estruturas Residenciais para Pessoas Idosas.
Objetivo: Avaliar o nível de fragilidade e o risco de osteoporose em pessoas idosas institucionalizadas.
Métodos: Estudo quantitativo, descritivo-correlacional e transversal, com uma amostra não probabilística por conveniência, composta por 110 participantes com 65 anos ou mais. O instrumento de recolha de dados incluiu um questionário estruturado em 5 seções: caracterização sociodemográfica, estilo de vida, estado clínico, Avaliação da Fragilidade (Tilburg Frailty Indicator-TFI) e avaliação do risco de osteoporose (Osteoporosis Risk Check adaptada da International Osteoporosis Foundation).
Resultados: Os resultados evidenciaram uma elevada prevalência de fragilidade e risco de osteoporose na população estudada, associada a fatores como a idade avançada, sedentarismo, polimedicação e histórico de quedas.
Conclusão: Este estudo demonstrou que a fragilidade e o risco de osteoporose estão presentes neste grupo populacional de forma significativa, reforçando a necessidade de implementar novas estratégias multidisciplinares para promover a saúde óssea e prevenir fraturas, com destaque para o papel central da Enfermagem de Reabilitação em Estruturas Residenciais para Pessoas Idosas.

Palavras-chave: envelhecimento; fragilidade; osteoporose; fatores de risco; enfermagem

ABSTRACT

Introduction: Population aging is a global phenomenon associated with the increased prevalence of clinical conditions, including osteoporosis and fragility, significant causes of morbidity and mortality in older adults. Understanding the risk factors that contribute to these conditions is essential for developing effective intervention and prevention strategies, especially for more vulnerable populations, such as older adults living in residential structures.
Objective: To assess the level of fragility and the risk of osteoporosis in institutionalized older adults.
Methods: This is a quantitative, descriptive, correlational, cross-sectional study with a non-probability convenience sample of 110 participants aged 65 and over. The data collection instrument included a questionnaire structured in 5 sections: sociodemographic characterization, lifestyle, clinical status, frailty assessment (Tilburg Frailty Indicator - TFI), and osteoporosis risk assessment (Osteoporosis Risk Check adapted from the International Osteoporosis Foundation).
Results: The results showed a high prevalence of fragility and risk of osteoporosis in the studied population, associated with factors such as advanced age, sedentary lifestyle, polymedication, and history of falls.
Conclusion: This study demonstrated that fragility and the risk of osteoporosis are significantly present in this population group, reinforcing the need to implement new multidisciplinary strategies to promote bone health and prevent fractures, highlighting the central role of Rehabilitation Nursing in Residential Structures for older adults.

Keywords: aging; fragility; osteoporosis; risk factors; nursing

RESUMEN

Introducción: El envejecimiento poblacional es un fenómeno global asociado con el aumento de la prevalencia de afecciones clínicas como la osteoporosis y la fragilidad, que son las principales causas de morbilidad y mortalidad en adultos mayores. Comprender los factores de riesgo que contribuyen a estas afecciones es esencial para desarrollar estrategias eficaces de intervención y prevención, especialmente para las poblaciones más vulnerables, como los residentes de residencias de ancianos.
Objetivo: Evaluar el nivel de fragilidad y riesgo de osteoporosis en ancianos institucionalizados.
Métodos: Se realizó un estudio cuantitativo, descriptivo, correlacional y transversal con una muestra no probabilística por conveniencia de 110 participantes mayores de 65 años. El instrumento de recolección de datos incluía un cuestionario estructurado en 5 secciones: caracterización sociodemográfica, estilo de vida, estado clínico, evaluación de la fragilidad (Indicador de Fragilidad de Tilburg - TFI) y evaluación del riesgo de osteoporosis (Evaluación del Riesgo de Osteoporosis, adaptada de la Fundación Internacional de Osteoporosis).
Resultados: Los resultados mostraron una alta prevalencia de fragilidad y riesgo de osteoporosis en la población estudiada, asociada a factores como edad avanzada, sedentarismo, uso de múltiples medicamentos y antecedente de caídas.
Conclusión: Este estudio demostró que la fragilidad y el riesgo de osteoporosis están significativamente presentes en este grupo poblacional, reforzando la necesidad de implementar nuevas estrategias multidisciplinarias para promover la salud ósea y prevenir fracturas, destacando el papel central de la Enfermería de Rehabilitación en Instituciones de Atención Residencial para Ancianos.

Palabras clave: envejecimiento; fragilidad; osteoporosis; factores de riesgo; enfermeira

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INTRODUCTION

Aging, understood as a multifaceted process that integrates biological, psychological, and social dimensions, is characterized by the gradual decline in functional capacity and increased vulnerability to diseases and a decrease in general well-being (Santos et al., 2019). Among the physiological changes, sarcopenia and a significant decrease in bone mineral density stand out, which compromise the autonomy of the older adult (Carvalho et al., 2016; Takla et al., 2024).

However, this process, although universal, presents individual variations influenced by genetic, environmental, and psychosocial factors (Sepúlveda et al., 2024), therefore, understanding these factors is essential for the development of strategies that promote longevity and improve the quality of life of the older adult (Sosiński et al., 2024).

1. LITERATURE REVIEW

Associated with the aging process, fragility in older adults is characterized by decreased functional reserve and greater vulnerability to stressors, resulting from multisystemic decline. This clinical condition often results in unintentional weight loss, associated with changes in body composition, sarcopenia, and osteoporosis, and overlaps with pathogenic pathways associated with loss of lean muscle mass and skeletal deterioration (Anaraki et al., 2023), motor slowing, and low physical activity (Rolland et al., 2021).

Screening and early assessment of fragility are fundamental in the context of health promotion, allowing the adoption of preventive interventions that can delay functional decline and reduce the risk of falls, fractures, hospitalizations, and mortality, contributing to the maintenance of autonomy and quality of life (Morley et al., 2013).

Highly prevalent in older adults, osteoporosis, a metabolic bone disease characterized by the deterioration of bone microstructure, resulting in decreased bone mineral density and a consequent increased risk of fractures (Song et al., 2022), is already considered a public health problem worldwide (Lee et al., 2024), due to its impact on the occurrence of fragility fractures, functional disability, and mortality. According to the International Osteoporosis Foundation (IOF, 2026), it was estimated that in 2019, approximately 32 million Europeans aged 50 or over were living with osteoporosis, representing 5.6% of that population, with the disease being significantly more prevalent in women (25.5 million).

This pathological condition can result from the coexistence of multiple factors, such as aging, hormonal changes, nutritional deficiencies, and physical inactivity. Furthermore, diseases such as rheumatoid arthritis and prolonged use of corticosteroids also increase the risk of osteoporosis (Anaraki et al., 2023). Regarding diagnosis, bone densitometry (DXA) appears to be the method of choice, allowing quantification of bone mass and classification of bone status. Regarding treatment, the option will be to combine pharmacological and non-pharmacological measures, such as physical exercise and health education, aiming not only to prevent bone loss, but also to reduce the risk of falls, which is one of the main causal factors of osteoporotic fractures in this population (Schumm et al., 2023).

The relationship between fragility and osteoporosis in older adults is significant and bidirectional, as both conditions influence each other, increasing the likelihood of fractures and morbidity (Lee et al., 2024). When they coexist, they significantly increase the risk of falls, especially in institutional contexts or in environments not adapted to the needs of the older adult, being responsible for a large part of osteoporotic fractures (Anaraki et al., 2023). These fractures constitute one of the main causes of loss of independence, clinical complications, and mortality in older adults (Rodrigues et al., 2020), representing a problem of growing importance, with a significant impact on older adults, their families, and health services (Rocha et al., 2025).

Muscle strength and balance are mediators in the relationship between fragility and osteoporosis, with lower muscle strength and balance being identified in frail older adults, suggesting that these factors contribute to the development of osteoporosis (Dhillon et al., 2023). Early intervention in these areas makes it possible to delay functional decline, reduce the occurrence of fractures, and maintain or improve the independence of the older adult, contributing to active aging and a better quality of life (Duque, 2021).

Associated with greater vulnerability of the physical condition, falls are frequent events in the context of residential structures for older adults, resulting from multiple factors, such as cognitive deficits, polymedication, and balance disorders (Shao et al., 2023). Prevention should include risk assessment, physical exercise programs, and adapting the institutional environment. In this regard, and at the public policy level, special emphasis is placed on the National Patient Safety Plan (DGS, 2021), which provides crucial guidelines for promoting effective, person-centered care. In this context, nursing also plays a crucial role in risk assessment, early identification, and health education, contributing to reducing the incidence of falls and consequent fractures and promoting healthy aging (Serra, 2023).

Despite the growing number of international studies on frailty and osteoporosis in older adults (Song et al., 2022; Anaraki et al., 2023; Lee et al., 2024), evidence produced in Portugal on the coexistence of these two conditions in residents of residential Structures for older adults is still scarce. In this context, the present study seeks to fill this gap, providing national data that contribute to a better understanding of this issue and support the development of prevention and intervention programs aimed at the institutionalized elderly population.

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2. METHODS

A quantitative, descriptive-correlational, and cross-sectional study was developed (Marôco, 2021), with a non-probabilistic convenience sample, composed of 110 older adults aged 65 or over, living in a Residential Structure for older adults.

2.1 Sample

Participant eligibility was based on the following inclusion criteria: people aged 65 or over, living in a Residential Structure for older adults, who agreed to participate in the study voluntarily and in an informed manner, and who were able to understand the questions.

As for the exclusion criteria, the following were considered: people under 65 years of age and those with cognitive limitations that prevented full understanding of the study objectives.

2.2 Data collection instruments

The data collection method was based on a questionnaire structured in four sections: sociodemographic characterization, lifestyle and clinical status characterization, fragility assessment (Tilburg Frailty Indicator - TFI), and osteoporosis risk assessment (Osteoporosis Risk Check). The variables analyzed included sociodemographic, clinical, and behavioral factors. Frailty was classified according to the Portuguese validated version of the Tilburg Frailty Indicator, considering a total score of ≥6 as indicative of frailty (Coelho et al., 2015).

The researchers completed the questionnaire, which was administered at the Residential Structures for the older adults. Participants were asked to voluntarily and fully cooperate with the study by signing an informed consent form. They were also provided with information about the research objectives, and the anonymity and confidentiality of their responses were guaranteed.

It should be noted that ethical and legal procedures were followed, with a favorable opinion obtained from the Ethics Committee of the Polytechnic Institute of Viseu (Opinion No. 05/SUB/2025). All procedures in this study respected the ethical principles enshrined in the Declaration of Helsinki.

2.3 Statistical analysis

Data processing and analysis were based on SPSS® (Statistical Package for Social Sciences) version 29, using descriptive and inferential statistics, including the Mann-Whitney, Kruskal-Wallis, and Spearman correlation tests. All tests were applied with a 95% confidence level, and results with $p < 0.05$ were considered statistically significant.

3. RESULTS

A total of 110 older adults living at Residential Structure for older adults participated in the study: 75 (68.2%) female and 35 (31.8%) male, aged between 65 and 94 years (average of 77.15 years).

Regarding marital status, 52.7% of the sample was married, and 47.3% were widowed, single, or divorced, with no statistically significant differences between the sexes ($X^2 = 1.089$; $p = 0.297$).

Data relating to anthropometric variables (weight, height and Body Mass Index) revealed an average body weight of 69.51 kg (sd = 1.63; min.: 30 kg and max.: 96 kg), which reflects the diversity of body characteristics present in the sample. The average height was 1.74 m (sd = 0.25; min: 1.40 m and max: 1.87 m) and the average Body Mass Index (BMI) was 22.66 kg/m² (sd = 1.63; min: 14.1 kg/m2 and max: 36.1 kg/m2), a value within the weight range considered normal, with a range of values that reveal the presence of individuals with underweight, overweight and obesity. Analysis of BMI by sex revealed that overweight was the most prevalent category (44.5%), followed by normal weight (41.8%), obesity (10.9%), and underweight (2.7%). Men had a higher prevalence of overweight (57.1%), while women had more cases of normal weight (45.3%) and obesity (13.3%), compared to men (34.3% and 5.7%, respectively). These patterns may be associated with behavioral, sociocultural, or hormonal factors. Despite these trends, the chi-square test revealed no statistically significant differences between the sexes ($X^2 = 3.798$; $p = 0.284$). However, the observed results point to possible implications for the approach to nutritional and metabolic health, particularly in the context of aging and the promotion of healthy lifestyles.

Lifestyle data revealed insufficient physical activity in the sample, with 80.9% reporting no physical activity. Men were more sedentary (88.6%) than women (77.3%), although this was not statistically significant ($X^2 = 1.951$; $p = 0.162$), which may contribute to the higher prevalence of overweight observed in the male group. The vast majority (92.7%) stated that they did not smoke or consume alcohol (96.4%), which constitutes a positive indicator for general health.

Regarding clinical characterization, the existence of comorbidities was found in 82.7% of the sample elements, with a higher prevalence in men (88.6%) compared to women (80.0%), without, however, presenting statistical significance ($X^2 = 1.227$; $p = 0.268$). This trend may be associated with less healthy lifestyles in men, including less physical activity and a higher prevalence of overweight.

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Medication use was observed in the vast majority of cases (75.5%), with this use being more prevalent in males (85.7%) than in females (70.7%). Although the difference between the sexes is not statistically significant ($\chi^2 = 2.918$; $p = 0.088$), this trend may indicate a higher frequency of comorbidities that justify medication use.

A high prevalence of falls (61.8%) was also found, starting at age 50, a critical factor that increases the risk of osteoporotic fractures. Most indicated that falls occurred during self-care activities (47.1%), followed by work tasks (36.8%), and finally, leisure activities (16.2%). In 70.6% of cases, falls occurred indoors, with slipping being the most frequently reported cause (69.1%).

Regarding osteoporosis risk, advanced age and prolonged use of medications affecting bone health were common risk factors. In addition, 23.6% of participants reported a history of fractures after the age of 50, while 29.1% reported alcohol and/or tobacco consumption. The same proportion recognised that these behaviours are harmful to bone health (Table 1).

Tabela 1 - Risk of osteoporosis

	No / don't know / none		Yes / some / several	
	nº	%	nº	%
Item 1: Age over 60	---	------	110	100.0
Item 2: Family history of osteoporotic fractures	107	97.3	3	2.7
Item 3: Personal history of fractures after age 50	84	76.4	26	23.6
Item 4: Diagnosis of diseases associated with bone loss	99	90.0	11	10.0
Item 5: Alcohol and tobacco consumption	78	70.9	32	29.1
Item 6: Both habits are known to be harmful to bone health	78	70.9	32	29.1
Item 7: Prolonged use of medications that affect bones	---	------	110	100.0

The mean Osteoporosis Risk Scale score was 1.95 (Table 2), indicating low to moderate risk, although some individuals are at high risk. It is important to note that, despite the relatively low mean, the presence of scores as high as 5 highlights the presence of cases at higher risk of osteoporosis, which deserves special clinical attention. The range of scores (from 1 to 5) and the observed variation indicate the heterogeneity of risk factors in the sample, making it essential to identify and monitor individuals with higher scores for the implementation of specific prevention and intervention strategies. These data reinforce the importance of regular screening for osteoporosis risk, especially in older populations, to promote bone health and reduce the risk of fractures.

Table 2 - Statistics related to the overall score of the Osteoporosis Risk Scale

	Min.	Max.	Average	DP
Overall score of the Osteoporosis Risk Scale	1	5	1.9	0.9

In the fragility assessment (Table 3), significant variability in responses was observed, indicating inequalities in health status and social context. Tilburg Scale scores revealed moderate levels of physical fragility (mean of 4.28), suggesting functional limitations in a significant portion of the sample, possibly associated with factors such as aging, chronic diseases, and changes in mobility and muscle strength. The identification of high levels of physical fragility assumes particular relevance in nursing, considering the context of increased risk of falls, hospitalizations, and loss of autonomy associated with this age group, therefore requiring an approach focused on promoting mobility, preventing falls, and stimulating functionality.

In the domain of psychological fragility, a low to moderate level was evidenced (1.67), which may indicate, in most cases, a good capacity for emotional response and maintenance of a relatively stable psychological state.

Regarding the social fragility dimension, the results indicate that, in general, participants have relatively low levels (1.28). This dimension is related to the degree of social isolation, support from family and community networks, and participation in social activities. The average value found suggests that, in most cases, individuals maintain some degree of social connection, which constitutes a protective factor against global fragility.

Table 3 - Statistics related to the Fragility Assessment Scale score

Dimensions of Fragility	Min.	Max.	Average	DP
Physical Fragility	0	8	4.3	2.1
Psychological Fragility	0	4	1.7	1.2
Social Fragility	0	3	1.3	0.7

Through inferential analysis, we aimed to assess the relationship between the level of global fragility and the risk of osteoporosis in the study sample (Table 4). A weak positive correlation was found between the variables, with a Spearman correlation coefficient of $\rho = 0.143$, which was not statistically significant. However, this value suggests that, as global fragility increases, there is a slight tendency toward an increased risk of osteoporosis.

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Table 4 - Relationship between the level of fragility and the risk of developing osteoporosis

		Level of fragility	Risk of osteoporosis
Level of fragility	Correlation Coefficient		0.143
	(ρ)		0.137
Risk of osteoporosis	Correlation Coefficient	0.143	
	(ρ)	0.137	

4. DISCUSSION

The present study sought to assess the level of fragility and the risk of osteoporosis in institutionalized older adults, as well as to identify the main associated risk factors.

Regarding the sociodemographic profile, the sample was composed mostly of older women (68.2%), with an average age of 77.15 years, demonstrating a trend consistent with the literature, which points to a higher prevalence of osteoporosis in postmenopausal women due to hormonal changes and accelerated bone loss (Anaraki et al., 2023), factors that play a crucial role in maintaining bone density.

The variability observed in anthropometric indicators, particularly BMI and height, suggests the heterogeneity of this sample. Similar characteristics were also identified in the study by Salari et al. (2021), which emphasizes the diversity of physical characteristics among the older adults and the need for care in the collection and analysis of anthropometric data.

Insufficient physical activity, reported by 80.9% of participants, constitutes an additional risk factor for fragility and osteoporosis. This observation is corroborated by the literature, as a sedentary lifestyle contributes to the decline in muscle strength and balance, aspects that, as observed by Lee et al. (2024), play a crucial mediating role in the relationship between fragility and osteoporosis.

In addition to inactivity, the consumption of substances such as alcohol and tobacco, reported by 29.1% of participants, also constitutes a preventable risk factor, which is attributed to the reduction of bone quality, interfering with bone formation and calcium absorption (Vondracek & Hansen, 2020) and a greater risk of fractures (Falaschi & Marsh, 2021), therefore the reduction or elimination of these behaviors represents a low-cost and high-impact preventive measure.

The main risk factors for fragility and osteoporosis identified in this study were age over 60 years (100% of participants), prolonged use of medications that affect bone health (100%), alcohol and tobacco consumption (29.1%), and personal history of fracture after age 50 (23.6%). These data are in line with international evidence, which recognizes such factors as determinants in the occurrence of osteoporotic fractures (Falaschi & Marsh, 2021; Jha et al., 2023), reinforcing the need for a preventive and multidimensional approach focused on the early identification and control of modifiable risk factors.

Advanced age is an inevitable and universal factor for decreased bone mineral density and increased fracture risk, as evidenced by Li et al. (2023). Because age is recognized as a powerful and independent risk factor for fractures, even in the absence of significant changes in BMD, the importance of screening and clinical surveillance in this age group is reinforced (Falaschi & Marsh, 2021).

Regarding clinical history, the high prevalence of falls (61.8%) stands out, occurring mainly during self-care activities (47.1%), with slipping being the most frequently reported cause (69.1%). These data suggest the presence of intrinsic factors, such as mobility and balance deficits, and extrinsic factors, such as inadequate environmental conditions, which require targeted preventive interventions (Shao et al., 2023). The prevalence identified in this study far exceeds that reported in the international literature, with values of 32.4% reported in the study by Yosef et al. (2024) and estimates by Montero-Odasso et al. (2021) who estimate that approximately one-third of the older adults suffers at least one fall annually, with the incidence being higher with age and the presence of conditions such as osteoporosis, fragility, and functional deficits (Montero-Odasso et al., 2021). In this sense, evidence supports multidimensional strategies that combine physical exercise, functional assessment, psychological support and environmental modification as an effective way to reduce the risk of falls and fractures (Zhao et al., 2023).

This study found a mean score of 1.95 on the Osteoporosis Risk Scale, indicating moderate risk, although a significant percentage of individuals were at high risk (score ≥ 4). This finding supports the need for periodic screenings and the use of tools such as FRAX for individualized risk assessment (Falaschi & Marsh, 2021).

In addition to the physical dimension, the results of this study revealed a tendency toward fragility in the psychological and social components, although without statistical significance. This finding is consistent with the literature, which highlights the influence of factors such as mental health, fear of falling, self-efficacy, and social support on functional recovery and the progression of fragility (Falaschi & Marsh, 2021). It was found that fragility is not restricted to its physical dimension, but includes psychological and social components, such as anxiety, isolation and perception of low self-efficacy, factors that interfere with adherence to therapeutic interventions (Falaschi & Marsh, 2021; Serra, 2023). The adoption of a biopsychosocial approach is, therefore, essential in monitoring the older adults, as emotional and relational well-being directly influences adherence to interventions and the preservation of functionality.

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The results also indicate a trend toward an association between higher levels of fragility and a higher risk of osteoporosis, although weak (ρ = 0.143) and without statistical significance (p = 0.137). However, the results are theoretically supported by the literature that highlights the interconnection between fragility, sarcopenia, and poor bone health (Rolland et al., 2021). This idea is also corroborated by Falaschi & Marsh (2021), who highlight a close epidemiological, biological, and clinical link between fragility, sarcopenia and poor bone health, contributing to falls and fragility fractures, which highlights the need for an integrated approach. In this context, health education and increased health literacy are key areas for intervention, considering that low literacy levels are associated with a worse prognosis, lower adherence to care, and a higher risk of adverse events. Therefore, educational programs tailored to the understanding level of older adults are essential (Dehghankar et al., 2021).

Previous studies indicate that the coexistence of fragility and osteoporosis increases the risk of falls and fractures, making these conditions particularly relevant in clinical nursing practice (Anaraki et al., 2023; Rolland et al., 2021). Thus, although the data from the present study do not confirm this relationship in a statistically significant way, the results do not invalidate the importance of an integrated approach in the assessment of fragility and fracture risk (Lee et al., 2024). For nursing practice, especially in the context of rehabilitation and the promotion of healthy aging, it is essential to maintain active surveillance over these two domains, intervening early to mitigate their cumulative effects on the health of older adults (Serra, 2023).

As part of multidisciplinary orthogeriatric teams, nurses can actively contribute to carrying out a comprehensive geriatric assessment, covering the physical, psychological, and social dimensions of a person's health status (Falaschi & Marsh, 2021). In this context, the development of integrated strategies, supported by public policies, is recommended to promote healthy aging and prevent the progression of fragility and osteoporosis.

Implications for clinical practice and research

This study addressed a highly relevant topic in the context of population aging, and its results can contribute to the development of more structured care practices aimed at preventing frailty and osteoporosis in institutionalized older adults. The systematic assessment of these conditions in Residential Structures for older adults can facilitate the early identification of individuals at higher risk, allowing for the implementation of preventive interventions designed to reduce the occurrence of falls, fractures, and functional decline, consequently improving the quality of life, autonomy, and functional capacity of residents.

In this context, healthcare professionals, especially Rehabilitation Nurses, should assume a central role in the early assessment of frailty and osteoporosis risk, integrating these aspects into the overall assessment of older adults. Based on this assessment, they can plan and implement individualized interventions that promote bone health and maintain functionality.

Despite the relevance of the results obtained, further studies are recommended using more robust and validated assessment instruments, as well as larger and more representative samples. Furthermore, it is important to conduct longitudinal and intervention studies to deepen our understanding of frailty progression and osteoporosis risk, and to evaluate the effectiveness of Rehabilitation Nursing programs in preventing falls, fractures, and loss of functional capacity in institutionalized elderly individuals.

Study limitations

The limitations of this study include the use of a non-probabilistic convenience sample, which does not allow for the generalization of the results, as well as the relatively low participation of older adults, limiting the representativeness of the sample. Furthermore, the risk of osteoporosis was assessed using the Osteoporosis Risk Check, a screening tool developed to identify risk factors and not to estimate the absolute probability of osteoporotic fractures. Consequently, the use of this instrument limits direct comparison with studies employing validated fracture risk prediction tools, such as FRAX®. Another limitation concerns the assessment of medication use, since it was not possible to retrospectively identify the specific pharmacological classes associated with bone loss, as this information was not systematically recorded during data collection. Therefore, the influence of individual drug classes on the risk of osteoporosis could not be analyzed. Future studies should consider the use of FRAX® or other validated fracture risk assessment tools and collect more detailed information on pharmacological therapies that affect bone health, thereby improving clinical applicability and comparability of results.

CONCLUSION

This study demonstrated that fragility and the risk of osteoporosis are significantly present in this population group, showing that advanced age, sedentary lifestyle, polymedication, and a history of falls constitute the main risk factors for these clinical conditions.

These results reinforce the need for preventive strategies and multidisciplinary approaches that promote early diagnosis and appropriate interventions. The essential role of rehabilitation nurses in detecting and managing these conditions is highlighted, particularly in Residential Structures for older adults, where their work can significantly contribute to promoting bone health, preventing fractures, and improving the quality of life of the older adults.

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AUTHORS' CONTRIBUTION

Conceptualization, P.R., S.B. and C.A.; data curation, P.R., M.L.S, C.G., L.P. and P.R; formal analysis, P.R., M.L.S, C.G., L.P. and P.R; investigation, P.R., M.L.S, C.G., L.P. and P.R; methodology, P.R., M.L.S, C.G., L.P. and P.R; supervision, P.R.; validation, P.R., S.B. and C.A.; visualization, P.R., S.B. and C.A; writing - original draft, M.L.S, C.G., L.P. and P.R; writing - review and editing, P.R., M.L.S, C.G., L.P. and P.R.

CONFLICT OF INTERESTS

The authors declare no conflict of interests.

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