RISKS FOR DEVELOPMENT OF OSTEOPOROSIS IN THE ELDERLY

RISCOS PARA O DESENCADEAMENTO DA OSTEOPOROSE EM IDOSOS

RIESGOS PARA EL DESENCADENAMIENTO DE LA OSTEOPOROSIS EN ADULTOS MAYORES

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ABSTRACT

Objective: to know the risks for the onset of osteoporosis in the elderly. **Method:** this is a quantitative, cross-sectional and descriptive study in the Family Health Strategy (FHS). An instrument covering sociodemographic characteristics, anthropometry, clinical variables and life habits was used for data collection. The results were analyzed through the *SPSS software*, version 20.0, and the findings were presented in tables. **Results:** hypertension and diabetes mellitus prevailed. With respect to the family history, it was found that the elderly never had a fracture, did not have genetic factors on osteoporosis and did not use calcium and vitamin D. As for the modifiable factors, a large part of the elderly said not to practice physical activity, nor get exposed to the sun, and they said they ingested much caffeine and milk. **Conclusion:** the proposed objective was reached and it is hoped that the results found in this study contribute to the construction of knowledge about this disease that has increasingly affected people, helping to elaborate prevention strategies or avoid possible complications. **Descriptors:** Nursing; Aged; Osteoporosis; Disease Prevention; Health Care (Public Health); Aging.

RESUMO

Objetivo: conhecer os riscos para o desencadeamento da osteoporose nos idosos. **Método:** trata-se de estudo quantitativo, transversal e descritivo na Estratégia Saúde da Família (ESF). Utilizou-se, para a coleta de dados, um instrumento composto por características sociodemográficas, antropometria, variáveis clínicas e hábitos de vida. Analisaram-se os resultados por meio do programa *SPSS*, versão 20.0, e se apresentaram os achados em tabelas. **Resultados:** prevaleceram-se as doenças hipertensão arterial e diabetes mellitus. Encontrou-se, sobre o histórico familiar, o fato de os idosos nunca terem apresentado fratura, não possuírem fatores genéticos sobre a osteoporose e não fazerem uso de cálcio e vitamina D. Com relação aos fatores modificáveis, grande parte dos idosos afirmou não praticar atividade física, não se expor ao Sol, ingerir bastante cafeína e leite. **Conclusão:** atingiu-se o objetivo proposto e espera-se que os resultados encontrados contribuam na construção do conhecimento sobre essa doença de crescente acometimento auxiliando a elaboração de estratégias de prevenção ou evitando possíveis complicações. **Descritores:** Enfermagem; Idoso; Osteoporose; Prevenção de Doenças; Atenção à Saúde; Envelhecimento.

RESUMEN

Objetivo: conocer los riesgos para el desencadenamiento de la osteoporosis en los adultos mayores. **Método:** se trata de estudio cuantitativo, transversal y descriptivo en la Estrategia Salud de la Familia (ESF). Se utilizó para la recolección de datos, un instrumento compuesto por características sociodemográficas, antropometría, variables clínicas y hábitos de vida. Se analizaron los resultados por medio del programa *SPSS*, versión 20.0, y se presentaron los hallados en tablas. **Resultados:** prevalecieron las enfermedades hipertensión arterial y diabetes mellitus. Se encontró, sobre el histórico familiar, el hecho de los adultos mayores nunca haber presentado fractura, no poseer factores genéticos sobre la osteoporosis y no hacer uso de cálcio y vitamina D. Con relación a los factores modificables, grande parte de los adultos mayores afirmó no practicar actividad física, no exponerse al Sol, ingerir bastante cafeína y leche. **Conclusión:** se consiguió el objetivo propuesto y se espera que los resultados encontrados contribuyan en la construcción del conocimiento sobre esa enfermedad de creciente acometimiento auxiliando la elaboración de estrategias de prevención o evitando posibles complicaciones. **Descriptores:** Enfermería; Anciano; Osteoporosis; Prevención de Enfermedades; Atención a la Salud; Envejecimiento.

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INTRODUCTION

It is noticeable that, chronic degenerative diseases, late rehabilitation, and signs of illness in advanced stages are some consequences of aging, which in general compromise the functionality and quality of life of the elderly.¹ Osteoporosis is among these growing problems. This disease stands out not only for the complications caused by it, but also for the great physical, financial and psychosocial burden caused to patients and society.²

Osteoporosis is a silent syndrome because bone mineral loss occurs gradually over the years, without any symptoms, and becomes evident only when a fracture occurs or when a bone densitometry measurement is made. Fractures caused by osteoporosis are related to chronic pain, functional deficiency and decreased quality of life.³

The asymptomatic nature of the disease and the lack of knowledge of people at risk are considered as a barrier against effective prevention measures. It is important to call attention to the fact that if preventive diagnostic tests are not performed, osteoporosis may go undetected until a more serious condition is reached.⁴

It is known that some factors interfere with the rate of loss of bone mass in different individuals. They are the female sex, hypoestrogenism, caucasoid race, low muscle mass, age and decrease of bone mass verified by densitometry. Another factors are low consumption of dairy products (poor calcium intake), daily intake of alcohol, smoking, sedentary lifestyle, poor exposure to the sun (leading to vitamin D deficiency), epithelial aging, reduced body mass index, and advanced age. It is also estimated that, in 70% of cases, the main factor is genetic predisposition; the other 30% are influenced by environmental or individual factors.⁵⁻⁶

As this is an insufficiently recognized and diagnosed disease, there is an interest in knowing if the population that has not been diagnosed with osteoporosis understands this health condition, if preventive measures are taken by them, or if they believed that they are at risk of developing it. It is also important to investigate to which extent the perceived risk of developing osteoporosis coincide with the real risk, with older people being at higher risk and also being the most likely to perceive it.⁴

It is therefore considered that the demographic and epidemiological aspects abovementioned, as well as the relation of osteoporosis with the deterioration of quality

of life of the elderly and with the increase of mortality, make it imperative that nurses be prepared to deal with situations of risk to develop the disease, or situations where the disease is already present.

OBJECTIVE

- To know the risks for the onset of osteoporosis in the elderly.

METHOD

A quantitative, cross-sectional and descriptive study was carried out between March and November 2017 with elderly people enrolled in a Family Health Strategy (FHS) unit in the urban area of the city of Picos/PI, Brazil. All the elderly enrolled in the unit were surveyed, totalling a population of 212 elderly people. As inclusion criteria, elderly patients aged 60 years and over, regardless of gender, were selected to participate. Bedridden elderly or those with some kind of deficiency/cognitive limitation that hindered the understanding of the questions of the instrument were excluded from the study.

For the calculation of the sample size, the formula for cross-sectional studies with finite populations was used, resulting in a final sample of 132 elderly people enrolled in the unit.

Data were collected from August to September 2017. The pilot test was initially applied to eight elderly people, all of whom were enrolled in the studied unit. The test was carried out to determine whether or not the items present in the questionnaire corresponded to the reality of consumption of the population, with investigation of socio-demographic characteristics, anthropometry, clinical variables and life habits.

The collection was started at the unit and the privacy of the elderly was guaranteed by conversations in a reserved room, while they were awaiting medical or nursing consultations. Only a small part of the BHU was collected, because only a portion of the elderly attended the unit. Active search was carried out with the help of community health agents (CHAs), and from then on, the samples were collected in the household of the elderly until the sample was completed.

Data was collected and analyzed in the statistical software *IBM Statistical Package for the Social Sciences* (SPSS), version 20.0. The results were then discussed by consulting updated literature related about the theme under examination.

This study was approved by the Research Ethics Committee of the Federal University of

Piauí under the number 2,384,635 and it was developed according to the requirements proposed by Resolution 466/2012 of the National Health Council (NHC).⁷ The participants who agreed to participate in the study signed the Informed Consent Term (ICT).

RESULTS

Table 1 shows the demographic characterization of the population studied, most of whom were between 60 and 69 years, and 70 to 79 years old, predominantly female and brown.

Table 1. Characterization of the study participants according to sociodemographic variables. Picos (PI), Brazil, 2017. (n = 132).

Variables	n	%
1 - Age		
60 to 69 years	51	41.1
70 to 79 years	51	41.1
80 to 89 years	22	17.8
2 - Sex		
Female	67	53.6
Male	57	46
3 - Race		
Brown	54	43.5
White	37	29.8
Black	30	24.2
Yellow	3	2.4

Table 2 shows the anthropometric variables height, weight, body mass index (BMI) and waist circumference. It was seen that most of the participants weighed between 50 and 70 kg, with a mean of 72.401 kg and a standard deviation of 13.4040. Height was mostly between 1.40 and 1.60 meters, with an average of 1.5805 and a standard deviation of 0.06268.

The calculation of BMI revealed that most of the elderly were overweight. The mean BMI was 28.832 and the standard deviation was 5.2951, with a BMI ranging from 17.5 to 50.7. Measures of waist circumference greater than 88 centimeters (high risk for metabolic complications) were observed in some women, while most men were within the ideal range (< 94 cm).

Table 2. Characterization of the participants according to anthropometric variables. Picos (PI), Brazil, 2017. (n = 132).

Variables	n	%
1 - Height		
1.40 to < 1.60cm	81	65.3
>= 1.60 cm	43	34.6
2 - Weight		
50 to < 70 kg	59	45.5
70 to < 90 kg	51	41.1
90 to 114 kg	14	11.2
3 - BMI		
Low weight	5	4.0
Normal weight	47	37.9
Excessive weight	72	58
4 - Waist Circumference (WC)		
< 80 cm	13	10.4
80 to 88 cm	22	17.7
> 88 cm	32	25.8
5 - Waist Circumference (WC)		
< 94 cm	27	21.7
94 to 102 cm	14	11.2
> 102 cm	16	12.9

Table 3 shows the personal and family history and life habits that are represent factors associated with the development of osteoporosis. A large part reported having suffered some type of fracture during life, most of them after 60 years of age.

When asked about smoking cigarettes, most participants responded negatively, and,

regarding the use of alcohol, consumption was also denied by the majority. However, regarding caffeine consumption, most said to consume this substance. The majority also said to consume milk and dairy products in their diet, but part of them only consumed milk and 1.6% consumed neither milk nor its derivatives.

It was stated, with respect to the practice of physical exercises, that most of the elderly practice some type of exercise at least three times a week and most of them also stated

that they did not get exposed to the sun. Regarding sleep, most reported from six to eight hours of sleep per night.

Table 3. Personal and family history, as well as life habits that represent factors associated with osteoporosis. Picos (PI), Brazil, 2017. (n = 132).

Variables	n	%
1 - Have you ever had a fracture?		
Yes	81	65.3
No	43	34.6
2- If YES, how old were you when the fracture occurred?		
Before the age of 40	9	7.3
Between 40 and 60 years	11	8.9
After 60 years	12	9.7
3 - History of osteoporosis?		
Yes	5	4.0
No	47	37.9
I don't know	72	58
4 - Are you a smoker?		
Yes	13	10.4
No	22	17.7
5 - Do you consume alcohol?		
Yes	27	21.7
No	14	11.2
6 - Do you consume caffeine?		
Yes	16	12.9
No	37	29.8
7 - Do you consume milk and dairy products?		
Yes	94	1.6
Yes, only milk	28	22.6
No	2	14.2
8 - Do you exercise (at least three times a week)?		
Yes	57	46
No	67	54
9 - Do you get exposed to the sun (for at least ten minutes)?		
Yes	91	26.6
No	33	73.4
10 - Hours of sleep		
<6 hours	58	46.8
6 to 8 hours	66	53.3

The results of the research regarding calcium and vitamin D supplementation, which are fundamental in the prevention and treatment of osteoporosis, are shown in Table 4. It is inferred that, with regard to daily

calcium supplementation, most of the interviewees denied this practice. Some participants used vitamin D supplementation, also indispensable in the maintenance of bone health.

Table 4. Characterization of calcium and vitamin D supplementation. Picos - PI, 2017. (n = 132).

Variables	n	%
Calcium supplementation		
Yes	26	21
No	98	79
Vitamin D supplementation		
Yes	17	13.7
No	107	86.3

DISCUSSION

It is noted that a morbidity affecting both men and women prevails over women not only due to the greater number of women in the population, but due to physiological issues inherent to the female body. In fact, the

female sex represents a considerable non-modifiable risk factor (six-fold greater chance) for the development of osteoporosis.⁶

It was reported that the mean age of the elderly participants was 71.93 years, similar to the results of another research on osteoporosis and life expectancy in Brazil,

where it was demonstrated that the prevalence increases with the advance of age, passing from 0.1% in the age group of 18 to 24 years to 27.7% in the age group of 80 years or more.⁸

The brown color prevailed over the others in the variable skin color. In contrast, a study with non-institutionalized elderly people in Campinas, São Paulo, found that 77.4% of their sample declared themselves as white and only 15.5% were brown.⁹ Ethnicity, color or race is a risk factor. A study on the cause of falls in the elderly population of an urban community in South Africa showed that black women had a lower risk to develop osteoporosis, contrary to white and oriental women.¹⁰

It has been shown that the higher the BMI of individuals, the greater is the preservation of bone mass and, consequently, the lower the risk of osteopenia and osteoporosis. In contrast, the lower the BMI and consequent lower impairment of the nutritional status of the elderly, the lower is the bone mineral density observed, increasing the risk of osteometabolic diseases in this age group.¹¹

The literature shows a positive correlation between body weight and bone mass; individuals with higher BMI present higher BMD. Furthermore, according to the classification of waist circumference for males and females, the present research diverges from a study conducted in Roca Sales, RS, where it was observed that both women (82.3%) and men (81.3%) were at increased risk for metabolic complications such as osteoporosis.¹²

Modifiable factors such as alcohol and tobacco use are considered important. The literature shows similarity with the present findings,¹² but a study by the UK National Osteoporosis Foundation showed that moderate alcohol consumption appeared to be associated to a slightly higher bone mineral density and lower risk of fractures in postmenopausal women.¹³

Lifestyle can be modified because it is a protective factor for health. Yet, most of the elderly interviewees reported that during their youth they had consumed alcohol or tobacco.¹⁴

A research carried out at Unicamp in 2014 on the relation of coffee and soft drink of cola showed that caffeine (active substance of coffee), when present in large quantities in the body, significantly increases bone resorption and consequently reduces bone mass, implying greater risk of fractures, especially in among females.¹⁵

Socioeconomic, anthropometric and dietary profiles were described in a study carried out in Benevides - PA to identify the prevalence of chronic diseases in the elderly. The results of this study are similar to the present findings; 44.6% of the participants did not perform any physical activity.¹⁶

Furthermore, with regard to sleep hours, the results converged with those of other studies where a similar number of sleep hours per night were reported. Such studies also came to the conclusion that individuals with sleep disorders such as insomnia and short sleep (less than seven hours per day) are at greater risk for osteoporosis.⁹

It is noted that throughout the different stages of life, some nutrients play an important role on bone health, including calcium and vitamin D. Both are co-dependent and simultaneously interact with genetic and environmental factors, which should not be neglected. It is observed that, among its numerous biological functions, calcium plays a fundamental role in the formation and regeneration of bone tissue.¹⁷

CONCLUSION

The proposed objective in this study was achieved. The prevalent risk factors were female sex, high risk for metabolic complications due to the classification of waist circumference in females, caffeine consumption, physical inactivity, chronic diseases, and the use of medications for these comorbidities, besides lack of calcium and vitamin D supplementation.

It is hoped, therefore, that the results contribute to the construction of knowledge, treatment and maintenance of this disease, which has presented an accelerated growth in the elderly population. The study may help in the elaboration of prevention strategies in order to alleviate the complications brought about by the disease, especially the occurrence of fractures, which have been mentioned by many authors as responsible for reducing the quality of life of the elderly, limiting and increasing morbidity and mortality among them.

It is emphasized, as an important aspect, the need for further studies on the proposed theme. It is also suggested that studies be carried out comparing the prevalence of risk factors with the population that already presents osteoporosis.

It is also suggested that the multiprofessional team working in primary care keep seeking new knowledge about the risk factors for the development of

osteoporosis so that it may be possible to identify inappropriate life habits or non-modifiable risk factors and, based on this identification, make it possible to carry out interventions in the community in order to promote health education, outlining attractive strategies to better guide and direct the population according to the needs presented.

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