ORIGINAL RESEARCH ARTICLE   **OPEN ACCESS**

OSTEOPOROSIS: A CROSS-SECTIONAL STUDY

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ARTICLE INFO

ABSTRACT

Osteoporosis is the most serious aggravating factor after age 50, women develop osteoporosis more frequently due to the lower bone mass peak and the Persian effect of estrogen during menopause. The present study aimed to analyze the profile of postmenopausal women. A cross - sectional study with a qualitative approach was carried out. The sample consisted of 14 women with osteoporosis. From the results, it was identified that 100% of the interviewees were female, with a predominantly age range of 51 to 66 years. 50% are married and survive on a salary income of 1 to 2 minimum salaries and of these 57.14% have incomplete primary education. It was also identified that 92.86% were Catholics and 35.71% had 5 or more children. As for the qualitative data, the results of the research show that women have habits of life that compromise their health, do not follow a diet that meets their daily needs and has as main complaint pains in various parts of the body, which are use of the medication. It has been found that osteoporosis is a serious public health problem affecting mainly women who have difficulty performing the treatment for a variety of reasons.

INTRODUCTION

In Brazil, the increasing number of elderly people has been occurring very rapidly and progressively, without fundamental changes in the living conditions of this population.

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Improving socioeconomic factors may lead to a better quality of life, adding to this event the increase in life expectancy (SILVA *et al*., 2014). Thus, an increase in the number of elderly people up to 2025 is estimated to be higher than the 30 million population, being accompanied by chronic degenerative diseases and few healthy habits (DAWALIBI *et al*., 2013). Aging is part of the vital process of human

development, in which it is the responsibility of bringing about several transformations that change the lifestyle of the elderly person. The musculoskeletal changes that arise at this stage are determined by a sequence of metabolic and endocrine changes that arise in this specific public, and can develop osteoporosis (YASUI, 2012). Osteoporosis, which means "porous bone", is an osteometabolic disorder characterized by a reduction in bone mineral density, leading to an increase in bone fragility, which leads to a high risk of fractures, with a higher prevalence in elderly women (MENEZES *et al.* (2008). It is a multifactorial disease, which is influenced by both genetic and environmental factors, and can be classified as primary type I and II and secondary (FRAZÃO; NAVIERA, 2006). Primary osteoporosis is caused by natural causes, for example, menopause. However the secondary is due to other processes, such as inflammatory (FERNANDES *et al.*, 2015). Osteoporosis is considered an osteometabolic disease, which is characterized by a decrease in bone mass and wear of the microstructure of the bone tissue, resulting in an increase in bone fragility leaving the elderly susceptible to falls and fractures (SANTOS *et al.*, 2017).

The most common fractures involve the vertebrae, hip and femur, pointing the female with a greater offensive of this disease due to post-minor pause, being the drug treatment essential for the prevention of fractures (CAMARGOS; BONFIM, 2017). This disease is divided into primary osteoporosis, occurs by natural factors such as: menopause and senility and secondary osteoporosis that originates from inflammatory processes that are: endocrine, rheumatic, hematological, pulmonary and psychiatric alterations (FERNANDES *et al.*, 2015). FELISBERTO *et al.*, 2018). The diagnosis of osteoporosis is based on bone mineral density (BMD). Bone mineral density is defined by the sum of the mineral substance in the bone area and may be influenced by several factors, such as body composition (SANTOS *et al.*, 2018). With decreasing bone density, there is a reduction in muscle strength of around 30%, leaving the elderly vulnerable to falls and the possibility of fractures leading to bodily limitations such as long walks, physical activities, and thus diminishing their functionality (TEIXEIRA *et al.*, 2013). For the prevention of osteoporosis and fractures, supplementation of calcium and vitamin D has been recommended according to some studies, however other studies show inconsistent data for this supplementation, pointing out no effect and even health risks (WEAVER *et al.*, 2016). Therapeutic and preventive aspects should still be observed in the improvement and maintenance of the quality of life of the elderly, bringing benefits of the functional capacity of the whole body adopting practices of physical exercises, with a greater consumption of milk and derivatives, foods rich in calcium; decrease in consumption of coffee, soft drinks, meats and fried foods (MOTA; SOUSA; AZEVEDO, 2012).

According to SBOT (2004) osteoporosis is a metabolic disease of bone tissue, characterized by gradual loss of bone mass, which weakens the bones, occurring in the tissue microarquitetura deterioration, causing the bones to become fragile and susceptible to fractures. The definition of osteoporosis is related to the alteration of the values of the bone densitometry due to the loss of bone mass. Thus we will have osteopenia, identified by the examination. Osteoporosis, when the loss is greater than -2.5 standard deviations (SD). Osteoporosis is considered severe when, in addition to the criteria already mentioned, there is a fracture. The interest in

the skeletal system and the factor of being a woman made me attract to study and understand this problem. Osteoporosis is not limited only to biological deficiencies, but to cultural, social and economic factors. The lack of information, economic resources and conformism is a powerful aggravating factor of this health problem. The period of the menopause alone, leaves the female sex fragile, confused, fearful. The association menopause and osteoporosis will often bring beyond the physical changes, the psychological ones. The posture loses its elegance, the gait becomes.

MATERIALS AND METHODS

The methodology should be understood as a set of sequential and detailed elements of scientific techniques and methods to achieve the proposed objectives, through suitable paths; meeting the criteria of speed, effectiveness and reliability of information (DEMO, 1987). A qualitative, exploratory field study was carried out. Where we seek to explore the medium, defining and quantifying cases. Thus, Richardson (1999) states that the qualitative aspect of an investigation can be present even in the information collected by essentially quantitative studies, not losing their qualitative character when they are transformed into quantifiable data, in the attempt to ensure the accuracy in the results. He also points out that the quantitative method is characterized by the use of quantification of both the information collection modalities and their treatment by means of statistics techniques. The study was carried out at Orcindo Guedes polyclinic in the city of Cajazeiras, PB. The population was composed of a group of postmenopausal women diagnosed with osteoporosis who had consultations in the polyclinic, with a sample of 14 patients. For data collection, a semi-structured interview script was elaborated in two parts. The first part, containing data of personal and socio-economic identification, and the second part, containing data directed to the research, both constituted by objective and subjective questions in order to be applied the participations of said research, serving as subsidies for the information desired in the interview act.

The data collection was performed in a period of three months. In the collection period the objectives of the work were presented to the collaborators, requesting their collaboration by signing the informed consent form and responding to the questionnaire. It is worth mentioning that the researcher's ethical position in relation to the development of research was guided by research guidelines and norms involving human beings, established in Resolution n 466/12 of the National Health Council in force in the country (BRASIL, 2012). Resolution 466/12 incorporates the basic principles of bioethics, as well as the ethical principles of autonomy, non-maleficence and justice, defined as individual or collective and involves the human being, in whole or in part, includes information and management of materials. In this way, the free and informed consent of the research participants involving human beings, according to said resolution, should always treat them in their dignity, respect them in their autonomy and defend them in their vulnerability (BRAZIL, 2012). During this research, participants were invited to sign the Free and Informed Consent form. Data analysis was performed in two stages: initially, objective data describing the socio-demographic characteristics and life habits of the participants were analyzed and analyzed in tables. The second stage began with the transcription in full of the interviewees. Then the responses were analyzed and presented in a

descriptive way compared to the light of the pertinent literature on the theme of Triviñus (1994). This study does not have any conflict of interests following the norms of the national health council, which regulates the research involving human beings and all the pregnant women signed the informed consent form (Brazil, 2012).

RESULTS AND DISCUSSION

The data presented below are related to the reports of postmenopausal women about this subject. The data were divided into two stages, the first one being about the socio-demographic data of the interviewees and the second one will be exposed to the verbalizations from the guiding questions.

Table 1. Demographic demographic data of postmenopausal women with osteoporosis

Demographic Data	N	%
Sex		
Women	14	100
Age range (Years)		
45-50 years	4	28,58
51-66 anos	7	50
67-72 anos	3	21,42
Marital Status		
Married	7	50
Unmarried	3	21,43
Widower	3	21,43
Divorced	1	7,14
Wage income		
1 a 2 salary	10	71,43
None	4	28,57
Education Level		
No Literate	1	7,14
Complete primary education	4	28,57
incomplete elementary school	8	57,14
High School	1	7,14
Religion		
Catholic	13	92,86
Protestant	1	7,14
Number of children		
1-2	2	14,28
2-4	4	28,56
5 or more	5	35,71
None	3	21,42

In our studies we observed that patients with osteoporosis are carriers of postmenopausal osteoporosis. This work is based on the post-menopause osteoporosis. Our studies corroborate with studies carried out in Southeast Brazil that find a prevalence of osteoporosis increases with the advancing age, from 0.1% in the age group from 18 to 24 years to 27.7% in the 80 years with a higher prevalence among women and even at age 80, for example, the prevalence of osteoporosis was 38.0% for women and 10% for men in the group studied in Minas Gerais Brazil (CAMARGOS, BONFIM, 2017). When analyzing the data in table 1, we identified that, in relation to the age group, seven (50%) of the 14 postmenopausal women interviewed were between the age group 51 and 66 years; four (28.58) in the age group 45 to 50 years and three (21.42%) are between 67 and 72 years old. These data lead us to verify that the majority of interviewees are in the age group of 51 to 66 years. According to Freitas *et al.* (2001) the age of occurrence of menopause is 50 years from then estrogen levels decay and an acceleration of loss of bone mass occurs. Hebert *et al*; (2003) also says that with the rapid decrease of this hormone in menopause, around 5 to 10 years after its installation, they reach values insufficient to maintain bone homeostasis. Freitas *et al.* (2001) states that in the first five years postmenopausal,

bone loss may reach 2% to 5%. Regarding the marital status, 50% were married, single and widowed both with 21.43% and separated by 7.14%. According to the above table, 71.43% of the interviewees have a salary income of 1 to 2 monthly minimum wages, while 28.57% do not have any income. Osteoporosis has been worsening in recent years, due to the modification of the age pyramid, Brazil ceases to be a young country and becomes a senescent nation. Because of the social and economic implications of the disease, it is considered a serious public health problem. Low wage incomes do not ensure a diet that meets the needs advocated by the Ministry of Health. Looking at the table we can see that 57.14% of the interviewees had incomplete elementary education, 28.57% complete primary education, complete secondary education and illiterate totaled 7.14% each. Although the population is mostly literate, Costa-Paiva (2003) ensures an association of osteoporosis with the lowest level of schooling. This data can be indirectly interpreted as indicative of nutritional status because it can, if under inadequate conditions, limit the peak and maintenance of bone mass. In terms of religion 92.86% of the sample were Catholic, in contrast 7,14% were evangelical. Regarding maternity, 35.71% had five or more children, 28.56% had 2 to 4 children and 14.28% had 1 to 2 children. The literature does not relate osteoporosis to motherhood. But for Costa-Paiva (2003) other reproductive aspects are associated, such as the age of the menarche and menopause, since these determine the extension of the estrogen exposure period, which is one of the most important determinants of bone densitometry, since estrogens act to prevent loss of bone mass, decreasing the laughter of fractures. Studies show the correlation between early menarche and high values of bone densitometry.

In studies conducted in Joinville (SC), Brazil, researchers who, in relation to schooling, illiterate older adults presented a higher occurrence of falls, when compared to those enrolled (Lima *et al.*, 2017). In a study carried out in Rio Grande do Sul, Pereira *et al.* (2013), when evaluating 6,751 elderly people, with a mean age of 70.3 years, found that the elderly with a higher level of education, that is, with a higher grade, 94.4% presented no risk of falls. The authors believe that higher schooling is associated with a trend towards better income, and consequently better housing conditions and access to health (Pereira *et al.*, 2013, Lima *et al.*, 2017).

Table 4. Factors concurrent to osteoporosis in postmenopausal women

Risk factors	Yes		No	
	n	%	n	%
Daily sun exposure in the morning 15 minutes	7	50	7	50
Performed hormone replacement	4	28,57	10	71,43
Consumption of alcoholic beverages in youth	-	-	14	100
History of familial osteoporosis	5	35,71	9	64,29
Smoking	5	35,71	9	64,29
Sedentary lifestyle	3	21,42	11	78,58
Inadequate calcium intake, considering only dairy products	2	14,29	12	85,71
Current alcohol consumption	1	7,14	13	92,85
Currently sedentary	4	28,57	10	71,43

Table 04 refers to the factors competing for osteoporosis in postmenopausal women. The participation of regular weight exercises and lifestyle modification (reducing the use of alcohol, coffee and cigarettes), reduce the risk for osteoporosis, fractures and associated disabilities in a later

period of life (HEBERT *et al*, 2003). In a study conducted by Geusens *et al*. (2002) found a greater correlation between falls and fractures than between osteoporosis and fractures, and the association of both makes this risk even greater. Madureira *et al*. (2007) in a 12-month associate-balance training program and home-based exercises, applied to 66 women with postmenopausal osteoporosis divided into two groups, one who received training and another control, achieved significant balance, mobility, and reduction in the number of falls. The association of sensorimotor training and progressive quadriceps strength is effective in preventing falls and reducing their risk factors (TEIXEIRA *et al*., 2013). Regarding hormone replacement, 71.43% did not perform this replacement and 28.57% did. Hormone replacement therapy is of paramount importance in bone remodeling (acting by activating osteoblasts and inhibiting osteoclasts). Its effect is mainly preventive and not curative (ALMEIDA, 2003). Hormone replacement therapy is prescribed to delay bone loss by reducing the incidence of carotid fractures and decreases bone resorption by increasing bone mass. Costa-Paiva (2003) says that many women still refuse to perform this replacement because of the risks it can cause and not all women need replacement. Freitas *et al*. (2001) asserts that the great difficulty of adherence of postmenopausal patients to therapy is their connection to thromboembolism, endometrial cancer and breast cancer. Some doctors do not want to submit to the laughter of being indirectly responsible for such complications and end up standing against such therapy.

Hormone replacement therapy (HRT) used soon after menopause and for 10 years reduces the incidence of osteoporotic fractures by 50% (PARDINI *et al*., 1999). In addition to the preventive aspect, it is already agreed that bone mass increases with the use of HRT in the long term, even in women with established osteoporosis, reducing the risk of vertebral fracture by 50% (PARDINI *et al*., 1999). In alcohol consumption in youth 100% did not use. Currently, 92.85% continue to not consume and 7.14% consume it. Alcohol decreases the activity of osteoclasts and leads to a decrease in serum osteocalcin (whose synthesis depends on vitamin K). As a consequence there is a decrease in the absorption of calcium in the intestine, causing hypercalcemia and increased parathyroid secretion. Hepatic hydroxylation occurs, that is, the reduction of active vitamin D metabolites Of the interviewees, 64.29% had a family history of osteoporosis, while 35.71% did not. People who have a mother, grandmother or uncles with osteoporosis will be more likely to develop osteoporosis, and heredity also helps explain why people develop osteoporosis earlier, it can determine the onset of bone loss from the age of 45 (PLAPLER, 2007). Regarding smoking, 64.29% were non-smokers and 35.71% were non-smokers. Smoking is probably one of the major laugh factors, since it is believed to interfere with the intestinal absorption of calcium. Aldrighi *et al*. (2005) concludes that smoking can also act directly on the bone matrix, reducing osteoblastic activity, anticipating the onset of osteoporosis symptoms.

Regarding the sedentarism in the youth, 78,58% were not sedentaristas, whereas 21,42% did not practice any physical activity. Currently 71.43% are not sedentary, while 28.57% are sedentary. The practices of constant physical activities produce load on the bone tissue. Women should be advised to remain active or start an exercise program for weight-bearing activities, such as walking. The goal is to achieve maximum bone density at menopause through correct physical activity

and constant physical activity (HEBERT *et al*., 2003). Physical activity has a beneficial effect on bone tissue, provided it is practiced regularly. Exercise is one that moves bone and muscle. These exercises prevent the loss of bone mass and its formation is stimulated by stress of weight and activity (ALMEIDA, 2003). Osteoporosis is a common condition. In women, the loss is higher in the first 10 years after menopause, which may reach 3% per year, and is higher in the sedentary woman (GALI, 2001; LANE, 1998). With respect to food, it was found that 85.71% made inadequate consumption of calcium, and 14.29% said that they had consumed it improperly. An adequate and balanced diet, rich in calcium and vitamin D, throughout life, with an increased intake of calcium during adolescence, adulthood and middle age, protects against skeletal dysmineralization (SMELTZER; BARE, 2002). Calcium is responsible for bone mineralization at all ages. The association between the amount of calcium in the diet and a greater risk in the early development of osteoporosis is a direct relation (BRITO, 2007). Increased calcium intake over a three-year period decreases the calcium level of calcium loss from vertebral bone mass in postmenopausal women, but without modifying their mass (ALMEIDA; RODRIGUES, 1997).

Qualitative Analysis

Verbalized questions, which women report data about the disease: symptoms, reaction to diagnosis, drug treatment and results.

Start of Symptoms

"2003. Back pain at the end of the spine after work. "

HAND.
"Last year. Lots of back pain legs and all over the body. "

M.S.A.
" More than a year. Pain throughout the cup, impression that the joints are brittle, tingling. "

A.B.S.

For Zylberstein *et al* (2002) these manifestations occur when there is already a loss between 30% and 40% of bone mass, complaining of pain in the spine when getting up in the morning, picking up a very heavy object or making an effort for a long time. The predominant symptom is bone pain, probably due to the process of collapse of trabecula structure caused by microfractures. (Hebert *et al*., 2003). The pains are common mainly in the dorsal spine. It can be severe or not, without being modified by posture or flexion (GOLDING, 2001). After significant bone loss, the clinical manifestations of the disease begin. The pain is common when getting up in the morning and getting worse after minor trauma, exacerbating itself during cough, laughter, movement or effort. The pain can be burning or cutting, and can last 15 to 60 days (ALMEIDA, 2003).

REACTION BEFORE DIAGNOSIS

"In the same year through bone densitometry. I was waiting for the pain, without worry.
R.E.A.

"2006. Much concern."
M.S.A.
"Some months. I was very worried my mother died of it. "

F.M.F.S.

The way the doctor transmits the news and exposes the problem gives the patient tranquility, leaving him free of doubts and insecurity (OLIVEIRA, 2003). DEXA bone densitometry is the standard test to detect osteoporosis, its accuracy to assess bone loss reaches detection levels of 1%, bringing hormone therapy and the preventive character in the evaluation of the bone resistance of the spine and neck of the femur. The rate of bone loss can be measured by performing bone densitometry annually, which provides a true view of the progression of osteoporosis. (HEBERT *et al*., 2004). Osteoporosis is a metabolic disease that has a strong economic and social impact, mainly altering the quality of life of women in the period of climacteric and menopause (ALMEIDA, 2003). The treatment of osteoporosis is importantísimo, considering the great morbidity of the disease and the high costs of the sequels (HEBERT *et al*, 2004). Treatment and maintenance of patients with osteoporosis involve high costs, which often the family is not ready to pay for such expenses, as well as other family complications, such as fractures, since the elderly need direct assistance, losing their independence, even for their routine activities (OLIVEIRA, 2003). Half of these fractures evolve to partial or total incapacitation, besides triggering several circulatory, respiratory and thromboembolic alterations, resulting and death within the first two years after fracture (COSTA-PAIVA, 2003).

Realization Of The Treatment

"Osteofar, One tablet once daily."
HAND.
"Miacalcic. One drop in each nostril once a day. "
A.S.L.
"Evista and calcitriol. One pill every single day. "
L.G.S.

The main goal of osteoporosis treatment is to avoid fractures with the use of therapies that increase BMD. Osteofar 10mg is a medicine sent by the Ministry of Health the carriers of osteoporosis. This is the commercial name of alendronate that acts not only on the activity but also on the number of osteoclasts, thus decreasing its time of action (Cuts and Stevens, 2003). As bisphosphonates (alendronate) are few absorbed by the gut, it is recommended to use them fasting, 40 to 60 minutes before meals, accompanied only by water. The adverse effects of alendronate are gastrointestinal, and erosive esophagitis has been described. In order to reduce this and other risks, the patient should not lie down after the medication is ingested (LEITE, 1999). The Miacalcic 200 Ui daily is calcitonin in the clinical form of salmon, which presents the therapeutic potential higher than the others (porcine, human, eel). It is a peptide hormone that acts to reduce the activity of osteoclasts, not altering their number. The adverse effects are mild: nausea, vomiting, diarrhea, among others. However, it has been found that the nasal spray form is better tolerated than the parental form (LEITE, 1999). The evista or raloxifene 60mg are selective estrogen receptor modulators (SERMS), acting estrogen agonist on bone tissue and cardiovascular parameters and antagonist in breast tissue is recommended in later postmenopausal women at risk of breast cancer. mom (Freitas *et al*., 2001). Calcitriol 0.25mg is a calcium compound that is always associated with other medications. The daily intake of calcium determines a contribution of this ion to the tissues, functioning as a substrate in the bone formation. In the

postmenopausal period, the calcium requirement increases to 1.0g to 1.5g / d, as the diet is not sufficient to meet this need, and the physician is led to supplement with calcium (ALMEIDA, 2003).

Amendment After Medicinal Therapy

"I did not see results. I thought I'd get better. "
            HAND.
"Yes. Invigoration, strength in activities. "
            A.S.L.
"Improved a little."
        J.F.A.

Any therapy for osteoporosis should be used for at least three years. Treatment discontinuation has shown that levels of the resorption markers return to baseline, bringing with them the same symptoms (LEITE, 1999). Because they do not obtain immediate results some of the patients end up abandoning the treatment or performing it incorrectly, resulting in non-benefit. These medications, besides controlling the hemostasis of the bone, have as great indication the relief of the pain, since it has an analgesic effect that brings the relief of the pains promoting comfort to the patient, enabling the accomplishment of their routine activities. (1997) Long-term and well-managed treatment can prevent vertebral and non-vertebral fractures, so it can also alleviate an acute painful situation (LEITE, 1999).

It was found that osteoporosis is a very common health problem in elderly people in Brazil and that there are several cases that were underreported due to lack of bone densitometry examination, some patients have difficulty adhering to treatment, especially in the food question. In this way, the government is expected to develop public policies aimed at the treatment, prevention and diagnosis of osteoporosis, mainly for the prevention of fractures in the elderly, when associated with a fracture of the femur, with complications and death.

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