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LETTERS TO THE EDITOR

Portuguese osteoporosis screening in the community: what did we learn?

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Dear editor,

Screening for osteoporosis (OP) in the community, identifying all individuals with the diagnosis or at high risk of developing it, enables the early and effective implementation of therapeutic strategies, reducing its morbidity and mortality[1,2]. However, the Portuguese reality of OP screening is unknown; thus, we aimed to estimate the prevalence of OP and its risk factors (RF) in the adult Portuguese population screened in the community.

A national community screening for OP was carried out between October 2022 and May 2023 in Portugal. Adult individuals (≥20 years) without a previous OP diagnosis were screened. A retrospective study was conducted, taking into account the collected data in this screening, including sociodemographic characteristics, RF for OP, lifestyle habits, and forearm Dual-energy X-ray absorptiometry (DXA) data. According to World Health Organization individuals were classified into three sub-groups: "Normal DXA" (T score ≥-1SD), "DXA with osteopenia" (T score between -1 and -2.5SD) and "DXA with osteoporosis" (T score ≤2.5SD)[3]. To compare the differences between groups, Chi-square test or Fisher's exact test (if expected count per cell was less than 5) were used. If p-value <0.05, multiple comparisons were performed using the Bonferroni method (adjusted p-value <0.016).

A total of 767 individuals, the majority female (73.9%) and Caucasian (99.3%), mean age of 58.42±11.72[28-91] years were screened. The mean bone mineral density (BMD) was 0.438±0.083[0.209-0.714] g/cm^2. The mean T score and Z score were -1.26±1.15[-5.30-2.20] and -0.92±0.50[-3.20-1.90], respectively. Table 1 describes the RF for OP in the population. A total of 116 individuals (15.1%), exhibited T score values suggesting OP (16% in females and 12.5% in males), and 338 (44.1%) suggesting osteopenia. Regardless of T score, 21% of individuals had a previous history of low trauma fracture and 13% reported a loss of height suggestive of spine fractures. When comparing the sub-groups we found statistically significant differences regarding age (≥60 years), history of low trauma fracture, loss of height and family history of hip fracture. These RF were more prevalent in the sub-groups with OP or osteopenia. It is noteworthy that the "DXA with osteopenia" sub-group had a higher prevalence of low trauma fracture and family history of hip fracture compared to other groups.

In our study, the majority of individuals screened either had OP or were at high risk of developing it. The prevalence of OP (15.1% in total) was similar in a previous cross-sectional epidemiological Brazilian study (15.6% in elderly users of the primary health care)[4]. However, this OP prevalence is higher than that reported in EpiReumaPt study, which reported an overall prevalence of 10.2% in Portugal[5]. In fact, EpiReumaPt study did not consider densitometric measurements in the definition of OP, which may have resulted in an underestimation of the prevalence of this condition[5]. Furthermore, the difference in prevalence between the studies is even more pronounced for the male sex: 12.5% in our study versus 2.6% in the EpiReumaPt study. OP is less prevalent in men; however, given that this screening was voluntary, men more aware of having RF for this condition may have sought screening more frequently. Although DXA is the standard method for OP diagnosis, assessing RF in the community allows for early identification and management of individuals. We found that even with normal DXA results, more than 25% of individuals had a history suggestive of fall with low trauma fracture. Certainly, previous research has shown that older adults with a history of falls are 47% more likely to have OP[4]. Furthermore, it has been demonstrated that the majority of fractures occur at DXA compatible with osteopenia or even normal, compromising the sensitivity of this method as a standalone screening tool for OP[6].

This study is the first to explore OP prevalence and its RF using national screening data from Portugal. Screen-

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TABLE I. RISK FACTORS FOR OSTEOPOROSIS AND LIFESTYLE HABITS DEFINED BY PORTUGUESE POPULATION SCREENED AND BY SUB-GROUPS ANALYSED

Risk factors (Yes), n (%)	TOTAL N=767	Normal DXA n=313	DXA with Osteopenia n=338	DXA with Osteoporosis n=116	P-value global
Female	567 (73.9)	217 (69.3)	259 (76.6)	91 (78.4)	0.051
Aged 60 or older	365 (47.7)	90 (28.8)	173 (51.2)	102 (87.9)	**<0.001***
Previous low trauma fracture (≥1), n=762	161 (21.1)	59 (18.9)	63 (33.6)	39 (18.9)	**0.002****
Menopause<45 years, n=537	97 (18.1)	28 (13.5)	50 (20.8)	19 (21.3)	0.088
Underweight (BMI<19 kg/m^2), n=719	15 (2.1)	4 (1.4)	8 (2.6)	3 (2.1)	0.533
Loss of more than 5 cm in height, n=753	98 (13%)	25 (8.1)	46 (14)	27 (23.5)	**<0.001*****
Inflammatory bowel disease or Celiac disease, n=762	24 (3.1)	8 (2.6)	10 (3.0)	6 (5.3)	0.360
Corticosteroids (≥6 months), n=757	60(7.9)	25 (8.1)	27 (8.1)	8 (6.9)	0.905
Familiar history of hip fracture, n=762	110 (14.4)	31 (9.9)	62 (18.6)	17 (14.7)	**0.008******
Lifestyle habits (Yes), n (%)					
Sun exposure <10 minutes/day/and no vitamin D supplementation, n=762	211 (27.7)	91 (29.4)	90 (26.8)	30 (25.9)	0.684
Daily physical activity <30 minutes, n=761	324 (42.6)	148 (47.9)	140 (41.5)	36 (11.1)	**0.008******
Inadequate dairy consumption/and no calcium supplementation, n=759	211 (27.8)	81(26.0)	97 (29.1)	33 (28.7)	0.665
Smoking (current), n=763	224 (29.4)	91 (29.4)	101 (30.0)	32 (27.6)	0.888
Alcoholic (current), n=763	18 (2.4)	6 (1.9)	11 (3.3)	1 (0.9)	0.277

DXA- Dual-energy X-ray absorptiometry. BMI-Body Mass Index. p-value global is significant at 0.05 level. Adjusted p-value is significant at 0.016 level. For comparison multiples: * p<0.001 for all groups; ** p=0.001 for "Normal DXA" versus "DXA with osteoporosis" and "DXA with osteopenia" versus "DXA with osteoporosis"; *** p<0.001 for "Normal DXA" versus "DXA with osteoporosis"; **** p=0.002 "Normal DXA" versus "DXA with osteopenia"; ***** p=0.002 "Normal DXA" versus "DXA with osteoporosis".

ing for OP in the community enables early detection of individuals with this condition or those at high risk of developing it. This, in turn, allows the implementation of suitable lifestyle modifications, along with non-pharmacological and pharmacological interventions, aimed at reducing the risk of fractures and morbimortality associated, thereby alleviate healthcare costs. However, this study has certain limitations. The authors took into account International Osteoporosis Foundation recommendations, which suggested the use of T scores even above 20 years old[7]. Though, The International Society of Clinical Densitometry recommend preferential use of Z-score in younger population[8]. Furthermore, it should be noted that BMD screening is not recommended in clinical practice in all premenopausal women and young men.

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