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Factors influencing the diagnosis of osteoporosis - data from EpiReumaPt

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Background: EpireumaPt is a cross-sectional study on the prevalence of rheumatic diseases (RDs) in Portugal. Osteoporosis (OP) is one of the diseases included in the study. Socio-demographic and clinical factors associated with this disease are well known. It is important to confirm if the same known factors are the ones associated with the diagnosis of OP in this study, in a setting when the rheumatologist is not aware of the DEXA results.

Objectives: To identify factors associated with the diagnosis of OP during the first months of EpiReumaPt.

Methods: Participants recruited for the EpiReumaPt survey and observed by a rheumatologist (December 2011 cutoff) were included in this analysis. The study population is a representative sample of the Portuguese population (random-route methodology) and first answers a questionnaire. In a second step, participants with a positive screening for RD (and 20% of the ones with a negative screening) are observed by a rheumatologist. A positive screening for OP (1st phase) is made in the event of a self-reported OP diagnosis, a history of non-traumatic fracture after the age of 40 or intake of anti-osteoporotic medication. The proportion of patients observed by a rheumatologist and with a final diagnosis of OP was calculated. Patients with and without OP were compared with respect to socio-demographic and clinical factors. The FRAX and wrist DEXA results (unknown to the rheumatologist at the time of the diagnosis) were compared between the two groups. Factors associated with OP were analysed by univariable logistic regression followed by multivariable regression. Forward selection was performed until the best-fit model was obtained.

Results: A total of 255 participants were included, 38 of which (15%) had a final diagnosis of OP. Participants with OP were older and had a higher probability for major and hip fractures (FRAX algorithm). The proportion of females and positive screening for OP were higher among OP sufferers and the T-score was lower. In the multivariable analysis, OP was independently associated with older age and female gender (table). An alternative model additionally included the DEXA result, being a lower T-score independently associated with OP. When included in the model, positive screening for OP was highly significant (OR 37.55).

Table – Factors associated with osteoporosis

	Model 1 **OR (95% CI)** **N = 255**	**Model 2** **OR (95% CI)** **N = 235**	**Model 3** **OR (95% CI)** **N = 255**
Age (years)	1.05 (1.03; 1.08)	1.04 (1.01; 1.07)	1.05 (1.02; 1.10)
Gender (female vs male)	8.50 (1.95; 36.94)	9.31 (2.05; 42.32)	†
Positive OP screening (yes vs no)	‡	‡	37.55 (14.47; 97.47)
Active worker (yes vs no)	†	†	†
Retired (yes vs no)	†	†	†
Education level (years)	†	†	†
Major fracture probability	†	†	†
T-score	‡	0.59 (0.41; 0.86)	†
BMD	†	†	†
Alcohol intake			
- Occasionally vs daily	*	*	*
- Never vs daily	*	*	*
Physical activity (yes vs no)	*	*	*
Body mass index (kg/m2)	*	*	*
Coffee intake (yes vs no)	*	*	*
Smoking (yes vs no)	*	*	*
Ethnicity (white vs other)	*	*	*
Hip fracture probability	*	*	*

*Not selected in univariable analysis. †Not selected in multivariable analysis. ‡ Not included in the model

Conclusion: FRAX and DEXA results were concordant with expectations in patients with OP. A higher age and female gender were independently associated with OP. A lower T-score and a positive screening for OP (1st phase) were also independently associated with OP. The strong influence of the positive screening for OP on the diagnosis of OP shall be further analyzed in terms of its adequacy.