

# Knowledge, Self-Care and Fragility Fracture Risk: An Exploratory Study Informing the Development of a Complex Nursing Intervention

Tiago Silva<sup>1\*</sup>, Sandra Garcêz<sup>2</sup>, Alexandre Matos<sup>3</sup>, Tiago Nascimento<sup>4</sup>, Cristina Baixinho<sup>5</sup>, Ricardo J. O. Ferreira<sup>6</sup>, Andreia Costa<sup>7</sup>

<sup>1</sup> Nursing Research Innovation and Development Centre of Lisbon (CIDNUR), School of Nursing, University of Lisbon, Lisbon, Portugal; PhD Student at University of Lisbon. Lisbon, Portugal; [orcid.org/0009-0007-9590-5353](https://orcid.org/0009-0007-9590-5353)

<sup>2</sup> Unidade Local de Saúde de Santa Maria. Lisbon, Portugal; [orcid.org/0000-0000-0000-0000](https://orcid.org/0000-0000-0000-0000)

<sup>3</sup> Instituto Português do Sangue e da Transplantação. Lisbon, Portugal; Master's Student at School of Nursing, University of Lisbon. Lisbon, Portugal; [orcid.org/0000-0000-0000-0000](https://orcid.org/0000-0000-0000-0000)

<sup>4</sup> Nursing Research Innovation and Development Centre of Lisbon (CIDNUR), School of Nursing, University of Lisbon, Lisbon, Portugal; Assistant Professor at School of Nursing, University of Lisbon. Lisbon, Portugal; [orcid.org/0000-0003-3646-9057](https://orcid.org/0000-0003-3646-9057)

<sup>5</sup> Nursing Research Innovation and Development Centre of Lisbon (CIDNUR), School of Nursing, University of Lisbon, Lisbon, Portugal; Coordinating Professor at School of Nursing, University of Lisbon. Lisbon, Portugal; [orcid.org/0000-0001-7417-1732](https://orcid.org/0000-0001-7417-1732)

<sup>6</sup> Nursing Research Innovation and Development Centre of Lisbon (CIDNUR), School of Nursing, University of Lisbon, Lisbon, Portugal; Rheumatology Department, Unidade Local de Saúde de Coimbra. Coimbra, Portugal; Laboratório Associado TERRA, Faculdade de Medicina, Universidade de Lisboa. Lisbon, Portugal; Instituto de Saúde Ambiental (ISAMB), Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal; [orcid.org/0000-0002-2517-0247](https://orcid.org/0000-0002-2517-0247)

<sup>7</sup> Nursing Research Innovation and Development Centre of Lisbon (CIDNUR), School of Nursing, University of Lisbon, Lisbon, Portugal; Laboratório Associado TERRA, Faculdade de Medicina, Universidade de Lisboa. Lisbon, Portugal; Instituto de Saúde Ambiental (ISAMB), Faculdade de Medicina, Universidade de Lisboa, Lisbon, Portugal; [orcid.org/0000-0002-2727-4402](https://orcid.org/0000-0002-2727-4402)

\* Corresponding author: [tiagosilva@campus.esel.pt](mailto:tiagosilva@campus.esel.pt)

## Abstract

### Introduction

Fragility fractures (FF) are a growing public health problem, with 70,700 cases recorded in Portugal in 2019.<sup>1</sup> These fractures are associated with a one-year mortality rate of 25%<sup>2</sup> and a major economic impact. The management of FF risk comprises multiple interacting components, in which knowledge and the ability to perform self-care activities are key elements.<sup>3</sup>

### Objective

To explore the association between FF risk, osteoporosis knowledge and self-care, and differences across gender and age groups.

### Methods

Cross-sectional study, using a convenience sample of individuals aged 50 to 74 years, attending a Family Health Unit, a Public Health Unit and a Blood Collection Center in Lisbon, who were fluent Portuguese speakers and without cognitive impairments. Data collection (August-November 2025) included sociodemographic variables and measures related to the: 10-year fracture risk estimated by FRAX (major osteoporotic fracture: high risk  $\geq 11\%$ , intermediate  $>7$  to  $<11\%$ , low  $\leq 7\%$ ; hip fracture: high  $\geq 3\%$ , intermediate  $>2$  to  $<3\%$ , low  $\leq 2\%$ ); Osteoporosis Knowledge Assessment Tool (OKAT; ranging 0-20); Exercise of Self-Care Agency Scale (ESCA; ranging 0-116). Statistical comparisons were performed using independent samples t-test or one-way ANOVA. An Ethics Committee approved the study (CAML84/25).

### Results

Our sample comprised 141 individuals (55.3% women, 61.8y ( $\pm 7.2$ ), 50.0% holding a higher education degree). Seven women reported history of FF. 24.3% women and 11.3% men were at moderate-to-high 10-year risk of FF. Women had a statistically higher mean OKAT score ( $8.9 \pm 3.4$  versus  $7.1 \pm 3.2$ ;  $p=0.002$ ). No statistically significant associations were found between self-care ability score and gender, age group, OKAT score, or FF risk category.

### Conclusion

One in four women and one in ten men were at moderate-to-high risk of FF, with  $\sim 60\%$  demonstrating very limited osteoporosis knowledge. These findings underscore the need for developing a complex intervention aimed at preventing FF through systematic screening and self-care promotion.

**Keywords**

Osteoporotic Fracture; FRAX; Self-care; Knowledge; Complex Intervention.

**References**

1. Kanis JA, Norton N, Harvey NC, Jacobson T, Johansson H, Lorentzon M, et al. SCOPE 2021: a new scorecard for osteoporosis in Europe. *Arch Osteoporos* [Internet]. 2021 [cited 21 Out 2025]; 16(1): 1-82. Available from: <https://doi.org/10.1007/s11657-020-00871-9>
2. Marques A, Lourenço Ó, Silva JAP. The burden of osteoporotic hip fractures in Portugal: costs, health related quality of life and mortality. *Osteoporos Int* [Internet]. 2015 [cited 21 Out 2025]; 26(10): 2623–30. Available from: <https://doi.org/10.1007/s00198-015-3171-5>
3. Adams J, Wilson N, Hurkmans E, Bakkens M, Balážová P, Baxter M, et al. 2019 EULAR points to consider for non-physician health professionals to prevent and manage fragility fractures in adults 50 years or older. *Ann Rheum Dis* [Internet]. 2021 [cited 21 Out 2025]; 80(1):57–64. Available from: <https://doi.org/10.1136/annrheumdis-2020-216931>