



## Preference of Quality of Life Questionnaires and Risk Assessment Calculators in Osteoporosis: A Brief Report

*Osteoporozda Yaşam Kalitesi Anketleri ve Risk Değerlendirme Ölçeklerinin Kullanımında Sağlık Çalışanlarının Tercihleri: Kısa Rapor*

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### Abstract

**Objective:** The purpose of this study was to identify the most preferred measurement tools for assessing fracture risk and quality of life (QoL) in patients with osteoporosis (OP).

**Materials and Methods:** The QoL questionnaires and risk assessment calculators in OP were investigated based on a questionnaire conducted by the Turkish Osteoporosis Society during WCO-IOF-ESCEO 2023 in Barcelona. One hundred congress participants were included in the study. Basically the participants were questioned which risk assessment calculator they preferred to assess fracture risk and which OP QoL questionnaire they used to evaluate patients' QoL.

**Results:** Twenty-one participants reported that they did not evaluate QoL. Those who completed the QoL assessment were found to prefer the OP QoL questionnaire the most (32.6%). We found that participants most preferred Fracture Risk Assessment Tool (FRAX) (81.0%) to assess fracture risk at the OP.

**Conclusion:** FRAX was found to be significantly preferable in the assessment of fracture risk, despite the fact that healthcare professionals did not have a substantial consistency in QoL questionnaires.

**Keywords:** Osteoporosis, quality of life, osteoporotic fractures

### Öz

**Amaç:** Osteoporozu (OP) olan hastalarda kırık riskini ve yaşam kalitesini (QoL) değerlendirmek için en çok tercih edilen ölçme-değerlendirme araçlarını belirlemektir.

**Gereç ve Yöntem:** Barselona'da düzenlenen WCO-IOF-ESCEO 2023 Kongresi sırasında 100 sağlık profesyoneli katılımcıya OP'li hastalarda tercih ettikleri QoL anketleri ve kırık riskini hesaplama araçları Türkiye Osteoporoz Derneği tarafından hazırlanan bir anket ile soruldu. Temel olarak katılımcılara kırık riskini değerlendirmek için hangi risk hesaplama aracını kullandıkları ile hastaların QoL'yi değerlendirip değerlendirmedikleri ve hangi anketi tercih ettikleri soruldu.

**Bulgular:** Yirmi bir katılımcı QoL'yi değerlendirmediklerini bildirdi. QoL değerlendirmesini tamamlayanların en çok OP QoL anketini (%32,6) tercih ettikleri görüldü. Katılımcıların OP'de kırık riskini değerlendirmek için en çok Kırık Riski Değerlendirme Aracı'nı (Fracture Risk Assessment Tool-FRAX) (%81,0) tercih ettikleri gözlemlendi.

**Sonuç:** Sağlık profesyonellerinin yaşam kalitesini değerlendirmede kullanılan anketlerde önemli bir tutarlılığa sahip olmamasına rağmen, FRAX'ın kırık riskini değerlendirmede önemli ölçüde tercih edildiği görüldü.

**Anahtar kelimeler:** Osteoporoz, yaşam kalitesi, osteoporotik kırıklar

### Introduction

Evaluation of fracture risk in osteoporosis (OP) and also evaluation of patients' quality of life (QoL) will be a guide for clinicians in daily practical applications. Hip, spine, or wrist fracture pain, along with physical, emotional, and psychological

incapacity, may reduce QoL. An important marker of the clinical course of patients with OP and fractures is evaluation of health-related QoL (HRQoL) (1).

To better identify patients at high risk of fracture, several web-based tools for fracture prediction which allow the inclusion of clinical risk factors, with or without bone mineral density (BMD),

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**Received/Geliş Tarihi:** 18.07.2023 **Accepted/Kabul Tarihi:** 02.08.2023

have been developed (2). The prevention of such injuries is a key public health objective due to the increased socioeconomic burden of OP-related fractures globally. The aim of this survey study was to determine the most frequently preferred scales for assessing fracture risk in OP and measuring QoL.

### Materials and Methods

The QoL questionnaires and risk assessment calculators in OP were investigated by a questionnaire conducted by the Turkish Osteoporosis Society during WCO 2023 in Barcelona. Hundred congress members voluntarily participated in the research. Eighty four of the participants (83.2%) were physicians. The rest were other health professionals. Most of the attendees were between the ages of 36-45 (27%). The others were between 46-55 (26%) and 56-65 (24%). Participations were from Italy (11.4%), Spain (10.2%), Romania 9.1% and other countries.

Basically 2 questions were asked:

A- Which one of the risk assessment calculator do you prefer?

1. Garvan Institute Bone Fracture Risk Calculator,
2. The Fracture Risk Assessment Tool (FRAX) algorithm,
3. QFracture<sup>®</sup>,
4. Osteoporosis Risk SCORE (Simple Calculated Osteoporosis Risk Estimation),
5. American Bone Health 10-Year Fracture Risk Calculator Version 2.1,
6. Other: please write in capital letters .....
7. I do not use a risk assessment calculator.

B- Which one of the osteoporosis QoL questionnaires do you prefer?

1. The Women’s Health Questionnaire,
2. Osteoporosis Quality of Life Questionnaire,
3. Osteoporosis Assessment Questionnaire,
4. Osteoporosis Functional Disability Questionnaire,

5. Quality of Life Questionnaire of the European Foundation for Osteoporosis- Qualeffo-41,
6. Osteoporosis-Targeted Quality of Life Questionnaire,
7. Japanese Osteoporosis Quality of Life Questionnaire,
8. The 16-item Assessment of Health-Related Quality of Life in Osteoporosis,
9. The Quality of Life Questionnaire in Osteoporosis (QUALIOSTTM),
10. I do not evaluate the Quality of Life in osteoporosis patients...

### Results

When the results were examined, it was noteworthy that 24.4% of the participants did not apply QoL assessment. It was determined that those who made a QoL assessment preferred the OP QoL questionnaire the most (32.6%). The Women’s Health Questionnaire preference was 18.6% and others were used at lesser rates (Figure 1).

It was found that the participants preferred FRAX the most (81.0%) in order to assess the fracture risk at the OP. OP risk score preference was 6% and 4% of the participants stated that they did not use any risk assesment calculator (Figure 2).

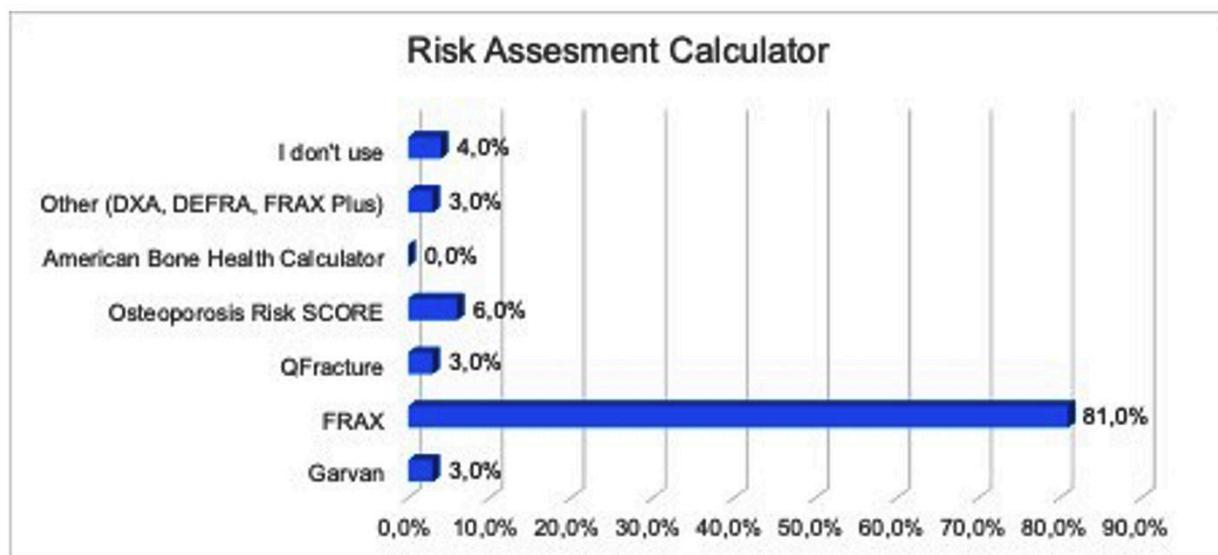
### Discussion

Due to its link to age-related fractures, notably those of the hip, vertebrae, distal forearm, and humerus, osteoporosis is a significant public health problem. It is well known that; OP is an overlooked issue that there is no evidence of disease until a fracture occurs. Osteoporotic fractures have a significant impact on patients’ QoL, which may lead to severe complications including disability.

A meta-analysis was performed to systematically review HRQoL in women with three different bone states (normal bone density, OP, OP with fractures).



Figure 1. Preference of OP QoL questionnaires  
OP: Osteoporosis, QoL: Quality of life



**Figure 2.** Preference of risk assesment calculator  
FRAX: Fracture Risk Assessment Tool, DXA: Dual energy X-ray absorptiometry

Studies were included if they examined the QoL of postmenopausal women with OP or osteoporotic fractures using a validated QoL questionnaire. With regard to 2897 postmenopausal women, 13 papers that met the inclusion criteria were thoroughly reviewed, and 12 of those studies were included in the meta-analysis. In comparison to postmenopausal women with normal BMD, those with OP exhibited worse overall HRQoL and several HRQoL aspects. Postmenopausal women with osteoporotic fractures had poorer overall HRQoL and individual measures of HRQoL, especially physical component summary, when compared to the postmenopausal women with OP. While fragility fracture severity was adversely correlated with HRQoL, BMD was positively correlated with it. Thus, it was determined that postmenopausal OP and fragility fractures may reduce HRQoL in women to variable degrees (3).

Evaluating QoL is crucial to health research and clinical trials investigating OP. It should be taken into account that, the choice of the type of research being conducted and the research question influence the choice of the QoL instrument; each instrument has unique benefits and drawbacks (4). Pastor-Robles et al. (5) reported the risk factors for OP related to QoL by comparing QoL in women over the age of 65 years diagnosed with OP with the general population. Except for pain/discomfort and anxiety/depression, the study group's QoL was comparable to that of the general population. Age, highest educational level reached, inflammatory diseases, physical activity, and insomnia were independent predictors of QoL in women with OP (5).

An assessment of the QoL of patients implies evaluating their health status and relationship with their environment. The results of our research have showed that OP QoL questionnaire is the most preferred scale. The practicality of the application and the fact that the specialists are used to it may be the reason of preference.

A number of web-based tools have been created to assist the identification of people at high fracture risk, with FRAX being the most commonly used globally. These methods enable the integration of clinical risk factors in fracture prediction algorithms, with or without BMD.

Access to dual energy X-ray absorptiometry, OP risk assessment, case identification, and treatment varies around the world, but studies reveal that only a tiny number of men and women at high fracture risk receive therapy (2).

According to the reserach performed by Holloway-Kew et al. (6) their results showet that, the FRAX and Garvan calculators underestimated the incident major osteoporotic and fragility fractures, especially in patients with osteopenia or OP. Both calculators predicted hip fractures more accurately. Detailed statistical analyses suggest that Garvan (with BMD) performed better than Garvan (without BMD) for prediction of fragility fractures (6). The participants of our study preferred FRAX the most in order to assess the fracture risk at the OP.

The accessibility of the fracture risk assessment tool FRAX®, which is now included in more than 100 clinical osteoporosis guidelines worldwide, has significantly improved the targeting of treatment to individuals at high risk of fracture. There is a study going on is to evaluate whether the existing algorithms can be further optimized with respect to current and novel risk factors. In this study, for each previously known and candidate risk factor, multivariate hazard functions for hip fracture, major osteoporotic fracture and mortality will be examined. After meta-analyses of the cohort-specific beta coefficients for each risk factor, models with a 10-year probability of hip and major osteoporotic fracture, with or without femoral neck bone mineral density, will be created. These combined cohorts and the stated models will serve as the foundation for an enhanced FRAX tool providing improved assessment of fracture risk [PROSPERO (CRD42021227266)] (7).

In a consensus report, it is also stated that, Turkey is performing well in certain areas such as BMD access and uptake of FRAX (8). When used rationally, these scales improve the ability of clinicians to identify high-risk patients and allow us to distinguish fracture risk among patients presenting with similar bone mineral densities. As Cozadd et al. (9) clearly stated, even in the absence of BMD data, fracture risk assessment methods such as the FRAX, Garvan fracture risk calculator, and QFracture examine the impact of numerous clinical parameters on fracture risk. Because of the fast evaluation of high number of patients in outpatient clinics application of such scales seems to be ignored.

**Peer-review:** Internally and externally peer-reviewed.

### Authorship Contributions

Concept: Y.G.K., Design: Y.G.K., Data Collection or Processing: Ü.A., R.T., Ş.T., Analysis or Interpretation: Y.K., Ş.T., M.S., N.E., Literature Search: Y.G.K., Y.K., M.S., N.E., Writing: Y.G.K., Y.K., R.T.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

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