Management of the Patient With a High Risk of Fracture in Clinical Practice. Results From a Survey of 174 Spanish Rheumatologists (OSTEOPAR Project)

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Objective: To collect information about diagnosis, classification and treatment of patients at high risk of fracture in the rheumatologist’s practice.

Material and methods: A survey was conducted among Spanish rheumatologists. The survey was aimed at gathering data on the physician’s healthcare activity; the osteoporosis (OP) and fracture risk factors were considered as most relevant; the diagnostic used tests and the treatment indication according to the presence of different risk factors.

Results: 99.5% of rheumatologists felt that there is a group of patients with OP at high risk of fracture. Previous fracture was considered the most important risk factor, particularly in case of multiple fractures, severe fractures, hip fracture, or that occurred during treatment. Glucocorticoid treatment, older age and low bone mineral density were considered, in this order, other important risk factors. The number of vertebral fractures was considered the most relevant radiological data, followed by the fracture’s chronology and severity. Most of the respondents selected teriparatide as the first treatment option in high-risk patients.

Conclusions: The definition of OP patient with high risk of fracture is not uniform in daily practice, although the majority of rheumatologists considered that having a previous fracture is the most important risk factor, followed by glucocorticoid treatment, older age and low BMD. Anabolic treatment was the approach most commonly used in OP patients with high risk of fracture.

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Manejo del paciente con alto riesgo de fractura en la práctica clínica. Resultados de una encuesta a 174 reumatólogos españoles (proyecto OSTEOPAR)

Palabras clave: Osteoporosis Fractura Factores de riesgo Práctica clínica

Objetivo: Recoger información sobre cómo se realiza el diagnóstico, la clasificación y el tratamiento de los pacientes osteoporóticos con alto riesgo de fractura en las consultas de Reumatología.

Material y métodos: Se realizó una encuesta a reumatólogos españoles que atienden de forma habitual a pacientes con osteoporosis (OP), donde se recogieron datos demográficos, clínicos y sobre los factores de riesgo de OP y de fractura considerados más importantes, así como pruebas diagnósticas y tratamiento según el riesgo de fractura de los pacientes.

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The risk of fracture resulting from bone fragility is the and also increases the likeli-
2
Therefore, appropriate frac-
Moreover, hip
In
). Hip fracture is associated with a high
6,7
In the United States,
fractures in a period of one year
and in 2050 the cost in Europe will be 76 700 million euros.
patients and their associated morbidity. The presence of one or
budgets. It is estimated that by 2025 the annual cost of these
of their high prevalence, their impact on the quality of life of
and hip fractures are of particular clinical importance because
of bone mineral density (BMD), which can lead to fractures. In Spain,
the disease affects approximately 15% of the female population,
with a prevalence of 26% in women aged 50.

Although fractures can occur in different locations, vertebral and hip fractures are of particular clinical importance because
of their high prevalence, their impact on the quality of life of patients and their associated morbidity. The presence of one or
more vertebral fractures multiplied by 5 the risk of new vertebral
fractures in a period of one year and also increases the like-
lihood of suffering a hip fracture. However, vertebral fractures
are not always recognized in time, which reduces the oppor-
tunities to identify and properly treat patients. Moreover, hip
fractures are characterized by slow and often incomplete recovery,
so a high proportion of patients require long-term care and ongo-
ing support for walking.
Hip fracture is associated with a high mortality, most deaths occurring in the first 3–6 months after the fracture.
Osteoporotic fractures also have a major impact on healthcare budgets. It is estimated that by 2025 the annual cost of these fractures may rise to 25 000 million dollars in United States1 and in 2050 the cost in Europe will be 76 700 million euros. In Spain, the cost of hospital admissions resulting from hip fracture amounts to 220 million euros a year. Therefore, appropriate frac-
ture risk stratification may help identify those patients most at
risk and thus facilitate early treatment, with a consequent reduc-
tion in the likelihood of future fractures. Unfortunately, there is
no universally accepted methodology on how to identify patients at high risk for fracture1,15 and there are no well-known crite-
ria used in everyday practice of specialists for the management
of these patients. For this reason, we set out to gather information
about the Spanish rheumatologist assessment of the risk of
fracture and how the diagnosis is made, the disease classified and
patients when at high risk of osteoporotic fracture during their practice.

Introduction

Osteoporosis (OP) is a skeletal disorder characterized by a
decrease in bone strength predisposing an increased risk of
fracture. The risk of fracture resulting from bone fragility is the
most important clinical aspect of the disease.2 In the United States,
approximately 10 million individuals suffer from OP or have a low
bone mineral density (BMD), which can lead to fractures.3 In Spain,
the disease affects approximately 15% of the female population,
with a prevalence of 26% in women aged 50.

Material and Methods

As part of the OSTEOPAR project, a group of experts in OP
designed a survey that included 27 questions to obtain information
on the profile of the surveyed rheumatologists, characteristics
of clinical activity, assessment of risk factors (RF), patient assess-
ment, choice of diagnostic tests and circumstances for which they
are requested, and the treatment for which they qualify based on
the patient’s clinical characteristics (see Appendix A). All responses were obtained by selecting one or more predeter-
mined options in the questionnaire, except the last question, which
asked respondents to define patients at high risk of fracture, using
up to 200 characters of free text.

Different sections of the questionnaire specifically collected
data on:

(1) Characteristics of the participating physician. Workplace, years
of professional experience in their specialty and Autonomous
Community where the respondent was located at.
(2) Characteristics of clinical activity. Total number of patients and
patients with OP seen per week, percentage of patients with
primary OP, origin, percentage with fractures and fracture type.
(3) Assessment of the RF and the patient. Questions were made
about the importance of several RF and high risk of osteo-
porotic fracture according to their degree of influence over
diagnostic and/or therapeutic decision-making. Respondents
made the assessment on a numerical scale from 1 to 5, where:
1=not important, 2=of little importance, 3=moderately impor-
tant, 4=very important and 5=highest importance. Also, the
surveyed were requested to order, by degree of importance,
the 3 RF for fracture considered as more relevant. Regarding
the assessment of the patient, we asked which option or
options they preferred when faced with a patient with OP pre-
senting back pain of recent onset or changes in their usual
features, if exploring the spine for the presence of kyphosis
or other deformities, and if they commonly used scales for
assessing fracture risk and frequency of the use of the FRAX
tool.
(4) Diagnostic tests. Circumstances in which the respondent
requested a lateral spine X-ray, value given to the different char-
acteristics of morphometric vertebral fracture (on the above
mentioned scale of 1–5) and whether or not an analysis of bone
metabolism was performed.
(5) Assessment of fracture risk and treatment options. How respon-
dents rate the risk of fracture in 4 pre-defined patient-profiles
(using the terms “high”, “medium” or “low”) and what treat-
ment would be chosen as first, second and third options for
each profile. Predefined profiles in the questionnaire were as
follows: Profile 1: 65-year-old woman presented vertebral frac-
ture after 5 years of treatment with bisphosphonates. Profile
2: 59-year-old woman in chronic treatment with bisphospho-
nates and a T-score of −2.5. Profile 3: 70-year-old woman
without treatment with a T-score of −2.8 in the femoral neck
and presenting 2 vertebral fractures. Profile 4: A 55-year-old
man with a T-score of −1.5 in chronic treatment with gluco-
corticoids. Additionally, respondents were asked to determine
whether supplemental calcium and vitamin D should be used
for each profile, as well as if treatment for OP should be
employed and what would the physician choose among the
following: estrogen receptor modulators, oral or intravenous
bisphosphonates, strontium ranelate, PTH (1–84) and teriparatide.

Finally, respondents were asked to evaluate whether, from their point of view, there was a group of patients at high risk of fracture and whether their behavior would be different toward these patients.

Descriptive statistics based on the calculation of percentages, means and medians was used and data analysis was carried out using SPSS software version 18.0. When appropriate, the analysis also included the standard deviation, mode, variance and percentiles, as well as maximum and minimum values.

**Results**

**Activities of the Rheumatologists Surveyed**

174 surveys were performed and collected from specialists in Rheumatology located throughout the national territory (Fig. 1) and who routinely treat patients with OP.

97.2% (N=169) of respondents claimed to work in the public health system, including this hospital and other hospitals, such as specialty and outpatient centers. 26.5% (N=46) had a private practice. Of those who developed their daily work exclusively in public centers, 55.2% (N=96) worked in hospitals, 4.6% (N=8) in non-hospital centers and 13.2% (N=23) both in hospitals and non-hospital centers. 2.9% (N=5) exercised their daily work exclusively in a private practice and 23.6% (N=41) reconciled public work with their private practices.

71.8% had 10 or more years of professional experience in their field, with a range of 0–5 years to more than 20 years. The patients came mostly from primary care (median, 31%–40%), a high percentage of the clinic itself (mean 21%–30%), with a minority referred from other specialties. The number of OP patients seen weekly varied considerably, with a minimum of 5 and maximum of 250 (mean 29.08 ± 25.0), although after grouping the number of patients seen per week in intervals of 10, it was observed that 92% of respondents saw between 5 and 50 patients. 75.2% of those surveyed responded that more than 50% of patients had primary OP.

**Fracture Types and Their Impact**

Over 40% of patients seen by respondents had fractures that were located mainly on the spine and to a lesser extent on the hip (Fig. 2).

**Risk Factors**

**Standard Risk Factors**

Respondents believed that the different RF for osteoporotic fracture have a disparate impact when making treatment decisions and/or diagnosis, with a previous fragility fracture, treatment with oral corticosteroids, age, BMD and the presence of secondary OP being the most important RFs in this regard. Instead, alcohol use, sedentary lifestyle, smoking, low intake of calcium rich foods or low exposure to sunlight were considered less relevant and ad a low or moderate importance for diagnostic decisions and/or treatment (Table 1). When choosing the most important 3 RF, previous fragility fracture and age were considered the most important. A previous fragility fracture, treatment with oral corticosteroids, age and BMD were considered second in importance, and treatment with oral corticosteroids, BMD and age were considered in third place of importance. None of the respondents selected smoking, use alcohol, other therapies (anticonvulsants, benzodiazepines, antiaromatase agents, anticoagulants, lithium, thiazolidinediones, etc.), the presence of rheumatoid arthritis, low intake of foods rich in calcium and low sun exposure as the first PR.

**High-Risk Factors**

Respondents felt that there are some particularly high importance RF for fracture involving differences in treatment decision-making. Among these risk factors, those considered with a maximum or high importance, and in this order, were: the presence of multiple fractures (vertebral and/or spinal), hip fracture, severe vertebral fracture, fracture despite treatment, vertebral fracture and treatment with glucocorticoids (doses equivalent to >7.5 mg/day of prednisone for an extended period) (Table 2).

![Fig. 1. Geographic distribution of respondents by region.](image-url)
Fig. 2. Summary of the frequency of the different types of fractures. The median percentage for each questionnaire option is shown.

Table 1
Evaluation of Risk Factors for Osteoporotic Fracture in Relation to the Influence It Has on Therapeutic and/or Diagnostic Decision Making.

<table>
<thead>
<tr>
<th>Risk Factors to Evaluate</th>
<th>Mean</th>
<th>Percentage of Participants Selecting This Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of pathologic fracture</td>
<td>4.7</td>
<td>79.9</td>
</tr>
<tr>
<td>Treatment with oral steroids</td>
<td>4.5</td>
<td>55.2</td>
</tr>
<tr>
<td>Age</td>
<td>4.1</td>
<td>33.9</td>
</tr>
<tr>
<td>BMI</td>
<td>4</td>
<td>42.5</td>
</tr>
<tr>
<td>Secondary osteoporosis</td>
<td>3.9</td>
<td>42.5</td>
</tr>
<tr>
<td>Early menopause/hypogonadism</td>
<td>3.9</td>
<td>49.4</td>
</tr>
<tr>
<td>Family history of hip fracture</td>
<td>3.9</td>
<td>49.4</td>
</tr>
<tr>
<td>Rheumatoid arthritis</td>
<td>3.8</td>
<td>42.5</td>
</tr>
<tr>
<td>Loss of height</td>
<td>3.7</td>
<td>41.4</td>
</tr>
<tr>
<td>Tendency to fall</td>
<td>3.7</td>
<td>40.2</td>
</tr>
<tr>
<td>Gender</td>
<td>3.4</td>
<td>38.5</td>
</tr>
<tr>
<td>Other treatments (antiepileptics, benzodiazepines, thiazolidinediones, etc.)</td>
<td>3.3</td>
<td>40.8</td>
</tr>
<tr>
<td>BMI</td>
<td>3.2</td>
<td>36.8</td>
</tr>
<tr>
<td>Alcohol consumption</td>
<td>3.2</td>
<td>39.7</td>
</tr>
<tr>
<td>Smoking</td>
<td>3</td>
<td>44.8</td>
</tr>
<tr>
<td>Sedentarism/immobility</td>
<td>3.1</td>
<td>43.7</td>
</tr>
<tr>
<td>Low calcium consumption</td>
<td>3</td>
<td>46.0</td>
</tr>
</tbody>
</table>

Evaluation from 1 to 5 (1=no importance and 5=maximum importance). The mean score and the percentage of those surveyed selecting each factor is shown.

Physical Examination and Laboratory Tests

In a patient with OP presenting back pain, the majority of rheumatologists (56.9%) performed an examination of the patient, request X-rays and also prescribe an analgesic treatment regimen, although it is noteworthy that 95.9% of respondents at least would ask for a radiograph (Fig. 3, panel A). 98.3% of rheumatologists mentioned exploring the spine of their patients seeking deformities, either on the first visit (78.9%) or as a response to the findings mentioned in the examination (18.4%).

Fracture Risk Scores

51.1% of participants reported using rating scales for fracture risk, with FRAX the most commonly used (97.5%), either alone or combined with other scales. 79.3% of respondents who used FRAX scale, used it routinely or in certain situations (Fig. 3, panel B).

Table 2
Evaluation of High Risk Factors for Osteoporotic Fracture in Relation to the Influence Each Has on Therapeutic and/or Diagnostic Decision-Making.

<table>
<thead>
<tr>
<th>Risk Factors to Evaluate</th>
<th>Mean</th>
<th>Percentage of Patients Who Chose This Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple fractures</td>
<td>4.7</td>
<td>81.6</td>
</tr>
<tr>
<td>Hip fracture</td>
<td>4.7</td>
<td>79.9</td>
</tr>
<tr>
<td>Severe vertebral fracture</td>
<td>4.6</td>
<td>75.3</td>
</tr>
<tr>
<td>Fracture in spite of treatment</td>
<td>4.5</td>
<td>69.5</td>
</tr>
<tr>
<td>Vertebral fracture</td>
<td>4.4</td>
<td>58.6</td>
</tr>
<tr>
<td>Chronic steroid treatment (&gt;7.5 mg)</td>
<td>4.2</td>
<td>36.2</td>
</tr>
<tr>
<td>Baseline BMD &lt; −3.5</td>
<td>3.8</td>
<td>43.7</td>
</tr>
<tr>
<td>Age &gt;70</td>
<td>3.8</td>
<td>36.3</td>
</tr>
<tr>
<td>Secondary osteoporosis</td>
<td>3.8</td>
<td>42.5</td>
</tr>
<tr>
<td>Presenting Colles fracture</td>
<td>3.6</td>
<td>43.1</td>
</tr>
<tr>
<td>Loss of bone mass in spite of treatment</td>
<td>3.6</td>
<td>42.5</td>
</tr>
<tr>
<td>Propensity to fall</td>
<td>3.6</td>
<td>39.1</td>
</tr>
<tr>
<td>Patient with more than 2 FR</td>
<td>3.5</td>
<td>44.8</td>
</tr>
<tr>
<td>Loss of height &gt;2 cm in the first year</td>
<td>3.5</td>
<td>36.2 (for scores 3 and 4)</td>
</tr>
<tr>
<td>BMI &lt;19</td>
<td>3.3</td>
<td>38.5</td>
</tr>
<tr>
<td>Recent dorsolumbar spine pain</td>
<td>3.3</td>
<td>37.9</td>
</tr>
</tbody>
</table>

Evaluation from 1 to 5 (1=no importance and 5=maximum importance). The mean score and the percentage of those surveyed selecting each factor is shown.
Lateral Radiograph of Spine

87.9% of respondents answered that a lateral spine X-ray was requested during the initial patient assessment. This percentage includes those who do so exclusively on the first visit (7.5%), in addition to those who do so if the patient has acute back or lumbar (28.7%) pain and, additionally, for patient follow-up (35.1%). 6.3% only requested it if the patient has acute back or lumbar pain.

Faced with a morphometric vertebral fracture, the number of fractures is the most important piece of information for the survey participants, followed distantly by the timing of the fracture, the degree of deformity of the fracture and its location (Table 3).

Analysis of Parameters of Bone Metabolism

80.5% of respondents requested an analysis of bone metabolism only in the first visit; a minority only requests it during treatment (10.9%) or does not request it (8.6%). Metabolic parameters frequently determined are serum calcium (29.6%), bone turnover markers (25.2%), vitamin D (21.4%) and PTH (11.3%).

Risk Assessment and Treatment of the Four Different Patient Profiles

In order to know the assessment of fracture risk in different types of patients, the questionnaire raised four preset profiles of patients to which the respondent assigned one of three possible increased levels of risk (as described in the material and methods section):

The results of this assessment are presented in Table 4.

For high-risk profiles (profiles 1 and 3) most selected teriparatide as first-line treatment (Table 5). For profile 4, considered by over 90% of respondents from moderate to high risk, the first choice of treatment was oral bisphosphonates, while the first option for profile 2, scored mostly as a medium risk, was oral bisphosphonates or strontium ranelate. Treatment with calcium and vitamin D is always used by the vast majority of respondents and

Table 3

<table>
<thead>
<tr>
<th>Morphometric Evaluation of Vertebral Fracture</th>
<th>Mean</th>
<th>Percentage of Participants Choosing This Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of fractures</td>
<td>4.65</td>
<td>75.9</td>
</tr>
<tr>
<td>Recent or old</td>
<td>3.66</td>
<td>40.5</td>
</tr>
<tr>
<td>Degree of deformity</td>
<td>3.43</td>
<td>34.5%, score 4 and 33.3%, score 3</td>
</tr>
<tr>
<td>Localization</td>
<td>3.22</td>
<td>36.2</td>
</tr>
<tr>
<td>Radiology report</td>
<td>2.18</td>
<td>27.6%, score 2</td>
</tr>
</tbody>
</table>

Evaluation from 1 to 5 (1=no importance and 5=maximum importance). The mean score and percentage of those surveyed that chose each factor are shown.

Table 4

<table>
<thead>
<tr>
<th>Evaluation of the Risk of Fracture (High, Medium or Low) in the Four Predefined Profiles of Patients.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Profile 1</td>
</tr>
<tr>
<td>High risk</td>
</tr>
<tr>
<td>Medium risk</td>
</tr>
<tr>
<td>Low risk</td>
</tr>
</tbody>
</table>

Percentage of rheumatologists selecting a determined risk in each profile are shown.
Table 5
Treatment Preferences in the 4 Predefined Patient Profiles.

<table>
<thead>
<tr>
<th>Profile 1</th>
<th>Calcitonin</th>
<th>Raloxifene</th>
<th>Oral BPP</th>
<th>IV BPP</th>
<th>Ranelate</th>
<th>PTH (1–84)</th>
<th>Teriparatide</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>96</td>
<td>92</td>
<td>90.2</td>
<td>55.2</td>
<td>33.9</td>
<td>38.5</td>
<td>9.2</td>
</tr>
<tr>
<td>1st option</td>
<td>0.6</td>
<td>–</td>
<td>2.3</td>
<td>2.3</td>
<td>11.5</td>
<td>9.2</td>
<td>9.2</td>
</tr>
<tr>
<td>2nd option</td>
<td>–</td>
<td>0.6</td>
<td>2.9</td>
<td>13.8</td>
<td>22.4</td>
<td>40.8</td>
<td>12.6</td>
</tr>
<tr>
<td>3rd option</td>
<td>3.4</td>
<td>7.5</td>
<td>4.6</td>
<td>28.7</td>
<td>32.2</td>
<td>11.5</td>
<td>3.4</td>
</tr>
<tr>
<td>Profile 2</td>
<td>No</td>
<td>98.3</td>
<td>62.6</td>
<td>46</td>
<td>70.1</td>
<td>19</td>
<td>83.3</td>
</tr>
<tr>
<td>1st option</td>
<td>–</td>
<td>15.5</td>
<td>36.8</td>
<td>4</td>
<td>31.6</td>
<td>–</td>
<td>5.7</td>
</tr>
<tr>
<td>2nd option</td>
<td>–</td>
<td>14.4</td>
<td>9.2</td>
<td>15.5</td>
<td>27</td>
<td>5.2</td>
<td>14.9</td>
</tr>
<tr>
<td>3rd option</td>
<td>1.7</td>
<td>7.5</td>
<td>8</td>
<td>10.3</td>
<td>22.4</td>
<td>11.5</td>
<td>19.5</td>
</tr>
<tr>
<td>Profile 3</td>
<td>No</td>
<td>96.6</td>
<td>97.7</td>
<td>53.4</td>
<td>44.3</td>
<td>60.9</td>
<td>47.1</td>
</tr>
<tr>
<td>1st option</td>
<td>0.6</td>
<td>–</td>
<td>14.9</td>
<td>6.9</td>
<td>0</td>
<td>8×</td>
<td>72.4</td>
</tr>
<tr>
<td>2nd option</td>
<td>0.6</td>
<td>–</td>
<td>14.4</td>
<td>22.4</td>
<td>13.2</td>
<td>37.4</td>
<td>12.1</td>
</tr>
<tr>
<td>3rd option</td>
<td>2.3</td>
<td>2.3</td>
<td>17.2</td>
<td>26.4</td>
<td>25.9</td>
<td>7.5</td>
<td>5.7</td>
</tr>
<tr>
<td>Profile 4</td>
<td>No</td>
<td>96.6</td>
<td>96.6</td>
<td>8.6</td>
<td>42.5</td>
<td>62.6</td>
<td>87.4</td>
</tr>
<tr>
<td>1st option</td>
<td>–</td>
<td>–</td>
<td>82.8</td>
<td>5.2</td>
<td>1.1</td>
<td>0.6</td>
<td>5.7</td>
</tr>
<tr>
<td>2nd option</td>
<td>0.6</td>
<td>0.6</td>
<td>6.3</td>
<td>35.1</td>
<td>20.1</td>
<td>4</td>
<td>22.4</td>
</tr>
<tr>
<td>3rd option</td>
<td>2.9</td>
<td>2.9</td>
<td>2.3</td>
<td>17.2</td>
<td>16.1</td>
<td>8</td>
<td>28.7</td>
</tr>
</tbody>
</table>

Percentages of rheumatologists choosing a certain treatment in each profile is shown.
for all profiles (97.1%, 92.0%, 98.9% and 98.3%, respectively), without specialist that never used it.

**Attitude Toward Patients at High Risk of Fracture and the Definition of High-Risk Patients**

Facing a high risk patient, 33.3% of respondents chose the option of starting treatment and monitoring more closely, and 21.8% answered that they would also request further diagnostic tests in these patients.

Respondents identified the patient at high risk based on 3 main criteria: presence of RF (47.5%), when two or more RF are present and current or previous fracture (34.4%), and only the presence of osteoporotic fracture without considering other risk factors (14.2%).

**Discussion**

Because the clinical significance of osteoporosis lies primarily in the risk of fracture and the morbidity and mortality associated with it, treatment guidelines suggest that it may be more important to identify patients at high risk of fracture than the OP patient properly. Therefore, fracture risk stratification is necessary to distinguish between patients with a high probability of presenting from those in which this probability is lower. Risk assessment helps to identify individuals at higher risk and therefore guides therapeutic decisions as well, and this estimation probably produces a greater awareness on the part of the clinicians who care for these patients and results in a more complete intervention.

Although guidelines recommend2 drug treatment be assigned based on the risks and benefits in individual patients, there are no specific indication about the risks and benefits that should be assessed by the specialist and therefore, in many cases are difficult to apply in the clinical practice.

Through the OSTEOPAR project, using an online survey, we tried to identify the views of rheumatologists in Spain on various RF and especially what they mean by patients at “high risk of fracture” and how the management is carried out in clinical practice.

Respondents felt that previous fracture and age were the two most important standard RF, while a single value of BMD was considered of lesser impact. A previous fracture as the best predictor of fracture is consistent with the evaluation of other authors16 and the guidelines published by the SEIOMM,17 although the order of priority established by the respondents to prior fracture and age varies slightly from previous guidelines. Other studies have shown that in both men and women, age is an important fracture RF, independent of BMD.5 The secondary role assigned to the BMD by the respondents is consistent with the general view of the guidelines and the previous observation that many patients can present fractures despite having a relatively well preserved BMD.2,18,20 Although BMD has traditionally been considered a predictor of fracture, there is no accurate way to identify individuals who will suffer it.21 Indeed, the opinion of respondents agrees with previous analysis, in which it must be considered in conjunction with biochemical indices of remodeling and other laboratory values16,17,22 and that treatment should be considered rather in terms of risk of fracture given by the clinical RF rather than by the isolated value of BMD.2,20 In contrast to other published23 risk assessments, our findings tended to evaluate BMI as a moderate RF, even lower than height loss or a tendency to fall. It is possible to take into account that FRAX computes BMI as a proxy for BMD24 and therefore assigned a lower relevance to this parameter. The majority used FRAX-including scores used as a preventive strategy, a finding that is supported by the guidelines.25

**Conflict of Interest**

Enrique Casado, Manuel Caamaño, Jorge Malouf, Enrique Salas, Juan Sánchez-Bursón, Gabriel Herrero-Beaumont have no disclosures to make.

María Luz Rentero belongs to the medical department of Eli Lilly & Co., the company that manufactures teriparatide.

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**Appendix A. Questionnaire used in this study**

1. Characteristics of the physician

**Question**: Workplace:
- Hospital
- Specialty center/peripheral specialty center/outpatient
- Private practice

**Response options**: All that apply
- Question: Years of professional experience in the field.

**Question**: Autonomous community where you work.

**Response options**: Spanish autonomous communities.
3. Evaluation of the patient/Risk factors Question: According to your opinion evaluate the following risk factors for osteoporotic fracture in relation to the influence they have in therapeutic and/or diagnostic decision making: age, gender, body mass index, height loss, early menopause/hypogonadism, previous fragility fracture, family history of hip fracture, smoking, alcohol consumption, sedentarism/immobility, treatment with oral steroids, treatment with other drugs (antiepileptic, benzodiazepines, antiaromatases, anticoagulants, lithium, thiazides, etc.), tendency to fall, rheumatoid arthritis, BMD, known secondary osteoporosis, low intake of calcium, underexposure to sunlight, others (specify which). Response options: Numerical value from 1 to 5, in relation to the following score: 1. No importance; 2. Little importance; 3. Moderate importance; 4. Very important; 5. Maximum importance. Question: If you had to choose in order the three most important factors to determine what osteoporotic patients have a high risk of fracture, which would they be? Response options: First most important factor to choose among the following: Age, gender, body mass index, height loss, early menopause/hypogonadism, previous fragility fracture, family history of hip fracture, smoking, alcohol consumption, sedentarism/immobility, treatment with oral steroids, treatment with other drugs (antiepileptic, benzodiazepines, antiaromatases, anticoagulants, lithium, thiazides, etc.), tendency to fall, rheumatoid arthritis, BMD, known secondary osteoporosis, low intake of calcium, underexposure to sunlight, others (specify which). Second most important factor to choose among the following: Age, gender, body mass index, height loss, early menopause/hypogonadism, previous fragility fracture, family history of hip fracture, smoking, alcohol consumption, sedentarism/immobility, treatment with oral steroids, treatment with other drugs (antiepileptic, benzodiazepines, antiaromatases, anticoagulants, lithium, thiazides, etc.), tendency to fall, rheumatoid arthritis, BMD, known secondary osteoporosis, low intake of calcium, underexposure to sunlight, others (specify which). Third most important factor to choose among the following: Age, gender, body mass index, height loss, early menopause/hypogonadism, previous fragility fracture, family history of hip fracture, smoking, alcohol consumption, sedentarism/immobility, treatment with oral steroids, treatment with other drugs (antiepileptic, benzodiazepines, antiaromatases, anticoagulants, lithium, thiazides, etc.), tendency to fall, rheumatoid arthritis, BMD, known secondary osteoporosis, low intake of calcium, underexposure to sunlight, others (specify which). Question: In a patient diagnosed with osteoporosis, in your opinion which of the following factors supposes a high risk of fracture and involves differences in decision making (therapeutic and/or diagnostic)? That a vertebral fracture is present, that a severe vertebral fracture is present, that a hip fracture is present, that a Colles fracture is present, that multiple fractures are present, that fracture presents in spite of treatment, baseline BMD < −3.5, patient with more than 2 risk factors, increase or appearance of recent pain in the dorsolumbar spine, relevant bone mass loss, loss of more than 2 cm of height in the past year, treatment with more than 7.5 mg of steroids for a prolonged period, age>70 years, BMI<19, propensity to fall, secondary osteoporosis. Response options: Numeric values 1–5, in relation to the following score: 1. No importance; 2. Little importance; 3. Moderate importance; 4. Very important; 5. Maximum importance. Question: In a patient with osteoporosis presenting incident low back pain, what actions would you carry out? Response options: Among the following, all that apply: No, I think association is low. Yes, I do not perform any action. Yes, I perform a closer follow up. Question: Do you consider there is a group of patients at high risk for fracture? Response options: Yes, I think association is low. Yes, I do not perform any action. Yes, I perform a closer follow up. Question: Do you think that the use of calcium and vitamin D is always indicated? Never. If consumption is low. Always. If consumption is low. Question: With respect to the FRAX tool: Response options: I do not know it. I use it in some patients when there is diagnostic doubt. I use it in all patients.

5. Treatment Question: In the following patient profiles classify the risk of fracture (high, medium, low) of each and mark the treatment that you would indicate as 1st, 2nd and 3rd options: Profile 1: 65-year-old woman presenting vertebral fracture after 5 years of bisphosphonate treatment. Profile 2: 59-year-old woman in treatment with bisphosphonates for 7 years and a T-score of −2.5. Profile 3: 70-year-old woman with no treatment and a T score of −2.8 on the hip and with 2 vertebral fractures. Profile 4: 55-year-old male with a T-score of −1.5 treated with 10 mg/day of steroids for 1 year. Response options to the classification of the risk for fracture: High. Medium. Low. Response options for 1st choice of treatment: Calcitonin, raloxifene, oral iv bisphosphonate, strontium ranelate, PTH (1–84), teriparatide. Response options for 2nd choice of treatment: Calcitonin, raloxifene, oral iv bisphosphonate, strontium ranelate, PTH (1–84), teriparatide. Response options for 3rd choice of treatment: Calcitonin, raloxifene, oral iv bisphosphonate, strontium ranelate, PTH (1–84), teriparatide. Response options to when you do prescribe the use of calcium and vitamin D? Always. If consumption is low. Never.

6. Conclusion Question: In your experience, Do you consider there is a group of patients at high risk for fracture? Response options: Yes, No. Question: In your daily practice, when a patient is considered as having a high risk for fracture, does this lead to any differences in your conduct? Response options: Among the following, all that apply: No, Yes, I do not employ them. Yes, I employ them.