Epidemiology, Burden, and Treatment of Osteoporosis in Denmark

This document highlights the key findings for Denmark, published in “Osteoporosis in Europe: A Compendium of country-specific reports”. View the complete SCOPE 2021 report and related 29 country profiles at: https://www.osteoporosis.foundation/scope-2021

**BURDEN OF DISEASE**

**Individuals with osteoporosis in Denmark**

328,000

INDIVIDUALS WITH OSTEOPOROSIS IN 2019

<table>
<thead>
<tr>
<th>WOMEN</th>
<th>MEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>77.7%</td>
<td>22.3%</td>
</tr>
</tbody>
</table>

The prevalence of osteoporosis in the total population amounted to 5.1%, on par with the EU27+2 average (5.6%). In Denmark, 21.1% of women and 6.5% of men aged 50 years or more were estimated to have osteoporosis.

**New fragility fractures in Denmark**

86,000

NEW FRAGILITY FRACTURES IN 2019

The number of new fragility fractures in Denmark in 2019 was slightly increased compared to 2010, equivalent to an increment of 3.9 fractures per 1000 individuals, totalling 37.0 fractures/1000 individuals in 2019.

**Estimated annual number of deaths associated with a fracture event**

In addition to pain and disability, some fractures are associated with premature mortality. SCOPE 2021 showed that the number of fracture-related deaths varied between the EU27+2 countries, reflecting the variable incidence of fractures rather than standards of healthcare.

**Remaining lifetime probability of hip fracture**

Hip fracture is the most serious consequence of osteoporosis in terms of morbidity, mortality and health care expenditure. The remaining lifetime probability of hip fracture (%) at the ages of 50 years in men and women was 10.6% and 22.1%, respectively, placing Denmark in the upper tertile of risk for both men and women.
The cost of osteoporotic fractures in Denmark accounted for approximately 4.7% of healthcare spending (i.e., €1.45 billion out of €29.8 billion in 2019), which is significantly higher than the EU27+2 average of 3.5%. These numbers indicate a substantial impact of fragility fractures on the healthcare budget.

**Healthcare cost of osteoporotic fractures**

The cost of osteoporotic fractures in Denmark accounted for approximately 4.7% of healthcare spending (i.e., €1.45 billion out of €29.8 billion in 2019), which is significantly higher than the EU27+2 average of 3.5%. These numbers indicate a substantial impact of fragility fractures on the healthcare budget.

<table>
<thead>
<tr>
<th>Type of costs</th>
<th>Cost (2019)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct cost of incident fractures</td>
<td>€852.8 million</td>
</tr>
<tr>
<td>Ongoing cost resulting from fractures in previous years</td>
<td>€548.4 million</td>
</tr>
<tr>
<td>Cost of pharmacological intervention (assessment &amp; treatment)</td>
<td>€51.2 million</td>
</tr>
<tr>
<td>Total direct cost (excluding the value of QALYs* lost)</td>
<td>€1.45 billion</td>
</tr>
</tbody>
</table>

*QALYs: Quality-Adjusted Life-Year – a multidimensional outcome measure that incorporates both the Quality (health-related) and Quantity (length) of life

Age is an important risk factor for fractures. The Danish population aged 50 years or more is projected to increase by 7.0% between 2019 and 2034, somewhat less than the EU27+2 average of 11.4%. The increases in men and women aged 75 years or more are more marked; 48.2% for men; 38.8% for women. Accordingly, the number and burden of fragility fractures are likely to increase.

**Projected increase in the number of fragility fractures**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
<th>Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019</td>
<td>86,000</td>
<td></td>
</tr>
<tr>
<td>2034</td>
<td>114,000</td>
<td>+32.6%</td>
</tr>
</tbody>
</table>

The number of fragility fractures in Denmark is expected to increase by more than 32% between 2019 and 2034, with a substantial impact on the healthcare budget.

In 2019, the average direct cost of osteoporotic fractures in Denmark was €250.5/person, while in 2010 the average was €209.7/person (increase of 19%).

The 2019 data ranked Denmark in 2nd place in terms of highest cost of osteoporotic fractures per capita in the surveyed 29 countries.
Despite the lack of established national fracture registries, the national data on hip fracture rates are of high quality and include more than only hip fracture data.

In Denmark, osteoporosis and metabolic bone disease are not recognised specialties. However, osteoporosis is recognised as a component of specialty training.

Advocacy by patient organisations can fall into four categories: policy, capacity building and education, peer support, research and development. For Denmark, three of the four advocacy areas (Policy, Capacity, Research and Development) were covered by a patient organisation.

### Key measures of policy framework for osteoporosis in Denmark

<table>
<thead>
<tr>
<th>Measure</th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Established national fracture registries</td>
<td>No</td>
</tr>
<tr>
<td>Osteoporosis recognised as a specialty</td>
<td>No</td>
</tr>
<tr>
<td>Osteoporosis primarily managed in primary care</td>
<td>Yes</td>
</tr>
<tr>
<td>Other specialties involved in osteoporosis care</td>
<td>Endocrinology, Rheumatology</td>
</tr>
<tr>
<td>Advocacy areas covered by patient organisations</td>
<td>Policy, Capacity, Research &amp; Development</td>
</tr>
</tbody>
</table>

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### Service provision

The provision of medical services for osteoporosis was reviewed with certain key components, including reimbursement elements which may impair the delivery of healthcare.

#### Service provision for osteoporosis in Denmark

- **100% reimbursement of osteoporosis medications**
- **17.4 available DXA units/million inhabitants**
- **Yes FRAX® risk assessment model is available**
- **€100 DXA cost**
- **10-25% of hospitals having fracture liaison services**

Denmark is one of the 12 (out of 27) countries that offered full reimbursement for osteoporosis medications.

The number of DXA units expressed per million of the general population amounted to 17.4 which puts Denmark in 14th place among the EU27+2. Furthermore, the availability of Trabecular Bone Score (TBS), which measures bone quality, was third highest.

In Denmark, the estimated average waiting time for DXA amounted to 90 days (24th rank). The reimbursement for DXA was unconditional for those patients who fulfil criteria (based on BMD and risk factors).

National fracture risk assessment models such as FRAX® were available in Denmark, as well as guidance on the use of fracture risk assessment within national guidelines. Guidelines for the management of osteoporosis were available in Denmark with a focus on different specificities; postmenopausal women, osteoporosis in men, secondary osteoporosis including glucocorticoid-induced osteoporosis.

Fracture Liaison Services (FLS), also known as post-fracture care coordination programmes and care manager programmes were reported for 10-25% of hospitals in Denmark.

National quality indicators allow to measure the quality of care provided to patients with osteoporosis or associated fractures. Systematic use of national quality indicator was reported for Denmark regarding hip fractures.
Service uptake for osteoporosis in Denmark

The condition of service uptake was evaluated with metrics that reflect fracture risk assessment, treatment gap, and management of surgery for hip fractures.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Estimate</th>
<th>Rank among EU27+2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of FRAX® sessions/million people/year</td>
<td>319</td>
<td>25</td>
</tr>
<tr>
<td>Treatment gap for women eligible for treatment</td>
<td>43%</td>
<td>2</td>
</tr>
<tr>
<td>Proportion of surgically managed hip fractures</td>
<td>&gt;90%</td>
<td></td>
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</table>

There was considerable heterogeneity between the countries in web-based FRAX® usage. The average uptake for the EU27+2 was 1,555 sessions/million/year of the general population with an enormous range of 49 to 41,874 sessions/million. For Denmark, the use of FRAX® amounted to 319 sessions/million in 2019 with a 66% decrease since 2011.

Do women at high fracture risk receive treatment?

125,000 WOMEN TREATED FOR OSTEOPOROSIS

93,000 WOMEN REMAIN UNTREATED FOR OSTEOPOROSIS

43% TREATMENT GAP

218,000 WOMEN ELIGIBLE FOR OSTEOPOROSIS TREATMENT

Many studies have demonstrated that a significant proportion of men and women at high fracture risk do not receive therapy for osteoporosis (the treatment gap). For Denmark, the treatment gap amongst women decreased to 43% in 2019, compared to 54% in 2010. In the EU27+2 the average gap was 71% but ranged from 32% to 87%.

For Denmark, the average waiting time for hip fracture surgery after hospital admission was reported to be 1-2 days. The proportion of surgically managed hip fractures was over 90%.

Acknowledgments

SCOPE Corresponding National Society based in Denmark

• Danish Bone Society
  www.danskknogleselskab.dk

References