



# SOLUTIONS FOR FRACTURE PREVENTION

 IN TÜRKIYE



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Report compiled by the International Osteoporosis Foundation (IOF) under the umbrella of Capture the Fracture® initiative (CTF), in collaboration with Turkish bone health experts.



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# SUMMARY

This document provides an assessment of the current policy and post-fracture care landscape in Türkiye and provides recommendations which are aligned with the needs and opportunities identified by the Capture the Fracture® Partnership in cooperation with a panel of Turkish experts.

## This document aims to:

### SECTION 1 - A Problem on the Rise

Summarize the increasing burden of fragility fractures in Türkiye

### SECTION 2 - Successes and Missed Opportunities

Map out successful (post-fracture care) initiatives in Türkiye, and identify areas for improvement

### SECTION 3 - Solutions Exist: Policy Recommendations

Provide health policy recommendations to address the burden of osteoporosis and fragility fractures and drive their implementation

### SECTION 4 - Build your Response

Support local stakeholders in prioritising osteoporosis and fragility fractures

## Key Messages

*The increasing burden of osteoporosis, treatment gap and importance of secondary fracture prevention*

- a. Fragility fractures are a major concern for public health in Türkiye** and are associated with a substantial (and escalating) health and financial burden. Approximately 255,000 fragility fractures occurred in the year 2019 with osteoporosis-related costs at an estimated \$455 million (USD) in the same year. Given the forecast increase in the older adult population and no change in policy, the number of fragility fractures is expected to increase by more than fifty percent in the next 15 years.
- b. Osteoporosis remains largely underdiagnosed and undertreated.** Today, 75%-90% of Turkish patients who are at high risk of fracture remain untreated for osteoporosis, despite the existence of safe and effective medications. Poor treatment initiation is especially marked in high-risk patients despite this population being most likely to sustain a further fracture. Unfortunately, less than 20% of Turkish patients currently receive effective secondary fracture prevention after an initial fragility fracture.
- c. The Turkish population is underserved with Post Fracture Care (PFC) services.** Despite the recognized benefits of FLS (a model of Post Fracture Care) in reducing the risk of subsequent fractures, few Turkish hospitals have an FLS. This represents a substantial missed opportunity, as it is a well-known fact that those who have had one fracture are vastly more likely to have another, and that targeting treatment in this group through FLS is a viable, and high-yield place to start.

## Key Recommendations

Although several initiatives are already in place and need to be reinforced, specific recommendations include:

- 1. Recognizing osteoporosis** as a chronic and progressive condition which must be addressed
- 2. Establishing more FLS** to increase post-fracture screening, diagnosis and treatment rates
- 3. Placing fragility fractures as a priority** of healthcare management

- 4.** **Improving public awareness** of osteoporosis and education of healthcare professionals
- 5.** **Working centrally and regionally;** and sharing best practices to optimise the patient pathway
- 6.** **Establishing specific fall services for patients at high risk**
- 7.** **Collecting further epidemiological and economic data** on the consequences of fractures

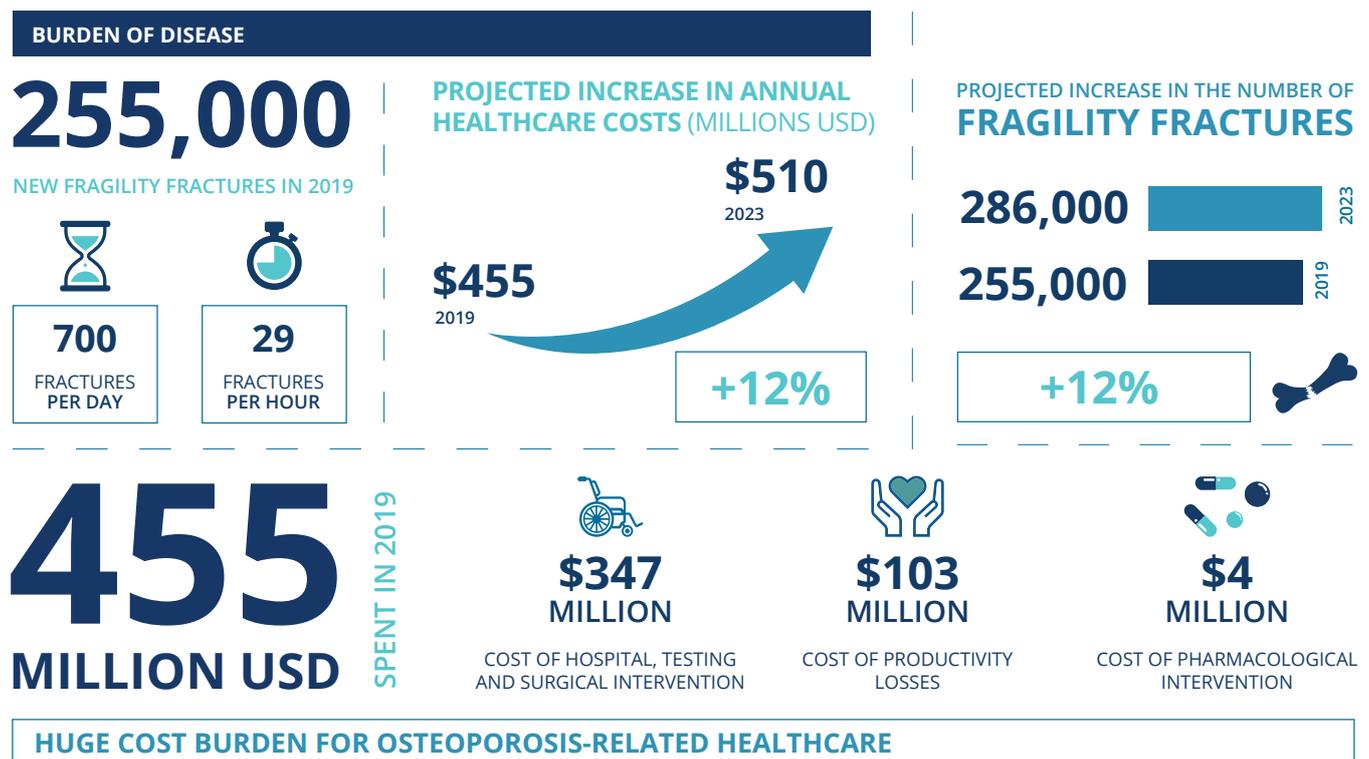


# A PROBLEM ON THE RISE

Osteoporosis is a disease which makes bones weak and fragile. This greatly increases the risk of breaking a bone even after a minor fall or bump. The disease has no obvious symptoms, and many people do not know they have osteoporosis until they suffer a fracture.

These, osteoporotic ‘fragility fractures’ are common, particularly in older adults, are increasing in prevalence, can be life-altering, causing pain, disability and loss of independence, and are associated with a substantial direct and indirect financial burden. Figure 1 summarizes key data regarding the burden of osteoporosis and fractures in Türkiye.

Figure 1  
Burden of osteoporosis-related fractures in Türkiye (based on Aziziye, 2020)



## Population background and ageing

Türkiye is one of the largest and youngest populations in Europe. In 2022, the population of Türkiye was about 85 million, a number expected to increase to 100 million by 2040 according to the Turkish Statistics Institute. The median age in Türkiye is only 33 years and, at birth, the average life expectancy is 81 years for women and 76 years for men.

**The proportion of elderly individuals in the population is rapidly increasing.** In 2021, people aged 65 years and above (older adults) constituted 9.7% of the total population, a 24% increase in the past five years, and this proportion is predicted to rise by 16% in 2040.



This shift in demographics **will markedly increase** the incidence and societal burden of fragility fractures in the population.

76% of the Turkish population are classed as living in an **urban setting**. In terms of health landscape, healthcare is more accessible in urban compared to rural settings and there is a substantial burden from infectious diseases. However, fragility fractures are common in the older adult population, compounded by a sedentary lifestyle and prevalent malnutrition.

## Fractures are common

**Fragility fractures are a substantial public health issue.** In 2019, about 255,000 fractures occurred in Türkiye (approximately 29 fractures per hour). The number of hip fractures (the most serious fracture type) was estimated at 24,000 in 2019; 73% of which were found in women. The International Osteoporosis Foundation (IOF) hip fracture map considers Türkiye a high-risk country for hip fractures, particularly in women.

**Osteoporosis affects numerous women and men.** The prevalence of osteoporosis at the femoral neck (hip bone) in the over 50s was estimated at 33% for women and 8% for men. In a 2005 study, for patients aged 65 years and over, 64% of women and 46% of men were shown to have osteoporosis at any site across the skeleton. Furthermore, the lifetime risk of hip fracture after the age of 50 is 15% in women and 4% in men.

PREVALENCE OF  
**OSTEOPOROSIS**  
AT THE HIP BONE



**33%**

FOR WOMEN



**8%**

FOR MEN



**The incidence of hip fracture has increased markedly** in the last 20 years. As a result, assuming no change in the age- and sex-specific incidence, the number of hip fractures is expected to increase by 166% between 2009 and 2035, to reach 64,000 hip fractures annually.

**Türkiye has one of the highest expected increases in fracture numbers.** The number of fragility fractures in men and women aged 50 to 89 years in Türkiye is expected to increase by 58% between 2015 and 2030.

**Re-fractures are also on the rise.** Fragility fractures substantially increase (almost double) the risk of developing a new fracture, with even higher increased risk in the first 24 months following a fracture.

**Fragility fractures are associated with increased death.** Mortality with hip fractures is particularly high with one in three Turkish patients dying within three years of the fracture.

**Fragility fractures cause pain, disability, loss of independence, and have a significant impact on quality of life.** Furthermore, several comorbid conditions can develop leading to the accrual of higher costs.

## Financial impact

**Fragility fractures are costly to the healthcare system.** In 2019, the total burden of osteoporosis-related fractures was estimated at \$455 million (USD), including about \$347 million for hospital costs; \$103 million for productivity losses and \$4 million for pharmacological intervention. When accounting for the population size, the average economic burden per 1,000 individuals at risk over that same year was \$23,987.

**455**  
MILLION USD

SPENT IN  
2019



**\$347**  
MILLION

COST OF HOSPITAL, TESTING  
AND SURGICAL INTERVENTION



**\$103**  
MILLION

COST OF PRODUCTIVITY  
LOSSES



**\$4**  
MILLION

COST OF PHARMACOLOGICAL  
INTERVENTION

**The financial burden is on the rise.** Due to the ageing population and increasing number of fractures, the total cost of fractures is predicted to increase drastically in the future.

**Fragility fractures affect national finances directly, but also indirectly** through fractures in the workforce and the additional care required from family and relatives of working age. A Turkish economic study reported that patient productivity losses accounted for about one fifth of total fracture costs.



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# SUCCESSES AND MISSED OPPORTUNITIES

We have identified positive initiatives for reinforcement and missed opportunities which need to be addressed.

## Positive initiatives to be built upon

**Healthcare in Türkiye has improved dramatically over the last 20 years.** This was instigated by the ‘strategic planning for health’ bill of 2002, which overhauled the health service policy and planned reforms between 2013 and 2017. This outlines steps to fit in with Health 2020 (a European policy framework) to “significantly improve the health and well-being of populations, reduce health inequalities, strengthen public health and ensure person-centred health systems that are universal, equitable, sustainable and of high quality”.

**A report on older adult health** in Türkiye has been prepared by the Presidency of Turkish Health Institutes (Türkiye Sağlık Enstitüleri Başkanlığı, TÜSEB) and the Turkish Public Health and Chronic Diseases Institute (Türkiye Halk Sağlığı ve Kronik Hastalıklar Enstitüsü, TÜHKE) which included mapping of **current approaches to osteoporosis and the ongoing problems.** Solutions to be implemented in the short and medium terms have been suggested and presented to health authorities.

**With a specific emphasis on older adults, the current situation in the approach to osteoporosis and areas in need of improvement in Türkiye** have been outlined by a multidisciplinary expert panel including geriatricians from the Turkish Academic Geriatrics Society, endocrinologists from The Society of Endocrinology and Metabolism of Türkiye, and physiatrists from the Turkish Society of Physical Medicine and Rehabilitation as well as involvement of an IOF expert.

On May 23, 2022, the inaugural meeting of the **National Council for Secondary Fracture Prevention** was organized by IOF within the framework of the Capture the Fracture® (CTF) initiative in Türkiye and in close partnership with key Turkish experts and stakeholders involved in post-fracture care and secondary fracture prevention, including representatives of the Turkish Osteoporosis Society, the Osteoporosis Patient Society of Türkiye, the Society of Life with Osteoporosis, the Society of Endocrinology and Metabolism of Türkiye, the Turkish Society

of Physical Medicine and Rehabilitation, the Turkish Orthopaedics and Traumatology Association, and the Fragility Fracture Network Türkiye. The launch of the National Council for Secondary Fracture Prevention will serve to enhance and expand the ongoing efforts of the CTF initiative to improve secondary fracture prevention in Türkiye.

**Coalitions are being built** to unite existing international and national advocates, medical & scientific societies, patient societies, multispecialty societies, and NGOs – and serve as a catalyst for optimal broad-based fracture prevention efforts at the national level.

The IOF Best Practice Framework application platform has been **translated into Turkish**.

**Recommendations for the management of osteoporosis** are available in Türkiye. In 2020, a panel of multidisciplinary experts performed a thorough review to assist clinicians in identifying osteoporosis and patients at risk of fracture, diagnosing the disease with appropriate available diagnostic methods, classifying the disease, and initiating appropriate treatment. These recommendations have been endorsed by the Turkish Osteoporosis Society, Society of Endocrinology and Metabolism of Türkiye, Turkish Society of Physical Medicine and Rehabilitation, Turkish Menopause and Osteoporosis Society, Turkish League Against Rheumatism, Turkish Society for Rheumatology, and Turkish Geriatrics Society.

**There is a national fall risk registry system** for all inpatients over 18 years. In this system, patients with moderate or high fall risk are reported to the related department of the Ministry of Health.

**Turkish Inappropriate Medication Use in the Elderly (TIME) Criteria®** have been developed by a multidisciplinary national expert group. It includes specific criteria **on ideal use of anti-osteoporotic medications** and fall risk increasing drugs, and a mobile application available in Google Play and Apple store (TIME CRITERIA®) free of charge.

**There are a limited number of FLS, but development is accelerating.** In May 2021, Türkiye had only 4 FLS running and mapped on the CTF Map of Best Practice. In March 2023, this number had risen 22 FLS, which represents 550% growth in just one year.



## Gaps and missed opportunities

**Low bone density and osteoporosis are not considered a high priority in Turkish healthcare.** Although recognised as a global health concern, osteoporosis is not officially accepted as a chronic disease in Türkiye, despite high prevalence and a predicted increase in future years.

Osteoporosis is still perceived as a female disease, therefore **male osteoporosis is often neglected leading to a gap in diagnosis and treatment.**

As osteoporosis and fragility fractures are not perceived as healthcare priorities in Türkiye, epidemiological and economic data regarding fractures have not been well-documented and the financial burden of these conditions may be **underestimated.** Equally, **secondary fracture prevention and screening have been neglected centrally.** The diagnosis rate of osteoporosis in one study was only 25%.

Furthermore, epidemiologic data regarding **vertebral (spinal) fractures** is lacking in Türkiye. A nation-wide epidemiological study is planned to be conducted by the Turkish Osteoporosis Society in 2023.

**DXA centres** do not systematically identify and report centre-specific least significant change (LSC) values in general. This precludes the ideal assessment for the monitoring of patients on anti-osteoporosis therapy, and is contrary to the results of academic studies. The integration of **vertebral fracture assessment (VFA) and trabecular bone score (TBS)** software in DXA scans is further lacking and should be encouraged.

**The vast majority of Turkish patients who are at high risk of fracture remain untreated for osteoporosis, despite the availability of effective and safe pharmacological options.** Currently, 75–90% of patients do not receive pharmacological intervention for secondary fracture prevention.



**There is no common diagnostic consensus.** FRAX® is available in Türkiye, but has not been incorporated into routine clinical practice throughout the country as the current reimbursement criteria allow prescription of anti-osteoporotic medication without using FRAX®. Therefore, the Türkiye-specific FRAX® model was not used to determine the threshold for pharmacological treatment of osteoporosis in the most recent consensus.

**Poor medication intake and adherence, even after previous fragility fracture.** Those who have had one fracture are highly likely to sustain another. Despite this, only one in five Turkish patients with hip fracture

are diagnosed with osteoporosis and receive anti-osteoporotic therapy. Poor and suboptimal adherence to osteoporosis medications further limits the potential benefits of those medications.

**Too few FLS initiatives are currently operational.** Despite the benefits of FLS in reducing the risk of fractures and the resultant cost-saving in most cases, FLS are still limited in Türkiye. This is despite the recent growth of these post-fracture care services. There is also a lack of fall centers/services in general, which contributes to major shortcomings in the function of FLSs.



The **restrictive reimbursement environment** in Türkiye is a significant barrier to appropriate osteoporosis management in the country. Treatment of patients younger than 65 years of age is only reimbursed if the bone mineral density T score is  $\leq -3.0$ . Recently, a new revision of reimbursement criteria in Türkiye states that denosumab can only be used as a second line agent after treatment with bisphosphonates. With this regulation, only those who have tolerability issues or progression of osteoporosis whilst taking bisphosphonates are reimbursed for denosumab unless they have renal diseases with an eGFR  $< 35$  ml/min/1.73m<sup>2</sup>. Teriparatide is reimbursed only for 18 months, and reimbursement terms require very strict conditions (age  $\geq 65$ , T score  $\leq -3.5$ , at least two fragility fractures radiologically confirmed). Romosozumab, a newer anabolic agent is also paid under the similar conditions. Furthermore, there are no vitamin D fortified products available to the public and there is suspicion and misinformation on the benefits of such products, despite scientific literature demonstrating the detrimental effect of low vitamin D levels on the skeleton.

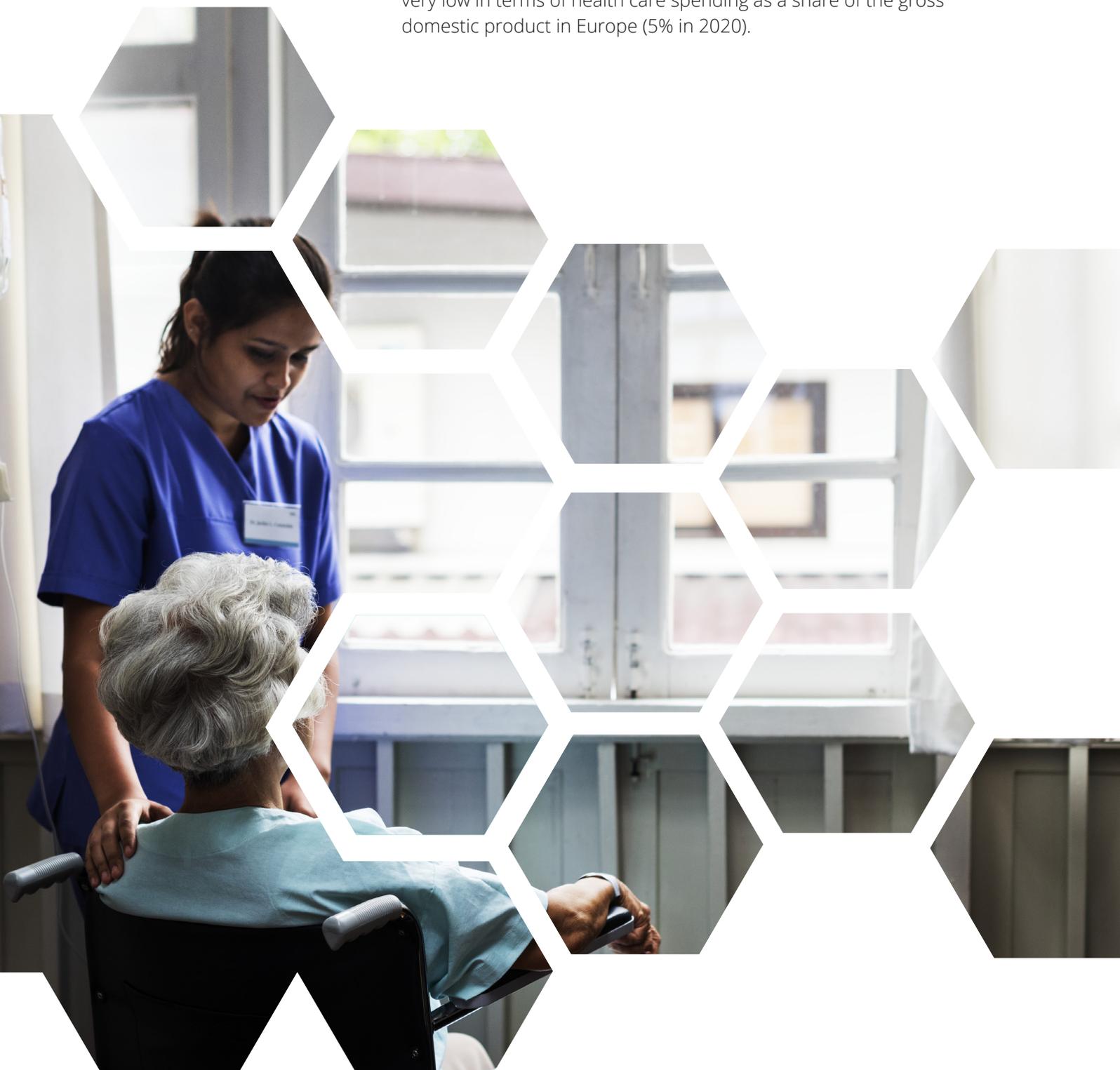
**Medical approaches to fragility fractures are inconsistent.** There is wide geographic variation in the practice of fracture risk screening and secondary fracture prevention.

Although there is a national registry system for fall risk, **fall prevention strategies** have not yet been developed. Furthermore, **specific needs of frail, older adults suffering from fragility fractures are widely unmet.** Frailty and associated health problems such as falls, sarcopenia, malnutrition, further fractures and disability are prevalent in older fracture patients and can be managed by timely recognition and intervention.

**Undernutrition (malnutrition or malnutrition risk),** both macronutrient (protein/energy) and micronutrient (e.g. vitamin D, calcium) deficiencies which are significant and modifiable risk factor for osteoporosis and fragility fractures, are prevalent in older adults, being as much as ~30% in those living in the community. Formal nutritional screening and subsequent interventions are largely not performed in Türkiye in most settings.

**Fragility fractures are paid for by a combination of private and public health services in Türkiye.** In 2013, the introduction of universal health insurance (Genel Sağlık Sigortası), improved universal access to healthcare for all socio-economic groups within Türkiye, and should be applauded. However, this system only covers emergency treatment. It does not cover subsequent osteoporosis screening, physical/occupational therapy, or pharmaceutical interventions. Thus, no secondary fracture prevention regimen is supported or encouraged.

**Lack of resources and insufficient budget allowance.** Türkiye ranked very low in terms of health care spending as a share of the gross domestic product in Europe (5% in 2020).



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# SOLUTIONS EXIST: POLICY RECOMMENDATIONS

Specific recommendations for policy include:

## 1 Recognition of osteoporosis as a chronic and progressive condition which must be addressed

- Osteoporosis must become a public health priority.
- Develop a common voice for osteoporosis stakeholders and integrate bone fragility in national policies.
- Improve access and reimbursement of pharmacological treatments.
- Support the establishment of osteoporosis prevention programs.

## 2 Establish more FLS to increase post-fracture screening, diagnosis, and treatment rates, providing adequate and timely intervention for individuals suffering from acute/subacute fragility fractures, and foster their post-fracture anti-osteoporotic treatment and follow-up.

- Look to the success stories of efficient FLS in Türkiye and compare with other countries taking part in CTF.
- More data on the efficiency of FLS within Turkish policy would help to inform future practice.
- Emphasise the need to expand FLS and implement orthogeriatric model and change organizational incentives to make it possible.
- Better fall centers/services are needed to complement FLS.

## 3 Fragility fractures should be a priority for healthcare management and public awareness of osteoporosis should be increased.

- Hospital managers are key for an effective development of FLS in the healthcare system at large.
- It is crucial to increase primary care physician awareness and involvement in post-fracture care management. This could be achieved via financial incentives. Gathering at international level with meetings and conferences will coalesce national societies. Management of osteoporosis through a multidimensional approach to develop optimum treatment strategies as bone health transcends many medical disciplines.
- Public awareness of osteoporosis could be improved. It is absolutely key to work with patient associations to raise awareness in both lay public and healthcare spheres.

- Medication review and its optimization should be promoted among the physicians that manage older adults. Implementation of useful aids for medication review (including the country-specific TIME Criteria) in formal health care systems of older adults and financial incentives can be beneficial in this regard.

## **4** Improving education of staff and healthcare professionals, and managing frailty to prevent falls.

- Measures such as educational activities should be taken to improve the screening and treatment of osteoporosis in older populations, including men.
- The vast majority of fragility fractures occur in frail or prefrail individuals. It is crucial to identify and manage frailty to prevent further falls, fractures and deterioration of functionality, health, and mortality in osteoporotic patients.
- Routine periodic training of the technicians involved in DXA scanning, including a certification process, should be incorporated into continuous professional development to ensure appropriate imaging.
- Scientific and academic groups should develop (online) continuous medical education programs to encourage family practitioners to be a part of the continuum of care by identifying the at-risk patients and applying the already-existing standardized laboratory panels.
- Establishing specific fall services for patients with high fall risk is important.

## **5** Work centrally and regionally; collect data and share best practice at a local level leading to the publication of an optimal patient pathway

- We advise working at a regional level to improve osteoporosis management policy and that the current annual health and financial legislature are a less effective way to roll-out osteoporosis-dedicated measures. Firmer policies on post-fracture care are required on a national basis.
- Build a national osteoporosis patient registry so that information can be shared. Historically in Türkiye, it has been difficult to share local data on a national basis, as Türkiye (quite rightly) has many strict regulations on data sharing with regards to patient information security. By connecting with a world-leading organisation such as the IOF and CTF-P, Turkish policy makers should be reassured that data will be used effectively and correctly.

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# BUILD YOUR RESPONSE

## Find and treat your fractures by increasing FLS

- **Recognise the unmet need for bone density screening**, acknowledge osteoporosis as a treatable disease and encourage fragility fracture prevention. Once post-fracture care is recognised as a priority (and osteoporosis as a disease) which can be effectively managed, policies should be devised to seek out those who would benefit from a Post-Fracture Care program.
- **Upgrade the post-fracture care pathway**, especially for vertebral fractures, wrist fractures, and hip fractures. Build on the guidelines and the FRAX® prediction tool and initiate new post-fracture care services involving the relevant healthcare professionals and employ a care coordinator (e.g., nurse).
- **Employ and improve the infrastructure already in place.** Türkiye has a small number of FLS on the CTF map. Coalition of these facilities would strengthen the CTF message and improve patient outcomes.
- **Shift national and medical opinion of fragility fractures and osteoporosis among patients, clinicians and hospital managers** and enforce the concept that it is a disease which requires management and can be treated. This will require specific involvement from rheumatology, endocrinology, geriatrics, orthopaedics, nurses, physical medicine and rehabilitation and primary care physicians.
- **Facilitate and improve the development of FLS and consider additional network structures** such as geriatric/orthogeriatric services (OGSS; also known as geriatric fracture centers [GFCs]), and osteoporosis liaison services (OLSs) for the future to improve diagnosis and treatment rates. Draw on the resources and guidance of the IOF/CTF to develop Turkish policies, foster coalition, improve mentorship, and utilize FLS databases (as described below).
- **Facilitate a multidisciplinary approach (physiatrists, orthopedic surgeons, endocrinologists, geriatricians)** to identify and meet specific needs of fragility fracture patients.
- **Ensure adequate remuneration and incentives to support best practice.** Adapt the remuneration model for these post-fracture care pathways. Put in place incentives linked to the detection of osteoporosis and fragility fractures in cases where patients have been hospitalized via emergency and orthopedic surgery services.

## Make use of available resources

The International Osteoporosis Foundation has developed several tools to facilitate and improve the development of Post Fracture Care/FLS including:

1. **The Policy Toolkit** which is a CTF-P Guidance for Policy Shaping generic narrative and associated resources (slide kit in several languages, Executive Summary, Infographic, webinar, outline video and policy toolkit. <https://www.capturethefracture.org/resource-center/advocating-for-pfc/policy-toolkits>
2. **The Capture the Fracture® Resource Centre** (<https://www.capturethefracture.org/resource-center>) which provides tools and resources to achieve the following:
  - Implementing an FLS
  - Improving an FLS
  - Advocating for the development of FLS



The Capture the Fracture® programme provides tools and resources to optimise post-fracture care:

1. **The Best Practice Framework**
  - Provides guidance for institutions that are implementing FLS
  - Sets benchmarking criteria to stimulate quality improvement of post-fracture care services at the organisational level
2. **The Mentorship Program** which partners experienced FLS leads with newly formed services or existing services
3. **The Benefit Calculator:** a microsimulation tool to estimate the financial consequences of improving post-fracture care.

4. **The role of the National Council for Secondary Fracture Prevention** should be enhanced, and its efforts should be encouraged to develop positive policies regarding osteoporosis and related fractures.

## Reinforce your evidence base

- Build a **national osteoporosis patient registry**.
- **Utilise the Turkey Benefit Calculator** to assess the expected financial impact of interventions to ensure you stay on track and utilise extensive resources available.
- Academic institutions should encourage **researchers to pursue further investigations** on country-based clinical and epidemiological data to facilitate the prevention and treatment of subsequent fractures.

## Form a policy team

- **Use renowned national and international mentors/collaborators** to educate and monitor the implementation of fragility fracture care pathways and FLS development. Inviting all the relevant key players in FLS to participate in events which would consolidate collaboration over the longer term.
- **Promote integrated care models;** specialist doctors, primary care doctors, nurses, other healthcare professionals such as physiotherapists and community pharmacy that facilitate the evaluation and treatment of patients with bone fragility fractures.
- **Involve 'key players' for advocacy** including the Turkish Osteoporosis Society, the Osteoporosis Patient Society of Türkiye, the Society of Life with Osteoporosis, Turkish Academic Geriatrics Society, the Society of Endocrinology and Metabolism of Türkiye, the Turkish Society of Physical Medicine and Rehabilitation, The Turkish Orthopaedics and Traumatology Association, and the Fragility Fracture Network Türkiye.

## Engage the public

- **Engage patient support groups** and the public at large and with education resources and high-quality literature.
- **Increase focus on chronic diseases** as some focus on these diseases was lost due to the Covid-19 pandemic.

## Foster healthy ageing

- **Empower clinicians and persuade health care managers and professionals that healthy bone ageing is possible**, and that chronic bone conditions can be managed to prevent future fractures.
- The unique place of **adequate nutrition** (i.e., protein, energy and micronutrients including vitamin D and calcium) in the prevention and treatment of osteoporosis, sarcopenia, falls and fractures should be underlined.
- **Physical activity** in both younger and older individuals should be promoted and be in line with the cultural background of Turkish people.
- **Cessation of smoking and limiting alcohol intake** should be emphasized in terms of bone health.
- The exclusive role of drugs in falls, osteoporosis and fractures in older adults, polypharmacy and inappropriate medication use (both over and under prescription) should be considered and managed via **regular medication review** in older adults, at least yearly and/or whenever an acute problem develops.
- **The vital importance of adherence to prolonged anti-osteoporotic drug therapy** should be highlighted and the positive outcomes associated with good therapeutic adherence should be emphasized.
- **Promote falls prevention services, ensure in-home safety taking fall risk into account and improve the physical capacity of older individuals**, in order to support their physical activities and autonomy.



**PROMOTE FALLS PREVENTION**



**ENSURE IN-HOME SAFETY**



**IMPROVE PHYSICAL CAPACITY**

- **Focus on fractures rather than 'osteoporosis'**. There are common misconceptions regarding osteoporosis including "osteoporosis treatments are not effective" or "losing height is normal". Targeting public health awareness campaigns at fractures will be more successful, for example "the first fracture must be the last!".

- **Consider the following systematic interventions:**
  - a. Screen height loss once a year
  - b. Screen falls risk
  - c. Perform osteoporosis screening, in all females  $\geq 65$  years, males  $\geq 70$  years, and all individuals  $\geq 50$  years with a clinical risk factor for fragility fractures.



**ANNUAL HEIGHT MEASUREMENTS**



**OSTEOPOROSIS SCREENING IN INDIVIDUALS WITH A CLINICAL RISK FACTOR**



**FALLS RISK SCREENINGS**

## Increase awareness of osteoporosis throughout the life course

- Leverage **World Osteoporosis Day** (on October 20 of each year) as a substantial opportunity to educate consumers and health professionals about osteoporosis and fracture prevention, and promote case-finding during this period.
- **Extend DXA prescription** to all 50+ patients who have previously sustained a fracture.
- Start early with **prevention campaigns in schools**: how to build strong bones, encouraging physical activity, to get sufficient levels of protein, vitamin D and calcium.
- Focus on the **general health of the population**: make sports fun, accessible and affordable by making it a priority in the policy of local councils.
- Incorporate **osteoporosis screening** into established annual elderly health checks.
- Scientific societies should encourage health care professionals to utilize the **FRAX**<sup>®</sup> country-adjusted risk calculation algorithms.

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## Glossary

**FRACTURE** – a broken bone

**FRAGILITY FRACTURE** - A broken bone which occurs due to minor force, such as a fall from standing height. The risk of fragility fractures can be reduced by lifestyle modifications, supplementation of calcium and vitamin D, falls prevention programmes and anti-osteoporosis medication.

**FRACTURE LIAISON SERVICE (FLS)** - See Post-Fracture Care Coordination Programme. A model of care which seeks to rehabilitate individuals after they have had a fracture and reduce the risk of them fracturing again in the future. The term is interchangeable with *POST-FRACTURE CARE (PFC) COORDINATION PROGRAMME*.

**OSTEOPOROSIS** - Osteoporosis is a disease in which the mass, density and strength of bone are reduced. As bones become more porous and fragile, the risk of fracture is greatly increased. The loss of bone occurs silently and progressively. It primarily affects the elderly and is more common in women than in men.

**PRIMARY PREVENTION OF FRACTURES** - Initiatives to prevent a first/sentinel/initial fracture occurring.

**SECONDARY PREVENTION OF FRACTURES** - Initiatives to prevent second/subsequent/further fractures occurring after the first fracture has occurred.



## References

- Åkesson KE, Ganda K, Deignan C, et al. (2022). Post-fracture care programs for prevention of subsequent fragility fractures: a literature assessment of current trends. *Osteoporos Int*, 33(8): 1659-1676. <https://doi.org/10.1007/s00198-022-06358-2>
- Aziziyeh R, Garcia Perlaza J, Saleem N, et al. (2020). The burden of osteoporosis in Türkiye: a scorecard and economic model. *Arch Osteoporos*, 15(1), 128. <https://doi.org/10.1007/s11657-020-00801-9>
- Bahat G, Catikkas NM, Yavuz DG, et al. (2021). The current situation in the approach to osteoporosis in older adults in Türkiye: areas in need of improvement with a model for other populations. *Arch Osteoporos*, 16:179. <https://doi.org/10.1007/s11657-021-01038-w>
- Bahat G, Ilhan B, Erdogan T, et al. (2020). Turkish inappropriate medication use in the elderly (TIME) criteria to improve prescribing in older adults: TIME-to-STOP/TIME-to-START. *Eur Geriatr Med*, 11(3): 491-498. <https://doi.org/10.1007/s41999-020-00297-z>
- Borgström, F, L. Karlsson, G. Orsäter, et al. (2020). "Fragility Fractures in Europe: Burden, Management and Opportunities." [In eng]. *Arch Osteoporos*, 15, 59. <https://doi.org/10.1007/s11657-020-0706-y>.
- Capture the Fracture® website. Launch of National Council for Secondary Fracture Prevention in Türkiye. Capture the Fracture® Article. (2022). Retrieved November 18, 2022, from <https://www.capturethefracture.org/news/planning-action-turkish-national-council-secondary-fracture-prevention-roundtable-20221028>
- Cooper C, & Ferrari S. (2019). IOF compendium of osteoporosis 2nd edition: International Osteoporosis Foundation. IOF International Osteoporosis Foundation. <https://www.osteoporosis.foundation/educational-hub/files/iof-compendium-osteoporosis-2nd-edition>
- El-Hajj Fuleihan G, Adib G, et al. (2011). The Middle East & Africa Regional Audit: Epidemiology, costs, and burden of osteoporosis in 2011. International Osteoporosis Foundation. [https://www.osteoporosis.foundation/sites/iofbonehealth/files/2019-06/2011\\_Middle\\_East\\_Africa\\_Audit\\_English.pdf](https://www.osteoporosis.foundation/sites/iofbonehealth/files/2019-06/2011_Middle_East_Africa_Audit_English.pdf)
- Johansen AS. (2015). Strategic Planning for Health: A Case Study from Türkiye. World Health Organization. Regional Office for Europe. Retrieved November 18, 2022, from <https://apps.who.int/iris/handle/10665/154199>.
- Kanis JA, Cooper C, Rizzoli R, and Reginster J.-Y. (2019). "European Guidance for the Diagnosis and Management of Osteoporosis in Postmenopausal Women." [In eng]. *Osteoporos Int* 30: 3-44. <https://doi.org/10.1007/s00198-018-4704-5>.
- Kanis JA, Norton N, Harvey NC, et al. (2021). "Scope 2021: A New Scorecard for Osteoporosis in Europe." *Archives of osteoporosis*, 16, 82-82. <https://doi.org/10.1007/s11657-020-00871-9>.
- Kirazlı Y, Çalış FA, El O, et al. (2020). Updated approach for the management of osteoporosis in Türkiye: a consensus report. *Archives of osteoporosis*, 15, 137. <https://doi.org/10.1007/s11657-020-00799-0>
- Kilci O, Un C, Sacan O, et al. (2016). Postoperative Mortality after Hip Fracture Surgery: A 3 Years Follow Up. *PLOS ONE* 11: e0162097. <https://doi.org/10.1371/journal.pone.0162097>
- Kucukler FK, Simsek Y, Turk AÇ, Arduc A, and Guler S (2017). Osteoporosis and silent vertebral fractures in nursing home resident elderly men in Türkiye. *J Clin Densitom* 20(2): 188–195. <https://doi.org/10.1016/j.jocd.2015.05.064>
- Kuru P, Akyüz G, Cerşit H, et al. (2014). Fracture history in osteoporosis: risk factors and its effect on quality of life. *Balkan medical journal*, 31, 295–301. <https://doi.org/10.5152/balkanmedj.2014.13265>



*Our vision is a world without fragility fractures,  
in which healthy mobility is a reality for all*



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