APAC AUDIT 2025

THE APCO-IOF

ASIA PACIFIC REGIONAL AUDIT

Epidemiology, Costs and Burden of Osteoporosis in 2025

A joint collaboration between the Asia Pacific Consortium on Osteoporosis (APCO) and the International Osteoporosis Foundation (IOF)

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Epidemiology, Costs and Burden of Osteoporosis in 2025

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APCO ASIA PACIFIC CONSORTIUM ON OSTEOPOROSIS

www.apcobonehealth.org

ABOUT APCO

The *Asia Pacific Consortium on Osteoporosis (APCO)* is a multidisciplinary network of experts committed to developing unified clinical frameworks that standardize osteoporosis screening, diagnosis, and management. It also leads regional initiatives to reduce skeletal fragility across diverse population.

APCO VISION

To move towards reducing the burden of osteoporosis and fragility fractures in the Asia Pacific region.

APCO MISSION

To engage with relevant stakeholders, including healthcare providers, policy makers and the public, to help develop and implement country and region-specific programs for the prevention and treatment of osteoporosis and its complication of fragility fractures, in Asia Pacific.

www.osteoporosis.foundation

ABOUT IOF

The *International Osteoporosis Foundation (IOF)* is the world's largest non-governmental organisation dedicated to the prevention, diagnosis, and treatment of osteoporosis and related musculoskeletal diseases.

IOF VISION

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

IOF MISSION

IOF is dedicated to making bone and musculoskeletal health a global priority. Through collaboration with its scientific experts, member organisations, and broader worldwide network, IOF drives initiatives that advance research and medical best practice, expand education, raise public awareness, and advocate for policies that improve bone health across the lifespan.

FOREWORD

Over the coming decades, the Asia Pacific region will undergo one of the most profound demographic shifts in human history. By 2075, the region will be home to nearly half the world's population, with average life expectancy extending almost a decade beyond current levels. Across diverse national contexts, a unifying reality is emerging: populations are ageing at an unprecedented pace. This demographic transformation brings immense opportunities for societies enriched by the longevity of their citizens, but it also carries profound challenges for health systems, economies, and communities.

Osteoporosis and the fragility fractures it causes exemplify these challenges. Left unaddressed, fragility fractures will increasingly overwhelm primary care, hospitals, and long-term care facilities, driving escalating human and economic costs. Yet this future is not inevitable. The findings of the 2025 Asia Pacific Regional Audit highlight that while significant gaps remain in prevention, diagnosis, treatment, and post-fracture care progress has been made in certain countries and regions, significant gaps remain on several fronts.

This report demonstrates that effective solutions already exist. From national registries and quality standards to the expansion of Fracture Liaison Services, examples of innovation, leadership, and measurable impact are evident throughout the region. The task before us is to scale these models, embed them within health systems, and ensure equitable access for all older people. Success will require collaboration: among governments, healthcare professional organisations, patient societies, and the private sector.

The *Asia Pacific Consortium on Osteoporosis* and the *International Osteoporosis Foundation* present this Audit as both a benchmark and a "Call to Action". The evidence contained within these pages provides a roadmap for policymakers and practitioners alike. By acting decisively now - before demographic change fully exerts its pressure - we can transform the future for millions of people across Asia Pacific, ensuring that longer lives are also healthier lives.

TABLE OF CONTENTS

29 Key Findings in the Asia Pacific Region in 2025

50 Key Recommendations

52 National and Regional Responses to the Asia Pacific Audit 2025

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EXECUTIVE SUMMARY

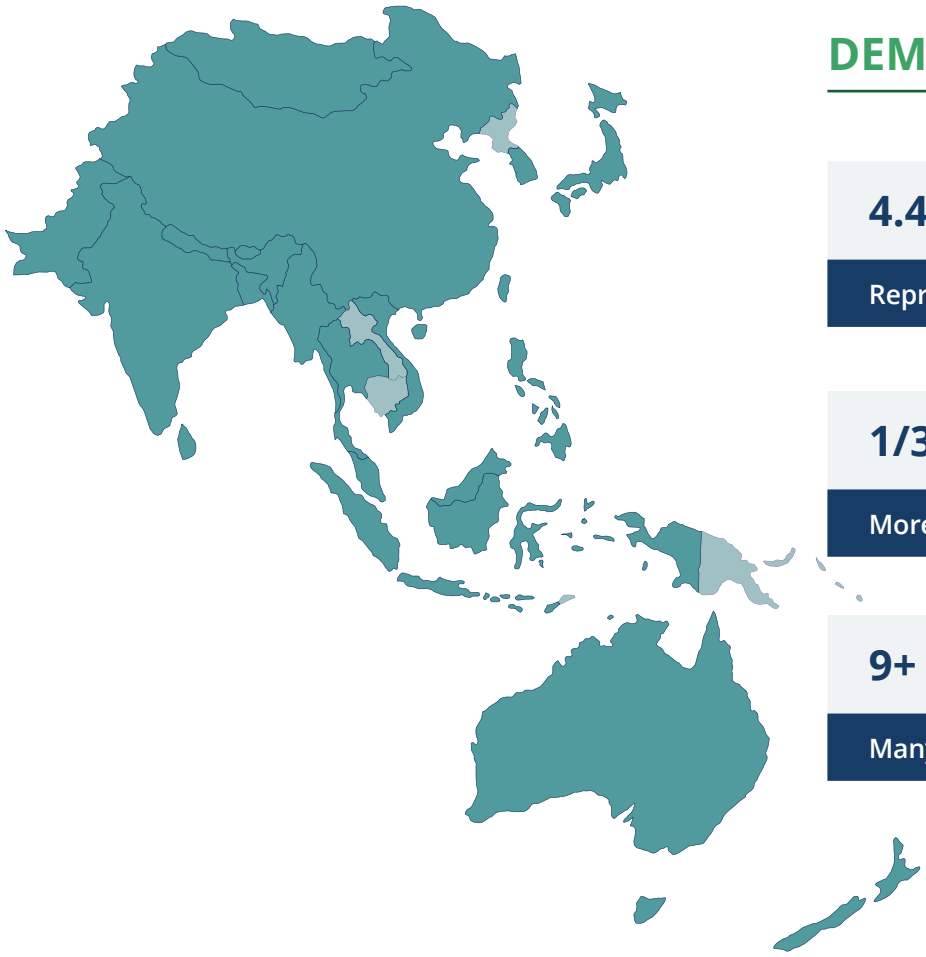
The *2025 Asia Pacific Regional Audit* is the most comprehensive assessment to date of the burden of osteoporosis and fragility fractures across 22 countries and regions. It reveals both the magnitude of the challenge and the opportunities for timely, collaborative action in the region.

DEMOGRAPHIC TRANSFORMATION

By 2075, the Asia Pacific region will experience dramatic shifts in population structure:

- The **population will grow** from 4.24 to 4.45 billion, **representing nearly half of humankind.**
- **Average life expectancy will rise** from 78 to 87 years.
- In several economies, **more than half the population will be aged 50 years or older**, with up to one-third aged 70 years or older.
- Countries such as Bhutan, Nepal, and Pakistan face **rapid ageing** with increases of more than 130% in their 50+ years populations, while China, Japan and the Republic of Korea face **declining overall populations but continued growth of older cohorts.**

This rapid demographic revolution demands urgent strengthening of preventive and care systems to avoid unsustainable pressure on health and social infrastructures.



DEMOGRAPHICS IN 2075

4.45 BILLION PEOPLE

Representing nearly 50% of humankind

1/3 WILL BE AGED 70+

More than 50% will be aged 50 or older

9+ YEARS LIFE EXPECTANCY

Many with declining overall population

KEY FINDINGS

The Audit highlights wide variation across the region in preparedness to meet the osteoporosis challenge:

1 Fracture data systems

- Only 10 of 22 countries and regions have **centralised databases**; fewer still capture all fracture types.
- Japan and Korea record **hundreds of thousands of fractures annually**, while many countries document only pilot-level numbers.

2 Models of care and professional responsibility

- Other than in a few countries, **primary care plays a limited role in osteoporosis management**, with it being largely under the purview of specialists, mainly orthopaedic surgeons.
- **Fracture Liaison Services (FLS) are limited:** one-quarter of countries and regions have none, and in over half, fewer than 25% of hospitals are covered. Only New Zealand and Singapore exceed 50% coverage.
- **Where implemented effectively**, such as in New Zealand, FLS identify nearly all hip and vertebral fracture patients and ensure access to secondary fracture prevention.

3 Access to diagnostics and treatment

- **DXA scan access varies** from same day in some settings to waits of nearly a year in others. Costs range from USD 15 to USD 175, with inconsistent reimbursement.
- **All countries have access to bisphosphonates, but reimbursement gaps limit affordability.** Newer anabolic agents are available in few settings and rarely reimbursed.
- **Treatment uptake is low:** in many countries and regions fewer than half of patients recommended for therapy initiate it.

4 Clinical guidelines and standards

- **Sixteen countries and regions** have published clinical guidelines, though scope and adoption vary.
- **National quality standards exist in only a handful of countries** (notably Australia, Japan, New Zealand and Thailand), enabling systematic benchmarking and continuous improvement.

5 Policy and advocacy environment

- **Only six countries** have designated osteoporosis or musculoskeletal disease as a national health priority.
- **Patient advocacy organisations exist in just nine countries and regions**, limiting consumer awareness and engagement.

KEY RECOMMENDATIONS

To address these gaps, the Audit proposes a practical roadmap of ten priorities:

1. **Designate osteoporosis as a national health priority**
in all countries and regions, with investment in epidemiological studies where gaps exist.

2. **Establish and expand national fracture registries**
beginning with hip fracture as a sentinel event.

3. **Ensure universal access to best-practice post-fracture care**
including through Orthogeriatric Services and Fracture Liaison Services.

4. **Promote life-course interventions in nutrition and exercise**
targeting expectant mothers, children, adults and seniors.

5. **Strengthen professional education**
for osteoporosis specialists, orthopaedic surgeons and primary care providers.

6. **Implement routine fracture-risk assessment in primary care**
for all patients aged 50 years or older.

7. **Integrate osteoporosis management into prescribing practice**
where medicines with bone-wasting side effects are used.

8. **Institute public awareness campaigns**
to empower individuals to assess and manage their fracture risk.

9. **Create national alliances**
for falls and fragility-fracture prevention, modelled on successful examples.

10. **Scale innovative models**
such as AI, digital tools, telehealth, and integrated data systems, to improve fracture prevention and enhance efficiency, access, and equity.

CONCLUSION

The *2025 Asia Pacific Audit* provides compelling evidence that osteoporosis and fragility fractures represent one of the most pressing health challenges for the coming decades in Asia Pacific. The demographic wave is already underway, but it is within our collective power to change its trajectory.

By implementing the recommendations outlined here - grounded in evidence, supported by international best practice, and designed for local adaptation - countries and regions can protect millions of citizens, preserve health system sustainability, and ensure that the promise of longer lives is matched by healthier, more independent years.

METHODOLOGY

STUDY DESIGN AND FRAMEWORK

The *Asia Pacific Regional Audit 2025* was developed as a joint initiative of the *Asia Pacific Consortium on Osteoporosis (APCO)* and the *International Osteoporosis Foundation (IOF)* to provide the most comprehensive cross-country assessment of osteoporosis burden, care pathways, and policy readiness in the region to date. This work represents a multicountry descriptive audit synthesising both quantitative and qualitative information provided directly by national professional societies, complemented by publicly available demographic data and published literature. The Audit was jointly led by senior representatives of APCO and the IOF, internationally acknowledged leaders in osteoporosis, fracture prevention, and musculoskeletal health policy. Independent editorial oversight and synthesis were undertaken by Paul Mitchell, an APCO Executive Committee member, to ensure consistency, objectivity, and coherence across national submissions.

QUESTIONNAIRE DEVELOPMENT

A structured questionnaire comprising **12 thematic sections** was designed collaboratively by IOF and APCO experts. The instrument covered:

- **Centralised database for fractures and epidemiology-** including data coverage, organisation (national/regional/local), fracture types, and sources.
- **Specialists responsible for osteoporosis management** - medical specialties and healthcare professionals providing osteoporosis care, and training recognition.
- **Patient support organisations** - existence, scope, and activities of national patient associations involved in osteoporosis advocacy, education, and peer support.
- **Osteoporosis as a documented national health priority (NHP)** - government recognition, policy frameworks, action plans, and related public health programmes.
- **Availability and reimbursement of medications** - list of approved therapies, reimbursement levels, and restrictions or conditions for access.
- **Fracture Liaison Services (FLS)** - availability, coverage, referral mechanisms, and reimbursement models for secondary fracture prevention programmes.
- **Waiting time for hip surgery** - typical surgical timelines, proportion of surgically managed fractures, and adherence to benchmark standards.
- **National guidelines for osteoporosis management** - existence, scope, last update year, methodology (systematic review, stakeholder involvement, external review), and compatibility with reimbursement criteria.
- **Access to bone densitometry and/or ultrasound** - availability, waiting times, costs, and reimbursement for DXA and quantitative ultrasound.
- **Fracture risk assessment tools** - use and adoption of tools such as FRAX®, Garvan, or others, and approaches to defining intervention thresholds.
- **Quality indicators for osteoporosis and fracture care** - national or regional systems tracking standards of care, secondary prevention, and outcomes.
- **Country overview** - expert summary of the national situation, key statistics, gaps, and priorities for future action.

15

The questionnaire was piloted among a subset of APCO and IOF members to ensure face validity and ease of completion before being disseminated region wide.

DATA COLLECTION

Invitations to participate were sent in November 2023 to:

- **APCO member representatives** in 22 Asia Pacific countries and regions;
- **National societies** that are part of the IOF Committee of National Societies (CNS) network;
- **Members of the IOF** Asia-Pacific **University Network**.

Each participating society or representative was requested to complete the questionnaire and coordinate national inputs from relevant clinicians, researchers, and policy experts. Data collection occurred between November 2023 and March 2024, with periodic reminders to ensure full country coverage.

NATURE AND SOURCES OF DATA

Respondents were asked to provide information based on the best available national sources, which included:

- Peer-reviewed publications;
- Government health statistics;
- Institutional and registry reports; and
- Expert consensus estimates when official data were unavailable.

As health system data availability and maturity vary widely across the region, several indicators represent informed estimates rather than systematically published datasets. All submissions were reviewed for internal consistency and plausibility by the audit's central analytical team. Discrepancies or implausible values were clarified with country contributors through iterative feedback.

DEFINITION AND REPORTING OF COST DATA

Cost data were collected under Section 5 of the questionnaire ("Availability and reimbursement of medication"), which requested each national respondent to provide estimates of the direct and indirect hospital costs associated with osteoporotic hip fractures, the average length of stay, and the source of this information (e.g., Ministry of Health, published literature, or expert opinion).

For consistency and transparency, this Audit interprets cost data according to established health economic definitions:

- **Direct cost** refers to the average per-patient cost of acute hospital care and, where data permitted, post-acute or first-year medical management of a hip fracture. These costs typically include surgical procedures, inpatient stay, diagnostic imaging, medications, and follow-up visits. Reported figures represent local currency values converted to USD using contemporaneous exchange rates.
- **Indirect cost** represents non-medical or societal costs associated with hip fracture, such as loss of productivity, caregiver time, home adaptations, and other out-of-pocket expenditures borne by patients or families.

Although these definitions were not explicitly stated in the original questionnaire, the intent of the relevant section was to capture these categories of expenditure as understood within each country's context. The absence of predefined terms represents a limitation of the data collection process, but it reflects the diversity of healthcare financing systems and cost-accounting approaches across the region. Where neither published nor administrative data existed, estimates provided by national experts or relevant professional organisations were accepted to ensure comprehensive regional representation.

DATA MANAGEMENT AND ANALYSIS

Data was collated and verified by the IOF project management team under the supervision of the audit's lead authors. Descriptive analyses were undertaken to generate country-specific and regional summaries. Quantitative data were analysed using descriptive statistics and visualised through tables, bar charts, and maps to highlight inter-country variation. Demographic projections were derived from the U.S. Census Bureau International Database (IDB) and expressed as percentage change in total, 50+, and 70+ year-old populations from 2025 to 2075. No further analyses or standardisation of cost data were undertaken, and all figures presented in this Audit reflect the values as reported by national experts, professional organisations, or referenced sources.

A graphical overview of regionally reported data was developed to provide an at-a-glance comparison across 11 key domains national database, specialist involvement, patient organisation, recognition as a national health priority (NHP), treatment availability, Fracture Liaison Services (FLS), hip-surgery benchmarks, guideline availability, access to DXA, use of fracture-risk assessment tools, and presence of quality indicators.

GOVERNANCE, REVIEW, AND VALIDATION

The preliminary data summaries were reviewed by the authors and by designated national society representatives to confirm accuracy and contextual interpretation. Where multiple responses were received from one country, consensus values were agreed through discussion between the Project Management team, the authors and local contributors.

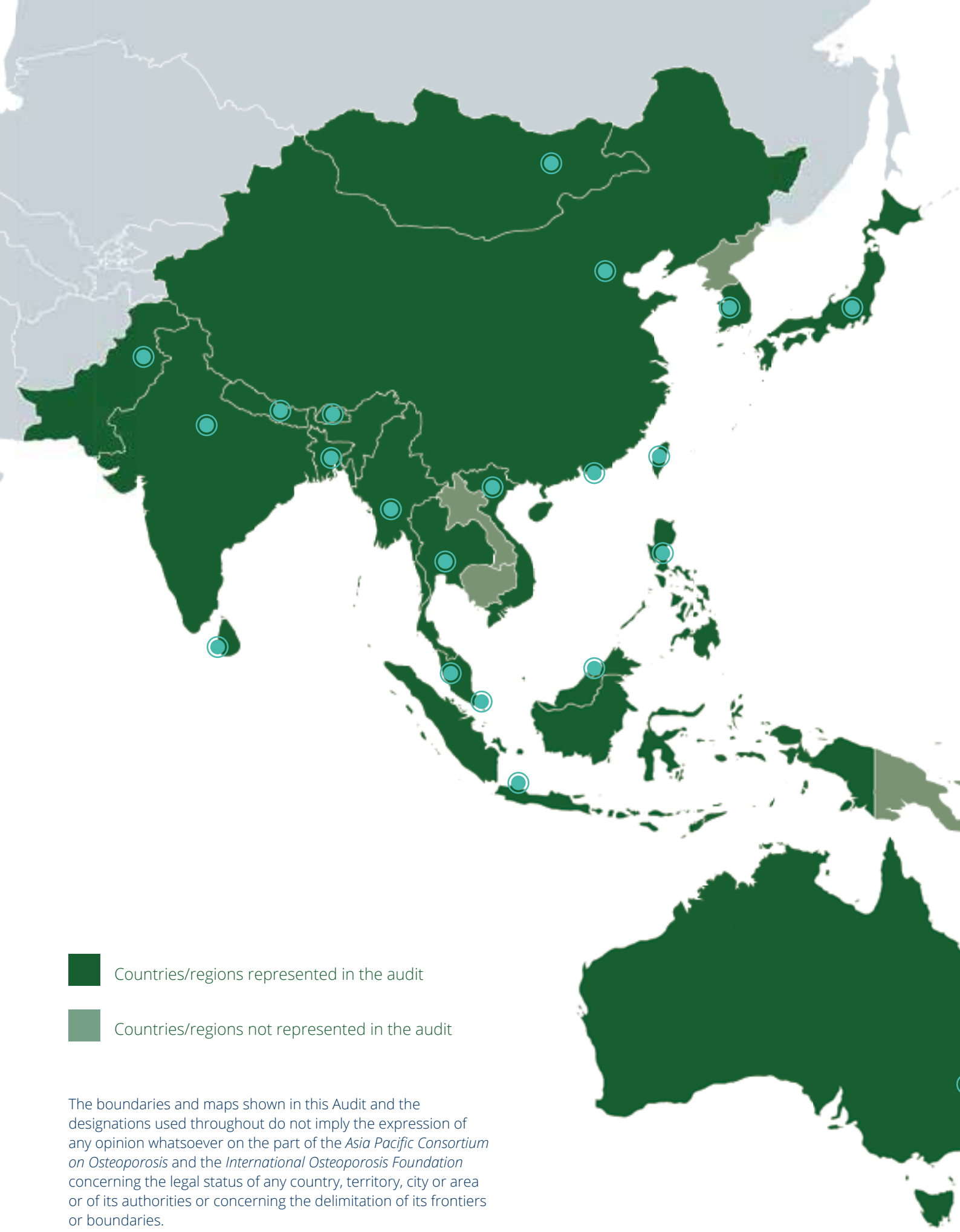
A final review was undertaken by the authors in September 2025 to confirm the incorporation of all national data updates submitted since March 2024 and to ensure the report's completeness and accuracy prior to publication. A full list of individual and organisational contributors is provided in the Contributors section of this report.

ETHICAL CONSIDERATIONS

The Audit did not involve collection of patient-level data or human subjects research and therefore did not require institutional ethics approval. All data were provided in aggregated form and were derived from published sources where available, or from expert or organisational estimates at the national or regional level.

LIMITATIONS

While the Audit strives for comprehensive coverage, several limitations must be acknowledged. Data availability and quality are highly heterogeneous across the Asia Pacific region, and many indicators, particularly regarding fracture incidence, treatment rates, and FLS coverage reflect best expert estimates rather than systematically collected national statistics. Nevertheless, the direct provision of information by national societies ensures that the findings accurately represent the current state of knowledge, infrastructure, and policy readiness in each setting.



Countries/regions represented in the audit

Countries/regions not represented in the audit

The boundaries and maps shown in this Audit and the designations used throughout do not imply the expression of any opinion whatsoever on the part of the *Asia Pacific Consortium on Osteoporosis* and the *International Osteoporosis Foundation* concerning the legal status of any country, territory, city or area or of its authorities or concerning the delimitation of its frontiers or boundaries.

THE AUDIT REGION

AUSTRALIA

BANGLADESH

BHUTAN

BRUNEI DARUSSALAM

CHINA

CHINESE TAIPEI

HONG KONG SAR

INDIA

INDONESIA

JAPAN

MALAYSIA

MONGOLIA

MYANMAR

NEPAL

NEW ZEALAND

PAKISTAN

PHILIPPINES

REPUBLIC OF KOREA

SINGAPORE

SRI LANKA

THAILAND

VIETNAM

THE CHANGING DEMOGRAPHICS OF THE NEXT 50 YEARS

FOUR DISTINCT DEMOGRAPHIC TRAJECTORIES

Across the Asia Pacific region, population dynamics are expected to shift dramatically over the next half century (*Figures 1, 2 and 3*). The area is home to a large and diverse population, in which demographic trajectories vary significantly between countries and regions. The 22 countries and regions in this audit fall broadly into four demographic trajectories based on projected population changes from 2025 to 2075:

TRAJECTORY 1

Steady population growth from 2025 to 2075

Countries in this group are projected to experience consistent growth throughout the next 50 years. These include Australia, Brunei Darussalam, Malaysia, New Zealand, Pakistan, and the Philippines.

TRAJECTORY 2

Growth until mid-century, followed by a plateau or slight decline

These countries are projected to grow steadily until around 2050, after which growth slows, plateaus, or declines slightly by 2075. This pattern is anticipated in Bangladesh, Bhutan, India, Indonesia, Mongolia, Myanmar, Nepal, Singapore, and Vietnam.

TRAJECTORY 3

Plateau by 2030, followed by accelerating population decline

A distinct demographic pattern is evident in a group of countries and regions where populations are expected to level off by around 2030, followed by a period of sustained decline that tends to accelerate in the second half of the century. This trajectory is anticipated in China, Chinese Taipei, Hong Kong SAR, Japan, the Republic of Korea and Thailand.

TRAJECTORY 4

Plateau from 2025 to 2050, followed by decline

Sri Lanka presents a unique demographic trajectory, with its population projected to plateau from 2025 through to 2050, followed by a moderate decline by 2075. While the rate of decline is not as steep as in Trajectory 3 countries and regions, it still represents a meaningful contraction in overall population size.

Figure 1. Projected populations for the most populous countries in Asia Pacific from 2025 to 2075[1]

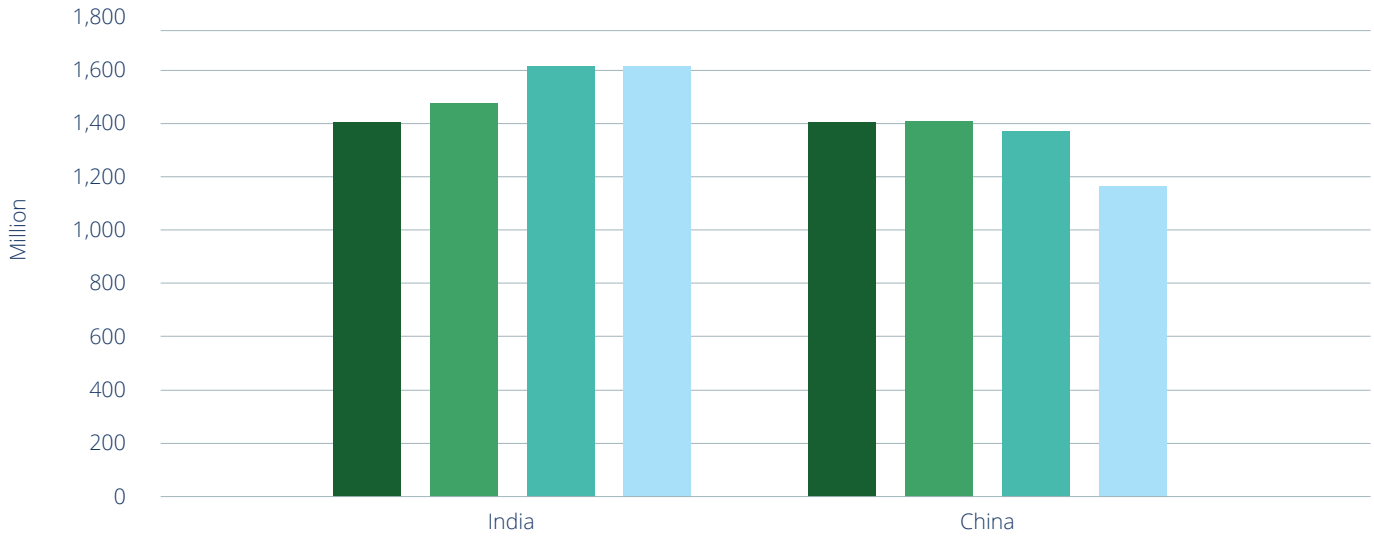


Figure 2. Projected populations for the mid-range countries and regions in Asia Pacific from 2025 to 2075[1]

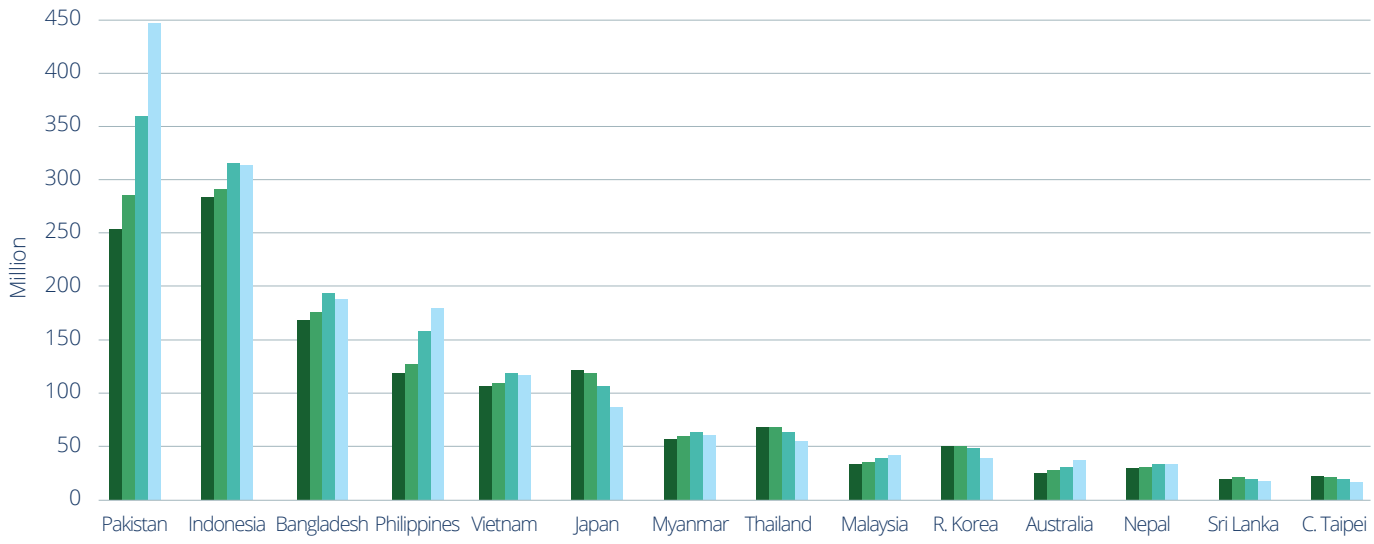
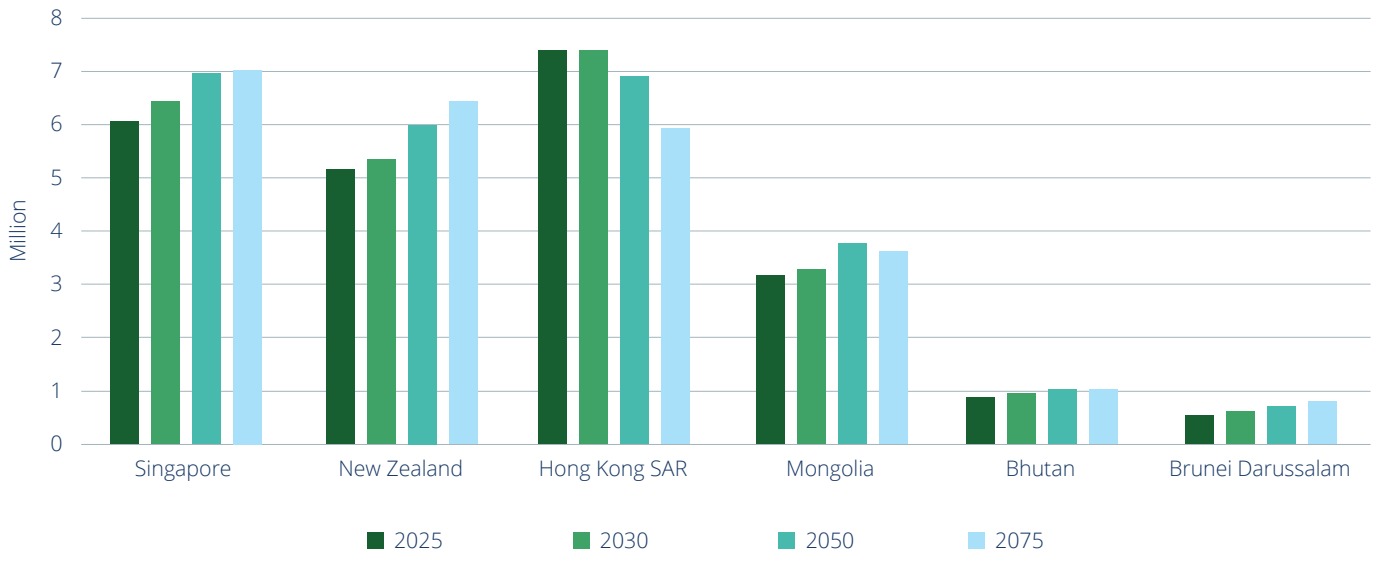


Figure 3. Projected populations for the smaller countries and regions in Asia Pacific from 2025 to 2075[1]

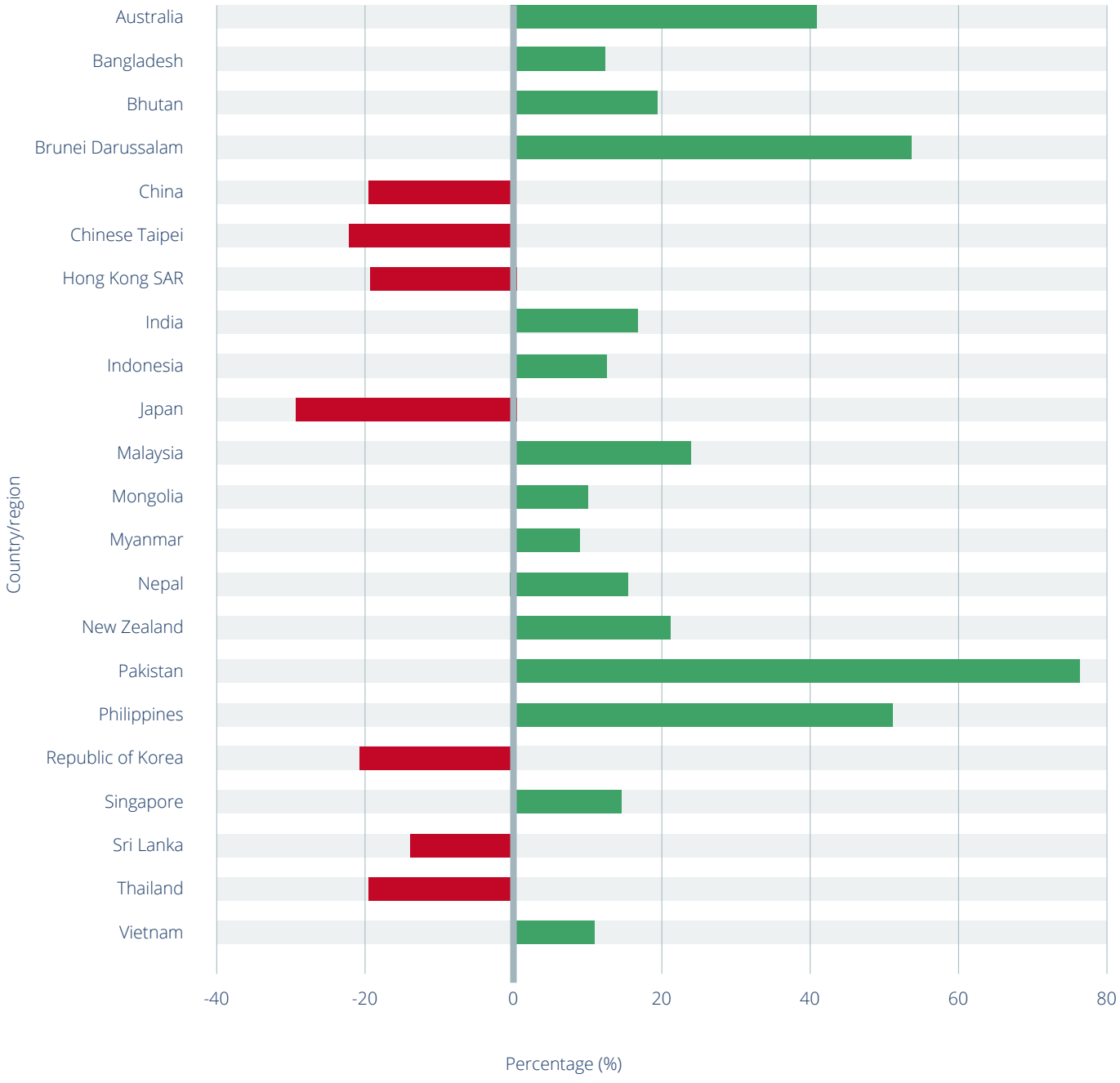


In terms of absolute change, as shown in ***Figure 4***, most countries and regions are projected to experience population growth between 2025 and 2075. However, the pace and sustainability of that growth vary significantly:

- **The most substantial projected increases** are in Pakistan (74%), Brunei Darussalam (51%), and the Philippines (50%), highlighting youthful populations and continued demographic momentum - the inherent growth that continues as large younger cohorts age into their reproductive years, even if fertility rates decline.
- In contrast, seven **countries and regions are projected to experience absolute population decline**: China (−19%), Chinese Taipei (-24%), Hong Kong SAR (−19%), Japan (−28%), Republic of Korea (−21%), Sri Lanka (−12%), and Thailand (−19%).

This stark contrast between high-growth and declining-population contexts underscores the importance of tailored, trajectory-sensitive policy responses.

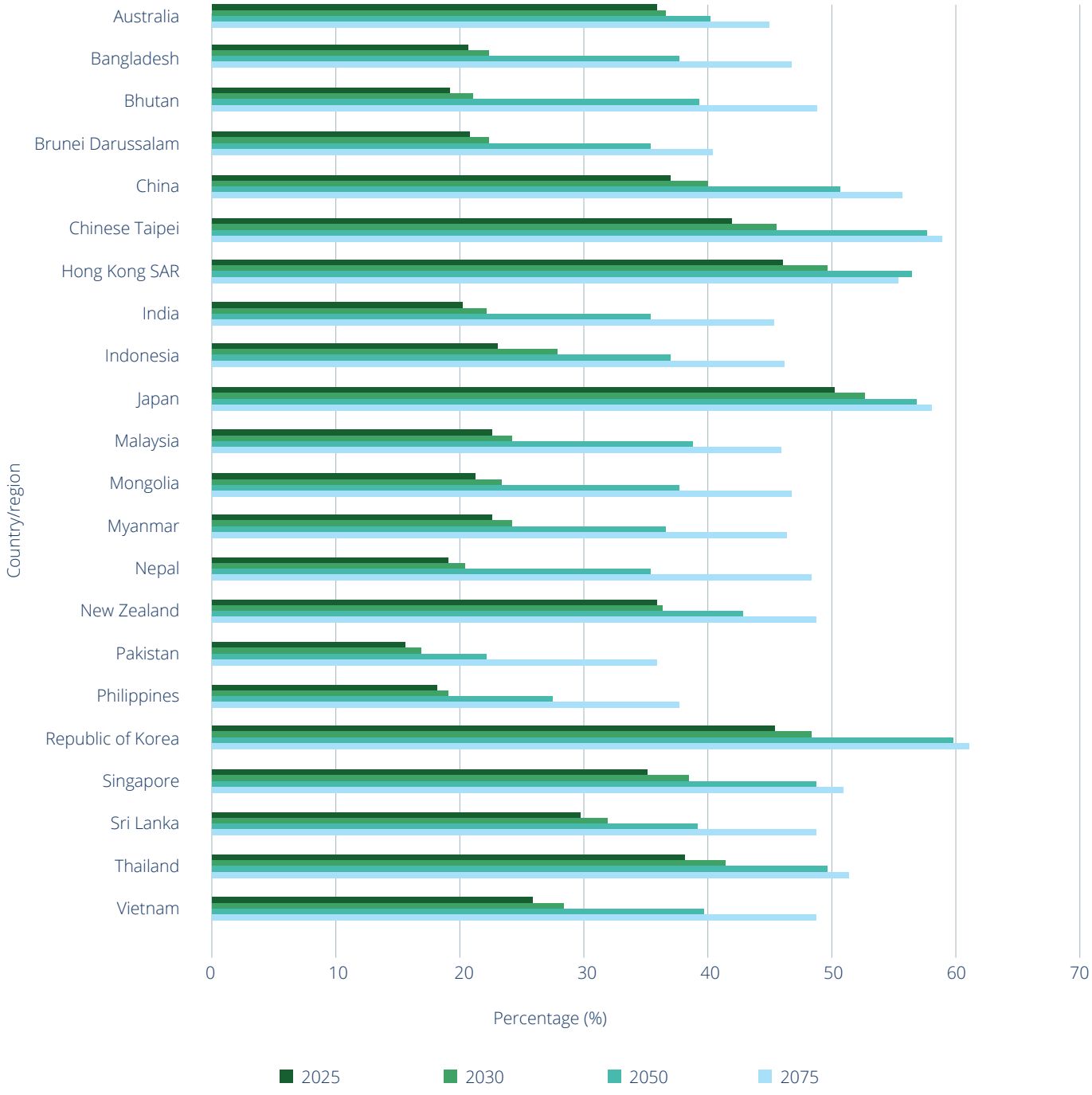
Figure 4. Percentage change in populations by country and region between 2025 and 2075[1]



In parallel with shifting population trajectories, all countries and regions across Asia Pacific are projected to experience a marked demographic transition characterised by population ageing. This has profound implications for healthcare systems, social support structures, workforce composition, and public policy. *Figures 5 to 8* present the projected changes in the proportion and growth of adults aged 50 years or older (50+) - and those aged 70 years or older (70+) - between 2025 and 2075.

The proportion of people aged 50+ years is set to increase across every country and region included in this audit. While the pace of change varies, the direction is universal. By 2075, more than half the total population is projected to be 50+ years in China (55%), Chinese Taipei (59%) Hong Kong SAR (55%), Japan (57%), the Republic of Korea (61%), Singapore (51%), and Thailand (52%). This significant demographic shift highlights the need to prepare not only health systems but broader societal structures for a rapidly ageing population.

Figure 5. Percentage of the population aged 50+ years by country and region from 2025 to 2075[1]



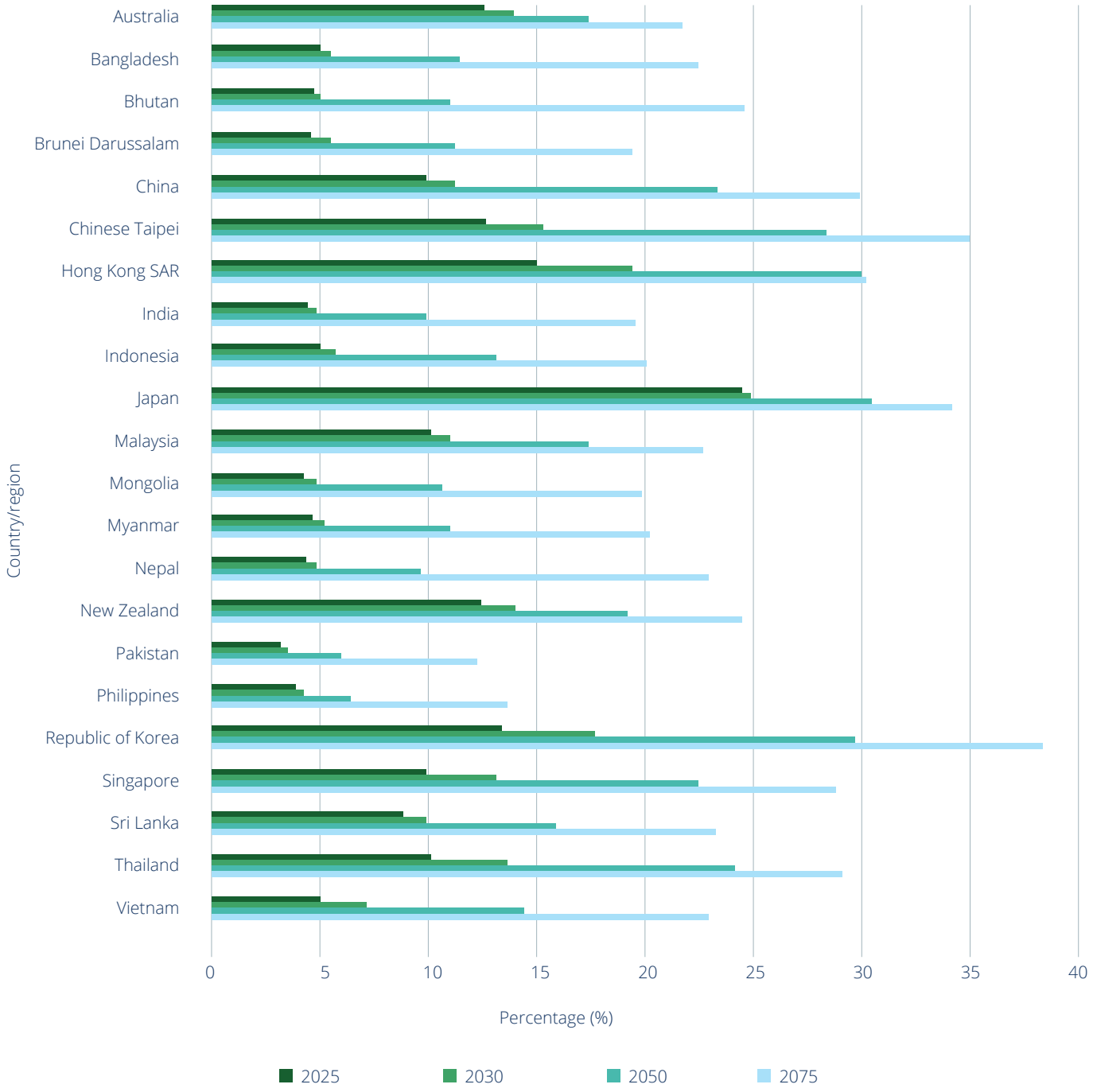
The increased proportion aged 50+ years over the next half century will be underpinned by an absolute increase in the size of the population aged 50+ years in every country in the region. The most substantial increases are projected in Nepal (159%), Bhutan (156%), and Pakistan (134%). These large percentage increases reflect younger countries undergoing rapid demographic transition and present a narrow but urgent window to put in place strategies that promote healthy ageing across the life course.

By contrast, the smallest percentage increases are seen in Japan (13%), Hong Kong SAR (17%), and Australia (29%). In these contexts, where population ageing is already well advanced, the focus shifts more squarely to optimising care models for older adults and addressing the sustainability of aged care systems.

Figure 6. Percentage change of the population aged 50+ years by country and region between 2025 and 2075[1]

In every country and region, the proportion of the population aged 70+ years is expected to grow substantially, reflecting increases in life expectancy and the ageing of large population cohorts. By 2075, at least 30% of the population is projected to be aged 70+ in China (30%), Chinese Taipei (35%), Hong Kong SAR (31%), Japan (33%), and the Republic of Korea (37%).

Figure 7. Percentage of the population aged 70+ years by country and region from 2025 to 2075[1]



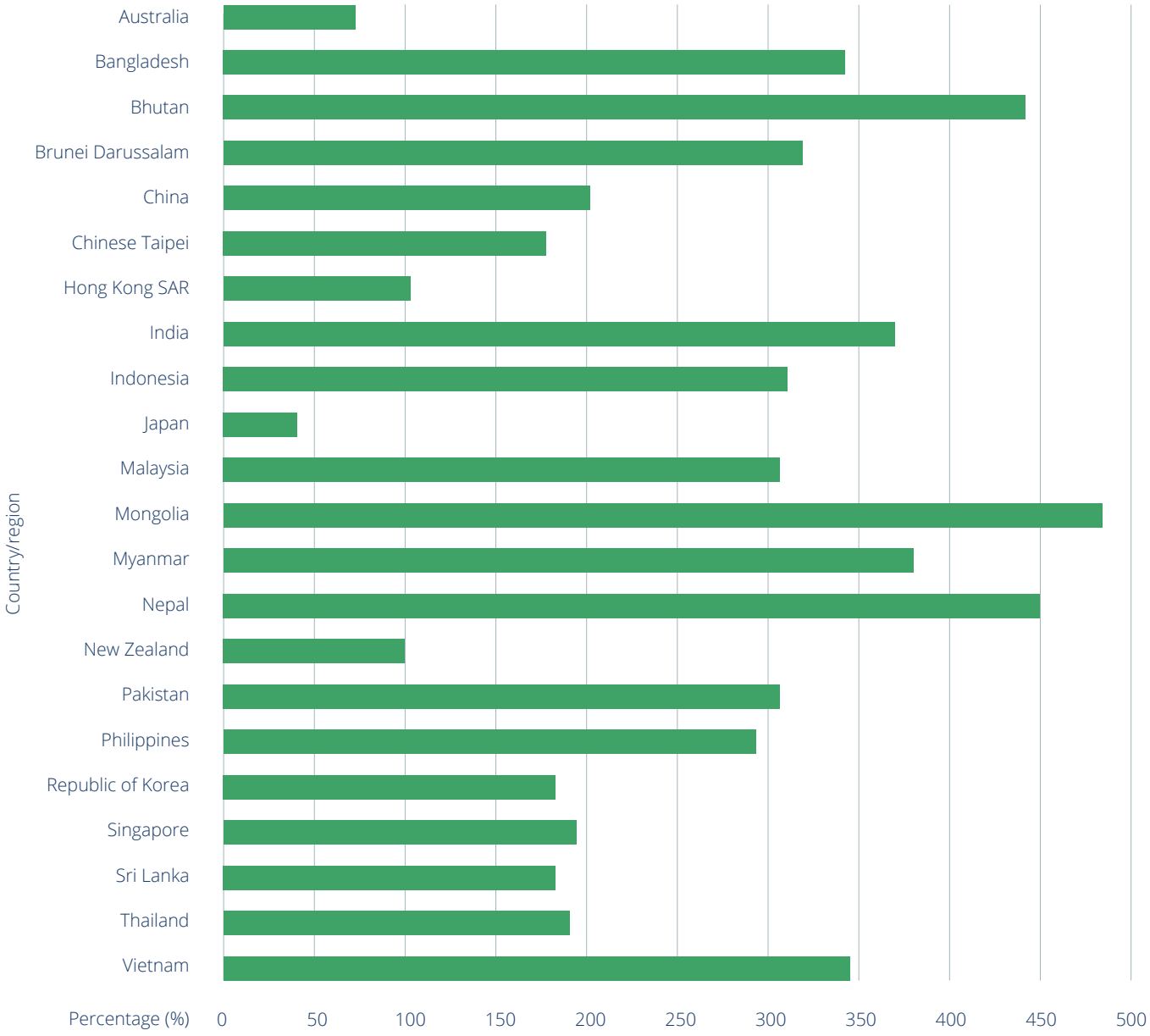
The percentage change in the population aged 70+ years is even more striking than in the 50+ years age group, particularly in countries and regions that currently have younger demographic profiles. The most dramatic increases are projected in Mongolia (474%), Nepal (452%), and Bhutan (435%), reflecting a rapid shift toward an older population. In contrast, the most modest increases are expected in Japan (39%), Australia (76%), and New Zealand (99%). However, even these comparatively smaller changes represent a substantial rise in the number of older adults.

The arrival of this new demographic era demands a transformative shift in the prevention of acute clinical events associated with long-term conditions such as fragility fractures. By 2075, average life expectancy across the region is projected to increase by nearly a decade, from 78 years in 2025 to 87 years, within a population expected to grow from 4.24 billion to 4.45 billion, representing nearly half of all humankind. Without major improvements in

preventive care, health systems will face mounting and ultimately unsustainable pressure. Primary care services, hospitals, and aged residential care will be at risk of being overwhelmed by the growing burden of age-related conditions, including osteoporosis and the fragility fractures it causes. Strengthening these systems now is essential to ensure their resilience and capacity to deliver high-quality, continuous care in the decades ahead.

In light of these demographic shifts, it is vital to assess the current readiness of health systems to support bone health and healthy ageing. The following section presents key findings from the 2025 audit of national and regional responses across Asia Pacific, highlighting progress and gaps across critical themes such as fracture data systems, clinical care pathways, diagnostic access, treatment availability, patient advocacy, and the prioritisation of osteoporosis in national health agendas.

Figure 8. Percentage change of the population aged 70+ years by country and region between 2025 and 2075[1]



REFERENCE

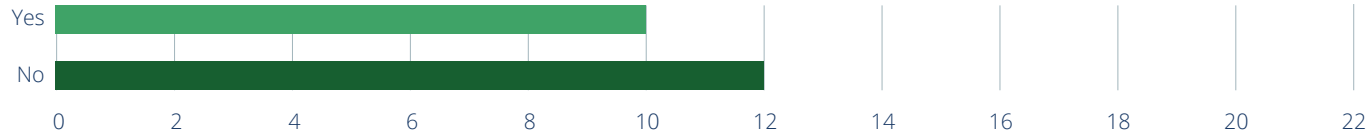
1. US Census Bureau International Database (IDB) Website. 2025. https://www.census.gov/data-tools/demo/idb/#/dashboard?dashboard_page=country&COUNTRY_YR_ANIM=2025. Accessed 22 May 2025.

KEY FINDINGS IN THE ASIA PACIFIC REGION IN 2025

CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

As illustrated in *Figure 1,* most countries and regions (12 out of 22) did not have a centralised database for fractures. The countries and regions with a centralised database included Australia, Chinese Taipei, Hong Kong SAR, Japan, New Zealand, Pakistan, Philippines, Republic of Korea, Singapore, and Thailand. Most of the centralised databases (7 out of 10) are organised at the national level. In the Philippines, their database is organised at the regional level. The databases in Hong Kong SAR and Thailand are managed at the hospital level.

Figure 1. Proportion of countries and regions with or without a centralised database for fractures

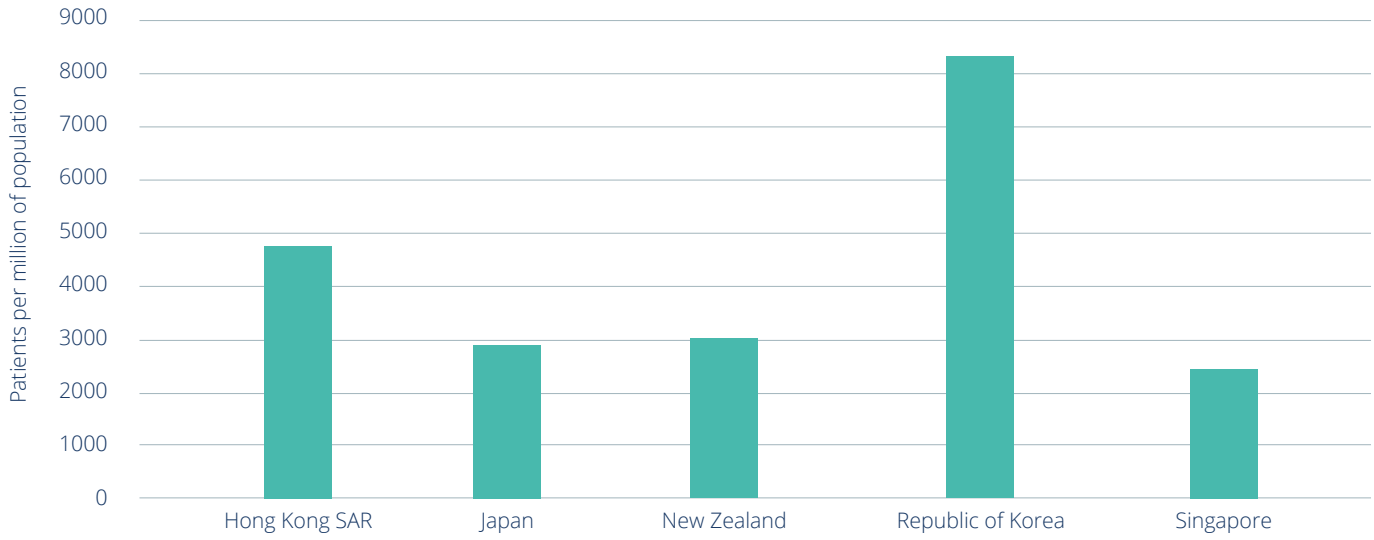


Of the 22 countries and regions surveyed, eight collect annual data on hip fractures. As shown in *Figure 2*, among the six databases with the highest rates of patient record entry per capita, there is substantial variation, ranging from 568 per million population in Australia to 1,672 per million in the Republic of Korea. In terms of absolute numbers of hip fractures documented in the databases, Japan and the Republic of Korea have the highest numbers annually, at 170,000 and 87,254, respectively. The database in the Philippines operates at a regional level and involves 14 major public hospitals as part of an on-going pilot study that has documented 509 hip fractures patients per year. The database in Thailand operates at a hospital level only and documents 100 hip fracture patients per year.

Figure 2. Annual hip fracture patient record entry into centralised databases

Six of the countries and regions collect annual data on all types of fractures. As shown in *Figure 3*, there is substantial variation in rates of patient record entry per capita, ranging from 2,510 per million population in Singapore to 8,325 per million in the Republic of Korea. In terms of absolute numbers of all fractures documented in the databases, again, Japan and the Republic of Korea have the highest numbers annually, at 363,000 and 434,500, respectively. The database in Thailand operates at a hospital level only and documents 110 fracture patients per year.

Figure 3. Annual all fracture patient record entry into centralised databases



Only Japan and Singapore collect data on other fracture types in their centralised database, including 190,000 and 6,923 fractures annually in the two countries, respectively.

SURGICAL TREATMENT OF PATIENTS BY FRACTURE TYPE

Of the 22 countries and regions surveyed, seven reported data on the proportion of patients that are treated surgically. As shown in ***Figure 4***, some variation is evident. It should be noted that the Japanese respondents to the survey stated that all patients were treated surgically when surgery was necessary, a caveat not expressed by respondents from elsewhere. Singapore is the only country that has data on surgical treatments for all fracture types. In both Australia and New Zealand, data on surgical management of hip fracture patients is collected in the *Australian and New Zealand Hip Fracture Registry (ANZHFR)*. The *New Zealand arm of the Australian and New Zealand Fragility Fracture Registry (ANZFFR)* collects detailed data on secondary fracture prevention delivered by *Fracture Liaison Services (FLS)* for patients with all types of fragility fractures. However, this does not currently include data on surgical management of non-hip fracture patients.

Figure 4. Percentage of patients treated surgically by fracture type

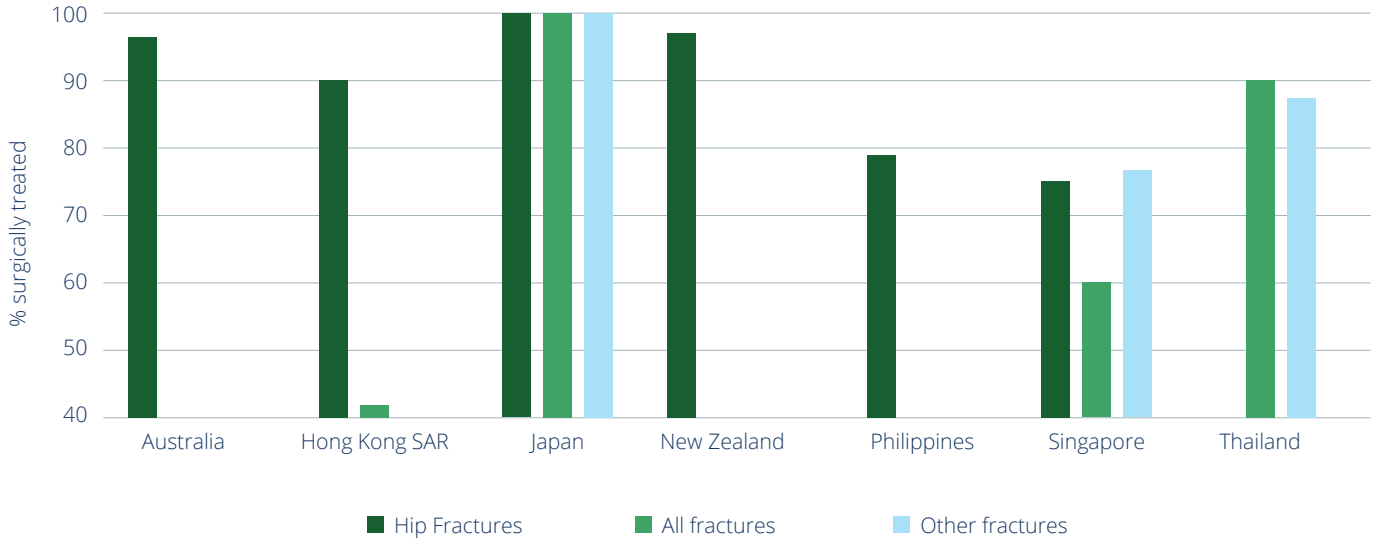


Table 1 summarises availability of centralised databases for each country and region. All centralised databases contain data for women and men. The age groups included in the centralised databases differ slightly between countries and regions. Chinese Taipei, Hong Kong SAR, Japan, and Singapore collect data for patients aged 40 years or older. The other countries start collecting data for patients aged 50-51 years or older. The Philippines are the only country to start collecting data for patients aged 61 years or older.

Table 1. Summary of centralised databases for each country and region

Country or Region	Centralised Database Available	Organisational level	Fracture Types Collected	Gender	Age Groups (years)
Australia	Yes	National Level	Hip Fractures	Women/men	50-75+ years
Bangladesh	No				
Bhutan	No				
Brunei Darussalam	No				
China	No				
Chinese Taipei	Yes	Regional Level	All	Women/men	40-75+ years
Hong Kong SAR	Yes	Hospital Level	All	Women/men	40-75+ years
India	No				
Indonesia	No				
Japan	Yes	National Level	All	Women/men	40-75+ years
Malaysia	No				
Mongolia	No				
Myanmar	No				
Nepal	No				
New Zealand	Yes	National Level	All	Women/men	50-75+ years
Pakistan	Yes	National Level	Hip Fractures	Women/men	51-75+ years
Philippines	Yes	Regional Level	Hip Fractures	Women/men	61-75+ years
Republic of Korea	Yes	National Level	All	Women/men	51-75+ years
Singapore	Yes	National Level	All	Women/men	40-75+ years
Sri Lanka	No				
Thailand	Yes	Hospital Level	All	Women/men	61-75+ years
Vietnam	No				

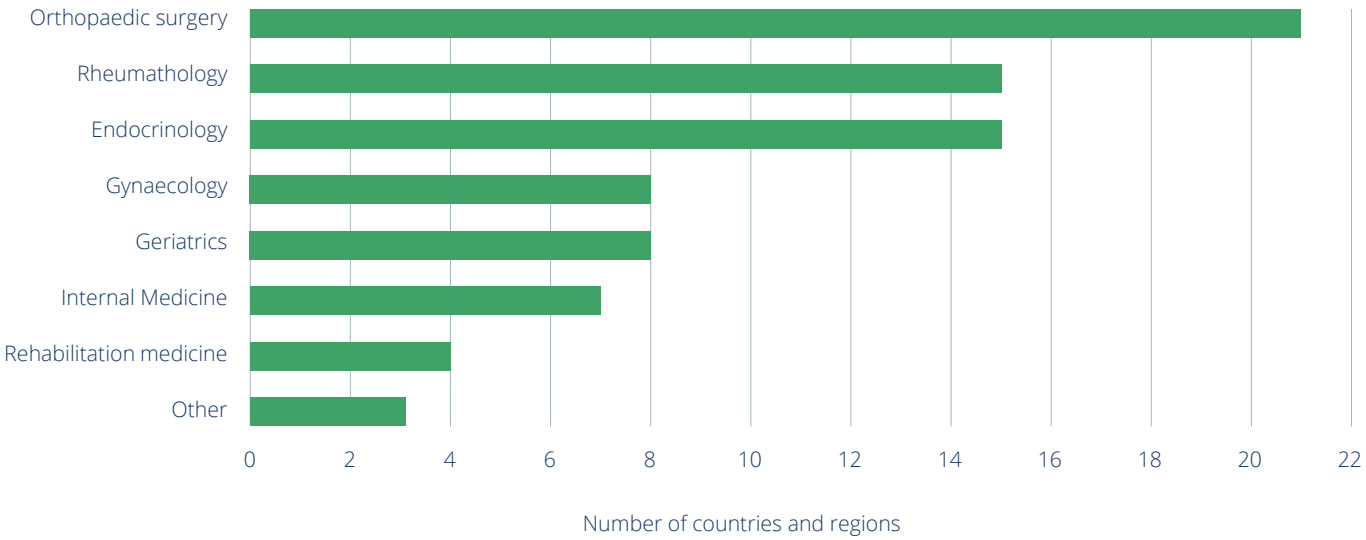
CLINICAL SPECIALTIES RESPONSIBLE FOR MANAGING OSTEOPOROSIS

As shown in *Figure 5*, most countries and regions (15/22) reported that osteoporosis is not primarily under the care of primary care physicians (PCPs). The seven countries and regions where PCPs are primarily responsible are Australia, Hong Kong SAR, Japan, Mongolia, New Zealand, Singapore, and Vietnam.

Figure 5. Is osteoporosis primarily under the care of primary care physicians?

As shown in *Figure 6*, survey respondents reported that orthopaedic surgeons are responsible for providing osteoporosis care in 21 of the 22 countries and regions surveyed. The next most commonly involved specialists are rheumatologists and endocrinologists, each cited in 15 of the 22 countries and regions.

Figure 6. Number of countries and regions with other healthcare professionals responsible for osteoporosis care



Osteoporosis is a recognised medical specialty in the following 13 countries and regions: Australia, Bhutan, China, Chinese Taipei, Hong Kong SAR, Indonesia, Japan, Mongolia, Philippines, the Republic of Korea, Singapore, Sri Lanka, and Thailand. Furthermore, the majority of respondents (15/22) reported that osteoporosis is a recognised component of specialty medical training in their country or region. As shown in *Figure 7*, these include Australia, Bangladesh, China, Hong Kong SAR, India, Indonesia, Malaysia, Myanmar, New Zealand, Pakistan, Philippines, the Republic of Korea, Singapore, Sri Lanka, and Thailand.

Figure 7. Osteoporosis and/or metabolic bone disease is a recognised component of specialty medical training

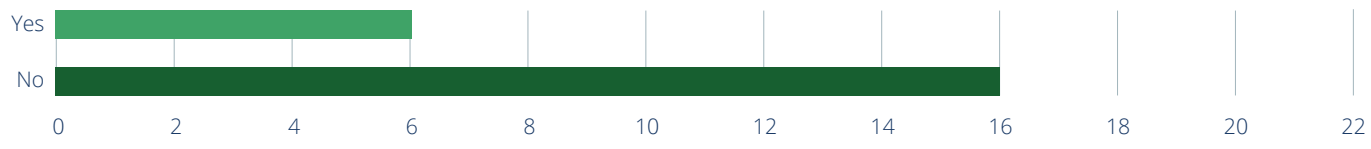
PATIENT SUPPORT ORGANISATIONS

The following nine countries and regions reported having a patient organisation focused on osteoporosis: Australia, Hong Kong SAR, Indonesia, Japan, Malaysia, Mongolia, New Zealand, Singapore, and Thailand.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY

Only the following six countries reported osteoporosis or musculoskeletal diseases to be a National Health Priority (NHP): Australia, China, Japan, New Zealand, Singapore and Thailand.

Figure 8. Osteoporosis or musculoskeletal diseases as a documented NHP

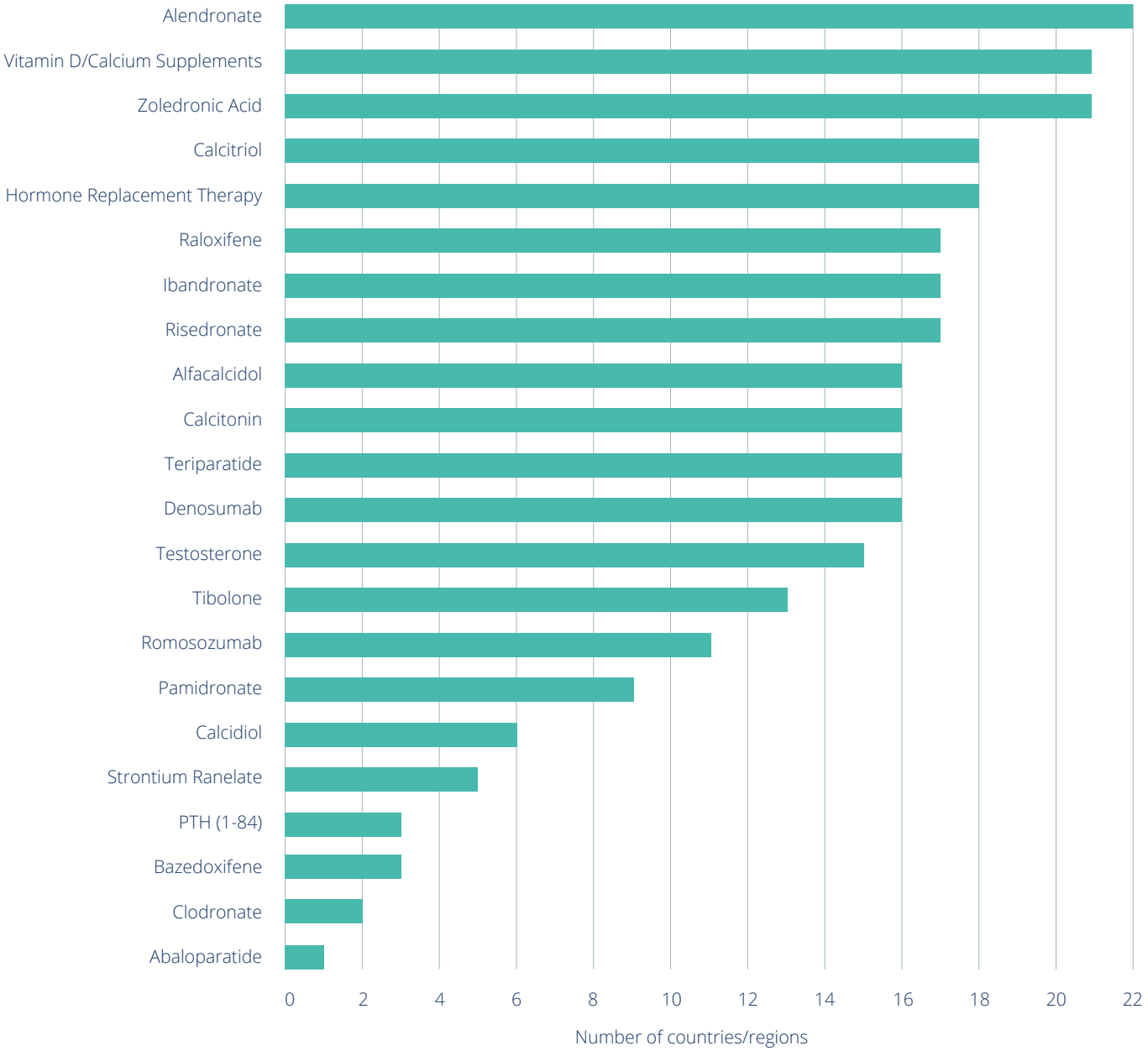


AVAILABILITY AND REIMBURSEMENT OF MEDICATION

Access to effective treatment is a cornerstone of osteoporosis management, yet across the Asia Pacific region, there is marked variation in both the availability of approved medications and the extent to which they are reimbursed. While some countries and regions provide broad access to a range of therapies through public or private insurance schemes, others face significant barriers, leaving many patients without affordable treatment options. This section examines the current landscape across the Asia Pacific region, highlighting where progress has been made, where gaps persist, and what these patterns mean for equitable access to care.

Figure 9 presents the number of countries and regions across the Asia Pacific region where key osteoporosis medications are available. Among these, the bisphosphonates - alendronate and zoledronic acid are the most widely accessible, with alendronate being available in all 22 countries and regions, while zoledronic acid is available in 21. In contrast, while teriparatide is accessible in most countries and regions, the availability of newer anabolic agents such as abaloparatide and romosozumab remains comparatively limited.

Figure 9. Availability of osteoporosis treatments across the Asia Pacific region

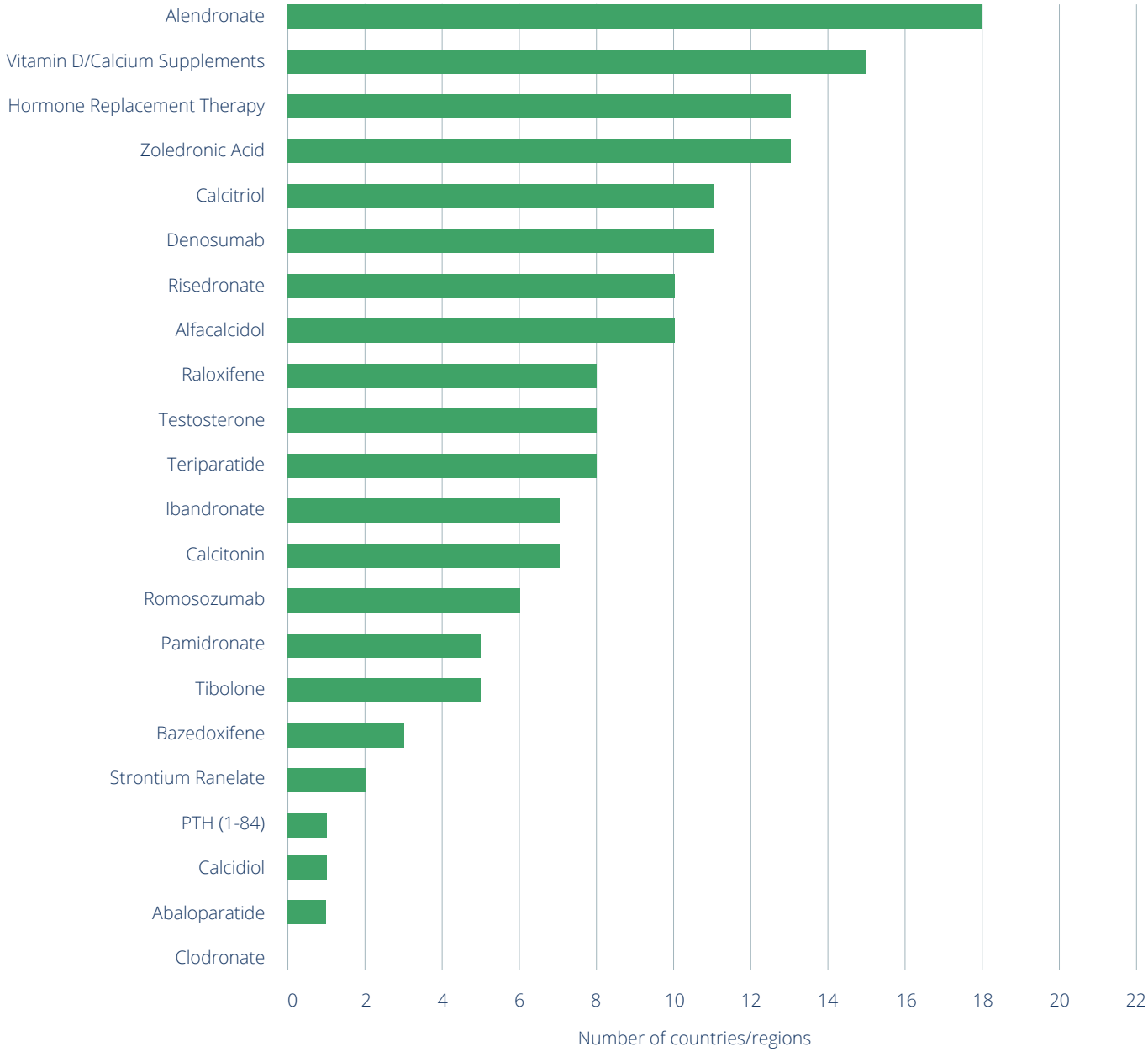


As shown in *Figure 10*, significant differences exist in terms of the number of countries and regions where the various treatment options are reimbursed. **A majority provide reimbursement for bisphosphonates (alendronate and zoledronic acid), along with calcium and vitamin D supplements:**

- **Alendronate** is reimbursed in 18 of the 22 countries and regions, including Australia, Bhutan, Brunei Darussalam, China, Chinese Taipei, Hong Kong SAR, India, Indonesia, Japan, Malaysia, Myanmar, Nepal, New Zealand, the Republic of Korea, Singapore, Sri Lanka, Thailand, and Vietnam.
- **Zoledronic acid** is reimbursed in 13 of the 22 countries and regions, including Australia, Brunei, China, Chinese Taipei, Hong Kong SAR, India, Indonesia, Japan, New Zealand, the Republic of Korea, Singapore, Sri Lanka, and Vietnam.
- **Calcium and vitamin D supplements** are reimbursed in 15 of the 22 countries and regions, including Australia, Brunei, China, Hong Kong SAR, India, Indonesia, Malaysia, Myanmar, Nepal, New Zealand, the Republic of Korea, Singapore, Sri Lanka, Thailand, Vietnam.

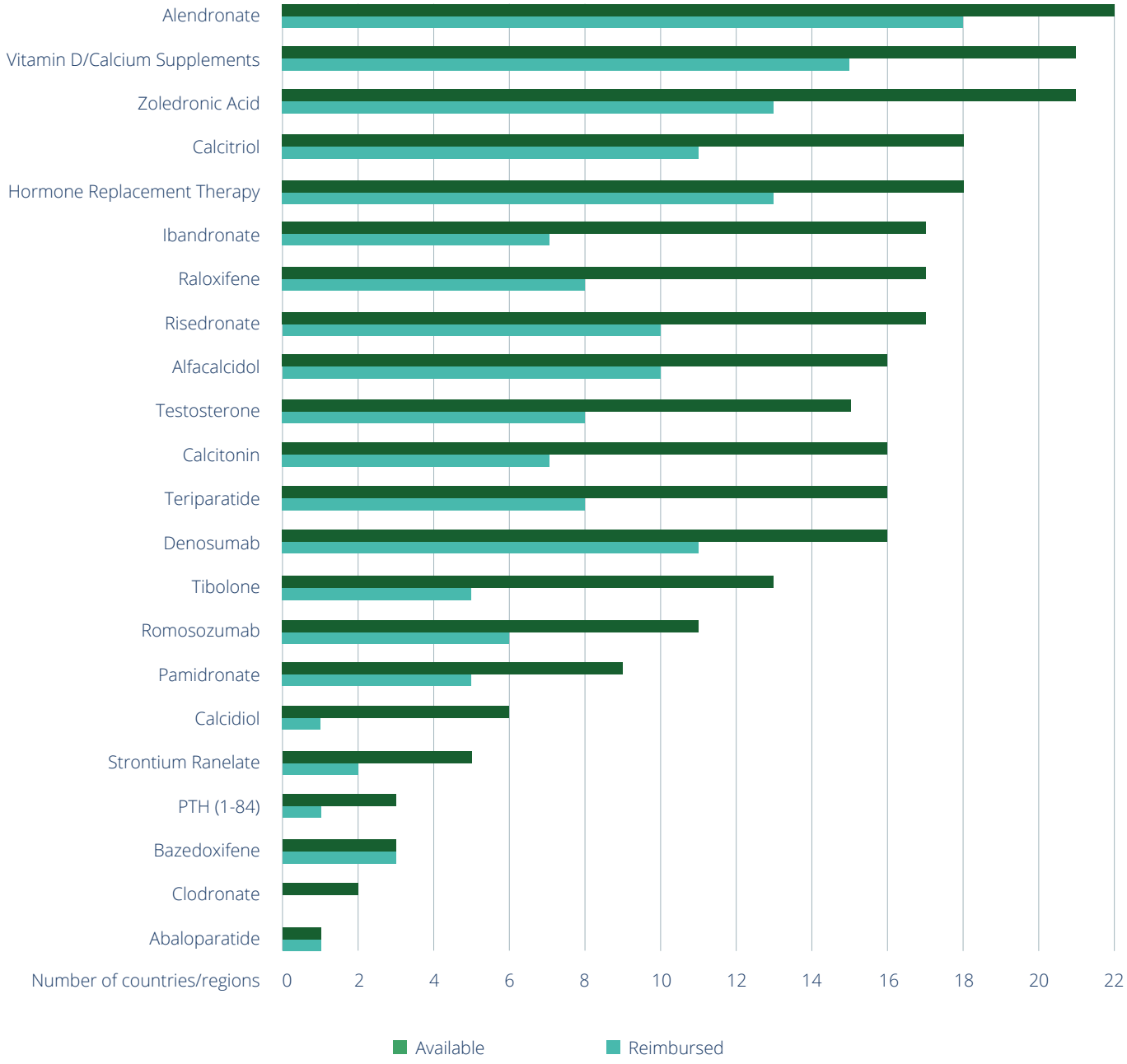
Consistent with the comparatively limited availability of the anabolic agents, teriparatide, romosozumab and abaloparatide are reimbursed in just eight, six and one country or region, respectively.

Figure 10. Reimbursement of osteoporosis treatments across the Asia Pacific region



The comparison of treatment availability and reimbursement shown in ***Figure 11*** reveals a significant disconnect. While many treatments are technically available in several countries and regions, access in practice is often constrained by limited or absent reimbursement. This disparity underscores a critical gap between regulatory approval and real-world patient access.

Figure 11. Availability of osteoporosis treatments vs. reimbursement across the Asia Pacific region



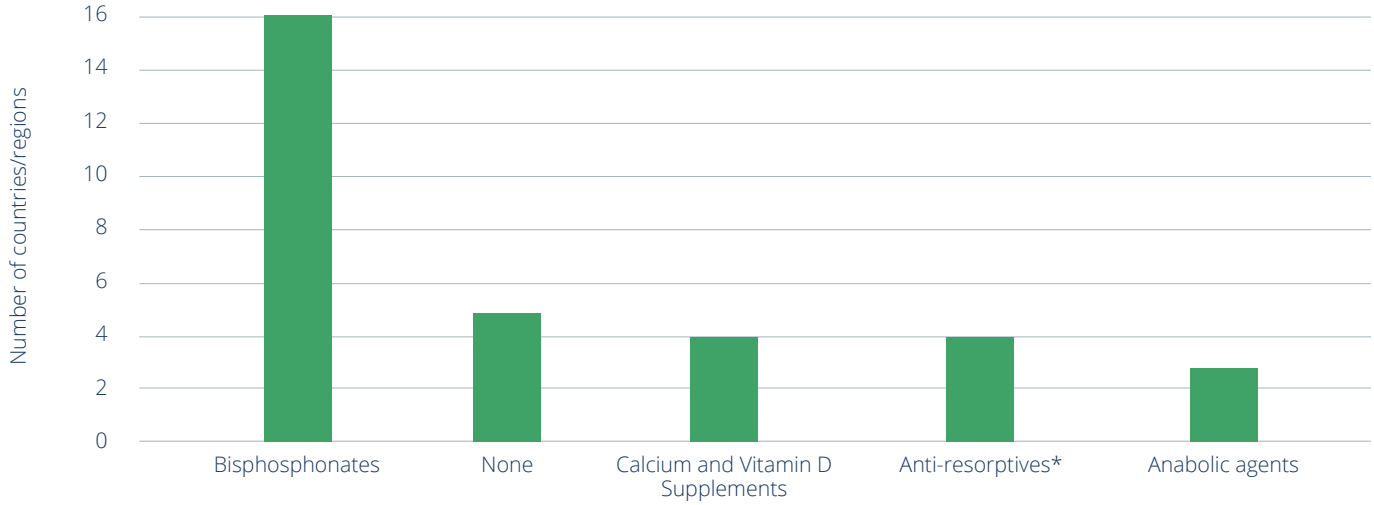
The situation regarding designation of first-line treatment status is heterogenous across the Asia Pacific region. As shown in ***Figure 12***, bisphosphonates are first-line treatments in 16 countries and regions, while anabolic agents received this designation in just three countries (Australia, China and India).

In every country or region that designates first-line treatments for osteoporosis, bisphosphonates are recommended, except in Mongolia, where calcium and vitamin D supplements are specified as first-line therapy.

In addition to bisphosphonates, Hong Kong SAR, Indonesia, and Myanmar also include calcium and vitamin D supplements as first-line options. Meanwhile, Australia, China, Hong Kong SAR, and the Republic of Korea consider other anti-resorptive therapies as part of their first-line treatment recommendations.

Countries and regions without designated first-line treatments include Bangladesh, Chinese Taipei, Japan, Pakistan, and Vietnam. The Japanese guidelines emphasise treatment selection based on individual patient profiles rather than designating a strict first-line therapy.

Figure 12. First-line treatments for osteoporosis in Asia Pacific countries and regions



** Includes bazedoxifene, calcitonin, denosumab, hormone replacement therapy, raloxifene, testosterone and tibolone.*

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

Fracture Liaison Services (FLS) are coordinated, multidisciplinary models of care designed to systematically identify, assess, and manage patients who present to urgent care services with a fragility fracture. An effective FLS typically comprises a core team including an FLS Lead Clinician, FLS Coordinator, and FLS Administrator, working in collaboration with orthopaedic, rehabilitation, and primary care services. High-performing FLS operate according to a structured clinical pathway defined by the internationally recognised **5IQ model**, which outlines six core aspects of care:

1. **Identify**
   all patients presenting with a fragility fracture at the participating institution.
2. **Investigate**
   through fracture risk assessment, bone mineral density testing, and evaluation of falls risk.
3. **Inform**
   patients and their families about bone health, fracture risk, and evidence-based strategies to reduce future risk.
4. **Intervention**
   with pharmacological therapies for osteoporosis and referrals to non-pharmacological strategies such as falls prevention programmes.
5. **Integrate**
   long-term follow-up and adherence support to ensure sustained benefit from interventions.
6. **Quality**
   improvement enabled by benchmarking of FLS performance against evidence-based clinical standards through participation in national or regional registries.

This structured approach ensures that each patient is offered a comprehensive secondary preventive pathway. A robust body of international evidence confirms that well-implemented FLS are associated with improved treatment initiation and adherence, reduced rates of subsequent fractures, and cost savings for healthcare systems. Consequently, FLS are increasingly recognised as the standard of care for secondary fracture prevention in ageing populations.

The *International Osteoporosis Foundation's* flagship initiative, *Capture the Fracture®*, supports this global effort by promoting the implementation of FLS worldwide, providing a Best Practice Framework aligned with the 5IQ model, and offering recognition through its global Map of Best Practice *https://www.capturethefracture.org/.*

Survey participants were asked to estimate the proportion of hospitals in their country or region that have an FLS in place. As shown in ***Figure 13***, nearly one-quarter of respondents reported that no hospitals in their country or region had established an FLS. A further 54% indicated that FLS were available in only 1–24% of hospitals. Notably, only two countries - New Zealand and Singapore - reported that more than half of their hospitals had an FLS in place, highlighting the limited implementation of these services in most health systems.

Figure 13. FLS Coverage: Proportion of countries and regions by percentage of hospitals with an established Fracture Liaison Service

The number of FLS that feature on the IOF Capture the Fracture® Map of Best Practice is shown in *Table 2*.

Table 2. FLS in the Asia Pacific region featured on the IOF Capture the Fracture® Map of Best Practice

Country or Region	FLS on the CTF Map	Gold	Silver	Bronze	Blue
Australia	15	3	6	3	3
Bangladesh	0	0	0	0	0
Bhutan	2	0	0	0	2
Brunei Darussalam	0	0	0	0	0
China	134	31	50	42	11
Chinese Taipei	54	11	14	24	5
Hong Kong SAR	7	0	2	4	1
India	4	0	0	0	4
Indonesia	0	0	0	0	0
Japan	131	24	36	62	9
Malaysia	27	1	0	15	11
Mongolia	0	0	0	0	0
Myanmar	0	0	0	0	0
Nepal	0	0	0	0	0
New Zealand	19	12	5	2	0
Pakistan	0	0	0	0	0
Philippines	18	0	1	3	14
Republic of Korea	6	0	0	4	2
Singapore	3	1	0	2	0
Sri Lanka	1	0	0	0	1
Thailand	21	4	7	8	2
Vietnam	4	1	1	2	0
Total	**446**	**88**	**122**	**171**	**65**

n.b. Data as of 30th October 2025

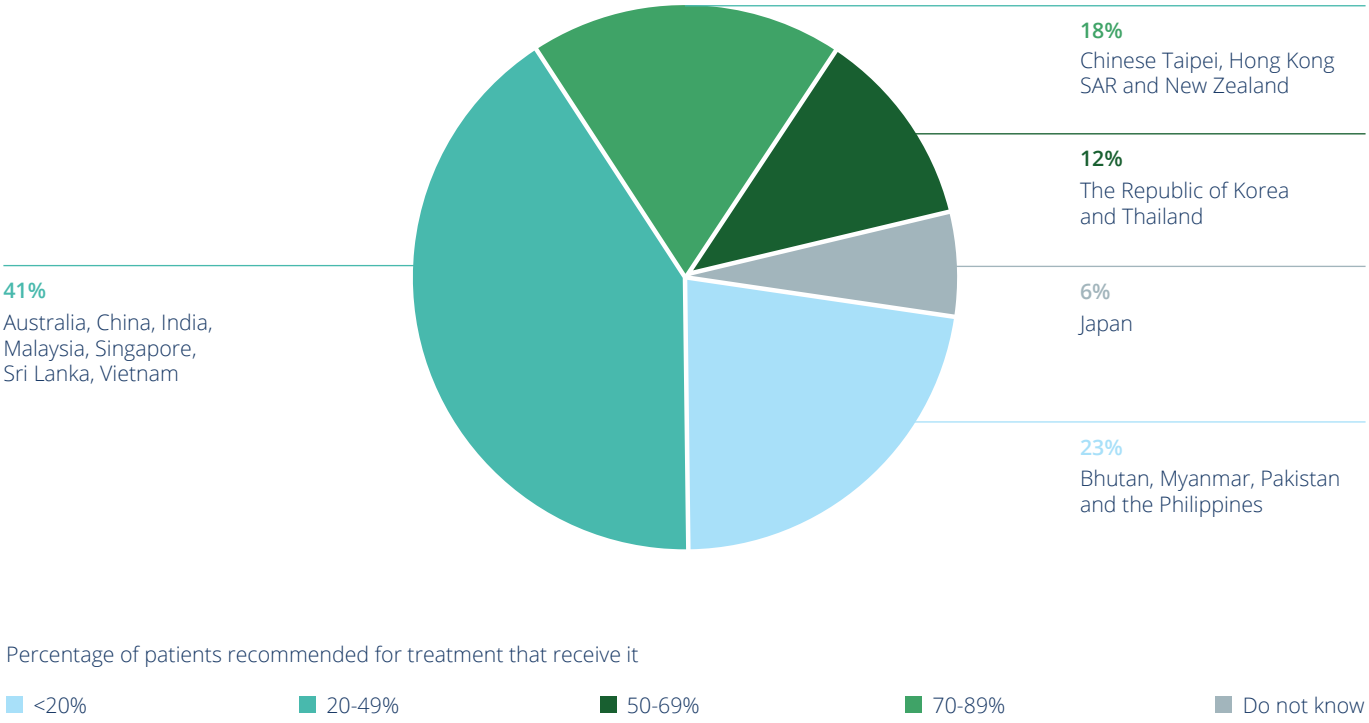
Survey participants were asked to estimate the proportion of patients in their country or region that are identified by an FLS by fracture type. The overall averages were 27%, 18% and 13% for hip, vertebral and other fractures, respectively. However, the degree of variation was striking, with some countries reporting 0% for all three fracture types, while in New Zealand, the rates reached 96% for hip fractures, 100% for vertebral fractures, and 60% for other fracture types.

Reimbursement mechanisms for FLS vary considerably across countries and regions, with funding sources including local health services (28%), national health systems (36%), and private sector contributions (36%). In Chinese Taipei, India, Malaysia, the Philippines, Singapore, and Thailand reimbursement for FLS is supported through a combination of funding mechanisms, including contributions from local or regional health authorities, national health systems, and private payers. By contrast, in Myanmar, Pakistan and Sri Lanka, FLS rely exclusively on private funding.

Regarding the key question of what proportion of patients recommended for osteoporosis treatment receive it, *Figure 14* reveals substantial variation across the 22 countries and regions. In Chinese Taipei, Hong Kong SAR and New Zealand the highest rates of treatment initiation were recorded, with 70-89% of patients who received a recommendation subsequently beginning therapy. Meanwhile, the Republic of Korea and Thailand reported intermediate uptake, with approximately 50–69% of recommended patients going on to initiate treatment.

Almost two-thirds of respondents indicated that less than half of treatment recommendations resulted in the patient taking the therapy. Specifically, in Australia, China, India, Malaysia, Singapore, Sri Lanka and Vietnam, 20-49% of patients recommended for treatment received it, whereas in Bhutan, Myanmar, Pakistan, and the Philippines, the proportion was below 20%. Notably, no country or region reported treatment initiation rates of 90% or higher.

Figure 14. Treatment uptake: Proportion of countries and regions by percentage of patients recommended for osteoporosis treatment that receive it



SURGICAL TREATMENT RATES AND TIME TO SURGERY FOR HIP FRACTURE PATIENTS

Overall, 23% of respondents reported that more than 90% of hip fracture patients in their country or region received surgical management. In comparison, 27% and 50% of respondents indicated that 76–90% and 51–75% of patients, respectively, were managed surgically. The distribution of countries and regions achieving each of the three levels of surgical management is shown in *Figure 15*.

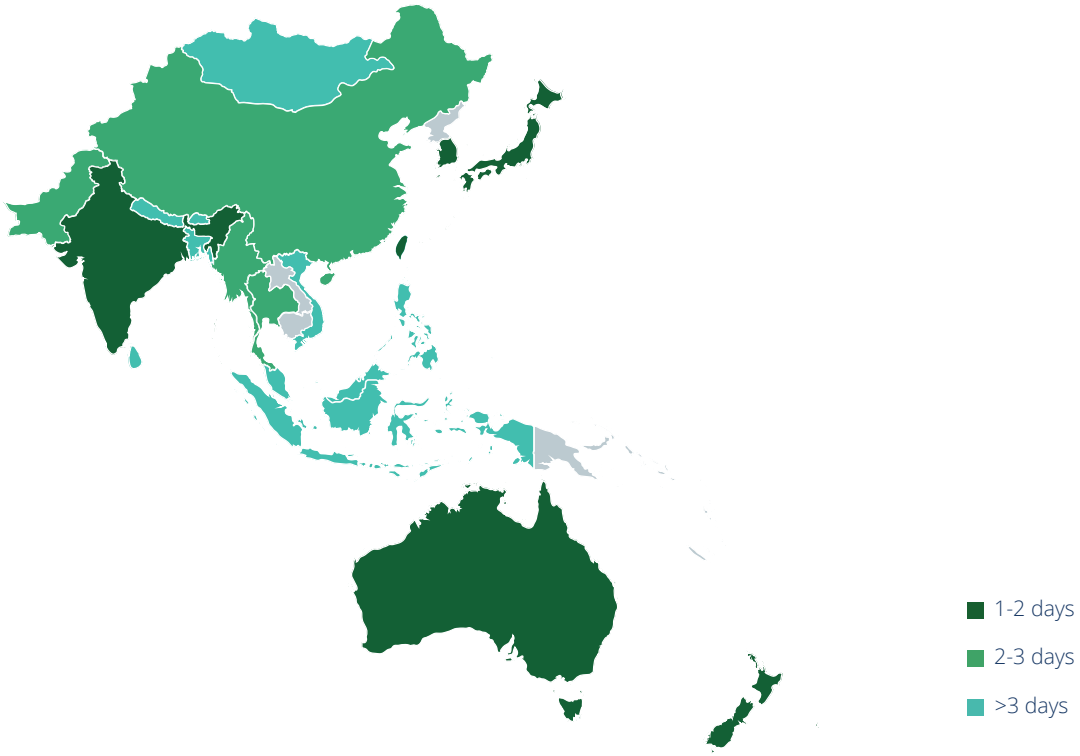
Figure 15. Countries and regions by proportion of hip fracture patients managed surgically

Timely surgical intervention is widely recognised as a critical component of high-quality hip fracture care, with numerous clinical guidelines and standards recommending that surgery be performed within 36 to 48 hours of hospital admission. Examples of countries in the Asia Pacific region that have adopted these recommendations include:

Australia and New Zealand	Japan	Malaysia
The second edition of the *Hip Fracture Care Clinical Care Standard*, published in 2023, advises that individuals with a hip fracture should undergo surgery within 36 hours of their initial presentation to hospital.	In 2022, the Central Social Insurance Medical Council of the Japanese Ministry of Health, Labour and Welfare introduced a new reimbursement scheme for hip fracture care, with early surgical intervention - within 48 hours of injury - identified as a key component.	The Malaysian Ministry of Health's 2023 *Clinical Practice Guidelines on the Management of Geriatric Hip Fracture* recommend that medically stable patients undergo surgery within 48 hours of admission to optimise recovery and reduce adverse outcomes.

Overall, 36% of respondents indicated that the average waiting time for hip fracture surgery in their country or region was 1-2 days. In comparison, 23% reported an average waiting time of 2-3 days, while 41% stated that it exceeded 3 days. The distribution of countries and regions by average time to surgery is presented in *Figure 16*.

Figure 16. Countries and regions by average waiting time for hip fracture surgery



GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

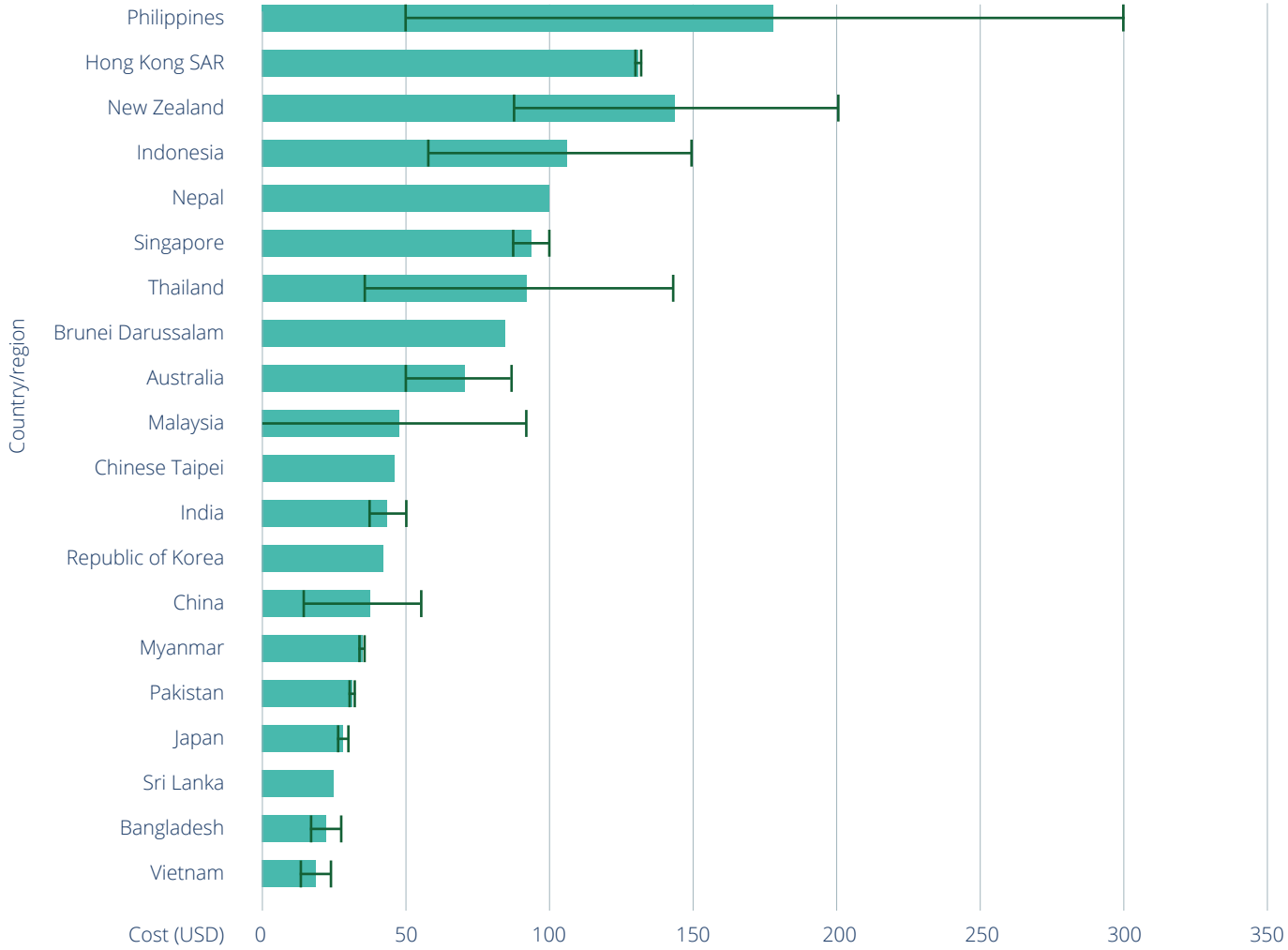
The majority of respondents – 16 out of 22 - indicated that osteoporosis clinical practice guidelines are available in their country or region. However, guidelines have not yet been published in Bangladesh, Bhutan, Brunei Darussalam, Mongolia, Nepal, and Sri Lanka.

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

Waiting times for DXA scans varied considerably across the region. In about half of the countries and regions surveyed including Bangladesh, China, India, Indonesia, Japan, Myanmar, Nepal, Pakistan, the Philippines, the Republic of Korea, Sri Lanka, and Vietnam, DXA was reported to be available within 0–3 days at centres where machines are present, typically large urban hospitals or private facilities. However, in many of these countries, overall access remains severely constrained, with only a few DXA units available nationwide.

In Chinese Taipei, Hong Kong SAR, Malaysia, Singapore, and Thailand, access was uneven, with public hospitals that often manage substantially higher patient volumes reporting considerably longer waiting times than private facilities. For example, in Hong Kong SAR, the average waiting time for a DXA scan is 190 days; however, this varies significantly depending on the healthcare setting. In private hospitals, the average wait is approximately two weeks, whereas in public hospitals, it extends to around one year. No information was provided in response to this question from Bhutan, Mongolia and New Zealand. As shown in *Figure 17*, the average cost of a DXA scan varies considerably across the Asia Pacific region, ranging from USD 175, USD 128, and USD 140 in the Philippines, New Zealand and Hong Kong SAR, respectively, to as little as USD 25, USD 20, and USD 15 in Sri Lanka, Bangladesh and Vietnam, respectively. The average cost of a DXA scan largely depends on whether the patient is assessed in a private or public hospital. For example, in the Philippines, the cost can range from USD 50 to USD 300, depending on the healthcare setting. No information was provided in response to this question from Bhutan and Mongolia.

Figure 17. Average cost of a DXA scan for countries and regions



n.b. The bars indicate estimated standard deviations.

Table 3 provides a summary of DXA access, associated costs, reimbursement status, and whether reimbursement is considered a barrier to accessing DXA across the countries and regions surveyed.

Table 3. Summary of DXA access, costs, and reimbursement status by country and region

Country or Region	Waiting time (d)	Cost (USD)	Is DXA reimbursed?	Is reimbursement a barrier to accessing treatment?
Australia	Variable but up to 7 days	50-80	Yes; 75 to 85% of the cost of a DXA scan may be reimbursed under the Medicare Benefits Schedule (MBS) if the patient meets the following criteria: • People with diagnosed osteoporosis; • Anyone with one or more previous fractures from a minor incident; • Corticosteroids use (common for asthma); • Women with early menopause; • Men with low testosterone; • Individuals with coeliac disease (or other malabsorption conditions), overactive thyroid or parathyroid conditions, rheumatoid arthritis, liver or kidney disease; • Those aged 70 years or over	Potentially for people who do not meet the MBS criteria and are not eligible for reimbursement. It may also be a barrier for those from low socio-economic status groups even when eligible for reimbursement.
Bangladesh	0-3	15-25	Limited to no reimbursement	Yes
Bhutan	No data	No data	No data	No data
Brunei Darussalam	30	80	Yes	No
China	0-2	13.75-56	Yes >50%-100%	No
Chinese Taipei	In major urban medical centres, 30 days. In rural hospitals, ranges from 1 to 7 days.	40	Partially	Yes
Hong Kong SAR	1-2 years in public hospitals, 1 week or less in private sector	125-130	Free in public setting, no reimbursement needed	Yes
India	0-3 days although longer in public sector	25-50	Yes, in public hospitals Limited to no reimbursement in private hospitals	Yes
Indonesia	0-3	60-150	Limited to no reimbursement	Yes
Japan	0	24-30	Yes	No
Malaysia	30-90 days in public hospitals, 0-1 day in private hospitals	0-34 in public hospitals, 43-85 in private hospitals	Yes, in majority of public hospitals and yes for those in private hospitals with insurance	Yes

Mongolia	No data	No data	No data	No data
Myanmar	0-3	30-35	No	Yes
Nepal	0	100	No	Yes
New Zealand	No data	80-200	Yes, however, there is considerable regional variation in access to publicly funded DXA.	In localities with limited access to publicly funded DXA, this can be a barrier to treatments that require Special Authority Approval by PHARMAC.
Pakistan	1-3	25-30	Some private insurance provide coverage.	Yes. As it is an expensive test mostly available in the private sector.
Philippines	0	50-300	No	Yes
Republic of Korea	1	36.2 / free at specific age less than 40	Yes	No. Only available once per year.
Singapore	Public sector: 4-5 weeks Private sector: 3-7 days	75-100	Yes partially	Yes
Sri Lanka	0-2	25	Yes	No
Thailand	0-60	30-140	Yes. Only civilian welfare system (20% of Thai people) can be fully reimbursed.	Yes partially
Vietnam	0	10-20	Yes, but limited to only when prescribed by a rheumatologist.	Yes

As shown in *Table 4*, respondents from eight countries provided information on access, costs and reimbursement status in relation to quantitative ultrasound.

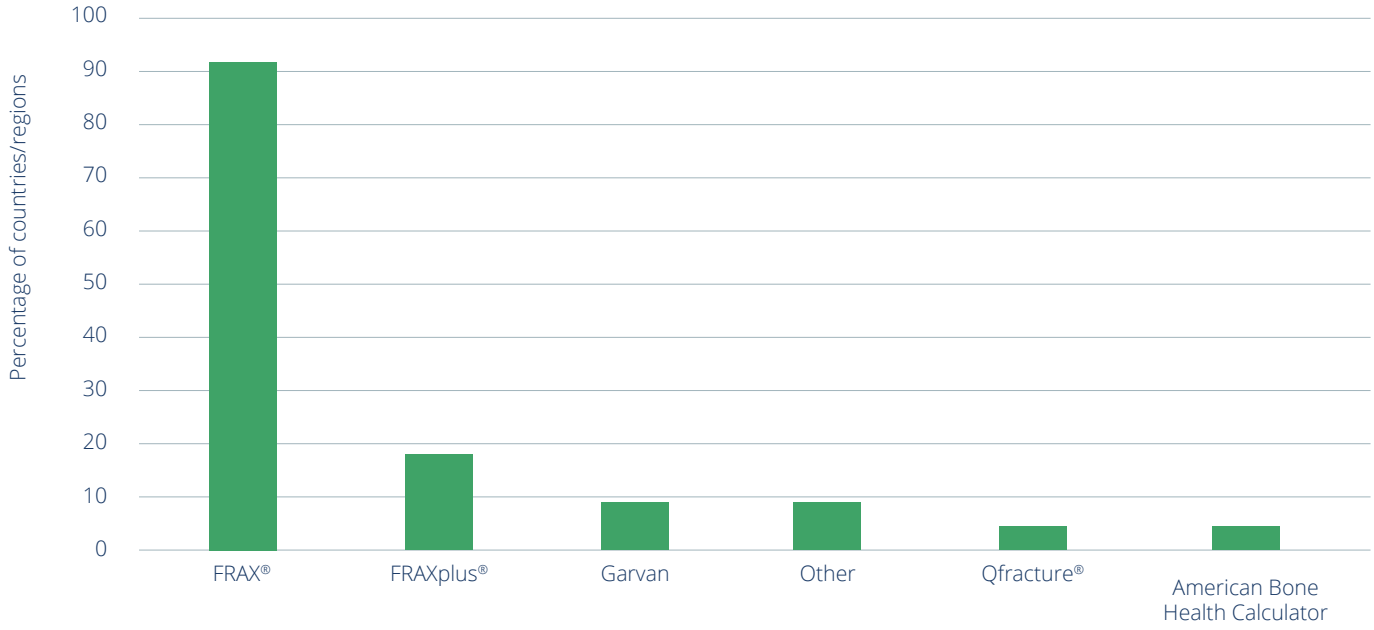
Table 4. Summary of Quantitative Ultrasound access, costs, and reimbursement status by country

Country or Region	Waiting time (d)	Cost (USD)	Is DXA reimbursed?	Is reimbursement a barrier to accessing treatment?
Bangladesh	0-7	8-20	Limited to no reimbursement	Yes
Brunei Darussalam	0-7	No data	Yes	No
China	0	10-30	Limited to no reimbursement	No
India	0	15	Sometimes	Yes
Indonesia	1	50	Yes	Yes
Japan	0	6	Yes	No
Myanmar	0	15	Limited to no reimbursement	No
Pakistan	1-3	25-30	Some private insurance provides coverage. Free at some places under NGO.	Yes

FRACTURE RISK ASSESSMENT TOOLS

Most countries and regions surveyed - 20 out of 22 - reported the use of at least one type of fracture risk assessment tool, with Mongolia and Vietnam being the only exceptions. As shown in ***Figure 18***, the most used tools were FRAX® and FRAXplus®, followed by the Garvan fracture risk calculator.

Figure 18. Proportion of countries and regions reporting use of Fracture Risk Assessment Tools



Among the 22 countries and regions surveyed, opinions on the widespread use of the FRAX® tool were evenly split. Respondents from Australia, Bhutan, Chinese Taipei, Hong Kong SAR, Indonesia, Japan, New Zealand, Philippines, Singapore, and Thailand reported that FRAX® is widely used in their setting. However, respondents from Bangladesh, China, India, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, Republic of Korea, and Vietnam indicated that its use is limited or not widespread.

QUALITY INDICATORS

Across the Asia Pacific region, the development and routine use of national quality standards for hip fracture care and secondary fracture prevention remain at a relatively early stage. While the *IOF Capture the Fracture® Best Practice Framework* provides an internationally recognised set of standards for benchmarking Fracture Liaison Services (FLS) and has driven significant quality improvement across the region (as illustrated in ***Table 2*** above), there are additional benefits to developing national clinical standards. National standards can foster broad engagement and "ownership" among local healthcare professional associations through consultation processes, and when used in tandem with international benchmarking, they can provide both global comparability and highly granular, locally relevant feedback to support continuous quality improvement.

The *APCO Bone Health QI tool kit*, developed by APCO, is designed to help healthcare providers (HCPs) understand the baseline variables and current state of osteoporosis care in any given institution or health care practice, enable benchmarking clinical practice against the APCO Framework, evidence-based clinical practice guidelines or established protocols for the chosen standard of care and to use the findings to then improve the quality of care through iterative Plan-Do-Study-Act (PDSA) cycles. These resources are available from the APCO website at *https://apcobonehealth.org/*.

Countries and territories can be broadly grouped into three categories. The most advanced examples come from Australia, Japan, New Zealand, and Thailand, each of which has established national clinical standards incorporating key performance indicators for hip fracture care and/or FLS, with regular, often annual, public reporting. In these countries, national or binational registries are pivotal, enabling systematic benchmarking of provider performance against the agreed standards and supporting both transparency and sustained quality improvement. These mature frameworks also present valuable opportunities for collaboration with colleagues in settings where national standards are less developed.

A second group - including Bhutan, China, Chinese Taipei, Hong Kong SAR, Indonesia, Mongolia, Myanmar, Nepal, Philippines, Republic of Korea, and Singapore - has various forms of quality indicators or guidelines in place, though with limited information on scope or reporting frequency. For these settings, enhancing transparency and increasing the regularity and comprehensiveness of reporting could accelerate improvements.

In contrast, Bangladesh, Brunei Darussalam, India, Malaysia, Pakistan, Sri Lanka, and Vietnam currently report no formal national quality standards for hip or other fragility fractures. In these countries, introducing even basic indicators - and leveraging the experience of neighbours with established national frameworks - could be a critical step toward improving care quality and outcomes for millions of fragility fracture patients.

THE GRAPHICAL OVERVIEW OF REGIONALLY REPORTED DATA

The graphical overview was designed to visually synthesise information self-reported by national representatives across 11 key domains of osteoporosis care and policy readiness. Its purpose is not to benchmark or rank countries, but to offer a clear, high-level overview of the reported presence or absence of key structural elements such as national databases, guideline availability, DXA access, and FLS implementation across the Asia Pacific region. This format enables readers and policymakers to grasp patterns, gaps, and areas of convergence at a glance, while recognising the heterogeneity in data maturity and system development across countries.

CALCULATIONS EXPLAINED

Each indicator was derived directly from responses to the audit questionnaire. No external weighting, scoring algorithm, or composite index was applied. Instead:

- Each domain was categorised according to whether the country reported complete presence, partial presence, absence, or no available data, corresponding visually to green (excellent), yellow (good), red (poor), and grey (no data).
- The "overall" bar represents the aggregate qualitative summary across all domains, reflecting the pattern of reported responses rather than a numerical average or quantitative score.
- No inferential comparisons between countries were performed, and no external validation or adjustment was applied.

This approach maintains transparency and avoids overstating precision, ensuring that the figure functions as a descriptive visualisation rather than a performance ranking.

OVERVIEW OF REGIONALLY REPORTED DATA

	Database[1]	Specialist Osteoporosis[2]	Patient Organisation[3]	NHP[4]	Treatment[5]	FLS[6]	Hip Surgery[7]	Guidelines[8]	DXA[9]	Risk Assessment[10]	Quality Indicators[11]	**Overall Performance**
Australia	●	●	●	●	●	●	●	●	●	●	●	●
Bangladesh	●	●	●	●	●	●	●	●	●	●	●	●
Bhutan	●	●	●	●	●	●	●	●	○	●	●	●
Brunei Darussalam	●	●	●	●	●	●	●	●	●	●	●	●
China	●	●	●	●	●	●	●	●	●	●	●	●
Chinese Taipei	●	●	●	●	●	●	●	●	●	●	●	●
Hong Kong SAR	●	●	●	●	●	●	●	●	●	●	●	●
India	●	●	●	●	●	●	●	●	●	●	●	●
Indonesia	●	●	●	●	●	●	●	●	●	●	●	●
Japan	●	●	●	●	●	●	●	●	●	●	●	●
Malaysia	●	●	●	●	●	●	●	●	●	●	●	●
Mongolia	●	●	●	●	●	●	●	●	○	●	●	●
Myanmar	●	●	●	●	●	●	●	●	●	●	●	●
Nepal	●	●	●	●	●	●	●	●	●	●	●	●
New Zealand	●	●	●	●	●	●	●	●	○	●	●	●
Pakistan	●	●	●	●	●	●	●	●	●	●	●	●
Philippines	●	●	●	●	●	●	●	●	●	●	●	●
Republic of Korea	●	●	●	●	●	●	●	●	●	●	●	●
Singapore	●	●	●	●	●	●	●	●	●	●	●	●
Sri Lanka	●	●	●	●	●	●	●	●	●	●	●	●
Thailand	●	●	●	●	●	●	●	●	●	●	●	●
Vietnam	●	●	●	●	●	●	●	●	●	●	●	●

Legend

- ● Excellent
- ● Good
- ● Poor
- ○ No data

Criteria

[1]Structure of centralised database; fracture types captured; age groups included
[2]Primary management of osteoporosis by general practitioners (GPs)
[3]Patient organisations dedicated to osteoporosis
[4]Osteoporosis designated as a National Health Priority (NHP)
[5]Available and reimbursed treatments; average hospital bed days for hip fractures
[6]Percentage of hospitals with an FLS; percentage of patients receiving treatment post-recommendation
[7]Average waiting time for hip surgery; proportion of hip fractures managed surgically
[8]Existance of national guidelines on osteoporosis prevention or treatment
[9]Average waiting time for DXA scan
[10]Use of fracture risk assessment tools
[11]Availability of quality indicators for hip and other fractures

KEY RECOMMENDATIONS

The findings of Asia Pacific Audit 2025 reveal both the scale of the osteoporosis and fragility fracture challenge across the region and the enormous opportunities for improvement. While there are examples of innovation, leadership, and measurable impact, these are not yet the norm, and large gaps remain in prevention, diagnosis, treatment, and post-fracture care.

Building on the momentum of initiatives such as the *IOF Capture the Fracture® Best Practice Framework* - which has already elevated standards for Fracture Liaison Services - there is an urgent need for complementary national actions that embed best practice into every level of health systems.

The **priorities outlined below** distil the key lessons from this Audit into a practical, collaborative roadmap. They are designed to engage policymakers, professional organisations, and national osteoporosis societies in a united effort to deliver sustained, equitable improvements in bone health and fracture prevention for millions of people across the Asia Pacific.

1 Designate osteoporosis as a national health priority

Osteoporosis must be designated a national health priority in all countries, with commensurate human and financial resources to ensure that best practice is delivered for all individuals living with this condition. In countries where the current disease burden is not known, epidemiological studies must be commissioned as a matter of urgency.

2 Establish and expand national fracture registries

In countries without an existing national hip fracture registry, national osteoporosis societies, national orthopaedic associations and national geriatric/internal medicine associations to collaborate to develop a business case for a registry and advocate to government for resources to support widespread participation.

3 Ensure universal access to best-practice post-fracture care

Policymakers, healthcare professional organisations and national osteoporosis societies must collaborate to provide Orthogeriatric Services and Fracture Liaison Services to all older people who suffer fragility fractures in their jurisdictions.

4 Promote life-course interventions in nutrition and exercise

Specific initiatives encompassing nutrition and exercise are required for particular age groups:

- Expectant mothers: National osteoporosis societies to collaborate with national obstetrics organisations to advise government on optimising bone health of mothers and infants.
- Children and adolescents: National osteoporosis societies to collaborate with government Ministries of Education, national teachers' organisations, national nutrition foundations/councils, national dietician/nutritionist organisations, government Ministries of Sport and Recreation, national sports councils and relevant private sector corporations and providers to educate children and adolescents on achieving their genetic potential for peak bone mass.

- **Adults and seniors:** National osteoporosis societies to collaborate with government Ministries for Seniors, national nutrition foundations/councils, national dietician/ nutritionist organisations, non-governmental organisations concerned with seniors' welfare and government Ministries of Sport and Recreation, national sports councils and relevant private sector corporations and providers to inform adults on their nutritional and exercise needs to maintain a healthy skeleton, avoid premature bone and muscle loss, avoid malnutrition and prevent falls in the elderly.

5 Strengthen professional education

National osteoporosis societies and healthcare professional organisations to collaborate to develop and encourage widespread participation in national professional education programmes designed for distinct audiences: lead clinicians in osteoporosis, orthopaedic surgeons, primary care providers and allied health care providers as well as nurses.

6 Implement routine fracture-risk assessment in primary care

National osteoporosis societies should work with primary care organisations to promote routine fracture-risk assessment in patients aged 50 years and above.

7 Integrate osteoporosis management into prescribing practice

Where treatments are licensed to prevent osteoporosis induced by medicines, and guidelines have been published to inform best clinical practice, osteoporosis management must become a standard consideration for clinicians when prescribing medicines with bone-wasting side effects.

8 Institute public awareness campaigns

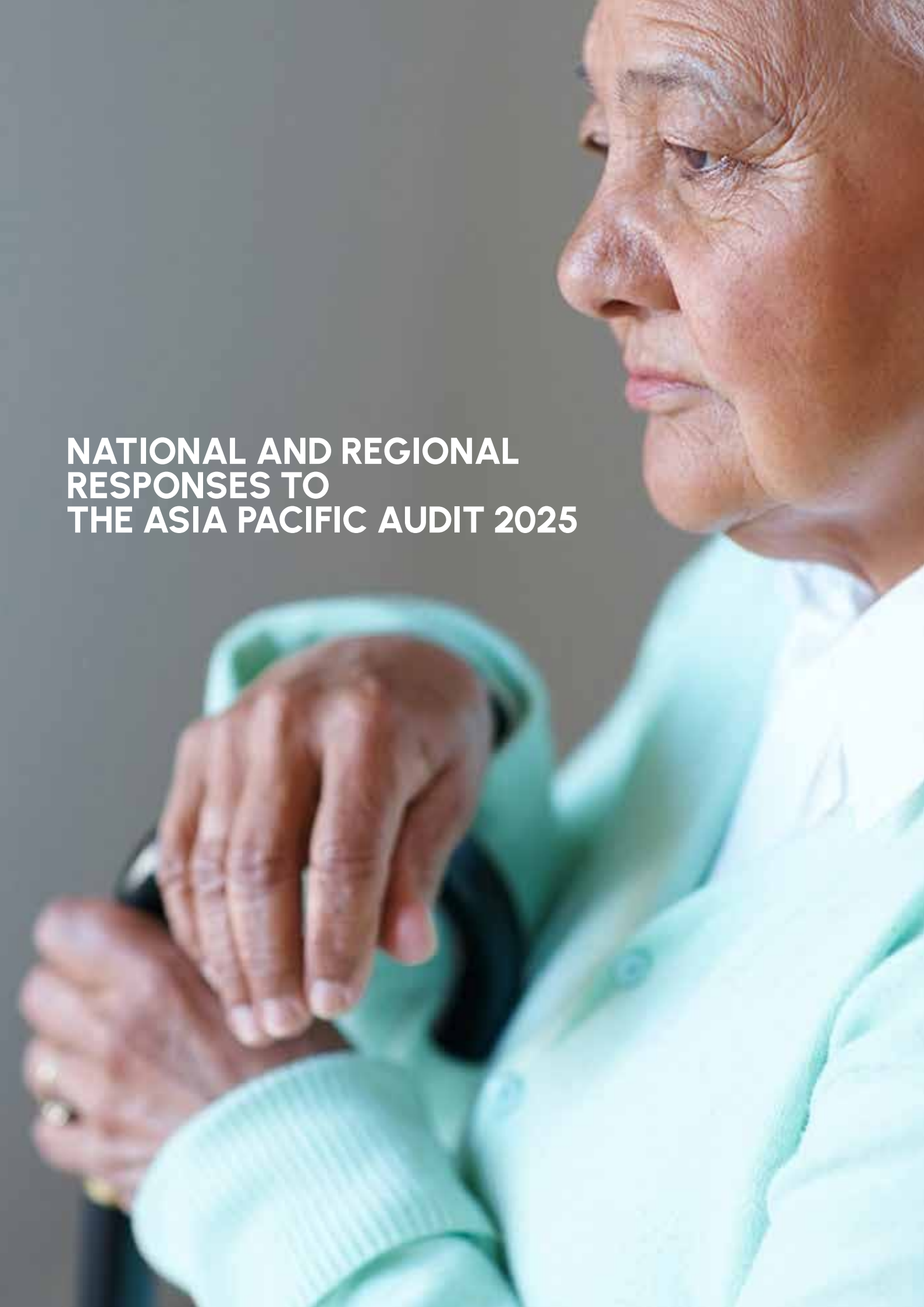
National osteoporosis societies to promote messaging regarding self-awareness of fracture risk and into public awareness and education initiatives. National osteoporosis societies, healthcare professional organisations, policymakers and regulators to collaborate to develop impactful public awareness campaigns which empower consumers to take ownership of their bone health.

9 Create national alliances

In countries without an existing national alliance, national osteoporosis societies to initiate dialogue with other relevant non-governmental organisations, policymakers, healthcare professional organisations and private sector companies to propose formation of a national falls and fracture prevention alliance modelled on successful examples from elsewhere. Formation of a national alliance has the potential to facilitate delivery of Priorities 1-8.

10 Scale innovative models

National osteoporosis societies, policymakers, and healthcare professional organisations should collaborate to pilot and scale innovative approaches that enhance efficiency, access, and equity in fracture prevention. These may include digital and AI-enabled risk detection, integrated electronic registries and data systems, telehealth and virtual rehabilitation, and new care-delivery or financing models that incentivise continuity of care. When implemented within strong clinical governance frameworks, such innovations can transform osteoporosis services across the Asia Pacific into more connected, sustainable systems.



NATIONAL AND REGIONAL RESPONSES TO THE ASIA PACIFIC AUDIT 2025

APAC AUDIT 2025

AUSTRALIA

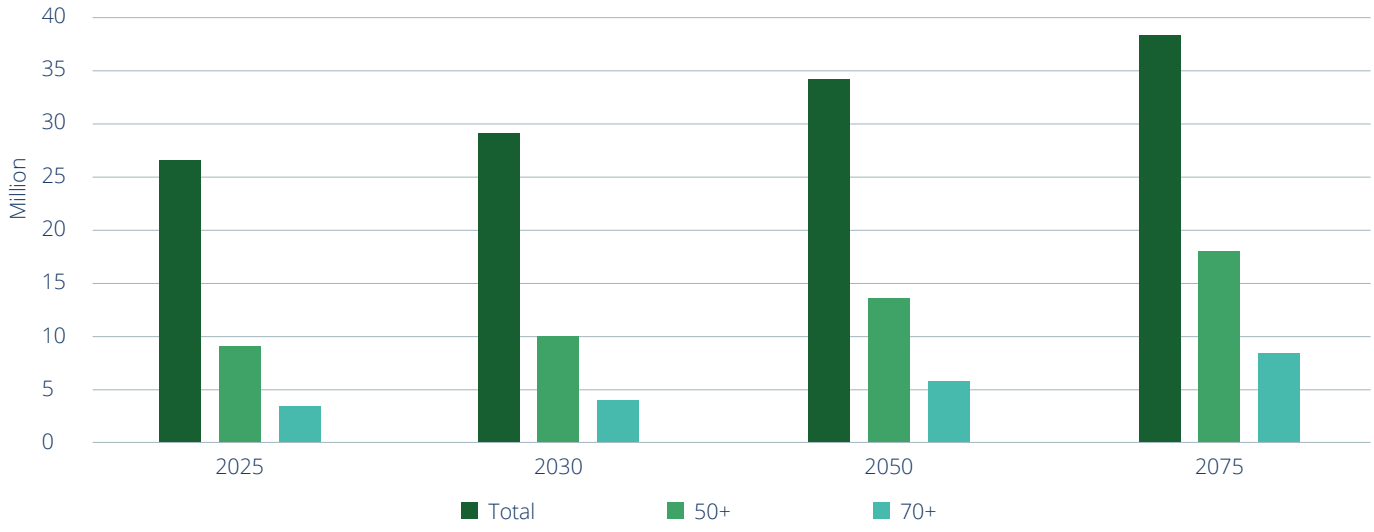
DEMOGRAPHIC TRENDS

Australia's population is projected to grow steadily over the coming decades, increasing by 23% from 27.1 million in 2025 to 33.4 million by 2050, and by a further 15% to reach 38.4 million by 2075 ***(Figure 1)***. Australians currently have an average life expectancy of 83.7 years, which is expected to rise to 90.8 years by 2075, an increase of more than 8%.

The proportion of Australians aged 50 years or older (50+) is set to rise significantly. In 2025, this group of 9.4 million people represents 35% of the total population. By 2075, this will increase to 45%, with numbers almost doubling to 17.2 million ***(Figure 1)***.

The most pronounced demographic shift will be among those aged 70 years or older (70+), whose numbers will rise from 3.3 million in 2025 to nearly 8.3 million in 2075. While this represents a growth of 150% in absolute numbers, a more telling statistic is their increasing share of the total population. In 2025, those aged 70+ years made up 12% of Australia's 27.1 million people, but by 2075, they will represent 22% of a larger 38.4 million population. This shift reflects a 76% relative increase in their share of the total population, underscoring the significant ageing of Australia's demographic profile.

Figure 1. Population projections for Australia from 2025 to 2075 [1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

Pursuant to publication of the Australian and New Zealand Guideline for Hip Fracture Care in 2014 [2], the first patient-level audit of the *Australian and New Zealand Hip Fracture Registry (ANZHFR)* was published in 2016 coincident with the launch of the first edition of the bi-national *Hip Fracture Care Clinical Care Standard* [3]. The first *ANZHFR Annual Report* [4] included data on 2,925 patient records from 21 hospitals in Australia and 594 from 4 hospitals in New Zealand. Significant progress in registry participation occurred in the ensuing years with a second edition of the *Hip Fracture Care Clinical Care Standard* published in 2023 [5] . The *10th ANZHFR Annual Report* [6] published in 2025 included 15,387 records from 84 Australian hospitals and 3,737 records from 22 New Zealand hospitals.

As shown in Table 1, data collection at the time of the survey was limited to hip fractures only.

Table 1. Status of centralised fracture databases in Australia [6]

Is a centralised database established?	Yes
Level of database coverage	National
Hip fracture records documented per year	15,387
Percentage of hip fractures treated surgically	97
All fracture records documented per year	Database only includes hip fractures
Percentage of all fractures treated surgically	Database only includes hip fractures
Other fracture records documented per year	Database only includes hip fractures
Percentage of other fractures treated surgically	Database only includes hip fractures
Age range and gender of patients in database	50-75+ years for both males and females

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

In October 2024, Healthy Bones Australia published a comprehensive burden of disease analysis for the period 2023 to 2033 [7]. In 2023, the direct healthcare costs associated with managing fractures caused by osteoporosis and osteopenia in Australia were substantial, encompassing acute care, subacute rehabilitation, and community-based management.

ACUTE CARE: PRE-HOSPITAL AMBULANCE SERVICES

The cost of ambulance paramedic care prior to hospitalisation for individuals with osteoporosis or osteopenia-related fractures amounted to AU$139.4 million (US$91 million). Older adults bore the bulk of these costs, with AU$98.8 million (US$64.5 million) (71%) spent on individuals aged 70+ years. While hip fractures commonly necessitated ambulance use, they accounted for only 31% of ambulance costs. Interestingly, 'other' fractures represented the largest share at 43%, followed by vertebral fractures at 19%.

ACUTE HOSPITAL SERVICES

Acute hospital care, encompassing both inpatient admissions and non-admitted services (such as emergency department and outpatient care), totalled AU$2.1 billion (US$1.4 billion). Of this, inpatient hospitalisation dominated, accounting for AU$1.9 billion (US$1.2 billion) or 92% of the total. Hip fractures were a major cost driver, comprising 45% of all acute hospital expenses. People aged 70+ years contributed 72% of inpatient costs, with women accounting for 71% of the total. The most expensive demographic subgroup was women aged 70+ years hospitalised with a hip fracture, whose care cost AU$549.2 million (US$358 million), or 28% of total hospital expenditures.

SUBACUTE CARE: REHABILITATION SERVICES

Rehabilitation or subacute care services for fracture recovery incurred costs of AU$460.3 million (US$300.2 million). Older adults aged 70+ years were again the most affected, accounting for AU$321.4 million (US$209.6 million) (70% of total rehabilitation costs). Women made up the majority, contributing AU$350.3 million (US$228.5 million) or 76% of the total. Rehabilitation for hip fractures alone cost AU$193.1 million (US$126 million [42%]), followed by 'other' fractures at AU$171 million (US$111.5 million [37%]).

COMMUNITY-BASED FRACTURE MANAGEMENT

The total cost of managing fractures in the community setting, which includes services provided by general practitioners, radiological imaging, post-discharge medical care, physiotherapy, and pharmaceutical interventions (e.g. pain management), amounted to AU$34 million (US$22.1 million). This component reflects the ongoing, non-hospital-based care provided to individuals either not admitted to hospital or following discharge from acute or subacute services.

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is primarily managed by primary care physicians, while specialist input is provided by rheumatologists, orthopaedic surgeons, endocrinologists, geriatricians, and rehabilitation medicine physicians. Although osteoporosis is not a standalone medical specialty, it is formally recognised within the broader disciplines of endocrinology and rheumatology. It also features as a core component of specialty medical training, particularly for endocrinologists.

PATIENT SUPPORT ORGANISATIONS

Healthy Bones Australia (HBA), formerly known as *Osteoporosis Australia*, is a national not-for-profit organisation and the leading consumer body dedicated to reducing fractures and improving bone health across the country. Established in 2001 in response to the rising prevalence of poor bone health and the limited focus on osteoporosis prevention within the healthcare system, HBA plays a critical role in raising awareness among the community and healthcare professionals. The organisation's work spans several key areas, including policy development, capacity building, education, peer support, and research and development.
Learn more from *https://healthybonesaustralia.org.au/.*

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis has been recognised as a National Health Priority (NHP) in Australia since 2002. The NHP is mandated solely by the Australian Government Department of Health and Aged Care, with no other governing body involved in the formal mandate. An associated action plan prioritises chronic disease prevention and is closely aligned with public health programmes. Key focus areas include public awareness and education, prevention, improved diagnosis, management and care, data collection, monitoring, and strategic research. In addition, there is meaningful patient engagement outside the formal NHP framework, including consumer participation in forums, contributions to clinical guideline development, and involvement in awareness campaigns.The most recent *National Strategic Action Plan for Osteoporosis* [8], published in 2019, sets out clear priorities and actions aimed at reducing the burden of osteoporosis and improving the quality of life for Australians affected by the condition.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

Australia offers a comprehensive and supportive framework for osteoporosis treatment through its national Pharmaceutical Benefits Scheme (PBS), which subsidises the cost of many essential medications. This system ensures that individuals at risk of osteoporotic fractures can access treatment affordably, depending on their clinical status and financial circumstances.

PBS subsidies are available to several key groups. These include people who have already sustained a fracture due to osteoporosis, individuals aged 70 years or older with confirmed low bone mineral density (BMD), and those diagnosed with low BMD who are prescribed long-term corticosteroid therapy (such as prednisone or cortisone) at a daily dose of 7.5 mg or higher for a minimum of three months. These criteria ensure that both primary and secondary prevention of fragility fractures are well-supported through public funding.

For patients eligible under the PBS, the cost of medicines is capped at a modest co-payment. As of 2025, general patients pay up to AU$31.60 (US$20.22) per prescription, while holders of a concession card, which includes pensioners and other low-income groups, pay only AU$7.70 (US$4.90). The Australian Government covers the remainder of the medication cost, except in instances where brand premiums or minor allowable surcharges apply.

To further reduce the financial burden on frequent medicine users, Australia also operates an annual PBS Safety Net. Once a patient's total spending on PBS medicines in a calendar year reaches a specified threshold, their out-of-pocket costs are substantially reduced or eliminated for the remainder of the year. The current thresholds are:

- **AU$2,569.80 (US$1,563.50)** for general patients, after which prescriptions are charged at the concessional rate.
- **AU$431.80 (US$262.80)** for concession card holders, after which PBS prescriptions are provided free of charge.

These protections offer considerable financial relief, particularly for older adults and retirees, ensuring continuity of care without the deterrent of rising medication costs.

From a clinical standpoint, all bisphosphonates and anabolic agents are approved for use as first-line treatments for osteoporosis. While these medicines are broadly reimbursed, certain clinical and administrative criteria must be met for PBS coverage. These criteria may include a prior fracture, diagnostic evidence of low BMD, the purpose of treatment (whether for primary or secondary prevention), and whether the medication is being used as first- or second-line therapy. In some cases, prior authorisation from PBS is required before the subsidy is granted.

Importantly, Australia's reimbursement policy does not restrict physicians' clinical judgement. Doctors are free to prescribe the treatments they deem most appropriate. However, there may be instances where a recommended medication is not subsidised under PBS for a particular patient. In such cases, patients still have the option to obtain the medication privately, albeit at a higher personal cost. This separation between clinical recommendation and reimbursement ensures both flexibility in treatment decisions and robust financial support where eligibility is met.

Table 2 provides an illustration of which osteoporosis treatments are available in Australia, whether they are reimbursed under PBS, and the proportion of the cost covered by the subsidy.

Table 2. Availability and reimbursement of osteoporosis treatments in Australia

Treatment	Available	Reimbursed	% Reimbursed
Risedronate	X	X	*150 mg, 1 tablet* - Dispensed price for maximum quantity (DPMQ) = AU$57.75 General Patient Charge = AU$31.60 (reimbursement without concession card = 45.3%). *30 mg, 28 tablet* - Dispensed price for maximum quantity (DPMQ) = AU$180.66 General Patient Charge = AU$31.60 (reimbursement without concession card = 82.5%)
Alendronate	X	X	*Fosamax Plus 70 mg/140 mcg* **-** Dispensed price for maximum quantity (DPMQ) = AU$18.98 General Patient Charge = AU$7.70 (reimbursement without concession card = 59.4%)
Ibandronate			
Pamidronate			
Clodronate			

Zoledronic acid	X	X	*Zoledronic acid 4 mg/5 mL injection* **-** Dispensed price for maximum quantity (DPMQ) = AU$72.23 General Patient Charge = AU$31.60 (reimbursement without concession card = 56.3%)
Raloxifene	X	X	*Raloxifene hydrochloride 60 mg tablet, 28 tablets* - Dispensed price for maximum quantity (DPMQ) = AU$47.15 General Patient Charge = AU$31.60 (reimbursement without concession card = 33.0%)
Bazedoxifene			
Denosumab	X	X	*Denosumab 120 mg/1.7 mL injection, 1.7 mL vial* - Dispensed price for maximum quantity (DPMQ) = AU$462.13 General Patient Charge = AU$31.60 (reimbursement without concession card = 93.2%). *Denosumab 60 mg/mL injection, 1 mL syringe* - Dispensed price for maximum quantity (DPMQ) = AU$251.97 General Patient Charge = AU$31.60 (reimbursement without concession card = 87.5%)
Strontium Ranelate	X	X	No data
Teriparatide	X	X	*Teriparatide 250 microgram/mL injection,* 2.4 mL pen device - Dispensed price for maximum quantity (DPMQ) = AU$177.30 General Patient Charge = AU$31.60 (reimbursement without concession card = 82.2%)
PTH (1-84)			
Abaloparatide			
Romosozumab	X	X	*Romosozumab 105 mg/1.17 mL injection,* 2 x 1.17 mL syringes - Dispensed price for maximum quantity (DPMQ) = AU$406.13 General Patient Charge = AU$31.60 (reimbursement without concession card = 92.2%)
Hormone Replacement Therapy	X	X	*Estradiol 0.1% (1 mg/g) gel, 28 x 1 g sachets* - Dispensed price for maximum quantity (DPMQ) = AU$37.81 – General Patient Charge = AU$31.60 (reimbursement without concession card = 16.4%)
Testosterone	X	X	No data
Alfacalcidol			
Calcidiol			

Calcitonin	X	X	*Calcitonin salmon 100 units/mL injection, 5 x 1 mL ampoules* - Dispensed price for maximum quantity (DPMQ) = AU$128.37 General Patient Charge = AU$31.60 (reimbursement without concession card = 75.4%)
Calcitriol	X	X	*Calcitriol 0.25 microgram capsule, 100 tablets* - Dispensed price for maximum quantity (DPMQ) = AU$45.71 General Patient Charge = AU$31.60 (reimbursement without concession card = 30.9%)
Tibolone	X	X	No data
Vitamin D/Calcium supplements	X	X	*Calcium carbonate 1.25 g (calcium 500 mg) chewable tablet, 120 tablets* - Dispensed price for maximum quantity (DPMQ) = AU$45.63 General Patient Charge = AU$31.60 (reimbursement without concession card = 30.7%)

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS

10 – 24 %

Hip fractures identified by or referred to an FLS

5 – 16%

Vertebral fractures identified by or referred to an FLS

0.5%

Other fracture types identified by or referred to an FLS

15%

Reimbursement mechanism to support FLS activities

Local health service

% of patients recommended for treatment who actually receive treatment

20 – 49%

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	1-2 days
% of hip fractures surgically managed	> 90%

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2024, the *Royal Australian College of General Practitioners (RACGP)*, in collaboration with *Healthy Bones Australia (HBA)*, released an updated clinical guideline to support general practitioners in the prevention, diagnosis, and management of osteoporosis in postmenopausal women and men over 50 years of age [9]. This update builds on the previous 2017 edition, reflecting significant developments in clinical evidence, expert consensus, and advancements in pharmacological treatments, particularly the emerging role of osteoanabolic therapies. The revised guideline aims to enhance primary care management of osteoporosis in light of the evolving evidence base.

The scope of the guideline includes the following:

- Postmenopausal women and men older than 50 years of age **who may be at risk of minimal trauma fracture**.
- Postmenopausal women and men older than 50 years of age **diagnosed as having at least one fracture following minimal trauma** (equivalent to a fall from standing height or less).
- Postmenopausal women and men older than 50 years of age **diagnosed with osteoporosis**, defined as a T-score of –2.5 or less, **but without evidence of a minimal trauma fracture**.
- **Glucocorticoid-induced osteoporosis (GIOP) and osteoporosis in men.**

The guidelines provide clear recommendations on population-based screening, including the assessment of vitamin D levels, falls risk, and osteoporosis, with particular attention to individuals aged 70 years or older, as well as those over 50 years with relevant risk factors. Fracture risk assessment is comprehensively addressed, incorporating prior fracture history, age, bone mineral density (BMD), and the use of validated tools such as the FRAX® tool and the Garvan Fracture Risk Calculator. While the guidelines are generally compatible with existing reimbursement policies, a notable gap remains. Individuals under 70 years of age with a BMD T-score below -2.5 are currently not eligible for reimbursement, even though the guidelines support treatment in these cases. Criteria for initiating treatment include prior fracture, age, BMD, FRAX® score, GIOP, and the presence of other clinical risk factors. The guidelines were developed without direct involvement from patients. Additional details about the development of guideline are included in *Table 3*.

Table 3. Development of clinical guidelines for the management of osteoporosis in Australia [9]

Systematic literature review undertaken	Yes
Recommendations	Graded from A to D based on the NHMRC[1] grades of recommendation
Stakeholder involvement	The consultation period was focused on HBA[2] stakeholders and review by the main users of the guideline i.e. general practitioners (GPs). The guideline was reviewed by GP subject matter experts and the RACGP[3] Expert Committee for Quality Care and endorsed by the RACGP Council
External review	Yes
Procedure for update defined	Yes
Economic analysis	Summaries of cost-effectiveness are provided
Editorial independence	Yes

1. National Health and Medical Research Council
2. Healthy Bones Australia
3. Royal Australian College of General Practitioners

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

As shown in *Table 4*, DXA is widely available in Australia. No information was reported in relation to availability of quantitative ultrasound.

Table 4. Access to and reimbursement of DXA in Australia

Waiting time (d)	Variable but up to 7 days
Cost (USD)	50-80
Is it reimbursed?	Yes; 75 to 85% of the cost of a DXA scan may be reimbursed under the Medicare Benefits Schedule if the patient meets the following criteria: People with diagnosed osteoporosis; Anyone with one or more previous fractures from a minor incident; Corticosteroids use (common for asthma); Women with early menopause; Men with low testosterone; Individuals with coeliac disease (or other malabsorption conditions), overactive thyroid or parathyroid conditions, rheumatoid arthritis, liver or kidney disease; those aged 70 years or over
Is reimbursement a barrier to accessing treatment?	Potentially for people who do not meet the above criteria and are not eligible for reimbursement. It may also be a barrier for those from low social-economic groups even when eligible for reimbursement.

FRACTURE RISK ASSESSMENT TOOLS

In Australia, both the FRAX® tool and the Garvan Fracture Risk Calculator are used to assess fracture risk, with FRAX® being the more widely adopted tool in clinical practice. When determining whether treatment is indicated using FRAX®, clinicians apply a fixed probability threshold rather than age-dependent probability thresholds and may also consider a combination of FRAX® score and bone mineral density (BMD) results. This approach is applied consistently for both men and women.

QUALITY INDICATORS

The second edition of the *Hip Fracture Care Clinical Care Standard* [5], published in 2023 by the *Australian Commission on Safety and Quality in Health Care (ACSQHC)*, was designed to improve the care of individuals with hip fractures from the time they present to hospital through to discharge. This updated standard aims to optimise outcomes by promoting evidence-based practices, minimising delays to surgery, supporting early mobilisation, and reducing the risk of subsequent fractures.

By adopting this standard, healthcare providers can deliver consistent, high-quality care across a range of settings, resulting in better patient outcomes and more informed clinical decision-making. Adherence to the standard is benchmarked and publicly reported in the Annual Reports of the *Australian and New Zealand Hip Fracture Registry (ANZHFR)* [10], supporting transparency and driving continuous quality improvement. The standard is a valuable resource for clinicians, patients, and policymakers alike and is available via the following link: *https://www.safetyandquality.gov.au/standards/clinical-care-standards/hip-fracture-clinical-care-standard.*

OVERVIEW OF OSTEOPOROSIS IN AUSTRALIA

The comprehensive burden of disease analysis published by *Healthy Bones Australia* in October 2024[7] provides an updated and detailed overview of the impact of osteoporosis and osteopenia nationwide. Building upon the previous analysis conducted in 2012, this new report presents clear evidence of rising disease prevalence and fracture rates, underscoring the urgent need for more effective prevention and treatment strategies. Without significant changes to current approaches, the burden of poor bone health in Australia is projected to increase markedly in the years ahead. A summary of the report's key findings is outlined below.

RISING PREVALENCE OF POOR BONE HEALTH

In 2023, an estimated 6.2 million Australians aged 50+ years, approximately 67% of that population, were living with poor bone health. This reflects a 34% increase since 2012. Among those affected, 77% had osteopenia and 23% had osteoporosis. Adults between the ages of 50 and 69 were identified as having a particularly high risk of osteopenia. Projections suggest that by 2033, the number of Australians in this age group with osteoporosis or osteopenia will rise to 7.7 million, a 23% increase from 2023 and a 69% increase since 2012.

ESCALATING FRACTURE RATES

Fracture incidence related to osteoporosis and osteopenia is also increasing. In 2023, there were an estimated 193,482 fragility fractures across Australia. This number is expected to climb by 34% over the subsequent decade, reaching 237,632 by 2033. During the period 2023 to 2033, the cumulative total number of new and repeat fractures is expected to exceed 2.1 million cases.

RECOMMENDATIONS FOR ACTION

To mitigate the rising burden of osteoporosis and osteopenia, the following recommendations were made:

- **Active investigation** targeting at-risk groups.
- **Early diagnosis** of both men and women, with osteoporosis or osteopenia, aged 50+ years.
- **Encourage inclusion** of bone mineral density checks in regular General Practitioner health check-ups for high-risk groups.
- **Fracture prevention** should target both men and women aged 50+ years with low bone mineral density.
- **Initiate osteoporosis treatment** for women and men, aged 50+ years or older, with proven minimal trauma fracture.
- **Treatment is recommended** for women and men (50+ years or older) diagnosed with osteoporosis (no fracture history). Refer to national guidelines for osteoporosis risk assessment, diagnosis and management.
- **Consider reimbursement** of bone mineral testing for high-risk groups.
- **Increase funding towards public awareness** and education programmes on osteoporosis and osteopenia prevention.

The *Australian and New Zealand Bone and Mineral Society (ANZBMS)* is a professional medical and scientific society established in 1988 to bring together clinical and experimental scientists and physicians actively involved in the study of bone and mineral metabolism in Australia and New Zealand. ANZBMS includes a number of committees that regularly undertake initiatives to address its mission of advancing the education of clinicians, allied health professionals and the public in the nature of and management of diseases impacting upon the skeleton. These include:

- **The Clinical Practice Committee** that critically appraises new guidelines, publications and regulatory applications, as presented to the society, on matters relating to clinical practice in bone and mineral metabolism and musculoskeletal medicine.
- **The Therapeutics Committee** that facilitates and advises on the introduction of new dietary, physical, pharmacological and surgical therapies into practice in Australia and New Zealand.

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This document highlights the key findings for Australia, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

ACKNOWLEDGMENTS

APAC Audit Contributors based in Australia
Australian and New Zealand Bone & Mineral Society (ANZBMS)
https://www.anzbms.org.au/

Healthy Bones Australia
https://healthybonesaustralia.org.au/

www.osteoporosis.foundation

APAC AUDIT 2025

BANGLADESH

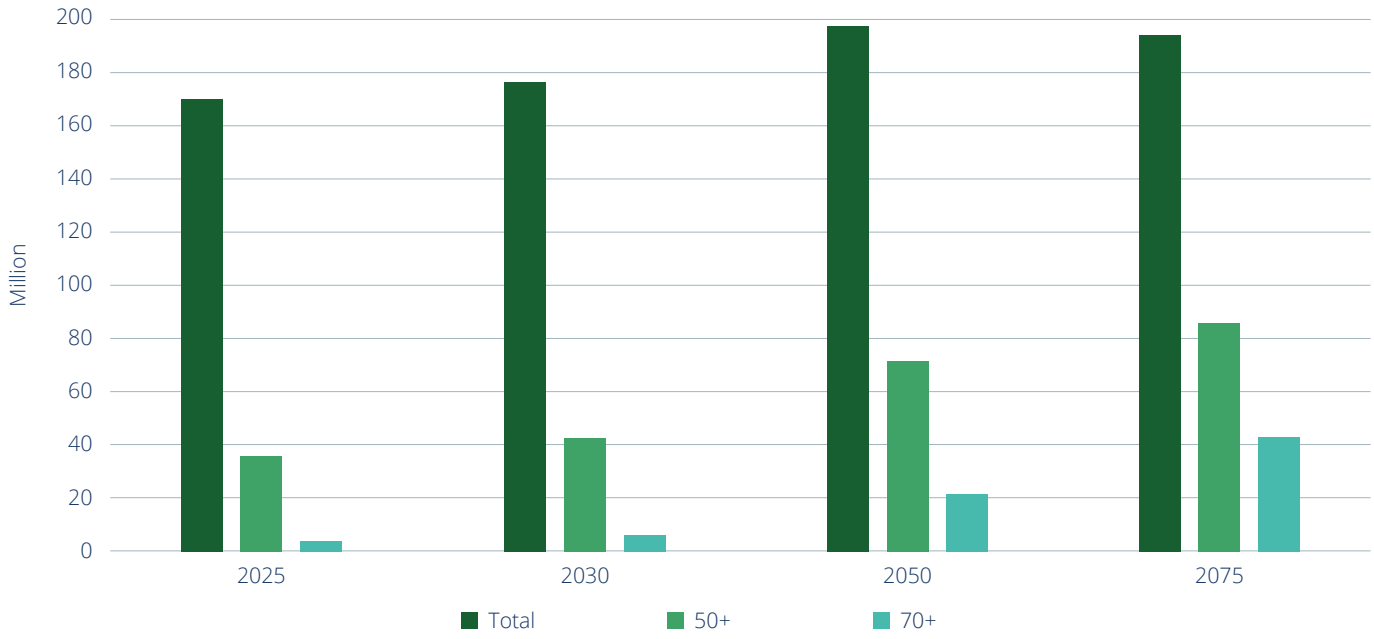
DEMOGRAPHIC TRENDS

Bangladesh's population is projected to grow steadily until the mid-21st century, increasing by 14% from 170.2 million in 2025 to 194.3 million by 2050. However, this growth will be followed by a period of gradual decline, with the population decreasing by 2% to 191.1 million by 2075 ***(Figure 1)***. Bangladeshis currently have an average life expectancy of 75.5 years, which is expected to rise to 86.1 years by 2075, an increase of 14%.

The proportion of Bangladeshis aged 50 years or older (50+) is set to rise significantly. In 2025, this group of 37.2 million people represents 22% of the total population. By 2075, this will increase to 46%, with numbers more than doubling to 88.1 million ***(Figure 1)***.

The most dramatic demographic shift in Bangladesh will be among those aged 70 years or older (70+), whose numbers are projected to surge from 8.6 million in 2025 to 42.8 million in 2075, a nearly 400% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ years accounted for just 5% of Bangladesh's 170.2 million people. By 2075, they will make up 22% of a larger 191.1 million population, reflecting a 343% relative increase in their proportion of the total population.

Figure 1. Population projections for Bangladesh from 2025 to 2075[1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

Bangladesh does not have a centralised database for fractures.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
1,000*	500*	7*

**Best available estimates as reported by country experts in the absence of published data.*

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care of rheumatologists, orthopaedic surgeons, gynaecologists, endocrinologists, and physiatrists. Osteoporosis is not a standalone medical specialty. It features as a core component of specialty medical training, particularly for rheumatologists.

PATIENT SUPPORT ORGANISATIONS

Bangladesh does not have any patient support organisations focused on osteoporosis.

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Bangladesh.

Waiting time (d)	0 - 3
Cost (USD)	15 - 25
Is it reimbursed?	Limited to none
Is reimbursement a barrier to accessing treatment?	Yes

Quantitative ultrasound is available in Bangladesh.

Waiting time (d)	0 - 7
Cost (USD)	8 - 20
Is it reimbursed?	Limited to none
Is reimbursement a barrier to accessing treatment?	Yes

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a range of osteoporosis treatments are available in Bangladesh. However, none are designated as first-line or reimbursed.

Table 1. Availability and reimbursement of osteoporosis treatments in Bangladesh

Treatment	Available
Risedronate	X
Alendronate	X
Ibandronate	X
Zoledronic acid	X
Clodronate	
Pamidronate	X
Raloxifene	X
Bazedoxifene	
Denosumab	X
Strontium Ranelate	X
Teriparatide	X
PTH (1-84)	
Abaloparatide	
Romosozumab	
Vitamin D/Calcium supplements	X
Calcitonin	X
Hormone Replacement Therapy	X
Testosterone	X
Alfacalcidol	X
Calcidiol	
Calcitriol	
Tibolone	X

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not recognised as a National Health Priority (NHP) in Bangladesh.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

No FLS have been established in hospitals in Bangladesh.

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	> 3 days
% of hip fractures surgically managed	51 – 75%

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

There are no guidelines for osteoporosis management in Bangladesh.

FRACTURE RISK ASSESSMENT TOOLS

Bangladesh uses FRAX®, but it is not widely used within the country.

QUALITY INDICATORS

There are no quality indicators for hip and other fractures in Bangladesh.

OVERVIEW OF OSTEOPOROSIS IN BANGLADESH

While osteoporosis is a commonly encountered in clinical practice in Bangladesh, data on the prevalence and incidence of both osteoporosis and hip fractures are currently not available. The *Bangladesh Rheumatology Society (BRS)* is advocating for osteoporosis to be designated a National Health Priority. The majority of the Bangladeshi population have vitamin D deficiency (60-70%) [2] and have lower calcium intake than is recommended (90-95%) [3]. A recent study among patients with unexplained musculoskeletal symptoms found that 80% had vitamin D deficiency, with bone pain, muscle cramps, and difficulty climbing stairs most strongly associated with low levels [4]. In Bangladesh, there is a need to raise awareness about osteoporosis among the general public, as well as among doctors, nurses, and caregivers.

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This document highlights the key findings for Bangladesh, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

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BHUTAN

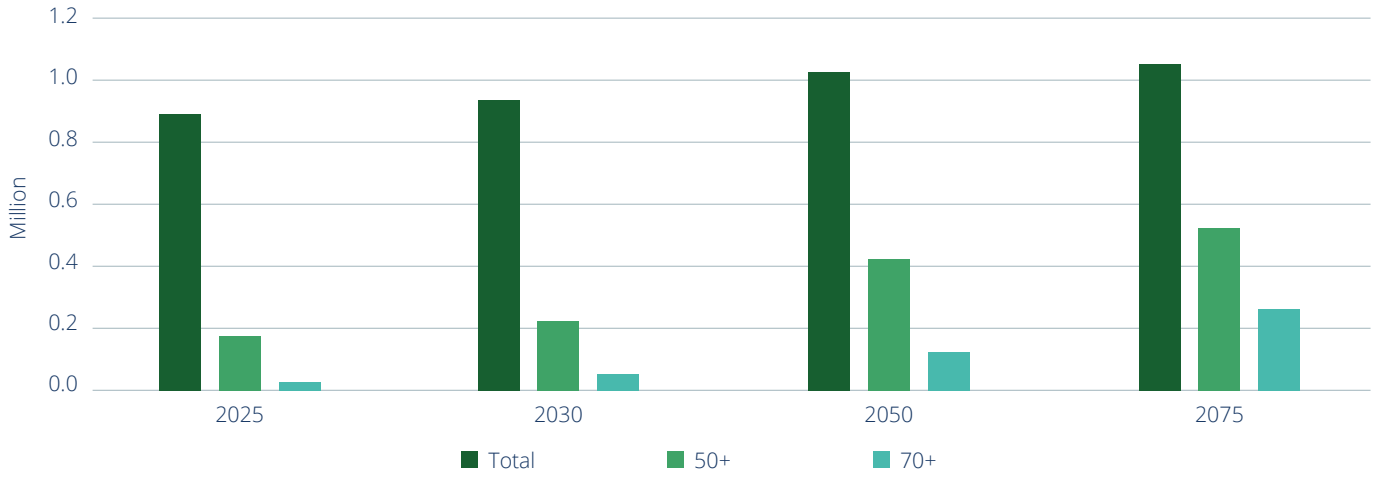
DEMOGRAPHIC TRENDS

Bhutan's population is projected to grow steadily until the mid-21st century, increasing by 17% from 893,000 in 2025 to 1,048,000 by 2050. However, population growth is expected to slow significantly in the second half of the century, with only a marginal increase of less than 1% to 1,053,000 by 2075 *(Figure 1)*. Bhutanese currently have an average life expectancy of 74.4 years, which is expected to rise to 86.2 years by 2075, an increase of 16%.

The proportion of Bhutanese aged 50 years or older (50+) is set to rise significantly. In 2025, this group of 169,000 people represents 19% of the total population. By 2075, this will increase to 49%, with numbers tripling to almost 512,000 *(Figure 1)*.

The most dramatic demographic shift in Bhutan will be among those aged 70 years or older (70+), whose numbers are projected to surge from 40,000 in 2025 to 252,000 in 2075, a 531% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ years accounted for just 4% of Bhutan's 893,000 people. By 2075, they will make up 24% of a larger 1,053,000 population, reflecting a 435% relative increase in their proportion of the total population.

Figure 1. Population projections for Bhutan from 2025 to 2075[1]



HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
10,000*	5,000*	15*

**Best available estimates as reported by country experts in the absence of published data*

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care of orthopaedic surgeons and internal medicine physicians. Osteoporosis is recognised as a standalone medical specialty. However, it does not feature as a core component of specialty medical training.

PATIENT SUPPORT ORGANISATIONS

Bhutan does not have any patient support organisations focused on osteoporosis.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not recognised as a National Health Priority (NHP) in Bhutan.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	**10 – 24%**
Hip fractures identified by or referred to an FLS	**10%**
Vertebral fractures identified by or referred to an FLS	**5%**

Other fracture types identified by or referred to an FLS	**10%**
Reimbursement mechanism to support FLS activities	**Local health service**
% of patients recommended for treatment who actually receive treatment	**< 20%**

FRACTURE RISK ASSESSMENT TOOLS

In Bhutan, FRAX® is widely used to assess fracture risk. When determining whether treatment is indicated using FRAX®, clinicians apply a fixed probability threshold, age-dependent threshold, and may also consider a combination of FRAX® score and bone mineral density (BMD) results. This approach is applied consistently for both men and women.

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

There are no guidelines for osteoporosis management in Bhutan.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, several osteoporosis treatments are available in Bhutan, with bisphosphonates designated as first-line treatment. Osteoporosis treatment is fully reimbursed through the national health system, subject to specific eligibility criteria. These conditions include factors such as prior fracture history, age, bone mineral density (BMD) thresholds, and whether treatment is for primary or secondary prevention, as well as alignment with first-line therapy recommendations. Importantly, reimbursement policies do not restrict or conflict with physicians' clinical judgment or treatment recommendations for their patients.

Table 1. Availability and reimbursement of osteoporosis treatments in Bhutan

Treatment	Available	Reimbursed	% Reimbursed
Risedronate			
Alendronate	X	X	70%
Ibandronate	X	X	90%
Zoledronic acid			
Clodronate			
Pamidronate			
Raloxifene			
Bazedoxifene			
Denosumab			
Strontium Ranelate			
Teriparatide			
PTH (1-84)			
Abaloparatide			
Romosozumab			
Vitamin D/Calcium supplements	X		
Calcitonin			
Hormone Replacement Therapy	X	X	90%
Testosterone			
Alfacalcidol			
Calcidiol			
Calcitriol	X		
Tibolone			

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	1 - 2 days
% of hip fractures surgically managed	51 – 75%

CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

Bhutan does not have a centralised database for fractures.

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA and ultrasound are generally not available in Bhutan, with only one axial DXA scanner available at the Jigme Dorji Wangchuck National Referral Hospital.

QUALITY INDICATORS

At the regional level in Bhutan, quality indicators have been established for the management of hip and vertebral fractures, with annual reporting on performance against these measures.

OVERVIEW OF OSTEOPOROSIS IN BHUTAN

Although still in the early phases, important steps are being taken in Bhutan to establish epidemiological surveillance, enhance diagnostic access, and develop national clinical guidance. Facilities are now in place for vitamin D screening at every regional hospital and a DXA scanner is now available at the national hospital. All doctors working in district hospitals have received training on osteoporosis screening and use of the FRAX® tool.

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This document highlights the key findings for Bhutan, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

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APAC AUDIT 2025

BRUNEI DARUSSALAM

DEMOGRAPHIC TRENDS

Brunei Darussalam's population is projected to grow considerably over the coming decades, increasing by 30% from almost 499,000 in 2025 to almost 647,000 by 2050, and by a further 16% to reach 751,000 by 2075 *(Figure 1)*. Bruneians currently have an average life expectancy of 75.5 years, which is expected to rise to 86.1 years by 2075, an increase of more than 11%.

The proportion of Bruneians aged 50 years or older (50+) is set to rise significantly. In 2025, this group of almost 108,000 people represents 22% of the total population. By 2075, this will increase to 41%, with numbers almost tripling to 304,000 *(Figure 1)*.

The most dramatic demographic shift in Brunei Darussalam will be among those aged 70 years or older (70+), whose numbers are projected to surge from 22,000 in 2025 to 141,000 in 2075, a 322% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ years accounted for just 4% of Brunei Darussalam's 499,000 people. By 2075, they will make up 19% of a larger 751,000 population, reflecting a 435% relative increase in their proportion of the total population.

Figure 1. Population projections for Brunei Darussalam from 2025 to 2075 [1]

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care of rheumatologists, orthopaedic surgeons, endocrinologists, and geriatricians. Osteoporosis is not a standalone medical specialty. It is not a recognised component of specialty medical training.

CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

There are no centralised databases for fractures in Brunei Darussalam.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

The *estimated* cost of hip fractures based on the average length of stay of 21 days are displayed in the table below.

Procedure	*Estimated* Cost (USD)
Uncemented Total Hip Arthroplasty	8,400
Cemented Bipolar Hip Hemiarthroplasty	7,400
Thompsons/Austin Moore Hemiarthroplasty	5,000
Dynamic Hip Screw	4,700
Proximal Intramedullary Nailing-Short	6,300
Proximal Intramedullary Nailing-Long	6,500

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

One DXA scanner is currently only available in the tertiary hospital. Request for DXA scans is currently restricted to hospital physicians.

Waiting time (d)	30
Cost (USD)	80
Is it reimbursed?	Yes
Is reimbursement a barrier to accessing treatment?	No

Quantitative ultrasound is available in Brunei Darussalam.

Waiting time (d)	0 - 7
Cost (USD)	Not Available
Is it reimbursed?	Yes
Is reimbursement a barrier to accessing treatment?	No

PATIENT SUPPORT ORGANISATIONS

Brunei Darussalam does not have any patient support organisations focused on osteoporosis.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a range of osteoporosis treatments are available in Brunei Darussalam, with alendronate designated as first-line treatment. Osteoporosis treatment is fully reimbursed through the national health system, subject to specific eligibility criteria. These conditions include factors such as prior fracture history, age, fracture risk threshold, and whether treatment is for primary or secondary prevention, as well as alignment with first- and second-line therapy recommendations. Reimbursement policies do sometimes conflict with physicians' clinical judgment or treatment recommendations for their patients. For example, treatment with zoledronic acid, denosumab or teriparatide requires application to a committee for approval which can potentially result in a 1- to 2-month delay to initiation of therapy.

Table 1. Availability and reimbursement of osteoporosis treatments in Brunei Darussalam

Treatment	Available	Reimbursed	% Reimbursed
Risedronate			
Alendronate	X	X	100%
Ibandronate			
Zoledronic acid	X	X	100%
Clodronate			
Pamidronate	X	X	100%
Raloxifene	X	X	100%
Bazedoxifene			
Denosumab	X	X	100%
Strontium Ranelate	X	X	100%
Teriparatide	X	X	100%
PTH (1-84)			
Abaloparatide			
Romosozumab			
Vitamin D/Calcium supplements	X	X	100%
Calcitonin	X	X	100%
Hormone Replacement Therapy	X	X	100%
Testosterone	X	X	100%
Alfacalcidol	X	X	100%
Calcidiol			
Calcitriol	X	X	100%
Tibolone			

FRACTURE RISK ASSESSMENT TOOLS

Brunei Darussalam uses FRAX®, but it is not widely used within the country.

QUALITY INDICATORS

There are no quality indicators for hip and other fractures in Brunei Darussalam.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not recognised as a National Health Priority (NHP) in Brunei Darussalam.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

No FLS have been established in hospitals in Brunei Darussalam.

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	> 3 days
% of hip fractures surgically managed	> 90%

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

There are no guidelines for osteoporosis management in Brunei Darussalam.

OVERVIEW OF OSTEOPOROSIS IN BRUNEI DARUSSALAM

While awareness of osteoporosis is gradually gaining momentum, significant efforts are still required to elevate it as a national health priority. At present, there are no established clinical guidelines or quality indicators specific to osteoporosis in the country. Additionally, data on osteoporosis remains limited, and there is no national fracture registry in place. This represents a critical gap, as reliable data is essential for informing policy, guiding clinical practice, and driving quality improvement initiatives. Establishing standardised fracture data collection and ensuring regular publication of such data is a pressing need. Although the country's electronic health record (EHR) system has the potential to serve as a valuable data source, its utility is currently hindered by limitations in the accuracy and consistency of ICD-10 coding for osteoporosis and related fractures. Future plans include setting-up a Fracture Liaison Service, establishing guidelines and standards of care for osteoporosis, and data collection on osteoporosis.

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APAC AUDIT 2025

CHINA

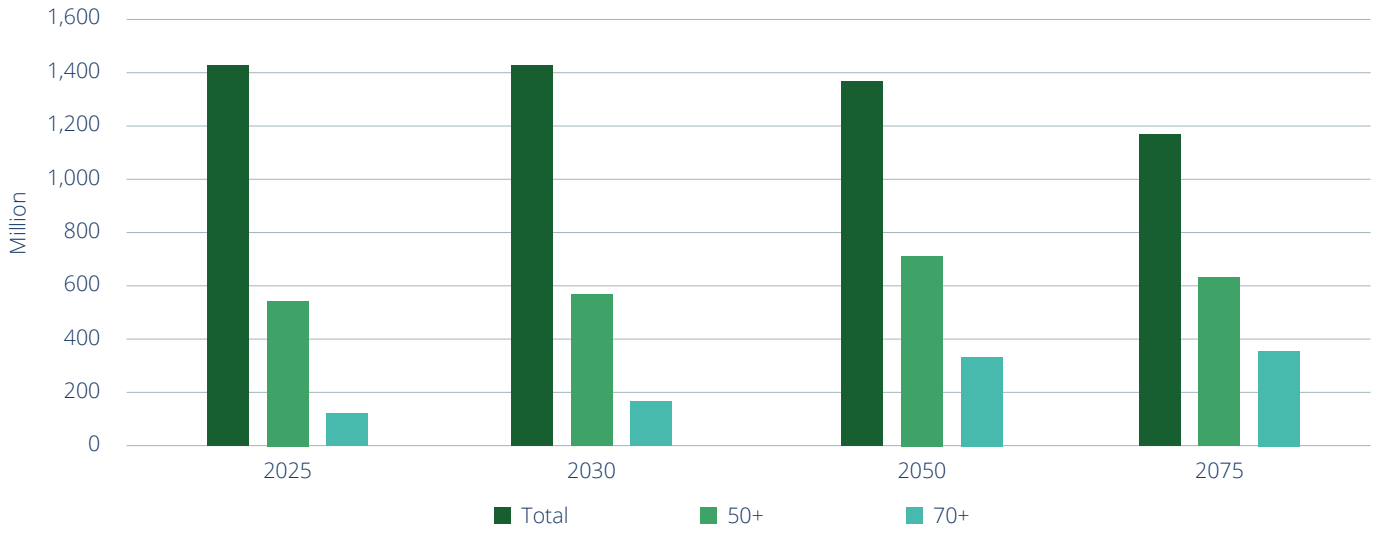
DEMOGRAPHIC TRENDS

China's population is projected to peak at 1,424 million in 2030, followed by a period of decline, with the population decreasing by 19% to 1,148 million by 2075 ***(Figure 1)***. Chinese currently have an average life expectancy of 79.0 years, which is expected to rise to 88.3 years by 2075, an increase of 12%.

The proportion of Chinese aged 50 years or older (50+) is set to rise significantly. In 2025, this group of 529.4 million people represents 37% of the total population. By 2075, this will increase to 632.5 million people representing 55% of the total population ***(Figure 1)***.

The most pronounced demographic shift will be among those aged 70 years or older (70+), whose numbers will rise from 138.4 million in 2025 to 339.2 million in 2075. While this represents a growth of 145% in absolute numbers, a more telling statistic is their increasing share of the total population. In 2025, those aged 70+ years made up almost 10% of China's 1,424 million people, but by 2075, they will represent 30% of a smaller total population of 1,148 million people. This shift reflects a 203% relative increase in their share of the total population, underscoring the significant ageing of China's demographic profile.

Figure 1. Population projections for China from 2025 to 2075 [1]



CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

In China, a range of clinical specialties are involved in the diagnosis of osteoporosis, including nuclear medicine, internal medicine, endocrinology, rheumatology, geriatrics, gynaecology, and orthopaedic surgery. Then, patient chooses whether GPs or specialist will provide the treatment. Osteoporosis is recognised as a standalone medical specialty and is a component of specialty medical training, in particular for endocrinologists, geriatricians, rheumatologists, orthopaedic surgeons, gynaecologists, primary care physicians, nuclear medicine doctors, and radiologists.

PATIENT SUPPORT ORGANISATIONS

China does not have any patient support organisations focused on osteoporosis. However, several foundations and assistance programmes target the general public. The *Beijing Renze Public Welfare Foundation* (仁泽公益基金会) runs recurring osteoporosis initiatives such as the "Bone as Strong as New" (骨固如新) patient assistance programme (2024–2025) supporting individuals with severe osteoporosis, and the "Strengthen muscles and bones, prevent and treat osteoporosis" (强肌健骨，防治骨松) education lecture series continuing in 2025. Earlier, the "Bone-Dance Life" national drug-assistance programme (骨舞人生" 严重骨质疏松患者援助项目), launched in 2015 by Beijing Life Oasis with support from the *Chinese Primary Health Care Foundation*, provided aid using teriparatide to patients with severe osteoporosis.

In addition, city and hospital-based WeChat programmes are increasingly being used for patient engagement. For example, Shanghai has launched a WeChat mini programme to help residents locate nearby osteoporosis diagnosis and treatment centres. Hospital teams also use WeChat for patient education and follow-up support, an approach supported by published evidence demonstrating improved outcomes among fragility fracture patients. Non-profit organisations such as Life Oasis also lead large-scale public education and outreach activities across hospitals and community venues nationwide.

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	2 – 3 days
% of hip fractures surgically managed	51 – 75%

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

In 2017, China's State Council released the 13th Five-Year Plan for Health and Wellness which aimed to establish a comprehensive medical and health system accessible to all urban and rural residents by 2020. This foundational plan laid the groundwork for broader healthcare reforms and public health initiatives.
https://www.gov.cn/xinwen/2017-01/10/content_5158559.htm

Building on this foundation, osteoporosis was formally recognised as a National Health Priority (NHP) in China in 2022. The NHP designation is mandated exclusively by the Ministry of Health, without involvement from other governing bodies. The associated national action plan prioritises dual-energy X-ray absorptiometry (DXA) scanning and access to osteoporosis treatments, both of which are reimbursed through the National Health System.

This action plan is closely aligned with broader public health initiatives, particularly the *China Health Initiative* (2017–2025), which addresses bone health alongside other chronic conditions under the "Healthy Bone Action" framework. Key areas of focus include nutritional support (specifically vitamin D and calcium intake), promotion of physical activity, fall prevention strategies, early screening, and comprehensive post-fracture management.

Furthermore, *China's Healthy China Action Plan* (2019–2030) reinforces these goals through a nationwide campaign to prevent disease and promote health, with bone health included as a priority area.
http://en.nhc.gov.cn/HealthyChinaActionPlan.html.

In addition to government-led efforts, there is growing patient engagement, particularly in the management of secondary osteoporosis, indicating a broader, community-involved approach to addressing this major public health issue.

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

The *Chinese Society of Osteoporosis and Bone Mineral Research,* the *Osteoporosis Society of China Association of Gerontology and Geriatrics society*, and the *Rheumatology Branch of the Chinese Medical Association* have published numerous guidelines for osteoporosis management, including:

- *Guidelines for the diagnosis and treatment of primary osteoporosis.* Chin J Osteoporosis Bone Miner Res Vol.15 No.6 November 10.2022 P573-611.
- *Guidelines for Diagnosis and treatment of Men Osteoporosis.* Chin J Osteoporosis Bone Miner Res Vol.13 No.5 September 10,2020, P381-395.
- *Guidelines for Diagnosis and treatment of Senile Osteoporosis* - Chin J Bone Joint Surg. Vol16. Nov.10. Oct.2023 P865-885.
- *Guideline for Diagnosis and treatment of glucocorticoid-induced osteoporosis, GIOP / Guidelines on Diagnosis and Management of Osteoporosis 2022* - Chin J. Intern Med. January 2021. Vol.60, P13-21.

The national guidelines include recommendations for population-based screening using tools such as the IOF One-Minute Osteoporosis Risk Check, the Osteoporosis Self-assessment Tool for Asians (OSTA), and FRAX®.

These guidelines also provide detailed guidance on fracture risk assessment, incorporating factors such as prior fracture history, age, BMD, and FRAX®. However, it is important to note that these clinical guidelines are not aligned with reimbursement policies. This disconnect exists because guidelines are developed by professional societies and non-governmental organisations (NGOs), whereas reimbursement decisions are made independently by government authorities. As a result, the content of the guidelines does not necessarily influence which treatments are covered or subsidised under national healthcare schemes.

The guidelines also outline treatment initiation criteria, including history of prior fracture, advanced age, low BMD, elevated FRAX® score, and glucocorticoid-induced osteoporosis (GIOP). The guidelines were developed without direct involvement from patients. Additional details about the development of guideline are included in *Table 1*.

Table 1. Development of clinical guidelines for the management of osteoporosis in China

Systematic literature review undertaken	Yes
Recommendations	Yes
Stakeholder involvement	Yes
External review	Yes
Procedure for update defined	Yes
Economic analysis	Yes
Editorial independence	Yes

CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

There is no centralised database for fractures in China.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
3,750 – 4,400*	142 – 2,700*	7*

** Best available estimates as reported by country experts*

The hospitals that participated in the survey to inform the Asia Pacific Regional Audit are located in the north and south of China.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	Other fracture types identified by or referred to an FLS
1 - 9%	1%
Hip fractures identified by or referred to an FLS	**Reimbursement mechanism to support FLS activities**
1%	Local health service
Vertebral fractures identified by or referred to an FLS	**% of patients recommended for treatment who actually receive treatment**
1%	20 – 49%

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

Table 2 provides an illustration of which osteoporosis treatments are available in China, whether they are reimbursed, and the proportion of the cost covered by the subsidy. Approved agents with demonstrated efficacy in reducing hip, non-vertebral, and vertebral fractures, including alendronate, risedronate, zoledronate, and denosumab, are considered appropriate first-line therapies for the majority of patients at high risk of osteoporotic fracture. For individuals who are unable to tolerate oral bisphosphonates or who present with very high fracture risk, denosumab, teriparatide, and zoledronate should be considered as initial therapy.

Treatment reimbursement varies by region, as it is funded through a combination of the national healthcare system, private insurance, and patient co-payments. While most patients receive support through the national health system, those with private insurance coverage may have part or full reimbursement, depending on the terms of their policy. This mixed model means that the extent of out-of-pocket cost to patients can vary significantly across jurisdictions.

Access to reimbursement is subject to several criteria, including a history of osteoporotic fracture, age, BMD T-score, whether the treatment is for primary or secondary prevention, and whether the therapy is classified as first- or second line.

In practice, reimbursement rules can sometimes limit access to preferred therapies, particularly for younger patients. For example, denosumab may only be reimbursed as a second-line option in patients under 70 years of age if other treatments are either ineffective or not tolerated. Similarly, teriparatide is generally not reimbursed, making it accessible only to patients who can afford to pay privately. This creates a gap between clinical recommendations and reimbursed prescribing practices, whereby some patients may be offered treatments outside of reimbursement frameworks if they are willing or able to cover the cost themselves.

Table 2. Availability and reimbursement of osteoporosis treatments in China

Treatment	Available	Reimbursed	% Reimbursed
Risedronate	X	X	60-80%
Alendronate	X	X	60-90%
Ibandronate	X	X	60-80%
Zoledronic acid	X	X	60-90%
Clodronate	X		
Pamidronate	X	X	60-80%
Raloxifene	X	X	60-90%
Bazedoxifene			
Denosumab	X	X	60-90%
Strontium Ranelate			
Teriparatide	X		
PTH (1-84)	X	X	60-80%
Abaloparatide			
Romosozumab			
Vitamin D/Calcium supplements	X	X	60-100%
Calcitonin	X	X	60-90%
Hormone Replacement Therapy	X	X	60-90%
Testosterone	X	X	60-90%
Alfacalcidol	X	X	60-90%
Calcidiol			
Calcitriol	X	X	60-90%
Tibolone	X	X	60-90%
Other (Chinese traditional herbal medicine)	X	X	The % reimbursed depends on the patient's age in Beijing, but not in other cities. The older the age group, the higher the percentage. For example, among individuals aged over 90 years, the proportion reaches approximately 90%. The % reimbursed also depends on the GDP of different provinces. Example, the % is higher in Beijing, Shanghai, and Guangzhou than in Tianjin, Changsha and even low-income provinces.

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in China.

Waiting time (d)	0 - 2
Cost (USD)	13.75 - 56
Is it reimbursed?	Reimbursable (50-100%)
Is reimbursement a barrier to accessing treatment?	No

Quantitative ultrasound is available in China.

Waiting time (d)	0
Cost (USD)	10 - 30
Is it reimbursed?	Limited to no reimbursement
Is reimbursement a barrier to accessing treatment?	No

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
National	Clinical Standards for Fracture Liaison Services	Osteoporosis and secondary prevention of fragility fracture	Every 3 months within 2 years in Beijing and Shanghai (National Center for Orthopaedics)
National	Medical record cover page	Hip fracture	Annually

FRACTURE RISK ASSESSMENT TOOLS

China uses FRAX® and FRAXplus®, but the tool is not widely used within the country.

OVERVIEW OF OSTEOPOROSIS IN CHINA

Osteoporosis is a growing public health concern in China, exacerbated by the country's rapidly ageing population and the rising prevalence of bone health issues among older adults. According to the Seventh National Population Census conducted in November and December 2020, China's population included 264 million individuals aged 60 years or older (approximately 18.7% of the total population), with over 190 million individuals aged 65 years or older (about 13.5% of the total population). The 2018 National Epidemiological Survey of Osteoporosis revealed that the prevalence of osteoporosis among those over 50 years of age was 19.2%, with 32.1% of females and 6.9% of males affected. Among those aged 65 years or older, the prevalence increased to 32%, with 51.6% of females and 10.7% of males affected. Additionally, the prevalence of vertebral fractures among individuals over 40 years was 10.5% in men and 9.5% in women. As the population continues to age, the burden of osteoporosis is expected to rise significantly, with projections indicating a notable increase in fracture incidence over the next decade due to demographic shifts.

Despite the increasing prevalence of osteoporosis, it has not been consistently prioritised as a national health issue in China. While there are clinical guidelines available for the management of osteoporosis, implementation and awareness at the primary care level remain variable across different regions. This inconsistency contributes to underdiagnosis and undertreatment of the condition. Vitamin D deficiency and inadequate calcium consumption are widespread concerns in China, contributing to the high prevalence of osteoporosis. Nutritional deficiencies exacerbate the risk of bone density loss and fractures, underscoring the need for public health initiatives focused on improving diet quality and promoting supplementation where necessary.

A key challenge in addressing osteoporosis in China is the severe shortage of DXA (dual-energy X-ray absorptiometry) scanners, which hinders the ability to conduct comprehensive, large-scale epidemiological studies on fracture outcomes. Such data are crucial for informing policy decisions, shaping clinical guidelines, and developing effective public health strategies. Without robust data, it becomes difficult to fully understand the scope of the disease's impact or assess the effectiveness of existing interventions.

Several major initiatives, including awareness campaigns, have been launched to address osteoporosis in China. These efforts aim to improve awareness among both the public and healthcare professionals, promote early detection, and enhance patient care. Looking ahead, China should prioritise the following actions to effectively combat osteoporosis:

- **Enhance public awareness and education.**
- **Strengthen healthcare infrastructure.**
- **Promote research and data collection.**

Key recommendations include:

- **Strengthen national policies** and increase funding for osteoporosis research and management.
- **Expand education** for both the public and healthcare professionals on osteoporosis prevention and management.
- **Revise current guidelines** for fracture screening and treatment to ensure equal focus on both men and women, with a particular emphasis on preventing vertebral fractures.
- **Improve dietary guidelines and supplementation programmes** to address vitamin D and calcium deficiencies.
- **Increase access to DXA machines** to expand diagnostic and treatment services.
- **Foster collaboration** between government, healthcare providers, and communities to implement comprehensive osteoporosis management programmes.

In summary, addressing osteoporosis in China requires a multifaceted approach that combines public health initiatives, improved healthcare services, and targeted research efforts. By prioritising these actions, China can effectively reduce the burden of osteoporosis and improve quality of life for its ageing population.

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This document highlights the key findings for China, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

ACKNOWLEDGMENTS

APAC Audit Contributors based in China
China Health Promotion Foundation (CHPF)
http://www.chinahpf.org.cn

Chinese Society of Osteoporosis and Bone Mineral Research (CSOBMR)
http://csobmr.cma.org.cn/

APAC AUDIT 2025

CHINESE TAIPEI

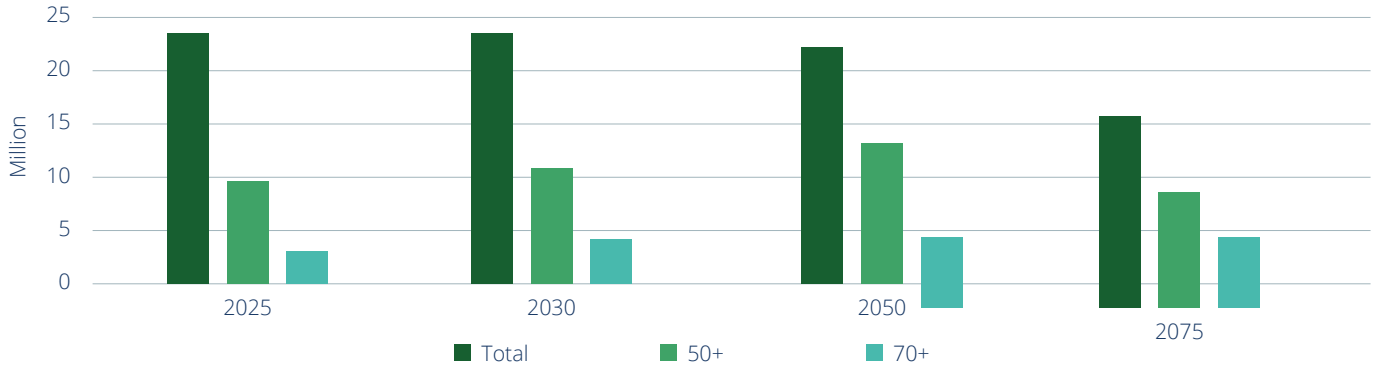
DEMOGRAPHIC TRENDS

The population of Chinese Taipei is projected to peak at more than 23.6 million in 2030, followed by a period of decline, with the population decreasing by 24% to 18.0 million by 2075 *(Figure 1)*. People in Chinese Taipei currently have an average life expectancy of 81.8 years, which is expected to rise to 89.8 years by 2075, an increase of 10%.

The proportion of people in Chinese Taipei aged 50 years or older is set to rise significantly. In 2025, this group of 9.8 million people represents 42% of the total population. By 2075, this will increase to 10.6 million people representing 59% of the total population *(Figure 1)*.

The most pronounced demographic shift will be among those aged 70 years or older, whose numbers will rise from 3.0 million in 2025 to 6.3 million in 2075. While this represents a growth of 110% in absolute numbers, a more telling statistic is their increasing share of the total population. In 2025, those aged 70+ made up almost 13% of Chinese Taipei's 23.6 million people, but by 2075, they will represent 35% of a smaller total population of 18.0 million people. This shift reflects a 175% relative increase in their share of the total population, underscoring the significant ageing of Chinese Taipei's demographic profile.

Figure 1. Population projections for Chinese Taipei from 2025 to 2075 [1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

In Chinese Taipei, the National Health Insurance Research Database provides a comprehensive resource from which fracture epidemiology data can be retrieved. However, these data are not routinely reported on an annual basis by the government, and no current summary is available for inclusion in this report.

PATIENT SUPPORT ORGANISATIONS

There are no patient support organisations focused on osteoporosis in Chinese Taipei. However, TOA has a patient education committee, patient support resource page and courses for nurse educators. Many hospitals also have patient support groups.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
3711[2,3]	482 - 1769[3]	7[2]

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

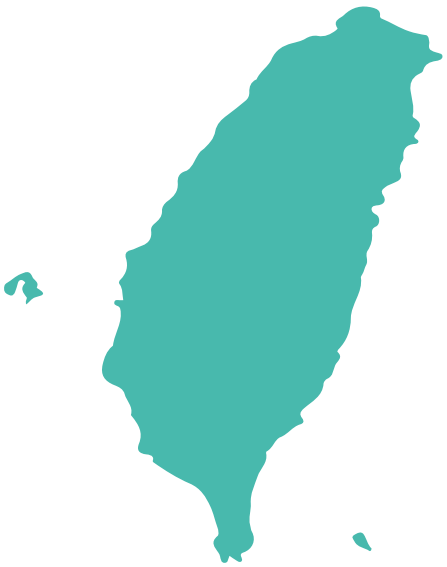
Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care mainly of orthopaedic surgeons, followed by internal medicine, geriatricians and family physicians. The *Taiwanese Osteoporosis Association (TOA)* offers courses to train osteoporosis specialists. However, it is not government accredited specialty.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not recognised as a National Health Priority (NHP) in Chinese Taipei.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	1 - 9%
Hip fractures identified by or referred to an FLS	17%
Vertebral fractures identified by or referred to an FLS	68%



Other fracture types identified by or referred to an FLS	15%
Reimbursement mechanism to support FLS activities	Individual hospital, research grant, private funding
% of patients recommended for treatment who actually receive treatment	70 - 89%

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	1 - 2 days
% of hip fractures surgically managed	> 90%

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a variety of osteoporosis treatments are available in Chinese Taipei. Antiresorptive medications are reimbursed as first-line therapy. Only those with very high-risk for fracture (bone mineral density T-score ≤-3.0) that have used antiresorptive medication for more than one year and sustain a new fragility fracture are reimbursed with bone formation medications. Prior to 2025, medications can only be reimbursed to those with hip fracture or vertebral compression fracture AND low BMD. Since March 2025, coverage extended to radius and humerus fractures for three specific medications. Also, for osteoporosis patients with rheumatoid arthritis, diabetes mellitus taking insulin therapy, and those that used prednisone equivalent dose of more than 5 mg/d for 3 months, two specific medications were reimbursed. When patients fit the reimbursement criteria, medications are paid 100% by the National Health Insurance system with very limited co-pay. Otherwise, patients would pay out-of-pocket if physicians feel treatments are necessary. Reimbursement policy does not interfere with what physicians would normally recommend to patients.

Table 1. Availability and reimbursement of osteoporosis treatments in Chinese Taipei

Treatment	Available	Reimbursed
Risedronate	X	X
Alendronate	X	X
Ibandronate	X	X
Zoledronic acid	X	X
Clodronate		
Pamidronate		
Raloxifene	X	X
Bazedoxifene	X	X
Denosumab	X	X
Strontium Ranelate	X	
Teriparatide	X	X
PTH (1-84)	X	
Abaloparatide		
Romosozumab	X	X
Vitamin D/Calcium supplements		
Calcitonin		
Hormone Replacement Therapy	X*	X
Testosterone	X	X
Alfacalcidol	X**	X
Calcidiol		
Calcitriol		
Tibolone	X*	X

* Reimbursed as a hormone NOT as osteoporosis medication.
**Reimbursed for postmenopausal women with hip fracture or compression fracture, NOT combined with other osteoporosis medications.

FRACTURE RISK ASSESSMENT TOOLS

FRAX®, FRAXplus® and American Bone Health Calculator are used in Chinese Taipei, with FRAX® being the most widely used fracture risk calculator. The OSTA, OSTAi and MOSTAi are also used in a convenient way.

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2023, the Taiwanese Osteoporosis Association (TOA) published updated clinical practice guidelines for the prevention and treatment of osteoporosis. The guidelines address population-based screening and provide the following indications for bone mineral density (BMD) measurement:

1. Women over 65 years of age or men over 70 years of age.
2. Menopausal women under 65 years of age with risk factors.
3. Women in the menopausal age range who have clinical fracture risk factors, such as being underweight, previous fractures, or the use of medications that increase fracture risk.
4. Men aged 50 to 70 years with fracture risk factors.
5. Individuals with fragility fractures (defined as fractures occurring from low-impact events).
6. Individuals with conditions related to low bone mass or bone mass loss.
7. Individuals taking medications that cause low bone mass or bone mass loss.
8. Anyone who requires anti-osteoporosis medications.
9. Individuals requiring monitoring to assess the effectiveness of treatment.
10. Evidence of bone loss, with consideration of treatment.
11. Individuals with moderate FRAX® risk.

The guidelines also address fracture risk assessment, considering factors such as prior fractures, age, BMD, and FRAX® scores, and are aligned with reimbursement policies.

Criteria for treatment are based on prior fractures, age, BMD, and FRAX® and are similarly compatible with reimbursement policies. The guidelines were developed without direct patient involvement. Additional details on the development of these guidelines are included in *Table 2*.

Table 2. Development of clinical guidelines for the management of osteoporosis in Chinese Taipei

Systematic literature review undertaken	Yes
Recommendations	Yes
Stakeholder involvement	Yes
External review	Yes
Procedure for update defined	Yes
Economic analysis	Yes
Editorial independence	Yes

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
National	Guidelines for Prevention and Treatment of Osteoporosis	Osteoporosis and secondary prevention of fragile fracture	Update every 2 years

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Chinese Taipei

Waiting time (d)	Urban medical centre 30, rural hospitals 1-7
Cost (USD)	40 (2 sites)
Is it reimbursed?	Partially (or conditionally)*
Is reimbursement a barrier to accessing treatment?	Yes

* DXA is reimbursed mainly for patients with endocrine disorders, fragility fractures, prostate cancer and breast cancer patients before and after certain medications, and under osteoporosis treatment to monitor progress.

No specific information was provided on access to ultrasound, but it was popular in a general awareness survey and for screening in the community.

OVERVIEW OF OSTEOPOROSIS IN CHINESE TAIPEI

In Chinese Taipei, the number of prevalent osteoporosis cases increased from 2008 to 2015 and remained stable until 2019. However, age-standardised prevalence and incidence rates declined over this period, from 3.8% to 2.9% and from 2.0% to 1.0%, respectively. The overall incidence rates of hip and spine fractures decreased significantly by 34% and 27%, respectively. Among patients with hip and spine fractures, the refracture rates were 8.5% and 12.9%, respectively, while the 1-year mortality rate remained stable at approximately 15% for hip fractures and 6% for spine fractures. Multiple real-world evidence studies have demonstrated that the use of osteoporosis medications after a fracture is associated with significant reductions in both refracture risk and all-cause mortality.

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2. Kim H, Cheng S-H, Yamana H, et al. Variations in hip fracture inpatient care in Japan, Korea, and Taiwan: an analysis of health administrative data. BMC Health Services Research. 2021; 21: 694. doi:10.1186/s12913-021-06621-y
3. Chan DC, McCloskey EV, Chang CB, et al. Establishing and evaluating FRAX® probability thresholds in Taiwan. J Formos Med Assoc 2017;116:161-8.

This document highlights the key findings for Chinese Taipei, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

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APAC Audit Contributor based in Chinese Taipei
Taiwanese Osteoporosis Association (TOA)
http://www.toa1997.org.tw/

APAC AUDIT 2025

HONG KONG SAR

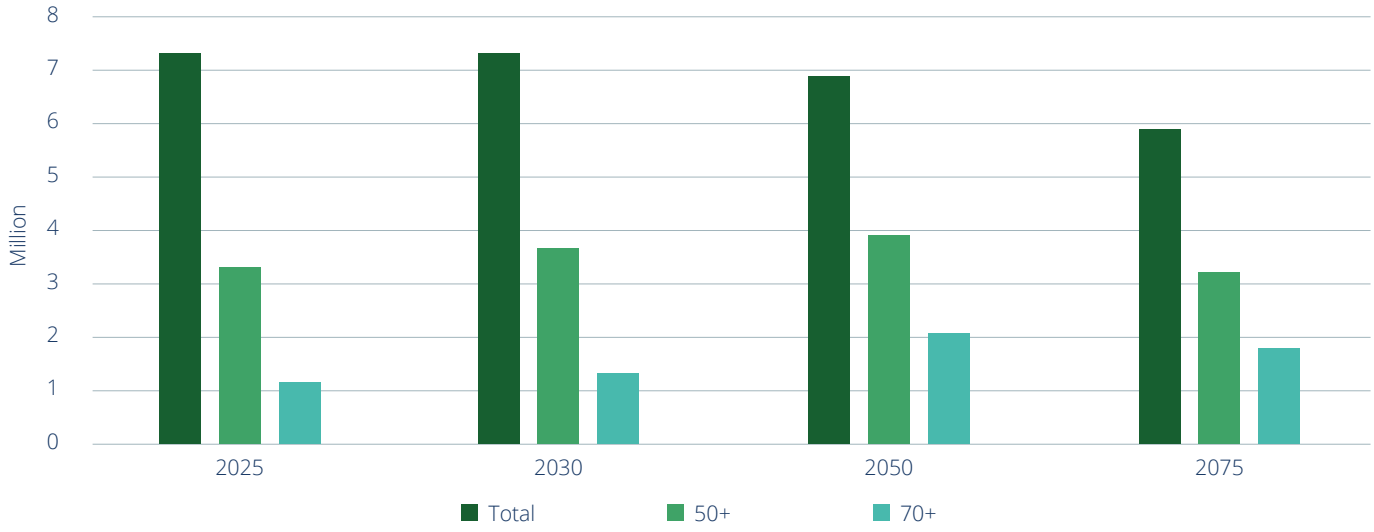
DEMOGRAPHIC TRENDS

The population of Hong Kong SAR is projected to peak at 7.3 million in 2030, followed by a period of decline, with the population decreasing by 19% to 5.9 million by 2075 *(Figure 1)*. Hong Kongers currently have an average life expectancy of 84.2 years, which is expected to rise to 91.1 years by 2075, an increase of 8%.

The proportion of Hong Kongers aged 50 years or older is expected to rise until mid-century before gradually declining. In 2025, this demographic comprises 3.4 million people, or 47% of the total population. By 2050, the number is projected to exceed 3.8 million, making up 56% of the population. However, by 2075, it is expected to decline to 3.2 million, while still accounting for 55% of the total population *(Figure 1)*.

A similar trend is projected for those aged 70 years or older, with their numbers rising from nearly 1.1 million in 2025 (15% of the population) to 2.1 million by 2050 (30%). By 2075, this group is expected to decline slightly to 1.8 million, while making up 31% of the total population.

Figure 1. Population projections for Hong Kong SAR from 2025 to 2075 [1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

Is a centralised database established?	Yes
Level of database coverage	Hospital
Hip fracture records documented per year	5,475
Percentage of hip fractures treated surgically	90
All fracture records documented per year	34,675
Percentage of all fractures treated surgically	42
Age range and gender of patients in database	40-75+ years for both males and females

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
8,000 - 12,788	No data	18 - 24

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is managed by primary care physicians, internal medicine physicians, and endocrinologists, rheumatologists, geriatricians, and orthopaedic surgeons. Osteoporosis is recognised as a standalone medical specialty and is a key component of specialty medical training, particularly in endocrinology and rheumatology. Indeed, the majority of complex and very high-risk cases are under the care of endocrinologists and rheumatologists.

PATIENT SUPPORT ORGANISATIONS

The Osteoporosis Society of Hong Kong SAR is a patient-focused organisation dedicated to osteoporosis. Operating both locally and internationally, the society focuses on a single disease and provides a platform to discuss various osteoporosis-related topics, including the latest scientific advances, clinical management, advocacy, capacity building, education, peer support, and research and development. For more information, visit *https://www.oshk.org.hk/*.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	Other fracture types identified by or referred to an FLS
25 – 50 %	10%
Hip fractures identified by or referred to an FLS	**Reimbursement mechanism to support FLS activities**
40 – 90%	Local health service
Vertebral fractures identified by or referred to an FLS	**% of patients recommended for treatment who actually receive treatment**
30 – 40%	70 – 89%

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a variety of osteoporosis treatments are available in Hong Kong. First-line treatments include alendronate with calcium and vitamin D, as well as zoledronate and denosumab (under the secondary fracture prevention programme). Treatment costs are partially reimbursed through a combination of the public health system, private providers, and co-payments, depending on the individual's insurance. Reimbursement is subject to conditions, including a history of prior fractures and the need for authorisation. Reimbursement policy does sometimes interfere with what physicians would normally recommend to patients.

Table 1. Availability and reimbursement of osteoporosis treatments in Hong Kong SAR

Treatment	Available	Reimbursed
Risedronate	X	
Alendronate	X	X
Ibandronate	X	
Zoledronic acid	X	X
Clodronate		
Pamidronate	X	
Raloxifene	X	
Bazedoxifene		
Denosumab	X	X
Strontium Ranelate		
Teriparatide	X	X
PTH (1-84)		
Abaloparatide		
Romosozumab	X	X
Vitamin D/Calcium supplements	X	X
Calcitonin	X	
Hormone Replacement Therapy	X	
Testosterone	X	
Alfacalcidol		
Calcidiol		
Calcitriol	X	
Tibolone		

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not documented as a Public Health Priority (PHP) in Hong Kong SAR.

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	2 - 3 days
% of hip fractures surgically managed	76 - 90%

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2024, the Osteoporosis Society of Hong Kong (OSHK) updated its 2013 guidelines for the clinical management of postmenopausal osteoporosis in Hong Kong[2]. The updated guidelines address population-based screening, with a focus on FRAX® and DXA screening. They provide a framework for fracture risk assessment, considering factors such as prior fractures, age, bone mineral density, and FRAX®. Additionally, the assessment guidelines align with reimbursement policies. Treatment criteria include prior fractures, age, BMD, FRAX®, and glucocorticoid-induced osteoporosis, all of which are consistent with reimbursement policies. The guidelines were developed without direct patient involvement. Additional details on the development of these guidelines are included in *Table 2*.

Table 2. Development of clinical guidelines for the management of osteoporosis in Hong Kong SAR[2]

Systematic literature review undertaken	Yes
Recommendations	Yes
Stakeholder involvement	Yes
External review	No
Procedure for update defined	Peer review
Economic analysis	No
Editorial independence	Yes

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Hong Kong SAR.

Waiting time (d)	1 - 2 years (public hospitals), 1 week or less (private)
Cost (USD)	125 - 130
Is it reimbursed?	Free in public setting Not reimbursed in public setting
Is reimbursement a barrier to accessing treatment?	Yes

No data was provided on access to ultrasound in Hong Kong SAR.

FRACTURE RISK ASSESSMENT TOOLS

FRAX® is widely used in Hong Kong SAR. When using FRAX®, the decision to initiate treatment is based on a fixed probability threshold and a combination of FRAX® score and BMD thresholds. This approach is applied to both men and women. An age-dependent probability threshold is not required for determining treatment eligibility.

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
Local	Treatment of osteoporosis	Osteoporosis and secondary prevention of fragility fracture	Don't know
Local	Fragility fracture programme	Hip fractures mainly	All hip fractures in hospital

OVERVIEW OF OSTEOPOROSIS IN HONG KONG SAR

The number of osteoporosis cases is rising, placing an increasing burden on the public healthcare system. The majority of cases, whether related to primary or secondary fracture prevention, are managed within public hospitals. For secondary prevention, alendronate is the first-line treatment, followed by denosumab and zoledronic acid as second-line options, and teriparatide and romosozumab as third-line treatments. Patients requiring primary prevention must self-finance their osteoporosis medications. Access to DXA scans in the public sector is limited due to long waiting times, and DXA is not a reimbursed service. As a result, the public healthcare system is struggling to meet the growing demand. Currently, osteoporosis is not considered a public health priority in Hong Kong SAR.

Almost all hip fracture cases are managed within the public healthcare system, making it feasible to initiate a secondary fracture prevention programme. Efforts are underway to progressively extend this service to patients with other types of fragility fractures as resources allow. However, launching a widespread osteoporosis screening programme remains challenging due to the involvement of multiple healthcare professionals. There is hope that the Osteoporosis Society of Hong Kong will soon take the lead in driving progress in this area.

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This document highlights the key findings for Hong Kong SAR, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

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APAC Audit Contributors based in Hong Kong SAR
Osteoporosis Society of Hong Kong (OSHK)
https://oshk.org.hk

Queen Elizabeth Hospital
https://www3.ha.org.hk/qeh/tch/main/index.htm

www.osteoporosis.foundation

APAC AUDIT 2025

INDIA

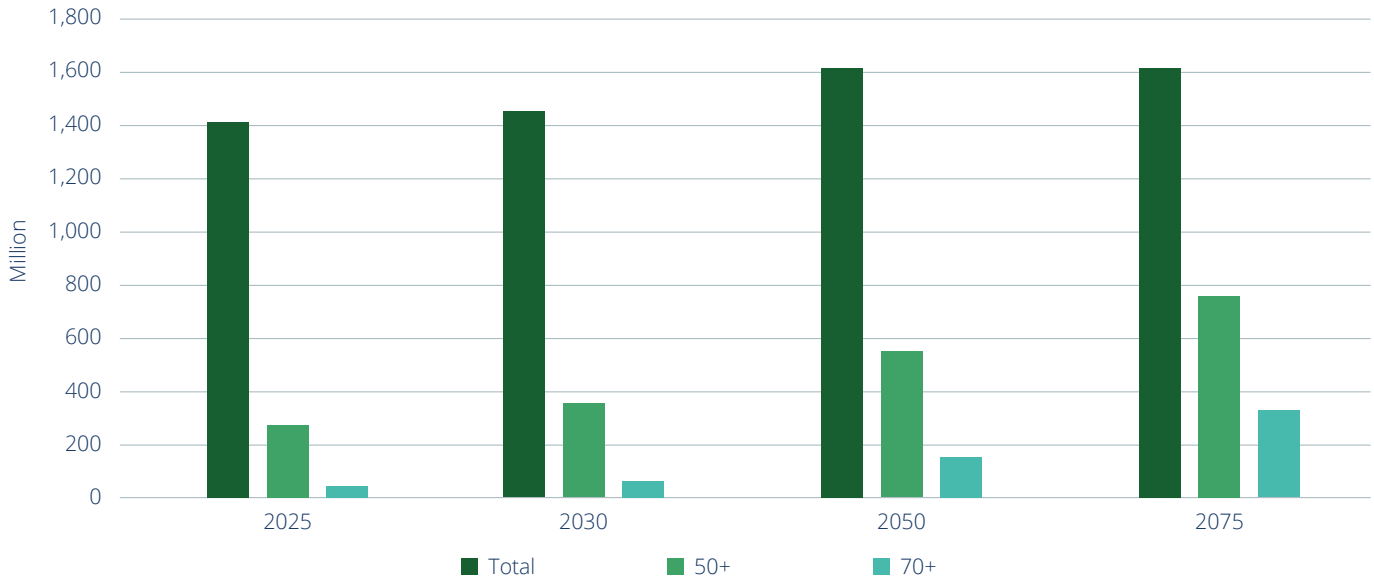
DEMOGRAPHIC TRENDS

India's population is projected to grow steadily until the mid-21st century, increasing by 14% from 1,419 million in 2025 to 1,622 million by 2050. However, population growth is expected to slow significantly in the second half of the century, with only a marginal increase of less than 1% to 1,625 million by 2075 *(Figure 1)*. Indians currently have an average life expectancy of 68.7 years, which is expected to rise to 82.5 years by 2075, an increase of 20%.

The proportion of Indians aged 50 years or older is set to rise significantly. In 2025, this group of 293.9 million people represents 21% of the total population. By 2075, this will increase to 45%, with numbers more than doubling to 730.9 million *(Figure 1)*.

The most dramatic demographic shift in India will be among those aged 70 years or older, whose numbers are projected to surge from 57.7 million in 2025 to 309.5 million in 2075, a 436% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for just 4% of India's 1,419 million people. By 2075, they will make up 19% of a larger 1,622 million population, reflecting a 368% relative increase in their proportion of the total population.

Figure 1. Population projections for India from 2025 to 2075 [1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

There is no centralised database for fractures in India.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
764 [2,3]	No data	12 [4]

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care of rheumatologists, orthopaedic surgeons, gynaecologists, and endocrinologists. It is not recognised as a standalone medical specialty. However, osteoporosis is currently a formal component of specialty medical training.

PATIENT SUPPORT ORGANISATIONS

There are no patient support organisations that focus on osteoporosis in India.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not documented as a National Health Priority (NHP) in India.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a variety of osteoporosis treatments are available in India. It is currently not possible to provide precise data on the percentage of reimbursement for individual osteoporosis medications in India, as no such data exists. Reimbursement is commonly available in public and government hospitals but is infrequent in the private sector. This is particularly significant given that more than 60% of healthcare in India is delivered through the private sector, where outpatient expenses, such as those for osteoporosis medications, are typically borne directly by patients. According to the *National Family Health Survey (NFHS)* 2019-21, approximately 40% of the population is now covered by some form of health insurance, but this coverage is often limited in scope.

Financial considerations play a critical role in access to treatment. Reimbursement is generally more accessible for generic medications than for innovative new drugs. Most osteoporosis therapies, except for romosozumab, are available as generics manufactured locally in India, which helps reduce costs. Romosozumab has been launched in the Indian market in 2024 and is not widely used as yet, due to the high cost.

In general, health insurance policies in India do not provide coverage for outpatient treatments, which includes routine osteoporosis management. While hospitalisation and surgery for conditions such as hip fractures may be reimbursed, the associated long-term osteoporosis medications often are not. As a result, treatment remains an out-of-pocket expense for most patients.

A recent initiative by the *National Health Authority of India* aims to expand insurance coverage, particularly for underserved populations. Notably, the scope of this programme was recently broadened to include all individuals over the age of 70 years. This expansion may significantly improve access to osteoporosis care for older adults, who are at the highest risk of fragility fractures.

Treatment reimbursement depends on the patient's insurance status. In some cases, costs are partially covered by private insurance providers, while in others, treatment may be fully reimbursed through the national health system. However, there are no standard conditions applied consistently across the system. Reimbursement policies are fragmented and, at times, may interfere with clinical decision-making, limiting physicians' ability to prescribe the most appropriate therapies. Access to reimbursed osteoporosis treatment remains uneven, and for most individuals, it continues to represent a significant out-of-pocket financial burden.

Table 1. Availability and reimbursement of osteoporosis treatments in India

Treatment	Available	Reimbursed
Risedronate	X	X
Alendronate	X	X
Ibandronate	X	X
Zoledronic acid	X	X
Clodronate		
Pamidronate		
Raloxifene		
Bazedoxifene		
Denosumab	X	X
Strontium Ranelate		
Teriparatide	X	X
PTH (1-84)		
Abaloparatide		
Romosozumab	X	X
Vitamin D/Calcium supplements	X	X
Calcitonin	X	X
Hormone Replacement Therapy	X	X
Testosterone	X	X
Alfacalcidol	X	X
Calcidiol		
Calcitriol	X	X
Tibolone	X	X

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	1 - 2 days
% of hip fractures surgically managed	76 - 90%

FRACTURE RISK ASSESSMENT TOOLS

India uses FRAX® [3], and its adoption is gradually increasing; however, it is not yet widely used across the country. The utility of FRAX® without DXA has been highlighted [5].

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	1 – 9 %
Hip fractures identified by or referred to an FLS	1%
Vertebral fractures identified by or referred to an FLS	1%
Other fracture types identified by or referred to an FLS	1%
Reimbursement mechanism to support FLS activities	Local health service & Private funding
% of patients recommended for treatment who actually receive treatment	20 – 49%

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

The 2021 *Indian Society for Bone and Mineral Research (ISBMR)* guidelines [6] aim to improve the diagnosis and management of osteoporosis in India, emphasising early screening, maintaining optimal vitamin D levels, and first-line pharmacotherapy for specific populations as follows:

- **Vertebral fractures:** Teriparatide is recommended as an initial anabolic treatment for 24 months, followed by antiresorptive agents. Zoledronic acid or denosumab are also effective, with zoledronic acid preferred due to clearer discontinuation protocols.
- **Hip fractures:** Intravenous zoledronic acid is the preferred agent, ideally administered before hospital discharge. Denosumab is a suitable alternative. Oral bisphosphonates may be used if injectables are declined. Teriparatide is less commonly used due to limited data for hip fracture prevention.
- **High-risk individuals without fractures:** Bisphosphonates (oral or intravenous) are typically first-line, with zoledronic acid favoured for its convenience. Denosumab is an alternative for those intolerant of bisphosphonates. Teriparatide is considered for very low BMD (T-score < -3.5) and high vertebral fracture risk. Timely dosing is critical to avoid rebound fractures with denosumab.
- **Low to moderate risk cases:** Alendronate, risedronate, zoledronic acid, and denosumab are all effective. Oral bisphosphonates are generally preferred in this group.

The guidelines address population-based screening. Fracture risk assessment is covered in the guidelines, considering factors such as prior fracture, age, bone mineral density, and FRAX®. However, the assessment guidance is not aligned with existing reimbursement policies. Treatment criteria are also outlined, including prior fracture, age, BMD, FRAX®, and glucocorticoid-induced osteoporosis. These criteria, however, are not compatible with reimbursement policies, as no formal reimbursement system currently exists. The guidelines were developed without direct patient involvement. Additional details on the development of these guidelines are included in *Table 2*. An updated version of the guidelines is under preparation.

Table 2. Development of clinical guidelines for the management of osteoporosis in India

Systematic literature review undertaken	No
Recommendations	Yes
Stakeholder involvement	Yes - ISBMR
External review	Yes
Procedure for update defined	No
Economic analysis	Yes
Editorial independence	Yes

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in India

Waiting time (d)	0 - 3 (longer in public sector)
Cost (USD)	25 - 50
Is it reimbursed?	Limited to none
Is reimbursement a barrier to accessing treatment?	Yes

Quantitative ultrasound is available in India.

Waiting time (d)	0
Cost (USD)	15
Is it reimbursed?	Sometimes
Is reimbursement a barrier to accessing treatment?	Yes

QUALITY INDICATORS

There are no quality indicators for hip and other fractures in India.

OVERVIEW OF OSTEOPOROSIS IN INDIA

Osteoporosis in India remains under recognised and undertreated. There is a pressing need for stakeholders across the healthcare system to collaborate in developing a national strategy. Life expectancy in India is now close to 70 years and continues to rise annually. As a result, the number of fragility fractures is also increasing, based on strong clinical impressions, although published data are lacking. While vertebral fracture rates in India appear comparable to those observed in Western countries, reliable data on hip fractures remain limited and inconsistent [7,8].

Despite the growing burden, osteoporosis and fragility fractures have yet to be recognised as national health priorities. These conditions compete for attention and resources alongside other rapidly increasing chronic diseases, such as diabetes, cardiovascular disease, and cancer. In 2021, the *Indian Society for Bone and Mineral Research (ISBMR)* released recommendations for the diagnosis and treatment of osteoporosis [6]. However, these are not graded recommendations and are primarily based on expert consensus.

Complementing these recommendations, a reference database for bone mineral density (BMD) in healthy Indian adults has been established [9], which may have important clinical implications for improving diagnosis and guiding intervention strategies for osteoporosis management.

Vitamin D deficiency is widespread across India, as demonstrated by numerous studies. The National Nutrition Survey (2016–2018) reported vitamin D deficiency, defined as a 25(OH)D level below 12 ng/mL, in 14% of preschool children (1–4 years), 18% of school-age children (5–9 years), and 24% of adolescents (10–19 years) [10]. Prevalence varies widely by region, with some areas, such as Delhi, showing rates exceeding 50%. Contributing factors include limited sun exposure and severe air pollution, particularly in urban settings. These findings make a strong case for national food fortification with vitamin D. Although not mandatory, government-recommended fortification of milk and edible oil is gaining popularity.

Calcium intake in India is also lower than recommended, with an estimated average daily intake of just 429 mg [11]. However, substantial variation exists across different states. Improving both calcium and vitamin D intake remains an important public health objective.

The ISBMR has undertaken several initiatives to raise awareness of osteoporosis in India. Academic symposia are conducted regularly across the country, including 16 IOF/ISCD *"Osteoporosis Essentials"* courses aimed at educating healthcare professionals, particularly orthopaedic surgeons. An annual national conference brings together leading Indian experts and invited international faculty. In addition, ISBMR members and office bearers have contributed to significant research publications in recent years, authored articles in major newspapers, and appeared on national television to highlight the public health implications of vitamin D deficiency and fragility fractures.

One of ISBMR's recent initiatives focuses on assessing bone health in individuals with diabetes, a population estimated to exceed 100 million in India. Some centres have begun incorporating bone health assessments into routine diabetes care, and efforts are underway to promote this as a standard practice nationwide.
A key priority moving forward is the collection of accurate data on hip fracture incidence, which is currently lacking. Reliable data would support the development of a more accurate, India-specific FRAX® tool, improving fracture risk prediction and patient management. In parallel, there is a need to expand access to and reimbursement for bone density testing and outpatient treatment for osteoporosis. Finally, broader implementation of vitamin D fortification programmes, alongside robust impact evaluations, is essential to address the widespread deficiencies and their long-term consequences.

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APAC Audit Contributors based in India
Indian Rheumatology Association (IRA)
https://indianrheumatology.org/

Indian Society for Bone and Mineral Research (ISBMR)
https://isbmr.org/

www.osteoporosis.foundation

APAC AUDIT 2025

INDONESIA

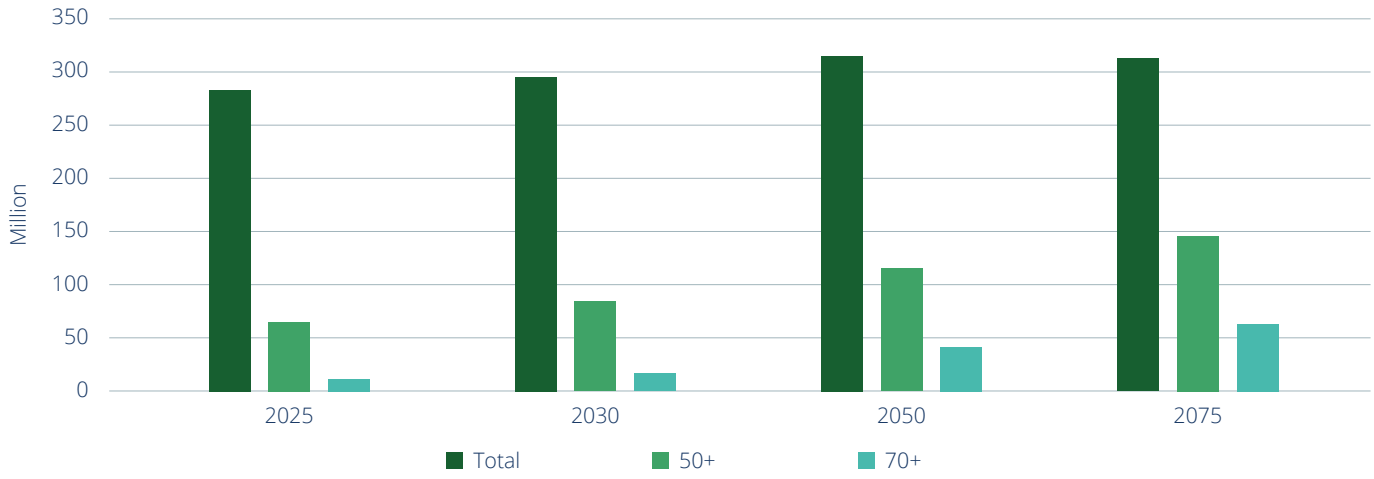
DEMOGRAPHIC TRENDS

Indonesia's population is projected to grow steadily until the mid-21st century, increasing by 12% from 283.6 million in 2025 to 318.4 million by 2050. However, this growth will be followed by a period of gradual decline, with the population decreasing by 1% to 314.7 million by 2075 *(Figure 1)*. Indonesians currently have an average life expectancy of 73.8 years, which is expected to rise to 85 years by 2075, an increase of 15%.

The proportion of Indonesians aged 50 years or older is set to rise significantly. In 2025, this group of 68.2 million people represents 24% of the total population. By 2075, this will increase to 46%, with numbers more than doubling to 145.0 million *(Figure 1)*.

The most dramatic demographic shift in Indonesia will be among those aged 70 years or older, whose numbers are projected to surge from 13.9 million in 2025 to 63.3 million in 2075, a 355% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for just 5% of Indonesia's 283.6 million people. By 2075, they will make up 20% of a larger 318.4 million population, reflecting a 310% relative increase in their proportion of the total population.

Figure 1. Population projections for Indonesia from 2025 to 2075[1]



HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
10,000*	No data	5 - 8*

**Best available estimates as reported by country experts in the absence of published data.*

CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

There is no centralised database for fractures in Indonesia.

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care of rheumatologists and orthopaedic surgeons. Osteoporosis is recognised as a standalone medical specialty and is currently a formal component of specialty medical training, particularly for rheumatologists.

PATIENT SUPPORT ORGANISATIONS

PERWATUSI (Perhimpunan Warga Tulang Sehat Indonesia, the Indonesian Healthy Bones Society) is a national-level patient support organisation in Indonesia dedicated exclusively to osteoporosis. The organisation plays a multifaceted role in osteoporosis prevention and management, focusing on public education, policy engagement, and community empowerment. PERWATUSI is particularly active in capacity building among women's organisations. PERWATUSI is well known for its pioneering work in developing *Senam Osteoporosis*, a tailored exercise programme aimed at maintaining bone health and preventing falls, both for older adults and as a preventive strategy for younger populations. PERWATUSI also engages in research and development to enhance these programmes and assess their impact.

In its efforts, PERWATUSI receives peer support and collaboration from *PEROSI (Perhimpunan Osteoporosis Indonesia, the Indonesian Osteoporosis Association)*, which is a professional medical society focused on clinical aspects of osteoporosis. This collaboration strengthens the link between patient-centred support and evidence-based clinical guidance, fostering a comprehensive approach to osteoporosis care in Indonesia.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not documented as a National Health Priority (NHP) in Indonesia.

FRACTURE RISK ASSESSMENT TOOLS

FRAX® is widely used in Indonesia to assess fracture risk. The decision to initiate treatment is based on a fixed probability threshold and a combination of FRAX® scores and BMD values. This approach is applied to both men and women. Age-dependent probability thresholds are not used to determine treatment eligibility.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in ***Table 1***, several osteoporosis treatments are available in Indonesia. First-line osteoporosis treatments include bisphosphonates such as risedronate and zoledronic acid, as well as calcium and vitamin D supplements.

Treatment costs are either partially covered by the national health system or fully reimbursed through private insurance, depending on the patient's insurance status. Reimbursement is subject to specific criteria, including a history of prior fracture, bone mineral density, indication for secondary fracture prevention, use of first- or second-line therapies, and prior authorisation.

In some cases, reimbursement policies may conflict with physicians' preferred treatment plans. Prescriptions for osteoporosis medications typically need to be issued by a specialist, such as an internal medicine physician or an orthopaedic surgeon. For risedronate and zoledronic acid to be reimbursed, patients must either have a BMD-DXA T-score below –2.5 or radiographic evidence of a fracture.

Table 1. Availability and reimbursement of osteoporosis treatments in Indonesia

Treatment	Available	Reimbursed	% Reimbursed
Risedronate	X	X	100%
Alendronate	X	X	0-100%*
Ibandronate	X		
Zoledronic acid	X	X	100%
Clodronate			
Pamidronate			
Raloxifene	X		
Bazedoxifene			
Denosumab			
Strontium Ranelate			
Teriparatide			
PTH (1-84)			
Abaloparatide			
Romosozumab			
Vitamin D/Calcium supplements	X	X	100%
Calcitonin	X		
Hormone Replacement Therapy	X	X	100%
Testosterone	X		
Alfacalcidol	X	X	100%
Calcidiol			
Calcitriol	X	X	100%
Tibolone			

* *Sometimes full coverage, sometimes no coverage.*

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

There are no FLS in Indonesia.

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
National	Pedoman Nasional Praktek Kedokteran untuk Osteoporosis	Adult and childhood osteoporosis	None
National	IRA recommendation for diagnosis and treatment GIOP	GIOP	None

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2023, the Indonesian osteoporosis guidelines were updated by PEROSI, the Ministry of Health, and the *Indonesian Rheumatology Association*, replacing the previous 2012 version [2]. These updated guidelines were developed to raise awareness among medical practitioners regarding the detection and management of osteoporosis. The scope of the guidelines includes postmenopausal women, glucocorticoid-induced osteoporosis, and osteoporosis in men.

The guidelines do not include recommendations for population-based screening. However, they do address fracture risk assessment, considering factors such as prior fracture, age, bone mineral density, and FRAX®. The assessment guidance is compatible with current reimbursement policies.

Treatment criteria are also clearly defined and include prior fracture, age, BMD, FRAX® scores, and glucocorticoid-induced osteoporosis. These treatment criteria are aligned with reimbursement policies. The guidelines were developed without direct patient involvement. Additional details on the development of these guidelines are included in *Table 2*.

Table 2. Development of clinical guidelines for the management of osteoporosis in Indonesia

Systematic literature review undertaken	Yes
Recommendations	Based on literature review without analysis
Stakeholder involvement	Yes
External review	Yes
Procedure for update defined	Yes
Economic analysis	No
Editorial independence	Yes

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	> 3 days
% of hip fractures surgically managed	51 - 75%

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Indonesia.

Waiting time (d)	0 - 3
Cost (USD)	60 - 150
Is it reimbursed?	Limited to none
Is reimbursement a barrier to accessing treatment?	Yes

Quantitative ultrasound is available in Indonesia.

Waiting time (d)	1
Cost (USD)	50
Is it reimbursed?	Yes
Is reimbursement a barrier to accessing treatment?	Yes

OVERVIEW OF OSTEOPOROSIS IN INDONESIA

Osteoporosis and osteoporosis-related fractures remain significantly underdiagnosed and undertreated in Indonesia. Both the *Indonesian Osteoporosis Association (PEROSI)* and the *Indonesia Rheumatology Association (IRA)* identified key contributing factors to this challenge, including limited awareness among healthcare professionals, restricted access to diagnostic tools, and uneven distribution of treatment options across the country.

PEROSI highlighted that the burden of osteoporosis in Indonesia is expected to rise with the ageing population, increasingly sedentary lifestyles, low calcium intake, and widespread use of corticosteroids. A critical barrier to diagnosis is the limited number of bone mineral density (BMD) scanners nationwide. Awareness among general practitioners (GPs) and specialists remains low. In response, PEROSI took steps to build capacity by training around 100 GPs in 2023 to screen for osteoporosis, supported by a grant from the *International Osteoporosis Foundation (IOF)*. They have also submitted recommendations to the Indonesian Ministry of Health to prioritise osteoporosis screening within primary healthcare and to provide at least one BMD scanner in every province.

IRA echoed these concerns and further emphasised the lack of national data on osteoporosis and related fractures, noting the absence of a centralised registry. They identify several structural challenges, including the limited number of healthcare professionals with expertise in osteoporosis, inadequate diagnostic infrastructure, and the difficulty in distributing therapies across Indonesia's vast archipelago. Despite these challenges, significant steps have been taken at the policy level. IRA noted major initiatives such as the development of the National Guidance for Medical Service of Osteoporosis by the Ministry of Health and their own N*ational Guideline for Glucocorticoid-Induced Osteoporosis (GIOP)*.

Together, these insights point to a shared recognition of the urgent need for improved awareness, infrastructure, national data collection, and equitable access to osteoporosis care in Indonesia. Both organisations are actively contributing to national efforts to close these gaps and improve outcomes for those at risk of fragility fractures.

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This document highlights the key findings for Indonesia, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

ACKNOWLEDGMENTS

APAC Audit Contributors based in Indonesia
Indonesian Rheumatology Association (PRI)
https://reumatologi.or.id/en/home-2/

Indonesian Osteoporosis Association (PEROSI)
https://perosi.or.id/

www.osteoporosis.foundation

APAC AUDIT 2025

JAPAN

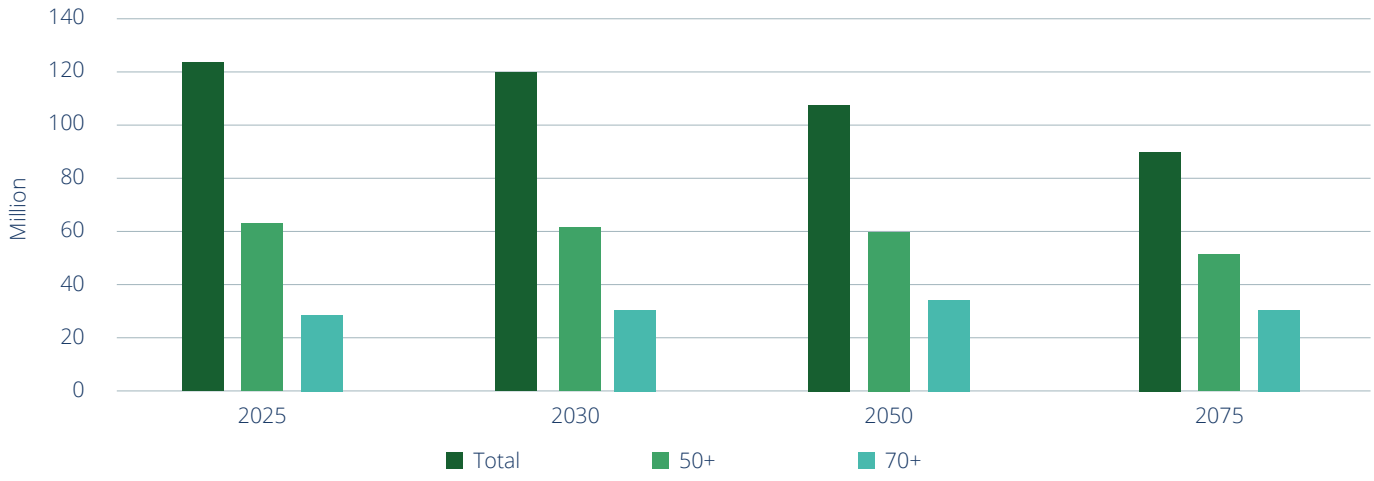
DEMOGRAPHIC TRENDS

Japan's population is expected to decline sharply in the coming decades, decreasing by 13% from 122.7 million in 2025 to 106.2 million by 2050. The decline is projected to accelerate in the second half of the century, with a further 17% drop to 87.8 million by 2075 *(Figure 1)*. Japanese currently have an average life expectancy of 85.3 years, which is expected to rise to 91.8 years by 2075, an increase of more than 7%.

Although the number of Japanese aged 50 years or older is projected to decline from 61.2 million in 2025 to 49.9 million by 2075, their share of the total population will rise gradually from 50% to 57% over the same period *(Figure 1)*.

While the number of people aged 70 years or older will decline slightly from 29.2 million in 2025 to 29.0 million by 2075, their share of the total population will rise from 24% to 33% over the same period, marking a 39% relative increase.

Figure 1. Population projections for Japan from 2025 to 2075 [1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

Is a centralised database established?	Yes
Level of database coverage	National
Hip fracture records documented per year	170,000
Percentage of hip fractures treated surgically	100
All fracture records documented per year	363,000
Percentage of all fractures treated surgically	100
Other fracture records documented per year	190,000
Percentage of all fractures treated surgically	100
Age range and gender of patients in database	40-75+ years for both males and females

Although the centralised fracture database collects data on various types of fractures, it only includes cases that involve surgical intervention. The other fractures include wrist, leg, humerus, vertebrae, clavicle, fingers, hands, elbows, knees, and other sites, provided surgery is performed. The Japanese Orthopaedic Association National Registry (JOANR) specifically records surgical procedures within the orthopaedic field. Additionally, the Fragility Fracture Network-Japan maintains a separate registry focused on hip fracture cases that require emergency surgery. For more information, visit *https://www.joanr.org/*.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
10,000	16,000	15*

*15 days in acute care hospitals. Patients can move to rehabilitation facilities and stay there up to 90 days, if necessary.

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is primarily managed by primary care physicians, while specialist input is provided by orthopaedic surgeons, gynaecologists, endocrinologists and geriatricians. Osteoporosis is recognised as a standalone medical specialty. However, it is not currently a formal component of specialty medical training.

PATIENT SUPPORT ORGANISATIONS

The Japan Bone Health Society is a national-level patient organisation dedicated to osteoporosis. Focused exclusively on this single disease, the Society is actively involved in policy advocacy, particularly through public education and awareness campaigns aimed at the general population.

It also plays a key role in capacity building and education, offering lectures in local communities across Japan. Peer support is provided through regional counselling services, helping individuals manage their condition more effectively. In addition, the Society engages in research and development activities in collaboration with the Japan Osteoporosis Foundation.

For more information, visit: *https://www.jpof.or.jp/general/society/*.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis was officially recognised as a National Health Priority (NHP) in Japan in 2023 under the "*Health Japan 21*" programme, announced by the Ministry of Health, Labour and Welfare. Documentation relating to this initiative is currently only available in Japanese (*https://www.mhlw.go.jp/content/10904750/001049796.pdf*). The NHP is mandated solely by the government and not by any other governing body.

An action plan accompanies the NHP, setting a target to increase the osteoporosis medical check-up rate to 15% by 2032. The plan is supported by public health initiatives under the *Health Japan 21* framework, which include

strategies related to nutrition (particularly vitamin D and calcium intake), physical activity, and fall prevention. At present, there is no formal patient involvement in the development or implementation of the NHP.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a range of osteoporosis treatments are available in Japan. There are no designated first line treatments in Japan.

Treatment is reimbursed in full by the national health system. Reimbursement is subject to specific criteria, including bone mineral density and indication for secondary fracture prevention.

In some cases, reimbursement policies may conflict with physicians' preferred treatment plans. Teriparatide, abaloparatide, romosozumab, and denosumab are reimbursed when prescribed for cases of severe osteoporosis, typically characterised by very low bone mineral density or the presence of osteoporotic fractures.

Table 1. Availability and reimbursement of osteoporosis treatments in Japan

Treatment	Available	Reimbursed	% Reimbursed
Risedronate	X	X	100%
Alendronate	X	X	100%
Ibandronate	X	X	100%
Zoledronic acid	X	X	100%
Clodronate			
Pamidronate			
Raloxifene	X	X	100%
Bazedoxifene	X	X	100%
Denosumab	X	X	100%
Strontium Ranelate			
Teriparatide	X	X	100%
PTH (1-84)			
Abaloparatide	X	X	100%
Romosozumab	X	X	100%
Vitamin D/Calcium supplements	X		0%
Calcitonin	X	X	100%
Hormone Replacement Therapy			
Testosterone			
Alfacalcidol	X	X	100%
Calcidiol			
Calcitriol	X	X	100%
Tibolone			

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	25 - 50%
Hip fractures identified by or referred to an FLS	25%
Vertebral fractures identified by or referred to an FLS	< 10%
Other fracture types identified by or referred to an FLS	< 5%
Reimbursement mechanism to support FLS activities	National health service
% of patients recommended for treatment who actually receive treatment	Do not know

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2015, the *Japan Osteoporosis Society (JOS)*, *Japan Osteoporosis Foundation (JOF)*, and the *Japanese Society for Bone and Mineral Research (JSBMR)* jointly developed the *Japanese Guidelines for the Prevention and Treatment of Osteoporosis 2015*. The guidelines are available in Japanese from this link: *http://www.josteo.com/*.

The guidelines include recommendations for population-based screening, notably encouraging routine medical check-ups specifically focused on bone health. They provide a comprehensive framework for fracture risk assessment, considering factors such as prior fractures, age, bone mineral density (BMD), FRAX® scores, and family history of osteoporosis. The assessment criteria are compatible with existing reimbursement policies.

Treatment criteria include prior fracture, age, BMD, FRAX® score, glucocorticoid-induced osteoporosis, and family history of the disease. These criteria are also aligned with reimbursement policies. The guidelines were developed without direct patient involvement. Additional details on the development of these guidelines are included in *Table 2*.

Table 2. Development of clinical guidelines for the management of osteoporosis in Japan

Systematic literature review undertaken	No
Recommendations	No
Stakeholder involvement	No
External review	The guidelines been reviewed by osteoporosis experts
Procedure for update defined	The guideline is in the process of being updated
Economic analysis	No
Editorial independence	Yes

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	1 - 2 days
% of hip fractures surgically managed	> 90%

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Japan.

Waiting time (d)	0
Cost (USD)	24 - 30
Is it reimbursed?	Yes
Is reimbursement a barrier to accessing treatment?	No

Quantitative ultrasound is available in Japan.

Waiting time (d)	0
Cost (USD)	6
Is it reimbursed?	Yes
Is reimbursement a barrier to access to treatment?	No

FRACTURE RISK ASSESSMENT TOOLS

FRAX® is widely used in Japan to assess fracture risk. The decision to initiate treatment is based on a fixed probability threshold, an age-dependent probability threshold, and a combination of FRAX® scores and BMD values. This approach is applied to both men and women.

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
National	Reimbursement scheme	Hip fracture	Annually
National	Guidelines for Prevention and Treatment of Osteoporosis	Osteoporosis and secondary prevention of fragile fracture	Don't know

OVERVIEW OF OSTEOPOROSIS IN JAPAN

The *Japanese Orthopaedic Association National Registry (JOANR)* systematically captures data on all orthopaedic surgical procedures performed nationwide. Complementing this effort, the *Fragility Fracture Network–Japan (FFN-J)* oversees a specialised registry focused exclusively on emergency surgical interventions for hip fractures. Established by FFN-J in 2017, the *Japan National Hip Fracture Database (JNHFD)* has yielded vital insights into the characteristics and clinical needs of hip fracture patients. The data have consistently highlighted the importance of timely surgical intervention and coordinated post-fracture care.

These evidence-based findings played a pivotal role in shaping health policy. In April 2022, the Japanese Ministry of Health, Labour and Welfare introduced a new reimbursement model that incentivises early surgery, within 48 hours of injury, and mandates comprehensive secondary fracture prevention[2]. This forward-looking policy is driving a significant transformation in fragility fracture care across Japan. It is also accelerating the nationwide implementation of FLS, thereby strengthening osteoporosis management and improving long-term patient outcomes.

Despite these efforts, Japan still lacks a national registry system for osteoporotic fractures that are managed non-surgically. This represents a significant data gap that may limit the effectiveness of comprehensive monitoring and prevention strategies.

The Ministry of Health, Labour and Welfare is currently implementing the third phase of the national health promotion initiative, *Health Japan 21*, which aims to raise awareness of bone health among the general population. As part of this initiative, a national guideline on osteoporosis is currently being updated to reflect the latest evidence and priorities.

Nutritional guidance also plays an important role in prevention. The *Dietary Reference Intakes for Japanese* (2020) recommend increased calcium intake and sufficient vitamin D consumption as key measures to prevent osteoporotic fractures and reduce fall risk.

To address both primary and secondary prevention, the *Japan Osteoporosis Society* has been promoting the *Osteoporosis Liaison Service (OLS)* model since 2011. OLS encompasses FLS, primary fracture prevention initiatives, and public education campaigns. Its core mission is "to prevent the first fracture and to stop the chain reaction of subsequent fractures."

Meanwhile, the *Japan Osteoporosis Foundation (JOF)* plays a central role in public awareness, organising annual World Osteoporosis Day events throughout Japan. The Foundation also supports patient advocacy efforts, including the activities of the *Japan Bone Health Society*.

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ACKNOWLEDGMENTS

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Japan Osteoporosis Society (JOS)
http://www.josteo.com

Japan Osteoporosis Foundation (JPOF)
https://www.jpof.or.jp/

www.osteoporosis.foundation

APAC AUDIT 2025

MALAYSIA

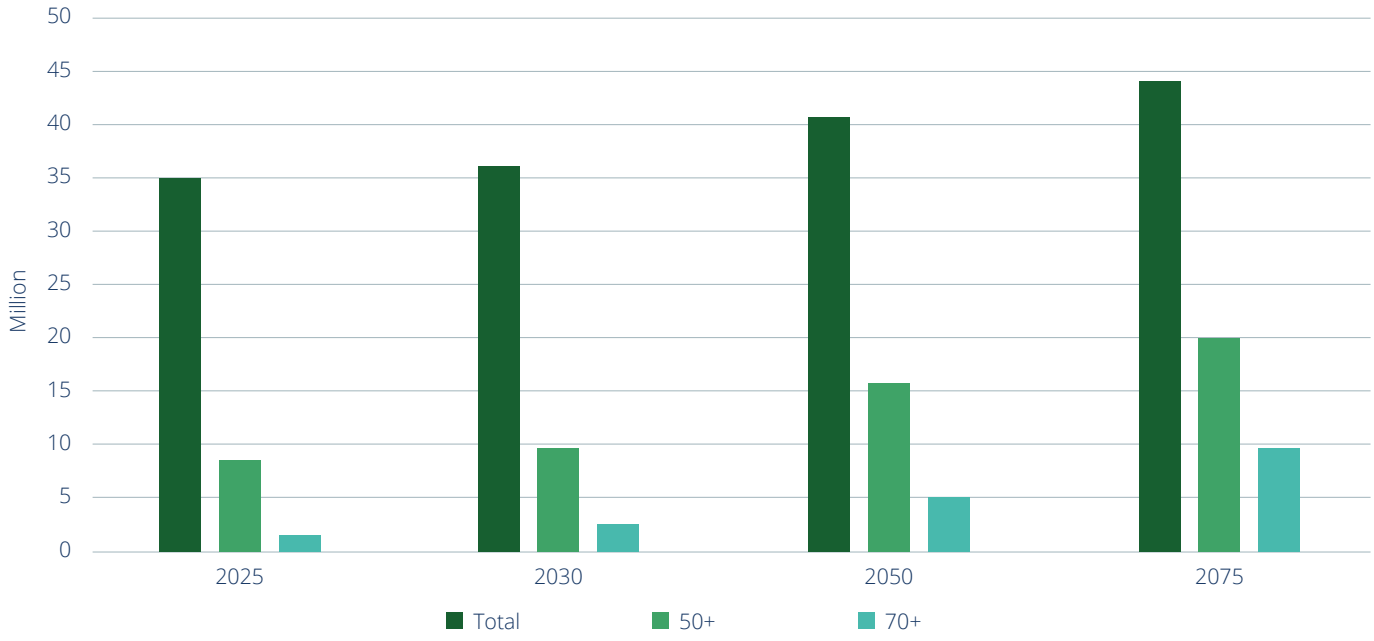
DEMOGRAPHIC TRENDS

Malaysia's population is projected to grow steadily over the coming decades, increasing by 18% from 34.9 million in 2025 to 41.3 million by 2050, and by a further 5% to reach 43.5 million by 2075 *(Figure 1)*. Malaysians currently have an average life expectancy of 76.9 years, which is expected to rise to 87.0 years by 2075, an increase of more than 13%.

The proportion of Malaysians aged 50 years or older is set to rise significantly. In 2025, this group of almost 8.1 million people represents 23% of the total population. By 2075, this will increase to 46%, with numbers more than doubling to 19.9 million *(Figure 1)*.

The most dramatic demographic shift in Malaysia will be among those aged 70 years or older, whose numbers are projected to surge from almost 1.9 million in 2025 to 9.5 million in 2075, a 408% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for just 5% of Malaysia's 34.9 million people. By 2075, they will make up 22% of a larger 43.5 million population, reflecting a 307% relative increase in their proportion of the total population.

Figure 1. Population projections for Malaysia from 2025 to 2075[1]



CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care of rheumatologists, orthopaedic surgeons, endocrinologists and geriatricians. Osteoporosis is not recognised as a standalone medical specialty, however, it is currently a formal component of specialty medical training, particularly for rheumatologists, orthopaedic surgeons, endocrinologists and geriatricians.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
6,326 - 6,420*	780*	7 - 17*

**Best available estimates as reported by country experts in the absence of published data.*

CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

There is no centralised database for fractures in Malaysia.

PATIENT SUPPORT ORGANISATIONS

The Osteoporosis Awareness Society of Kuala Lumpur and Selangor (OASKLS) and the Malaysian Osteoporosis Society (MOS) are patient-focused organisations dedicated to raising awareness and improving the management of osteoporosis in Malaysia. They operate across the country, with a particular focus on communities with older populations. Their activities are centred around a include active policy advocacy, public education, and capacity-building initiatives. Their outreach strategies encompass webinars as well as face-to-face campaigns conducted nationwide.

While both organisations play a significant role in public engagement and policy, they are not currently involved in peer support services or research and development activities.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not documented as a National Health Priority (NHP) in Malaysia.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a range of osteoporosis treatments are available to patients treated in public hospitals in Malaysia. However, there are not officially designated first-line treatments in the country. In the public healthcare system, bisphosphonates are typically used as the initial treatment before considering denosumab. In contrast, clinicians in the private sector have greater flexibility and may prescribe any osteoporosis medication based on clinical judgment.

Treatment reimbursement in Malaysia involves a combination of funding from the national health system, private insurance, and patient co-payments. The extent of coverage depends on the individual's insurance status and financial situation. Reimbursement is often subject to specific criteria, including prior fracture history, bone mineral density results, whether the treatment is for primary or secondary prevention, first- or second-line treatment option, and prior authorisation requirements.

In the private healthcare sector, all osteoporosis medications are reimbursed if the patient has insurance. However, calcium and vitamin D supplements are generally excluded, as they are categorised as nutritional supplements. Patients without insurance coverage in the private sector are required to pay the full cost of their medications out-of-pocket.

Reimbursement policies may, at times, conflict with physicians' preferred treatment strategies. For instance, in public hospitals, anabolic agents, recommended for patients at very high risk, are not readily accessible. Each patient requires a separate funding application for these medications, and approval is not guaranteed. If funding is denied, patients must either pay out-of-pocket or be prescribed bisphosphonates. Denosumab is typically reserved for those who have not responded to bisphosphonates.

In some public healthcare facilities, medication eligibility is strictly tied to BMD results. For example, treatment may only be prescribed if a patient's T-score is ≤ -2.5. Patients with a T-score of -2.4 may not qualify for medication reimbursement, highlighting a significant barrier to timely and effective osteoporosis treatment in the public sector.

Table 1. Availability and reimbursement of osteoporosis treatments in Malaysia

Treatment	Available	Reimbursed	% Reimbursed
Risedronate			
Alendronate	X	X	50 - 100%
Ibandronate	X		
Zoledronic acid	X		
Clodronate			
Pamidronate			
Raloxifene	X		
Bazedoxifene			
Denosumab	X	X	50 - 100%*
Strontium Ranelate			
Teriparatide	X		
PTH (1-84)			
Abaloparatide			
Romosozumab	X		
Vitamin D/Calcium supplements	X	X	100%
Calcitonin			
Hormone Replacement Therapy	X	X	50 - 100%
Testosterone	X		
Alfacalcidol	X	X	50%
Calcidiol	X		
Calcitriol	X	X	100%
Tibolone	X		

* *Only after bisphosphonate failure or intolerance in public hospitals*

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	10 - 24%
Other fracture types identified by or referred to an FLS	0 - 10%
Hip fractures identified by or referred to an FLS	20 - 60%
Reimbursement mechanism to support FLS activities	Local health service & Private funding
Vertebral fractures identified by or referred to an FLS	0 - 30%
% of patients recommended for treatment who actually receive treatment	20 - 49%

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	> 3 days
% of hip fractures surgically managed	76 - 90%

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2022, the *Malaysian Osteoporosis Society (MOS) (Persatuan Osteoporosis Malaysia)* updated its 2012 guidelines, publishing the *Clinical Practice Guidelines on the Management of Osteoporosis 2022* [2]. The updated guidelines cover the management of osteoporosis in postmenopausal women, men, and individuals with glucocorticoid-induced osteoporosis (GIOP).

The guidelines emphasise population-based screening and recommend osteoporosis screening for several high-risk groups, including individuals with prior fragility fractures, those with clinical risk factors, secondary osteoporosis, height loss and falls risk, and for all postmenopausal women aged 50 years+.

Fracture risk assessment is addressed in detail, incorporating factors such as prior fractures, age, bone mineral density, FRAX® scores, and fall risk. However, these assessment recommendations are not fully aligned with the current reimbursement policies in Malaysia's public healthcare system.

The guidelines also provide specific treatment initiation criteria, which include prior fracture, age, BMD, FRAX®, GIOP, and men. Despite these clinical recommendations, treatment decisions in the public sector remain constrained by government reimbursement policies. Reimbursement for osteoporosis medications, particularly anabolic agents, does not currently follow the Clinical Practice Guidelines. The guidelines were developed without direct patient involvement. Additional details on the development of these guidelines are included in *Table 2*.

Table 2. Development of clinical guidelines for the management of osteoporosis in Malaysia

Systematic literature review undertaken	Yes
Recommendations	Yes
Stakeholder involvement	Yes
External review	Yes
Procedure for update defined	Yes
Economic analysis	No
Editorial independence	Yes

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Malaysia.

Waiting time (d)	30 - 90 days in public hospitals, 0 - 1 day in private hospitals
Cost (USD)	0 - 34 in public hospitals, 43 - 85 in private hospitals
Is it reimbursed?	Yes, in majority of public hospitals, yes for those in private hospitals with insurance
Is reimbursement a barrier to accessing treatment?	Yes

No data was provided on access to ultrasound in Malaysia.

FRACTURE RISK ASSESSMENT TOOLS

Malaysia uses FRAX®, but it is not widely used within the country.

QUALITY INDICATORS

There are no quality indicators for hip and other fractures in Malaysia.

OVERVIEW OF OSTEOPOROSIS IN MALAYSIA

The incidence of hip fractures among individuals aged 50 years+ in Malaysia was estimated at 90 per 100,000 population in 1996 [3]. Age-adjusted rates were 218 per 100,000 for women and 88 per 100,000 for men. Asymptomatic morphometric vertebral fractures were identified in 11.4% of participants in a cohort of healthy, community-dwelling adults aged 45-90 years [4].

Projections suggest a significant rise in hip fractures, with cases expected to increase 3.55-fold from 5,880 in 2018 to 20,893 by 2050 [5]. Despite this alarming trajectory, osteoporosis is not currently recognised as a national health priority in Malaysia.

The 3rd edition of the *Clinical Practice Guidelines (CPG) on the Management of Osteoporosis* [6] was published in 2022 and officially launched on 17 January 2023, accompanied by a message from the Director-General of Health Malaysia. Since the launch, the Malaysian Osteoporosis Society (MOS) has conducted educational workshops nationwide to promote guideline adoption among medical professionals. However, challenges remain in integrating osteoporosis screening and secondary fracture prevention into routine practice across all disciplines.

Vitamin D deficiency is widespread in Malaysia. A meta-analysis reported that the pooled prevalence of vitamin D deficiency (25(OH)D < 30 nmol/L) was 21% (95% CI: 9–36%), while vitamin D insufficiency (25(OH)D < 50 nmol/L) affected approximately 64.5% of the population (95% CI: 56.1–72.5%) [7]. Additionally, calcium intake among postmenopausal women averages around 450 mg per day, far below recommended levels [8].

There is a critical lack of up-to-date epidemiological data on osteoporotic fractures in Malaysia. The absence of recent national hip fracture data and large-scale population-based studies hinders effective health policy planning and resource allocation.

Three main organisations are actively engaged in osteoporosis and fragility fracture advocacy in Malaysia:

- **Malaysian Osteoporosis Society (MOS):** Professional medical society leading guideline development and clinician education.
- **Fragility Fracture Network of Malaysia (FFNM):** Focused on multidisciplinary care and system-level improvements for fragility fracture patients.
- **Osteoporosis Awareness Society of Kuala Lumpur and Selangor (OASKLS):** A patient-focused organisation engaged in public education through face-to-face events, social media campaigns, and live streams.

These societies collaborate under the Bone Health Alliance Malaysia (BHAM) to raise public awareness and advocate for improved osteoporosis care.

To address the growing burden of osteoporosis and fractures in Malaysia, it is imperative to:

- **Elevate osteoporosis to a National Health Priority.**
- **Expand Fracture Liaison Services (FLS) to more hospitals.**
- **Engage a broader range of healthcare specialties in proactive osteoporosis treatment.**
- **Launch large-scale epidemiological studies to inform national policy**.

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ACKNOWLEDGMENTS

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Universiti Tunku Abdul Rahman
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APAC AUDIT 2025

MONGOLIA

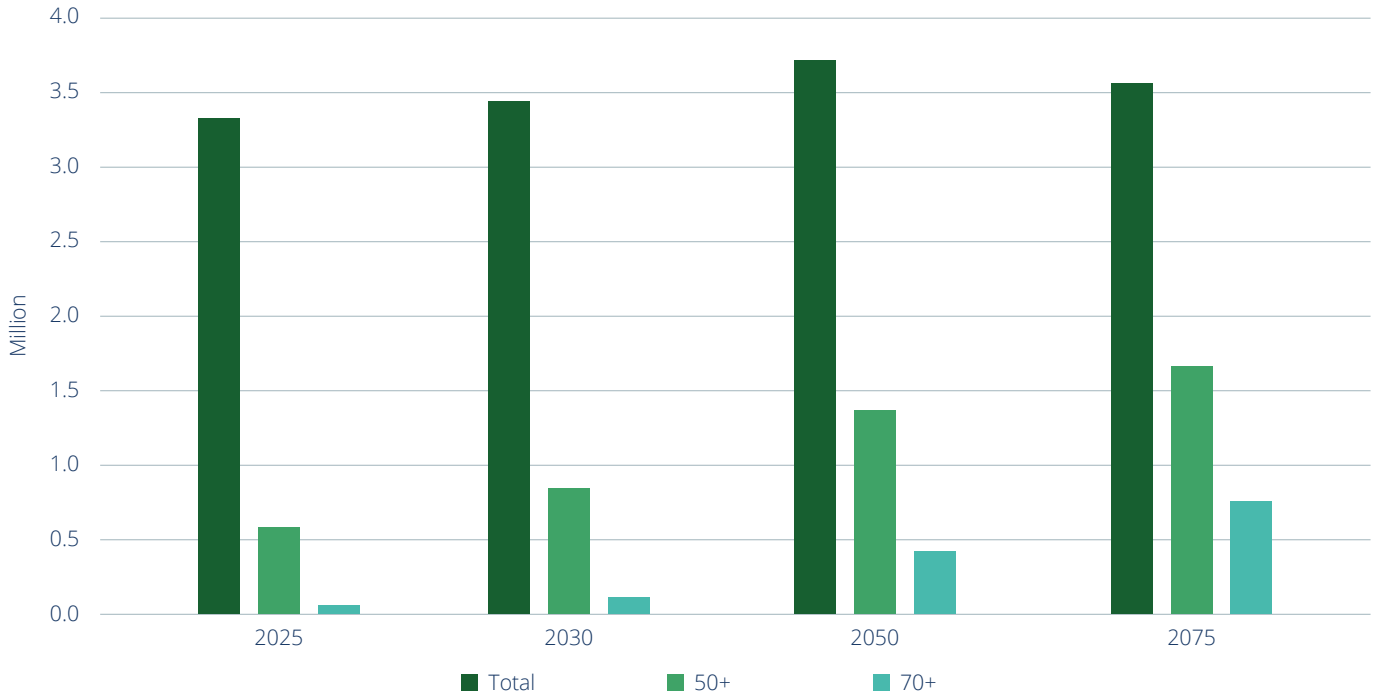
DEMOGRAPHIC TRENDS

Mongolia's population is projected to grow steadily until the mid-21st century, increasing by 12% from 3.3 million in 2025 to 3.7 million by 2050. However, this growth will be followed by a period of gradual decline, with the population decreasing by 2% to 3.6 million by 2075 *(Figure 1)*. Mongolians currently have an average life expectancy of 72.2 years, which is expected to rise to 84.0 years by 2075, an increase of 16%.

The proportion of Mongolians aged 50 years or older is set to rise significantly. In 2025, this group of almost 700,000 people represents 21% of the total population. By 2075, this will increase to 46%, with numbers more than doubling to 1.7 million *(Figure 1)*.

The most dramatic demographic shift in Mongolia will be among those aged 70 years or older, whose numbers are projected to surge from 113,000 in 2025 to 708,000 in 2075, a 527% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for just 3% of Mongolia's 3.3 million people. By 2075, they will make up 20% of a larger 3.6 million population, reflecting a 474% relative increase in their proportion of the total population.

Figure 1. Population projections for Mongolia from 2025 to 2075[1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

There is no centralised database for fractures in Mongolia.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
800*	No data	21*

**Best available estimates as reported by country experts in the absence of published data.*

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is primarily managed by primary care physicians, while specialist input is provided by rheumatologists, orthopaedic surgeons, gynaecologists, and rehabilitation medicine physicians. Osteoporosis is recognised as a standalone medical specialty. However, it is not currently a formal component of specialty medical training.

PATIENT SUPPORT ORGANISATIONS

The *Mongolian Naran Society for Osteoarthritis and Musculoskeletal Health* is a patient-focused organisation dedicated to osteoporosis and related musculoskeletal conditions *(https://www.facebook.com/naransociety/)*. Operating at the national level, the society plays an active role in policy advocacy. Its mission includes raising awareness of osteoporosis and musculoskeletal disorders, enhancing health education, and improving access to healthcare services across Mongolia.

The organisation is actively engaged in capacity building and public education. For example, on World Osteoporosis Day, it led nationwide efforts to improve public understanding of osteoporosis and fracture prevention. In addition, the society is involved in research and development activities. However, it does not currently provide peer support services.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not documented as a National Health Priority (NHP) in Mongolia.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

There are no FLS in Mongolia.

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	> 3 days
% of hip fractures surgically managed	51 - 75%

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, several osteoporosis treatments are available in Mongolia. Calcium and vitamin D supplements are designated as first-line treatments.

Treatment costs are partially covered by the national health system. Reimbursement is subject to specific criteria, including age, BMD, secondary prevention, second line treatment, and prior authorisation. Reimbursement policy does not interfere with what physicians would normally recommend to patients.

Table 1. Availability and reimbursement of osteoporosis treatments in Mongolia

Treatment	Available
Risedronate	
Alendronate	X
Ibandronate	
Zoledronic acid	X
Clodronate	
Pamidronate	X
Raloxifene	
Bazedoxifene	
Denosumab	
Strontium Ranelate	
Teriparatide	
PTH (1-84)	
Abaloparatide	
Romosozumab	
Vitamin D/Calcium supplements	X
Calcitonin	
Hormone Replacement Therapy	
Testosterone	
Alfacalcidol	
Calcidiol	
Calcitriol	
Tibolone	

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

There are no guidelines for osteoporosis management in Mongolia.

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

Calcaneal ultrasound is available in a limited number of centres in Mongolia. However, at the time of this audit's publication, no central DXA scan service is available.

FRACTURE RISK ASSESSMENT TOOLS

Mongolia does not use any fracture risk assessment tools.

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
National	Reimbursement scheme	Hip fracture	Annually

OVERVIEW OF OSTEOPOROSIS IN MONGOLIA

There is currently no research documenting the prevalence or clinical characteristics of osteoporosis in the Mongolian population, nor are there recent data on trends in hip or vertebral fractures. This lack of epidemiological evidence poses a significant barrier to informed public health planning and clinical guideline development. Diagnostic capacity is also limited. There are no dual-energy X-ray absorptiometry (DXA) machines available in Mongolia, however, there are some calcaneal ultrasound machines.

Financial support for osteoporosis-related initiatives remains insufficient, impacting efforts in prevention, early detection, treatment, and public education. Compounding these challenges is a shortage of healthcare professionals and researchers with expertise in osteoporosis. The limited number of specialists constrains both the advancement of clinical services and the development of a national research agenda to address the growing burden of osteoporosis and fragility fractures in Mongolia.

REFERENCES

1. US Census Bureau International Database (IDB) Website. 2025. https://www.census.gov/data-tools/demo/idb/#/dashboard?dashboard_page=country&COUNTRY_YR_ANIM=2025. Accessed 22 May 2025.

This document highlights the key findings for Mongolia, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

ACKNOWLEDGMENTS

APAC Audit Contributor based in Mongolia
Mongolian Naran Society of Osteoarthritis and Musculoskeletal Health
https://www.facebook.com/naransociety/

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MYANMAR

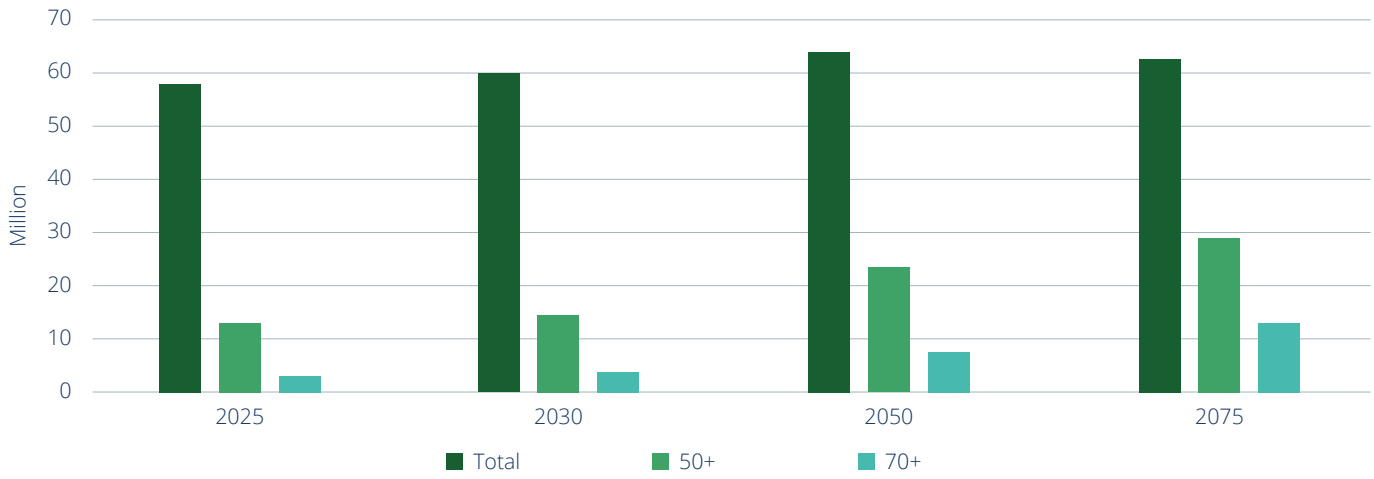
DEMOGRAPHIC TRENDS

Myanmar's population is projected to grow steadily until the mid-21st century, increasing by 11% from 57.9 million in 2025 to 64.2 million by 2050. However, this growth will be followed by a period of gradual decline, with the population decreasing by 2% to 62.9 million by 2075 *(Figure 1)*. Myanmar nationals currently have an average life expectancy of 70.8 years, which is expected to rise to 85.0 years by 2075, an increase of 20%.

The proportion of Myanmar nationals aged 50 years or older is set to rise significantly. In 2025, this group of 13 million people represents 22% of the total population. By 2075, this will increase to 46%, with numbers more than doubling to 28.9 million *(Figure 1)*.

The most dramatic demographic shift in Myanmar will be among those aged 70 years or older, whose numbers are projected to surge from 2.4 million in 2025 to 12.9 million in 2075, a 430% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for just 4% of Myanmar's 57.9 million people. By 2075, they will make up 20% of a larger 62.9 million population, reflecting a 388% relative increase in their proportion of the total population.

Figure 1. Population projections for Myanmar from 2025 to 2075[1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

There is no centralised database for fractures in Myanmar.

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care of rheumatologists, orthopaedic surgeons, endocrinologists, and geriatricians. Osteoporosis is not recognised as a standalone medical specialty. However, it is currently a formal component of specialty medical training, particularly for rheumatologists, orthopaedic surgeons, endocrinologists and geriatricians.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
200 - 2,000*	100 - 500*	7 - 20*

**Best available estimates as reported by country experts in the absence of published data.*

PATIENT SUPPORT ORGANISATIONS

There are no patient support organisations that focus on osteoporosis in Myanmar.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not documented as a National Health Priority (NHP) in Myanmar.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	1 - 9%
Hip fractures identified by or referred to an FLS	1%
Vertebral fractures identified by or referred to an FLS	1%

Other fracture types identified by or referred to an FLS	1%
Reimbursement mechanism to support FLS activities	Private funding
% of patients recommended for treatment who actually receive treatment	< 20%

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	2 - 3 days
% of hip fractures surgically managed	51 - 75%

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a range of osteoporosis treatments are available in Myanmar. Treatments designated as first-line include alendronate, zoledronic acid, risedronate, ibandronate, calcium and vitamin D.

Treatment costs are partially reimbursed through a combination of the national health system, private insurance, and patient co-payments. The extent of reimbursement varies depending on the individual patient's insurance coverage and financial circumstances. Currently, there is no standardised or unified reimbursement system in place. Importantly, there are no specific conditions or clinical criteria that must be met for treatment reimbursement. As a result, reimbursement policies do not restrict or interfere with physicians' ability to prescribe treatments based on clinical judgment.

Table 1. Availability and reimbursement of osteoporosis treatments in Myanmar

Treatment	Available	Reimbursed	% Reimbursed
Risedronate	X		
Alendronate	X	X	10%
Ibandronate	X		
Zoledronic acid	X		
Clodronate			
Pamidronate			
Raloxifene			
Bazedoxifene			
Denosumab	X		
Strontium Ranelate			
Teriparatide	X		
PTH (1-84)			
Abaloparatide			
Romosozumab			
Vitamin D/Calcium supplements	X	X	10%
Calcitonin	X		
Hormone Replacement Therapy			
Testosterone	X		
Alfacalcidol	X		
Calcidiol			
Calcitriol	X		
Tibolone	X		

FRACTURE RISK ASSESSMENT TOOLS

Myanmar utilises fracture risk assessment tools such as FRAX®, FRAXplus®, and QFracture. However, FRAX® is not yet widely adopted in clinical practice across the country.

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2023, the Myanmar Society of Endocrine & Metabolism published the *Myanmar Clinical Practice Guideline for the Management of Osteoporosis and Fragility Fracture* [2]. The guideline covers the management of osteoporosis in postmenopausal women, men, individuals with glucocorticoid-induced osteoporosis (GIOP), and those who have sustained fragility fractures.

While the guidelines offer detailed recommendations on fracture risk assessment, including factors such as prior fracture, age, bone mineral density, and FRAX® scores, they do not include strategies for population-based screening. The guidance also sets out criteria for initiating treatment based on similar clinical risk factors.

However, the implementation of these guidelines faces significant limitations. There is currently no reimbursement policy for osteoporosis care in Myanmar, meaning that patients must bear the full cost of diagnosis and treatment. As a result, while the guidelines align with international standards in terms of clinical assessment and treatment initiation, their practical application is constrained by the absence of financial coverage or national funding mechanisms. The guidelines were developed without direct patient involvement. Additional details on the development of these guidelines are included in *Table 2*.

Table 2. Development of clinical guidelines for the management of osteoporosis in Myanmar

Systematic literature review undertaken	Yes
Recommendations	Yes
Stakeholder involvement	In progress
External review	Multidisciplinary review
Procedure for update defined	Every 5 years
Economic analysis	No
Editorial independence	Yes

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
National	Reimbursement scheme	Management of hip fracture	No regular system available yet
National	Myanmar Clinical Practice Guideline for Management of Osteoporosis and Fragility Fracture	Osteoporosis and Fragility Fracture	Don't know

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Myanmar.

Waiting time (d)	0 - 3
Cost (USD)	30 - 35
Is it reimbursed?	No
Is reimbursement a barrier to accessing treatment?	Yes

Quantitative ultrasound is available in Myanmar.

Waiting time (d)	0
Cost (USD)	15
Is it reimbursed?	Limited or none
Is reimbursement a barrier to accessing treatment?	No

OVERVIEW OF OSTEOPOROSIS IN MYANMAR

Osteoporosis is an emerging public health concern in Myanmar, yet the country currently lacks comprehensive national data on the prevalence and burden of osteoporotic fractures. Tertiary centre-based data suggest that the prevalence of osteoporosis among postmenopausal women ranges from 35-45%. However, the absence of a robust national health information system has hindered large-scale epidemiological studies and accurate fracture forecasting. The Myanmar Society of Endocrine and Metabolism (MSEM) emphasises the urgent need for nationwide data collection and research to inform evidence-based policy and planning.

There is no health insurance system in Myanmar, and consequently, no reimbursement mechanism for osteoporosis diagnosis or treatment. This leads to out-of-pocket expenses for patients, with treatment costs in private hospitals averaging approximately 20% higher than in public facilities. Access to care is further limited by widespread vitamin D deficiency, insufficient calcium intake, and limited availability of diagnostic tools such as DXA.

In response to these challenges, MSEM has played a leading role in advancing osteoporosis care. The first Myanmar osteoporosis guideline was published in 2012 in the *Journal of the ASEAN Federation of Endocrine Societies (JAFES)* [3] but remained primarily utilised within the endocrinology community. Recognising the need for broader, multidisciplinary guidance, MSEM coordinated the development of a national clinical practice guideline titled *Myanmar Clinical Practice Guideline for Management of Osteoporosis and Fragility Fracture* [2], launched on World Osteoporosis Day in 2023. This updated guideline includes recommendations for postmenopausal osteoporosis, glucocorticoid-induced osteoporosis, osteoporosis associated with aromatase inhibitor therapy, and the management of fragility fractures.

In addition to guideline development, MSEM has been proactive in professional and public education. The society regularly conducts continuing medical education (CME) sessions and online courses for healthcare professionals, as well as public talks to raise awareness about bone health. World Osteoporosis Day is observed annually with community outreach events, advocacy campaigns, and stakeholder engagement.

A key strategic goal for the society is the establishment of FLS to improve secondary fracture prevention. While a proposal has been submitted to the Ministry of Health, official approval is still pending. MSEM continues to advocate for osteoporosis to be recognised as a national health priority and calls for stronger government commitment, multi-stakeholder collaboration, and increased public awareness to address the growing burden of osteoporosis and fragility fractures in Myanmar.

REFERENCES

1. US Census Bureau International Database (IDB) Website. 2025. https://www.census.gov/data-tools/demo/idb/#/dashboard?dashboard_page=country&COUNTRY_YR_ANIM=2025. Accessed 22 May 2025.
2. Myanmar Society of Endocrinology and Metabolism (MSEM). Myanmar Clinical Practice Guideline for Management of Osteoporosis and Fragility Fracture (2023). Yangon: Myanmar Society of Endocrinology and Metabolism; 2023. https://msem.org.mm/edu/myanmar-clinical-practice-guideline-for-management-of-osteoporosis-and-fragility-fracture-2023/. Accessed 8 August 2025.
3. Latt TS, Aye TT, Ko K,Myint T, Hliang NN, ThaungM, Chit TT (2012) Myanmar clinical practice guidelines for osteoporosis. JAFES 27:151–155.

This document highlights the key findings for Myanmar, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

ACKNOWLEDGMENTS

APAC Audit Contributor based in Myanmar
Myanmar Society of Endocrinology and Metabolism
https://msem.org.mm/

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NEPAL

DEMOGRAPHIC TRENDS

Nepal's population is projected to grow steadily until the mid-21st century, increasing by 13% from 31.3 million in 2025 to 35.3 million by 2050. However, population growth is expected to slow significantly in the second half of the century, with only a marginal increase of less than 1% to 35.4 million by 2075 *(Figure 1)*. Nepalis currently have an average life expectancy of 73.2 years, which is expected to rise to 84.6 years by 2075, an increase of 16%.

The proportion of Nepalis aged 50 years or older is set to rise significantly. In 2025, this group of almost 5.8 million people represents 18% of the total population. By 2075, this will increase to 48%, with numbers almost tripling to 16.9 million *(Figure 1)*.

The most dramatic demographic shift in Nepal will be among those aged 70 years or older, whose numbers are projected to surge from 1.2 million in 2025 to almost 7.8 million in 2075, a 525% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for just 4% of Nepal's 31.3 million people. By 2075, they will make up 22% of a larger 35.4 million population, reflecting a 452% relative increase in their proportion of the total population.

Figure 1. Population projections for Nepal from 2025 to 2075[1]

CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

There is no centralised database for fractures in Nepal.

PATIENT SUPPORT ORGANISATIONS

There are no patient support organisations that focus on osteoporosis in Nepal.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
675*	300*	7*

**Best available estimates as reported by country experts in the absence of published data.*

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care of orthopaedic surgeons. Osteoporosis is neither recognised as a standalone medical specialty nor formally included in specialty medical training programmes.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not documented as a National Health Priority (NHP) in Nepal.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

There are no FLS in Nepal.

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	> 3 days
% of hip fractures surgically managed	51 - 75%

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Nepal.

Waiting time (d)	0
Cost (USD)	100
Is it reimbursed?	No
Is reimbursement a barrier to accessing treatment?	Yes

No data was provided on access to ultrasound in Nepal.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a range of osteoporosis treatments are available in Nepal. Alendronate is the only treatment designated as first-line.

Treatment costs are partially reimbursed through a combination of the national health system, private insurance, and patient co-payments. The extent of reimbursement varies depending on the individual patient's insurance coverage and financial circumstances. Currently, there are no specific conditions or clinical criteria that must be met for treatment reimbursement. As a result, reimbursement policies do not restrict or interfere with physicians' ability to prescribe treatments based on clinical judgment.

Table 1. Availability and reimbursement of osteoporosis treatments in Nepal

Treatment	Available	Reimbursed	% Reimbursed
Risedronate	X		
Alendronate	X	X	50%
Ibandronate	X		
Zoledronic acid	X		
Clodronate			
Pamidronate			
Raloxifene			
Bazedoxifene			
Denosumab			
Strontium Ranelate			
Teriparatide			
PTH (1-84)			
Abaloparatide			
Romosozumab			
Vitamin D/Calcium supplements	X	X	100%
Calcitonin	X		
Hormone Replacement Therapy			
Testosterone			
Alfacalcidol	X		
Calcidiol	X		
Calcitriol	X		
Tibolone			

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

There are no guidelines for osteoporosis management in Nepal.

FRACTURE RISK ASSESSMENT TOOLS

Nepal uses FRAX®, but it isn't widely used within the country.

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
National	National Health insurance	Hip fracture	Don't know

OVERVIEW OF OSTEOPOROSIS IN NEPAL

The number of patients with osteoporosis is rising steadily. However, both clinicians and government authorities have yet to take a proactive approach to its management. Nepal currently lacks an adequate reimbursement policy for osteoporosis care, and support is urgently needed. The *International Osteoporosis Foundation (IOF)* and similar organisations should consider tailored strategies specifically designed to address the needs of low-and-middle-income countries.

REFERENCES

1. US Census Bureau International Database (IDB) Website. 2025. https://www.census.gov/data-tools/demo/idb/#/dashboard?dashboard_page=country&COUNTRY_YR_ANIM=2025. Accessed 22 May 2025.

This document highlights the key findings for Nepal, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

ACKNOWLEDGMENTS

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Nepal Osteoporosis Society

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NEW ZEALAND

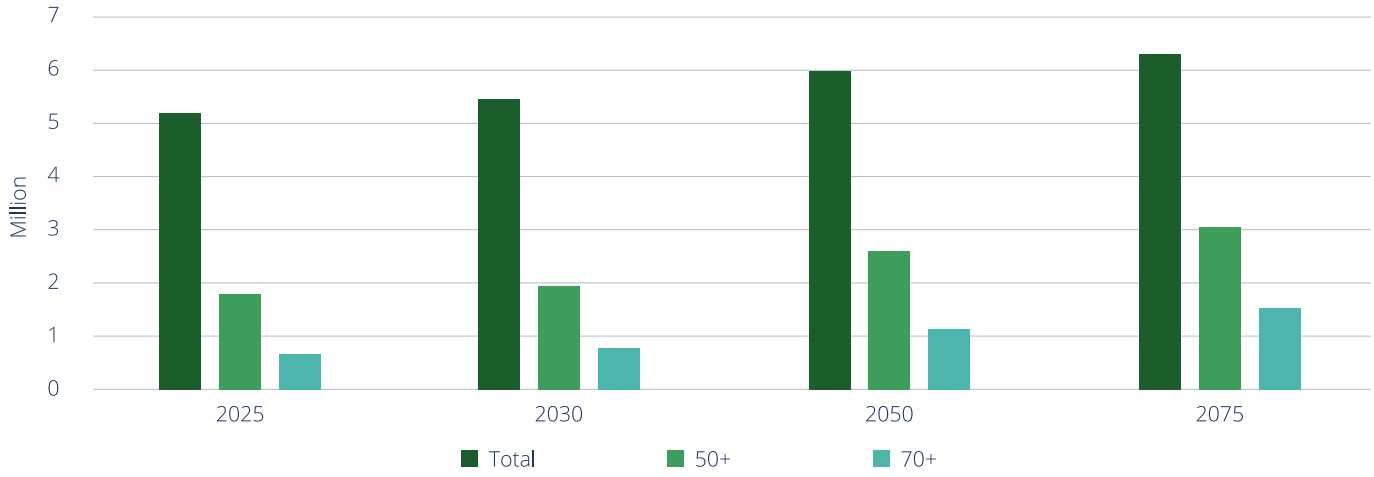
DEMOGRAPHIC TRENDS

New Zealand's population is projected to grow steadily over the coming decades, increasing by 15% from 5.2 million in 2025 to 6.0 million by 2050, and by a further 6% to reach 6.3 million by 2075 ***(Figure 1)***. New Zealanders currently have an average life expectancy of 83.1 years, which is expected to rise to 90.5 years by 2075, an increase of more than 9%.

The proportion of New Zealanders aged 50 years or older is set to rise significantly. In 2025, this group of 1.8 million people represents 35% of the total population. By 2075, this will increase to 48%, with numbers increasing to 3.0 million ***(Figure 1)***.

The most pronounced demographic shift will be among those aged 70 years or older, whose numbers will rise from more than 627,000 in 2025 to nearly 1.5 million in 2075. While this represents a growth of 142% in absolute numbers, a more telling statistic is their increasing share of the total population. In 2025, those aged 70+ made up12% of New Zealand's 5.2 million people, but by 2075, they will represent 24% of a larger 6.3 million population. This shift reflects a 99% relative increase in their share of the total population, underscoring the significant ageing of New Zealand's demographic profile.

Figure 1. Population projections for New Zealand from 2025 to 2075[1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

New Zealand has made substantial progress in the systematic collection and use of patient-level data to improve outcomes following fragility fractures. Two complementary registries underpin this work: the *Australian and New Zealand Hip Fracture Registry (ANZHFR)* [2] and the *Australian and New Zealand Fragility Fracture Registry (ANZFFR)* [3].

The ANZHFR was established following the publication of the *Australian and New Zealand Guideline for Hip Fracture Care* in 2014 [4]. The first patient-level audit was released in 2016 [5], coinciding with the launch of the inaugural *Hip Fracture Care Clinical Care Standard* [6]. The 2016 report [5] included data from 2,925 patients across 21 hospitals in Australia and 594 patients from four hospitals in New Zealand. Since then, registry participation has expanded

markedly. The 10th ANZHFR Annual Report [7], published in 2025, included data on 15,387 patients from 84 Australian hospitals and 3,737 patients from 22 hospitals in New Zealand. The registry benchmarks care across the pre-operative, operative, post-operative, and rehabilitation phases of hip fracture management, tracking outcomes up to 120 days post-fracture. It provides a powerful mechanism to monitor adherence to the binational *Hip Fracture Care Clinical Care Standard*, which was updated in 2023 [8].

However, as the ANZHFR is limited to patients with hip fractures, a complementary system was needed to support quality improvement in secondary fracture prevention for all fragility fractures. This led to the launch of the ANZFFR in 2022 [3]. The registry captures detailed, patient-level data aligned with the internationally recognised 5iQ model of care (Identification, Investigation, Information, Intervention, Integration, and Quality), enabling systematic tracking of Fracture Liaison Service (FLS) performance across a broader patient population.

FLS teams in New Zealand are benchmarked both nationally and internationally, against the National Clinical Standards for FLS [9] and the International Osteoporosis Foundation's (IOF) *Capture the Fracture® Best Practice Framework* [10]. Since its launch, the New Zealand arm of the ANZFFR has enabled FLS teams to monitor their performance against the National Clinical Standards in real time. The registry has rapidly scaled, capturing 55% of the estimated national fragility fracture caseload [11] in its first year and 72% in its second [12], marking the fastest rate of patient identification ever achieved by a fragility fracture registry globally.

The second *ANZFFR Annual Report* (March 2025) highlights encouraging outcomes [12]:

Within 12 weeks of their fracture:
- 99% of patients received a fracture risk assessment.
- 96.5% received a falls risk assessment.
- 52.5% of those recommended for DXA scanning had the scan completed.
- 85% received written or digital information about bone health and/or falls prevention.

Within 16 weeks:
- 90% of patients received follow-up care.
- 82% of patients' primary care providers received a long-term care plan.

At 52 weeks:
- Very high treatment adherence was observed.
- Only 3.3% experienced a refracture, an encouraging result when compared internationally.

Together, the ANZHFR and ANZFFR provide a comprehensive, data-driven framework to improve the quality of care and reduce refracture risk for people with fragility fractures in New Zealand. These registries not only enable benchmarking against national and international clinical standards but also drive accountability and support continuous improvement in clinical practice. A summary of the most recent Annual Reports from the ANZHFR and ANZFFR is provided in *Table 1*.

Table 1. Status of centralised fracture databases in New Zealand

Is a centralised database established?	Two registries: ANZHFR and ANZFFR
Level of database coverage	National
Hip fracture records documented per year	3,668 (ANZHFR: Jan-Dec 2024)
Percentage of hip fractures treated surgically	97
All fracture records documented per year	15,939 (ANZFFR: Jul 2023-Jun 2024)
Percentage of all fractures treated surgically	Not documented
Age range and gender of patients in database	50 - 75+ years for both males and females

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
34,370*	No data	20*

Best available estimates

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is primarily managed by primary care physicians, while specialist input is provided by rheumatologists, orthopaedic surgeons, gynaecologists, endocrinologists, and geriatricians. Osteoporosis is not recognised as a standalone medical specialty. However, it is a recognised component of specialty medical training, particularly for endocrinology trainees.

PATIENT SUPPORT ORGANISATIONS

Osteoporosis New Zealand (ONZ) is the national patient organisation dedicated exclusively to improving bone health and reducing the burden of osteoporosis in New Zealand. Operating at the national level, ONZ is a disease-specific charity focused on public awareness, policy advocacy, education, and support for individuals affected by osteoporosis and fragility fractures.

ONZ plays a strategic role in shaping national health policy, advocating for systematic approaches to fracture prevention and improved post-fracture care. The organisation is active in capacity building and professional education, supporting health system reforms aligned with international best practice. ONZ is also a key contributor to research and quality improvement efforts, most notably through its leadership role in the *Australian and New Zealand Fragility Fracture Registry (ANZFFR)* [3], which benchmarks Fracture Liaison Services across the country against national and international clinical standards [9,10].

Through its consumer-facing platform, *Bone Health NZ* [13], ONZ engages directly with individuals and families, offering accessible resources, educational materials, and peer support initiatives to empower people to understand and manage their bone health. By integrating community support with clinical advocacy and research, Osteoporosis New Zealand serves as a bridge between patients, clinicians, and policymakers, driving forward a national strategy for better bone health. Read more at *www.osteoporosis.org.nz*.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis was officially recognised as a national health priority in New Zealand in 2017 with the launch of the *Live Stronger for Longer* programme [14]. Led by the Accident Compensation Corporation (ACC), the Crown Entity responsible for injury prevention, the programme is supported by a coalition of government and public sector partners, including the Ministry of Health (MoH), Health Quality and Safety Commission New Zealand (HQSC), Osteoporosis New Zealand (ONZ), and various components of the wider health system.

At the heart of *Live Stronger for Longer* is its flagship initiative: the development and expansion of a national network of world-class Fracture Liaison Services (FLS). These services deliver systematic secondary fracture

prevention to individuals who have sustained a fragility fracture and are supported by a comprehensive national FLS quality improvement programme, delivered by ONZ. This programme enables benchmarking against the National Clinical Standards for FLS [9] and the *International Osteoporosis Foundation's Capture the Fracture® Best Practice Framework* [10], driving continuous improvements in service delivery and patient outcomes.
While the Ministry of Health's logo appears on the *Live Stronger for Longer* website, it is unclear whether this constitutes a formal government mandate. Given the unique structure of New Zealand's health system, where ACC and MoH have complementary but distinct responsibilities, osteoporosis has not been formally mandated as a Ministry-led health priority. Therefore, for the purposes of this report, it is classified as not formally mandated by the government.

Nonetheless, *Live Stronger for Longer* is underpinned by a well-defined action plan. Since 2016, a series of ACC-developed business cases have shaped the programme's strategic and operational direction, supporting targeted investment in public health initiatives focused on falls prevention, nutrition, and early risk identification. A key component of this approach is *Know Your Bones*™ (*www.knowyourbones.org.nz*), an online self-assessment tool provided by Osteoporosis New Zealand through its consumer-facing platform, *Bone Health NZ* [13]. This resource empowers individuals to better understand their personal fracture risk and take proactive steps to engage with bone health services.

Patient involvement extends beyond the NHP framework into the broader national quality improvement ecosystem. Both the *Australian and New Zealand Hip Fracture Registry (ANZHFR)* [2] and the *Australian and New Zealand Fragility Fracture Registry (ANZFFR)* [3] are essential elements of this work, each guided by independent steering groups that include patient and consumer representatives. These registries ensure the patient voice is embedded in the design, delivery, and monitoring of fracture prevention services across the country.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in ***Table 2***, a range of osteoporosis treatments are available in New Zealand. The 2017 national clinical guidance [15] states that bisphosphonates are first-line treatment, and that oestrogen therapy may be considered as first-line therapy for women within 10 years of menopause.

Treatment for osteoporosis in New Zealand may be fully reimbursed through the public health system, private insurance, or a co-payment arrangement, depending on the patient's individual circumstances and insurance coverage. However, reimbursement is subject to specific clinical criteria, which may include the presence of a prior fracture, bone mineral density results, fracture risk thresholds, and whether the treatment is for primary or secondary prevention. Additional conditions may apply, such as limitations to first-line therapies and the requirement for prior authorisation.

Reimbursement policy can, at times, constrain clinical decision-making and interfere with what physicians might otherwise recommend as optimal treatment for their patients. In particular, two osteoporosis treatments, teriparatide and denosumab, are subject to PHARMAC's Special Authority criteria. Notably, in January 2025, PHARMAC broadened access to denosumab, improving treatment availability for individuals with osteoporosis and for those with hypercalcaemia related to malignancy.*

*See: *https://www.pharmac.govt.nz/news-and-resources/consultations-and-decisions/decision-to-widen-access-to-denosumab-for-osteoporosis-and-people-with-high-calcium-levels-associated-with-cancer*.

Table 2. Availability and reimbursement of osteoporosis treatments in New Zealand

Treatment	Available	Reimbursed	% Reimbursed
Risedronate	X	X	100%
Alendronate	X	X	100%
Ibandronate			
Zoledronic acid	X	X	100%
Clodronate			
Pamidronate	X	X	100%
Raloxifene	X	X	100%
Bazedoxifene			
Denosumab	X	X	100%
Strontium Ranelate			
Teriparatide	X	X	100%
PTH (1-84)			
Abaloparatide			
Romosozumab			
Vitamin D/Calcium supplements	X	X	100%
Calcitonin	X	X	100%
Hormone Replacement Therapy	X	X	100%
Testosterone	X	X	100%
Alfacalcidol	X	X	100%
Calcidiol			
Calcitriol	X	X	100%
Tibolone	X		

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

% of hospitals with an FLS

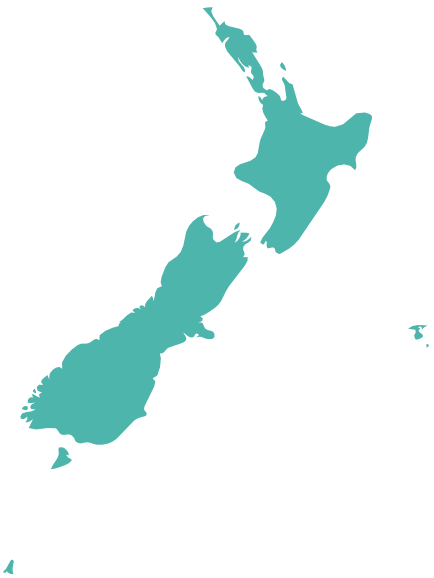
100%

Hip fractures identified by or referred to an FLS

100%

Vertebral fractures identified by or referred to an FLS

10 - 100%*



Other fracture types identified by or referred to an FLS

60%

Reimbursement mechanism to support FLS activities

National injury prevention agency

% of patients recommended for treatment who actually receive treatment

75%

*Data from the ANZFFR reports significant variation in identification rates of vertebral fractures between FLS

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	1 - 2 days
% of hip fractures surgically managed	> 90%

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2017, Osteoporosis New Zealand published the *Guidance on the Diagnosis and Management of Osteoporosis in New Zealand* [15]. The guideline covers the management of osteoporosis in postmenopausal women, men, individuals with glucocorticoid-induced osteoporosis (GIOP), and those who have sustained fragility fractures.

While the guidelines offer detailed recommendations on fracture risk assessment, including factors such as prior fracture, age, BMD, FRAX®, and lateral DXA of the spine or spinal x-ray to identify vertebral fractures, they do not include strategies for population-based screening. The guidance also sets out criteria for initiating treatment based on similar clinical risk factors.

The guidance is compatible with Pharmac funding criteria. The guidelines were developed without direct patient involvement. Additional details on the development of these guidelines are included in *Table 3*.

Generic zoledronic acid is a proven, safe, and cost-effective treatment for the prevention of future fractures and is publicly funded by Pharmac. However, access to funded infusion services remains inconsistent across New Zealand. In some regions, patients are required to pay USD 60 – USD 150 out of pocket for administration costs, an expense that can pose a substantial barrier for older adults living on a fixed retirement income. Achieving national consistency in both the availability of the medication and its delivery is essential to ensure equitable access to this important therapy.

Table 3. Development of clinical guidelines for the management of osteoporosis in New Zealand

Systematic literature review undertaken	Yes
Recommendations	Yes
Stakeholder involvement	Yes
External review	No
Procedure for update defined	An update is planned in 2025 and will consider the APCO Framework
Economic analysis	No
Editorial independence	Yes

FRACTURE RISK ASSESSMENT TOOLS

New Zealand utilises multiple tools for assessing fracture risk, including FRAX®, the *Garvan Fracture Risk Calculator*, and *Know Your Bones*™. Among these, FRAX® is the most widely used tool nationwide. When using FRAX® to determine whether treatment is indicated, a fixed probability threshold is commonly applied, often in combination with a bone mineral density threshold. This approach is used for both men and women. Age-dependent probability thresholds are not currently incorporated into treatment decision-making.

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in New Zealand

Waiting time (d)	No data
Cost (USD)	80 - 200
Is it reimbursed?	Yes, however, there is considerable regional variation in access to publicly funded DXA.
Is reimbursement a barrier to accessing treatment?	In localities with limited access to publicly funded DXA, this can be a barrier to treatments that require Special Authority Approval by Pharmac.

No data was provided on access to ultrasound in New Zealand.

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
National	Hip Fracture Clinical Care Standard: *https://www.safetyand-quality.gov.au/publications-and-re-sources/resource-library/hip-fracture-clinical-care-standard-2023* [8]	Seven Quality statements with associated indicators	Annual Reports published. Real time reporting to each hospital through local dashboard within the ANZ Hip Fracture Registry: *https://anzhfr.org/.* Annual Reports are published in September.
National	Clinical Standards for Fracture Liaison Services in New Zealand (second edition): *https://os-teoporosis.org.nz/wp-content/uploads/2024/09/ONZ-FLS-Clinical-Standards-Sept-2021.pdf* [9]	Six Quality statements with associated Key Performance Indicators	Annual Report published. Real time reporting to each FLS through local dashboard within the ANZ Fragility Fracture Registry: *https://fragilityfracture.co.nz/.* Annual Reports are published in March.

OVERVIEW OF OSTEOPOROSIS IN NEW ZEALAND

Since the release of *BoneCare* in December 2012 [16], New Zealand has made significant strides in improving bone health and reducing the burden of fragility fractures. This initiative marked a turning point in the nation's approach to osteoporosis by introducing a unified, systematic framework in a field that had previously been fragmented and inconsistent.

KEY ACHIEVEMENTS SINCE *BONECARE 2020*

The following is summarised in a 2022 *Archives of Osteoporosis* publication [17] and the 2025 *Osteoporosis New Zealand Bone Health Briefing* document [18].

FORMATION OF A NATIONAL ALLIANCE

Between 2012 and 2016, various organisations collaborated informally to advance the goals of *BoneCare 2020*. This collaboration was formalised in 2017 with the launch of the *Live Stronger for Longer* programme, led by the *Accident Compensation Corporation (ACC)* and supported by the Ministry of Health, Health Quality and Safety Commission, Osteoporosis New Zealand, and other public sector partners. This marked the beginning of a nationally coordinated effort to address bone health.

ADVANCEMENTS IN HIP FRACTURE CARE

Major progress has been made in standardising hip fracture care. The *Australian and New Zealand Guideline for Hip Fracture Care* was published in 2014, followed by the trans-Tasman *Hip Fracture Care Clinical Care Standard* in 2016. The publication of the first patient-level audit from the *Australian and New Zealand Hip Fracture Registry (ANZHFR)* further enabled benchmarking and improvement of hip fracture care across the country.

STRENGTHENING SECONDARY FRACTURE PREVENTION

Key developments include the publication of the *Clinical Standards for Fracture Liaison Services* (FLS) in 2016 and again in 2021, establishing a robust framework for systematic secondary fracture prevention. The launch of the New Zealand arm of the *Australian and New Zealand Fragility Fracture Registry (ANZFFR)* in 2022 has provided real-time benchmarking for FLS teams against national and international standards, further supporting service improvement and accountability.

LOOKING AHEAD: STRONGER TOGETHER – A NATIONAL STRATEGY FOR BONE HEALTH

In 2025, Osteoporosis New Zealand will publish *Stronger Together: A Collaborative Strategy for Bone Health in New Zealand,* a comprehensive national strategy designed to guide efforts across the life course. The strategy outlines three primary goals:

- **Sustaining excellence in Care:** Maintain and strengthen support for New Zealand's world-class FLS Teams that care for individuals with fragility fractures.

- **Preventing First Fractures:** Develop a clinically and cost-effective national primary fracture prevention programme to reduce the risk of first fragility fractures in older adults.

- **Promoting Lifelong Bone Health:** Raise public awareness and deliver education across all age groups on building and maintaining strong bones, from achieving peak bone mass in youth to preserving bone health throughout adulthood and older age.

Achieving these goals will require a coordinated, multi-sector approach, from acute care and secondary prevention through to early-life interventions that build the foundation for lifelong bone health.

This integrated approach, combining clinical excellence, public health action, and education, has the potential to significantly reduce the personal, societal, and economic burden of osteoporosis and fragility fractures across New Zealand.

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This document highlights the key findings for New Zealand, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

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APAC Audit Contributor based in New Zealand
Osteoporosis New Zealand (ONZ)
https://osteoporosis.org.nz/

APAC AUDIT 2025

PAKISTAN

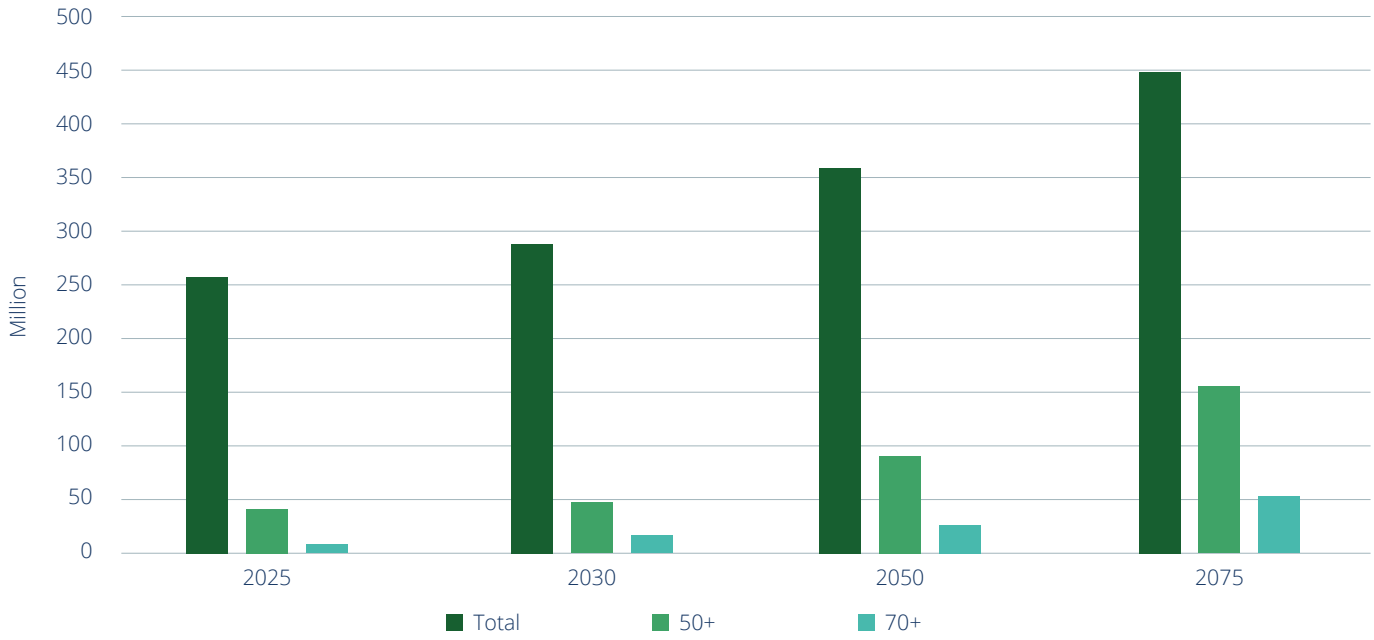
DEMOGRAPHIC TRENDS

Pakistan's population is projected to grow considerably over the coming decades, increasing by 43% from 257.0 million in 2025 to more than 366.5 million by 2050, and by a further 22% to reach 447.0 million by 2075 *(Figure 1)*. Pakistanis currently have an average life expectancy of 70.5 years, which is expected to rise to 82.5 years by 2075, an increase of 17%.

The proportion of Pakistanis aged 50 years or older is set to rise significantly. In 2025, this group of almost 38.3 million people represents 15% of the total population. By 2075, this will increase to 35%, with numbers quadrupling to 155.6 million *(Figure 1)*.

The most dramatic demographic shift in Pakistan will be among those aged 70 years or older, whose numbers are projected to surge from 7.6 million in 2025 to 53.9 million in 2075, a 608% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for just 3% of Pakistan's 257.0 million people. By 2075, they will make up 12% of a larger 447.0 million population, reflecting a 307% relative increase in their proportion of the total population.

Figure 1. Population projections for Pakistan from 2025 to 2075[1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

The Hip Fracture Registry for Pakistan was launched in January 2023 through a mobile application available on both Android and iOS platforms. Developed by a dedicated working group in collaboration with the Pakistan Orthopaedic Association and supported by the Asia Pacific Orthopaedic Association, the registry is overseen by the Health Advisory Board. Participating members and institutions represent all four provinces of Pakistan.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES*

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
1,070 – 3,560*	No data*	4 – 5*

**Best available estimates as reported by country experts in the absence of published data.*

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

In Pakistan, there are no dedicated professionals exclusively assigned to the management of osteoporosis, as may be the case in some Western healthcare systems. Instead, healthcare providers across various specialties based on the patient's clinical presentation and healthcare setting contribute to the diagnosis, treatment, and ongoing management of the disease. Osteoporosis is not recognised as a standalone medical specialty. However, it is currently a formal component of specialty medical training, particularly for family physicians, internal medicine specialists, endocrinologists, gynaecologists, rheumatologists, orthopaedic surgeons, and chemical pathologists. Efforts are underway to formally recognise metabolic medicine, including metabolic bone diseases such as osteoporosis, as a subspecialty within Chemical Pathology. Additionally, a growing number of radiologists are developing a special interest in osteoporosis, reflecting a positive trend toward more specialised care. However, there are no dedicated osteoporosis clinics in most hospitals.

PATIENT SUPPORT ORGANISATIONS

There are no formal patient support organisations that focus on osteoporosis in Pakistan. However, the country does have a patchwork of efforts like patient awareness sessions, free medical camps for osteoporosis screening, social media campaigns and some laboratories in Pakistan have developed 'Osteoporosis Panels' to support patient education and facilitate easier diagnostic pathways.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not documented as a National Health Priority (NHP) in Pakistan.

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	2 - 3 days
% of hip fractures surgically managed	51 - 75%

FRACTURE RISK ASSESSMENT TOOLS

In 2021 the surrogate model for Pakistan specific FRAX® for fracture risk assessment was introduced for clinical use but it is still not widely used within the country. Currently, the group at an Academic Medical Center is working to integrate the FRAX® tool in nursing assessment at the outpatient clinics.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a range of osteoporosis treatments are available in Pakistan. However, none are designated as first-line or reimbursed.

Table 1. Availability and reimbursement of osteoporosis treatments in Pakistan

Treatment	Available
Risedronate	X
Alendronate	X
Ibandronate	X
Zoledronic acid	X
Clodronate	X
Pamidronate	X
Raloxifene	X
Bazedoxifene	
Denosumab	X
Strontium Ranelate	X
Teriparatide	X
PTH (1-84)	
Abaloparatide	
Romosozumab	X
Vitamin D/Calcium supplements	X
Calcitonin	X
Hormone Replacement Therapy	X
Testosterone	X
Alfacalcidol	X
Calcidiol	X
Calcitriol	X
Tibolone	X

Pakistan does not have a comprehensive national health system like those in some other countries, such as the National Health Service in the United Kingdom. Healthcare in Pakistan is primarily provided through a combination of public and private sectors. In the public sector, healthcare services are typically provided through government hospitals and clinics. Treatment at these facilities may be subsidised or provided free of charge to certain segments of the population, particularly those who are unable to afford healthcare services. However, the quality and availability of healthcare in public facilities can vary significantly across different regions of Pakistan. In addition, non-governmental organisations play an important role in providing subsidised and free of charge services.

In the private sector, healthcare services are provided by private hospitals, clinics, and healthcare professionals. Patients usually pay out-of-pocket for treatment received at private healthcare facilities. However, some individuals may have private health insurance coverage that helps offset the cost of medical expenses. Private health insurance coverage in Pakistan is not as widespread as in some other countries, but it is available for purchase from various insurance companies.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

The FLS model of care is currently being implemented at three hospitals in Pakistan. As a relatively new concept in the country, these institutions have initiated pilot programmes that are still evolving. Additionally, one institute has conducted feasibility studies to assess the potential model for broader implementation.

% of hospitals with an FLS	Other fracture types identified by or referred to an FLS
1 - 9%	No data
Hip fractures identified by or referred to an FLS	**Reimbursement mechanism to support FLS activities**
In process at 3 hospitals. One institute is doing feasibility studies.	Private funding
Vertebral fractures identified by or referred to an FLS	**% of patients recommended for treatment who actually receive treatment**
No data	< 20%

QUALITY INDICATORS

There are no quality indicators for hip and other fractures in Pakistan. Pathfinder audits to assess the practices in management have been conducted in hip fracture patients [2] and gap analysis conducted against IOF best practice standards [3]. These findings together with the findings of a feasibility study will help in determining the key performance indicators for fragility fractures.

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2023, the Bone and Mineral Disease Research Group and CITRIC Center at Aga Khan University developed a clinical practice guideline titled *GRADE-ADOLOPMENT of Clinical Practice Guideline for Postmenopausal Osteoporosis Management—a Pakistani Context* [4]. The guideline focuses specifically on the management of postmenopausal women with osteoporosis.

It provides comprehensive recommendations for use of surrogate fracture risk assessment tool for Pakistan. The guideline also outlines criteria for initiating treatment based on these risk factors. However, it does not address population-based screening strategies.

Despite its alignment with international standards in terms of clinical assessment and treatment thresholds, the guideline's implementation in Pakistan remains limited. There is currently no national reimbursement policy for osteoporosis care, leaving patients to cover the full costs of diagnosis and treatment out of pocket. This lack of financial support poses a significant barrier to the practical application of the guideline at a national level. The guidelines were developed without direct patient involvement. Additional details on the development of these guidelines are included in *Table 2*.

Table 2. Development of clinical guidelines for the management of osteoporosis in Pakistan

Systematic literature review undertaken	Yes
Recommendations	Yes
Stakeholder involvement	No
External review	Yes
Procedure for update defined	Plans are in place to tailor the guidelines according to APCO framework
Economic analysis	No
Editorial independence	Yes

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Pakistan.

Waiting time (d)	1 - 3
Cost (USD)	25 - 30
Is it reimbursed?	Some private insurance provides coverage
Is reimbursement a barrier to accessing treatment?	Yes, as it is an expensive test available in the private sector mostly

Quantitative ultrasound is available in Pakistan.

Waiting time (d)	1 - 3
Cost (USD)	25 - 30
Is it reimbursed?	Some private insurance provides coverage, free at some NGO facilities
Is reimbursement a barrier to accessing treatment?	No

OVERVIEW OF OSTEOPOROSIS IN PAKISTAN

In Pakistan, osteoporosis lacks recognition as a National Health Priority, evidenced by the absence of an action plan and epidemiological data on the condition. The recent development of Clinical Practice Guidelines (CPGs) [4] on postmenopausal osteoporosis underscores the necessity for their dissemination and endorsement by national societies.

Currently, fracture rates specific to Pakistan are unavailable, prompting reliance on estimates derived from studies on Indians residing in Singapore, extrapolated to reflect the Pakistani population based on United Nations data from 2015, as reported by IOF[5]. Projections indicate a concerning trajectory, with the annual number of hip fractures in individuals aged 50+ anticipated to surge by 214% by the year 2050 [6], driven largely by an escalation in cases among women due to their extended life expectancy. However, this alarming trend highlights the urgent imperative for comprehensive epidemiological studies on fractures within Pakistan.

Furthermore, Pakistan contends with one of the highest prevalences of vitamin D deficiency globally. The CPG for postmenopausal osteoporosis recommends elevated doses of vitamin D (2000–4000 IU) for patients with specific conditions such as obesity, malabsorption, and advanced age, while cautioning against excessive dosing. For those deficient in vitamin D, loading doses ranging from 5000 IU daily for eight weeks to larger doses administered weekly over the same period are advised, with consideration given to more aggressive regimens for patients with severe symptoms impacting their quality of life. Clinical trials, such as that conducted by Masood et al. [7] have shown promising results in correcting deficiency with single large doses given orally or intramuscularly. For asymptomatic individuals and those who have successfully completed loading doses, maintenance supplementation with at least 600 IU daily for adults and 700–800 IU daily for older adults is recommended. As outlined in the CPG [4], patients are counselled on the importance of achieving adequate calcium intake, aiming for a total daily intake of 1,200 mg from both dietary sources and supplements particularly for women aged 50 years and above.

Over the past decade, the *Bone and Mineral Disease Research Group* has made remarkable strides in advocating for bone health and addressing fragility fractures by embracing inclusivity and engaging diverse professional groups including nursing, orthopaedics, rheumatology, nutrition, endocrinology, and basic science. This collaborative effort culminated in the launch of FFN-Pakistan under the *Global Fragility Fracture Network*, establishment of special interest groups, and the successful organisation of the first international conference aimed at fostering synergies in bone health. A series of workshops were conducted, covering a range of topics including comprehensive geriatric assessment from a nursing perspective, falls prevention, recent advances in fragility fracture management, formulation of guidelines for vitamin D, and orthogeriatric nursing in emergency and perioperative settings. Moreover, the group introduced *Continuing Medical Education (CME)* seminars, case-based discussions, and invited lectures under the theme *'Bone and Mineral Matters.'* It also played a pivotal role in co-hosting Asia Pacific Pocket Meetings of the Global FFN to advance orthogeriatric care across the region.

An addition to the current scenario of osteoporosis care in Pakistan, where standardised training and coordinated management practices have been lacking is the *'Online Certificate Course on Osteoporosis'*, developed under the auspices of FFN-Pakistan and the *Bone and Mineral Disease Research Group*. It is an evidence-based educational programme aimed at improving clinical understanding and practice in osteoporosis prevention, diagnosis, and management. The course, accredited with continuing professional development credit hours, is live since 2024 for healthcare providers.

To further expand national networks on fragility fractures and education, a provincial Chapter for FFN-Pakistan was established during the Endobone colloquium in Lahore. Collaborative efforts with organisations such as the *Pakistan Orthopaedic Association* and the *Pakistan Arthroplasty Society* resulted in the organisation of the first ISCD Course on Osteoporosis and the development of a multidisciplinary online course for healthcare professionals involved in orthogeriatric care.

The research group's initiatives extended beyond educational efforts to include the development of clinical practice guidelines for post-menopausal osteoporosis [4], as well as the creation and validation of tools for nutrition assessment and sunlight exposure measurement, tailored to the Pakistani context. Mentoring support was provided to other research groups aiming to develop multidisciplinary projects in bone and mineral disorders, particularly focusing on high-risk groups such as patients with infertility, Polycystic Ovary Syndromes (PCOS), thalassemia, and recurrent stone formation.

Future priorities include developing consensus recommendations for implementing secondary fracture prevention (SFP) and disseminating guidelines endorsed by national societies, updating to in light of the APCO framework [8], and refining guidelines on vitamin D and thalassemia. Recognising the socio-economic determinants of bone health, efforts will also focus on addressing inequality and enhancing community support systems. Shifting perspectives towards better skeletal health will involve public health initiatives that improve access to education, healthcare, and economic opportunities, alongside promoting social policies that reduce disparities and foster collaboration among healthcare professionals, policymakers, and the community.

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This document highlights the key findings for Pakistan, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

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APAC AUDIT 2025

PHILIPPINES

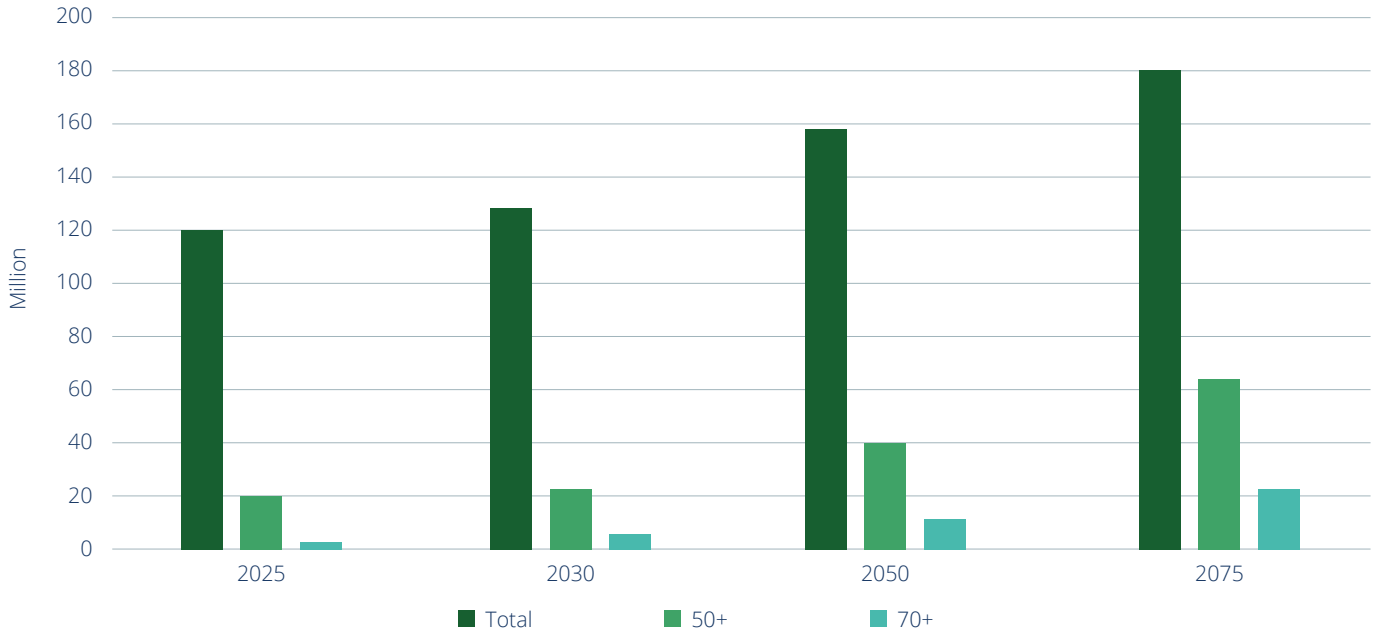
DEMOGRAPHIC TRENDS

The Philippine's population is projected to grow considerably over the coming decades, increasing by 32% from 120.1 million in 2025 to more than 158.1 million by 2050, and by a further 14% to reach 180.3 million by 2075 *(Figure 1)*. Filipinos currently have an average life expectancy of 70.9 years, which is expected to rise to 82.7 years by 2075, an increase of 17%.

The proportion of Filipinos aged 50 years or older is set to rise significantly. In 2025, this group of almost 20.2 million people represents 17% of the total population. By 2075, this will increase to 36%, with numbers more than tripling to 65.3 million *(Figure 1)*.

The most dramatic demographic shift in the Philippines will be among those aged 70 years or older, whose numbers are projected to surge from 4.1 million in 2025 to 24.3 million in 2075, a 491% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for just 3% of the Philippines' 120.1 million people. By 2075, they will make up 13% of a larger 180.3 million population, reflecting a 294% relative increase in their proportion of the total population.

Figure 1. Population projections for the Philippines from 2025 to 2075 [1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

A pilot Fragility Hip Fracture Registry project involving 14 public hospitals was initiated in mid-2022. This centralised database is part of an ongoing research initiative led by the Department of Orthopaedics at the University of the Philippines Manila. The project is supported by the Fragility Fracture Network (FFN) Philippines and funded by the Department of Science and Technology of the Philippines.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
2,635 - 3,054 (public) 20,000 - 22,000 (private)	5,000	8 - 14 days

Fragility hip fractures impose an estimated annual economic burden of approximately PhP 1.09 billion (USD 22.6 million) in the Philippines [2]. This estimate is based on the incidence of hip fractures, the size of the at-risk population, average treatment costs, and productivity losses associated with each case.

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care of rheumatologists and endocrinologists. Osteoporosis is recognised as a standalone medical specialty and is currently a formal component of specialty medical training, particularly for rheumatologists, endocrinologists, gynaecologists, orthopaedic surgeons, family medicine doctors, and rehabilitation medicine physicians.

PATIENT SUPPORT ORGANISATIONS

Replace with The Osteoporosis Society of the Philippines Foundation, Inc. (OSPFI) supports patients primarily through educational initiatives, including online webinars and virtual seminars.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	Other fracture types identified by or referred to an FLS
1 - 9%	< 5%
Hip fractures identified by or referred to an FLS	**Reimbursement mechanism to support FLS activities**
< 10%	National health service and Private funding
Vertebral fractures identified by or referred to an FLS	**% of patients recommended for treatment who actually receive treatment**
< 5%	< 20%

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a range of osteoporosis treatments are available in the Philippines. The bisphosphonate alendronate is designated as first-line treatment. Reimbursement is limited to hospitalisations; there is no reimbursement provided for anti-osteoporosis medications.

Table 1. Availability and reimbursement of osteoporosis treatments in the Philippines

Treatment	Available
Risedronate	X
Alendronate	X
Ibandronate	X
Zoledronic acid	X
Clodronate	
Pamidronate	
Raloxifene	X
Bazedoxifene	
Denosumab	X
Strontium Ranelate	
Teriparatide	X
PTH (1-84)	
Abaloparatide	
Romosozumab	X
Vitamin D/Calcium supplements	X
Calcitonin	
Hormone Replacement Therapy	X
Testosterone	
Alfacalcidol	X
Calcidiol	
Calcitriol	X
Tibolone	X

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	> 3 days
% of hip fractures surgically managed	51 - 75%

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not documented as a National Health Priority (NHP) in the Philippines.

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

The *Osteoporosis Society of the Philippines Foundation, Inc*., as the lead organisation, has submitted the 2023 Philippine Clinical Practice Guidelines (CPG) on the screening, diagnosis, management, and prevention of primary osteoporosis and fragility fractures among postmenopausal women and elderly men [3] to the *Health Technology Assessment Council* (HTAC) of the Department of Health (DOH). These guidelines have been favourably approved by the Health Technology Assessment Council (HTAC) and the DOH published on its website - *www.doh.gov.ph/dpcb/doh-approved-cpg*.

The scope of the guidelines focuses on two key populations: postmenopausal women and elderly men. The guidelines support a population-based approach to screening and incorporate data from the *Philippine Health Examination Survey 2023*. Screening is recommended for all postmenopausal women, men aged 50 years or older, and adults with clinical risk factors for osteoporosis.

In terms of fracture risk assessment, the guidelines emphasise the importance of evaluating prior fracture history, age, bone mineral density, FRAX® scores, and relevant comorbidities. However, while these assessment tools are well-validated, they are currently not aligned with any existing reimbursement policies in the Philippines, as there is no formal reimbursement structure in place for osteoporosis assessment.

The guidelines also outline criteria for initiating treatment, including prior fractures, advanced age, low BMD, high FRAX® risk, comorbidities, and the use of medications known to increase fracture risk. These recommendations are not compatible with reimbursement policies because, currently, there is no reimbursement framework for osteoporosis treatment. However, all senior citizens in the Philippines are entitled to a 20% discount on hospitalisation, medications, meals, and certain other related expenses.

Patients were actively involved in the development of the clinical practice guidelines. An individual living with osteoporosis participated in the technical review process, and patients were also consulted during the formulation of clinical questions and throughout panel discussions. Additional details on the development of these guidelines are included in *Table 2*.

Table 2. Development of clinical guidelines for the management of osteoporosis in the Philippines

Systematic literature review undertaken	Yes
Recommendations	Yes: Strong versus Weak
Stakeholder involvement	Yes: All physician organisations from different specialties including patients
External review	Yes
Procedure for update defined	Every 3 years or when there are new updates
Economic analysis	Yes
Editorial independence	Yes

FRACTURE RISK ASSESSMENT TOOLS

The Philippines uses both FRAX® [4] and FRAXplus® for assessing fracture risk, with FRAX® being widely adopted across the country. In clinical practice, the determination of whether treatment is warranted using FRAX® follows several approaches. These include the use of fixed probability thresholds, age-dependent probability thresholds, and combined thresholds involving both FRAX® scores and bone mineral density measurements. These methods are applied consistently for both men and women.

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in the Philippines.

Waiting time (d)	0
Cost (USD)	50 - 300
Is it reimbursed?	No
Is reimbursement a barrier to accessing treatment?	Yes

No data was provided on access to ultrasound in the Philippines.

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
National	2023 Clinical Practice Guidelines on Osteoporosis	Screening, prevention, diagnosis, management on PMW and elderly men	Don't know

OVERVIEW OF OSTEOPOROSIS IN THE PHILIPPINES

Osteoporosis remains a significant but under-recognised public health concern in the Philippines. Despite its growing burden, it is still not officially designated a national health priority, and fragility fractures, particularly hip fractures, are often managed without adequate urgency or emphasis on secondary prevention. The condition continues to be perceived as a silent disease and frequently misattributed as an inevitable part of ageing, rather than a preventable and treatable medical issue.

As of mid-2025, the national prevalence and incidence of osteoporosis in the Philippines has not been recently updated. However, estimates from the *2003 National Nutrition and Health Survey* projected that the number of Filipinos at risk of osteoporosis would increase from 4 million in 2020 to over 10.2 million by 2050. Additionally, a high prevalence of suboptimal vitamin D levels has been observed nationwide, with 48.7% of the population affected by either deficiency or insufficiency. The highest rates were found in the National Capital Region (54.1%), while the lowest were recorded in Davao del Sur in Mindanao (28.9%).

The country celebrates Osteoporosis Awareness Week during the second week of October, as established by Proclamation No. 19s.1998, and Bone and Joint Awareness Week during the third week of October, under Proclamation No. 658. These activities play a key role in promoting public education and engagement on bone health.

Notably, the *Osteoporosis Society of the Philippines Foundation, Inc*. led the publication of the *2023 Clinical Practice Guidelines on Screening, Diagnosis, Management, and Prevention of Primary Osteoporosis and Fragility Fractures Among Postmenopausal Women and Elderly Men* [2]. The guideline can be accessed on the DOH website - *www.doh.gov.ph/dpcb/doh-approved-cpg*. It has been submitted to *Journal of Asean Federation of Endocrine Society* for publication consideration. This update marks a major milestone in advancing evidence-based care and guidance for clinicians across the country.

In terms of service delivery, the *University of the Philippines-Philippine General Hospital (UP–PGH)* launched the country's first *Orthogeriatric Multidisciplinary Fracture Management Model* and FLS, which received bronze-level recognition from the International Osteoporosis Foundation's *Capture the Fracture®* programme in 2020. Similarly, the *National University Hospital's Orthogeriatric-FLS unit* has served as a model for other institutions, demonstrating how hospitals in low- to middle-income settings can enhance care for fragility hip fracture patients.

These initiatives led by the *Osteoporosis Society of the Philippines Foundation*, the *Fragility Fracture Network Philippines*, and leading institutions represent important steps toward improving osteoporosis care and fragility fracture prevention in the Philippines, but continued multisector collaboration and government prioritisation are needed to fully address the growing burden of this disease.

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This document highlights the key findings for the Philippines, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

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https://www.facebook.com/OsteoporosisPhilippines/

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APAC AUDIT 2025

REPUBLIC OF KOREA

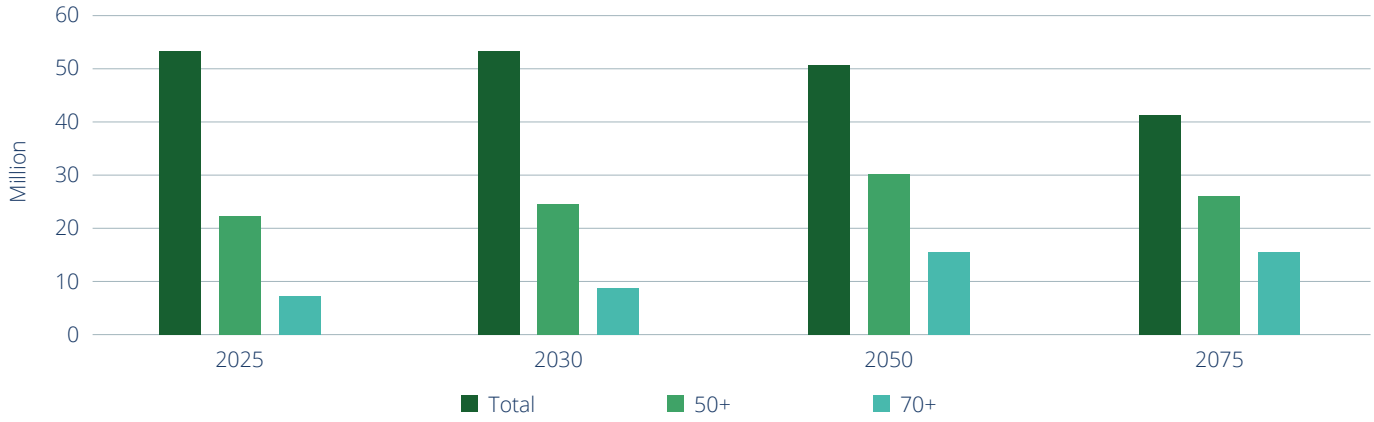
DEMOGRAPHIC TRENDS

The population of the Republic of Korea is projected to grow marginally from 52.2 million in 2025 to 52.6 million in 2030, an increase of less than 1% - before entering a period of significant decline. This downward trend is expected to accelerate in the second half of the century, with the population falling by 21% relative to 2025 levels, reaching 41.3 million by 2075 *(Figure 1)*. South Koreans currently have an average life expectancy of 83.6 years, which is expected to rise to 90.8 years by 2075, an increase of more than 8%.

The proportion of South Koreans aged 50 years or older is projected to rise significantly in the coming decades. In 2025, this age group comprises nearly 23.0 million people, accounting for 44% of the total population. By 2075, despite a declining overall population, the number of people aged 50 years or older is expected to grow to 25.3 million, representing 61% of the population *(Figure 1)*.

The most dramatic demographic shift in the Republic of Korea will be among those aged 70 years or older, whose numbers are projected to increase from 6.8 million in 2025 to almost 15.3 million in 2075, a 123% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for 13% of the Republic of Korea's 52.2 million people. By 2075, they will make up 37% of a smaller 41.3 million population, reflecting a 182% relative increase in their proportion of the total population.

Figure 1. Population projections for the Republic of Korea from 2025 to 2075 [1]



HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
4,880 - 8,000*	**663***	**21 - 25***

**Best available estimates as reported by country experts.*

CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

In 2022, NHHS data was available for hip and all fractures as shown in *Table 1*.

Table 1. Status of centralised fracture databases in the Republic of Korea

Is a centralised database established?	Yes
Level of database coverage	National
Hip fracture records documented per year	87,254
Percentage of hip fractures treated surgically	No data
All fracture records documented per year	434,500
Percentage of all fractures treated surgically	No data
Age range and gender of patients in database	51-75+ years for both males and females

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care of rheumatologists, orthopaedic surgeons, gynaecologists, endocrinologists, geriatricians, rehabilitation medicine physicians, and internal medicine doctors. Osteoporosis is recognised as a standalone medical specialty and is currently a formal component of specialty medical training, particularly for endocrinologists, orthopaedic surgeons, and rehabilitation medicine physicians.

PATIENT SUPPORT ORGANISATIONS

There is no patient support organisation that focuses on osteoporosis in the Republic of Korea.

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	1 - 2 days
% of hip fractures surgically managed	76 - 90%

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
Local	FLS guidebook 2023	Primary treatment and secondary prevention of fragility fracture	No data

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 2*, a range of osteoporosis treatments are available and reimbursed in the Republic of Korea. Bisphosphonates, denosumab and selective oestrogen receptor modulators (SERMs) are designated as first-line treatments in the country.

Treatment reimbursement in the Republic of Korea involves a combination of funding from the national health system, private insurance, and patient co-payments. Reimbursement is subject to specific criteria, including prior fracture history, age, bone mineral density results, whether the treatment is for primary or secondary prevention, and first- or second-line treatment option.

The 2024 Korean clinical guidelines[2] recommend anabolic-first therapy for very high-risk patients. However, reimbursement access to anabolic agents (e.g., teriparatide, romosozumab) requires failure of prior bisphosphonate therapy, creating a misalignment between evidence-based recommendations and policy.

Table 2. Availability and reimbursement of osteoporosis treatments in the Republic of Korea

Treatment	Available	Reimbursed	% Reimbursed
Risedronate	X	X	40 - 70%
Alendronate	X	X	40 - 70%
Ibandronate	X	X	40 - 70%
Zoledronic acid	X	X	40 - 70%
Clodronate			
Pamidronate	X	X	40 - 70%
Raloxifene	X	X	40 - 70%
Bazedoxifene	X	X	40 - 70%
Denosumab	X	X	40 - 70%
Strontium Ranelate			
Teriparatide	X	X	40 - 70%
PTH (1-84)	X		
Abaloparatide			
Romosozumab	X	X	40 - 70%
Vitamin D/Calcium supplements	X	X	40 - 70%
Calcitonin	X	X	40 - 70%
Hormone Replacement Therapy	X	X	40 - 70%
Testosterone			
Alfacalcidol	X	X	40 - 70%
Calcidiol	X	X	40 - 70%
Calcitriol	X	X	40 - 70%
Tibolone	X	X	40 - 70%

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not documented as a National Health Priority (NHP) in the Republic of Korea.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	Other fracture types identified by or referred to an FLS
1 - 9%	No data
Hip fractures identified by or referred to an FLS	**Reimbursement mechanism to support FLS activities**
No data	National health service
Vertebral fractures identified by or referred to an FLS	**% of patients recommended for treatment who actually receive treatment**
No data	50 - 69%

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in the Republic of Korea.

Waiting time (d)	1
Cost (USD)	36.2 / free at specific age if price is less than 40 USD
Is it reimbursed?	Yes
Is reimbursement a barrier to accessing treatment?	No / only available once 1 year

No data was provided on access to ultrasound in the Republic of Korea.

FRACTURE RISK ASSESSMENT TOOLS

The Republic of Korea uses FRAX®, but it is not widely used within the country.

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2024, a total of four clinical practice guidelines were published in Korea by relevant academic societies.

- Korean Society of Osteoporosis (KSO). (2024). *Clinician's Guide to Osteoporosis and Sarcopenia*. Seoul, Korea: KSO Publishing.
- Korean Society for Bone and Mineral Research (KSBMR). (2024) *Physician's Guide to Osteoporosis.*
- Korea Academy of Medical Science (KAMS) and Korea Disease Control and Prevention Agency (KDCA) (2024). *Evidence-based Recommendations for Osteoporosis in Primary Care.*
- The Korean Society of Menopause (KSM) (2024) *The 2024 Guidelines for Osteoporosis - Korean Society of Menopause.*

The guideline covers the management of osteoporosis in postmenopausal women, men, individuals with glucocorticoid-induced osteoporosis (GIOP), and those with sarcopenia.

While the guidelines offer detailed recommendations on fracture risk assessment, including factors such as prior fracture, bone mineral density, and FRAX® scores, they do not include strategies for population-based screening. The guidance also sets out criteria for initiating treatment based on similar clinical risk factors and GIOP.

Reimbursement policies for osteoporosis medications, particularly anabolic agents, does not currently follow the recommendations made in the *Clinician's Guide*. The guidelines were developed without direct patient involvement. Additional details on the development of these guidelines are included in *Table 3*.

Table 3. Development of clinical guidelines for the management of osteoporosis in the Republic of Korea

Systematic literature review undertaken	Yes
Recommendations	Yes
Stakeholder involvement	Yes
External review	Yes
Procedure for update defined	Yes
Economic analysis	Yes
Editorial independence	Yes

OVERVIEW OF OSTEOPOROSIS IN THE REPUBLIC OF KOREA

The Korean Society of Osteoporosis advocate for broadening access to osteoporosis treatments, particularly anabolic agents.

The Korean Society for Bone and Mineral Research noted that in 2024 there were six Fracture Liaison Services in the country.

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This document highlights the key findings for the Republic of Korea, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

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Korean Society of Bone and Mineral Research (KSBMR)
https://www.ksbmr.org/eng/

Korean Society of Osteoporosis (KSO)
https://www.koreanosteoporosis.or.kr/eng/main.html

www.osteoporosis.foundation

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SINGAPORE

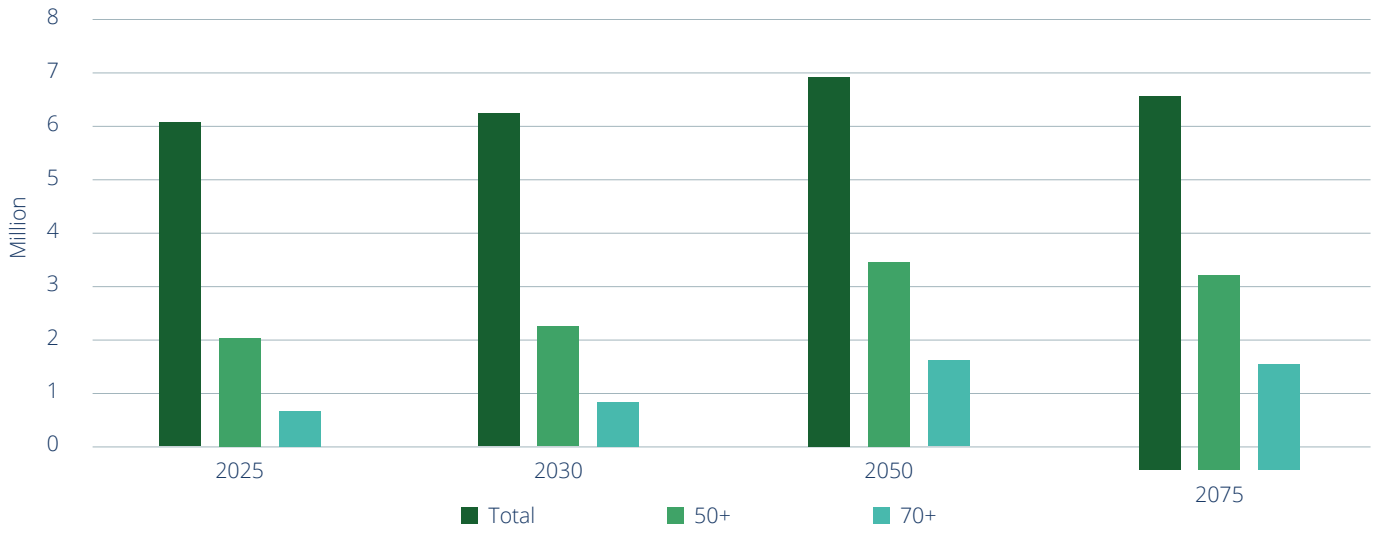
DEMOGRAPHIC TRENDS

Singapore's population is projected to grow steadily until the mid-21st century, increasing by 14% from 6.1 million in 2025 to more than 6.9 million by 2050. However, population growth is expected to slow significantly in the second half of the century, with only a marginal increase of less than 1% to 7.0 million by 2075 *(Figure 1)*. Singaporeans currently have an average life expectancy of 86.8 years, which is expected to rise to 92.5 years by 2075, an increase of more than 6%.

The proportion of Singaporeans aged 50 years or older is set to rise significantly. In 2025, this group of almost 2.1 million people represents 34% of the total population. By 2075, this will increase to 51%, with numbers increasing to 3.6 million *(Figure 1)*.

The most dramatic demographic shift in Singapore will be among those aged 70 years or older, whose numbers are projected to surge from 0.6 million in 2025 to more than 2.0 million in 2075, a 239% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for almost 10% of Singapore's 6.1 million people. By 2075, they will make up almost 29% of a larger 7.0 million population, reflecting a 193% relative increase in their proportion of the total population.

Figure 1. Population projections for Singapore from 2025 to 2075 [1]



HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

In 2019, Chandran et al.[2] evaluated the projected health and economic burden of osteoporotic fractures in Singapore from 2017 to 2035 and assessed the potential impact of increasing treatment rates using pharmacological options such as denosumab.

To estimate future fracture incidence and associated costs, the study used population forecasts for adults aged 50 years and over in combination with osteoporosis prevalence data. Two scenarios were modelled: a status quo scenario assuming the treatment rate of 28% at the time remained unchanged, and an intervention scenario in which treatment rates increased to 75%, primarily through the use of denosumab. The analysis included projections

for fracture incidence as well as direct healthcare costs (e.g., hospitalisation and outpatient services) and indirect societal costs (e.g., productivity loss and caregiver burden) for hip, vertebral, and other osteoporotic fractures.

The results revealed that osteoporotic fractures in Singapore are expected to increase by 57.9%, rising from 15,267 cases in 2017 to 24,104 cases in 2035. The total economic burden is projected to grow from S$183.5 million (USD 143.1 million) to S$289.6 million (USD 225.9 million) over the same period. Enhancing treatment coverage could prevent up to 29,096 fractures and result in cumulative cost savings of S$330.6 million (USD 257.9 million).

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
21,200 (comprehensive one-year cost) [3] 4,650 - 6,980*	No data	10 - 11 days [4]

**Estimated for direct within hospital cost*

CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

Table 1. Status of centralised fracture databases in Singapore

Is a centralised database established?	Yes
Level of database coverage	National
Hip fracture records documented per year	3,900
Percentage of hip fractures treated surgically	74
All fracture records documented per year	15,267
Percentage of all fractures treated surgically	60
Other fracture records documented per year	6,923
Percentage of other fractures treated surgically	75
Age range and gender of patients in database	40-75+ years for both males and females

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is primarily managed by primary care physicians, while specialist input is provided by rheumatologists, orthopaedic surgeons, gynaecologists, endocrinologists, geriatricians, rehabilitation medicine physicians, and internal medicine doctors. Osteoporosis is recognised as a standalone medical specialty and is a recognised component of specialty medical training, particularly for endocrinologists, rheumatologists, orthopaedic surgeons, geriatricians, rehabilitation medicine physicians, and internal medicine doctors.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis was officially documented as a National Health Priority (NHP) in 2008 [5]. The NHP is mandated by the government, but it is not governed or overseen by any additional regulatory or independent body. The NHP does not include any specific action plans or implementation strategies and there is no patient involvement outside of the NHP.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 2*, a range of osteoporosis treatments are available and reimbursed in Singapore. Oral bisphosphonates are designated as first-line treatments in the country.

Treatment reimbursement in Singapore involves a combination of funding from the national health system, private insurance, and patient co-payments. Reimbursement is patient dependant and based on needs assessment by medical social workers. Reimbursement is subject to specific criteria, including prior fracture history, age, bone mineral density results, fracture risk threshold, first- or second-line treatment option, and whether authorisation is required.

Reimbursement policies may, at times, conflict with physicians' preferred treatment strategies. Access to treatment is also influenced by the specific terms and conditions of patients' private insurance plans. Public subsidies in Singapore cover older antiresorptives: oral bisphosphonates (alendronate, risedronate) and intravenous zoledronic acid. Denosumab was recommended for inclusion in the Medication Assistance Fund (MAF) list for defined high-risk osteoporosis indications with effect from 1 July 2022. Anabolic agents have limited subsidy availability, although a teriparatide biosimilar was recommended for MAF inclusion effective 1 August 2025.

Table 2. Availability and reimbursement of osteoporosis treatments in Singapore

Treatment	Available	Reimbursed	% Reimbursed*
Risedronate	X	X	50 - 75%
Alendronate	X	X	50 - 75%
Ibandronate			
Zoledronic acid	X	X	50 - 75%
Clodronate			
Pamidronate			
Raloxifene	X	X	50 - 75%
Bazedoxifene			
Denosumab	X	X	50 - 75%
Strontium Ranelate			
Teriparatide	X		
PTH (1-84)			
Abaloparatide			
Romosozumab	X		
Vitamin D/Calcium supplements	X	X	50 - 75%
Calcitonin	X		
Hormone Replacement Therapy	X	X	50 - 75%
Testosterone	X		
Alfacalcidol			
Calcidiol			
Calcitriol			
Tibolone	X		

** Osteoporosis medications are eligible for reimbursement in Singapore, typically covering 50 - 75% of the cost for standard drugs in public institutions for citizens and a smaller percentage (25%) for Permanent Residents, with additional financial assistance available for specific drugs such as denosumab via the Medication Assistance Fund (MAF), and through MediSave for outpatient care, subject to scheme limits and eligibility.*

PATIENT SUPPORT ORGANISATIONS

The *Osteoporosis Society of Singapore (OSS)* is the national patient organisation dedicated to improving bone health and reducing the burden of osteoporosis across the country. As a disease-specific charity operating at the national level, OSS focuses on public awareness, policy advocacy, education, capacity building, and providing support for individuals affected by osteoporosis and fragility fractures. The society actively involves patient representatives in a range of initiatives aimed at raising awareness and empowering the community. One key initiative is the training of Bone Health Ambassadors, who offer peer support and contribute to community outreach efforts. While OSS plays a vital role in advocacy and support, it is not engaged in research and development activities.

The only dedicated peer-to-peer osteoporosis support group in Singapore is the *WISHBONE (Women (and Men) In Support of Healthy Bones)* at *Singapore General Hospital (SGH)*, established in 2013 by the *Osteoporosis and Bone Metabolism Unit* at SGH. It provides a true support setting where patients share experiences, support one another, and learn from regular educational sessions with healthcare professionals.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	**> 50%**
Hip fractures identified by or referred to an FLS	**50%**
Vertebral fractures identified by or referred to an FLS	**20 - 25%**

Other fracture types identified by or referred to an FLS	**20 - 50%**
Reimbursement mechanism to support FLS activities	**Local and National health service**
% of patients recommended for treatment who actually receive treatment	**20 - 49%**

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2018, the Ministry of Health's Agency for Care Effectiveness (ACE) published the *Appropriate Care Guideline for Osteoporosis Identification and Management in Primary Care* [5]. The guideline covers the management of osteoporosis in men and women in primary care.

This was followed in 2025 by the *ACE Clinical Guideline* [6] which focuses on simple recommendations for case finding and treatment initiation, with applicability largely confined to basic primary care.

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	1 - 2 days
% of hip fractures surgically managed	76 - 90%

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Singapore.

Waiting time (d)	4 - 5 weeks (public) / 3-7 days (private)
Cost (USD)	75 - 100
Is it reimbursed?	Yes partially
Is reimbursement a barrier to accessing treatment?	Yes

Calcaneal ultrasound is used in several medical centres primarily for screening and is also employed in community-based or mass screening initiatives. However, locally derived normative reference ranges are not available.

FRACTURE RISK ASSESSMENT TOOLS

FRAX®-based fixed intervention thresholds based on an in-house developed Markov model are included in the 2025 update of the *ACE Clinical guidelines* [6]. The intervention thresholds recommended in this guideline differ from the hybrid intervention thresholds recommended in an earlier published and peer-reviewed study by Chandran M et al [3]. Health Care Providers are encouraged by experts to apply clinical judgement in determining the most appropriate threshold for intervention, with due consideration of patient-specific factors and the broader clinical context.

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
National	Hip fracture database	Under Ministry of Health	Under Ministry of Health

OVERVIEW OF OSTEOPOROSIS IN SINGAPORE

Osteoporosis remains a national health priority in Singapore, with ongoing efforts aimed at promoting healthy aging and reducing the burden of fragility fractures. The forthcoming implementation of HealthierSG will further reinforce this focus, as osteoporosis is set to become one of the designated national health plans by 2025. This initiative is expected to enable systematic data collection on fractures at the national level and support cost-effectiveness analyses of various prevention strategies.

Singapore is actively strengthening primary care services and promoting "ageing in place" within the community as part of broader efforts to support the elderly population. Programmes under these initiatives aim to enhance early detection, prevention, and management of osteoporosis and its associated risks.

Key statistics commonly referenced include hip fracture incidence and DXA utilisation rates. Between 2017 and 2035, the incidence of osteoporotic fractures is projected to increase significantly, from 15,267 to 24,104 cases overall (a 57.9% increase), with female cases rising from 10,717 to 17,225 (a 60.7% increase), and male cases from 4,550 to 6,878 (a 51.2% increase[2]. The total economic burden associated with these fractures, including both direct healthcare costs and indirect societal costs, is estimated to rise from S$183.5 million in 2017 (USD 143.1 million) to S$289.6 million (USD 225.9 million) in 2035.

Despite its prioritisation, osteoporosis management in Singapore faces many challenges. Large scale epidemiological studies are lacking. Fracture Liaison Services are confined to only the public teaching hospitals, and dedicated research funding in metabolic bone disorders remains insufficient.

However, ongoing public-education efforts, including annual public health forums run by the Osteoporosis Society of Singapore and hospitals such as Singapore General Hospital and high-quality research by individual investigators reflect a sustained commitment to preventing skeletal fragility and improving bone health at both clinical and population levels. In addition, partnerships with organisations such as the IOF, International Society for Clinical Densitometry (ISCD), the Asian Federation of Osteoporosis Societies (AFOS) and the Asia Pacific Consortium on Osteoporosis (APCO) to hold conferences dedicated to bone health and metabolic bone disorders, and the participation of all three medical universities in the International Osteoporosis Foundation University Network, provide recurring regional platforms for professional education, guideline development and cross-country collaboration.

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This document highlights the key findings for Singapore, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". ***View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

ACKNOWLEDGMENTS

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National University of Singapore
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Osteoporosis Society (Singapore) (OSS)
http://www.osteoporosis.sg/

APAC AUDIT 2025

SRI LANKA

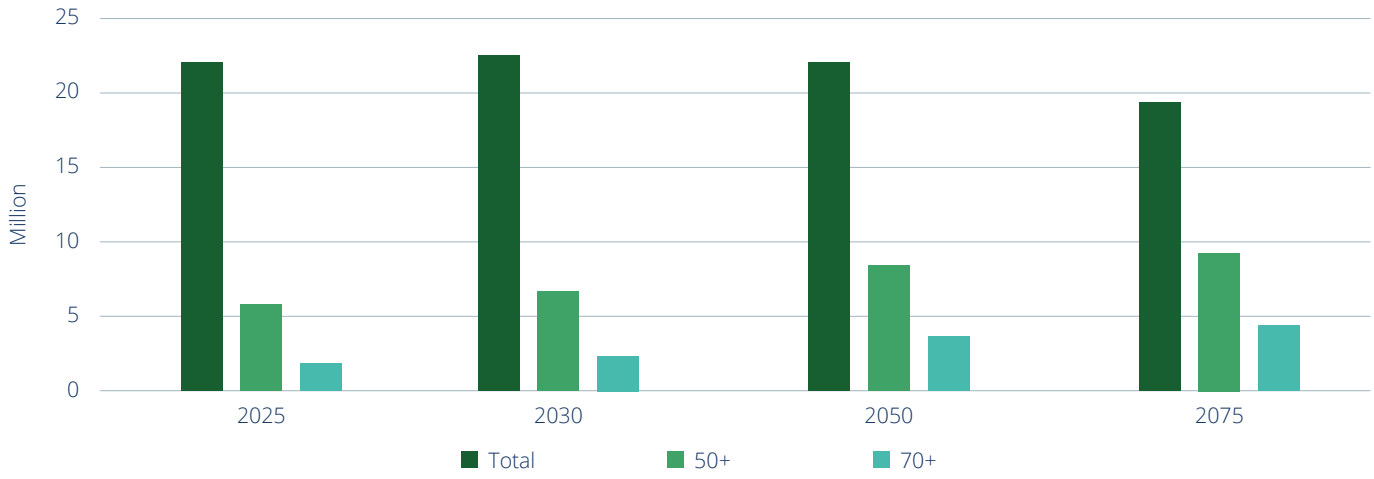
DEMOGRAPHIC TRENDS

Sri Lanka's population is projected to grow marginally from 22.1 million in 2025 to 22.3 million in 2030, an increase of less than 1% before entering a period of significant decline. This downward trend is expected to accelerate in the second half of the century, with the population falling by 12% relative to 2025 levels, reaching 19.4 million by 2075 ***(Figure 1)***. Sri Lankans currently have an average life expectancy of 76.9 years, which is expected to rise to 87.0 years by 2075, an increase of 13%.

The proportion of Sri Lankans aged 50 years and over is projected to rise significantly in the coming decades. In 2025, this age group comprises 6.5 million people, accounting for almost 30% of the total population. By 2075, despite a declining overall population, the number of people aged 50 years or older is expected to grow to 9.1 million, representing 59% of the population ***(Figure 1)***.

The most dramatic demographic shift in Sri Lanka will be among those aged 70 years or older, whose numbers are projected to increase from 1.8 million in 2025 to more than 3.5 million in 2075, a 110% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for 8% of Sri Lanka's 22.3 million people. By 2075, they will make up almost 23% of a smaller 19.4 million population, reflecting a 177% relative increase in their proportion of the total population.

Figure 1. Population projections for Sri Lanka from 2025 to 2075 [1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

There is no centralised database for fractures in Sri Lanka.

PATIENT SUPPORT ORGANISATIONS

There are no patient support organisations that focus on osteoporosis in Sri Lanka.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
No data	No data	14*

Best available estimates as reported by country experts in the absence of published data

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care of rheumatologists, orthopaedic surgeons, endocrinologists and internal medicine doctors. Osteoporosis is recognised as a standalone medical specialty and is currently a formal component of specialty medical training, particularly for endocrinologists and internal medicine doctors.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not documented as a National Health Priority (NHP) in Sri Lanka.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	Other fracture types identified by or referred to an FLS
1 - 9%	0%
Hip fractures identified by or referred to an FLS	**Reimbursement mechanism to support FLS activities**
1 - 9	Private funding
Vertebral fractures identified by or referred to an FLS	**% of patients recommended for treatment who actually receive treatment**
0	20 - 49%

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	> 3 days
% of hip fractures surgically managed	51 - 75%

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1,* a range of osteoporosis treatments are available and reimbursed in Sri Lanka. Bisphosphonates are designated as first-line treatments in the country.

Treatment is reimbursed in full by private insurance and there are no conditions associated with reimbursement. Consequently, reimbursement policy does not interfere with what physicians would normally recommend to patients.

Table 1. Availability and reimbursement of osteoporosis treatments in Sri Lanka

Treatment	Available	Reimbursed	% Reimbursed
Risedronate			
Alendronate	X	X	100%
Ibandronate	X	X	100%
Zoledronic acid	X	X	100%
Clodronate			
Pamidronate	X	X	100%
Raloxifene	X		
Bazedoxifene			
Denosumab			
Strontium Ranelate			
Teriparatide			
PTH (1-84)			
Abaloparatide			
Romosozumab			
Vitamin D/Calcium supplements	X	X	100%
Calcitonin			
Hormone Replacement Therapy	X	X	100%
Testosterone	X	X	100%
Alfacalcidol	X	X	100%
Calcidiol			
Calcitriol	X	X	100%
Tibolone			

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

There are no guidelines for osteoporosis management in Sri Lanka.

FRACTURE RISK ASSESSMENT TOOLS

Sri Lanka uses FRAX®, but it is unknown if it is widely used within the country.

QUALITY INDICATORS

There are no quality indicators for hip and other fractures in Sri Lanka.

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Sri Lanka.

Waiting time (d)	0 - 2
Cost (USD)	25
Is it reimbursed?	Yes
Is reimbursement a barrier to accessing treatment?	No

No data was provided on access to ultrasound in Sri Lanka.

OVERVIEW OF OSTEOPOROSIS IN SRI LANKA

Osteoporosis is not currently recognised as a national health priority in Sri Lanka. Access to diagnostic services is limited, with DXA scanners available only in a small number of urban centres. As a result, the majority of individuals at high risk of fragility fractures remain undiagnosed and untreated. Therapeutic options are also constrained with key medications such as denosumab and parathyroid hormone analogues not available. The current economic crisis in the country has made the situation worse.

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*This document highlights the key findings for Sri Lanka, published in "The Asia Pacific Regional Audit: Epidemiology, costs and burden of osteoporosis in 2025". **View the complete report at: https://www.osteoporosis.foundation/asia-pacific-audit-2025***

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APAC Audit Contributor based in Sri Lanka
Osteoporosis Sri Lanka

APAC AUDIT 2025

THAILAND

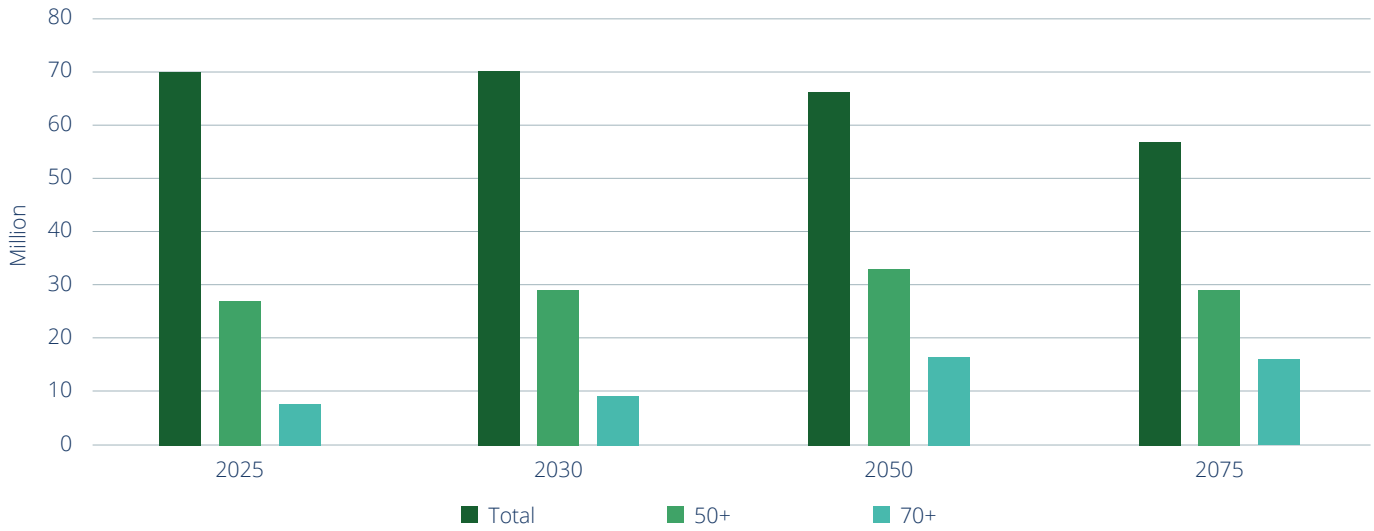
DEMOGRAPHIC TRENDS

Thailand's population is projected to grow marginally - from 70.0 million in 2025 to 70.3 million in 2030, an increase of less than 1% - before entering a period of significant decline. This downward trend is expected to accelerate in the second half of the century, with the population falling by 19% relative to 2025 levels, reaching 56.4 million by 2075 ***(Figure 1)***. Thais currently have an average life expectancy of 78.4 years, which is expected to rise to 87.9 years by 2075, an increase of 12%.

The proportion of Thais aged 50 years or older is projected to rise significantly in the coming decades. In 2025, this age group comprises 26.5 million people, accounting for almost 38% of the total population. By 2075, despite a declining overall population, the number of people aged 50 years or older is expected to grow to 29.4 million, representing 52% of the population ***(Figure 1)***.

The most dramatic demographic shift in Thailand will be among those aged 70 years or older, whose numbers are projected to increase from 7.0 million in 2025 to 15.9 million in 2075, a 126% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for 10% of Thailand's 70.0 million people. By 2075, they will make up almost 28% of a smaller 56.4 million population, reflecting a 180% relative increase in their proportion of the total population.

Figure 1. Population projections for Thailand from 2025 to 2075[1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

Two published studies have contributed to characterising the epidemiology of fragility fractures in Thailand.

In 2019, a retrospective cohort study analysed fragility hip fracture cases from Nan and Pua Hospitals in Nan province, Thailand, between September 2014 and December 2017, using ICD-10 codes S72.0–S72.2 [2]. A total of 876 patients were identified, with annual incidence rates of 211.6, 214.9, and 238.5 per 100,000 person-years for 2015–2017, respectively. Women had a markedly higher incidence than men (female-to-male ratio 2.5:1).

Most fractures (87.2%) occurred indoors, and 5.9% of patients experienced a refracture, with a median time to refracture of 143 weeks. The study classified the regional incidence as moderately severe and emphasised the need for coordinated, multidisciplinary homecare and fall-prevention strategies to reduce the burden of fragility hip fractures.

In 2023, a retrospective cohort study compared outcomes for patients aged ≥50 years admitted with fragility hip fractures to Police General Hospital, Bangkok, in the pre-pandemic period (2018–2019; n = 139) and during the COVID-19 pandemic (2020–2021; n = 125) [3]. The 30-day mortality rose from 0% pre-pandemic to 2.4% during the pandemic, and one-year mortality increased significantly from 1.4% to 4% (p = 0.033), though none of the deaths were directly related to COVID-19 infection. The pandemic period was associated with a shorter time to surgery, but longer delays to bone mineral density testing, initiation of osteoporosis medication, and higher loss to follow-up, resulting in reduced treatment uptake. These findings suggest that while acute surgical care improved, secondary fracture prevention pathways were disrupted during the pandemic.

In parallel with these research efforts, a national surveillance and prevention system for falls, hip fractures, and recurrent fractures has recently been established [4]. Data collection for this programme began in July 2025, meaning there are currently no national-level data to report. Once operational data accumulate, this system is expected to provide a centralised, comprehensive platform for ongoing monitoring and policy planning.

Is a centralised database established?	Yes
Level of database coverage	Hospital
Hip fracture records documented per year	100
Percentage of hip fractures treated surgically	90
All fracture records documented per year	110
Percentage of all fractures treated surgically	87.5
Age range and gender of patients in database	61-75+ years

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
6,719 (6,066 – 7,373) [5]	**1,592 (1,136 – 2,047)**	**16 (15 - 17)**

In 2023, Unnanuntana et al. assessed the in-hospital costs associated with treating elderly patients diagnosed with osteoporotic femoral neck fractures who underwent bipolar hemiarthroplasty at Siriraj Hospital in Thailand[5]. The mean and median total in-hospital costs associated with treating elderly patients diagnosed with osteoporotic femoral neck fractures who underwent bipolar hemiarthroplasty were USD 5,671 and USD 5,013, respectively, with a cost range spanning from USD 3,695 to USD 13,194. Notably, direct medical costs comprised 96.3% of total expenditures. Among cost components, intraoperative expenses were the most substantial, with prosthesis costs alone representing almost 30% of the total. Postoperative nursing care and medical treatment also accounted for a significant share of the costs. Factors such as prolonged hospital stays and postoperative pneumonia were associated with higher overall costs, with length of stay showing the strongest correlation.

When compared with previous Thai studies, the costs observed in this study were higher, likely due to an older patient population, greater burden of comorbidities, use of newer prosthetic technologies, and the

implementation of fast-track surgical pathways and Fracture Liaison Services. However, in an international context, the costs in Thailand were still lower than those reported in countries such as Singapore and Norway, underscoring the impact of differing healthcare systems and reimbursement models.

To reduce costs, the study recommends prioritising early surgical intervention, preventing postoperative respiratory complications, and minimising hospital length of stay. It should be noted that the findings are based on data from a single tertiary care hospital with a relatively small sample size, which may limit their applicability to other settings or treatment approaches. Nonetheless, the study offers timely and accurate cost data for the management of femoral neck fractures in Thailand and provides a valuable foundation for future health economic evaluations.

In 2023, Amphansap and colleagues presented a poster at the *Global Fragility Fracture Network Congress* in Oslo on the cost-utility of a Fracture Liaison Service for osteoporotic hip fracture patients in a tertiary care hospital in Thailand [6]. This study evaluated 71 patients with a mean age of 78.1 years, 73.2% of whom were female. Most had significant comorbidities (90.2% with a Charlson Comorbidity Index of 3–5) and ASA class 2 status (71.8%). Femoral neck fractures were most common (62.0%), followed by intertrochanteric (36.6%) and subtrochanteric (1.4%) fractures. The mean length of stay was 15.8 days. The mean total direct cost per patient was USD 6,719, comprising direct medical costs (USD 4,463) and direct non-medical costs (USD 2,255). Indirect costs averaged USD 1,591, bringing the mean total cost to USD 8,311, with a cost per QALY of USD 8,604. These locally derived cost and outcome data provide an important basis for future evaluations of secondary fracture prevention models in Thailand.

In 2024, Charatcharoenwitthaya et al. published a retrospective analysis of hip fracture hospitalizations among Thais aged 50 years or older within the *Universal Health Coverage System* from 2013 to 2022 [7]. They found that annual hospitalisation costs increased 2.5-fold over the decade, from USD 17.3 million in 2013 to USD 42.8 million in 2022 ($p < 0.001$). This cost escalation paralleled rising incidence and case numbers across all six regions of Thailand, highlighting the growing economic burden of hip fractures on the national health system and the urgent need for effective prevention strategies to curb future costs.

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is not primarily managed by primary care physicians. Instead, it is under the care of orthopaedic surgeons. Osteoporosis is recognised as a standalone medical specialty and is currently a formal component of specialty medical training, particularly for orthopaedic surgeons and endocrinologists.

PATIENT SUPPORT ORGANISATIONS

The *Thai Osteoporosis Foundation* (TOPF) is a scholarly organisation comprising a multidisciplinary team of healthcare professionals dedicated to the management of osteoporosis. In 2010, TOPF published Thailand's first clinical practice guideline for the diagnosis and treatment of osteoporosis, with subsequent revisions released in 2016 and 2021[8]. For more information, visit *https://topf.or.th/*.

The *Royal College of Orthopaedic Surgeons of Thailand* also plays a prominent and active role in advancing osteoporosis care and research. For more information, visit *https://www.rcost.or.th/th/*.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is included as one of the priority areas in the work plan for developing Thailand's healthcare system under the *20-Year National Strategy* (2018–2037) [9].

QUALITY INDICATORS

Level	Title	Topics covered	Frequency of reporting
National	Hip surgical rate	Hip fracture	Annually
National	Referral for Fracture Liaison Service	Hip fracture, osteoporosis management, fall prevention and multidisciplinary long-term management	Annually
National	Fast track hip surgery within 72 hours	Hip fracture	Annually
National	Thai Osteoporosis Foundation (TOPF) Clinical Practice Guideline on the diagnosis and management of osteoporosis 2021	Osteoporosis and secondary prevention of fragile fracture	Do not know

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a range of osteoporosis treatments are available and reimbursed in Thailand. Bisphosphonates are designated as first-line treatments in the country.

Treatment is reimbursed either in full by the national health system or in part by the private insurance. Reimbursement is patient dependant and is subject to specific criteria, including prior fracture history, age, bone mineral density results, fracture risk threshold, secondary prevention, first- or second-line treatment option, and whether authorisation is required.

Reimbursement policies in Thailand may sometimes conflict with physicians' preferred treatment approaches for osteoporosis. Currently, alendronate is the only anti-osteoporosis medication reimbursed across all healthcare systems, and its coverage is limited to patients for a maximum duration of 5 years under the following clinical conditions:

1. **Patients aged ≥ 50 years:**
   Alendronate may be prescribed if the patient has a documented history of fragility fracture involving the hip or vertebrae. In cases where the patient has experienced fractures at the distal forearm, humerus, or pelvis. Treatment with alendronate is indicated only if the BMD T-score is ≤ -2.5.

2. **Patients without a prior history of fracture:**
   In individuals aged ≥ 65 years who have no history of fragility fracture, alendronate may be considered if the BMD T-score is ≤ -2.5. Alternatively, if the BMD T-score falls within the osteopenic range (between -1.0 and -2.5), treatment is justified when the 10-year probability of hip fracture, as calculated by the FRAX® tool using the Thailand database, is ≥ 3%.

Individuals under the civilian welfare system, which covers approximately 20% of the population, are eligible for full reimbursement of all approved osteoporosis medications. In contrast, the social security and universal coverage schemes offer more restrictive support. Under these schemes, reimbursement is generally limited to calcium and vitamin D supplementation. Romosozumab is not reimbursed under any scheme, and several other therapies are only reimbursed post-fracture and for patients with a BMD T-score below -2.5.

Table 1. Availability and reimbursement of osteoporosis treatments in Thailand

Treatment	Available	Reimbursed	% Reimbursed
Risedronate	X		
Alendronate	X	X	100%
Ibandronate	X		
Zoledronic acid	X		
Clodronate			
Pamidronate			
Raloxifene	X		
Bazedoxifene			
Denosumab	X		
Strontium Ranelate			
Teriparatide	X		
PTH (1-84)			
Abaloparatide			
Romosozumab	X		
Vitamin D/Calcium supplements	X	X	100%
Calcitonin	X		
Hormone Replacement Therapy	X	X	100%
Testosterone	X	X	100%*
Alfacalcidol	X		
Calcidiol	X		
Calcitriol**	X	X	100%
Tibolone	X		

* *Can be 100% reimbursed*
** *Only in case of CKD stage 5, ESRD, acute hypocalcaemia and hypoparathyroidism*

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS
25 - 50%

Hip fractures identified by or referred to an FLS
60 - 90%

Vertebral fractures identified by or referred to an FLS
10-70%

Other fracture types identified by or referred to an FLS
10 - 50%

Reimbursement mechanism to support FLS activities
Local and National health service

% of patients recommended for treatment who actually receive treatment
50 - 69%

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	2 - 3 days
% of hip fractures surgically managed	76 - 90%

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2021, the *Thai Osteoporosis Foundation (TOPF)* published the *Clinical Practice Guideline (CPG)* on the diagnosis and management of osteoporosis [8]. The guideline covers the management of osteoporosis in postmenopausal women, men, and individuals with glucocorticoid-induced osteoporosis (GIOP).

While the guidelines offer detailed recommendations on fracture risk assessment, including factors such as prior fracture, age, bone mineral density, and FRAX® scores, they do not include strategies for population-based screening. The guidance also sets out criteria for initiating treatment based on similar clinical risk factors.

Both the assessment guidelines and treatment recommendations are compatible with reimbursement policies. The guidelines were developed without direct patient involvement. Additional details on the development of these guidelines are included in *Table 2*.

Table 2. Development of clinical guidelines for the management of osteoporosis in Thailand

Systematic literature review undertaken	Yes
Recommendations	Yes
Stakeholder involvement	Yes
External review	Yes
Procedure for update defined	Yes
Economic analysis	No
Editorial independence	Yes

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Thailand.

Waiting time (d)	0 - 60
Cost (USD)	30 - 140
Is it reimbursed?	Yes. Only civilian welfare system (20% of Thai people) can be fully reimbursed. Since 2024, patients diagnosed with postmenopausal osteoporosis are eligible for 100% reimbursement under all healthcare system.
Is reimbursement a barrier to accessing treatment?	Yes partially. Especially for men and other secondary osteoporosis cause.

No data was provided on access to ultrasound in Thailand.

FRACTURE RISK ASSESSMENT TOOLS

Thailand uses FRAX®, and it is widely used within the country. When using FRAX®, treatment decisions are based on one of three approaches: a fixed probability threshold, an age-dependent probability threshold, or a combined threshold incorporating both FRAX® probability and bone mineral density values. These approaches are applied to both men and women.

OVERVIEW OF OSTEOPOROSIS IN THAILAND

Osteoporosis remains a significant but under-recognised health challenge in Thailand. Recent studies have shed light on the current state of care and ongoing gaps. These include findings from a three-year evaluation of a FLS model at a university-based tertiary care hospital [10], and another study that explored the persistent treatment gap following fragility hip fractures at a tertiary university medical centre [11].

A further example comes from the Police General Hospital in Bangkok, where a prospective cohort study assessed outcomes after five years of Fracture Liaison Service (FLS) implementation [12]. Among 353 patients aged 50 years or older presenting with fragility hip fractures between 2014 and 2019, post-injury bone mineral density testing rates rose from 28% before FLS to 86%, and osteoporosis treatment rates increased from 41% to 89%. Time to surgery and hospital stay decreased significantly (from 7.9 to 5.0 days and 23.2 to 19.6 days, respectively; $p < 0.001$). Secondary fracture rates at one year fell by 30% compared to pre-FLS levels, although the reduction in one-year mortality was not statistically significant. These findings illustrate the potential of well-implemented FLS models to improve secondary fracture prevention and care quality in the Thai context.

Despite these advances, substantial barriers hinder the nationwide implementation of effective osteoporosis management and FLS programmes. Public awareness of osteoporosis is low, and financial constraints prevent some patients from accessing bone mineral density testing and appropriate medications. Among healthcare providers, underdiagnosis and undertreatment remain prevalent. From a policy perspective, osteoporosis and fragility fractures have not been prioritised by the government, however, there is limited access to diagnostic tools such as DXA machines.

Nutritional factors further compound the issue, with the average daily calcium intake among Thai individuals estimated at only 300–400 mg, and over 85% of hip fracture patients exhibiting vitamin D deficiency (serum 25(OH)D < 20 ng/mL). In response to these challenges, a new collaborative project involving *Siriraj Health Policy (Faculty of Medicine, Siriraj Hospital, Mahidol University), Thai Orthopaedic Association, Royal College of Orthopaedic Surgeons of Thailand*, and *Krungthai Bank Public Company Limited* is currently underway, aiming to strengthen national efforts in osteoporosis prevention and care [4].

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ACKNOWLEDGMENTS

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https://topf.or.th/

Metabolic Bone Disease Subspecialty (MBOG)
https://mbog.ac/en-about/

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Phramongkutklao College of Medicine, Phramongkutklao hospital
http://www.pcm.ac.th/

www.osteoporosis.foundation

APAC AUDIT 2025

VIETNAM

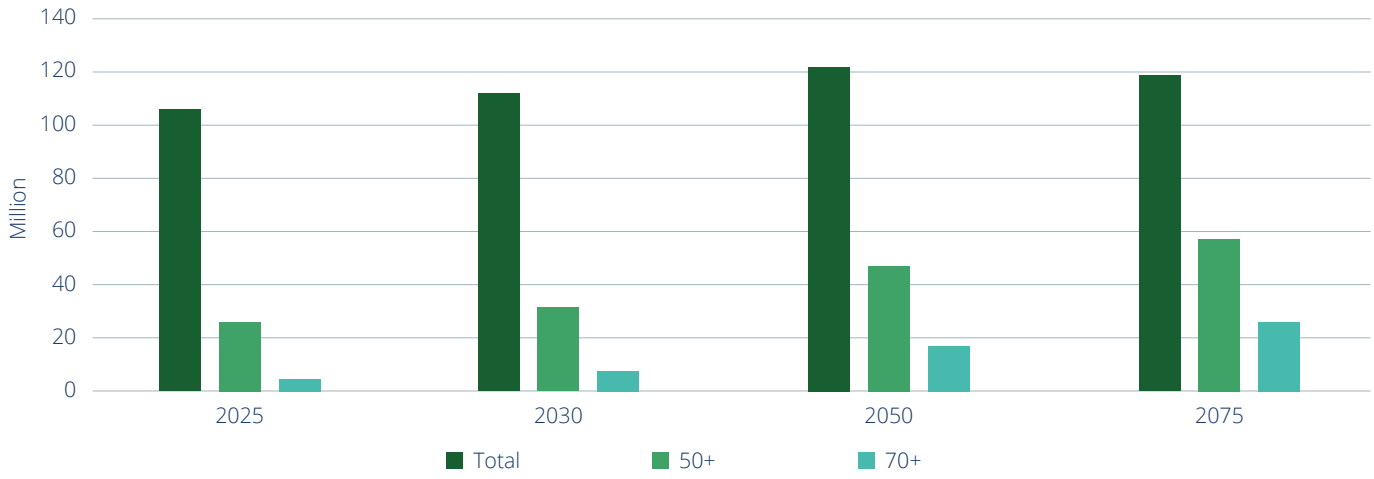
DEMOGRAPHIC TRENDS

Vietnam's population is projected to grow steadily until the mid-21st century, increasing by 13% from 106.7 million in 2025 to 121.0 million by 2050. However, this growth will be followed by a period of gradual decline, with the population decreasing by 2% to 118.9 million by 2075 *(Figure 1)*. Vietnamese currently have an average life expectancy of 76.3 years, which is expected to rise to 86.7 years by 2075, an increase of more than 13%.

The proportion of Vietnamese aged 50 years or older is set to rise significantly. In 2025, this group of 26.4 million people represents almost 25% of the total population. By 2075, this will increase to 48%, with numbers more than doubling to 56.7 million *(Figure 1)*.

The most dramatic demographic shift in Vietnam will be among those aged 70 years or older, whose numbers are projected to surge from 5.4 million in 2025 to 26.4 million in 2075, a 390% increase in absolute terms. Equally striking is their growing share of the total population. In 2025, those aged 70+ accounted for just 5% of Vietnam's 106.7 million people. By 2075, they will make up 22% of a larger 118.9 million population, reflecting a 340% relative increase in their proportion of the total population.

Figure 1. Population projections for Vietnam from 2025 to 2075 [1]



CENTRALISED DATABASES FOR FRACTURES AND EPIDEMIOLOGY

There is no centralised database for fractures in Vietnam.

PATIENT SUPPORT ORGANISATIONS

There are no patient support organisations that focus on osteoporosis in Vietnam.

HEALTHCARE COSTS ASSOCIATED WITH FRAGILITY FRACTURES

Average direct hospital costs for treating osteoporotic hip fractures (USD)	Average indirect hospital costs for treating osteoporotic hip fractures (USD)	Average bed days for hip fractures
4,000 (2,000 - 7,000 in private hospitals)	**200 - 400**	**7**

Average Direct Hospital Costs for Treating Osteoporotic Hip Fractures (USD): Approximately $4,000, with costs ranging from $2,000 in public hospitals to $7,000 in private hospitals, depending on surgical intervention and facility type.

Average Indirect Hospital Costs for Treating Osteoporotic Hip Fractures (USD): Estimated at $200 – $400, though data is limited and may not capture full societal costs (e.g., caregiver expenses or lost productivity).

Average Bed Days for Hip Fractures: 7 days, based on standard post-surgical recovery in Vietnam's healthcare system.

CLINICAL SPECIALTY RESPONSIBLE FOR MANAGEMENT OF OSTEOPOROSIS

Osteoporosis is primarily managed by primary care physicians, while specialist input is provided by rheumatologists, orthopaedic surgeons, gynaecologists, endocrinologists, geriatricians, and internal medicine doctors. Osteoporosis is not recognised as a standalone medical specialty and is currently not a recognised component of specialty medical training.

OSTEOPOROSIS AS A DOCUMENTED NATIONAL HEALTH PRIORITY (NHP)

Osteoporosis is not documented as a National Health Priority (NHP) in Vietnam.

ACCESS TO DXA AND/OR ULTRASOUND AND REIMBURSEMENT

DXA is available in Vietnam

Waiting time (d)	Immediate
Cost (USD)	10 - 20
Is it reimbursed?	Yes, but limited to only when prescribed by a rheumatologist
Is reimbursement a barrier to accessing treatment?	Yes

No data was provided on access to ultrasound in Vietnam.

AVAILABILITY AND REIMBURSEMENT OF MEDICATION

As shown in *Table 1*, a range of osteoporosis treatments are available and reimbursed in Vietnam. There are no designated first-line treatments in the country.

Treatment reimbursement in Vietnam involves a combination of funding from the national health system, private insurance, and patient co-payments. The level of reimbursement varies depending on the patient's specific insurance coverage. However, current reimbursement policies may not always align with physicians' preferred treatment strategies.

Table 1. Availability and reimbursement of osteoporosis treatments in Vietnam

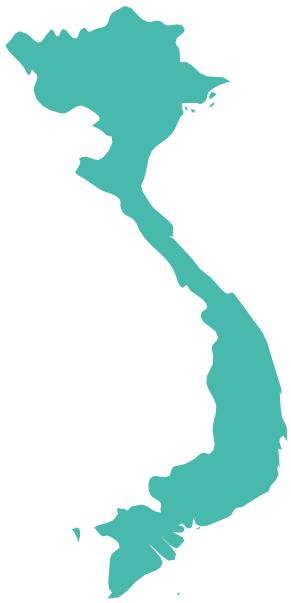
Treatment	Available	Reimbursed	% Reimbursed
Risedronate	X	X	80%
Alendronate	X	X	80%
Ibandronate	X		
Zoledronic acid	X	X	80%
Clodronate			
Pamidronate			
Raloxifene	X		
Bazedoxifene			
Denosumab			
Strontium Ranelate			
Teriparatide			
PTH (1-84)			
Abaloparatide			
Romosozumab			
Vitamin D/Calcium supplements	X	X	80%
Calcitonin	X		
Hormone Replacement Therapy	X		
Testosterone			
Alfacalcidol			
Calcidiol	X		
Calcitriol	X		
Tibolone			

Medication costs are reimbursed only for patients with a bone mineral density (BMD) T-score of ≤-2.5, as per Vietnam's national health insurance policy. This threshold may exclude high-risk patients with fragility fractures but higher T-scores.

Reimbursed treatments include risedronate, alendronate, zoledronic acid, and vitamin D/calcium supplements (80% reimbursement rate). Other treatments like ibandronate, raloxifene, and calcitonin are available but not reimbursed.

FRACTURE LIAISON SERVICES (FLS) REIMBURSEMENT AND AVAILABILITY

% of hospitals with an FLS	Other fracture types identified by or referred to an FLS
1 - 9%	0%
Hip fractures identified by or referred to an FLS	**Reimbursement mechanism to support FLS activities**
1 - 2%	National health service
Vertebral fractures identified by or referred to an FLS	**% of patients recommended for treatment who actually receive treatment**
5 - 10%	20 – 49%



- **Reimbursement Mechanism:** National health insurance covers prescribed expenses for FLS activities, but only 1 - 9% of hospitals in Vietnam have an FLS program. Low adoption limits identification and management of fractures (1 - 2% of hip fractures, 5 - 10% of vertebral fractures, and 0% of other fractures are referred to FLS).
- **Impact:** Approximately 20 - 49% of patients recommended for treatment receive it, indicating significant care gaps.

WAITING TIME FOR HIP SURGERY

Average waiting time for hip surgery after hip fracture	> 3 days
% of hip fractures surgically managed	51 - 75%

FRACTURE RISK ASSESSMENT TOOLS

No risk assessment tools are used in Vietnam.

QUALITY INDICATORS

There are no quality indicators for hip and other fractures in Vietnam.

GUIDELINES FOR OSTEOPOROSIS MANAGEMENT

In 2016, the Ministry of Health published a Clinical Practice Guideline (CPG) on the diagnosis and management of osteoporosis. The guideline covers the management of osteoporosis in postmenopausal women. [2]

The guidelines do not address population-based screening and do not address fracture risk assessment; however, they are compatible with reimbursement policy. Criteria for treatment includes BMD only, but they are compatible with reimbursement policy. The guidelines were developed without direct patient involvement. Additional details on the development of these guidelines are included in *Table 2*.

Table 2. Development of clinical guidelines for the management of osteoporosis in Vietnam

Systematic literature review undertaken	No
Recommendations	Yes, but recommendations were not graded
Stakeholder involvement	No
External review	No
Procedure for update defined	No
Economic analysis	No
Editorial independence	No

OVERVIEW OF OSTEOPOROSIS IN VIETNAM

Osteoporosis management in Vietnam faces numerous and significant challenges. A major concern is the predominant reliance on T-scores alone to guide treatment decisions, with insufficient consideration given to the presence of fragility fractures. This narrow focus risks excluding many individuals who are at high risk of future fractures but do not meet the T-score threshold.

The absence of validated fracture risk prediction strategies further impedes early identification and timely intervention. These shortcomings are compounded by a critical lack of comprehensive hip fracture data, which is essential for accurately assessing the national burden of osteoporosis. Public awareness is also limited, due in part to the lack of a coordinated national campaign to promote osteoporosis education and prevention. On the treatment front, options remain constrained, with bisphosphonates being the only widely available therapy. The unavailability of a broader range of medications restricts clinicians' ability to offer personalised, evidence-based treatment plans tailored to individual patient needs

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