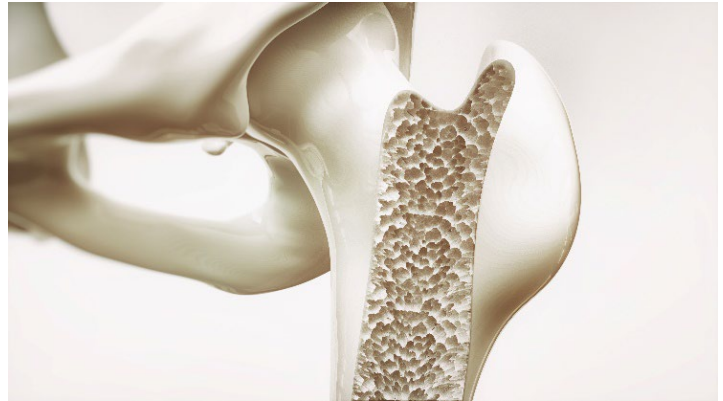


About osteoporosis & fragility fractures

The global burden of osteoporosis & fragility fractures

- Osteoporosis – the most common disease – is characterised by porous brittle bones, low bone density and quality, and structural deterioration.¹
- Osteoporosis can compromise a person’s quality of life through loss of independence and productivity, chronic pain, disability, emotional distress, reduced social interaction, and self-limitation caused by a fear of falling.²
- A significant and burdensome clinical consequence of osteoporosis is fragility fractures.³
- Globally, the population aged 65 years and over increased from six per cent in 1990, to nine per cent in 2019.⁴ This percentage is projected to rise to 16 per cent by 2050,⁴ meaning one in six people worldwide will be aged 65 years or over by 2050.⁴
- With our rapid ageing global population, the incidence of osteoporosis and related fractures has significantly increased and will continue to increase markedly in the future.³
- The non-communicable disease, affects one in three women, and one in five men over the age of 50 worldwide.³
- Globally, osteoporosis is estimated to account for nearly nine million fractures each year,⁵ noting more than 200 million people worldwide live with osteoporosis.⁶
- An osteoporotic fracture, which occurs every three seconds worldwide,⁷ compromises quality of life, and places the affected individual at twice the risk for further fracture, and loss of independence.^{7,8}
- Among all osteoporotic fractures, hip fractures incur the greatest morbidity, mortality, and social and financial costs.⁹
- Concerningly, more than 80 per cent of fragility fracture patients are neither assessed, nor treated,^{10,11} placing a substantial, but importantly, preventable burden on already strained healthcare systems.^{12,13}



Osteoporosis in the Asia Pacific



- The number of people aged 60 years and over in the Asia-Pacific region – home to more than a third of the world’s population aged 65 years and over, and to more elderly people than any other region¹⁴ – is predicted to triple between 2010 and 2050, reaching a staggering 1.3 billion people.¹⁵
- Osteoporotic fractures among Asia-Pacific populations are expected to increase exponentially, due to the region’s rapidly ageing population, mounting urbanisation, and subsequent increase in sedentary lifestyles.¹⁶

- The Asia Pacific is home to 4.5 billion people and vastly different healthcare systems.¹⁷
- An overwhelming 319 million people aged 50 years and over from the Asia Pacific are projected to be at high risk of osteoporotic fracture over the next two decades,¹⁸ while more than half of the world's hip fractures are expected to occur in the region by 2050.⁹
- A recent analysis of nine Asian countries and regions from the Asian Federation of Osteoporosis Societies (AFOS) revealed the number of hip fractures will more than double from 1.13 million in 2018, to 2.54 million in 2050,¹⁹ primarily due to changing population demographics.
- Osteoporosis is greatly under-diagnosed and under-treated in Asia, even among those at highest risk who have already fractured.²⁰ In most developing countries of the Asia Pacific, especially in rural areas, DXA technology is not widely available.²⁰



Singapore

- The population aged over 50 years in Singapore is projected to increase from 289,000 in 2013, to 1.5 million by 2050 (representing 46 per cent of the population).¹⁶
 - The age adjusted rates of osteoporosis among women over 50 years of age in Singapore, are currently among the highest in Asia.²¹
 - The highest rates of hip fractures in Asia have been reported in Singapore, with a four-to-five-fold increase in incidence over a 30-year period.¹⁶
- Between 2017 and 2035, the incidence of osteoporotic fractures in Singapore is projected to rise by 57.9 per cent, reaching a fracture incidence of 24,104 by 2035.²²
 - The total economic burden (including both direct costs and indirect costs to society) associated with osteoporotic fractures was SGD 183.5 million (USD 136 million) in 2017, and is projected to grow to SGD 289.6 million (USD 214 million) by 2035.²²
 - OPTIMAL (Osteoporosis Patient Targeted and Integrated Management for Active Living) is a secondary fracture prevention programme in Singapore, which is currently instituted in all the country's government hospitals and polyclinics.¹⁶

Australia

- More than 1.2 million Australians are living with osteoporosis, the prevalence of which is on the rise.²³
- In the over 50's population, osteoporosis and osteopenia (low bone density) affect more than 66 per cent of adults, accounting for 4.74 million Australians, and resulting in 140,822 fractures.²⁴
- An estimated 6.2 million Australians over 50 years of age are currently (2022) living with osteoporosis or osteopenia, a 31 per cent increase from 2012.²⁴
- In 2012, the total costs of osteoporosis and osteopenia among Australians aged over 50 was AUD 2.75 billion (USD 2.04 billion) – a figure which is projected to increase to AUD 3.84 billion (USD 2.85 billion) by this year (2022).²⁴



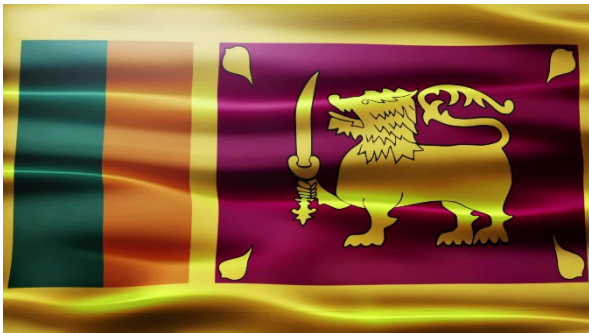
- In 2013 there was one fracture every 3.6 minutes in Australia, equating to 395 fractures per day, or 2,765 fractures per week. This year (2022), it is anticipated there will be one fracture every 2.9 minutes, i.e. 501 fractures per day, and 3,521 fractures per week.²⁴
- Studies demonstrate osteoporosis-related fractures are costly to the Australian healthcare system, at more than AUD 3 billion (USD 2.22 billion) per year.²⁴

India

- Between 2025 and 2050, the population of India is projected to grow from 1.4 billion, to 1.88 billion, with those aged over 50 expected to constitute 33 per cent of the population by 2050.¹⁶
- Compared to Western populations, hip fractures occur a decade earlier in the Indian population.¹⁶
- In 2013, 50 million people living in India were either osteoporotic, or considered to be living with low bone mass.¹⁶
- The 2018 Asian Federation of Osteoporosis Societies (AFOS) study predicted the number of hip fractures in India would more than double, from approximately 332,000 in 2018, to 792,000 in 2050.⁹
- The projected direct cost of hip fractures is expected to increase from USD 256 million to USD 612 million between 2018 and 2050.⁹
- Estimates suggest approximately 80 per cent of the urban Indian population, and 9 in 10 hip fracture patients, are vitamin D deficient.²⁵



Sri Lanka



- An estimated 45 per cent of women,²⁶ and 5.8 per cent of men in Sri Lanka aged 50 years and over,²⁷ are likely to live with osteoporosis, the number for which is expected to increase with the country's ageing population.
- For Sri Lankan women, osteoporosis relates to menopause and advancing age.²⁶
- For Sri Lankan men, osteoporosis is linked to evolving age and less physical activity, low body weight associated with low bone mineral density (BMD), and larger families.²⁷

Chinese Taipei

- Osteoporosis is increasing rapidly in Chinese Taipei due to the country's ageing population.²⁸
- An estimated one in four (around 25 per cent) of the Taiwanese population was living with osteoporosis in 2011.²⁹
- The prevalence of osteoporosis increased from 17.4% in 2001, to 25.0% in 2011.²⁹
- The proportion of the Taiwanese population over 50 years of age is projected to increase from 32 per cent (7.5 million) in 2013, to 57 per cent (11.9 million) in 2050.²⁹
- Given the increasing incidence of osteoporosis amongst the country's population, Chinese Taipei now has the highest prevalence of hip fracture of any country in Asia, which is also higher than the world average.³⁰



- Taiwanese men have a higher annual hip fracture rate than Taiwanese women, 20.67 per cent of whom die within one year of injury.²⁸
- About one-in-three Taiwanese women and one-in-five men will sustain a vertebral, hip, or wrist fracture during their lifetime.²⁸
- Concerningly, only some patients who have sustained a hip or vertebral fracture in Taiwan receive anti-osteoporosis drug therapy.²⁸ NHI data in 2006–2007 showed that only 27 % of hip fracture patients received BMD examinations and only 34 % received drug treatment for osteoporosis.
- The average medical cost of fracture per case is more than NT 100,000 (roughly USD 3,300) for acute care.²⁸
- The cost of osteoporosis is expected to increase rapidly for men and women who sustain hip fractures.²⁸

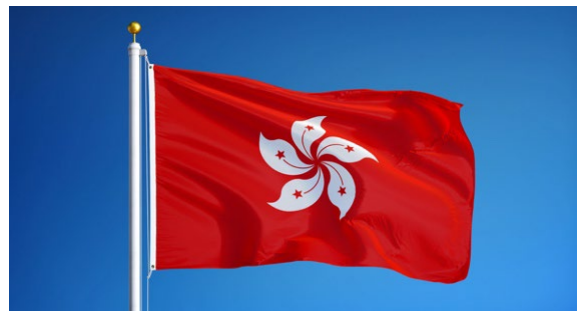
Malaysia

- The Malaysian population aged over 50 years is expected to increase from 5.3 million in 2013, to 13.9 million in 2050.³¹
- Furthermore, Malaysia is expected to experience a 3.55-fold increase in hip fracture incidence by 2050, compared to 2018.³¹
- Advancing age, reduced body weight, and minimal physical activity significantly predicts osteoporosis in men, while older age, low body weight, and low-income status significantly predicts osteoporosis in women.³¹
- In Malaysia, DXA machines in public hospitals are used to confirm the bone health of patients with strong risk factors for osteoporosis, but not for bone health screening.³¹
- The use of an effective osteoporosis screening tool will reduce the burden of DXA by prioritising patients at high risk of osteoporosis for DXA scan.³¹



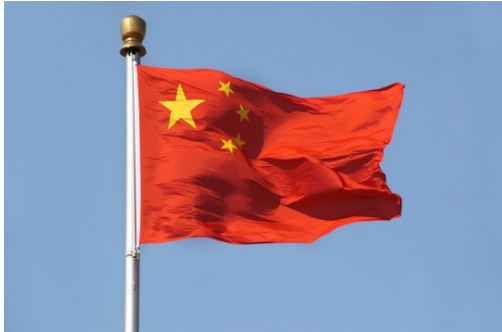
Hong Kong

- In 2013, 40 per cent of the population of Hong Kong was aged over 50 years.¹⁶
- By 2025, it is projected that half of the total population will be aged over 50 years, and will rise to 60 per cent by 2050.¹⁶
- The 2018 AFOS study projected the number of hip fractures in Hong Kong to be 9,590 and 27,468 in 2018, and 2050, respectively.¹⁶
- The study further estimated the direct medical costs of hip fractures in Hong Kong to be US 85 million, with the projected costs of such to increase to US 243 million by 2050.¹⁶
- With the exclusion of the last decade, Hong Kong has seen a sharp increase in hip fractures over the past 50 years. The past decade however, has seen a reversal in this trend.¹⁶
- Hong Kong is currently experiencing a decrease in the incidence of age-adjusted hip fractures in women and men, as well as a lower prevalence of osteoporosis and osteopenia, due to improved awareness of osteoporosis, leading better lifestyles and increased access to anti-osteoporosis treatment.¹⁶
- Osteoporosis is not officially documented as a national health priority in Hong Kong, and has failed to attract proportional attention from policy makers in comparison to other chronic diseases, such as diabetes, hypertension, cardiac and cerebrovascular disease, or dementia.¹⁶



Philippines

- In the Philippines, osteoporosis is largely considered to be part of the natural ageing process, and therefore is not a national health priority. Furthermore, osteoporosis treatment is not reimbursed.¹⁶
- Currently, 14 per cent of the Filipino population is over 50 years of age.
- The proportion of the population aged over 70 years is predicted to increase by 372 per cent from 2.8 million in 2013, to 13.4 million in 2050.¹⁶
- The prevalence of osteoporosis is considered to be an intermediate risk in more than 45 per cent of women, and 43 per cent of men. Projections estimate the population at high risk for osteoporosis will reach 10.2 million by 2050.¹⁶
- The direct medical costs of hip fractures in the Philippines is estimated to be USD 22.6 million.³²
- Based on the IOF Hip Fracture Incidence map, the Filipino hip fracture incidence is 133 per 100,000 in women, and 48 per 100,000 in men, per year.¹⁶
- Long wait times for hip surgery, and low surgery rates in the Philippines can be attributed to limited reimbursement offered for in-patient care.¹⁶
- The average waiting time for hip surgery is more than three days in the Philippines, and only between one-quarter, to a half of hip fractures, are treated surgically.¹⁶



China

- In 2013, the number of people aged 60 years and over reached 200 million in China, constituting 26 per cent of the population. This figure is projected to increase to 49 per cent, equating to 636 million by 2050.¹⁶
- China's urbanisation rate increased from 33 per cent in 2000, to 43 per cent in 2013. Urbanisation accounts for more sedentary lifestyles and less exposure to sunlight, and therefore, an increased risk of vitamin D deficiency.¹⁶
- Estimates suggest Vitamin D level deficiency is as high as 70-90 per cent in the elderly population of Beijing and Shanghai.¹⁶
- Studies reveal around 13 per cent of Mainland Chinese adults are living with osteoporosis.¹⁶
- Projections suggest the total number of osteoporosis-related fractures will increase from 2.33 million in 2010, to 5.99 million in 2050.³³
- The 2018 AFOS study projected the number of hip fractures in China would increase from close to 485,000, to more than 1.17 million between 2018 and 2050, respectively,⁹ with the projected direct cost of hip fractures expected to rise from USD 1,690 million, to USD 4063 million.⁹

ends#

For more information please contact:

Kirsten Bruce, APCO Communications Director, Sydney, Australia

T +61 (0)401 717 566

E kirstenbruce@vivacommunications.com.au

References

1. International Osteoporosis Foundation (IOF). *What is Osteoporosis*. [Dec, 2022]; Available from: <https://www.iofbonehealth.org/what-is-osteoporosis>.
2. Office of the Surgeon General (US). *Bone Health and Osteoporosis. A Report of the Surgeon General*. Rockville (MD): Office of the Surgeon General (US) - *The Burden of Bone Disease*. 2004 [Dec, 2022]; Available from: <https://www.ncbi.nlm.nih.gov/books/NBK45502/>.
3. International Osteoporosis Foundation. *Epidemiology across the world*. [Dec, 2022]; Available from: <https://www.osteoporosis.foundation/health-professionals/about-osteoporosis/epidemiology>.
4. United Nations - Department of Economic and Social Affairs, *World Population Ageing 2019 Highlights*. 2019.
5. Johnell, O. and J.A. Kanis, *An estimate of the worldwide prevalence and disability associated with osteoporotic fractures*. *Osteoporos Int*, 2006. 17(12): p. 1726-33.
6. International Osteoporosis Foundation (IOF). *Osteoporosis Facts and Statistics*. [Dec, 2022]; Available from: <https://www.iofbonehealth.org/facts-and-statistics/calcium-studies-map>.
7. International Osteoporosis Foundation (IOF). *Capture the fracture*. [Dec, 2022]; Available from: <https://www.capturethefracture.org/about>.
8. Madureira, M.M., R.M. Ciconelli, and R.M.R. Pereira, *Quality of life measurements in patients with osteoporosis and fractures*. *Clinics (Sao Paulo, Brazil)*, 2012. 67(11): p. 1315-1320.
9. Cheung, C.-L., et al., *An updated hip fracture projection in Asia: The Asian Federation of Osteoporosis Societies study*. *Osteoporosis and sarcopenia*, 2018. 4(1): p. 16-21.
10. Royal Australian College of General Practitioners & Osteoporosis Australia, *Osteoporosis prevention, diagnosis and management in postmenopausal women and men over 50 years of age*. 2017.
11. International Osteoporosis Foundation, *World Osteoporosis Day Toolkit*. 2021.
12. Kim, T.K., *CORR® International-Asia-Pacific: Ageing in the Asia-Pacific-The Elephant in the Room*. *Clinical orthopaedics and related research*, 2018. 476(10): p. 1933-1934.
13. Benjamin, R.M., *Bone health: preventing osteoporosis*. *Public health reports (Washington, D.C. : 1974)*, 2010. 125(3): p. 368-370.
14. World Bank Group, *Live Long and Prosper - Ageing in East Asia and Pacific*. 2016.
15. United National Population Fund (UNFPA) Asia & the Pacific. *Ageing*. [Nov, 2020]; Available from: <https://asiapacific.unfpa.org/en/node/15208>.
16. International Osteoporosis Foundation, *The Asia-Pacific Regional Audit: Epidemiology, costs & burden of osteoporosis in 2013*. 2013. p. 1-128.
17. Chandran, M., et al., *IQ driving QI: the Asia Pacific Consortium on Osteoporosis (APCO): an innovative and collaborative initiative to improve osteoporosis care in the Asia Pacific*. *Osteoporos Int*, 2020. 31(11): p. 2077-2081.
18. Odén, A., et al., *Burden of high fracture probability worldwide: secular increases 2010-2040*. *Osteoporos Int*, 2015. 26(9): p. 2243-8.
19. Cheung, C.L., et al., *An updated hip fracture projection in Asia: The Asian Federation of Osteoporosis Societies study*. *Osteoporos Sarcopenia*, 2018. 4(1): p. 16-21.
20. International Osteoporosis Foundation (IOF). *Key statistics for Asia*. [Dec, 2022]; Available from: <https://www.osteoporosis.foundation/facts-statistics/key-statistic-for-asia>.
21. Wang, P., et al., *Estimation of Prevalence of Osteoporosis Using OSTA and Its Correlation with Sociodemographic Factors, Disability and Comorbidities*. *International journal of environmental research and public health*, 2019. 16(13): p. 2338.
22. Chandran, M., et al., *The health and economic burden of osteoporotic fractures in Singapore and the potential impact of increasing treatment rates through more pharmacological options*. *Arch Osteoporos*, 2019. 14(1): p. 114.
23. Henry, M.J., et al., *Prevalence of osteoporosis in Australian men and women: Geelong Osteoporosis Study*. *Med J Aust*, 2011. 195(6): p. 321-2.
24. Watts, J., Ambimanyi-Ochom, J, & Sander K, *Osteoporosis costing all Australians: A new burden of disease analysis 2012-2022*. 2013, Osteoporosis Australia.
25. Mithal, A., et al., *The Asia-Pacific Regional Audit-Epidemiology, Costs, and Burden of Osteoporosis in India 2013: A report of International Osteoporosis Foundation*. *Indian J Endocrinol Metab*, 2014. 18(4): p. 449-54.
26. Sewwandi Subasinghe, H.w.A., Lakamwasam, S., Ball, P., Morrissey, H., Waidyarante, E., *Estimating regional bone mineral density-based T-scores using clinical information; tools validated for postmenopausal women in Sri Lanka*. *Osteoporosis and Sarcopenia*, 2020 6(3): p. 122-128.
27. Lekamwasam, S., Wijayarathne, L., Rodrigo, M. et al., *Prevalence and determinants of osteoporosis among men aged 50 years or more in Sri Lanka: a community-based cross-sectional study*. *Arch Osteoporos* 2009. 4: p. 79-84.
28. Tsai KS, T.T., *Epidemiology of osteoporosis in Taiwan*. *Osteoporos International*, 1997. 7(3).

29. Sewwandi Subasinghe, H.w.A., Lakamwasam, S., Ball, P., Morrissey, H., Waidyarante, E. , *Estimating regional bone mineral density-based T-scores using clinical information; tools validated for postmenopausal women in Sri Lanka*. Osteoporosis and Sarcopenia, 2020.
30. Fang-Ping Chen, T.-S.H., Tsai-Sheng Fu, Chi-Chin Sun, An-Shine Chao and Tien-Ling Tsai, *Secular trends in incidence of osteoporosis in Taiwan: A nationwide population-based study*. Biomedical Journal, 2018: p. 314-320
31. Subramaniam S, C.C., Soelaiman IN, Mohamed N, Muhammad N, Ahmad F, Ng PY, Jamil NA, Abd Aziz N, Chin KY. , *Development of Osteoporosis Screening Algorithm for Population Aged 50 Years and above in Klang Valley, . Malaysia*. Int J Environ Res Public Health, 2020 17(7).
32. Tai, T.W., et al., *The economic burden of hip fractures in Asia*. Osteoporos Sarcopenia, 2021. 7(2): p. 45-46.
33. Si, L., et al., *Projection of osteoporosis-related fractures and costs in China: 2010–2050*. Osteoporosis International, 2015.