MALAYSIA

CURRENT

Population 29.6 million
Aged over 50 years 18%
Life expectancy 74 years
Hip fracture incidence per year 90/100,000
Cost per hip fracture 6,000 USD
Number of DXA per million population 2
Fracture liaison services not implemented

PROJECTED 2050

Population 42.9 million ⬆
Aged over 50 years 32% ⬆
Life expectancy 81 years ⬆

COUNTRY OVERVIEW

The proportion of the Malaysian population aged over 70 years is projected to increase by 417% over the next four decades, rising from 939,010 in 2013 to 4.8 million in 2050. Life expectancy will also be about seven-years longer than today, rising from 74 years to 81 years (*Figure 1*)[1]. Over the same period, the number of people aged over 50 years is projected to increase by 163% from 5.3 million to 13.9 million. While the overall population will also increase from 29.6 million in 2013 to 42.9 million in 2050, this 45% rise is small in comparison to the increase in the older age groups (*Figure 2*). By 2050, those aged over 50 years will account for approximately one-third of the total population. The increasing proportion of older people in this ageing population indicates that urgent action is required to tackle the projected burden of osteoporosis.

FIGURE 1 Life expectancy in Malaysia

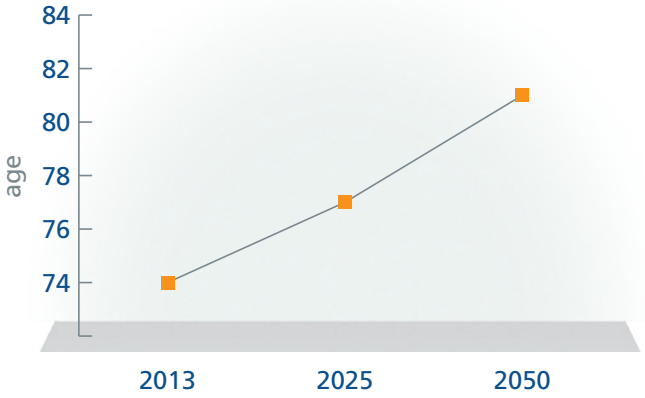
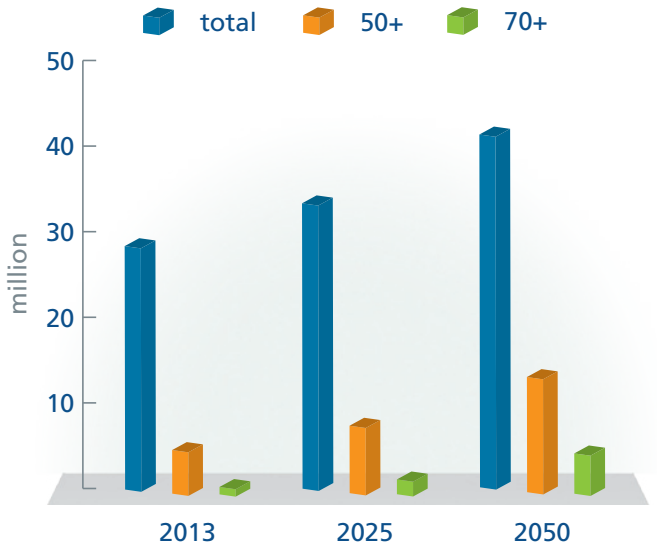


FIGURE 2 Population projection for Malaysia



State of osteoporosis/osteopenia

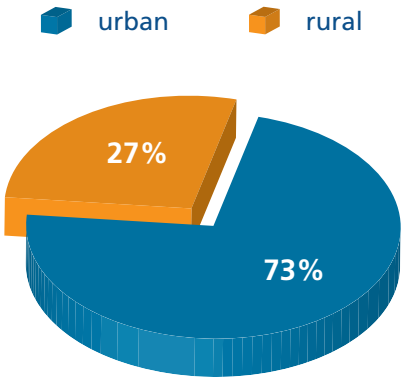
Osteoporosis remains under-diagnosed and under-treated in Malaysia and the prevalence is not well known or documented other than from the 1997 study on hip fractures which is discussed in more detail later.

Lifestyle

Calcium intake remains low in Malaysia, with several surveys showing daily calcium intakes of below 500 mg daily, both in premenopausal and postmenopausal women[2-4]. Similarly, overall population levels of vitamin D remain in the insufficient range, with mean levels of 48 nmol/L[5].

Vitamin D levels in Malaysia are suboptimal across most age groups. Studies have found that over 35% of Malaysian children are vitamin D deficient (≤ 37.5 nmol/L)[7]. Among adults in Kuala Lumpur, a study showed that approximately 41% and 87% of males and females respectively were vitamin D insufficient (< 50 nmol/L)[6]. Possible reasons for the insufficiency could be low dietary intake of vitamin D as well as the lack of fortification in foods. Additionally, there is lack of sun exposure because of the tendency to remain indoors during the day due to the hot and humid climate as well as the increase in urban living (*Figure 3*)[7,8].

FIGURE 3 Urban versus rural population in Malaysia[7]



Level of awareness

One study found the level of awareness about osteoporosis among the general population in Malaysia to be fairly good. Responding to a questionnaire, 87.1% of people said they had heard of osteoporosis; 97.1% identified low calcium intake as a risk factor; and 75.8% knew postmenopausal status increased the risk of osteoporosis in women. In general, the study found increased knowledge in women who had more schooling and in those with a higher income. The main sources from which they obtained information about osteoporosis appeared to be newspapers and magazines[9].

FRACTURE RATES

Hip fracture

There remains a serious lack of osteoporotic fracture data in Malaysia underscoring the need for large-scale epidemiological fracture studies to be funded and conducted. The most reliable data are from analyses of hip fracture incidence for the years 1996 and 1997. The Malaysian Osteoporosis Society (MOS) is currently in the process of gathering new data on recent hip fracture incidence for the year 2012 and comparing it with the 1996 and 1997 data.

Hip fracture incidence in 1996–1997 in those aged over 50 years was 90 per 100,000 individuals per year, and has likely increased due to the ageing population (*Table 1*)[10]. The Chinese portion of the population had the highest incidence of hip fractures compared to the Malays and Indians, accounting for 44.8% of hip fractures in women. The inpatient hospital cost for hip fractures in 1997 was estimated to be 6.8 million USD (RM 22 million), and this is not counting rehabilitation or nursing home care costs. With an ageing population, hip fracture numbers and costs are expected to escalate[11].

TABLE 1 Hip fracture incidence by age group (per 100,000) in Malaysia[10]

AGE	MALE	FEMALE	OVERALL
50-54	10	10	10
55-59	20	30	20
60-64	40	50	40
65-69	60	100	80
70-74	100	230	170
75+	320	640	510

SOURCE Lee, J-K, Khir, ASM, 'The incidence of hip fracture in Malaysians above 50 years of age: variation in different ethnic groups'.

According to the MOS more than 90% of hip fractures in Malaysia are managed surgically. The time a patient

waits for surgery depends on whether the private or public system is used. In public hospitals, the average waiting time is between one to two weeks. In private hospitals access to surgery is much faster and takes place within a few days.

Other fragility fractures

Data not provided.

Vertebral fractures

Data not provided.

COST OF FRACTURE

Information provided by the MOS and the Osteoporosis Awareness Society of Kuala Lumpur estimates that the average hospital costs for a hip fracture event are approximately 6,000 USD, and in the public sector the patient would be responsible for approximately half of this cost. In general, patients remain in hospital for about 7 days (*Table 2*).

TABLE 2 Hip fracture in Malaysia

HOSPITAL COSTS PER HIP FRACTURE (USD)	AVERAGE HOSPITAL BED DAYS	SURGICALLY TREATED
$6,000	7	95%

FRACTURE REGISTRIES

Malaysia has a fracture registry organized at the national level collecting data on hip fractures for men and women of all ages. However, to date, data from the registry has not been officially released or published.

The hip fracture incidence for individuals aged above 50 years, for the years 1996 and 1997 was initiated by the MOS with the support and collaboration from private and government hospitals. The MOS is in the process of collecting similar data for the year 2012 and is optimistic about using the data to generate references for a Malaysia specific FRAX model.

FRACTURE LIAISON SERVICES

Hospitals in Malaysia have not implemented fracture liaison services.

SPECIALISTS RESPONSIBLE FOR OSTEOPOROSIS

Osteoporosis in Malaysia is managed by both general practitioners and specialists from various specialties. Physicians such as endocrinologists and rheumatologists play an important role for the medical treatment of osteoporosis. However, orthopaedic surgeons play an active role both in fracture fixation and repair as well as medical treatment for osteoporosis. Orthopaedic surgeons are generally comfortable in initiating and monitoring medical treatment for osteoporosis. General practitioners refer patients with more complicated conditions or secondary osteoporosis to specialists.

GOVERNMENT POLICIES

Osteoporosis as a documented national health priority

Osteoporosis is not among the national health priorities in Malaysia although there was a meeting of the Ministry of Health officials in 2012 about the importance of osteoporosis.

Non-governmental organizations, however, do run regular programmes to increase awareness of osteoporosis. The MOS works with the medical community while the Osteoporosis Awareness Society Kuala Lumpur (OASKL) works with the general public.

Between the two organizations, the programmes offered include:

- Awareness and educational programmes for medical practitioners, Scientific Meeting and clinical practice guideline (CPG)
- "Healthy Bone for Life" campaign and awareness of bone health among the public

Guidelines

In 2012, under the MOS an updated version of the Malaysian Clinical Guidance for the Management of Osteoporosis was completed and accepted by the Ministry of Health Malaysia as an approved Clinical Practice Guideline for Malaysia[12,13]. A summary of the guidance for postmenopausal osteoporosis was subsequently published as a journal article[11]. Since its launch in June 2012, the clinical guidance was disseminated to GPs and specialists through Continuing Medical Education (CME) programmes organized by the MOS throughout the country and in various towns.

Offering guidance for postmenopausal women, men and those with glucocorticoid-induced osteoporosis,

TABLE 3 Osteoporosis treatments and respective reimbursement in Malaysia

	YES	NO	IF YES, % REIMBURSED
Risedronate	private only		varies
Alendronate	x		100%
Ibandronate	x		100%
Zoledronic acid	private only		varies
Clodronate	private only		varies
Pamidronate	private only		varies
Raloxifene	private only		varies
Bazedoxifene		x	varies
Denosumab	private only		varies
Strontium Ranelate	x		100%
Teriparatide	private only		varies
PTH (1-84)		x	
Vitamin D/Ca supplements	x		100%
Calcitonin	private only		varies
Hormone Replacement Therapy	x		100%
Testosterone	x		100%
Alfacalcidol	x		100%
Calcitriol	x		100%

the guidelines address population-based screening, and fracture risk assessment and treatment.

Audit and quality indicator systems

Audit and quality indicators are not currently available for osteoporosis treatment in Malaysia.

TREATMENT (REIMBURSEMENT OF MEDICATION)

While a national health system is not in place, patients can choose to go to either a public or private hospital for treatment. If they go to a public hospital, a handful of osteoporosis treatments (*Table 3*) are offered and are reimbursed in full. Usually, prior authorization is required and only the senior doctors such as clinical specialists or consultants are allowed to prescribe osteoporosis drugs. If patients choose to go to a private hospital they can access a wider variety of treatments, which may be partially or fully covered depending on the private health insurance held by the patient. If the patient does not have private insurance, self-pay is an option in the private system.

DIAGNOSTICS

There has been greater usage and accessibility of dual-energy X-ray absorptiometry (DXA) scanners over recent years, and currently throughout Malaysia there are about 100 DXA scanners[11] which represents an approximate DXA equipment density of 2.0 per million of the general population[14]. Access to a scan is usually immediate, and in the worst case waiting times are no longer than one week. If DXA is accessed in the public system there is no cost to the patient. If accessed in the private system, costs run at approximately 40 USD per scan and there is no reimbursement in most of the health insurance plans (*Table 4*). Ultrasound is not used for the medical diagnosis of osteoporosis in the hospitals and therefore reimbursement is not offered. If ultrasound is used, it is mainly used for screening and increasing awareness among general public of all ages and sexes, by commercial entities during the health awareness campaigns.

TABLE 4 Diagnostics access and cost in Malaysia

	DXA	ULTRASOUND
Waiting time (d)	up to 1 week	not used
Cost (USD)	**PUBLIC** $0 **PRIVATE** $40-$100	not used
Is it reimbursed?	**PUBLIC** free **PRIVATE** not reimbursed	no
Is reimbursement a barrier to access to treatment?	**PUBLIC** no **PRIVATE** possible	

RECOMMENDATIONS

Achievements

- Malaysian Osteoporosis Society – promote awareness and educational programmes for medical practitioners, together with scientific meetings and clinical practice guidelines (CPG).
- Osteoporosis Awareness Society of Kuala Lumpur – promote "Healthy Bone for Life" campaign and awareness of bone health among the public.
- Availability of diagnostic tools (about 100 DXA scanners in the whole country), screening tools to raise awareness among public (such as quantitative ultrasound).
- Availability of most of the treatment options (HRT, SERMs, Bisphosphonates, Strontium ranelate, Calcitonin, Teriparatide and Denosumab). Most of these agents are available in government hospitals and subsidized by the health-care system in Malaysia.
- Availability of Bone Turnover Markers (BTM) in private labs for the purpose of monitoring treatment efficacy and to decide on possibility of drug holiday.
- Availability of specialists, implants and fracture fixation systems to fix different types of osteoporosis fractures.
- Regular densitometry training courses organized for clinicians and technologists from the International Osteoporosis Foundation (IOF) and International Society for Clinical Densitometry (ISCD).

Unmet Needs in Osteoporosis

- Lack of recognition of the importance of osteoporosis as a disease under the National Health Care System. Osteoporosis and bone health has not

been given priority compared to other diseases such as diabetes mellitus, hypertension, coronary heart disease, AIDs and others.

- Absence of a structured programme at the national level to promote healthy bones for all age groups (from an expectant mother, to young adult and even elderly) and a preventive programme for osteoporosis.

- Absence of epidemiological data on the incidence and prevalence of osteopenia and osteoporosis.

- Lack of epidemiological data on the incidence and prevalence of osteoporosis related vertebral and hip fractures. The most reliable data were the 1997 incidence of hip fracture among individuals above 50 years of age.

- Absence of reference database on bone mineral density of different ethnic groups in Malaysia.

- Absence of reference database on bone turnover markers of different ethnic groups in Malaysia.

REFERENCES

1. *United States Census Bureau 2013*, Census.Gov, viewed 01 September 2013, <http://www.census.gov/population/international/data/idb/informationGateway.php>.
2. Pon, LW, Noor-Aini, MY, Ong, FB, Adeed N, Seri, SS, Shamsuddin, K, Mohamed, AL, Hapizah, N, Mokhtar, A & Wan, HW 2006, 'Diet, nutritional knowledge and health status of urban middle-aged Malaysian women', *Asia Pac J Clin Nutr*, vol. 15, no. 3, pp. 388-399.
3. Chong, HC, Chee, SS, Goh, EM, Chow, SK & Yeap, SS 2007, 'Dietary calcium and bone mineral density in premenopausal women with systemic lupus erythematosus', *Clin Rheumatol*, vol. 26, no. 2, pp. 182-185.
4. Chee, WS, Suriah, AR, Zaitun, Y, Chan, SP, Yap, SL, Chan, YM 2002, 'Dietary calcium intake in postmenopausal Malaysian women: comparison between the food frequency questionnaire and three-day food records', *Asia Pac J Clin Nutr*, vol. 11, no. 2, pp. 142-146.
5. Green, TJ, Skeaff, CM, Rockell, JE, Venn, BJ, Lambert, A, Todd, J, Khor, GL, Loh, SP, Muslimatun, S, Agustina, R & Whiting, SJ 2008, 'Vitamin D status and its association with parathyroid hormone concentrations in women of child-bearing age living in Jakarta and Kuala Lumpur', *Eur J Clin Nutr*, vol. 62, no. 3, pp. 373-378.
6. Moy, FM & Bulgiba, A 2011, 'High prevalence of vitamin D insufficiency and its association with obesity and metabolic syndrome among Malay adults in Kuala Lumpur, Malaysia', *BMC Public Health*, vol. 11, p. 735.
7. Khor, G, Chee, W, Shariff, Z, Poh, B, Arumugam, M, Rahman, J & Theobald, H 2011, 'High prevalence of vitamin D insufficiency and its association with BMI-for-age among primary school children in Kuala Lumpur, Malaysia', *BMC Public Health*, vol. 11, p. 95.
8. *Rural Population (% Of Total Population) In Malaysia 2013, Trading Economics*, viewed 01 September 2013, <http://www.tradingeconomics.com/japan/rural-population-percent-of-total-population-wb-data.html>.
9. Yeap, SS, Goh, EM & Das Gupta, E 2010, 'Knowledge about osteoporosis in a Malaysian population', *Asia Pacific Journal of Public Health*, vol. 22, no. 2, pp. 233-241.
10. Lee, J-K, Khir, ASM 2007, 'The incidence of hip fracture in Malaysians above 50 years of age: variation in different ethnic groups', *Int J Rheum Dis*, vol. 10, no. 4, pp. 300-305.
11. Yeap, SS, Hew, FL, Lee, JK, Goh, EM, Chee, W, Mumtaz, M, Damodaran, P, Lim, HH & Chan, SP 2013, 'The Malaysian Clinical Guidance on the Management of Postmenopausal Osteoporosis, 2012: A Summary', *Int J Rheum Dis*, vol. 16, pp. 30-40.
12. Ministry of Health Malaysia 2013, Kementerian Kesihatan Malaysia, <http://www.moh.gov.my>.
13. Malaysian Osteoporosis Society 2013, Persatuan Osteoporosis Malaysia, <http://www.osteoporosis.my>.
14. Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2008 Revision, viewed March 28, 2011, <http://esa.un.org/unpp>: Kanis, JA, data on file.