Osteoporosis

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Citation

AIHW

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Osteoporosis is a condition where bones become thin, weak and fragile, such that even a minor bump or accident can cause a broken bone (minimal trauma fracture). Osteopenia is a condition when bone mineral density is lower than normal but not low enough to be classified as osteoporosis.

Cat. no: PHE 233

Findings from this report:

- The hip was the most common site for minimal trauma fractures (32% of fractures)

- An estimated 924,000 Australians have osteoporosis, representing 3.8% of the population

- Osteoporosis is most common in older women, affecting over 1 in 4 women aged over 75

- In 2017–18 there were 93,321 hospitalisations for minimal trauma fractures in people aged 50 and over

What is osteoporosis?

Osteoporosis (meaning 'porous bones') is a condition that causes bones to become thin, weak and fragile. As a result, even a minor bump or accident can cause a fracture (broken bone). Such events might include falling out of a bed or chair, or tripping and falling while walking. Fractures due to osteoporosis can result in chronic pain, disability, loss of independence and premature death (Bliuc et al. 2013).
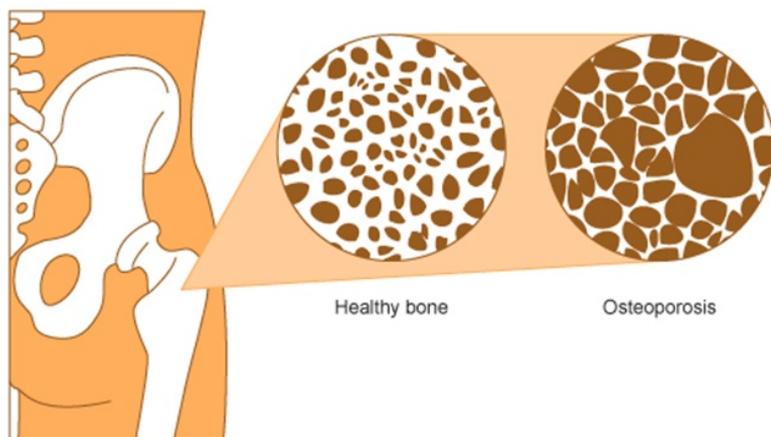
Decreased bone density occurs when bones lose minerals such as calcium faster than the body can replace them (OAMSAC 2014). The decrease in bone mineral density (BMD) and changes in bone quality make bones more fragile and more easily broken than bones of 'normal' density (OAMSAC 2014). Low bone density is known as osteopenia and is the range of bone density between normal bones and osteoporosis.

Risk factors associated with the development of osteoporosis include increasing age, sex, family history of the condition, low vitamin D levels, low intake of calcium, low body weight, smoking, excess alcohol consumption, physical inactivity, long-term corticosteroid use and reduced oestrogen level (Ebeling et al. 2013).

How common is osteoporosis?

Generally, osteoporosis is under-diagnosed. Because osteoporosis has no overt symptoms, it is often not diagnosed until a fracture occurs. It is therefore difficult to determine the true prevalence of the condition (that is, the number of people with the condition). Information about 'diagnosed cases' is likely to underestimate the actual prevalence of the condition.

An estimated 924,000 Australians have osteoporosis, based on self-reported data from the Australian Bureau of Statistics (ABS) 2017–18 National Health Survey (NHS) and 20% of people aged 75 years and over have osteoporosis (ABS 2018). This definition of osteoporosis includes people who had osteoporosis or osteopenia.

Osteoporosis is more common in women than men. In 2017–18, 29% of women aged 75 and over had osteoporosis compared with 10% of men.

Older age groups also tend to be affected. The proportion of women with osteoporosis increases with age, with those 75 and over being most affected (Figure 1).

Figure 1: Prevalence of self-reported osteoporosis by age and sex, 2017-18
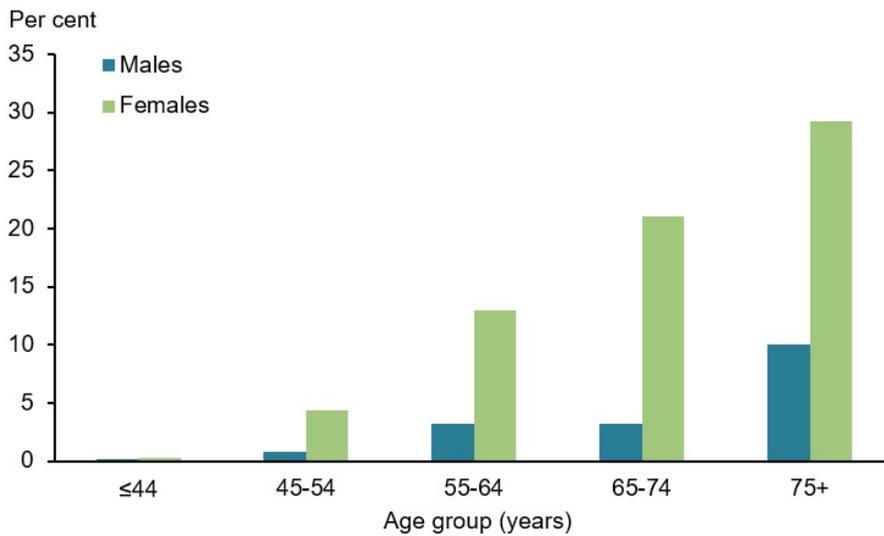
Note: refers to people who self-reported that they were diagnosed by a doctor or nurse as having osteoporosis or osteopenia (current and long term) and also people who self-reported having osteoporosis or osteopenia.

Source: AIHW analysis of ABS 2019a (Data table).

Aboriginal and Torres Strait Islander people

According to self-reported data from the ABS 2018–19 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), prevalence of osteoporosis among Aboriginal and Torres Strait Islander people was 2.3%, affecting about 18,900 people —including about 1000 who live in remote areas (0.7% of the remote Indigenous population).

After adjusting for age, twice as many females (5.1%) were affected by the condition than males (2.5%). The prevalence in Indigenous Australians (3.9%) and non-Indigenous Australians (3.3%) was similar overall and for females while the prevalence of osteoporosis was 1.9 times as high in Indigenous males as non-Indigenous males (Figure 2).

Figure 2: Prevalence of osteoporosis by Indigenous status, 2018-19
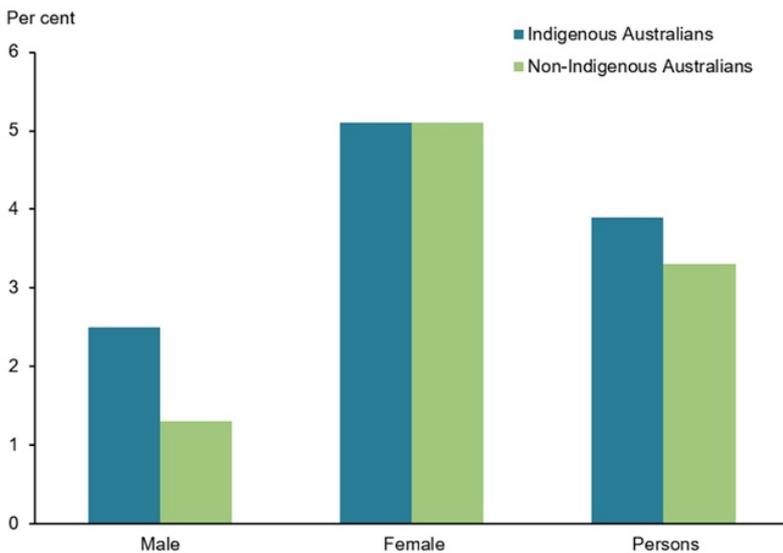
Note: Rates are age-standardised to the Australian population as at 30 June 2001.

Source: ABS 2019b (Data table).

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Impact of osteoporosis

Perceived health status

People aged 45 and over with osteoporosis had lower self-assessed health status than people without the condition—based on self-reported data from the ABS 2017–18 National Health Survey (NHS). People with osteoporosis were 2.7 times as likely to describe their health as poor (15%) compared with those without the condition (5.4%) (Figure 1).

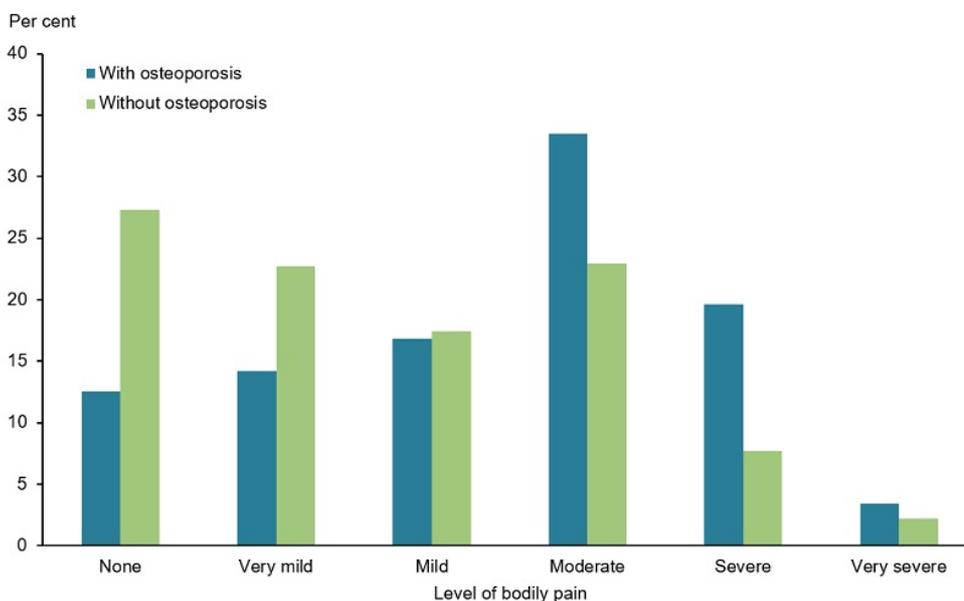**Figure 1: Self-assessed health of people aged 45 and over with and without osteoporosis, 2017-18**
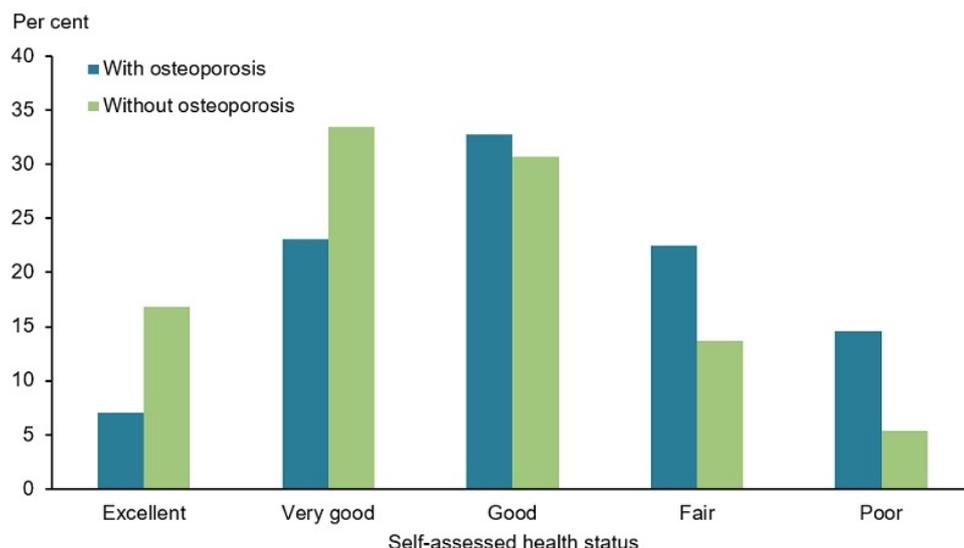
Note: Rates are age-standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of ABS 2019 (Data table).

Pain

In 2017–18, more than half of people with osteoporosis aged 45 and over (57%) experienced 'moderate' to 'very severe' pain in the last 4 weeks. People with osteoporosis were 2.3 times as likely to experience severe or very severe bodily pain in the last 4 weeks (23%) compared with those without the condition (10%) (Figure 2).

Figure 2: Pain[a] experienced by people aged 45 and over with and without osteoporosis, 2017-18

(a) Bodily pain experienced in the 4 weeks prior to interview.

Psychological distress

People aged 45 and over with osteoporosis were 2.9 times as likely to experience very high levels of psychological distress (12%) compared with those without the condition (4.1%)—according to the 2017–18 NHS (Figure 3).

Figure 3: Psychological distress[a] experienced by people aged 45 and over with and without osteoporosis, 2017-18
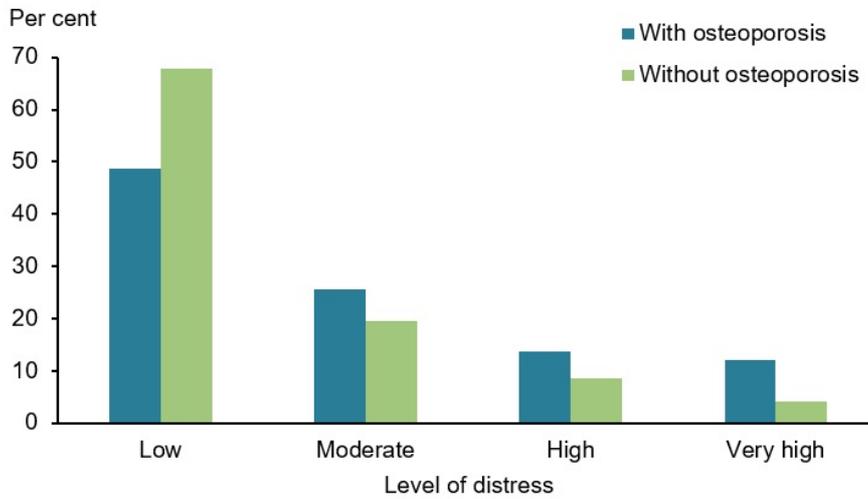
(a) Psychological distress is measured using the Kessler Psychological Distress Scale (K10), which involves 10 questions about negative emotional states experienced in the previous 4 weeks. The scores are grouped into Low: K10 score 10–15, Moderate: 16–21, High: 22–29, Very high: 30–50.

Note: Rates are age-standardised to the Australian population as at 30 June 2001.

Source: AIHW analysis of ABS 2019 (Data table).

References

ABS (Australian Bureau of Statistics) 2019. Microdata: National Health Survey, 2017-18, detailed microdata, DataLab. ABS cat no. 4324.0.55.001. Canberra: ABS. Findings based on AIHW analysis of ABS microdata.

Treatment and management of osteoporosis

Diagnosing osteoporosis

Diagnosis of osteoporosis requires an assessment of bone mineral density (BMD). The most commonly used technique is a specialised X-ray known as a 'Dual energy X-ray Absorptiometry (DXA) scan' to determine bone mineral density (BMD) in the hips and spine (IOF 2017). Scan results are expressed as T-scores which compare a person's BMD with the average of young healthy adults (Table 1).

Table 1: Diagnosing osteoporosis using bone density testing

	Normal	Osteopenia	Osteoporosis
T-Score	1 to -1	-1 to -2.5	-2.5 or lower

Source: WHO Study Group 1994.

Preventing and managing osteoporosis

Osteoporosis is largely a preventable disease. The goal of the prevention and treatment of osteoporosis is to maintain bone density and reduce a person's overall fracture risk (RACGP 2018).

Quality of life can be severely compromised for people with osteoporosis, particularly if they fall and sustain a fracture. Wrist and forearm fractures may affect the ability to write, type, prepare meals, perform personal care tasks and manage household chores. Fractures of the spine and hip can affect mobility, making activities such as walking, bending, lifting, pulling or pushing difficult. Hip fractures, in particular, often lead to a marked loss of independence and reduced wellbeing.

Primary prevention of osteoporosis involves supplementing diet to get sufficient calcium and vitamin D, and behaviour modification such as regular weight-bearing and resistance exercise, keeping alcohol intake low and not smoking, and fall reduction strategies (RACGP 2018).

There is a diverse range of medicines available for osteoporosis management, so treatment selection is guided by a number of factors including sex, "menopausal status, medical history, whether it is for primary or secondary fracture prevention, patient preference and eligibility for government subsidy" (Bell et al. 2012).

Oral and intravenous bisphosphonates, and subcutaneous denosumab injections are among the recommended first-line pharmacological therapy for both males and females with osteoporosis (RACGP 2018). These medicines "slow bone loss, improve bone mineral density and reduce fracture rates" (RACGP 2018). Bone building drugs, such as daily teriparatide (RACGP 2018) and monthly romosozumab injections, are reserved as second-line treatments when first-line treatments fail.

Hospitalisation for osteoporosis

People with osteoporosis can be hospitalised for a range of reasons, including minimal trauma fractures. These fractures can occur from a minor bump, fall from a standing height or an event that would not normally result in a fracture if the bone was healthy.

Minimal trauma fractures generate substantial costs to the community, including with direct costs in terms of hospital treatment. Data from the National Hospital Morbidity Database (NHMD) show that in 2017–18 there were 6,838 hospitalisations with a principal diagnosis of osteoporosis for people aged 50 and over. The hospitalisation rate for people with osteoporosis was greatest for people aged 85 and over (Figure 1). Among individuals 50 years and above, the hospitalisation rate was higher in females than in males (122 compared with 41 per 100,000 persons in 2017-18).

Figure 1: Rate of hospitalisation for osteoporosis, people aged 50 and over, by age and sex, 2017-18
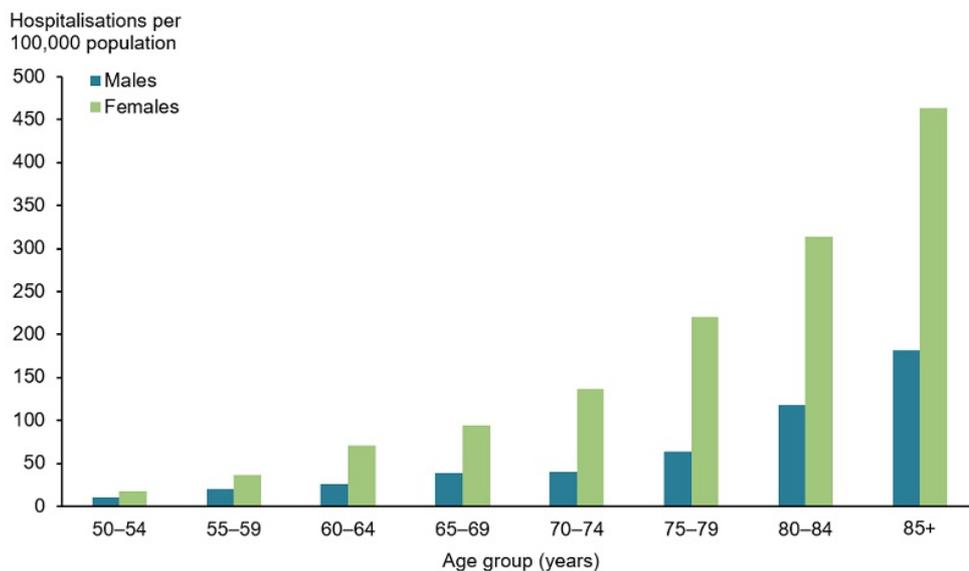
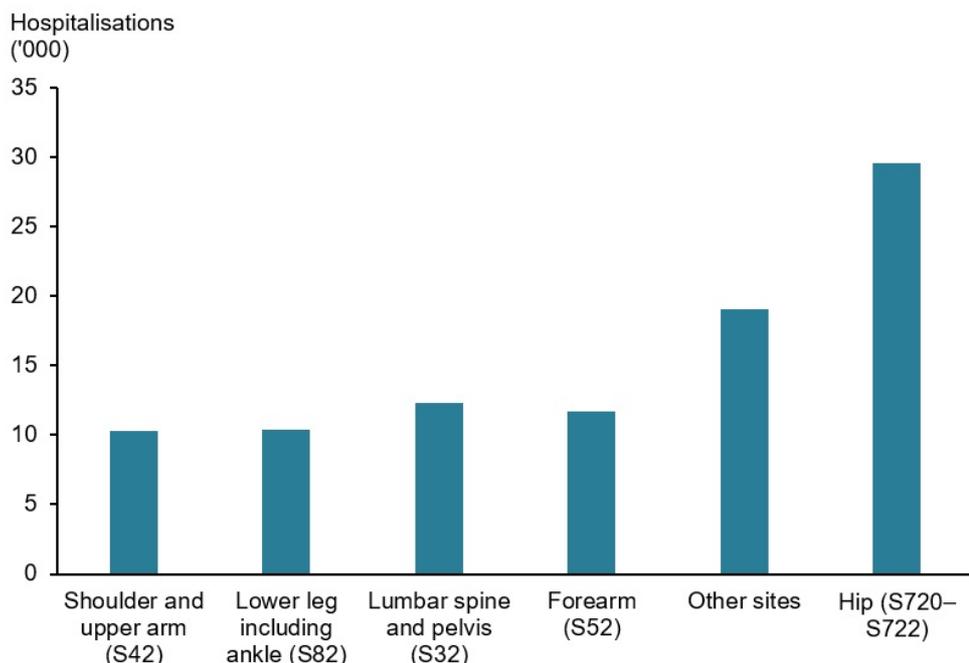*Source:* AIHW National Hospital Morbidity Database (Data table).

Minimal trauma fractures

Minimal trauma fractures may be the result of osteoporosis, which is commonly undiagnosed prior to a fracture. A range of other factors, such as high bone turnover, low body weight and a tendency to fall, also increase minimal trauma fracture risk. As osteoporosis is not common before the age of 50, minimal trauma fractures occurring in people age 50 or over are more likely to be a result of osteoporosis.

In 2017-18:

- there were 93,321 hospitalisations for minimal trauma fractures in people aged 50 and over
- the hospitalisation rate for minimal trauma fractures in people aged 50 and over was higher in females (1,576 per 100,000 people) than in males (650 per 100,000).
- of all hospitalisations for minimal trauma fractures for people aged 50 and over, 34% were for people aged 85 and over
- the most common fracture sites were the hip (32%), the forearm (13%) and lumbar spine and pelvis (13%) (Figure 2).

Figure 2: Hospitalisations following minimal trauma by fracture site, people aged 50 and over, 2017-18

Source: AIHW National Hospital Morbidity Database (Data table).

Minimal trauma hip fractures

Minimal trauma hip fracture is one of the most serious and debilitating outcomes of osteoporosis (Ip et al. 2010). In 2015-16, there were an estimated 18,700 new hip fractures among Australians aged ≥45 years—a crude (age-specific) rate of 199 fractures per 100,000 population (AIHW). Treatment of this type of fracture invariably requires hospitalisation, may require surgery, and may be a source of ongoing pain and disability. These fractures are a considerable burden to individuals, the community and the Australian health system due to their high cost (Watts et al. 2013).

In 2017-18:

- there were 29,541 hospitalisations for minimal trauma hip fracture among people aged 50 and over
- the rate of hospitalisation for minimal trauma hip fracture among people age 50 and over was more than twice as high for females (480 per 100,000 people) compared with males (226 per 100,000) (Figure 3)
- hospitalisation rates for minimal trauma hip fracture were highest in those aged 85 and older (2,566 per 100,000 people, compared with 16 per 100,000 people aged 50–54).

Figure 3: Rate of hospitalisations for minimal trauma hip fractures, people aged 50 and over, 2017-18
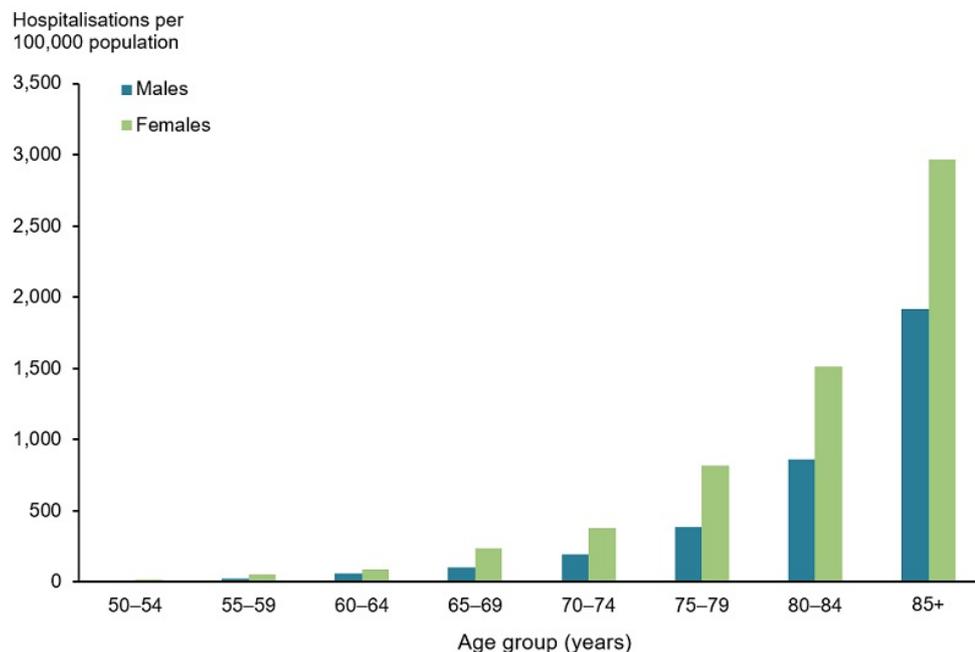
Source: AIHW National Hospital Morbidity Database (Data table).

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AIHW (Australian Institute of Health and Welfare) 2018. Hip fracture incidence and hospitalisations in Australia 2015–16. Cat. no. PHE 226. Canberra: AIHW.

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Data

Data tables: Osteoporosis 2020

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