CHILE

OVERVIEW

Like the populations of many other countries, the Chilean population is getting older due to the decrease in birth rate and the increase in life expectancy. The problem of diagnosing and treating osteoporosis will become a health and economic issue for public and private health insurers alike. At the present time, the public system does not cover costs for diagnostic testing or medication for osteoporosis, as osteoporosis is not a priority for the government health system. Private systems have a partial coverage of those costs related to diagnosis and treatment.

There is a marked difference in the availability of medical coverage for osteoporosis for people using public versus private medical systems, and also between people from larger versus smaller urban centers.

The public awareness about bone health is increasing but there are still not enough educational campaigns or programmes. In addition, Chileans have a low calcium intake in the adolescent and adult population.

A major problem in Chile is vitamin D deficiency among the paediatric and adult populations. There are no public policies to fortify food or increase vitamin D recommendations. There is insufficient awareness among physicians and allied health professionals about this topic.1-2

The Chilean Society of Osteoporosis (SCHOMM) is working towards validation of the FRAX model for prediction of fracture risk. They hope to have it available in the first semester of 2012.

KEY FINDINGS

Population growth statistics

The present population of Chile is estimated to be 17 million, of which 25% (4.3 million) is 50 years and older and 6% (1 million) is 70 years and over. By 2050, it is estimated that the total population will rise to 19 million, of which 43% (8.3 million) will be 50 years and older and 17% (3.2 million) will be 70 years and older (fig 1).

FIGURE 1 Population projection for Chile until 2050

SOURCE US Census Bureau

Epidemiology

There is a dearth of recent epidemiological data demonstrating the prevalence of osteoporosis and osteopenia in Chile. In 1987, a community based study, looking at women aged 50 years and over, showed a prevalence rate at the proximal femur of 46% and 22% respectively for osteopenia and osteoporosis.4

In 1994, Arteaga et al. found that, in a group of 171 women over 40 years, 29.2% were osteopenic at the spine as defined by a bone mineral density (BMD) less than 0.92 g/cm².5 A 2002 study, examining postmenopausal Mapuche women, showed that, of the 95 women studied, 17.9% had osteopenia and 56.8% had osteoporosis at the spine. In the same study, the femoral neck bone mineral density revealed 57.9% with osteopenia and 7.4% with osteoporosis.6 Overall, this revealed that 83.2% of the study participants had either osteopenia or osteoporosis at the hip or spine leaving only 16.8% with normal bone density. Interestingly, a 2003 study revealed that Mapuche ethnicity is a protective factor for hip fracture.7

In 2007, Rodriguez, et al. recruited 555 women between the ages of 55 and 84 to participate in a study looking at frequency of vertebral fractures. This study revealed
that 14% of the women had a T-score of -2.5 or less at the hip, while 32% had a T-score of -2.5 at the spine. For those participants between the ages of 80-85, osteoporosis at the femoral neck reached a rate of 53.3%.

Unpublished data from FUNDO (Chilean Osteoporosis Foundation) revealed that, in 2009, a sample of 40 000 women over the age of 50 years had a rate of osteopenia of 52% by calcaneus ultrasound. Eight per cent of these women showed osteoporosis using the same method.

**Hip fracture**

It is estimated that there were 5236 and 2104 hip fractures respectively in Chilean women (age 45 and older) and men (age 45 and older) in the year 2008. Estimated projections for 2050 show an increase in these numbers to 9988 and 4007 for women and men respectively. Local Chilean experts estimate that, currently, 90% of hip fractures are treated surgically.

In 1991, rates of hip fracture were analyzed using hospital records. An overall incidence of 23.5 fractures for every 100 000 inhabitants was reported. In women aged 50 years and over, the incidence rate was 192.5 per 100 000. More importantly, the incidence rate increased after the age of 75 to 617 per 100 000 women, double the rate found in men.

Another study showed an increase in hip fracture rates from 1982 to 1993. The study demonstrated that the increase was not entirely due to an increasing proportion of older women but rather more likely related to lifestyle changes.

In 2003, a retrospective study showed that, of 203 patients admitted for hip fracture surgery, 90% were never diagnosed or treated for osteoporosis.

According to SCHOMM, the direct hospital cost for treating a hip fracture is estimated between 2000 and 7000 USD depending on whether the fracture is treated in a public or private healthcare setting. The average hospital bed stay for a hip fracture patient is five to seven days and it is estimated that for each hip fracture, 45 days of productivity are lost in the workplace.

**Vertebral fracture, other fragility fractures**

There are minimal data available showing the incidence of vertebral fracture in Chile. A 2007 study revealed that 29.7% of the 55-84 year old women assessed had at least
one vertebral fracture. Fifty-six per cent of the patients with vertebral fractures did not have osteoporosis by densitometry at any anatomical site.

**Diagnosis**

In Chile there are 161 DXA machines allowing for approximately one DXA per 100,000 inhabitants. The average length of wait for a DXA scan is five days. There is one pQCT machine designated for research and no information is available on the number of ultrasound machines in the country. DXA machines are mainly available in urban centers and private health clinics.

**Reimbursement policy**

The cost of a DXA scan is 40 - 100 USD. DXA is not reimbursed by the government health plan, but is reimbursed by private health care insurance. There is partial reimbursement for FONASA beneficiaries. Osteoporosis medications are not reimbursed by public health care plans but are sometimes reimbursed by private health care plans, and only for patients with osteoporosis.

**Calcium and vitamin D**

Calcium, vitamin D supplements, and calcium fortified foods (milk and some cereals) are available in Chile.

A study conducted in 1997 demonstrated that healthy postmenopausal women living in Santiago, Chile, with no vitamin D fortification in their diets, are vitamin D deficient despite normal sun exposure. Figure 2 above illustrates the levels of the vitamin D deficiency for the women included in the study.

Another study showed that 47.5% of the patients (aged 55-84 years) had hypovitaminosis D using a cutoff level of 17 ng/mL.

Few studies have investigated typical calcium intake in Chile. One study demonstrated that of the 80 women (age 42 years and over) studied, the average intake was 745 mg/day.

**PREVENTION, EDUCATION, LEVEL OF AWARENESS**

Osteoporosis is not recognized as a major health problem and there are currently no government public awareness programs covering prevention, diagnosis or management of osteoporosis.

Physician guidelines for Chile can be found at:

http://www.asocimed.cl/Guias%20Clinicas/endocrinologia/osteoporosis.html
There is no governmental health professional training and there are currently no approved governmental guidelines for osteoporosis treatment or prevention.

There are no known osteoporosis patient support groups in Chile. Public health awareness programmes are supported via websites and advertisements. The milk industry actively supports patient awareness through advertising campaigns targeted at increasing milk consumption among adults.

Awareness of osteoporosis among the public is considered to be average to high, whereas the level of awareness among health professionals is rated as low to medium. There is a consensus among experts in Chile that Primary care physicians are not educating their patients about osteoporosis.

According to local Chilean experts, in general, medical health professionals are poorly equipped and trained to care for patients with osteoporosis. Gynaecologists, geriatricians, rheumatologists and endocrinologists are considered to be the most well equipped. In the allied health profession, nutritionists and nurses are better equipped than physiotherapists.

**RECOMMENDATIONS**

- Considering that projected population increases for Chile will see the population 50 years and older increase from 25% today to 43% in the near future, the hospital infrastructure will have to expand to account for the subsequent increase in the number of hospital beds needed, particularly in relation to the number of hip fracture patients.

- An increase in dietary calcium and vitamin D, along with an increase in the amount of fortified foods available to the public, will be important in helping future generations reach their peak bone mass.

- Better access to diagnostic machines and better coverage of these tests by both private and public health insurers will allow more people to be diagnosed and subsequently treated.

- Increased reimbursement of medications for the treatment and prevention of osteoporosis for citizens with both private and public health plans is needed.

**REFERENCES**

9. Estimation of (osteoporotic) hip fractures per year based on hospital discharges, code S72 (CIE-10). (SCHOMM)