

# MOROCCO

## OVERVIEW

Morocco's population is approximately 32 million in 2010. It is a young population with only 5 637 000 people aged over 50 years. However, the age group >60 years which represents 8% of the population in 2010 will double in 2030 (15.4%). Moreover, the average life expectancy which was 59 years of age in 1981, has increased to 72 years of age in 2010 and continues to increase. There are many recent studies on osteoporosis epidemiology in Morocco: incidence of hip fractures, prevalence of vertebral fractures in men and women, distribution of BMD, prevalence of hypovitaminosis D, and quality of life of women with osteoporosis have all been studied. Clinicians follow international recommendations for the diagnosis and treatment of osteoporosis. The current gold standard for osteoporosis diagnosis is bone mineral density (BMD) determination by DXA assessment, but in Morocco, DXA machines are available mainly in the big cities and private clinics, thereby placing it beyond the reach of most people. It has been estimated that 13.4% of men aged over 50 and 44.6% of postmenopausal women have osteoporosis<sup>1-3</sup>. About 13% of men and 26% of women over 50 years have asymptomatic vertebral fractures<sup>4-5</sup>. The annual incidence of hip fractures per 100 000 inhabitants is estimated at 52.1 among women and 43.7 among men. Hypovitaminosis D prevalence has been estimated to affect 91% of the female population<sup>6</sup>. Thus, despite being a common metabolic bone disease, osteoporosis is still under-diagnosed and undertreated. It attracts little attention and even less action in our country. It is not yet considered a public health priority in Morocco. The Moroccan Society of Rheumatology recently used wide media coverage to increase awareness of osteoporosis. A large multicentric cohort study on osteoporosis and incident fractures is currently being prepared.

## KEY FINDINGS

The present population in Morocco is estimated to be 32 million, of this 17% (5.3 million) is 50 years of age or over and 4% (1.3 million) is 70 or over. By 2050, it is estimated that 37% (15.5 million) of the population will be 50 or over and 13% (5.5 million) will be 70 or over while the total population will increase to 42 million (fig 1).

**FIGURE 1** Population projection for Morocco until 2050



REF US Census Bureau

## EPIDEMIOLOGY

Normal values of BMD were determined in general population-based large samples of healthy Moroccan women<sup>2</sup> and men<sup>3</sup> and the proportion of osteopenia and osteoporosis were evaluated. Based on extrapolations from these studies, DXA estimation and WHO classification, 2 137 410 people have osteopenia (about 39% of the population over 50) and 984 730 have osteoporosis in Morocco in 2010 (fig 2).

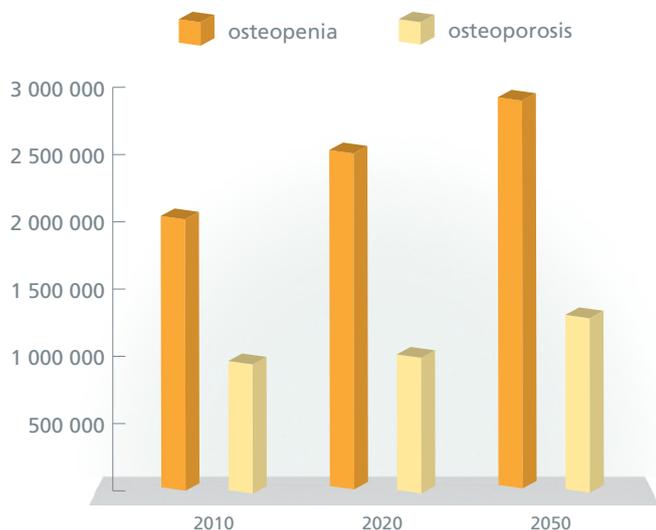
In a 2009 study assessing the relationship between historical height loss and vertebral fractures, in which 288 postmenopausal Moroccan women were recruited, 31% of the patients were found to be osteoporotic<sup>8</sup>. In another study of 357 postmenopausal women living in urban areas with a mean age of  $58.7 \pm 7.8$  years, 42.1% had osteopenia and 30.1% had osteoporosis.

### Hip fracture

In 2011, it is estimated that there will be 2,707 hip fractures in Morocco.

In a 2002 retrospective study, there were a total of 150 hip fractures in those over the age of 50 between January

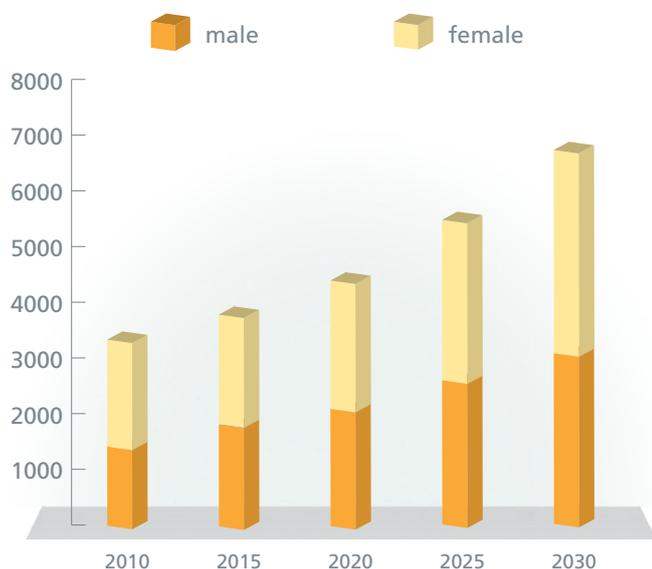
**FIGURE 2** Incidence of osteopenia and osteoporosis in 2010 and projection for 2020 and 2030



1 to December 31 in Rabat, a province in Morocco<sup>7</sup>. The age-adjusted one-year cumulative incidence of hip fracture was 52.1/100 000 in women and 43.7/100 000 in men.

Another retrospective study evaluating the hip fracture incidence between 2006 and 2009 using the same design collected 1004 hip fractures and found an age-adjusted incidence of 61.8/100 000 in women and 58.0/100 000 in men (recent unpublished data). The estimation of the number of hip fractures is derived from this study (fig 3).

**FIGURE 3** Estimation of the number of hip fractures for 2010, 2020, 2030



The direct (i.e. hospital) costs of hip fractures is around 1500-3000 euros. Free health care is provided for all people in public hospitals<sup>1</sup>.

### Vertebral fracture, other fragility fractures

The number of vertebral fractures is estimated to be 1 553 565 million. In a study cohort of 328 women with a mean age of  $65 \pm 6.5$  years, vertebral fractures were detected in 25.6% using vertebral fracture assessment (VFA) with at least 60% of those women having 2 fractures<sup>3</sup>. In the aforementioned study of 357 postmenopausal living in urban areas, with a mean age of  $58.7 \pm 7.8$  years, 46.7% were diagnosed with vertebral fractures<sup>4</sup>. Vertebral fracture prevalence has been estimated to be 13% in asymptomatic men<sup>5</sup>.

### DIAGNOSIS

In total, there are 20 DXA machines in Morocco and 4 ultrasound machines. This equipment is available only in some urban centers. A DXA assessment costs USD 100 and an ultrasound USD 18. The waiting time is between 0 to 2 days for a DXA assessment and there is no waiting time for an ultrasound.

### REIMBURSEMENT POLICY

These exams are reimbursed without restrictions for patients with health coverage but the rates and reimbursement restrictions differ between private health care insurances. Only 17% of patients in Morocco have health insurance, and a large number of patients have to pay for their densitometry<sup>5</sup>.

Regarding treatment, the available drugs are reimbursed for patients with health coverage without any restriction; private insurances apply different rates of reimbursement (70-98%) and some reimburse only after the first fracture. Osteoporotic treatments are available under prescription.

### CALCIUM AND VITAMIN D

Calcium and vitamin D supplements are available as well as fortified foods. There are no programmes on lifestyle prevention.

## PREVENTION, EDUCATION, LEVEL OF AWARENESS

In Morocco, osteoporosis is not yet recognized as a major health problem. There are no government approved guidelines but physicians follow international guidelines.

In general the level of osteoporosis awareness among the population is low. In a study of 356 healthy Moroccan women with a mean age of  $58.9 \pm 7.7$ , the prevalence of osteoporosis showed an inverse relationship with education level, ranging from 19.7% for the most educated to 50% for the non-educated women ( $p < 0.05$ )<sup>10</sup>.

Physicians in medical specialties (rheumatologists, orthopedists, gynecologists and endocrinologists) treating a population susceptible to osteoporosis are well trained to diagnose and treat the disease and osteoporosis is integrated into the medical school curriculum. However, most general health professionals are generally very poorly equipped and trained to manage patients with osteoporosis except those working in specialized centers.

The Rheumatology Moroccan Society in Morocco is active and organizes regular meetings focusing on osteoporosis, communications in newspapers and different media, including radio, television, web etc.

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