

## Review Article

# Preventive care for osteoporosis in family medicine: risk assessment, bone health, and fracture prevention

**Marwah Yakoop Abdullah<sup>1\*</sup>, Rakan Turki Alotaibi<sup>2</sup>, Khalid Abdullah Althagafi<sup>3</sup>,  
Waleed Abdullah Alzahrani<sup>4</sup>, Shatha Thani Alanizi<sup>5</sup>, Yasser Yahya Alzahrani<sup>6</sup>,  
Mohammad Ahmed Alshamrani<sup>7</sup>, Hassan Ali Alnahwi<sup>8</sup>, Ali Obaid Alrashidi<sup>9</sup>,  
Naif Nasser Almutawa<sup>10</sup>, Khalid Mohammed Alkwai<sup>10</sup>**

<sup>1</sup>Department of Family Medicine, East Jeddah Hospital, Jeddah, Saudi Arabia

<sup>2</sup>College of Medicine, King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia

<sup>3</sup>College of Medicine, Ibn Sina National College, Jeddah, Saudi Arabia

<sup>4</sup>Department of Family Medicine, Northern Area Armed Forces Hospital (NAAFH), Hafar Al Batin, Saudi Arabia

<sup>5</sup>College of Medicine, King Faisal University, Dhahran, Saudi Arabia

<sup>6</sup>Primary Health Care, Ministry of the Interior Medical Services, Riyadh, Saudi Arabia

<sup>7</sup>Department of Emergency Medicine, King Fahad Military Medical complex, Dhahran, Saudi Arabia

<sup>8</sup>Emergency Department, Al Omran General Hospital, Al Ahsa, Saudi Arabia

<sup>9</sup>Primary Health Care, Ministry of Health, Hafar Al Batin, Saudi Arabia

<sup>10</sup>College of Medicine, King Saud University, Riyadh, Saudi Arabia

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### \*Correspondence:

Dr. Marwah Yakoop Abdullah,

E-mail: marwahyq@gmail.com

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## ABSTRACT

Osteoporosis is a health condition that involves bones and an elevated likelihood of fractures. In the realm of family medicine, the prevention of osteoporosis entails evaluating risks promoting bone health and minimizing the occurrence of fractures. This review explores aspects of care for osteoporosis in family medicine, focusing on early detection and intervention. Family physicians need to be observant of signs like fragility fractures, postural changes, and height loss that indicate osteoporosis. Many different elements, such as one's age, gender, family medical background and the choices they make in their lifestyle can contribute to the likelihood of developing osteoporosis. These factors also help in devising measures to address the condition effectively. Managing osteoporosis requires an approach led by family physicians that includes lifestyle adjustments, medication interventions tailored to risks, and patient education. Emphasizing weight-bearing exercises, nutrition personalized medications are elements of preventive care. Patient education plays a role in ensuring adherence to prescribed treatments as well as adopting strategies to prevent falls. Tools like FRAX help family physicians assess risks and tailor interventions accordingly. Collaborating with therapists and dietitians further enhances the effectiveness of managing osteoporosis through care. Family doctors go beyond their duties. Take a role in community initiatives that aim to increase awareness offer education and carry out screenings to prevent osteoporosis. Family doctors, as healthcare providers, play a role in minimizing the effects of osteoporosis on bone health and overall well-being. This review provides a summary of measures for osteoporosis, in family medicine emphasizing the significance of early identification, personalized treatment and community involvement.

**Keyword:** Osteoporosis, Family medicine, Preventive care, Fracture prevention, Clinical management

## INTRODUCTION

Osteoporosis is a condition that affects the strength of our bones and makes them more prone to fractures. It's a concern in health especially in the field of family medicine where preventive care plays a crucial role in managing its impact on bone health.<sup>1</sup> This review delves into the aspects of care for osteoporosis in family medicine covering risk assessment, maintaining bone health and preventing fractures. Assessing the risks associated with osteoporosis is key to care. Identifying individuals at risk allows for targeted interventions that can slow down bone loss. Age, gender, family history and hormonal status are factors that contribute to this risk with postmenopausal women and older adults being particularly vulnerable.<sup>2,3</sup> By evaluating these factors, healthcare providers can categorize patients into risk groups and provide tailored preventive measures accordingly. Maintaining bone health is a focus when it comes to preventing osteoporosis in family medicine.<sup>4</sup> Ensuring nutrition, including intake of calcium and vitamin D forms the foundation for optimal bone density. Lifestyle changes such as weight-bearing exercises also contribute to bones and overall musculoskeletal well-being.<sup>5</sup> Family physicians play a role in educating patients about these lifestyle factors and encouraging habits that promote well-being, throughout all stages of life.<sup>6,7</sup> Preventing fractures has become a goal, in the field of family medicine's preventive care toolkit. The occurrence of fragility fractures has an impact on both morbidity and mortality highlighting the need, for strategies to lower the risk of fractures.<sup>8,9</sup> Pharmacological treatments, like bisphosphonates and other medications that reduce bone loss are prescribed by family doctors to improve bone density and lower the risk of fractures. Working alongside healthcare professional's family physicians carefully consider each patient's characteristics and possible side effects when deciding on the best pharmacotherapy options. Incorporating energy X ray absorptiometry (DXA) scans into family medicine practices adds precision to assessing the likelihood of osteoporosis.<sup>3,10</sup> DXA scans provide measurements of bone mineral density making it easier to detect issues on and take appropriate action. Additionally, advancements in risk assessment tools, such as the FRAX® algorithm empower family physicians to estimate the probability of osteoporotic fractures over a ten-year period based on clinical risk factors.<sup>11</sup> These tools contribute to a preventive care approach that considers individual circumstances. Family medicine plays a role beyond care by participating in community wide initiatives aimed at preventing osteoporosis. Public health campaigns that raise awareness promote education and offer screening opportunities encourage communities to prioritize measures for maintaining bones across populations. Through their engagement with communities, family physicians help foster an understanding that osteoporosis is a condition that can be prevented and well managed. Furthermore, preventive care for osteoporosis, within family medicine encompasses assessing risks, promoting

bone health maintenance strategies and implementing prevention measures.<sup>12</sup> Family doctors have a role, in recognizing people who're at risk promoting healthy lifestyle changes and using medication to reduce the chances of fractures. By using tools like DXA scans and fracture risk assessment algorithms doctors can better identify those at risk. The active involvement of family medicine in community efforts emphasizes their role, in preventing health issues related to osteoporosis.<sup>13,14</sup> As the field of family medicine continues to advance, research and a dedication to educating patients will contribute to improving and enhancing preventive care strategies for osteoporosis. This review aims to provide an overview of care in family medicine, specifically focusing on risk assessment, bone health and fracture prevention for osteoporosis.

## LITERATURE RESEARCH

In this review conducted on November 26, 2023, we carefully examined articles, from the Cochrane Library, PubMed, and Scopus. Our focus was on care for osteoporosis in family medicine, encompassing aspects such as risk assessment, bone health, and fracture prevention. Specifically, we targeted studies conducted in English since 2008, prioritizing the well-being of patients at risk of osteoporosis. Our goal was to provide healthcare professionals with guidance on assessment methodologies and early warning systems to improve care in family medicine.

## DISCUSSION

The signs and symptoms of osteoporosis, in family medicine are markers that require observation for early detection. Fragile fractures, in weight bearing bones serve as signs of compromised bone health. These fractures are associated with health issues and even death highlighting the need for strategies to prevent them especially in vulnerable individuals. Family doctors play a role in identifying these fractures particularly when there is minimal or no apparent trauma. Changes in posture, like kyphosis or dowagers hump and gradual loss of height are commonly linked to fractures.<sup>15</sup> These subtle yet impactful changes can be easily. Are indicators of an increased risk of osteoporotic fractures? Family doctors should remain vigilant during examinations particularly for postmenopausal women and older adults to recognize these postural shifts promptly. Though back pain is not specific it can be linked to fractures that occur in osteoporosis.<sup>16</sup> This pain might be caused by movements, within vertebrae or pressure on nearby nerves. It's important for family physicians to actively ask about the presence and characteristics of pain in individuals who are at risk for osteoporosis as it can indicate underlying vertebral fractures. Recognizing these signs is the beginning; family physicians also need to consider various risk factors contributing to the likelihood of osteoporosis. Postmenopausal women, adults, individuals with a family history of osteoporosis and those with low

body weight are at risk. Lifestyle factors, like calcium and vitamin D intake, behavior, smoking and excessive alcohol consumption also contribute to bone loss and increase the chances of fractures occurring.

### ***Clinical manifestation***

Recognizing the signs of osteoporosis in family medicine requires observation from healthcare providers for detection. Osteoporosis, a condition characterized by reduced bone density and weakened strength can be identified through fractures, changes in posture and in some cases a decrease in height. It's crucial for family physicians to be familiar with these presentations in order to identify individuals at risk and initiate interventions. Fractures are the indicators of osteoporosis and often occur in weight-bearing bones, like the hip, spine, and wrist. Fragility fractures that result from no apparent trauma are particularly concerning as they signal compromised bone quality and suggest underlying osteoporosis. Fractures in the hip specifically have rates of morbidity and mortality. This highlights the need for strategies to prevent fractures in individuals who are susceptible to them.<sup>17,18</sup> Family doctors should be particularly aware of osteoporosis when they come across patients with fragility fractures especially if there wasn't a trauma involved. Changes in posture, such as developing kyphosis or dowagers hump, are often seen in people with fractures caused by osteoporosis. These fractures occur when the vertebrae weaken due to osteoporosis leading to collapse or compression. While vertebral fractures can happen without symptoms, they gradually affect alignment and posture over time. Family doctors should be vigilant during exams to identify these postural changes especially in postmenopausal women and older adults as they indicate an increased risk of osteoporotic fractures. A loss of height is also associated with fractures. As the vertebral bodies compress individuals may gradually become shorter over time. Although patients may not always realize this height loss themselves family doctors should pay attention to changes in height reported by patients or observed during checkups. Assessing changes in height along with a history helps identify potential vertebral fractures and highlights the need for further evaluation for osteoporosis.

Back pain, although not specific can occur as a symptom linked to fractures in the spine caused by osteoporosis. Vertebral fractures can cause localized pain due to movements within the vertebrae or pressure on nearby nerves. It is important for family doctors to actively ask about the presence and nature of pain in people who may be at risk for osteoporosis. Recognizing the connection between pain and possible vertebral fractures allows for a focused evaluation that involves using imaging studies to confirm the diagnosis and guide appropriate treatment. Family doctors must consider factors contributing to the likelihood of osteoporosis and its clinical signs. Postmenopausal women, adults, individuals with a family

history of osteoporosis and those with low body weight are at risk. Lifestyle factors like not getting calcium and vitamin D being inactive smoking and drinking much alcohol also increase the chances of bone loss and vulnerability to fractures.<sup>19</sup> The clinical signs of osteoporosis have an impact on affected individual's quality of life and independence in activities. Fractures, hip fractures are linked to mortality rates, increased illness burden, and an overall decline in health. Vertebral fractures can cause pain, deformity, and loss of height-emphasizing the importance of detection and intervention. Family doctors have a role in identifying these signs, conducting comprehensive risk assessments and implementing preventive measures to minimize the impact of osteoporosis on their patient's wellbeing.

In family medicine, the primary signs of osteoporosis revolve around fractures, changes in posture, and a decrease in height. Fractures that occur in fragile weight-bearing bones can be signs of weakened bone health. Changes in posture, such as developing a curve in the spine known as kyphosis or experiencing height loss, are often associated with fractures in the vertebrae. If someone also experiences back pain along with risk factors, it could indicate osteoporosis. Family doctors play a role in recognizing these signs, conducting thorough risk assessments, and taking preventive measures to minimize the impact of osteoporosis on a patient's overall well-being.

### ***Management***

The management of osteoporosis, in family medicine involves a patient centered approach that focuses on preventing fractures improving bone health and enhancing well-being. Family physicians play a role in this multifaceted strategy by identifying individuals at risk conducting risk assessments and implementing targeted interventions. Making lifestyle changes is an aspect of managing osteoporosis. Engaging in weight bearing exercises such as walking, jogging and resistance training is important for promoting bone health. These activities stimulate the formation of bones increase bone mineral density and improve strength and balance thereby reducing the chances of falls and fractures. Family doctors play a role, in assisting patients in developing exercise routines tailored to their health needs and personal preferences. Ensuring intake of calcium and vitamin D through a balanced diet is vital, for maintaining optimal bone health. Calcium is a component of bone structure while vitamin D aids its absorption. Family physicians assess patient's dietary habits. Recommend supplements when necessary to meet nutritional needs. Additionally, encouraging smoking cessation and moderating alcohol intake are also lifestyle modifications, for managing osteoporosis. Smoking negatively affects bone density while excessive alcohol consumption increases the risk of fractures.<sup>20,21</sup> Family doctors offer assistance and materials to help people quit smoking and advise patients on adopting a rounded lifestyle that

promotes healthy bones. Medications are especially important, for individuals who're, at risk or have been diagnosed with low bone mineral density. Antiresorptive medications, such, as bisphosphonates, function by preventing bone resorption and aiding in the maintenance or improvement of bone density. These medications have demonstrated their efficacy in lowering the likelihood of fractures occurring in the spine and hip. Additionally, selective estrogen receptor modulators (SERMs) are regarded as beneficial for women since they effectively prevent bone loss and fractures. Anabolic agents such as teriparatide and abaloparatide bone formation and are recommended for clinical scenarios, especially for individuals with severe osteoporosis or those who cannot tolerate other treatments. When choosing medication options, family physicians carefully evaluate the patient's medical history, risk factors, and preferences. Monitoring treatment effectiveness and potential side effects is important to optimize outcomes. Patient education plays a role in managing osteoporosis as it encourages active participation in preventive measures and treatment plans. Family physicians educate patients about the importance of following medications, potential side effects, and making lifestyle modifications. Preventing falls through strategies such as home safety assessments, balance exercises and vision checks is a part of education. Stressing the significance of follow-up appointments to monitor bone health, assess treatment efficacy and make necessary adjustments is vital. The integration of risk assessments like FRAX into clinical practice, helps family physicians identify individuals who may benefit from pharmacological interventions.<sup>22</sup> FRAX incorporates factors to calculate the likelihood of experiencing osteoporotic or hip fractures over a 10-year. Family doctors use these risk assessments to make treatment decisions and customize interventions based on each patient's needs. It is crucial to integrate care for clinical management. Collaborating with therapists, dietitians and other healthcare professionals is crucial for providing care to individuals with osteoporosis. Personalized exercise programs designed by therapists and nutritional guidance provided by dietitians are essential in optimizing bone health. Family physicians play a role in facilitating this approach to address the diverse needs of patients with osteoporosis effectively. Regular monitoring of bone mineral density using energy X-ray absorptiometry (DXA) scans is a component of managing osteoporosis. DXA scans enable family physicians to evaluate the effectiveness of treatments, identify bone loss, and make adjustments to interventions. Additionally, monitoring fractures, falls and overall health changes helps paint a picture of the patient's response to treatment and guides clinical management. Therefore, managing osteoporosis in family medicine requires a personalized approach that includes lifestyle modifications, pharmacological interventions, patient education, falls prevention strategies and interdisciplinary collaboration. As primary care providers, family physicians play a role, in coordinating these efforts to

ensure individuals with osteoporosis receive evidence-based care.

## CONCLUSION

Preventive care, for osteoporosis in family medicine involves aspects, such as assessing risks maintaining bone health, and preventing fractures. Osteoporosis shows important signs like fractures, postural changes, and height loss that family physicians need to identify in order to pinpoint individuals at risk. When it comes to managing osteoporosis in family medicine, a comprehensive and patient-centered approach is followed. This includes making lifestyle changes using medications and educating patients. Family physicians have a role in guiding patients through exercise routines, ensuring proper nutrition, and selecting suitable medications based on individual risk profiles. Patient education is vital for management. Family physicians emphasize the importance of following medications, making lifestyle adjustments, and implementing strategies to prevent falls. Using risk assessments like FRAX helps family physicians personalize interventions according to each patient's needs. Collaborating with therapists and dietitians enhances the effectiveness of managing osteoporosis through interdisciplinary care. Regular monitoring of bone mineral density with DXA scans provides insights into treatment effectiveness. Helps guide ongoing clinical management. As primary care provider family physicians extend their role beyond settings by participating in community-wide initiatives, for preventing osteoporosis. Public health initiatives that aim to raise awareness provide education. Offer screening services play a role in taking proactive steps toward improving bone health on a broader scale. To sum up, when it comes to family medicine, effectively preventing and managing osteoporosis requires a personalized approach. Family physicians, through their vigilance in recognizing clinical manifestations, proactive management, and community engagement, play a crucial role in mitigating the impact of osteoporosis on individuals' bone health and overall well-being.

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