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# Quality of Life of Osteoporosis Patients a Review

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**ABSTRACT:** Complaints regarding, and morbidity of, osteoporosis are caused by fractures which are associated with pain and decrease of physical function, social function, and well-being. These are aspects of quality of life. Health-related quality of life covers physical, mental, and social well-being. Quality of life may be measured for evaluation of treatment effects in clinical trials, for the assessment of the burden of the disease of osteoporosis, and for estimates of the cost-effectiveness of different treatment scenarios in health care policy. Quality of life has been measured in patients with osteoporosis with generic questionnaires such as SF-36 and EQ-5D, which can be used in many diseases, or with one of the six available osteoporotic-specific questionnaires, e.g., Qualeffo-41 or OPAQ. Every questionnaire has to be validated to assess psychometric properties and discrimination power between patients with osteoporosis and control subjects. The value attached to specific health states (utility) can be assessed with some generic instruments or by systematic questioning of the patient, e.g., the time-trade-off method. This results in one value for health status ranging from 0 (death) to 1 (perfect health). Utility values can be used to calculate loss of quality-adjusted life years (QALY). Most data have been obtained in patients with prevalent vertebral fractures. Scores of specific and generic questionnaires showed significant loss of quality of life with prevalent vertebral fractures. In addition, studies with Qualeffo-41 and OPAQ showed a deteriorating quality of life with increasing number of vertebral fractures. Lumbar fractures had more impact on quality of life than thoracic fractures. Incident vertebral fractures were also associated with a decrease of quality of life especially in the physical function domain. This applied to clinical incident vertebral fractures as well as to subclinical fractures to a lesser degree. Loss of quality of life following hip fracture has been documented with generic and osteoporosis-specific questionnaires. A considerable loss was observed in the 1st year with some improvement in the 2nd year, but not to baseline values. Quality of life depended on comorbidity, mobility, activities of daily life (ADL)-independence, and fracture complaints. Utility loss has been observed following hip fracture, especially disabling hip fracture, hip and vertebral fracture combined, or multiple vertebral fractures. Utility following osteoporotic fractures has been valued by patients, the healthy elderly, and panels of experts. The healthy elderly gave the worse quality-of-life scores (lower utility) to various hip fractures than patients with hip fractures themselves. In conclusion, suitable instruments exist for measuring quality of life in patients with osteoporotic fractures. These instruments are useful for clinical trials and for assessment of the burden of disease.

**KEYWORDS:** osteoporosis, health, patients, quality, life, disease, fractures

## I. INTRODUCTION

The World Health Organization Quality of Life (WHOQOL) project was initiated in 1991. The aim of the project was to develop an international cross-cultural quality of life assessment instrument. The WHOQOL instrument assesses individual perceptions in the context of culture, value systems, personal goals, standards, and concerns (1). This definition demonstrates that quality of life should not be measured by the frequency with which a medical service is offered to the patient but by the degree to which the results obtained serve the purposes of prolonging life, easing pain, restoring function, and preventing incapacity (2).

Two major developments in the health field are recognizing the importance of patient-based disease evaluations and the importance of assessing the quality of the therapeutic measures being employed (3).

Assessing functional status and quality of life has been considered central to evaluating disease progression and developing new treatments, particularly in chronic diseases such as osteoporosis (4). Assessing quality of life in osteoporosis is commonly used as an outcome measure secondary to the biomechanical and radiographic evaluations following each fracture event (5),(6).

Quality of life encompasses various facets of life, including health status, environment, financial aspects and human aspects. Health status is a subset of quality of life that covers physical, mental, and social well-being (5),(7).



Assessing health-related quality of life has been considered an important marker of the clinical evolution of patients with osteoporosis and fractures (9)-(13). In addition, this assessment is central to health science research and clinical trials. Physical, emotional, and psychological incapacity, combined with the pain that results from hip, spine, or wrist fractures, can alter quality of life (14).

After a hip fracture, only 25% of individuals return to their activities of daily living, such as cooking or going to the mall (15). The loss of independence that results from the inability to walk (caused by functional limitations or by the fear of falling) is the principal consequence of a hip fracture. This inactivity worsens osteoporosis and increases the risks of falling and suffering new fractures (16).

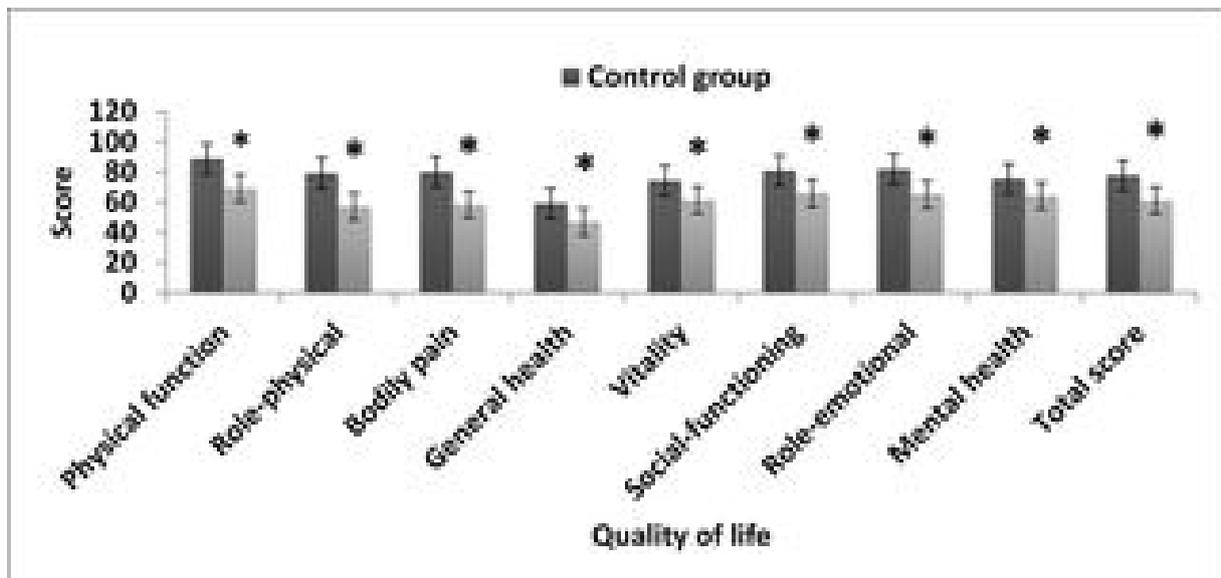
The functional alterations caused by a vertebral fracture can reduce the ability of patients to perform the activities of daily living at home and care for themselves, which increases the fear of falling and the risk of new fractures (17),(18). Vertebral fractures are present in approximately one third of the elderly Brazilian population (19). Vertebral fractures are strongly associated with lumbar pain and functional limitations (20),(2). In addition, such fractures reduce lung, heart, stomach, and urinary capacities, thereby significantly reducing the quality of life (2).

During the period following a wrist fracture, the individual can experience pain and movement limitations. Certain activities may be restricted, and such individuals could have chronic pain and reduced functions (3). Fracture events can affect the physical and mental domains of quality of life to different degrees depending on the type and severity of the fracture (4). Fracture patients experience psychological sequelae, such as anxiety, fear, depression, reduced self-esteem, and social isolation (8).

By measuring quality of life, we can predict clinical evolution and functional changes, as well as understand the conditions that will lead to developing better osteoporosis treatments, thereby improving patient health, reversing bone loss and reducing the risk of fractures.

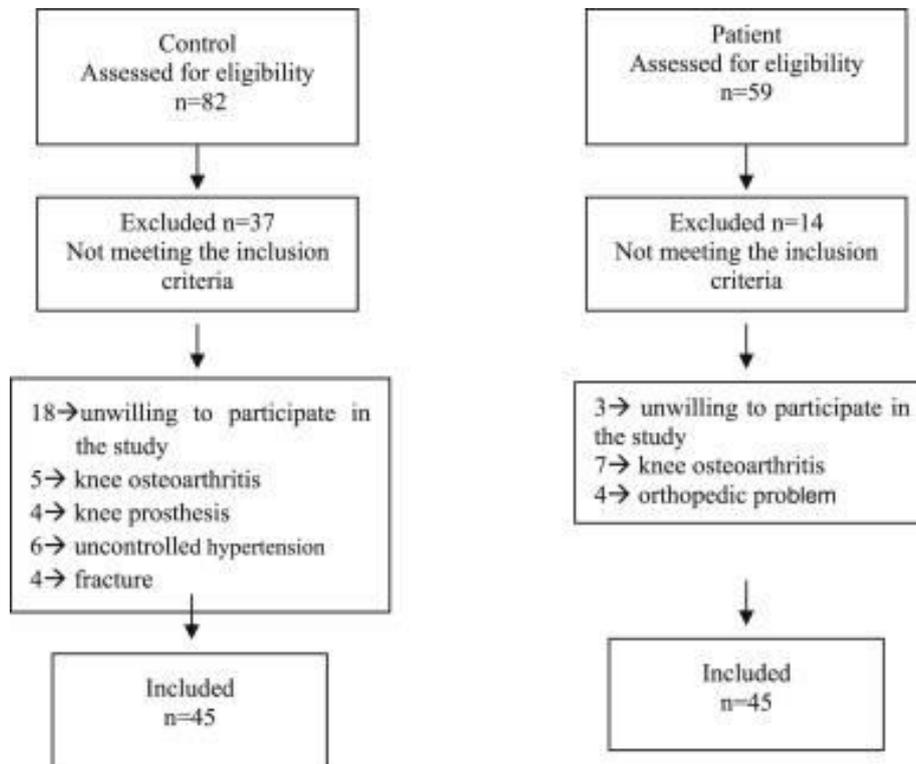
Therefore, the search for osteoporosis-targeted questionnaires is essential to monitor and therapeutically evaluate individuals who suffer from this metabolic bone disease.

## II. OBSERVATIONS



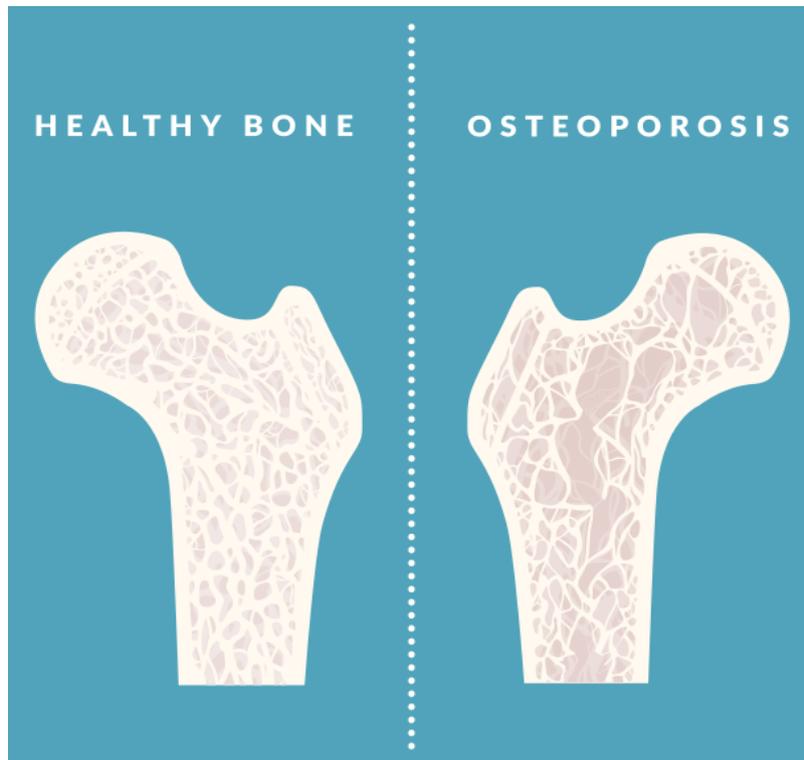
### Quality of Life Is Related to Social Support in Elderly Osteoporosis Patients

Quality of life and social support in elderly patients with osteoporosis were poorer than in elderly patients without osteoporosis and were positively correlated. Our findings indicate that increased efforts to improve the social support and quality of life in elderly osteoporosis patients are urgently needed. Further longitudinal studies should be conducted to provide more clinical evidence to determine causative factors for the observed association between risk factors and outcomes(1)

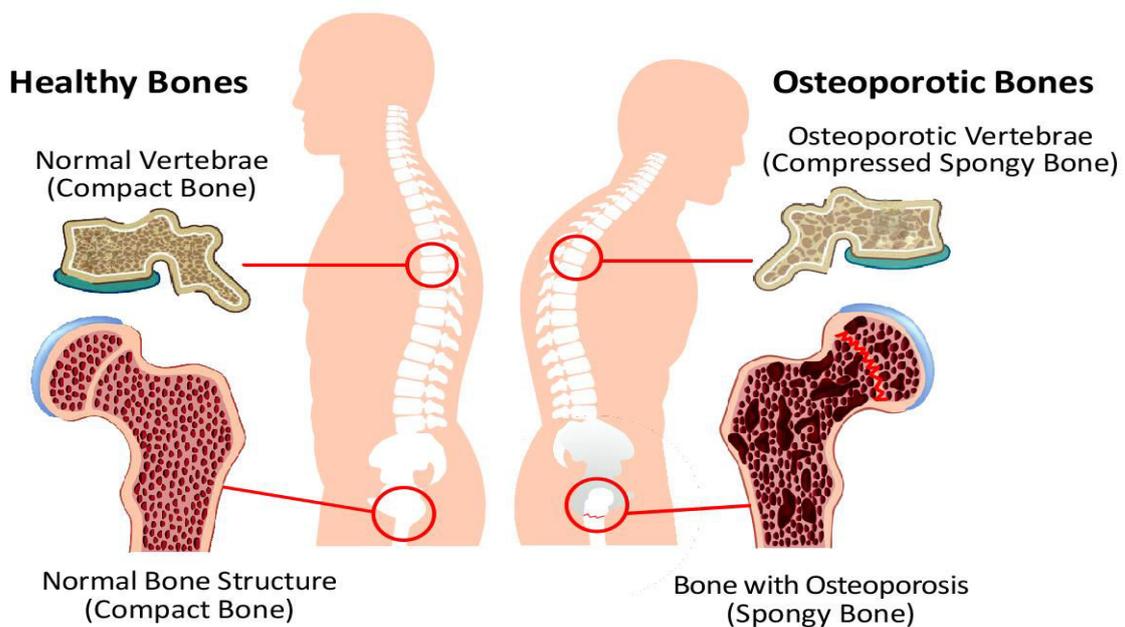


**Comparison of the spinal characteristics, postural stability and quality of life in women with and without osteoporosis**

Osteoporosis (OP) constitutes a major public health problem, through its association with age-related fractures, particularly of the hip, vertebrae, distal forearm and humerus. According to Curtis et al. (1), substantial geographic variation has been noted in the incidence of osteoporotic fractures worldwide, with Western populations, reporting increases in hip fracture throughout the second half of the 20th century, with a stabilization or decline in the last two decades. It is stated that, in developing populations however, particularly in Asia, the rates of osteoporotic fracture appears to be increasing. The massive global burden consequent to OP means that fracture risk assessment should be a high priority among health measures considered by policy makers (1). It is well known that; OP is a silent problem without any evidence of disease until a fracture occurs. Health consequences from osteoporotic fractures in patients include disability and have a negative impact on the Quality of Life (QoL) (2-4). The World Health Organization operational definition of OP, based on a measurement of bone mineral density (BMD) by dual-energy X-ray absorptiometry (DXA), has been used globally since the mid-1990s. However, although this definition identifies those at greatest individual risk of fracture, in the population overall a greater total number of fractures occur in individuals with BMD values above the threshold for OP diagnosis (1). It should be kept in mind that, OP should not be defined only as a loss of bone mass, because this entity is an important clinical syndrome, which causes many problems with respect to functional status and QoL. It is demonstrated that, patients who develop a vertebral compression fracture are at substantial risk for additional fractures and OP accounts for approximately half of all hip fractures and these fractures may cause chronic pain, disability, and death (2-4). If a vertebral fracture exists the focus shifts to rehabilitation and prevention of the next fracture (5). Currently more than 200 million people worldwide are estimated to be osteoporotic and it is predicted that; by 2050 there will be up to 21.3 million hip fractures each year globally (6) (<https://www.iofbonehealth.org/facts-statistics>). Compared to other osteoporotic fractures, hip fractures require special attention given the high mortality risk associated.(7)

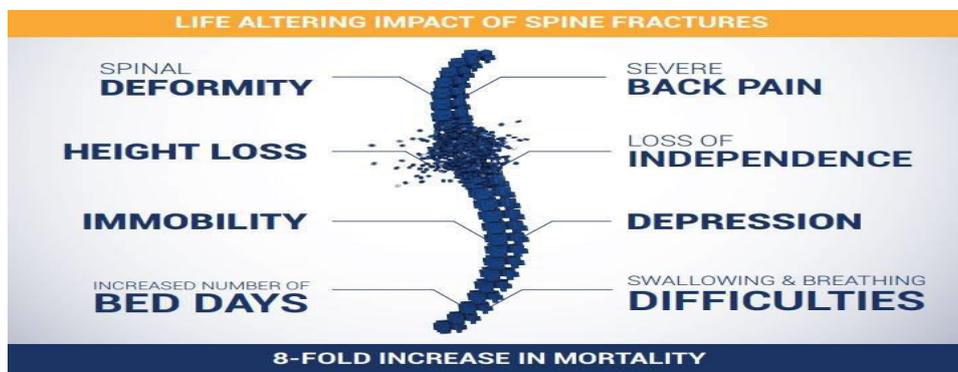


Avoiding social interactions due to low self-confidence, physical pain in everyday life activities, emotional problems, anxiety and fear of fracture, and depression caused by being dependent on others [9] are the negative consequence of this disease. In the present study, significant statistical difference was observed in the quality of life associated with the field of social activities between the two groups. Hassanzadeh [8] and Esmaili [10] showed that the mean score of the quality of life in patients with osteoporosis in the field of social activities was higher than those of the healthy people, reflecting the low quality of their lives in the field of social activities. Findings of the current study is consistent with their study results. Lee [11] mentioned that given the gradual and unexplained process of osteoporosis, disruption occurs in people’s social activities and consequently, their QoL declines.



According to studies, women with osteoporosis have a lower quality of life compared to healthy women, even when there is no fracture [12]. Some studies reported such differences only in significant social activities [13] thus additional

supplementary studies may be necessary to compare other areas of quality of life in patients with osteoporosis and healthy people. It seems that quality of life in patients with osteoporosis should be investigated even before the occurrence of fractures to develop effective strategies for disease acceptance and dealing with it through performing counseling interventions, and providing appropriate support and care [14]. Quality of Life (QoL) is a broad multi-dimensional concept, which reflects all aspects of the welfare of an individual, including health status, as well as environmental, spiritual, and economic issues. Health-related QoL is especially associated with physical, psychological, and social health aspects as well as the effects of illness and treatment on these parameters [15]. Osteoporosis does not affect the quality of life per se but its complications and especially consequent fractures are the main factors in reducing the QoL [16, 17]. Given the impact of multiple factors on QoL [18], factors like environmental, geographical, cultural, ethnic, race, and even personal perception of QoL mentioned in Gil study [19], 34.1% osteoporosis prevalence in Fasa City, Iran [20], as well as lack of any study on this subject in Fasa, the researcher tried to assess the QoL of patients with osteoporosis. Focusing on the quality of life is important in order to identify educational, consulting, and treating needs and is the basis to improve QoL.



### III. DISCUSSION

Independent associations between health-related quality of life (HRQoL), physical function and pain in older women with osteoporosis and vertebral fracture found that lower levels of HRQoL were significantly linked to lower levels of physical function and higher levels of pain. Pain may influence several dimensions of HRQoL; therefore, an understanding of the complex underlying mechanisms of osteoporotic pain is important for its proper management. However, there is limited evidence that osteoporotic pain decreases after short-term exercise intervention, according to the authors. Thus, based on their findings, they recommend proper pharmacological pain management as part of interventions for patients with osteoporosis and vertebral fracture.[11]

Aerobic activity as well as strength training -- using weight machines, free weights, or elastic bands or just [doing] calisthenics -- can increase bone strength and reduce the risk of falling by improving balance and coordination".

Get plenty of calcium, a major building block of bone tissue. "Calcium gives bone its hardness and is very important for bone strength." Aim for 1,000 milligrams of dietary calcium per day if you're younger than 50 or a man age 50 to 70. Women age 50 and older and men age 71 and older need a total of 1,200 milligrams daily, according to the National Osteoporosis Foundation. That translates to three servings of high-calcium foods like milk, yogurt, cheese, or calcium-fortified citrus juice or cereal.[15]

### IV. RESULTS

Several tools are available to assess osteoporosis risk: the Simple Calculated Osteoporosis Risk Estimation (SCORE; Merck), Osteoporosis Risk Assessment Instrument (ORAI), Osteoporosis Index of Risk (OSIRIS), and the Osteoporosis Self-Assessment Tool (OST). These tools seem to perform similarly and are moderately accurate at predicting osteoporosis. The FRAX tool (University of Sheffield), which assesses a person's 10-year risk of fracture, is also a commonly used tool. The FRAX tool includes questions about previous DXA results but does not require this information to estimate fracture risk. Because the benefits of treatment are greater in persons at higher risk of fracture, one approach is to perform bone measurement testing in postmenopausal women younger than 65 years who have a 10-year FRAX risk of major osteoporotic fracture (MOF) (without DXA) greater than that of a 65-year-old white woman without major risk factors. For example, in the United States, a 65-year-old white woman of mean height and weight<sup>7</sup> without major risk factors has a 10-year FRAX risk of MOF of 8.4%.<sup>4,8</sup> In comparison, a 60-year-old white



woman of mean height and weight<sup>7</sup> with a parental history of hip fracture has a 10-year FRAX risk of MOF of 13%. [18]

Although the risk of osteoporosis and osteoporotic fractures generally increases with age, the presence of multiple risk factors at a younger age may indicate that the risk-benefit profile is favorable for screening with bone measurement testing.

The most commonly used bone measurement test used to screen for osteoporosis is central DXA; other screening tests include peripheral DXA and quantitative ultrasound (QUS). Central DXA measures BMD at the hip and lumbar spine. Most treatment guidelines recommend using BMD, as measured by central DXA, to define osteoporosis and the treatment threshold to prevent osteoporotic fractures. All the osteoporosis drug therapy studies reviewed by the USPSTF used central DXA to determine eligibility for study enrollment. Peripheral DXA measures BMD at the lower forearm and heel. Quantitative ultrasound also evaluates peripheral sites and has similar accuracy in predicting fracture risk as DXA, while avoiding the risk of radiation exposure; however, it does not measure BMD. Peripheral DXA and QUS are measured with portable devices and may be less costly and more accessible than central DXA measurement [14]

## V. CONCLUSION

World Osteoporosis Day on 20 October focussed the awareness of the population on this widespread condition. 6.3 million of the over 50s in Germany are affected and every year 885,000 people develop it for the first time.

In osteoporosis, the body loses bone mass because too little calcium is being deposited in the bones. They grow porous and may break. The spinal column bends forwards and a "dowager's hump" can develop. The body's centre of gravity shifts forwards and the risk of falling rises. Osteoporosis is an insidious process and in many cases is not diagnosed until after a vertebral fracture has occurred. [17]

Studies have proved that the risk of a new fracture is 3.2 times higher after the first vertebral fracture, 9.8 times after the second and 23.3 times after the third. In order to strengthen the bones, improve posture and relieve pain, guideline-compliant osteoporosis treatment<sup>3</sup> combines modern drugs, physical exercise and back braces that straighten the spine (such as Spinomed from medi). If necessary, your doctor can prescribe one after a vertebral fracture; the prosthetist/orthotist fits it individually.

The patient simply puts the back brace (such as Spinomed\*) on like a rucksack and fastens it at the front with the Velcro fastener. The strap system and the back rod exert noticeable tension forces on the back and always remind the patient to adopt the correct posture. The tension effect causes reflex contraction of the trunk muscles in the back and abdomen (= biofeedback). The back brace strengthens the muscles and can relieve pain. This will lower the tendency to sway and reduces the risk of falling and possibly suffering new fractures. The muscle-strengthening effect of Spinomed\* and Spinomed active\*\* has been proved in two randomised clinical trials [20]

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