



International Journal of Multidisciplinary Conference Proceedings

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Nutritional and Lifestyle Interventions in the Management of Osteoporosis

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KEYWORDS	ABSTRACT
Osteoporosis, Nutrition, Lifestyle, Bone Health, Exercise, Micronutrients, Phytoestrogens	Osteoporosis remains a major public health concern characterized by reduced bone mass and micro architectural deterioration, leading to increased fracture risk at the common sites (hip, wrist, spine, ribs). Nutritional and lifestyle interventions play a pivotal role in both prevention and management. Adequate intake of calcium, vitamin D, vitamin K, protein, magnesium, and other essential micronutrients is fundamental for optimal bone mineralization and skeletal strength. Regular physical activity, particularly resistance and weight-bearing exercises, stimulates bone remodeling, improves muscle strength, and minimizes fall-related fractures. Conversely, modifiable risk factors such as a sedentary lifestyle, coffee and salt intake, low estrogen, smoking, and excessive alcohol consumption exacerbate bone loss. Recent evidence highlights the beneficial effects of phytoestrogens, dairy products, probiotics, and anti-inflammatory dietary patterns on bone metabolism and oxidative stress. This review emphasizes the need for an integrated, evidence-based approach combining nutritional optimization, structured exercise, and behavioral modification to enhance bone health and mitigate the global impact of osteoporosis.
ARTICLE HISTORY	
Date of Publication:30-10-2025	
Conference Organizer(s)	
University of Lahore, Sargodha Campus, Pakistan & Research Consultancy on Social & Management Development	
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Volume-Issue-Page Number	3(1) 18
Citation	Khan, F. A., Umer, M., Ali, S., Yassin, I. G., Nayila, N., & Gul, H. (2025). Nutritional and Lifestyle Interventions in the Management of Osteoporosis. <i>Proceedings of the 2nd International Conference on Artificial Intelligence, Social Transformation, and Scientific Progress (ICASST-2025), International Journal of Multidisciplinary Conference Proceedings</i> , 3(1).