International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

The Burden of Musculoskeletal Disorder Through the Lens of WHO Definition of Health: A Literature Review

Dr. Tage Sepi[1], Dr. Somsankar Mukherjee[2]

[1]Assistant Professor, Department of Physiotherapy, IGTAMSU
[2]Professor, Department of Physiotherapy, IGTAMSU

Abstract

Background: Musculoskeletal disorders are one of the major causes for disability, leading to health and socioeconomic burden. The onset of the pain may start mild, allowing individuals to ignore it as it might not hamper their daily activities. But are these conditions so small enough to be ignored? Most literature search has said about the impact of musculoskeletal disorder in various occupations, health, quality of life etc. Despite extensive research on musculoskeletal disorder, limited attention has been given to viewing musculoskeletal disorders within the holistic framework of WHO definition of health.

Objective: The review aims to analyse the possible impact of musculoskeletal disorder in an individual's life in the context of the WHO definition of health.

Method: A conscientious search of recent articles from 2021-2025 was done in Google scholar, to find the impact of Musculoskeletal disorders in an individual's health and quality of life. The articles focused on studies conducted in various population and occupational groups.

Results: Findings revealed that musculoskeletal disorders had a negative impact on an individual overall physical, mental and social well-being by causing physical pain, mental stress and anxiety, resulting to decrease in social participation.

Conclusion: Musculoskeletal disorders when viewed through the Lens of WHO definition emerge as multidimensional conditions that require a holistic approach. The review highlights the need for integrated strategies in the treatment, management and prevention of musculoskeletal disorders.

Keywords: Musculoskeletal disorder, Physical wellbeing, Mental wellbeing, Social wellbeing.

INTRODUCTION

Musculoskeletal disorder is an umbrella term that includes symptoms arising from the joints, muscles, fascia, tendons, bones, Synovial capsules, ligaments, nerves and spinal discs. The common symptoms include pain, joint stiffness, tingling and numbness in the muscle, reduced mobility and functional impairment. Musculoskeletal disorders are among the leading cause of long term disability and illness, especially in the elderly. Pain being one of the chief complains in MSDs, arise due to repetitive motion and prolong static postures. Postural deviations can reduce muscular efficiency, predisposing individuals to pain and pathological musculoskeletal conditions.[1] The National Institute for Occupational Safety and Health (NIOSH), in the USA, defines Musculoskeletal Disorder (MSD) as "A disorder and injury that affects a part of the body's musculoskeletal system, which includes bones, nerves, tendons,

ligaments, joints, cartilage, blood vessels and spinal discs". [2] MSDs are said to be the leading cause of disability worldwide, leading to 17% of all years lived with disability, globally.[2,3] Many studies have found that MSDs are more common among women than in men. Population growth and aging workforce are said to be an important factors, which have elevated the prevalence of MSDs worldwide. Although musculoskeletal disorder may not be a life-threatening condition, but it needs to be taken seriously as it accounted for one of the major condition leading to limited mobility due to pain, ultimately leading to poor quality of life. It has also been observed as one of the major cause for early retirement leading to decline in societal contribution to his/her maximum capacity.[3] In 2019 China, India and the USA ranked as the top 3 country in terms of prevalence and numbers of Disability adjusted life years and Years lived with disability.[4] The major risk factors for the rise in musculoskeletal conditions are known to be poor posture, prolong sitting time in front of the screen, poorly designed ergonomics[5], high level stress, movement disorders, repetitive movement of a particular joint, psychosocial risk factors, work place hazards, aging, smoking and obesity. Prolonged static posture due to the work demand can overload the muscular structures which results into increase risk of musculoskeletal disorder. [6-10] Musculoskeletal conditions are found to be common not only among industrial sector or Healthcare employees but also among the general population. [11-13]

WHO defines health as "A state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". The word 'complete' in the definition describes the three aspects of well-being. Wellbeing is multidimensional, the holistic definition emphasizes that health must be understood beyond the absence of illness, encompassing functional capacity, psychological resilience and social participation. [14,15]

This study aims to understand the impact of musculoskeletal disorder in an individual's life on the context of definition of Health by World Health Organization. Though many studies have focused on the impact of musculoskeletal disorder in different population, no study was found to study musculoskeletal disorder through the Lens of WHO definition of health. The articles for the study were searched from Google scholar and only those published in English from 2020-2025 were included in the study based on the language understood by the researcher.

Musculoskeletal disorder and Physical well-being:

Physical wellbeing is the absence of disease and an active lifestyle, free from fatigue and pain.[16] Excessive Physical workload, Prolonged and improperly performed sedentary work, insufficient physical activity, awkward sitting and standing postures in workplace may all give rise to musculoskeletal conditions.[17] As the condition progresses towards chronic stage, it may lead to temporary or lifelong limitations in mobility and dexterity. Low back pain, neck pain, shoulder pain, wrist pain and knee pain are some of the most common musculoskeletal pain found in various occupations like beauticians, nurses, physiotherapist, surgeons, computer worker, gamers, teachers and farmers.[18-20] The intensity of the pain varies in different joints based on the demand of the work. Osteoarthritis is found to be one of the most common musculoskeletal conditions causing pain, stiffness and restricted movement. Osteoporosis, osteopenia, rheumatoid arthritis are some of the major musculoskeletal conditions whose prevalence is increasing sharply overtime worldwide.[18] Development of carpel tunnel syndrome is found to be prevalent in jobs that required repetitive movement of the hand and wrist, particularly in computer users giving rise to symptoms such as tingling, numbness, paraesthesia and hand pain.[21-23] One of the long term effect of musculoskeletal condition

may be the Chronic pain, which in itself is classified as a disease under the International Classification of disease (ICD-11). [24] Chronic pain results in decline of physical function and there by Physical wellbeing. [25]

Musculoskeletal disorder and mental health:

WHO defines mental health as "A state of mental well-being that enables people to cope with the stresses of life, to realize their abilities, to learn well and work well, and to contribute to their communities. Mental health is an integral component of health and well-being and is more than the absence of mental disorder". [26] Work stress and negative mood has found increase subjective sensitivity to pain, which has been reported to raise the musculoskeletal conditions, conversely it is also found that MSDs aggravates negative mood leading to stress, anxiety and depression and thus reduce the general health status. [27] MSDs are found to have a negative impact on an individual's mental state, which further leads to the development of mental health problems. [28] Chronic Musculoskeletal pain and reduced physical function increases the risk of mental health issue such as fatigue, sleeping problems, depression and anxiety.[29] In long lasting musculoskeletal pain, mental health issues may affect the ability to cope with and recover from chronic pain. Work related musculoskeletal strain and sprain is found to increase the risk and prevalence of anxiety and depression in workers post trauma. [30] Chronic condition of pain are said to alter the regions of brain responsible for the processing of emotional stimuli thereby causing a bidirectional relationship between pain and depression. [31] Insomnia is found to be the one of the mental health issue due to MSDs. [32] A good sleep has a major effect on mental, physical and social well-being as well as a good productivity, whereas insufficient sleep increases pain and fatigue. [33] Many studies have also found a positive correlation between occupational stress and work related musculoskeletal disorder. [34,35]

Musculoskeletal disorder and social well-being:

The concept of social well-being refers to an individual's ability to build in social relationship and contributing to the welfare of the society. [16] An individual's worth in the society is measured through his or her ability to contribute towards the society. Symptoms of musculoskeletal disorder mostly pain is seen to interrupt the participation of an individual in their social roles, especially in the workplace.[36] Musculoskeletal disorders are considered to be the largest contributors in the development of occupational disease burden in the workplace. Conditions arising due to MSDs may vary according to one's occupation demand. Many studies have identified the impact of musculoskeletal disorder at different workplace and have analysed that they are the major cause of chronic disability, sick leave absence, reduced work productivity and quality of life.[37] Higher frequency of absenteeism and reduced work productivity in the workplace due to musculoskeletal disorder has been associated with reduced organizational efficiency and profitability which further leads to early retirement of an individual or the need of replacing the employee to contribute to the overall economic impact. The inability to participate in social activities and maintain social relationships has also been connected with social isolation and loneliness which further deteriorates the psychological health of a being, including loss of self-esteem. [38] Musculoskeletal disorder has also shown to decrease the ADL capabilities leading to diminished life satisfaction. [39] Overall quality of life in an individual with musculoskeletal disorder has shown to have a negative correlation. [40]

Conclusion

In conclusion, the narrative review weaves together the diverse impact of musculoskeletal disorder in an individual's overall well-being, affecting Physical, mental and social aspects of life as defined by WHO definition of health. Understanding these interconnected effects highlights the need for comprehensive approaches to manage and prevent MSDs, ultimately improving overall health and quality of life.

REFERENCE

1. Maria Paula Pacheco, Paulo Jose Carvalho, Luis Cavalheiro, Filipa Manuel Sousa et.al, Prevelance of Postural Changes and musculoskeletal disorders in young adults. Int. J.Environ.Res.Public Health 2023, 20, 7191.
2. Andrew M. Briggs, Joanne E. Jordan, Deborah Kopansky-Giles, Saurab Sharma, Lyn March, Carmen Huckel Schneider, Swatee Mishrra, James J. Young, Helen Slater et. Al, The need for adaptable global guidance in health systems strengthening for musculoskeletal health: A qualitative study of international key informants. Global Health Research and Policy (2021) 6:24.
3. Roberta Bonfiglioli, Yohama Caraballo-Arias et.al, Epidemiology of work related musculoskeletal disorders. Curr Opin Epidemiol Public Health 2022, 1:18-24.
4. Jin et.al, Global Pattern, trend and cross-country inequality of early musculoskeletal disorders from 1990 to 2019, with projection from 2020 to 2050. August 9 2024, Med 5: 943-962.
5. Marina Milakovic, Helena Koren et.al, Telework related risk factors for musculoskeletal disorder. Frontiers in public health. 2023, 11.
6. Aime Francois Tchicaya, Irel Narcisse Arnaud Aka, Any Adjooua Kra, et.al, Risk factors and economic impact of musculoskeletal disorders in employees of a port operations company in southwestern Cite D'Ivoire in 2020. Occupational Diseases and environmental Medicine, 2025, 13(2), 43-60.
7. Ningjing Chen, Daniel Yee Tak Fong, Janet Yuen Ha Wong et.al, Health and economic outcomes associated with musculoskeletal disorders Attributable to high body mass index in 192 countries and Territories in 2019. JAMA network open, 2023, 6(1).
8. Jaya Tiwari, Pritam Halder, Divya Sharma et.al, Prevalence and association of musculoskeletal disorders with various risk factors among older Indian adults: Insights from a nationally representative survey, Plos one, October 23, 2024, 19(10).
9. L. J. Fan et.al, Ergonomic risk factors and work-related musculoskeletal disorders in clinical Physiotherapy. Frontiers in public health, 20 December 2022. DOI 10.3389/fpubh.2022.1083609
10. Sharon M. H. Tsang et.al, Excessive use of electronic devices among children and adolescents is associated with musculoskeletal symptoms, visual symptoms, psychosocial health, and quality of life: a cross-sectional study. Frontiers in public health, 29 June 2023. doi: 10.3389/fpubh.2023.1178769.
11. Mekuanent Asmare Yizengaw et.al, Prevalence and factors associated with work-related musculoskeletal disorder among health care providers working in the operation room. Annals of Medicine and Surgery 72 (2021) 10298.
12. Renukesh Shetty et.al, Correlation between Pain and Disability in Cervical and Lumbar Spine in Two-Wheeler Riders. Acta Scientific Orthopaedics, October 2022; 5 (10).
13. Dr Prajesh Kandalkar et.al, Prevalence of Riding Related Musculoskeletal Disorders and Disability Among Motorcyclists in Pune Region - A Cross-Sectional Study. Galore International Journal of

Applied Sciences and Humanities. June 2025;9(2).
14. Thomas Schramme et.al, Health as complete well-being: The WHO definition and beyond. Public health issue 2023, 16(3): 210-218.
15. Aaron Jarden et.al, What is wellbeing? Int. J. Environ. Res. Public Health **2023**, 20, 5006. https://doi.org/10.3390/ijerph20065006
16. ChenWang et.al, Redefining human Health: Physical wellbeing, mental wellbeing, Social wellbeing and environmental wellbeing. Chinese medical Journal 2023;136 (20).
17. Malgorzata Grabara, The association between physical activity and musculoskeletal disorders- a cross-sectional study of teachers. Peer J 22 February 2023.
18. Chiara Greggi, Virginia Veronica Visconti, Marco Albanese et.al, Work-related Musculoskeletal Disorders: A systematic Review and Meta-Analysis. Journal of clinical medicine, 2024, 13, 3964.
19. Aanchal Bijlwan, Ruchi Mishra, Sanket Bajpai, Sanjiv K Jha, Devanshi Gupta, Kaushiki Muley et.al, Prevalence and impact of musculoskeletal pain among female beauty service workers in Ujjain City: A cross-sectional Survey. RGUHS Journal of Physiotherapy,2025;5(1):11-15.
20. Andrew Nguyen, Philip Lee et.al, Addressing the growing burden of musculoskeletal diseases in the ageing US population: Challeges and innovations, May 2025, Vol 6.
21. Viviane Farid Fahmy, Muhamed Abdel Maguid Tolba Momen et.al, Prevalence, risk factors and quality of life impact of work related musculoskeletal disorders among school teachers in Cairo, Egypt. BMC public health, 2022; 22:2257.
22. Georgiana-Anca Vulpoi, Catalina Elena Bistriceanu et.al, Computer use and compressive neuropathies of the upper limbs: A Hidden Risk? Journal of Clinical Medicine, 2025, 14: 5237.
23. Shadi Amer, Dina Yamin, Nurul Ainun Hamzah et.al, Prevalence of Musculoskeletal Disorders and their associated risk factors among computer users. The Indonesian Journal of Occupation Safety and Health, April 2025, 14(1):56-66.
24. Sabrina Coninx et.al, Pain and the field of affordances: an enactive approach to acute and chronic pain. 2021,199: 7835-7863.
25. Christine Seel Ritchie et.al, Impact of persistent pain on function, congition and wellbeing of older adult. J Am Geriatr Soc. 2023 January; 71(1): 26–35. doi:10.1111/jgs.18125.
26. Melvyn Freeman, The world mental health report: transforming mental health for all. 2022 Sep 8;21(3):391–392. doi: 10.1002/wps.21018.
27. Xue Li, Xu Yang et.al, Associations of musculoskeletal disorders with occupational stress and mental health among coal miners in Xinjiang, China: a cross-sectional study. BMC Public Health 2021, 21:1327.
28. Xue Li, Ting Jiang et.al, The relationship between occupational stress, musculoskeletal disorders and the mental health of coal miners: The interaction between BDNF gene, TPH2 gene polymorphism and the environment. Journal of Psychiatric Research 2021, 135: 76–85.
29. Kirsti Krohn Garnaes, Siv Morkved et.al, Mental health among patients with chronic musculoskeletal pain and its relation to number of pain sites and pain intensity, a cross sectional study among primary health care patients. 2022;23:1115.
30. Andrea Marie Jones, Mieke Koehoorn et.al, Prevalence and risk factors for anxiety and depression disorders in workers with work related musculoskeletal strain or sprain in British Columbia, Canada: a comparison of men and women using administrative health data. Occup Environ Med 2021;0:1–9. doi:10.1136/oemed-2020-106661.

31. Maria Sole Chimenti, Giulia Lavinia Fonti et.al, The burden of depressive disorders in musculosketal diseases: Is there an association between mood and inflammation? Ann Gen Psychiatry (2021) 20:1 https://doi.org/10.1186/s12991-020-00322-2
32. Remziye Cici et.al, Musculoskeletal disorders increases the insomnia severity in nurses. Sleep Sci. 2022;15(Special 1):1-6.
33. Fatih Okan. The Relationship of Musculoskeletal System Disorders with Sleep Quality Among Office Workers. 2023, 33:3:316-321.
34. Russo F, Di Tecco C, Fontana L, Adamo G, Papale A, Denaro V, et al. Prevalence of work related musculoskeletal disorders in Italian workers: is there an underestimation of the related occupational risk factors? BMC Musculoskelet Disord. 2020;21(1):738.
35. Soo Jeong, Byoung –Hee-Lee, The moderating effect of work-related musculoskeletal disorders in relation to occupational stress and health-related quality of life of construction workers: a cross-sectional research. BMC Musculoskeletal Disorders.2024; 25:147.
36. Musaed Z. Alnaser, Effect of Work-Related Musculoskeletal Disorders on Psychosocial Health and Well-Being : A Qualitative Study. Journal of Allied Health, Winter 2021; 50: 4.
37. Stefano Amatori, Erica Gobi et.al, Physical activity, musculoskeletal disorders, burnout, and work engagement: A cross-sectional study on Italian white collar employees. Front. Public Health 12:1375817. doi: 10.3389/fpubh.2024.1375817.
38. Ahmed Abdullah Alsayed Alhashim et.al, Work related musculoskeletal disorders and their impact on quality of life : A comprehensive review. Saudi J Med Pharm Sci, 11(5): 360-377.
39. Yuanpeng Zhu, Haoran Zhang et.al, Musculoskeletal Multimorbidity Burden and Trajectoryin Relation to Later-Life Holistic Well-Being AmongMiddle-Aged and Elderly Individuals: A Prospective Study. Orthopaedic Surgery, 2024; 16:3129–3140
40. Majdi Hashem, Reem A AlMohaini et.al, Impact of Musculoskeletal pain on Health-Related Quality of Life Among adults in Saudi Arabia. Cureus 27 March, 2024, 16(3): 1-13.