

INTERPRETING WRMDS THROUGH A MULTIDIMENSIONAL DISABILITY FRAMEWORK

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DOI: <https://doi.org/10.5281/zenodo.17413611>

Abstract

Work disability is a highly relevant topic in occupational and social security health, involving clinical, social, and economic aspects. This article aims to review the determining factors, assessment, social impact, and rehabilitation strategies related to disability caused by Work-Related Musculoskeletal Disorders (WRMDs). A literature review was conducted using databases from the past five (5) years, covering publications from 2020 to 2025. The databases used were PubMed/MEDLINE, LILACS, Cochrane Library, SciELO, Scopus, and Web of Science, using the keywords: work disability, occupational health, WRMD, rehabilitation, assessment, social security, and Boolean operators: work disability AND WRMD; rehabilitation AND WRMD; assessment AND WRMD; workers' health OR occupational health; WRMD NOT treatment. Reflections on determining factors, assessment, rehabilitation, and the social impacts of such disorders were established. Promoting health, preventing harm, identifying demands involving such disorders, conducting early assessments, and providing appropriate rehabilitation are essential to minimize WRMD-related disability.

Keywords: work disability, occupational health, rehabilitation, assessment, social security.

I. Introduction

Work disability is a condition that limits an individual's ability to perform their work tasks, which can be temporary or permanent. Proper assessment and management are essential to ensure workers' quality of life and the sustainability of social security systems.

Several factors influence disability, including clinical, psychosocial, and environmental aspects. Recent studies emphasize the importance of multidisciplinary approaches in assessment and rehabilitation (Silva et al., 2021; Oliveira & Santos, 2022).

Assessment must be carried out carefully, considering clinical, functional, and psychosocial factors. Standardized tools, such as the Functional Capacity Questionnaire, have been increasingly used (Lima et al., 2020).

Work disability has a significant impact on individuals' lives and the country's economy, increasing health and social security costs (Martins & Pereira, 2023).

Work-Related Musculoskeletal Disorders (WRMDs) are a set of musculoskeletal conditions caused or worsened by occupational activities. They are one of the main causes of work absence and disability,

negatively impacting workers' quality of life and generating high costs for health and social security systems (Silva et al., 2021). These conditions affect muscles, tendons, nerves, joints, and other musculoskeletal system tissues. They are caused or worsened by job-related factors, particularly repetitive movements, poor posture, excessive effort, or vibration. WRMDs can result in pain, limited movement, temporary or permanent disability, affecting both health and productivity, increasing costs for employers and the healthcare system (Longen et al., 2024).

Various factors contribute to the development of WRMDs, including biomechanical, postural, environmental, and psychosocial factors. Repetitive motion, overexertion, vibration, and psychosocial stress increase the risk (Pereira et al., 2020; Oliveira & Santos, 2022). Early rehabilitation programs and multidisciplinary interventions have shown effectiveness in restoring work capacity (Costa et al., 2022). In this context, from health promotion to rehabilitation demands and the need to prevent injuries, this article aims to review determining factors, assessment, social impact, and rehabilitation strategies for WRMD-related disability.

II. Methodology

A literature review was conducted using databases covering the last five (5) years (2020–2025). Searches were made in PubMed/MEDLINE, LILACS, Cochrane Library, SciELO, Scopus, and Web of Science, using keywords: work disability, occupational health, WRMD, rehabilitation, assessment, social security, and Boolean operators: work disability AND WRMD; rehabilitation AND WRMD; assessment AND WRMD; workers' health OR occupational health; WRMD NOT treatment.

Inclusion criteria: articles that addressed at least two core focuses of the study.

Exclusion criteria: articles focused strictly on clinical treatment.

Selected articles were analyzed and synthesized, focusing on their timeliness, thematic depth, and informational quality. The results are presented descriptively and integrated into the discussion.

III. Discussion

Assessment of WRMD-related disability involves clinical examinations, functional evaluation, and standardized tools like pain scales and functionality questionnaires (Lima et al., 2020; Costa et al., 2022). WRMDs lead to high absenteeism, reduced productivity, and increased treatment and rehabilitation costs. The resulting disability significantly affects both the economy and the quality of life of workers (Martins & Pereira, 2023; Souza et al., 2022).

Ergonomic programs, active breaks, training, and multidisciplinary interventions have proven effective in reducing WRMD incidence and improving work capacity (Almeida & Rocha, 2021; Costa et al., 2022).

In Brazil, professional rehabilitation is key to minimizing the effects of work disability, promoting the social and economic reintegration of disabled workers (Santos et al., 2019). According to Law No. 8.213/1991, the Social Security system plays a central role in providing rehabilitation services aimed at maintaining or adapting workers to their limitations.

Additionally, the Unified Health System (SUS) and the National Institute of Social Security (INSS) are the main bodies involved in vocational rehabilitation. Ordinance GM/MS No. 1.060/2004 established guidelines for rehabilitation, promoting integrated actions among health, social security, and labor sectors (Brazil, 2004). However, studies show there are difficulties in effective policy implementation, especially in under-resourced regions (Silva & Oliveira, 2020).

Rehabilitation in Brazil includes medical evaluations, physiotherapy, occupational therapy, and work adaptation guidance. Nonetheless, there are challenges such as lack of resources, professional training, and limited access to services, which reduce program effectiveness (Lima et al., 2018). Moreover, the integration between health and social security sectors needs improvement to ensure a more holistic approach (Pereira & Souza, 2021).

WRMD evaluation should be multidimensional, encompassing clinical, ergonomic, and psychosocial aspects for a comprehensive understanding of the worker's condition (Almeida et al., 2021).

Clinical evaluation includes standardized tools like the Nordic Musculoskeletal Questionnaire, collecting data on symptom location and severity (Silva & Pereira, 2020). Physical assessment should also include strength tests, range of motion, and palpation to detect injuries or inflammation (Costa et al., 2022).

Ergonomic assessment is critical and involves analyzing work environment, posture, repetitive movements, and physical demands. Tools such as the Ergonomic Checklist and task analysis are commonly used to identify risk factors (Martins & Oliveira, 2019). A recent review emphasizes that combining subjective and objective assessments improves risk identification accuracy (Pereira et al., 2022).

Psychosocial factors—stress, workload, and job satisfaction—also play key roles in symptom development and persistence (Lima & Souza, 2021). Integrating these approaches allows for more complete evaluations and effective intervention planning.

Recent advancements include the use of assistive technologies and early rehabilitation strategies. Research indicates that multidisciplinary approaches and strengthened health care networks can improve labor reintegration outcomes (Costa & Almeida, 2022). Still, expanding access and improving service quality remains necessary.

The link between ergonomic risks and WRMD development is widely documented, particularly in systematic reviews consolidating prior evidence. Silva et al. (2018) highlight the central role of ergonomics in preventing WRMD through adjustments that reduce risks such as poor posture and repetitive motions. A review by Pereira et al. (2019) found that ergonomic strategies—like workstation adjustments, active breaks, and training—produce positive results, especially in office and manufacturing settings. Costa & Silva (2021) reinforce that ergonomic evaluations must be continuous and adaptable to workplace changes.

Finally, a recent review by Souza et al. (2022) emphasizes that integrating assistive technologies and automated ergonomic assessment tools can enhance risk identification and enable personalized interventions, reducing WRMD prevalence.

IV. Final Considerations

A thorough understanding of the factors behind work disability is crucial for developing effective public policies and rehabilitation strategies. Ideal initiatives involve health promotion, harm prevention, early evaluation, and proper rehabilitation to minimize WRMD-related disability and support worker health and healthcare system sustainability.

Vocational rehabilitation in Brazil is a vital tool for promoting social and labor inclusion of disabled workers. Despite recent advances, there is still a need to strengthen public policies, improve professional training, and expand access to services—ensuring more effective and humanized rehabilitation.