

Risk Factors for the Occurrence of Musculoskeletal Disorders (MSDs) in Furniture Workers: Literature Review

Maharani Nusara Ardhi¹, Widodo Hariyono², Rosyidah³

^{1,2,3}Master of Public Health Program specializing in Occupational Safety and Health, Faculty of Public Health, Universitas Ahmad Dahlan Yogyakarta

ARTICLE INFO

Keywords:

risk factors,
Musculoskeletal Disorders,
Furniture Workers

ABSTRACT

Musculoskeletal complaints are one of the many complaints that often arise and are related to ergonomic problems. These complaints are caused or worsened by work activities and conditions, such as lifting movements, repetitive movements, unnatural postures, pushing or pulling movements, static work and working in confined areas. According to data from the 2018 Labor Force Survey (LFS), it shows that the prevalence rate of musculoskeletal disorders in workers is very high, namely 1,144,000 cases with a distribution of cases affecting the back of 493,000 cases, the upper limbs or neck 426,000 cases, and the lower limbs under 224,000 cases. The aim of this research is to find out and identify risk factors that cause musculoskeletal complaints in furniture workers. The research method was carried out using a literature review. The literature search was carried out online, namely via Google Scholar and the Garuda Portal, resulting in 4 national articles. Data processing is carried out by identification, filtering, inclusion and eligibility based on article findings which are then analyzed. The data used is secondary data whose sources are obtained from scientific articles/journals, books, documents and laws. The risk factors that cause complaints of musculoskeletal disorders in furniture workers have several risk factors which are divided into two, namely individual factors and work factors. Individual factors include age, length of service, BMI, and smoking habits. Meanwhile, work factors include work posture and work attitude. The risk factors that cause serious musculoskeletal complaints are age, length of service and work posture.

Email :

maharaninusaraardhi@gmail.com

Copyright © 2023 Journal Eduhealth. All rights reserved is

Licensed under a Creative Commons Attribution- Non Commercial 4.0 International License (CC BY-NC 4.0)

1. INTRODUCTION

Implementing ergonomics is a must for every workplace so that discomfort and other complaints can be minimized (Tarwaka, 2015). If there is a mismatch between the work station and the worker, it can result in disturbances or complaints in the musculoskeletal system. Musculoskeletal complaints are complaints in parts of the skeletal muscles that are felt by a person ranging from very mild complaints to very painful. If the muscles receive static loads repeatedly over a long period of time it can cause complaints in the form of damage to the joints, ligaments and tendons. These complaints are usually referred to as musculoskeletal disorders (MSDs).

There are two groups of musculoskeletal disorder complaints, namely temporary complaints (reversible) and persistent complaints (persistent). Temporary (reversible) complaints are complaints that occur when the muscles are under load and will disappear if the load is removed. Meanwhile persistent complaints are complaints that will not go away even if the load placed on the muscles has been removed. Types of musculoskeletal disorder complaints include Carpal Tunnel Syndrome (CTS), Hand Arm Vibration Syndrome (HAVS), Low Back Pain (LBP), Peripheral Nerve Entrapment Syndrome, and so on.

According to data from the 2018 Labor Force Survey (LFS), it shows that the prevalence rate of musculoskeletal disorders in workers is very high, namely 1,144,000 cases with a distribution of cases affecting the back of 493,000 cases, the upper limbs or neck 426,000 cases, and the lower limbs.

Risk Factors for the Occurrence of Musculoskeletal Disorders (MSDs) in Furniture Workers: Literature Review. Maharani Nusara Ardhi, et.al

under 224,000 cases (Sekaaram and Ani, 2017). In the European Union, musculoskeletal disorders are the most common health problems among workers, around 25-27% of workers complain of back pain and 23% muscle pain (Suryanto, 2020). The prevalence of musculoskeletal complaints in Indonesia based on those diagnosed by doctors is 7.9% with the highest prevalence occurring at the age of 65-74 years, followed by the 55-64 year age group at 15.5% and the 45-54 age group at 11.1%. (Ministry of Health, 2018)

Complaints of musculoskeletal disorders (MSDs) can occur due to several factors including work factors, environmental factors, psychosocial factors and individual factors (Tarwaka, 2019). Work factors or working conditions include awkward postures, high workloads and work duration. Musculoskeletal complaints are also related to individual factors including age, gender, length of service, BMI, exercise habits, smoking habits, physical strength, and anthropometry. Environmental factors can include poor lighting and physical exposure such as temperature and vibration. Psychosocial factors such as work stress can influence the occurrence of musculoskeletal disorders (MSDs). Complaints can be made worse by work activities and conditions, such as lifting movements, repetitive movements, unnatural postures, pushing or pulling movements, static work and working in confined areas.

The aim of this study is to find out and identify risk factors that cause musculoskeletal disorders in furniture workers. By knowing the risk factors that cause MSDs in workers, it will be easier to carry out prevention and control so that it will increase worker productivity.

2. METHOD

This research uses a literature study method (literature review). Search for research literature using the internet as reference material. From the search results, 10 articles were obtained. Of the 10 articles obtained, there were 4 articles that met the inclusion criteria. Fulfillment of inclusion criteria includes publication year ranging from 2018-2023, national journals indexed by Google Scholar, respondents in research on furniture workers, type of research in the form of quantitative or qualitative research, journals in the open access category, and having an international standard serial number (ISSN). . Data processing is carried out by identification, filtering, inclusion and eligibility based on article findings which are then analyzed. The data used is secondary data whose sources are obtained from scientific articles or journals, books and documents.

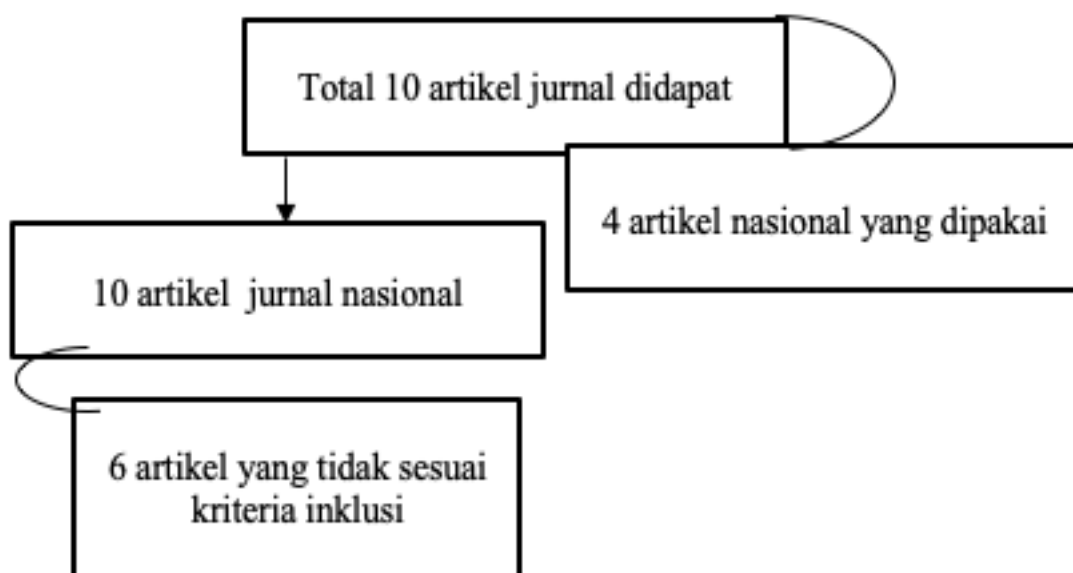


Figure 1. Literate Review Method

3. RESULTS AND DISCUSSION

Of the 10 articles identified, 6 articles were excluded because they did not meet the predetermined inclusion criteria. Of the 4 research article findings taken, they came from national journals.

Table 1. Journal Description of Risk Factors Causing MSDs Complaints

Author Name and Year	Title	Objective	Method	Results
Maidiani, Indri., et al. (2018)	Factors Associated with the Incident of MSDs in Furniture Workers (Study at CV.	Knowing the relationship between work period, age, habits smoking, BMI and work attitude with MSDs complaints	<i>Cross-sectional</i>	There is a relationship between length of service and age with complaints MSDs, and an there is no relationship between habits smoking, BMI, and work attitudes with complaints MSDs.
Cahyany, Agustin SR, et al. (2019)	The relationship between work posture and Musculoskeletal Disorders Complaints in Furniture Workers in Serenan Juwiring Village, Klaten	To find out the relationship between work posture and complaints of musculoskeletal disorders among furniture workers in Serenan Village, Juwiring, Klaten.	<i>Cross-sectional</i>	There is a relationship between posture work with complaints of musculoskeletal disorders in furniture workers in the village Serenan Juwiring Klaten
Jerro H, Tambuwun., et al. (2020)	The Relationship Between Age and Years of Work and Musculoskeletal Complaints skeleton in Furniture Workers in Leilem Dua Village, Sonder District	Knowing that there is a relationship between age and years of work with musculoskeletal complaints in furniture workers in Leilem Village Two Sonder Districts.	<i>Cross-sectional design</i>	There is a significant relationship between age and years of service and complaints musculoskeletal problems in furniture workers in Leilem Dua Village, Sonder District
Humairah , Siti., et al. (2022)	Analysis of the Influence of Working Posture and Working Period on MSDs Complaints on Furniture Craftsmen in Pasar Monday Village, Central Amuntai District	For identify and analyze the relationship between work posture and work period with complaints <i>muscoloskeletal disorders</i> (MSDS) in furniture craftsmen in Pasar Monday Village, Central Amuntai District.	<i>Cross-sectional</i>	There is an influence between work posture and work mass with MSDs in furniture craftsmen

Discussion

Based on the results of 4 journal article findings that have been reviewed, the risk factors that cause complaints of musculoskeletal disorders in furniture workers are obtained. These risk factors are divided into two categories, namely individual factors and work factors. The author divides risk factors into two, namely, individual factors and work factors.

Individual Factors

Age

Age is one of the risk factors causing musculoskeletal disorders. Some experts say age is one of the main triggers for muscle complaints (Ferusgel and Rahmawati, 2018). The results of research conducted by Maidiani, Indri., et al. (2018), showed that 27 furniture workers aged >30 years experienced musculoskeletal complaints. The results of this research are in line with research conducted by Jerro H, Tambuwun., et al. (2020) on furniture workers who reported that there was a relationship between age and musculoskeletal complaints. As a person gets older, muscle endurance and strength decreases, resulting in increased muscle complaints or disorders. Disorders of the muscles can cause pressure on the muscles and bones, causing pain.

Years of service

Work period is the length of time a person works calculated from the first time they start working. Working period is a risk factor for musculoskeletal disorders, because working period is an indicator of a person's level of exposure in the workplace (Ferusgel and Rahmawati, 2018). The results of research conducted by Jerro H, Tambuwun., et al. (2020), shows that there is a relationship between length of service and MSDs complaints. The higher the length of service, the greater the complaints that workers will feel because work period is an accumulation of a person's work activities carried out over a long period of time. If this activity is carried out continuously it will cause disturbances in the body. These results are in line with research conducted by Humairah, Siti., et al. (2022), shows that the length of work period influences the occurrence of musculoskeletal complaints. Therefore, it can be said that the longer a person has worked, the higher the risk of causing musculoskeletal disorders.

Body Mass Index/BMI

Body mass index is an indicator factor used to see the nutritional status of workers. The fatter a person is, the greater the risk of experiencing musculoskeletal complaints. Being underweight can result in the risk of infectious diseases, whereas if you are overweight it can increase the risk of degenerative diseases. The results of research conducted by (Maidiani, Indri., et al. 2018), show that there is no relationship between BMI and MSDs complaints. The results showed that there was no relationship between BMI and MSDs complaints, possibly due to other factors such as bone strength. BMI only measures the ratio between weight and height, so it cannot determine bone strength.

Smoking habit

Smoking habit is one of the risk factors that can influence MSDs complaints. The smoking habit can reduce the capacity of the lungs to consume oxygen, so that oxygen in the blood becomes low which causes fatigue and ultimately muscle pain. Workers who have a smoking habit are 2.84 times more likely to experience musculoskeletal complaints compared to workers who do not have a smoking habit. The results of research conducted by (Maidiani, Indri., et al. (2018), show that there is no relationship between smoking habits and MSDs complaints. This research is not in line with research conducted by (Hanif, 2020), showing that smoking habits can influence MSDs complaints. This happens because someone who has a smoking habit can reduce lung capacity. When lung capacity decreases, the oxygen consumed will also decrease, so the body's freshness will also decrease.

Job Factors

Work Posture

Work posture is the attitude of the worker's body when doing work. Work posture is one of the risk factors causing musculoskeletal disorders. Work postures that cause musculoskeletal disorders in workers are inappropriate work postures that are carried out continuously for a long time (Sjarifah and

Rosanti, 2019). Improper working posture increases the risk of MSDs in the cervical, thoracic and lumbar spine at least twofold (Leite et al., 2019). The results of research conducted by Cahyany, Agustin SR, et al. (2019), stated that there is a relationship between work posture and musculoskeletal complaints. This is because workers work in a work posture that deviates from the normal position. Workers work in various positions such as bending, squatting, sitting, standing and rotating and the work is static and repetitive. The results of this research are in line with the research of Humairah, Siti., et al. (2022), stated that unergonomic body posture will increase musculoskeletal events.

Work attitude

Work attitude is a description of the body position when doing a job. Inappropriate work attitudes at work can cause an increase in workload so that workers are unable to exert their abilities optimally. Inappropriate work attitudes generally occur because the characteristics of task guidance, work tools and work stations are not appropriate

(Fauziah., et al. 2018) The results of research conducted by (Maidiani, Indri., et al. (2018), show that there is no relationship between work attitudes and MSDs complaints. The factor that allows there to be no relationship between work attitudes and MSDs complaints is movement stretching carried out by workers. In this study, stretching was not observed so it is not known how often workers stretch. Muscle stretching functions to reduce the sensation of pain in the joints and can increase the supply of oxygen to body tissues which can improve blood circulation and the accumulation of lactic acid in It is not formed in the body, so it does not cause muscle pain.

4. CONCLUSION

Based on research results, the risk factors that cause complaints of musculoskeletal disorders in furniture workers have several risk factors which are divided into two, namely, individual factors and work factors. Individual factors include age, length of service, BMI, and smoking habits. Meanwhile, work factors include work posture and work attitude. The risk factors for the causes above that increase serious musculoskeletal complaints are age, years of work, and work posture .

REFERENCES

- [1] Kemenkes RI (2018) 'Laporan Nasional RISKESDAS 2018', Badan Penelitian dan Pengembangan Kesehatan, p. 198.
- [2] http://labdata.litbang.kemkes.go.id/images/download/laporan/RKD/2018/Laporan_Nasional_RKD2018_FINAL.pdf.
- [3] Ferusgel, A. and Rahmawati, N. (2018) 'Faktor Yang Mempengaruhi Keluhan Musculoskeletal Disorder'S Pada Supir Angkutan Umum Gajah Mada Kota Medan', Jurnal Kesehatan Masyarakat, 9(2), pp. 461–7. Available at: <http://jurnal.untad.ac.id/jurnal/index.php/Preventif>
- [4] Maidiani, Indri., dkk. (2018). Faktor - faktor Yang Berhubungan dengan Kejadian MSDs Pada Pekerja Mebel (Studi di CV. X Semarang).Universitas Muhammadiyah Semarang: Artikel Ilmiah. <http://repository.unimus.ac.id/>
- [5] Jerro H. Tambuwun., dkk. (2018). Hubungan Antara Usia dan Masa Kerja dengan Keluhan Muskuloskeletal pada Pekerja Mebel di Desa Leilem Dua Kecamatan Sonder. Medical Scope Journal (MSJ). 1(2):1-6 DOI: <https://doi.org/10.35790/msj.1.2.2020.27201>
- [6] Hanif, A. (2020). Hubungan antara umur dan kebiasaan merokok dengan keluhan MSDs pada pekerja angkat angkut UD Maju Makmur Kota Surabaya. MTPH Journal, Volume 4., No. 1. <https://doi.org/10.33086/mtphj.v4i1.715>
- [7] Fauziah, Niswaton. (2018). Hubungan Antara Posisi Tubuh Dengan Keluhan Muskuloskeletal Pada Petani Padi Di Desa SilongoKecamatan Lubuh Tarok Kabupaten Sijunjung. Vol.5., No.2. JOM FKP.
- [9] Tarwaka. 2019. Ergonomi Industri Dasar-Dasar Pengetahuan Ergonomi dan Aplikasi di Tempat Kerja Edisi II. Harapan Press Surakarta.
- [10] Humairah, Siti., dkk. (2022). Analisis Pengaruh Postur Kerja dan Masa Kerja dengan Keluhan MSDs Pada Pengrajin Mebel di Desa Pasar Senin Kecamatan Amuntai Tengah. Universitas Islam Surakarta.<http://eprints.uniskabjm.ac.id/id/eprint/12914>

- [11] Cahyany, Agustin S.R., dkk. (2019). Hubungan postur kerja dengan keluhan musculoskeletal disorders pada pekerja mebel di Desa Serenan, Juwiring, Klaten. Program Studi Kesehatan: Fakultas Ilmu Kesehatan UMS. Naskah Publikasi.
- [12] Sjarifah, I. and Rosanti, E. (2019) 'Analisis Tingkat Risiko Keluhan Musculoskeletal Disorders (MSDs) Pada Pekerja Usaha Kecil Konveksi Bangsri, Karangpandan', *Journal of Industrial Hygiene and Occupational Health*, 3(2), pp. 156–165. Available at:
- [13] <http://ejournal.unida.gontor.ac.id/index.php/JIHOH>.
- [14] Suryanto D., dkk. (2020). Ginanjar R, Fathimah A. Hubungan risiko ergonomi dengan keluhan musculoskeletal disorders (MSDs) pada pekerja informal bengkel las di Kelurahan Sawangan Baru dan Pasir Putih Kota Depok Tahun 2019. *Promotor*. Vol.3(2):196.
- [15] Sekaaram, V. and Ani, L. S. (2017) 'Prevalensi Musculoskeletal Disorders (MSDs) pada Pengemudi Angkutan Umum di Terminal Mengwi, Kabupaten Badung-Bali', *Intisari Sains Medis*, 8(2), pp. 118–124. [doi: 10.1556/ism.v8i2.125](https://doi.org/10.1556/ism.v8i2.125)