

**FACTORS RELATED TO COMPLAINTS OF MUSCULOSKELETAL DISORDERS (MSDS) IN CLEANING SERVICE WORKERS****Azila Rahimah Dalimunthe*, Nadya Ulfa Tanjung, Delfriana Ayu Astuty**

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[*azilarahimahdalimunthe@gmail.com](mailto:azilarahimahdalimunthe@gmail.com)**ABSTRACT**

One of the jobs that has the potential to experience MSDs complaints is Cleaning Service workers who perform work repeatedly for a long time so that it can potentially damage the Musculoskeletal system. This study aims to determine the factors associated with MSDs complaints in Cleaning Service officers at RSUP Haji Adam Malik Medan. This study used quantitative analytical methods with Cross Sectional design, where the population amounted to 262 people. Determination of samples using the Lemeshow formula with stratified random sampling techniques with an error rate of 5%, obtained a sample of 150 people. Data results through statistical analysis using Chi square test. It is known that there is a relationship between age (pvalue = 0.039), gender (pvalue = 0.030), length of work (pvalue = 0.038), sports activities (0.028) with complaints of MSDs. With the existence of factors related to complaints of MSDs that are at risk of occurring in Cleaning Service workers of RSUP Haji Adam Malik Medan, it is expected for every worker to do adequate rest, by stretching if they start to feel sore in the joints or when do a job that can cause with complaints MSDs in order to still be able to do the job effectively.

Keywords: cleaning service; individual factors; musculoskeletal disorders

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INTRODUCTION

Musculoskeletal disorders (MSDs) are disorders of the skeletal muscles caused by muscles receiving static loads repeatedly and continuously for a long time and will cause complaints in the joints, ligaments and tendons. In general, *Musculoskeletal Disorders* are in the form of pain, injury or abnormalities in the skeletal muscular system, including nerve tissue, tendons, ligaments, muscles or joints (Salamah. I. I, 2020). The causes of *musculoskeletal* complaints are excessive muscle stretching, repetitive activity, unnatural work attitude, secondary causes and combination causes according to Tarwaka, 2010 in (Jalajuwita & Paskarini, 2015). From several studies such as research (Ajhara et al., 2022) said that there is a significant relationship between sex factors and *Musculoskeletal* complaints in sewing workers. From the study (Handayani, 2011) also said that the factors associated with complaints of MSDs were age variables with pvalue = 0.030, working period variables with p value = 0.004 and exercise habit variables with p value = 0.003.

The World Health Organization (WHO) in 2021 stated that around 1.71 billion people experience *Musculoskeletal Disorders* worldwide. Among *Musculoskeletal* disorders, lower back pain causes the highest number with a prevalence of 568 million people (WHO)

(Gleadhill et al., 2021). Based on Riskesdas data in 2018, the prevalence of *Musculoskeletal* diseases in Indonesia is 7.9%. The highest prevalence based on diagnosis is in Aceh (13.3%) then Bengkulu (10.5%) and Bali (8.5%) (Riskesdas, 2018). Occupational risk factors include aspects such as posture, workload level, frequency and duration of work. While individual characteristic factors involve elements such as length of service, age of workers, smoking habits, gender, stress levels, history of *Musculoskeletal Disorders* (MSDs) and Body Mass Index (BMI). Environmental risk factors involve elements such as vibration, lighting, noise, *cold stress* and *heat stress* (Kattang et al., 2018). So in this case the workers are not just working but they also have to pay attention to ergonomic working conditions or environments.

Ergonomics is the science, art and application of technology to harmonize or balance between all facilities used both in activities and rest with human abilities and limitations both physical and mental so that the overall quality of life becomes better (Tarwaka, 2015). Ergonomics can also be interpreted as fitting *the job to workers* (Simanjuntak & Susetyo, 2022). Health and safety in today's workplace is not only a responsibility that must be carried by workers, but also an obligation that must be recognized by the work system itself. The long-term impact of *Musculoskeletal Disorders* can result in chronic disease conditions, disability, medical care needs and financial burdens for individuals experiencing stress due to *Musculoskeletal Disorders* (Pratama & Yuantari, 2016). Hospitals are full of potential hazards caused by various factors such as biological, chemical, physical, ergonomic factors along with other factors that cause occupational diseases and occupational accidents. Hospitals must think about so that workers, including *cleaning service* workers, avoid occupational diseases (Warmuni & Rusminingsih, 2020).

Cleaning Service Officer is a person who is responsible for the task of maintenance and cleaning services in a place, office, institution, institution both government and private (Ratnasari, n.d.). In general, *Cleaning Service* officers at Adam Malik Medan Hospital have the task of cleaning every room in the hospital area such as sweeping, mopping, cleaning glass and dusty or dirty parts and transporting garbage in the hospital area. If the work position is not optimal and the work method is less ergonomic for a long time and repetitive, it can result in a number of problems for workers, such as pain in certain areas according to the type of work performed, such as the hands, feet, abdomen, back and waist. In addition, there may be a decrease in motivation and comfort during work, as well as disturbances in body movements, such as difficulty moving the legs, hands or head/neck (Wardani & Multazam, 2023). In a longer duration, there may be changes in body shape such as tilt and bone bending. In *cleaning service* workers, routine tasks involve standing for long periods, bending over and having to move from one place to another with different types of work that cause their work position to be unergonomic. *Cleaning Service* personnel work for 8 hours per shift with 1 hour rest, so special attention is needed to the position of both legs when standing, as this can affect their body stability.

RSUP H. Adam Malik is a Class A Hospital in accordance with the Decree of the Minister of Health no. 335 / Menkes / SK / VII / 1990 and also as a Teaching Hospital, in accordance with the Decree of the Minister of Health No: 502 / Menkes / SK / IX / 1991, dated September 6, 1991 which is technically under the Directorate General of Health Services of the Ministry of Health of the Republic of Indonesia located at Jalan Bunga Lau No. 17 Medan Tuntungan. On January 11, 1993 it officially became the Education Center of the Faculty of Medicine, University of North Sumatra which was inaugurated by the President of the Republic of Indonesia on July 21, 1993 (Adam & Medan, n.d.). Based on the primary data obtained by the researchers, H. Adam Malik Hospital has 262 *Cleaning Service* officers

stationed in each building where the building consists of 26 buildings. Cleaning Service Officer of RSUP H. Adam Malik also has work shifts, namely 180 morning shifts (06.00-14.00), 56 day shifts (14.00-22.00) and 26 night shifts (22.00-06.00). Then based on a preliminary survey conducted on several cleaning service workers have a lot of work with work done repeatedly so that it allows them to experience complaints of Musculoskeletal Disorders. The purpose of this study serves to determine the factors associated with complaints of Musculoskeletal Disorders in Cleaning Service personnel at RSUP Haji Adam Malik Medan.

METHOD

This study used quantitative analytical methods with Cross Sectional design, where the population amounted to 262 people. Determination of samples using the Lemeshow formula with stratified random sampling techniques with an error rate of 5%, obtained a sample of 150 people. Data results through statistical analysis using Chi square test. Data collection was carried out by interviews using questionnaires and observation of respondents. Data analysis uses statistical applications with Chi-Square tests and is presented in the form of tables and narratives. This study used an interview method with Nordic Body Map (NBM) filling which was useful to determine the factors associated with complaints of Musculoskeletal Disorders in Cleaning Service personnel at Haji Adam Malik Hospital Medan.

RESULTS

Table 1.
Frequency Distribution of Respondent Characteristics (n=150)

Variabel	F	%
Age		
21 – 30 year	68	45,3
31- 40 year	48	32,0
41 – 50 year	34	22,7
Gender		
Man	34	22,7
Woman	116	77,3
Shift Work		
Morning	104	69,3
Afternoon	32	21,3
Evening	14	9,3
Years Of Service		
< 1 year	5	3,3
1 – 5 year	41	27,3
> 5 year	104	69,3
Do you like exercising?		
Yes	79	52,7
No	71	47,3
If yes, which body parts are often used when exercising?		
Not exercising	70	46,7
Neck	6	4,0
Hand	34	22,7
Foot	36	24,0
Back	4	2,7
How often do you exercise?	saudar a/i	
Rarely (0-3 times/month)	108	72,0
occasionally (1-2 times/week)	28	18,7
Frequently (3-4 times/week)	14	9,3

Table.1 shows that *Cleaning Service workers* at RSUP Haji Adam Malik Medan with the characteristics of respondents based on age, namely 21-30 years old 68 people (45%), 31-40 years old 48 people (32%) and 41-50 years old 34 people (22.7). So it can be concluded that the results of the highest percentage based on the age of *Cleaning Service officers* are aged 21-30 years which amounted to 68 people with a percentage of 45%.Based on the results of Table.1 shows that *Cleaning Service workers* at RSUP Haji Adam Malik Medan with respondent characteristics based on Gender, namely 34 men (22.7%) and 116 women (77.3%). So it can be concluded that from the highest percentage based on the gender of *Cleaning Service officers*, namely the female gender which amounted to 116 people with a percentage of 77.3%.

Based on the results of Table.1 shows that *Cleaning Service workers* at RSUP Haji Adam Malik Medan with respondent characteristics based on work shifts, namely with morning shifts of 104 people (69.3%), day shifts of 32 people (21.3%) and night shifts of 14 people (9.3%). So it can be concluded that from the highest percentage based on *the work shift* of *Cleaning Service officers*, namely *the morning shift* amounted to 104 people with a percentage of 69.3%. Based on the results of Table.1 shows that *Cleaning Service workers* at RSUP Haji Adam Malik Medan with respondent characteristics based on Working Period are <1 years 5 people (3.3%), 1-5 years 41 people (27.3%) and >5 years 104 people (69.3%). So it can be implied that from the highest percentage based on the length of service of *Cleaning Service officers*, which is >5 years, there are 104 people with a percentage of 69.3%.Based on the results of Table.1 shows that *Cleaning Service workers* at RSUP Haji Adam Malik Medan with sports activities are Yes 79 people (52.7%) and Not 71 people (47.3%). So it can be concluded from the highest percentage based on the likes of exercising, *Cleaning Service officers*, namely with the Yes option totaling 79 people with a percentage of 52.7%.

Based on the results of Table.1 shows that *Cleaning Service workers* at RSUP Haji Adam Malik Medan with body parts that are often used when exercising are not exercising 70 people (46.7%), neck 6 people (4.0%), hands 34 people (22.7%), legs 36 people (24.0%) and back 4 people (2.7%). So it can be concluded from the highest percentage based on body parts that are often used when exercising, namely not exercising amounting to 70 people with a percentage of 46.7%. Based on the results of Table.1 shows that *Cleaning Service workers* at RSUP Haji Adam Malik Medan with how often to exercise are rarely (0-3 times / month) 108 people (72.0), sometimes (1-2 times / week) 28 people (18.7%) and often 14 people (9.3%). So it can be concluded from the highest percentage based on how often to exercise, which is rarely 108 people with a percentage of 72.0%.

Table 2.
Frequency Distribution of MSDs

Variable	f	%
MSDs Complaints		
Minor Complaints	40	26,7
Moderate Complaints	110	73,3

Table.2 shows that *Cleaning Service workers* at RSUP Haji Adam Malik Medan have risk factors for *Musculoskeletal Disorders in the* category of mild complaints 40 people (26.7%) and moderate complaints 110 people (73.3%). So it can be concluded that from the highest percentage, namely with moderate complaints, there are 110 people with a percentage of 73.3%.

Table 1.
Chi-square *test results* between Age and MSDs

Chi-square test results between Age and MSDs							
Age	MSDs Complaint Rate				Total		P value
	Minor Complaints		Moderate Complaints				
	f	%	f	%	f	%	
21-30 year	25	36,8	43	63,2	68	100	0,039
31-40 year	9	18,8	39	81,3	48	100	
41-50 year	6	17,6	28	82,4	34	100	

Table.1 shows that the age of 21-30 years of *Cleaning Service* workers who experienced minor complaints of MSDs amounted to 25 people (36.8%) and those who experienced moderate complaints amounted to 43 people (63.2%), aged 31-40 years *Cleaning Service* workers who experienced minor complaints amounted to 9 people (18.8%) and those who experienced moderate complaints amounted to 39 people (81.3%), aged 41-50 years *Cleaning Service* workers Those who experienced mild complaints amounted to 6 people (17.6%) and those who experienced moderate complaints amounted to 28 people (82.4%). Chi-square *test results* between ages with MSDs were $0.039 < 0.05$. It can be concluded that between age and MSDs has a significant relationship.

Age is one of the risk factors for *Musculoskeletal Disorders*. Basically, complaints of the *Musculoskeletal* system can be felt in the working age, which is the age range of 25 to 65 years. Age is closely related to complaints of skeletal muscles. Some experts say age is one of the main triggers for muscle complaints (Rahmawati, 2018). There are studies that say that workers aged ≥ 38 years have a high chance of *Musculoskeletal Disorders* (Prahastuti et al., 2021). It can be said that the older a worker gets, the more muscle complaints are felt (Rahmawati, 2018). The results of this study are in line with research (Nurftah et al., 2021) that there is a significant relationship between the age of tea picking workers and *Musculoskeletal complaints* with a value of $p = 0.005 (< 0.05)$. Researchers concluded that with the increasing age of workers there is a decrease in organ function that causes *musculoskeletal complaints*.

Table 3.
Chi-square *test results* between Sex and MSDs

Chi-square test results between sex and MSDs							
Gender	MSDs Complaint Rate				Total		P value
	Minor Complaints		Moderate Complaints				
	f	%	f	%	f	%	
Man	14	41,2	20	58,8	34	100	0,030
Woman	26	22,4	90	77,6	16	100	

Table 3. shows that male *Cleaning Service* workers who experienced minor complaints amounted to 14 people (41.2%) and those who experienced moderate complaints amounted to 20 people (58.8%), female gender in *Cleaning Service* workers who experienced minor complaints amounted to 26 people (22.4%) and those who experienced moderate complaints amounted to 90 people (77.6%). Chi-square *test results* between Gender and MSDs are $0.030 < 0.05$. It can be concluded that between sex and MSDs have a significant relationship. Sex is a condition related to muscle strength between women and men. Based on the results of the study, according to researchers that men have quite a lot of energy coverage compared to women. Because women are not good in terms of physical energy in their daily activities, while men rely more on physical energy to carry out their daily activities. Women's physical power is about two-thirds that of men's physical power. Women in general rarely use physical energy such as movement and so on along with more sitting / silent in their activities. Therefore, women are more often affected by back pain and other complaints. So that women are at greater risk of MSDs than men who more often use physical energy in their daily activities to expend excess energy and sweat. Thus, women have a higher rate of *Musculoskeletal Disorders* (Diani & Hafifah, 2019).

The results of this study are in line with research (Alruwaili et al., 2023) statistical test results show that sex has a relationship with MSDS, namely $p = 0.001 (< 0.05)$ in Health Care workers in Northern Saudi Arabia. This is also in line with the tarwaka theory which states gender greatly affects the level of risk of muscle complaints, this happens because isiolgis, ability, female muscles are indeed lower than men. Women's muscle strength is only about two-thirds of men's muscle strength, so men's muscle endurance is higher than women's. The average female muscle strength is approximately only 60% of the strength of male muscles, especially the muscles of the arms, back and legs.

Table 4.
Chi-square test results between Working Period with MSDs

Chi-square test results between Working Period with MSDs							
Years of service	MSDs Complaint Rate				Total		Nilai p
	Minor Complaints		Moderate Complaints				
	f	%	f	%	f	%	
<1 year	3	60,0	2	40,0	5	100	0,038
1-5 year	15	36,6	26	63,4	41	100	
>5 year	22	21,2	82	78,8	104	100	

Table.3 shows that *Cleaning Service* workers with a working period of <1 year who experienced minor complaints amounted to 3 people (60.0%) and those who experienced moderate complaints amounted to 2 people, 1-5 years of work *Cleaning Service* workers who experienced minor complaints amounted to 15 people (36.6%) and those who experienced moderate complaints amounted to 26 people (63.4%), work period >5 years *Cleaning Service* workers Those who experienced mild complaints amounted to 22 people (21.2%) and those who experienced moderate complaints amounted to 82 people (78.8%). The results of the *Chi-square* test between Work Period and MSDs are $0.038 < 0.05$. It can be concluded that between age and MSDs has a significant relationship.

Length of service refers to how long you have worked since you first started working. Working period is a risk factor for *Musculoskeletal Disorders*, because working period is one indicator of a person's level of exposure at work (Rahmawati, 2018). MSDs do not appear briefly, but rather chronic diseases that have long stages to develop and cause pain. Compared to workers who have <5 years of exposure, workers with 5 years of > experience may increase the risk of MSDs. Workers who have worked for a long time, plus have a heavy workload can cause muscle aches and pains because they are burdened continuously (Purba & Lestari, 2017). This is because overloading with prolonged time on the *Musculoskeletal* system can cause pain in certain parts of the body (Sjarifah & Rosanti, 2019). Workers with long working hours are 1.6 times more likely to develop symptoms of MSDs than those who work shorter hours (Purba & Lestari, 2017). Therefore it can be said that the longer a person has a period of service, the higher the risk of developing symptoms of MSDs. The results of this research are in line with research (Devi et al., 2017) stating that statistical tests obtained a value of $p = 0.033 (< 0.05)$ which means that the variable of working period has a significant relationship with complaints of MSDs in rice transportation activities at PT Buyung Poetra Pangan Pegayut Ogan Ilir.

Table 5.
Chi-square test results between Sports Activities and MSDs

Chi-square test results between Sports Activities and MSDs							
Sports Activities	MSDs Complaint Rate				Total		P value
	Minor Complaints		Moderate Complaints				
	f	%	f	%	f	%	
Yes	27	34,2	52	65,8	79	100	0,028
No	13	18,3	58	81,7	71	100	

Table. 5 Shows that *Cleaning Service* workers who like sports activities with mild

complaints amounted to 27 people (34.2%) and moderate complaints amounted to 52 people (65.8%), *Cleaning Service workers* who did not like sports activities with minor complaints amounted to 13 people (18.3%) and those who experienced moderate complaints amounted to 58 people (81.7%). Chi-square test results between exercise activities and MSDs were $0.028 < 0.05$. It can be concluded that between exercise activities and MSDs have a significant relationship. (Tarwaka & Sudiajeng, 2004) According to physical freshness and physical ability is influenced by exercise habits because when exercising means training the work of muscle functions. According to NIOSH (1997) regular exercise habits are closely related to physical freshness, so exercise can affect complaints of MSDs. And according to (Manja et al., 2020) exercise habits are a form of physical activity that can lose weight, lack of exercise which can be a cause of obesity due to lack of fat burning and little energy used.

The results of this study are in line with research (Goalbertus & Putri, 2022) stating that the statistical test obtained a p value of 0.002 (< 0.05), which means that the variable likes to exercise has a meaningful relationship with complaints of MSDs in dental professional students. This is also in line with research (Diani & Hafifah, 2019) which states that statistical tests obtained p values of 0.003 (< 0.05) which means that it has a significant relationship between likes to exercise and complaints of MSDs in nurse workers. If you exercise regularly can prevent obesity with all its negative consequences, such as respiratory muscles, heart muscles, muscles contained in the skeleton of the human body. From the results of the study also stated that exercise habits get a P-value result of 0.004 which means it has a significant relationship with complaints of MSDs. Workers with the habit of not exercising are 2,627 times more at risk of experiencing complaints of MSDs than workers with exercise habits (Marcilin & Situngkir, 2018).

DISCUSSION

The results of univariate analysis showed that the majority of respondents of *Cleaning Service workers* at RSUP Haji Adam Malik Medan were in the age range of 21-30 years with a percentage of 45.3%. This age group is most dominant compared to other age groups, namely 31-40 years (32%) and 41-50 years (22.7%). These findings suggest that the *cleaning service* workforce is dominated by younger workers who may have better physical endurance than older workers. However, although young people tend to have a lower risk of *musculoskeletal* complaints compared to older age groups, they are still not immune to the risk. The gender distribution shows that *Cleaning Service workers* at RSUP Haji Adam Malik Medan are dominated by women with a percentage of 77.3%. This difference may be due to gender stereotypes or hiring preferences that skew more towards female workers for cleaning work. This condition is important to note because research shows that women are more prone to *musculoskeletal* complaints than men, mainly because of differences in muscle strength and daily physical habits that are lower in women than men.

From the results of *shift* work analysis, it was found that most *cleaning service* workers work in the *morning shift* (69.3%), with a much higher percentage compared to the day shift (21.3%) and night shift (9.3%). This suggests that more cleaning work is done in the morning which may be due to higher hygiene needs at that time. This *shift* arrangement can also affect the rate of *musculoskeletal complaints*, as heavy, repetitive workloads on the morning *shift* can increase the risk of complaints. Based on length of service, the majority of workers have more than 5 years of service (69.3%), indicating that many *cleaning service* workers have worked for a long time at the hospital. Long periods of work can lead to an increased risk of *musculoskeletal* complaints due to repeated exposure to heavy physical workloads. Workers who have only worked less than 1 year are only 3.3%, which is not long enough to

feel the negative impact of their work.

Exercise activities were also analyzed and it was found that 52.7% of *cleaning service workers* stated that they like to exercise, while 47.3% do not like to exercise. However, even though there are a number of workers who exercise, the frequency of exercise is still low with the majority of workers exercising infrequently (0-3 times / month). Sports activity can be a protective factor against *musculoskeletal* complaints, but the low frequency of exercise among workers suggests that the potential benefits of exercise in reducing the risk of *musculoskeletal* complaints may not be optimal. Bivariate analysis showed that there was a significant association between age, sex, length of work and exercise activity with *musculoskeletal complaints* (MSDs). For example, the older age of *cleaning service* workers shows a higher rate of moderate complaints. Gender also showed significant differences, with women experiencing moderate complaints higher than men. Longer service life (>5 years) is also associated with higher *musculoskeletal* complaints. Similarly, workers who do not exercise regularly have higher complaints than those who exercise regularly.

This conclusion is in line with the existing literature, which suggests that factors such as age, sex, length of work and physical activity are closely related to the risk of *musculoskeletal complaints*. Previous research supports these findings by showing that older, female workers, with long working hours and less physical activity tend to have a higher risk of MSDs. Therefore, interventions that focus on reducing workload, increasing exercise frequency and quality, and better *shift* management can help reduce the risk of *musculoskeletal* complaints among workers *Cleaning Service*.

CONCLUSION

Based on research that has been conducted on 150 respondents who work as Cleaning Service workers at Haji Adam Malik Hospital Medan in 2024, it can be concluded that between the ages with MSDs who experience mild complaints at the age of 21-30 years there are 25 people (36.8%) and those who experience moderate complaints at the age of 21-30 years are 43 people (63.2%). The table between age and MSDs gets a P value of $0.039 < 0.05$ which means there is a relationship between age and MSDs. In the table between gender and MSDs who experienced mild complaints, there were 26 women (22.4%) and those who experienced moderate complaints were found in the female sex 90 people (77.6%). The table between sex and MSDs gets a p value of $0.030 < 0.05$ which means there is a relationship between sex and MSDs. In the table between working period with MSDs who experienced minor complaints, there were 22 workers who had a working period of >5 years (21.2%) and those who experienced moderate complaints were found in workers who had a working period of >5 years totaling 82 people (78.8%). In the table between working period with MSDs get a p value of $0.038 < 0.05$ which means there is a relationship between working period and MSDs. In the table between sports activities and MSDs who experienced mild complaints in workers who like to exercise amounted to 27 people ((34.2%) and those who experienced moderate complaints were found in workers who did not like to exercise amounted to 58 people (81.7%). In the table between sports activities get p values of $0.028 < 0.05$ which means there is a relationship between sports activities and MSDs.

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