



## Factor analysis of the influence of Musculoskeletal disorders (MSDs) on the performance of midwives at Dr. H Hospital. Jusuf SK. Indonesia

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### Abstract

Midwives play a crucial role in providing direct care to mothers throughout pregnancy, labor, and postpartum. Research reveals their heightened exposure to physical (e.g., pulling, pushing) and psychosocial factors (e.g., extended caregiving), as well as organizational challenges (e.g., insufficient equipment support), contributing to musculoskeletal disorders. These issues adversely affect long-term career planning, leading to decreased individual and workgroup performance. This study investigates the factors influencing musculoskeletal disorders and their impact on midwives' performance at RSUD Dr. H. Jusuf SK. The type of research used is observational analytical design cross-sectional. The research was carried out in June – July 2023 at RSUD Dr. H. Jusuf SK. The sample in this study was 51 respondents. Data collection uses questionnaires, sheets Rapid Entire Body Assessment (REBA), Nordic Body Map (NBM) Sheet, using scales, microtools, Angulus App. Data analysis using the Smart PLS program. The research results show that age has a direct effect on performance ( $p$ -value = 0.001) and there is no indirect effect on performance through Musculoskeletal Disorders (MSDs) ( $p$ -value = 0.622). Musculoskeletal Disorders (MSDs) have a direct effect on performance ( $p$ -value = 0.012). Body Mass Index (BMI) has a direct effect on performance ( $p$ -value = 0.003) and an indirect effect on performance through Musculoskeletal Disorders (MSDs) ( $p$ -value = 0.047). Work Posture has no direct effect on performance ( $p$ -value = 0.220) and has an indirect effect on performance through Musculoskeletal Disorders (MSDs). Workload has a direct effect on performance ( $p$ -value = 0.000) and has a direct effect on performance through Musculoskeletal Disorders (MSDs) ( $p$ -value = 0.001). Proportion of pain due to musculoskeletal Disorders (MSDs) for midwives, has a negative impact on the midwife's performance.

**Keywords:** Midwives, Musculoskeletal Disorders (MSDs), Performance Factors, Age, Workload.

### Full length article

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### 1. Introduction

One of the ergonomic dangers is Musculoskeletal Disorders (MSDs) which are the highest contributor to workplace-related morbidity rates. Musculoskeletal Disorders (MSDs) is the occurrence of damage to the muscular system in the human body which is caused by an imbalance in activity load on muscle and skeletal capabilities which significantly directly or indirectly reduces work productivity [1].

Musculoskeletal complaints have an impact on reducing productivity and work quality, and increasing absenteeism among workers. Workers who experience musculoskeletal complaints often have to lose time from work for the recovery or healing process which is difficult and takes a long time, thus having a detrimental impact on workers and the company or business owner [2]. According to a recent report by the United States Census Bureau (Federal agency), 40% of compensated disorders are Musculoskeletal Disorders (MSDs).

These disorders are related to work injuries and costs approximately 45-54 million dollars. Nearly 48% of all work-related illnesses are Work-Related Musculoskeletal Disorders (MSDs). According to research conducted in the US, 65% of all new cases of illness in the work environment are Musculoskeletal Disorders (MSDs). The prevalence and incidence of Musculoskeletal Disorders (MSDs) is higher in developing countries [3]. Data from the UK Central Bureau of Statistics (2018) also shows that people working in public health organizations experienced a decline in performance such as the highest rate of absence due to illness among all sectors including industrial workers in every year from 2013 to 2017, this attendance was due to ergonomic problems. In America, the health care sector has also reported much higher occupational injury rates than other sectors; 8.1% of cases were work-related injuries or disorders in 2017. Approximately, 50% of absences from the midwife profession during illness are caused by ergonomic problems, namely musculoskeletal disorders. This shows that health-related problems, especially Musculoskeletal disorders (MSDs), have a considerable impact on staff well-being and the economy. Musculoskeletal disorders (MSDs) among healthcare professionals can also impact patient care and safety, functional limitations and long-term career planning of individuals and also decrease individual and work group performance [4]. The midwife profession that cares for women in labor, especially midwives and specialist obstetricians, is at risk of developing musculoskeletal disorders. The role of midwives is to provide direct care to mothers during pregnancy, labor and after birth. Obstetricians have the responsibility to care for complicated or high-risk pregnancies. From the research results, this occupational group is highly exposed to physical factors (for example, pulling, pushing, and working in extreme positions to handle two patients: mother and baby at the same time), psychosocial factors (for example, being more sympathetic to mothers because they spend a long-time continuity of care), and organizational factors (e.g., lack of improved equipment support) that may lead to the development of musculoskeletal disorders [4].

## **2. Materials and methods**

### **2.1. Location and Research Design**

The research was conducted at RSUD Dr. H. Jusuf SK. in June – July 2023. The type of research used is observational analytic with a cross-sectional.

### **2.2. Population and Sample**

The population in this study were all midwives at RSUD Dr. H. Jusuf SK. handled the birthing process for 59 midwives. The sampling method used in this research was purposive sampling. Calculations in sampling using the Slovin formula obtained 51 respondents.

### **2.3. Method of collecting data**

This research data was collected directly by researchers, obtained from research objects through filling out questionnaires by respondents. Before filling out the questionnaire, respondents were given an explanation of the research objectives and how to fill out the questionnaire given by the researcher.

### **2.4. Data analysis**

The data will be analyzed using the Statistical Package for Social Science (SPSS) and Smart PLS programs to make it easier to describe and interpret the data that has been processed so that meaning can be obtained from the results of the research that has been carried out. Data analysis was carried out in three ways, namely univariate, bivariate and multivariate.

## **3. Results**

### **3.1. Sample Characteristics**

Table 1 shows that the largest age of respondents is in the young category, namely 38 respondents (74.5%) and the least age is in the old category, namely 13 respondents (25.5%). Based on education, the highest education level of respondents was D3, namely 32 respondents (62.7%) and the least education was Bachelor's degree, namely 1 respondent (2%). Based on body mass index (BMI), the highest BMI was in the fat category, namely 42 respondents (82.4%) and the lowest BMI was in the normal category, namely 3 respondents (5.9%). Based on work posture, the most respondents' work posture was in the non-ergonomic category, namely 42 respondents (82.4%) and the least work posture was in the ergonomic category, namely 9 respondents (17.6%). Based on workload, the highest workload of respondents was in the heavy category, namely 43 respondents (84.3%) and the least workload was in the light category, namely 8 respondents (15.7%). Based on Musculoskeletal Disorders (MSDs), Musculoskeletal Disorders (MSDs), the most respondents were in the severe category, namely 46 respondents (90.2%) and Musculoskeletal Disorders (MSDs), the least were in the mild category, namely 5 respondents (9.8%). Based on midwife performance, the majority of midwife performance was in the poor category, namely 32 respondents (62.7%) and the lowest midwife performance was in the good category, namely 19 respondents (37.3%). Table 2 shows that of the 51 respondents, the largest percentage in the age variable are respondents who are in the young category and suffer from severe Musculoskeletal Disorders (MSDs), namely 33 respondents (64.7%) and the lowest percentage are respondents who are in the old category. and experienced Musculoskeletal Disorders (MSDs) in the mild category, namely 0 respondents (0%). The highest percentage of the Body Mass Index variable are respondents who have a Body Mass Index in the fat category and experience Musculoskeletal Disorders (MSDs) in the severe category, namely 37 respondents (72.5%) and the lowest percentage are respondents who have a BMI in the normal and thin categories and experience Musculoskeletal Disorders (MSDs) were in the mild category, namely 0 respondents (0%). The largest percentage of the work posture variable is respondents who have a work posture in the non-ergonomic category and suffer from severe Musculoskeletal Disorders (MSDs), namely 40 respondents (78.4%) and the lowest percentage are respondents who have a work posture in the non-ergonomic category and experience Musculoskeletal problems.

Disorders (MSDs) in the mild category were 2 respondents (3.9%). The highest percentage of the workload

variable are respondents who have a heavy workload and experience Musculoskeletal Disorders (MSDs) in the severe category, namely 43 respondents (84.3%) and the lowest percentage are respondents who have a heavy workload and experience MSDS in the light category, namely 0 respondents (0%). In Table 3 based on the cross-tabulation results, Table 4.3 shows that of the 51 respondents, the largest percentage in the age variable were respondents who were in the young category and had poor midwife performance, namely 21 respondents (41.2%) and the lowest percentage were respondents who had the age category is old and the midwife's performance is in the good category, namely 2 respondents (3.9%). The highest percentage of the BMI variable are respondents who have a BMI in the fat category and have poor midwife performance, namely 21 respondents (41.2%) and the lowest percentage are respondents who have a Body Mass Index (BMI) in the normal category and have good midwife performance, namely 1 respondent (2%). The highest percentage of the work posture variable are respondents who have a work posture in the ergonomic category and have poor midwife performance, namely 28 respondents (54.9%) and the lowest percentage are respondents who have a work posture in the ergonomic category and have poor midwife performance, namely as many as 4 respondents (7.8%). The highest percentage of the workload variable are respondents who have a heavy workload and poor midwife performance, namely 29 respondents (56.9%) and the lowest percentage are respondents who have a light workload and poor midwife performance, namely as many as 3 respondents (5.9%). The largest percentage in the Musculoskeletal Disorders (MSDs) variable are respondents who have Musculoskeletal Disorders (MSDs) in the severe category and have poor midwife performance, namely 32 respondents (62.7%) and the lowest percentage are respondents who have MSDS in the mild category and have poor performance, midwives in the bad category, namely 0 respondents (0%).

#### 4. Discussion

##### 4.1. The Effect of Age on Performance Through Musculoskeletal Disorders (MSDs) as an Intervening Variable

Age is an important factor related to the presence of musculoskeletal complaints. The prevalence of musculoskeletal complaints increases as people enters their working lives. At the age of 35, people will usually begin to experience their first experience of feeling pain in their back. The age groups with the highest levels of back pain are the 20-24 years age group for men, and the 30-34 age group for women. Age-related musculoskeletal complaints are usually characterized by loss of muscle strength, increased bone fragility, loss of cartilage resilience, reduced ligament elasticity and redistribution of fat [5]. Research results show that there is a direct influence between age and the performance of midwives at Dr. H. Jusuf SK Regional Hospital. According to Hasibuan's (2003) theory, an individual's age influences their physical, mental condition, work ability, responsibility, and tendency to be absent. On the other hand, older employees are less physically fit, but work hard and have greater responsibilities [6]. The results of this research are in line with the research of Gusti et al. (2019)

which states that age has a significant influence on midwife performance. Midwives who are older ( $\geq 27$  years) are more likely to perform better than younger midwives. In some of the literature on performance, there is a tendency to conflate age and experience. More work experience as age increases so that performance increases [7]. The results of Aspita & Sugiono's 2019 research show that there is a relationship between age and performance. Midwives with an age of more than 35 years had a good performance 3.19 times greater than those with an age of less than 35 years ( $b=3.19$ ;  $CI= 1.62$  to  $4.75$ ;  $p<0.001$ ). Even though age has a direct influence on performance, age does not have a direct influence on Musculoskeletal Disorders (MSDs), then Musculoskeletal Disorders (MSDs) have a direct influence on the performance of midwives at RSUD dr. H. Jusuf SK. This is due to Musculoskeletal Disorders (MSDs). tendon sheath and most commonly involves the arms and back. There is no relationship between age and complaints Musculoskeletal Disorders (MSDs). This is because almost all midwives are in the young age category  $\geq 35$  years, namely 38 *bidan* (74.5%) category of young and old  $> 35$ , namely 13 midwives (25.5%). And 33 young midwives experienced MSDS complaints and 13 older midwives experienced MSDS complaints. This is because age can be a factor in someone experiencing MSDS complaints. At the age of 20-29, muscles have maximum strength, then after reaching 60 years of age, muscle strength decreases by 20%. The factors that have arisen previously, when combined with non-ergonomic work attitudes, can give rise to MSDS complaints [8]. There are 33 midwives at Dr. H. Jusuf SK experienced MSDS complaints from 38 midwives who were in the young age category, which was one of the factors where more people in the young age category experienced MSDS complaints because almost all of the midwives who handled childbirth were in the young midwife category. Midwives in the older category handle parturition in cases of emergency conditions such as large babies, shoulder dystocia (stuck shoulders), or breech birth, and thrombosis up to the anus (total perineal rupture). Research conducted by Ramdan et al. (2019) which obtained a p value of  $0.066 > 0.05$  so that age does not have a significant relationship with complaints of MSDS in female nurses at Haji Darjad Hospital, East Kalimantan. Research conducted by Madadzadeh et. al. (2020) obtained a p value of  $0.11 (p>0.05)$  which means that age does not have a significant relationship with MSDS complaints. Age was a predictor of right shoulder and upper back discomfort, with caregivers aged 30 years (inclusive) or older having a higher risk than those younger than 30 years. At the age of 30 years, there are setbacks such as tissue regeneration into scar tissue, decreased fluids, and tissue damage. This results in decreased stability in the muscles and bones. The older an individual gets, the higher the risk of the individual experiencing a decline in elasticity in the bones, thus triggering the appearance of symptoms [9]. Apart from this research, research that is in line is research conducted by Krishnan et al., 2021 which states that age is a problem. Age is one of the main risk factors in nurses with a high average prevalence of MSDS (97.3%).

Where is the Midwife at RSUD Dr. H. Jusuf SK, who handles the parturition process, consists of 51 midwives, most of whom are in their 30s. There is a relationship between Musculoskeletal Disorders (MSDs) and performance, this is

because, based on observations, it can be seen that the midwife at RSUD Dr. H. Jusuf SK has quite high mobility in carrying out his work so that walking and standing activities cannot be avoided. Apart from that, the number of patients who have to be treated is quite large, thereby increasing the mobility of midwives to assist with the birthing process. This mobility causes complaints to arise in several parts of their body. Their attitude to work tends to be in a repetitive bending position and tends to maintain an unergonomic body position, which causes complaints in several parts of their body. Midwives who experience complaints of musculoskeletal disorders can reduce their performance due to working time being used for rest. Nurses who experience complaints in several parts of their body are no longer able to work optimally because their body parts can no longer function properly. The number of midwives at Dr. H. Jusuf SK experienced complaints of pain in their body parts and there were several midwives who experienced pinched nerves (nucleus pulposus hernia), this made the midwives have to take leave from work, because the midwives had to receive physiotherapy treatment and surgery. The results of this research are in line with research by Mohammad Khandan et al. (2019), the average performance value was  $34.94 \pm 7.33$ . The difference between the number of musculoskeletal disorders and performance in various hospital departments was significant ( $p < 0.05$ ) as a result of which 142 nurses (92.8%) reported that over the past few years they had experienced pain in at least one of their body parts. Low back pain was reported the lowest (59.47%). Due to the high prevalence of pain in various parts of the body, productivity and performance will be reduced over a long period of time and increase health care costs.

#### ***4.2. The Effect of Body Mass Index (BMI) on Performance Through Musculoskeletal Disorders (MSDs) as an Intervening Variable***

Nutritional status of adults, especially those related to underweight and overweight. A body weight that is less than ideal, whether it is malnutrition or excess nutrition, can cause harm and problems to the body's health. The problem of undernutrition and overnutrition in adults (aged > 18 years) is an important problem, because apart from having a risk of certain diseases, it can also affect a person's productivity and performance. Nutritional status in this study is the normal or abnormal nutritional condition of workers measured based on Body Mass Index (BMI). A person is said to have normal nutritional status if the BMI measurement results are 18.5 – 25.0 and is said to be abnormal if the BMI measurement results are > 25.0. Based on the research results of the path analysis test in this study, it shows the influence of BMI (X2) on performance (Y2), where from the results of statistical tests the p value (0.003) < 0.05 is obtained, which means the p value is less than the significance level of 0.05 so there is a direct influence of BMI on performance. This is because based on the distribution of nutritional status, more respondents have the nutritional status of fat, namely 34 midwives. The results of this research are in line with research conducted on employees of the Directorate of Health Polytechnics, Ministry of Health, Medan in 2020, totaling 76 people, it was found that 53 people (100%) had abnormal nutritional status, and 23 people (100%) had normal nutritional status. for workers with obese nutritional status,

the person is less agile and slow at work [10]. Meanwhile, people who have a normal body weight will be more agile at work [11]. Research conducted by Hergenroeder, Andrea L., et al. (2019) showed that on performance-based measurements, obese individuals had slower walking speeds compared to the lean weight group. Linear regression analysis revealed that BMI attenuated the relationship between Self-report and Performance-Based Measures of Physical Function. There is an influence between BMI and Complaints of Musculoskeletal Disorders (MSDs), the influence of BMI (X2) on MSDS (Y1), where from the results of statistical tests the p value (0.000) < 0.05 is obtained, which means the p value is less than the significance level of 0.05 so there is a direct influence of BMI on MSDS. Where there are 37 midwives at Dr. H. Jusuf SK in the obese category experienced complaints of Musculoskeletal Disorders (MSDs). The relationship between BMI and the risk of Musculoskeletal Disorders (MSDs) is that the fatter a person is, the greater the risk of developing Musculoskeletal Disorders (MSDs). This is because someone who has a high BMI will try to support the load from the front by contracting the lower back muscles. If this continues, it will cause pressure on the spinal cord which can cause a hernia of the nucleus pulposus [12]. The results of this study are in line with research conducted by Shu Chuan Lin et al., 2020 and Krishnan et al., 2021 which stated that Body Mass Index (BMI) was significantly associated with nurses experiencing left elbow joint discomfort, right, left wrist, right wrist, left knee joint, right knee joint, ankle joint, and at many points on the body. This research is also in line with research conducted by T. Ribeiro et al., 2017 which shows that there is a relationship between the prevalence of work-related musculoskeletal disorder (WRMSD) symptoms in various areas of the body and BMI with the results of research on the relationship between WRMSD symptoms in the knee ( $p = 0.011$ ) and BMI. Nurses who are overweight report having musculoskeletal complaints in their knees more often than nurses with normal weight. Research conducted by L. Tang et al., 2022. Someone who has a high BMI will try to support their body weight from the front by contracting their lower back muscles. And if this continues, it will cause pressure on the spinal cord which will cause a hernia of the nucleus pulposus [13]. A person who is overweight or obese is found to have damage to the musculoskeletal system which 118 manifests as pain and discomfort. Common MSDs complaints that occur in obese individuals include neck, shoulder, back, arm, knee pain, leg pain, and Achilles tendon injuries. Musculoskeletal complaints that occur are caused by the influence of anthropometric measurements related to the balance of the skeletal structure in accepting both body weight and workload [14].

#### ***4.3. The Effect of Work Posture on Performance Through Musculoskeletal Disorders (MSDs) as an Intervening Variable***

Based on the results of research where the influence of Work Posture (X3) on Performance (Y2), from the results of statistical tests it was obtained that the p value (0.220) was > 0.05, which means the p value was more than the significance level of 0.05 so there was no indirect effect of posture. work on Performance. The results of the research

show the influence of Work Posture (X3) on MSDS (Y1), where from the results of statistical tests it is obtained that the p value (0.008) is  $<0.05$ , which means the p value is less than the 0.05 significance level so that there is a direct effect of Work Posture on MSDS. The research results show that there is no direct influence between work posture and performance of midwives at RSUD Dr. H. Jusuf SK, this is because on average those who have good performance are older people, where older people have longer work experience so they are better in work positions than younger people. Pe Having more work experience as you age increases your performance. Work posture is an appropriate work process determined by body anatomy and the size of the equipment used in the work. Inappropriate work equipment factors can influence this. Work posture will then influence MSDs complaints. MSDs complaints generally occur due to excessive muscle contractions due to workload, repetitive activities, and unnatural work attitudes. An awkward or unnatural work attitude is a work attitude that causes body parts to move away from their natural position. The farther the body part is from the center of gravity, the higher the musculoskeletal complaints [7]. The research results show the indirect influence of Work Posture (X3) on Performance (Y2) through Musculoskeletal Disorders (MSDs) (Y1), where from the results of statistical tests the p value (0.000)  $<0.05$  is obtained, which means the p value is less than the level significance is 0.05 so there is a direct influence of Work Posture on Musculoskeletal Disorders (MSDs). In this research, the results obtained were that work posture was one of the factors causing complaints of MSDs in midwives at RSUD Dr. H. Jusuf SK. This is proven from observations at the hospital, midwives carry out their work in a work posture where they bend, twist, lift and move continuously and excessively. where in the normal birthing process the midwife accompanies the patient in the birthing process which sometimes lasts for hours, during the birthing process the midwife's position is next to the patient and the position is slightly bent and down because the hospital bed has a barrier at the front and it is also safer for the baby if the position slightly slanted, during the birthing process there are two midwives who assist in the birth, where the right midwife is the helper and the left one supports the baby who is born, after the baby is born the process of expelling the placenta is also carried out in the patient, where the position of the right hand on the stomach carries out the action of pushing the stomach and holding the placental cord, once this stage is complete, the midwife will carry out a sewing process which usually takes up to two hours if the tear has reached the patient's anus. If the patient reacts during childbirth, it is common for patients to lift their hips. The two midwives in the left and right positions must hold them with their hands on the left and right thighs so that the patient does not lift their hips. This research is in line with research by Yulian (2021), where the results of research using the Chi Square test obtained a P-value of 0.004, so it can be said that  $H_a$  is accepted, namely that there is a significant relationship between work posture and musculoskeletal disorder complaints. Body position/posture in this study showed that all respondents who were not at risk did not experience musculoskeletal complaints as many as 2 respondents (100%) and respondents who were more at risk experienced musculoskeletal

complaints as many as 36 respondents (78.3%). These results mean that the riskier the nurse's work position/posture, the higher the number of musculoskeletal complaints in nurses. Bivariate analysis obtained a p value of 0.004, meaning  $p < 0.05$ , so there is a relationship between body position/posture and musculoskeletal complaints in nurses in the emergency room and operating room at Prambanan Regional Hospital.

#### **4.4. Effect of Workload on Performance Through Musculoskeletal Disorders (MSDs) as an Intervening Variable.**

Minister of Home Affairs Regulation No. 12/2008, states that workload is the amount of work that must be carried by a position/organizational unit and is the product of work volume and normal time. If the worker's abilities are higher than the job demands, a feeling of boredom will arise. However, on the contrary, if the worker's abilities are lower than the demands of the job, more fatigue will occur. Therefore, it is very important to pay attention to the distribution of workload appropriately and in accordance with employee abilities. Analysis of Factors Related to Midwives' Performance in Providing Quality Services in the Work Area of Bukittinggi City Health Center 2018 Khairan Nisa, DKK 59 because it can influence employee performance and also program achievement (Riny Chandra, 2019). The results of the research show the influence of Workload (X4) on Performance (Y2), where from the results of statistical tests it is obtained that the p value (0.000) is  $<0.05$ , which means the p value is less than the significance level of 0.05 so there is a direct influence of Workload on Performance. The research results are in line with Nisa (2019) where, respondents who have a good perception of workload tend to have good performance too. Meanwhile, respondents with poor perceptions of workload also tend to have poor performance. The results of this research show a P value = 0.012, meaning that there is a relationship between workload and midwife performance. This is also in line with research Anggiasari, 2019 which states that there is a relationship between perceived workload and the performance of village midwives, where the P value = 0.019. In this study, it was found that the workload variable had a relationship with the MSDS, the midwife's workload increased due to physical workload (for example, pulling, pushing, and working in extreme positions to handle two patients: mother and baby at the same time), psychosocial factors (for example, more sympathetic to the mother due to continuous long time spent in caregiving), and organizational factors (e.g., lack of improved equipment support) that may lead to the development of musculoskeletal disorders. Midwives have multiple roles and duties, not only serving pregnant women, midwives are also administrative officers.

The large workload makes it difficult for midwives to divide their time between service duties and other duties, as a result, services to pregnant women are not optimal. The results of this research are in line with Yamin's (2018) research on nurses, where the results of the path analysis test carried out on the workload variable influenced complaints of musculoskeletal disorders with a value of  $p = 0.019$ , where there was a relationship between the workload variable and the MSDS.

**Table 1:** Results of Univariate Analysis Based on Respondent Characteristics and Variables Examined in Midwives at Regional General Hospitals Dr. H. Jusuf SK North Kalimantan.

Characteristics	Frequency (n)	Percent (%)
<b>Age (Years)</b>		
Old	13	25.5
Young	38	74.5
<b>Education</b>		
D3	32	62.7
D4	18	35.3
S1	1	2
<b>Body Mass Index</b>		
Fat	42	82.4
Normal	3	5.9
Thin	6	11.8
<b>Working posture</b>		
Not Ergonomics	42	82.4
Ergonomics	9	17.6
<b>Workload</b>		
Heavy	43	84.3
Light	8	15.7
<b>MSDS</b>		
Heavy	46	90.2
Light	5	9.8
<b>Midwife Performance</b>		
Bad	32	62.7
Good	19	37.3

Source: Primary Data, 2023.

**Table 2:** Distribution between Age, BMI, Work Posture, Work Load with MSDS Midwives at RSUD Dr. H. Jusuf SK. Tarakan City.

Variable	MSDS				Total	
	Heavy		Light			
	n	%	n	%	N	%
<b>Age</b>						
Old	13	25.5	0	0	13	25.5
Young	33	64.7	5	9.8	38	74.5
<b>Body Mass Index</b>						
Fat	37	72.5	5	9.8	42	82.4
Normal	3	5.9	0	0	3	5.9
Thin	6	11.8	0	0	6	11.8
<b>Work Posture</b>						
Not Ergonomics	40	78.4	2	3.9	42	82.4
Ergonomics	6	11.8	3	5.9	9	17.6
<b>Workload</b>						
Heavy	43	84.3	0	0	43	84.3
Light	3	5.9	5	9.8	8	15.7

Source: Primary Data, 2023.

**Table 3:** Distribution between Age, Body Mass Index (BMI), Work Posture, Work Load, Musculoskeletal Disorders (MSDs) and Midwife Performance at RSUD Dr. H. Jusuf SK Tarakan City.

Variable	Midwife Performance				Total	
	Bad		Good			
	n	%	n	%	N	%
<b>Age</b>						
Old	11	21.6	2	3.9	13	25.5
Young	21	41.2	17	33.3	38	74.5
<b>BMI</b>						
Fat	27	52.9	15	29.4	42	82.4
Normal	2	3.9	1	2	3	5.9
Thin	3	5.9	3	5.9	6	11.8
<b>Work Posture</b>						
Not Ergonomics	28	54.9	14	27.5	42	82.4
Ergonomics	4	7.8	5	9.8	9	17.6
<b>Workload</b>						
Heavy	29	56.9	14	27.5	43	84.3
Light	3	5.9	5	9.8	8	15.7
<b>MSDS</b>						
Heavy	32	62.7	14	27.5	46	90.2
Light	0	0	5	9.8	5	9.8

Source: Primary Data, 2023.

## 5. Conclusions

Age has a direct effect on performance ( $p$ -value = 0.001) and there is no indirect effect on performance through Musculoskeletal Disorders (MSDs) ( $p$ -value = 0.622). Musculoskeletal Disorders (MSDs) have a direct effect on performance ( $p$ -value = 0.012). Body Mass Index (BMI) has a direct effect on performance ( $p$ -value = 0.003) and an indirect effect on performance through Musculoskeletal Disorders (MSDs) ( $p$ -value = 0.047). Work Posture has no direct effect on performance ( $p$ -value = 0.220) and has an indirect effect on performance through Musculoskeletal Disorders (MSDs). Workload has a direct effect on performance ( $p$ -value = 0.000) and has a direct effect on performance through Musculoskeletal Disorders (MSDs) ( $p$ -value = 0.001). To the Hospital Management Dr. from complaints of musculoskeletal disorders. Midwives should pay attention to body position when working so that they do not easily experience musculoskeletal complaints which will later have an impact on decreased performance. Midwives should maximize their rest time so that their tired bodies after work can recover so they can work optimally.

## Ethics statement

Health research ethics commission, Faculty of Public Health, Hasanuddin University on August 8 2022 with number: 9069/UN4.14.1/TP.01.02/2022.

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