

RELATIONSHIP BETWEEN WORK DURATION AND TYPE OF WORK WITH MUSCULOSKELETAL DISORDERS OF FISHERMEN IN OCCUPATIONAL HEALTH EFFORTS POST FISHERMEN OF MAROS REGENCY

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ABSTRACT

Musculoskeletal disorders that occur in workers are influenced by factors. The factors highlighted in this study are the length of work and type of work. This study aims to determine the relationship between work duration and type of work with musculoskeletal disorders in fishermen in the UKK (Occupational Health Efforts) Post, Maros Regency. This type of research is analytic survey research with cross-sectional study/cross-sectional design. The population in this study totaled 224 people. Sampling when this research took place was carried out by accidental sampling. The results of this study indicate that there is a significant relationship between the length of work with musculoskeletal disorders in fishermen at the UKK post of fishermen in Maros Regency. There is a significant relationship between the types of work with musculoskeletal disorders in fishermen at the UKK fishermen post in Maros Regency. Length of work is the factor that has the greatest influence on musculoskeletal disorders in fishermen at the fishermen's UKK post in Maros Regency. In order to do stretches both before and after every activity, for fishermen aged > 45 years, be careful in carrying out activities and minimize awkward attitudes/work positions and always participate in every meeting, guidance, and health examination conducted by the occupational health program manager.

Keywords: Musculoskeletal disorders, Length of Work, Type of Work, Fishermen.

INTRODUCTION

Various studies in the fisheries sector show that many experience complaints of musculoskeletal disorders. Research conducted on lobster seekers, as many as 395 respondents. Half of the respondents reported aggravated lower back pain while working for lobster. For lower back pain occurs in the captain and sternmen, while in sternmen there is more hand/wrist pain than the captain (Fulmer et al., 2017).

Research conducted on crab seekers, classifying the task of catching the most physically heavy fish on fishermen on a rating scale from 0 (no problem) to 10 (the main problem) is pulling the pot by hand, unpacking or loading without mechanical assistance, maintenance of equipment, water or bad weather, long workdays, and hot or cold weather. The results show that an average of 6.4 attracts pots by hand versus 2.4 with towers. Task pressure ratings with measurable variability with interquartile range (IQR) including pull pots by hand (IQR = 5), unloading without assistance (IQR = 5), moving boxes and baskets on ships (IQR = 5), and equipment maintenance (IQR = 4.5) (Kucera & McDonald, 2010).

The geographical condition of the State of Indonesia is an archipelago consisting of approximately 17,000 islands and 70% consisting of sea, so naturally most of the livelihood as

fishermen. Until now, fishermen have not received optimal health services, especially those related to their work, namely obtaining complete health services (promotive, preventive, curative and rehabilitative) and implemented comprehensively in an integrated system (Wiludjeng, 2004).

Overall occupational safety and health can be explained that every worker has the right to obtain occupational safety and health services regardless of the status of the formal or informal industrial sector, the size of the company, and the type of work. The development and growth of the two industrial sectors are always accompanied by big problems of work accidents and occupational diseases (Dharmawirawan & Modjo, 2012).

Fishermen are one of the most important assets or resources in marine resources in terms of expertise related to marine catches. According to the International Labor Organization (ILO) (2010), there are more than 30 million fishermen around the world and at least 15 million of them work full time on fishing vessels, if associated with accidents or illness, a fisherman may be far from professional medical care and must rely on fellow crew members to care for him until brought ashore. Fishermen are not paid based on wages but are paid based on the number of catches (Saleh, 2018).

The results of Riskesdas (Basic Health Research) in 2018 showed the prevalence of joint disease based on diagnosis in population aged ≥ 15 years according to South Sulawesi Province data from 2013-2018, decreased from 11.9 to 7.3. However, fisherman workers were ranked fourth out of nine types of work, namely 7.40% (Riskesdas, 2018).

Musculoskeletal disorders that occur in workers are influenced by individual factors namely age, sex, years of service, exercise habits, physical strength, smoking habits and body mass index, occupational factors such as attitudes or positions that are not natural, excessive stretching of muscles, repetitive activities and length of work and environmental factors, namely pressure, vibration, microclimate and cause of the combination. Therefore, further research is needed to find out the relationship between the length of work and the type of work with musculoskeletal disorders in fishermen at the UKK (Occupational Health Efforts) Post District of Maros.

METHODS

This type of research is analytic survey research with cross-sectional study/ design. This study aims to observe the effect of risk factors for musculoskeletal disorders in fishermen in the UKK fishermen post in Maros Regency. This research was conducted with participatory observations namely observations made by participating in the activities being investigated.

The population in this study were all members of the fishermen UKK post in Maros Regency namely the UKK post-Kuri Caddi 28 people, the UKK post-Kampala 32 people, the UKK post-Pajukukang 50 people, the UKK post-Bonto Bahari 45 people, the UKK post-Tupabiring 25 people, the UKK post Borimasunggu 24 People and Pos UKK Lestari Soreang 20 people in total 224 people.

Sampling when this research took place was carried out by accidental sampling. The method of data collection in this study was carried out by requesting basic data on the number of UKK posts of fishermen in Maros Regency through the Health Office and Puskesmas, then asking for assistance from the participation of the puskesmas (Community Health Center)

occupational health program manager and the chairman and cadre of the UKK post to meet with UKK post members fisherman.

The researcher first introduces himself and explains the purpose of the study before conducting interviews and measurements. Respondents were then asked for their willingness in the process by signing the agreement (Informed Consent), conducted interviews and measurements which were assisted by the occupational health program manager of the health center and the chairman and cadre of the UKK post.

Data collected in this study are as follows: Primary data obtained from interviews and direct measurements to respondents when researchers conduct research. Secondary data, data obtained from the Health Office, Puskesmas and UKK Post.

RESULTS AND DISCUSSION

Long-Term Relationship with Musculoskeletal Disorders

Based on the research conducted, data are obtained on the long-term relationship of work with musculoskeletal disorders in fishermen. Here are the results of the analysis in table 1.

Table 1. Relationship between Work Periods and Musculoskeletal Disorders of Fishermen in the UKK Fishermen Post in Maros Regency in 2020

Work Duration	<i>Musculoskeletal Disorders</i>				Total		<i>p-value</i>
	There is		There is no		n	%	
	n	%	n	%			
Long	25	62,5	15	37,5	40	100	0,001
Not Long	2	12,5	14	87,5	16	100	
Total	27	48,2	29	51,8	56	100	

Source: Primary Data, 2020

Based on table 1 shows that of the 40 respondents who fall into the old category, there are 25 respondents (62.5%) who have complaints and 15 respondents (37.5%) who have no complaints. Of the 16 respondents who were included in the short category, there were 2 respondents (12.5%) who had complaints and 14 respondents (87.5%) who had no complaints.

Based on the results of statistical analysis using the Chi-square test, in the Chi-Square Test Fisher's Exact Test value with a value of $p = 0.001$ where the value of $p < 0.05$. So it can be concluded that the length of work has a significant relationship with musculoskeletal disorders in fishermen in the Mark fishermen post in Maros Regency in 2020.

Relationship between types of work and musculoskeletal disorders

Based on research conducted obtained data regarding the relationship between types of work with musculoskeletal disorders in fishermen. Following the analytical results in table 2.

Table 2. Relationship between Occupational Types and Musculoskeletal Disorders of Fishermen in the UKK Post, Maros Regency Fishermen in 2020

Type of work (Fisherman)	Musculoskeletal Disorders				Total		p-value
	There is		There is no		n	%	
	n	%	n	%			
Crab	18	66,7	9	33,3	27	100	0,016
Fish	9	31	20	69	29	100	
Total	27	48,2	29	51,8	56	100	

Source: Primary Data, 2020

Based on table 2 it shows that of the 27 respondents included in the crab fishermen category, there were 18 respondents (66.7%) who had complaints and 9 respondents (33.3%) who had no complaints. Of the 29 respondents included in the fish fishermen category, there were 9 respondents (31%) who had complaints and 20 respondents (69%) who had no complaints.

Based on the results of statistical analysis using the Chi-square test, the Chi-Square Test value Continuity Correction = 5.755 with a value of $p = 0.016$ where the value of $p < 0.05$. Then it can be concluded that the type of work has a significant relationship with musculoskeletal disorders in fishermen in the UKK fishermen post, Maros Regency in 2020.

Multivariate Analysis

The results of the bivariate analysis found four independent variables (length of work, attitude/work position, length of work, and type of work) that have a relationship with the dependent variable (musculoskeletal disorders). Based on these results a multivariate analysis can be performed using multiple logistic regression tests, to find out which variable most influential on musculoskeletal disorders in fishermen at the UKK fishermen post in Maros Regency. Next, the data presentation of the results of multiple logistic regression tests between independent variables that have a relationship with the dependent variable can be seen in table 3.

Table 3. Multivariate Analysis of Variables that Influence Musculoskeletal Disorders of Fishermen in the UKK Post Maros Fishermen in 2020

Variable	B	Wald	Exp(B)/OR (95% CI)	P-Value
Work Duration	2,207	4,978	9,086 (1,308 – 63,124)	0,026
Type of Work	0,831	1,024	2,296 (0,459 – 11,484)	0,311

Based on table 3 shows that the results of multivariate analysis, the p value of the four variables, namely tenure with $p = 0.139$ ($p > 0.05$), attitude / work position with $p = 0.073$ ($p > 0.05$), length of work with p value = 0.026 ($p < 0.05$) and type of work with p value = 0.311 ($p > 0.05$). It can be concluded that the length of work is a variable that has an influence on the dependent variable.

Exp (B) / OR value of the working period variable is $3,520 > 1$ so it is a risk factor but it is not significant because the lower values of 0.664 and upper 18.660 contain a value of 1, for the attitude/work position variable of $9,208 > 1$ so it is a risk factor but not significant because

values of lower 0.811 and upper 108.510 contain the value of 1, for the length of work variable of $9.086 > 1$ so it is a risk factor and significant because the lower values of 1.308 and upper 63,124 do not contain the value of 1 and for the type of work variable of $2,296 > 1$ so it is a risk factor but not significant because the lower value is 0.459 and the upper 11.484 contains a value of 1.

It can be concluded that the length of work variable is the most influential variable on musculoskeletal disorders, with an Exp (B) / OR value of 9.086 which means that the variable has 9.086 times greater influence on musculoskeletal disorders in fishermen in the UKK post of fishermen in Maros Regency.

Work Length is the length of time a work is carried out from exposure to risk factors until the work is completed. Within a week, a person's work time can usually work well for 40 - 50 hours per week, if it exceeds the time limit, it is likely to happen things that are not desirable for the workforce itself and also in the work done, in some cases, the work duration of more than 10 hours a day results in a decrease in total performance, a decrease in speed is usually followed by an increase in the number of illnesses. For the number of 40 hours a week can be made 5 working days or 6 working days depending on various factors, but the fact shows that working 5 days out of 40 working hours a week is a valid phenomenon and is increasingly being applied everywhere (Suma'mur, 2009; Syahrir, 2020).

Long work hours or more than 40 hours of work for a week will also increase the duration of exposure to workers so that over time the greater the risk of injury will occur. Working time for a person can determine the health condition in question and affect the efficiency, effectiveness, and productivity of his work.

Previous research conducted by Attariq et al (2018) examined the factors associated with the incidence of musculoskeletal disorders (myalgia) in fishermen in Batukaras Village Pangandaran, West Java, with a total of 140 respondents. Based on the results of data analysis, the value of $p = 0.024$ is obtained where $p < 0.005$. It can be concluded that, length of work has a significant relationship with the incidence of musculoskeletal disorders (myalgia).

The length of work in this study was obtained from the respondents' answers to the questionnaire questions and the calculation of the work time that researchers did from leaving to returning home. The duration of work is categorized into two groups, namely the old group is respondents who have time to do their work for > 6 hours/day, and groups that are not long are respondents whose time in doing work is ≤ 6 hours/day.

Based on data obtained from the results of the study, it is known that the length of work of fishermen who became respondents ranged from 1.30 hours/day to 21 hours/day, the highest in the old category of 40 respondents. The data obtained were then analyzed by statistical tests using the Chi-Square test.

Based on the results of statistical tests, the crosstab table uses 2x2 tables and there are cells below 5, so the value taken in the Chi-Square Test table is the Fisher's Exact Test with a value of $p = 0.001$ where $p < 0.05$. It can be concluded that this study shows that the length of work has a significant relationship with musculoskeletal disorders in fishermen at the UKK fishermen post in Maros Regency. The results of research conducted in line with existing theories that the length of work is one of the factors that can affect musculoskeletal disorders.

There is a long working relationship with musculoskeletal disorders in fishermen in the UKK fishermen post in Maros Regency, this is because there are respondents who are in the old category and they experience musculoskeletal disorders. In addition, their work is carried out continuously with little time to rest and an environment that is not ergonomic that is done on a jolloro (motorized boat) boat and there is also a *katinting* (small boat) ship.

They do the work continuously because the fishing gear used is 420 meters to 3,000 meters, takes a long time to pull it, not to mention when they release the catch from the fishing gear. The working environment that is above the water requires them to work optimally, because it is affected by tides, waves, weather, and catch season. In addition, according to Suroso & Prastike (2020) odd work postures, workloads carried out continuously or repeatedly as well as age factors where a decrease in muscle strength is at risk for the occurrence of musculoskeletal disorders

This research, in line with research conducted by (Utami et al., 2017) regarding the relationship between work duration, work attitude, and workload with musculoskeletal disorders in rice farmers in Ahuhu Village, Meluhu District, Konawe Regency. Based on the data analysis, $p = 0.019$ is obtained where $p < 0.05$ shows that the length of work has a significant relationship with musculoskeletal disorders.

Research also conducted by Afridah et al (2017) about workload analysis with musculoskeletal complaints on furniture workers in the city of Surabaya. Based on the data analysis, $p = 0,000$ was obtained where $p < 0.05$ indicates that the length of work has a significant relationship with musculoskeletal disorders.

The research that is not in line with this research is Randang (2017) which examines the relationship between age, years of service, and length of work with musculoskeletal disorders in fishermen in Talikura Village, Romboken District, Minahasa Regency. One of the variables in this study is the length of work with the number of respondents as many as 40 fishermen. From the results of data analysis, the value of $p = 0.692$ is obtained where $p > 0.05$, this shows that the length of work does not have a significant relationship with musculoskeletal disorders.

Types of work for fishermen are activities carried out by fishermen based on the purpose of the type of catch. The fishing gear used in each type of work varies, depending on the type of catch that is being targeted. Various types of work for fishermen who are members of the Maros Regency fishermen post, including crab fishermen and fish fishermen. In each type of work using different fishing gear and some even do not use fishing gear with different work postures. Their work environment is the same, namely the environment in waters, some use the Jolloro and Katinting vessels.

In this research variable, there are two types of work contained therein as mentioned above namely crab fishermen are fishermen who focus on searching for crabs by using crab nets and some use bubbly, fish fishermen are fishermen who focus on finding fish using fishnets large and some use small fishing nets.

In crab fishermen, they use crab net fishing gear, and some use bubuk (crab trap), where the two fishing gears use different methods. In crab fishermen who use fishing nets, the fishing gear used has a size of 420 m to 3,000 m, there is only one net and there are divided into two nets, as well as the catch fishing gear. The time needed by fishermen in pulling the nets, exceeds

one hour for one net, which in the process of releasing the catch by using special techniques to avoid crab claws just needs time.

In crab fishermen who use the *bubuh* fishing gear, the gears range from 50 seeds to 300 seeds with a gap of 10 m. there are only one fishing gear and also two and there is a fishing gear that has a body. In the use of *bubuh*, the installation process uses a bait that is inserted into the *bubuh* and then ready to be installed, the mud is left for a day then pulling the net. In attracting *bubuh* requires more energy than those who use crab nets and work postures that are riskier.

Fish fishermen use fishing nets where the fishing process is done alone and there are groups of up to four people, depending on the fishing nets that they use. In fish fishermen themselves, do the net installation using sticks in the form of bamboo or wood as a benchmark for installing the net, then spread it until the whole net is attached. After installation is complete the fisherman waits on his boat, sees a sign that the net gets fish.

Fish fishermen in groups of up to four people, using longer-sized fishing nets, they divide tasks and make shifts or tasks. Some descended into the water as a benchmark and others directed the nets and ships until the nets were circular. This activity continues over and over if the catch is lacking, they repeat it until the results they get are enough. When this activity was carried out, the researchers took part in watching and they repeated it up to four times with sufficient results for them.

The types of work for fishermen have different methods, methods of catching and using tools that are adapted to the type of catch, so that their exposure is different as well as the perceived musculoskeletal disorders. The longer the type of work carried out the longer the fishermen are exposed to the risk of danger, especially unnatural work portals are mostly done on fishermen. The type of work done by fishermen is used as a variable in this study, to differentiate it from other research variables related to musculoskeletal disorders.

Data on the type of work in this study was obtained from respondents' answers to the questionnaire by looking at the type of work they did. Of the two types of work available to fishermen in the Maros fishermen post in Maros Regency, the type of fishing fish occupation which is the highest type of work is 29 respondents who do this type of work. Data obtained from the results of the study were analyzed by statistical tests using the Chi-Square test.

From the results of statistical tests, the crosstab table uses 2x2 tables, so the value taken in the Chi-Square Test table is a Continuity Correction value of 5.755 with a value of $p = 0.016$ where $p < 0.05$. It can be concluded that in this study shows that the type of work has a significant relationship with musculoskeletal disorders in fishermen in the UKK post of fishermen in Maros Regency.

There is a relationship between the types of work and musculoskeletal disorders in fishermen in the UKK post of Maros Regency fishermen. It is likely that in both types of work, crab fishermen have the most musculoskeletal disorders and fish fishermen who have the least musculoskeletal disorders. Work posture and work environment factors for each type of work have different exposure to each other with different opportunities for the occurrence of musculoskeletal disorders.

CONCLUSION

There is a significant relationship between the length of work with musculoskeletal disorders in fishermen in the UKK (Occupational Health Efforts) fishermen post in Maros Regency. There is a significant relationship between the types of work with musculoskeletal disorders in fishermen at the UKK fishermen post in Maros Regency. Length of work is the factor that has the greatest influence on musculoskeletal disorders in fishermen at the fishermen's UKK post in Maros Regency.

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