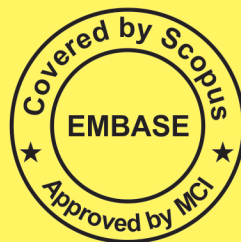




Indian Journal of Forensic Medicine & Toxicology

Website: www.ijfmt.com



Official Organ of Indian Association of Medico-Legal Experts (Regd.)

Indian Journal of Forensic Medicine & Toxicology

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"Indian Journal of Forensic Medicine & Toxicology" is peer reviewed quarterly journal. It deals with Forensic Medicine, Forensic Science, Toxicology, DNA fingerprinting, sexual medicine and environment medicine. It has been assigned International standard serial No. p-0973-9122 and e- 0973-9130. The Journal has been assigned RNI No. DELENG/2008/21789. The journal is indexed with Index Copernicus (Poland) and is covered by EMBASE (Excerpta Medica Database). The journal is also abstracted in Chemical Abstracts (CAS) database (USA). The journal is also covered by EBSCO (USA) database. The Journal is now part of UGC, DST and CSIR Consortia. It is now official publication of Indian Association of Medico-Legal Experts (Regd.).

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Print-ISSN:0973-9122 Electronic - ISSN: 0973-9130

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Website: www.ijfmt.com

Editor

Dr. R.K. Sharma
Institute of Medico-legal Publications
Logix Office Tower, Unit No. 1704, Logix City Centre Mall, Sector- 32, Noida
- 201 301 (Uttar Pradesh)

Printed, published and owned by

Dr. R.K. Sharma
Institute of Medico-legal Publications
Logix Office Tower, Unit No. 1704, Logix City Centre Mall, Sector- 32, Noida
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Musculoskeletal Disorders Complaints by Part Body Fishermen Village Labuang Namrole South Buru District

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Abstract

Indonesian people living in coastal areas work as fishermen. Musculoskeletal disorders are felt by fishermen in the muscles and bones resulting in the decreased system of movement. The purpose of the study was to identify differences in musculoskeletal complaints based on body parts. The study design uses observational analytic, using a cross-sectional design. Fishermen's research samples amounted to 35 people. The results of the majority of respondents aged 51-55 years and 61-65 years, tenure of > 10 years and unnatural work postures. Nordic Body Map (NBM) measurement, musculoskeletal complaints due to unnatural/forced work postures experienced by respondents. Low extremity musculoskeletal complaints with a mean value of 18.8 and the lowest score of 12 while the highest is a score of 20. Conclusions based on the Nordic Body Map (NBM) musculoskeletal complaints occur because of unnatural/forced work postures. The majority of complaints experienced are found in the lower extremities. It is recommended that fishermen dynamically adjust their work positions.

Keywords: *musculoskeletal complaints, nordic body map, muscles, work posture*

Introduction

Indonesia is an archipelago consisting of 17,504 islands and 2/3 of them are sea areas, where most of the coastal population has livelihoods as fishermen. Fishermen are people whose whole or part of their livelihood depends on fishing. The sea is a natural resource that is used for the benefit of people's welfare.

By implementing occupational safety and health control technology, it is expected that workers will achieve physical endurance, workforce, and a high level of health. Besides that, occupational safety and health can be expected to create work comfort and high work safety. So, the elements in occupational health and safety are not focused on physical factors, but also mental, emotional and psychological factors.

The world food organization (Food and Agriculture Organization) entitled "The State of World Fisheries and Aquaculture 2014" released on March 2, 2016, reported that as many as 24,000 fishermen died at sea. The report mentioned that there were 4 factors that caused the high mortality rate of traditional fishermen and sea transportation users. The main cause of marine accidents that lead to loss of human life is purely human error (human error). Other causes are neglect by sea transportation providers and related agencies, as well as sea transportation safety equipment that is far from adequate and lack of standard work procedures. Specifically, in fishery activities, as much as 80 percent of marine accident factors are caused by human negligence.⁽¹⁾

Fishermen in carrying out their activities face risks, among others in the form of safety risks at sea and the risk of uncertainty of catches that can be obtained. In carrying out their activities, sea cucumber fishermen need fishing facilities such as boats, engines, compressors, masks and frog legs. These facilities cannot be bought by mustard fishermen. Efforts to overcome this are

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pursued by establishing a working relationship with the civil servants. This condition then becomes the starting point for the establishment of a working relationship between Ponggawa and mustard in the sea cucumber fishery business, where they agree to establish a working relationship because each has a goal to be achieved through the relationship.

Fishermen are those who have a livelihood by utilizing marine resources such as fish and other marine biotics (except seaweed) that contain the economic value (can be consumed and marketed) both continuously and seasonally, using facilities such as boats and equipment. fishing gear (Lampe 1989: 1). Meanwhile, according to the Director-General of Fisheries, fishermen are a group of people whose lives depend directly on sea products, either by catching or cultivating. They generally live on the beach, a residential neighborhood close to the location of their activities. The development of science and technology has made the industrial world compete for efficiency and increase productivity by using increasingly complex means of production. The more complex work equipment used will increase the potential for workplace accidents if not handled as well as possible. Potential or risk of danger is a condition that there is a possibility that a work accident will arise due to a hazard. Therefore handling and controlling work accidents can be done through risk management. Risk management is a management process with a view to minimizing risk or even avoiding work accidents altogether.⁽²⁾

Capture fisheries activities are full of challenges and are faced with risks and uncertainties. One form of risk and uncertainty is accidents at sea. The International Maritime Organization (IMO) in 2007 explained that an accident was an undesirable event involving death, injury, loss or damage to ships, property loss or environmental damage. FAO (2009) says that the main cause of marine accidents that result in the loss of human

life is purely human error (human error). FAO (2010) estimates that around 30 million fishermen work on 4 million fishing vessels operating in the world, around 98% of these fishermen work on vessels less than 24 meters long, which for this measure is not written in international regulations.⁽¹⁾

The number of global deaths is estimated by the International Labor Organization (ILO, 2007) in 1999 to be 24,000 deaths worldwide each year.⁽³⁾ FAO (2010) adds an explanation of this, namely the global death rate will be higher because there are some countries that do not have statistical data or information on global death rates. Previous studies published in the journal work intensity of fishing activities on the operation of Soma Pajeko (Mini Purse Seine) in Bitung according to Handayani et al. (2015) a fishing fisherman is required to have a strong physique so that he can work productively and his catch is satisfying.⁽⁴⁾

Method

This type of research is analytic observational research using cross-sectional. Data collection is done once for a particular object at a certain time period (point time approach). The population is fishermen in Labuang Village, Namrole District, Buru Regency. Samples were taken by accidental sampling technique, which was found at the time of research and was willing to be a research respondent. Univariate data analysis uses the frequency distribution to describe the characteristics of respondents. The bivariate analysis uses the Kruskal Wallis test to determine differences in musculoskeletal complaints based on the part of the body being analyzed.

Findings

The following are presented characteristics of research respondents such as age, education, occupation, marital status, length of work and length of service in the following table:

Table 1. Distribution of Respondent Characteristics

Age	Frequency	Percentage
· 35-40	2	5.7
· 41-45	6	17.1
· 46-50	5	14.3
· 51-55	8	22.9
· 56-60	6	17.1
· 61-65	8	22.9
Education		
· No School	10	28.6
· Primary school	17	48.6
· Junior High School	7	20.0
· Senior High School	1	2.9
Profession		
· Tonda Fisherman	35	100
Marital Status		
· Marriage	35	100
Length of Working		
· >3 hour	35	100
Years of Service		
· >10 years	35	100

Based on table 1, most fishermen aged 51-55 (22.9%) and 61-65 (22.9%). The majority of primary school education is 48.6%. all Tonda fishermen, married status, work duration > from 3 hours and work period > 10 years. The results of Kruskal Wallis analysis in the following table:

Table 2 Complaints of Musculoskeletal Disorders based on Nordic Body Map on Fishermen in Labuang Village, Namrole District, South Buru Regency

Complaints	Minimum	Maximum	Mean
Complaints on the neck and head	2	4	3.6
Complaints of upper limb	7	9	7
Complaints of lower limb	12	20	18.8
Complaints to the truncus	6	9	7.6

Based on the Nordic Body Map (NBM) musculoskeletal complaints due to unnatural/forced work postures that were experienced by many respondents occurred at lower extremities with a mean value of 18.8 and the lowest score of 12 while the highest was 20. The least complaints were experienced namely Complaints of the neck and head with a mean value of 3.6 and the

lowest score of 2 while the highest score of 4.

Discussion

1. Respondent characteristics

Complaints of muscles and bones due to a permanent

posture at work, repetitive and for a long time can be fatal if this condition is left. Complaints of perceived pain can be temporary if the burden that causes pain is stopped. But if musculoskeletal complaints are felt at work and loading is not stopped it can cause persistent pain. In general, cases of musculoskeletal disorders are often found in workers in the industry, loading, and unloading of goods and workers who exert 90% of their work activities.

According to Tawaka⁽⁵⁾, increasing age will be followed by a decrease in maximal oxygen volume, sharpness of hearing and vision, speed of discerning things, making decisions and ability to remember long-term. So that the older the age of the worker, then he will tend to behave unsafely. One form of unsafe behavior or substandard practice is in the form of violations of SOPs. The first complaint of musculoskeletal pain is felt at the age of 35 years, the age of complaints increases.⁽⁵⁾ According to Pratiwi that age is in line with unsafe behavior, the older a person is, the higher the category of unsafe behavior is carried out, and conversely, the younger the person's age, the category of unsafe behavior carried out is lower or even included in the safe category.⁽⁶⁾

The education level of the majority of respondents had an elementary school education. One's education influences one's mindset in facing the work entrusted to him. In addition, education will also affect the level of absorption of training provided in the context of carrying out work and work safety⁽⁷⁾.

Length of work all respondents work > 3 hours. The length of work is the length of time a person has gone through since pursuing work. The length of work is a period of time or the length of time the workforce works in a place⁽⁸⁾. The length of work can describe a person's experience in mastering the area of their duties. The longer a person works in an organization, the more experienced the person will be so that his work skills are better⁽⁹⁾.

Respondents based on tenure as fishermen > 10 years. According to Setyawati⁽¹⁰⁾, the longer a person's working period, the more emotional their stability tends to be so that they can work safely and avoid unsafe actions when working. This is because adjustments to the environment have been going on for a long time along with the experience gained. Experience is someone who has worked for several years, a fisherman

who has worked for 15 to 30 years, can be considered an experienced fisherman and can be used as a handler⁽¹¹⁾. The fishermen's fishing experience also has an impact on the fishermen's catch. Experience factor, according to Foster⁽¹²⁾, what determines whether a person is experienced or not can be seen from the length of time or work period taken by a person so that he can understand the tasks of a job and have done the job properly.

The respondent's work position is to work with unnatural/forced work postures. Work posture is defined as the posture or position of body parts such as arms, body, head and other body parts during work, such as sitting, standing, squatting or posture of the arms and hands when using work tools. The results of Manoppo's research obtained a relationship between physical activity with musculoskeletal complaints with the Spearman correlation test.⁽¹³⁾

2. Musculoskeletal complaints

Musculoskeletal disorders based on the Nordic Body Map (NBM), unnatural / forced labor postures that are mostly experienced by most respondents with complaints on Lower Extremities with a score of 20, this occurs in tonda fishermen who carry out daily activities at sea with an unusual position natural or forced to cause musculoskeletal disorders, especially the lower extremities with a static sitting position, this is experienced by fishermen when getting fish with a certain weight requires power to attract fish by using a footstool in pulling a load of fish to be lifted into the boat lounges.

The research on Tonda fishermen in the Namrole Subdistrict of South Buru Regency was supported by Budiman⁽¹⁴⁾ suggesting that this unnatural position occurred because of interactions between workers and work tools that were not balanced or work tools used were not in line with worker anthropometry. An unnatural work position is a work attitude that causes parts of the body to move away from their natural position. The farther the position of the body from the center of gravity, the higher the skeletal muscle complaints. Job attitudes are not natural in general because of the incompatibility of work with the ability of workers. The position of kneeling, bending or squatting usually causes pain in the lower back or in the knee if done for a long time and continuously results in serious problems in muscles and joints.⁽⁷⁾

One of the factors that influence the occurrence of skeletal muscle disorders. The recommended weight is 23-25 kg, while according to MoH-RI the burden should not exceed the rule, namely adult men at 15-20 kg and women (16-18) at 12-15 kg. in this case the capture fishermen make repetitive movements and lift the fish with a load of 10 tons every day within 30 days at sea so the weight of the load exceeds the threshold value. Previous studies have found physical activities such as lifting, holding loads that are classified as heavy workloads on fishermen associated with musculoskeletal complaints.⁽¹³⁾

Conclusion

Most of the Tonda fishermen in conducting activities at sea have unnatural work positions. There are differences in complaints of musculoskeletal disorders based on body parts in tonda fishermen in Labuang Village, Namrole District, South Buru Regency. It is recommended to fishermen to change positions at work, to reduce musculoskeletal complaints. Workers can do physical fitness to relax muscles and body tissues.

Conflict of Interest-No

Source of Funding-Authors

Ethical Clearance-Yes

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