



## **Correlation between Age, Working Period and Work-Related Musculoskeletal Complaints with Nordic Body Map among Fishermen**

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### **Dear Editor-in-Chef**

Musculoskeletal Disorders (MSDs) are impairments of the bodily structures, such as muscles, joints, tendons, ligaments and nerves, which are caused or aggravated primarily by the performance of work in which work is carried out. The International Labor Organization (ILO) in 2013 in The Prevention of Occupational Disease program notes that 59% of musculoskeletal complaints represented by carpal tunnel syndrome (CTS) were the most common complaints of the overall disease records in Europe in 2005, whereas in Korea MSDs experienced a very high increase from 1,634 in 2001 to 5,502 in 2010 (1). Statistics in 2011 show that 67 million workers in Indonesia were in the informal sector and 30% of them were fishermen (2). Fisherman also has a risk to get MSDs because fisherman uses much exertion which results in excessive stretching of muscles. To the best of our knowledge, no study has examined the correlation of between age, working period and work-related Musculoskeletal Complaints in fisherman, especially in Indonesia. The purpose of this study was to assess the correlation between the age, working period and

work-related Musculoskeletal Complaints in fisherman.

Overall, 67 fisherman who did not have muscle and joint disorders and used small boats while working was conducted by cluster random sampling technique. Subjects data were retrieved according to personal factors, work factors, and MSDs complaints. Data were collected according to personal factors such as age, length of service, and body measurement using BMI (Body Mass Index). Data collection by occupation factor is the measurement of work position by using REBA (Rapid Entire Body Map) method by measuring on upper body, body (trunk), neck and leg. REBA classifications were <1 (very low risk), 2-3 (low risk), 4-7 (moderate risk), 8-10 (high risk), and  $\geq 11$  (very high risk). Meanwhile, MSDs complaints were measured using a Nordic Body Map (NBM) checklist with low classification (NBM 0-20), moderate (NBM 21-41), high (NBM 42-62) and very high (NBM 63-84). Spearman's rho correlation test with significance level  $\alpha = 0.05$  with program SPSS (SPSS, Inc., Chicago, IL) was used to know the correlation between variables.

Majority of fisherman had age range 41-60 years (69.60%), working period more than 10 years (89.30%), had a normal body size (78.90%) and had a high-risk level of MSDs complaints (73.20%). There was correlation between age, working period and body size with MSDS compliance rate ( $p=0.021$ ,  $r=0.302$ ;  $p=0.001$ ,  $r=0.440$ ;  $p=0.03$ ,  $r=-0.290$ ). Age had a significant relationship because, in middle age, the strength and endurance of human muscle would be decreased so that the risk of muscle complaint was increasing (3). Muscle strength and would be decreased by 20% at age of 60 years (4).

Working period is a combination factor that contributes to musculoskeletal complaints. The disease or injury disorders in the musculoskeletal system almost never occur directly, but rather a continuous accumulation of small or large collisions over a relatively long period of time (5, 6). Complaints of the musculoskeletal system associated with body size are more due to the balance conditions of the skeletal structure in receiving loads, both weight and other additional loads. For example, the high body generally has a slim bone form, so it is biomechanically susceptible to press load and susceptible to bending, thereby assuming a higher risk of musculoskeletal complaints (7).

For recommendation, the fisherman must use a rest period of about 5-10 minutes to stretch the muscles during the work or after work. Second, fishermen must consume lots of water and eat

fibrous fruits. Third, fishermen must use time on the sidelines of a break to exercise.

## Conflict of interests

The authors declare that there is no conflict of interests.

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