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## Correlation between Age and Period of Working with the Musculoskeletal Disorders Complaints on Palm Farmers in Pt. X

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### ABSTRACT

According a study by Study Center and Health Ecology Development Ministry of Health in 2004, palm farmers are one of group workers that suffer complaints of musculoskeletal disorders (MSDs). It's aimed to determine the correlation between age and period of working with MSDs complaints on palm farmers in PT. X. Analytic observational with the cross-sectional approach. Instruments, such as; questionnaires check the NBM and VAS. Study technique is use purposive sampling Study sample of 40 respondents. Results showed 18 respondents (45%) aged  $\geq 35$  years old, 16 respondents (40%) with period of working  $\geq 4$  years and 60% had MSDs complaints. Spearman test results, it is known there were no significant correlation between age and period of working with MSDs complaints ( $p = 0.900, 0.799$ ). There weren't significant correlation between age and period of working with MSDs complaints on palm farmers in PT. X. It's expected to be input for the company is expected to provide training to palm farmers in the form of stretching and gymnastics movements ergonomics to reduce the incidence of MSDs that can increase work productivity.

**Key words:** Age, period of working, complaints of musculoskeletal disorders, palm farmers

### INTRODUCTION

Health is an important element to be able to enjoyed a quality of life, either at home or at work (Suaeb, 2013). Occupational health is a free condition from physical disturbance, mental, or emotional pain caused by the work place (Sholihah and Anward, 2012). Occupational health includes harmonization of various efforts between the workers with a job and work place both physical and psychological one of them is aimed to prevent the onset of health problems of workers due to situation/conditions of the work place (Buchari, 2007).

One of the health problems are complaints of musculoskeletal disorders (MSDs). Data of the (National Health Survey, 2002), MSDs is the one of the ten most complained diseases by the community (National Health Survey, 2002). Meanwhile, data is the Health Department North Sumatra Provincial in 2008 mentions that MSDs ranks first of the 10 non-communicable diseases were reported from all health centers in North Sumatra with the prevalence of 12% (HdoNSP., 2008). According to Abdillah (2013) about the complaints of MSDs were one of them researched in America in 2004, claimed that about 60% the manual handling workers suffered pains and injuries in the back area while working, such as lift, pull and hold something.

According to a study by Study Centre and Health Ecology Development Ministry of Health in 2004 as cited in Yuliani *et al.* (2012) showed complaints of MSDs experienced by 31.6% of palm farmers in Riau. The agricultural sector especially sub-sector plantation was the one element that gets top priority in development activities of economical industry in addition to the oil and natural gas from commodity mainstay of Indonesian. The product of palm oils growing rapidly along with the development of technology and food industry as well as non-food materials for industrial (Mursidah, 2009). Palm farmers play an important role in the food production for the countryside and urban population and remains a main source of income, employment and export commodities (Olowogbon and Fakayode, 2013). Harvesting job on palm farmer allow the complaints of MSDs (Ng *et al.*, 2013).

The PT. X is one of the palms oil plantation company located in South Kalimantan with the extensive whole of the gardens core is 3,406 ha, divided into four gardens core section. Based on the data obtained, the productivity in the garden section I-IV in 2012-2013 has decreased from 104,370-83,788 t. Gardens section, I experienced the largest decline difference in is 33.2% (6,822 t) compared with the garden section II, decrease of 30.1% (6,191 t), garden section III of 23.6% (4,863 t) and garden section IV of 13.1% (2,706 t). The decline in productivity is one of the impact from complaint of MSDs. Moreover, the burden on farmers to collect fresh fruit bunches at least 2.5 t a day increase the risk the complaint.

World Health Organization (WHO) define the MSDs is the disturbance of the muscles, tendons, joints, vertebrae, peripheral nerves and vascular system occur suddenly or gradually and acute and chronic (Wijaya *et al.*, 2011). Adverse impact of the disturbance will result in reduced skills to carry out the work, reduced work productivity and increased health care costs. The MSDs have three factors, namely occupational factors, environmental factors and individual factors (Bukhori, 2010). According to Nurhikmah (2011) mentions that there is a correlation between individual factors with complaints of MSDs.

Study carried out by Noor (2013) showed that there is a correlation between the age and period of working with the incidence of complaints of MSDs. Increasing age causes a decrease in the ability of the body's tissues (muscles, tendons, joints and ligaments) moreover, the longer the period of employment, the greater the risk of developing complaints of MSDs.

Based on the above background, it is necessary to do study on the correlation between the age and period of working with the complaints of MSDs on palm farmers in PT. X.

## **MATERIALS AND METHODS**

Design of this study was an observational analytic with cross sectional approach. The sampling technique that used in this study is purposive sampling. From the population of 47 respondents, there are 7 people that did not fulfill the inclusion criteria of the respondents did not have a history of diseases such as broken or dislocated bones, diabetes and disturbance of the thyroid gland, at the time the study was as palm farmers and willing to be the respondent, so that samples taken in this study are 40 samples. Data were obtained with the filling out the questionnaire to find out the identity of the respondents including age and period of working, as well as check the Nordic Body Map that has been standardized to measure complaints of MSDs. The independent variable in this study was age and period of working. The dependent variable in this study was complaints of MSDs. Data was analyzed using univariate analysis to determine the frequency distribution of each variable separately. Meanwhile the bivariate analysis is used to analyze the correlation between the age and period of working with the complaints of MSDs were

analyzed using Spearman Rank with the degree of confidence is 95%. It's aimed to determine the correlation between age and period of working with MSDS complaints on palm farmers in PT. X.

**RESULTS**

**Univariate analysis:** The focus of the study are age, period of working and complaints of MSDs on palm farmers in the PT. X. Overview the age, period of working and complaint of MSDs of respondents are showed in Table 1.

Table 1 shows the distribution and frequency of age of the 40 respondents that selected as samples in this study. The average was 34.35 years old respondents. Out of the 40 respondents, there were 22 people (55%) of respondents aged <35 years old and categorized as no-risk age group and 18 respondents (45%) aged ≥35 years old that classified as at risk age group. Distribution and frequency of the period of working of 40 was respondents that selected as samples in this study. The average respondents have period of working of 3.424 years. Of the 40 respondents there were 24 people (60%) of respondents to the duration of <4 years and categorized as at no-risk period of working group and 16 respondents (40%) with period of working ≥4 years that categorized as at risk period of working group. Most of the respondents as many as 24 (60%) of respondents have complaints of MSDs. While, as many as 16 (40%) of respondents did not have complaints of MSDs.

**Bivariate analysis:** The correlation between the age and period of working with the complaints of MSDs.

The results of the analysis of the correlation between the age and period of working with the complaints of MSDs on the respondents by using the Spearman Rank Correlation test can be seen in Table 2.

Based on the Table 2 shows that the variables between the age with the complaints of MSDs there was no correlation with p-value = 0.900 (p>0.05) with a correlation coefficient of 0.021, indicating a positive correlation with the strength of a weak correlation. This is because the average age of palm farmers are <35 years old (3 years 4 months). Respondents with age <35 years old have not degenerated bone but this group also had complaints of MSDs. Although, bone regeneration is still good but the respondent <35 years old also work with high ergonomic risk resulting in the age study did not correlate significantly with complaints of MSDs.

Table 1: Distribution and frequency of age, period of working and complaints of MSDs on palm farmers in PT. X

Variables	Quantity	Percentage (%)
<b>Age</b>		
<35 years old	22	55
≥35 years old	18	45
<b>Period of working</b>		
<4 years	24	60
≥4 years	16	40
<b>Complaints of MSDs</b>		
Yes	24	60
No	16	40
Total	40	100

Table 2: Analysis of the correlation between the age and period of working with the complaints of MSDs

Variables	p-value	Correlation spearman	Adjective
Correlation of the age with the complaints of MSDs	0.900	0.021	No correlation
Correlation of the period of working with the complaints of MSDs	0.799	0.042	No correlation

## **DISCUSSION**

The first complaint can be felt at the age of 35 years old and will continue to increase with age. This is due to degeneration in the form of tissue damage, replacement tissue into scar tissue and fluid reduction. This causes the stability of the bones and muscles to be reduced, so the older of age the greater risk of MSDs (Zhahir, 2012; Mutiah *et al.*, 2013). The results of this study are not in line study carried out by Noor (2013) that gives the result that there is a correlation between the age with the complaints of MSDs with p-value of 0.001.

This study is same with the study by Polii *et al.* (2013) on the correlation of age, period of working and nutritional status with complaints of musculoskeletal in labor unloading at the Port of Manado with the result p-value of 1.000 claimed that age do not have a correlation with complaints of MSDs. In line with Polii *et al.* (2013) the study of Pratiwi *et al.* (2009) on several factors that influence (one age) for low back pain on the carrying herbalist in the Geneng village, Mijen District, at Demak with the result p-value 0.355 claimed that age do not have a correlation with low back pain. In line with Polii *et al.* (2013) the study of Mutiah *et al.* (2013) on the analysis of the level of risk of musculoskeletal disorders (MSDs) with The Brief Survey and individual characteristics (age one) to complaints MSDs wok makers in the Cepogo village Boyolali with p-value per body part all  $p > 0.05$ .

Variable between period of working with complaints of MSDs there was no correlation with p-value = 0.799 ( $p > 0.05$ ) with the Spearman correlation coefficient of 0.042, indicating a positive correlation with the strength of a weak correlation. The results showed that workers work with period of working at risk and not at risk of having the same complaint. Respondents with period of working, who are not at risk and risk having the same ergonomic risk and position of the respondent in the harvest that have not been accordance with ergonomic position. According study by Sang *et al.* (2014) suggested that the cause of complaints of MSDs on palm farmers is a result of working posture or body position during work activities.

Period of working is a factor that greatly affects a worker to increase the risk of complaints of MSDs, especially for the type of work that uses the power or high labor. Complaints of MSDs is a chronic disease that requires long time to develop and manifest. So the longer time work, the greater is the risk for interference complaints of musculoskeletal (Zulfiqor, 2010).

Results of this study are not in line with the study conducted by Sang *et al.* (2014) on the correlation of risk postures with complaints of MSDs on oil palm farmers in PT. Sinergi Perkebunan Nusantara, Central Sulawesi (one variable is period of working) declared that there is a significant correlation between period of working with complaints of MSDs with p-value of 0.029 ( $p < 0.05$ ). But this study in line with study carried out by Rahayu (2012) regarding the factors associated with musculoskeletal disorders on lift-haul quarry workers industry in District Karangnongko Klaten (one period of working) declared that there is no correlation between period of working with complaints of MSDs with p-value of 0.214 ( $p > 0.05$ ).

## **CONCLUSION**

Palm farmers are included in the category of risk age ( $\geq 35$  years old) were 18 respondents (45%). Palm farmers are included in the category of period of working at risk ( $\geq 4$  years old) accounted for 16 respondents (40%). A total of 24 respondents (60%) experienced musculoskeletal disorders. There was no correlation between age with complaints of MSDs on palm farmers in PT.X. There was no correlation between period of working with complaints of MSDs on palm farmers in PT.X. Next study are expected to Studying other variables of environmental factors (temperature

and humidity) and work (working frequency, work posture, duration and workload) with complaints of MSDs as well as complement the limitations contained in this study. The company is expected to provide training to palm farmers in the form of stretching and gymnastics movements ergonomics to reduce the incidence of MSDs that can increase work productivity.

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