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THE 4th INTERNATIONAL CONFERENCE ON HEALTH SCIENCE 2017

“The Optimalization of Adolescent Health in The Era of SDGs”

INNA GARUDA HOTEL YOGYAKARTA,
INDONESIA
November 5th, 2017



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HEALTH POLYTECHNIC OF HEALTH MINISTRY
YOGYAKARTA Jl. Tata Bumi No.3, Banyuraden, Gamping,
Sleman, Yogyakarta, Indonesia 55293 Phone/Fax.62-274-
617601, Email : ichs@poltekkesjogja.ac.id

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**INNA GARUDA HOTEL YOGYAKARTA,
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**ANALYSIS OF RELATED FACTORS WITH A SUBJECTIVE COMPLAINT
OF MUSCULO SKELETAL DISEASES (Part II) : CHARACTERISTICS AND
RELATIONSHIP CHARACTERISTICS INDIVIDUAL FACTORS
ON WORKERS INSURANCE OFFICE**

Arif Jauhari*, Kuat Prabowo, Arfia Fridianti
Nursing Department of Health Polytechnic of Health Ministry Jakarta II, Indonesia
Email : arifjauhari@poltekkesjkt2.ac.id

ABSTRACT

Occupational health is the right of every worker to be guaranteed by the business owner. Workers are free to choose the type of work so as to obtain fair and prosperous working conditions. In the scope of occupational health prosperous has a very broad meaning covers all aspects of life ranging from health, safety, tranquility, feasibility and comfort in work (PP No.50, 2012). One of the hazards of occupational health is the danger of ergonomics. The objective of the paper was to analyze factors related to subjective complaints of musculoskeletal disorder (MSDS) disease in insurance company workers. This research is a quantitative analytic research using cross sectional study design because in this research the data collection of dependent variable and independent variable is observed in the period of time together. The results showed that the description of characteristics of individual factors for the highest complaints at age 36-45 years (43.3%), male sex (66.7%) and have a working period > 3 (68.3%) years. The relationship characteristic of individual factors "correlated significantly" for the variable age and years of service, whereas for the gender variable "there was no significant relationship".

Keywords: *Subjective Complaints, Insurance Company Workers, Ergonomic Risk Factor*

INTRODUCTION

Occupational health is the right of every worker guaranteed by the business owner and the worker is free to choose the type of work to obtain the conditions of fair and prosperous work, in the scope of prosperity health has a very broad meaning covers all aspects of life ranging from health, security, peace, feasibility and comfort in work¹. Work has risks to health problems caused by work processes, work environment and worker health behavior. Workers are not only at risk of working-related illness or occupational disease. Occupational diseases are diseases caused by work and work environments including occupational illnesses.

Based on data from the International Labor Organization (ILO) in 2013 it is known that every year 2.34 million people are found dead related to the work of both illness and accident and about 2.02 million cases of death related to occupational diseases and every 15 seconds 1 worker died due to work accident and 160 workers suffered from work-related illness. The report on the implementation of occupational health in 26 provinces in Indonesia in 2013 the number of cases of common diseases in workers there are about 2,998,766 cases and the number of cases of occupational diseases amounted to 428,844 cases (Ministry of Health Indonesia, 2014). In Indonesia the current workplace illness illustration, such as the "Peak of the Ice" phenomenon of occupational diseases that is known and reported is still very limited and partial based on the results of the study so that it has not yet described the magnitude of occupational health and safety problems in Indonesia².

One element of hazard or occupational health hazard is the danger of ergonomics. Ergonomic hazard poses a health risk to workers who can cause harm to both workers and companies. Losses incurred include worker fatigue, decreased worker productivity, resulting in the loss of working days causing material loss to the company. The emergence of ergonomic risk occurs because of many factors including the factors of work environment, work factors and the factors of the workers themselves. Occupational health problems that can be caused by ergonomic dangers are Musculoskeletal Disorders (MSDs). MSDs complaints are usually felt after working for workers in a relatively long period of time and usually felt when the workers are not working in the company or have entered a period of unproductive age (retirement). MSDs complaints are subjective because each worker has different levels of complaints ranging from the highest level, moderate to low level. However, the high level of complaints perceived by these MSDs disorder workers may impair the ability to work at normal capacity.

Based on the (Khoiriah, 2013) research results on the study of ergonomic risk factors and subjective complaints Work-Related Musculoskeletal Disorders (WMSDs) on workers who use computers at PT. X in 2013 obtained the result of ergonomic risk level of work posture assessed by RULA method obtained high risk range and very high and level of ergonomic computer workstation risk assessed using ROSA method got high risk ergonomic level³. Based on the results of Nordic Body Map (NBM) as many as 29 out of 30 respondents (96.7%) had complaints of symptoms of WMSDs with most complaints on the upper neck (58.6%), back (55.2%), lower neck (44, 8%), waist (41.8%), and hip (38%) can be concluded that from the results obtained there is a link between the level of ergonomic risk with subjective complaints WMSDs.

While based on research on the level of risk analysis of ergonomics and complaints cumulative trauma disorders on workers computer users in PT. X 2015 shows a mismatch on some work equipment and the result of an ergonomic risk level assessment using RULA on 18 computer user workers shows high and very high risk with a range of RULA 6-7 values. While from 153 respondents in the observation showed 120 (78,43%) of respondents felt there were complaints of aches, pains, pain, discomfort at the waist (35.29%), upper neck (33.98%), and neck part down (33.33%)⁴.

2. Office Ergonomics

Ergonomics is a scientific study that focuses on the appropriateness between human beings and work and other influencing factors. Ergonomic implementation considers the physical and mental abilities and worker boundaries because workers interact with equipment, equipment, working methods, tasks and work environments. In recent years, Office Ergonomics' main focus has been on computer-based work. This is based on the rapid increase in the use of computers in the office and also increased related injury or health problems experienced by workers.

Many aspects in the office that must apply the principles of ergonomic. But some things that get special attention is work posture and workstation design. The two things are interrelated, where the formation of work posture one of them is influenced by the workstation design where the workers perform work activities. Therefore in the workstation designer must consider the characteristics and limitations of workers.

3. Anthropometry

Anthropometry (the size dimension of the human body) comes from the Greek, i.e. Antropos means Man, and Metricos Means Measurement. Simply anthropometry is the study of the measurement of the human body. Anthropometry is a collection of numerical data related to the physical characteristics of the human body size, shape and strength and application of such data to the handling of design problems⁵. Humans basically have a shape of size (height, width, etc.) of weight and others that

are different from one another. Anthropometry will be widely used as an ergonomic consideration in requiring human interaction. Anthropometric data obtained successfully will be applied widely among others in terms of: Working area design (Work station, car interior), Designing equipment such as machinery, equipment, tools (tools) and so on, Consumptive product design such as clothing, chairs or tables etc., and the design of the physical environment.

4. Musculoskeletal Diseases (MSDs)

Is a complaint on the parts of skeletal muscle felt by someone ranging from very mild to very sick complaint. If the muscles receive static loads repeatedly and over a long period of time, they can cause complaints of joints, ligaments and tendons. Complaints to this damage are commonly termed with complaints (MSDs) or injuries to the musculoskeletal system.

Skeletal muscle complaints generally occur due to excessive muscle contraction due to overloading of heavy workloads with long duration of loading. Conversely, muscle complaints are unlikely to occur when muscle contraction is only between 15-20% of maximum muscle strength. But if the muscle contraction exceeds 20%, then the blood circulation to the muscle is reduced according to the level of contraction that is influenced by the amount of power required. Oxygen supplies to the muscle decreases the metabolism process of carbohydrates inhibited and as a result occur accumulation of lactic acid causing muscle pain⁶.

METHOD

This research uses REBA (Rapid Entire Body Assessment) method. REBA is an ergonomic measurement method used to evaluate work, workload and posture (neck, back, arms, wrists and feet). In addition, this method is also influenced by coupling factors, external burden is supported by the body and work activities during work. Assessment using the REBA method that has been done by Dr. Sue Hignett and Dr. Lynn McAtamney through the stages dividing into three groups A, B and C) as follows:

1. Taking posture data of workers by using video or photo assistance.
2. Determination of the corners of the worker's body part.

RESULT

1. Characteristics of Individual Factors

Table 1. Distribution Of Individual Respondent Factors with Subjective Community Compliance Rate of MSDs Diseases on Employees Division HR, Network, Budget Accounting, Banking and Seniors in PT. Insurance Jasindo Year 2017

Variable	Frequency	Percentage (%)
Age (years):		
26-35	17	28,3
36-45	26	43,3
46-55	17	28,3
Total	60	100
Sex:		
Female	20	33,3
Male	40	66,7
Total	60	100
Work (years)		
< 3	19	31,7
>3	41	68,3
Total	60	100

Source: Primary Data 2017

Based on the results of table 1, the highest individual factor distribution results were obtained in the variable age at 36-45 years old (43,3%), gender variable on male gender (66,7%), and time variable working period > 3 years (68,3%).

2. Relationship Characteristics of Individual Factors

Tabel 2. Relationship Characteristics Of Individual Factors with Treatment Subjective Combustion Completion Of MSDs In Workers Division HR, Network, Budget Accounting, Banking and Seniors in PT. Insurance Jasindo Year 2017

Variable	Ignored		Low		Medium		High		Total	P-Value
	F	%	F	%	F	%	F	%	F%	
Age (years):										0,000
26-35	3	17,6	8	47,1	5	29,4	1	5,9	17	100
36-45	1	3,8	0	0	14	53,8	11	42,3	26	100
46-55	0	0	0	0	6	35,3	11	64,7	17	100
Total	4	6,7	8	13,3	26	41,7	23	38,3	60	100
Gender:										0,836
Female	1	5,0	3	15,0	7	35,0	9	45,0	20	100
Male	3	7,5	5	12,5	18	45,0	14	35,0	40	100
Total	4	6,7	8	13,3	25	41,7	23	38,3	60	100
Work (years):										0,002
<3	4	21,1	5	26,3	6	31,6	4	21,1	19	100
>3	0	0	3	7,3	19	46,3	19	46,3	41	100
Total	4	6,7	8	13,3	25	41,7	23	38,3	60	100

Source: Primary Data 2017

Based on the results of table 2 obtained statistical test results obtained p-value for the variable age 0.000. While the result of p-value for gender variable 0,836 and result p-value for variable of work time 0,002.

DISCUSSION

1. Characteristics of Individual Factors

Based on the results of the distribution of the highest individual factors on the age, sex and employment variables are at the age of 36-45 years, male and have a working life > 3 years.

This shows that the theory found in Osborne (1995) about skeletal muscle complaints in accordance with the results of research that says that a person at the age of 35 years new feel subjective complaints of MSDs disease and the level of complaints will continue to increase as the age of a person decreases muscle strength⁷.

While for physiologically gender variables, women's muscle abilities were lower than men and based on previous studies showed the prevalence of some cases of MSDs higher for women than men⁸ and theory of Tarwaka, suggests that the ratio of muscle complaint periods between men and the woman is 1: 3⁹. However, because the number of respondents' proportions between unbalanced men and women made the results in the study for the highest gender variables experienced by men.

This is one of the factors that makes the results of the study at the time of work > 3 years has the highest category in this study because in theory of Tarwaka states that workers have a working period e4 years have a risk of 2.775 times compared to workers with a working period d4 years⁹. Of the several individual factors that can affect subjective complaints of MSDs disease one of them includes the variable age and the length of work that researchers do in this company.

The preventive action that can be done to reduce subjective complaints from individual factors is by changing the habit of sitting the individual into a little lordose on the waist and a little kifose may be on the back, for the company is given at least 15 minutes for all employees to stretch simultaneously to reduce the burden static and for further research is expected to get the number of male and female respondents are balanced to be seen distribution⁹.

2. Relationship Characteristics of Individual Factors

Based on statistical test results obtained p-value value for the variable age 0,000, while the value of p-value gender 0.836 and p-value value of work 0.002. So the result for the variable age and working period "no relationship" and for sexes "no relationship". At the age of 30 years degeneration in the form of tissue damage, tissue replacement into scarring, fluid reduction makes the stability of the bone and muscle become reduced, so the older a person the higher the risk of the person experiencing elastic decrease in bone that cause disease MSDs. This is the highest cause of respondents to feel the subjective complaint rate of MSDs disease at the age of 36-45 years because of the beginning of tissue damage and reduction of fluid plus if a respondent during work does not consume mineral water to make the body lack of fluids that can reduce concentration and increase muscle fatigue and contagious symptoms of MSDs disease.

While for physiologically gender variables, women's muscle abilities were lower than men and based on previous studies, the prevalence of some cases of MSDs was higher among women than men⁸. This is different from the results obtained by researchers because in this study there are several factors that affect one of them is

because the distribution of male and female respondents who do not have the same proportion of the spread makes the spread cannot be seen significantly and female respondents in the female the company has no significant complaints as the kind of work balanced between sitting and standing makes low static loads. For the variable of working period one of the factors that make the research result on the working period > 3 years have Medium and High category and is reinforced with the theory of Tarwaka, which states that workers have e4 years of service have a risk of 2.775 times compared to workers with years of service d4 years⁸.

The results of this test are the same as the research (Handayani, 2011) which shows there is relationship between ages with MSDs disease complaints with p-value value 0,030. From the results of statistical test data of this study in accordance with the existing theory and content the same statistical test results that "there is a relationship" with previous research on MSDs disease. While for statistical test result for gender variable equal to research (Ridwan, 2011) stating that "no relationship" and for variable of working period of this research result same with result of research done by (Handayani, 2011) with result of p- value 0.004 which indicates that there is a relationship between the duration of the work with MSDs disease and the existing theory of the working relationship with subjective complaints of MSDs disease is similar to the results of research which proves the longer the worker will feel the subjective complaints of MSDs disease.

The preventive action to reduce subjective complaints of MSDs disease in workers of individual factors, especially for the variable age and employment can be done by:

- a. For age variables, because the older the age of a person more susceptible to muscle fatigue it is necessary to rest or stretch at least 15-25 minutes to change the position of the body in order to reduce the static movement.
- b. At work workers should consume enough mineral water at least 8 glasses per day, because lack of oxygen can make the occurrence of muscle fatigue and decreased concentration power that can cause symptoms of MSDs disease.
- c. For the variable of working period, because the longer the work will be increasing subjective complaints MSDs disease it is necessary to do administrative control by rotating workers who work in each division so that workers are not workers with the same work load during work in the company within a period of continuing in a long time⁸.

CONCLUSION

Based on the results of research conducted at PT. INSURANCE JASINDO on the division of HR, Network, Budget Accounting, Banking and Agency it can be drawn conclusions, among others:

1. Description of characteristics of individual factors for the highest complaints at age 36-45 years (43.3%), male sex (66.7%) and have a working period > 3 (68.3%) years.
2. The relationship characteristic of individual factors "correlated significantly" for the variable age and years of service, whereas for the gender variable "there was no significant relationship".

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