Relationship_between_Work_Posture_and_Musculoskeletal.pdf

by

FILE	RELATIONSHIP_BETWEEN_WORK_POSTURE_AND_MUSCULOSKELETAL .PDF (359.38K)		
TIME SUBMITTED	22-NOV-2020 10:46PM (UTC+0700)	WORD COUNT	3216
SUBMISSION ID	1453900284	CHARACTER COUNT	17053

DOI Number: 10.5958/0976-5506.2019.01714.5

Relationship between Work Posture and Musculoskeletal Disorders (Msds) at Processing Workers in PtToarco Jaya, Rantepao City year 2017

Januarty Triani Rimba[1], Furqaan Naiem[1], Muhammad Rum Rahim[1]

[1]Department of Work Safety and Health, Faculty of Public Health, Hasanuddin University

ABSTRACT

Musculoskeletal Disorders (MSDs) are one of the problems that are often experienced by workers in both the informal sector and the formal sector. PT Toarco Jaya Processing worker is an industry that engaged in Arabica coffee production where there are activities that are quite high, monotonous and repetitive. This can cause workers to experience skeletal muscle disorders that can reduce work productivity. This study aims to determine the relationship of work posture with Musculoskeletal Disorders (MSDs) disorders in PT Toarco Jaya processing workers in the city of Rantepao in 2017. This type of research was observational analytic with a cross sectional study approach. Data collection is conducted against 57 workers by exhaustive sampling in March 2017. Primary data collection was obtained from interviews using questionnaires, Nordic Body Map Questionnaire, Rapid Entire Body Assessment, microtoise, scales and cameras. Data analysis was performed using univariate analysis, namely frequency distribution and percentage of each variable and bivariate analysis was performed on two variables to identify relationships using the chi-square test. The results of this study indicate that there is a relationship between work posture and MSDs complaints with a p value (0.002), there is a relationship between age, nutritional status, and work period with complaints of MSDs with a value of p (0.005), p (0.030), p (0.031) < α (0.05). It is best for the company management to provide training on work posture at work. Others factors such as workload and environmental factors are recommended in future study.

Keywords: *Work Posture; Musculoskeletal Disorders; Processing Workers*

Introduction

As a developing country, Indonesia needs healthy, efficient and productive human resources to support national development. Besides that labor is an element that is directly confronted with various consequences of technological advances in industry, so it is only natural for them to be given health care protection and development towards welfare or national guarantees.[1] Based on data from the International Labor Organization (ILO) in 2013, every 15 seconds one worker dies from a work accident and 160 workers experience work-related illness.[2]

The factors that cause musculoskeletal complaints are excessive muscle stretching, languishing activity, unnatural work attitude, secondary causes and combination causes.[3] Studies of musculoskeletal in various types of industries have been carried out and studies have shown that muscle parts that are often complained about are skeletal muscle which includes the muscles of the neck, shoulders, arms, hands, fingers, back, waist, and lower muscles.[3] From various types of research, it can be seen that the complaints of diseases that are often suffered by workers are work related musculoskeletal disorders, one of which is influenced by the existence of a work position. The work method will directly or indirectly affect the muscles involved and can cause muscoleskeletas disorders with complaints of pain in the neck, back, lower back and other complaints.[4]

In a study conducted on paving workers in CV SumberGalian, Makassar, showed that of 85 respondents there were 52 respondents who experienced severe disorder Muscoleskeletas disorder and 32 other respondents had mild disorder muscoleskeletas disorder, this indicates that there are still many workers who suffer from muscoleskeletas disorder specifically in the city of Makassar.[5] Based on research conducted on Fumiture workers in Benda Kota Tangerang District, showed that there were 27 workers (81.8%) aged ≥ 30

years who had musculoskeletal disorder and as many as 22 workers (45.8%) aged <30 years also experienced musculoskeletal disorder. The results of bivariate statistical tests showed that there was a significant relationship between age and musculoskeletal disorder. According to Suma'mur (2009) in a week people can only work well for 40-50 hours. More than that negative tendencies arise.[6]

Body mass index (BMI) can also be used as an indicator of the condition of worker nutrition according to Zulfiqor (2010) who conducted research on fabrication workers at PT.[7] Caterpillar Indonesia, someone who is overweight will try to support the weight from the front by contracting the lower back muscles. And if this continues, it will cause pressure on the spinal cord pads which results in fatigue and muscle pain. Based on the results, it was obtained workers who had an index of body obesity period of 13 workers (17.3%) and workers with a normal body mass index of 32 workers (42.7%). The test results showed that most workers had a normal BMI and experienced complaints of mild MSDs, namely 26 workers. This is not in line with the research of Karuniasih (2009) which examined 52 bus travel drivers, which amounted to 90.4% of MSDs complaints experienced by bus drivers who had excessive body mass index (overweight) or obesity.[8]

Work posture and work position that are not ergonomic have an impact on decreasing work productivity and work performance which can lead to work accidents, besides that it can also affect workers' health levels, one of which is muscle and joint complaints or musculoskeletal complaints. Based on the description of the background above, the authors are interested in conducting research on the relationship of work posture with disorders of Musculoskeletal Disorders (MSDs) in PT workers,Toarco Jaya, Rantepao City.

Methodology

This study used observational analytic method. A cross sectional approach was used to identify the relationship of work posture variables with musculoskeletal disorder (MSDs). The location of the research was carried out at PT. Toarco Jaya, the city of Rantepao.The population used as samples in the study were 57 processing workers at PT Toarco Jaya, Rantepao City.

Method of Collecting Data: The data on complaints of Musculoskeletal Disorders (MSDs) were obtained using the Nordic Body Map questionnaire. The data on work posture is obtained by calculating the risk of skeletal muscle pain in certain body parts (neck, spine, upper & lower arms, wrists) using the REPR (Rapid Entire Body Assessment) sheet. The data on the Body Mass Index obtained through direct measurement of body weight and height of workers using a weight scale and microtoice role and then calculated using the BMI formula.

Data Processing: Processing and data analysis techniques were carried out by Chi Square statistical tests and using the SPSS program.

Data Analysis: Univariate analysis was performed on each variable from the results of this study to see the frequency and percentage distribution, which included work attitudes, age, length of work, length of service, nutritional status, musculoskeletal disorder (MSDs). Bivariate analysis is done to prove the hypothesis with the chi-square test where the variable work attitudes, age, work status of nutritional status (BMI) and years of service with MSDs complaints in this study.

Result and Discussion

Retrieval of respondents' research data was conducted in March 2017 with 57 Processing workers. This study gains the permission of the Manager of PT Toarco Jaya and the head of Processing. Interviews were conducted using questionnaires and the Nordic Body Map Questionnaire. Then, measurements of workers' height were carried out using microtoise and for measuring body weight using weight scales. The data obtained is then processed using the SPSS computer program.

The characteristics of the respondents show majority of the respondents are from age group of 35-44 and 45-54 contribute by 35% and 33% respondents respectively. Next, most of the respondents about 63.2% have working period between 3 to 10 years. For nutrition status, majority about 40.4% of the respondents are under fat categories where thin and normal categories contribute by equal percentage which is 28.1% each.

Distribution of Respondents based on Musculoskeletal Disorders Complaints (MSDs): In this study, complaints of Musculoskeletal Disorders (MSDs) in processing part workers were grouped into two, namely workers who experienced MSDs complaints (80.7%)

and workers who did not experience MSDs complaints (19.3%). The highest reported body parts for MSDs are neck, waist, left ankle, right ankle, right shoulder, left shoulder and back contribute by 45.6%, 42.1%, 38.5%, 38.5%, 36.8%, 33.3% and 26.3% respectively.

Distribution of Respondents based on Work Posture, Age, Nutritional status and Working period: High-risk workers are who have 8-15 Rapid Entire Body Assessment (REBA) scores or action levels 3 and 4. For low-risk work postures, they have a REBA score of 1-7 or level 0, 1, and 2. Table 1 shows that the work posture on processing workers who have a high risk are 73.7%. The number of workers with a low risk work posture is 26.3%. The age of respondents into two categories, namely high risk (aged ≥ 30 years) and low risk (aged <30 years). High risk category has 77.2% of the respondents and a low risk category has 22.8% of the respondents.

The nutritional status has two categories where the abnormal nutritional status is BMI> 25 or <18.5 and for the category of normal nutritional status is BMI ranged from 18.5-25. Table 1 shows that 71.9% of the respondents are under abnormal nutritional status and the respondents under normal nutritional status are 28.1%. Working period is grouped into two categories where the respondents who have worked for ≥ 5 years and working period of <5 years. The working period of respondents with the category ≥ 5 years is 47.4% and category which is <5 years is 52.6%.

Table 1: Distribution of Respondents based on Work Posture, Age, Nutritional status and Working period

Items	Categories	Frequency (n)	Percentage (%)
Work posture	High Risk (8-15 REBA)	42	73.7
	Low Risk (1-7 REBA)	15	26.3
Age	High Risk (More than 30 years old)	44	77.2
	Low Risk (Less than 30 years old)	13	22.8
Nutritional status	Normal	16	28.1
	Not Normal	41	71.9
Working period	Old (More than 5 years)	27	47.4
	New (Less than 5 years)	30	52.6

Relationship between Complaints on Musculoskeletal Disorders (MSDs) with Work Posture, Working Period, Age and Nutritional Status: Table 2 shows there are 90.5% of the respondent experienced musculoskeletal disorders with high risk work posture and 53.3% of the respondent experienced musculoskeletal disorders with low risk work posture. Besides that, there are 46.7% and [illegible]% of the respondent did not experienced low risk and high risk respectively. The chi-square test obtained p = 0.002 (p = <0.05), so that H0 is accepted and Ha is rejected so that it can be interpreted that there is a relationship between work posture and complaints of musculoskeletal disorders (MSDs) in processing workers PT Toarco Jaya In 2017.

Table 2 shows there are 92.6% of the respondents are from long service life which is more than 5 years and about 7.0.0% are from new work a period which is less than 5 years. Furthermore, respondents who did not experience MSDs complaints with a long working period about 7.4% and 30.0% with new years of service that did not experience MSDs complaints. The chi-square test obtained the value of p = 0.031 (p <0.05) means that H0 is rejected and Ha is accepted, so that it can be interpreted that there is a relationship between work period and MSDs complaint on processing workers PT Toarco Jaya Kota RantepaoTahun 2017.

Table 2 shows the high risk age that experienced MSDs complaints are about 88.9% and high risk age that experienced MSDs complaints are about 53.8%. Then, respondents who did not experience MSDs with a high risk age category is about 11.4% and a low risk age category is about 46.2%. The chi-square test obtained the value of p = 0.005 (p <0.05) means that H0 is rejected and Ha is accepted, so that it can be interpreted that there is a relationship between age and MSDs complaints in 2017 PT Toraco Jaya processing workers.

Table 2 shows the respondents who experienced complaints of MSDs with abnormal nutritional status were 36 respondents are 87.8% and respondents who experienced complaints of MSDs with normal nutritional status are 62.5%. Respondents who did not experience

complaints of MSDs with abnormal nutritional status are 12.2%, while respondents with normal nutritional status are 37.5%. The chi-square test obtained the value of p = 0.030 (p <0.05) means that H0 is rejected and Ha is accepted, so it can be interpreted that there is a relationship between nutritional status and MSDs complaints to processing workers PT Toarco Jaya, Rantepao, Tahun 2017.

Table 2: Relationship between Complaints on Musculoskeletal Disorders (MSDs) with Work Posture, Working Period, Age and Nutritional Status

Relationship between Complaints on Musculoskeletal Disorders (MSDs)		Complaints of MSDs		Statistical test results (P value)
		No (%)	Yes (%)	
Work Posture	Low Risk (1-7 REBA)	46.7	53.3	0.002
	High Risk (8-15 REBA)	9.5	90.5	
Working Period	New (More than 5 years)	30.0	70.0	0.031
	Old (Less than 5 years)	7.4	92.6	
Age	Low Risk (Less than 30 years old)	46.2	53.8	0.005
	High Risk (More than 30 years old)	11.4	88.9	
Nutritional Status	Normal	37.5	62.5	0.030
	Not Normal	12.2	87.8	

The results of this study are consistent with the research conducted by Suwanto, J (2016) that the results of statistical tests using the Spearman Rho test with a significant level (α≤0.05) obtained a significance value (p = 0.001) with a moderate relationship (r = 0.551) hence there is a significant relationship between the risk of work posture and the risk of musculoskeletal complaints.[9] Meanwhile, according to Nurhayati (2013), the results of statistical tests on the relationship between work posture and musculoskeletal complaints with a significance value of 0,000 p-value <0.05, a correlation strength value of 0.657 (strong) and a positive correlation means that there is a strong and very significant relationship between postures work with musculoskeletal complaints.[10]

Boshuizen et al in Margarini (2014), states that someone who works more than 5 years increases the risk of back pain compared to less than 5 years of exposure.[11] This can occur because the loading of the spine for a long time can cause the disc cavity to constrict permanently and also result in spinal degeneration which can cause chronic lower back pain. The same is true of Aisyah (2014), in lifting workers about the relationship between individual characteristics and work position with musculoskeletal complaints in lift-up workers at PT.[12] AJG Gresik is one of them concerning working period which shows that there is a relationship between years of service and musculoskeletal complaints.

Age is identical to the level of work ability by changes in body tools, cardiovascular and hormonal systems.[1] This study is in line with Tarwaka (2010) which states that workers who than 35 years old have a small risk of experiencing musculoskeletal complaints.[3] These complaints occur because in general, skeletal muscle complaints begin to be felt in working age, which is 25-65 years. Nusa, et al (2013) showed that there was a significant relationship between age with musculoskeletal complaints with a value of p = 0.003 (p <0.05) and the closeness value of the relationship was positive, namely the higher the age the higher the risk of musculoskeletal complaints.[13]

This is consistent with Puput's 2015 study which showed that body mass index (BMI) had a significant relationship with musculoskeletal complaints.[14] According to Supariasa (2002), the Body Mass Index (BMI) or Body Mass Index (BMI) is a simple tool or way to monitor the nutritional status of adults, especially those associated with underweight and overweight.[15] The association of BMI with MSDs is the more fat a person is, the greater the risk of experiencing MSDs.

Conclusion

Based on the results of research on the relationship of work posture with complaints of musculoskeletal disorders in PT Toarco Jaya Processing workers in the city of Rantepao in 2017, the musculoskeletal Disorders (MSDs) complaints on processing workers are more than workers who do not experience MSDs complaints. Work posture, Working period, Age and Nutritional status

are related to complaints of Musculoskeletal Disorders (MSDs) in PT Toarco Jaya processing workers in the city of Rantepao in 2017.

Acknowledgement

The authors would like to thank to the participants at PT Toarco Jaya, Rantepao City.and Faculty of Public Health, Hasanuddin University for unconditionally support.

Ethical Clearance: Taken from the committee

Source of Funding: Nil

Conflict of Interest: Nil

REFERENCES

1. Suma'mur PK. Company Hygiene and Work Safety. Printing 13. Haji Masagung: Jakarta. 1996.
2. ILO. The Prevention of Occupational Diseases. [Internet]. 2013. [cited 2015 Oct 25]. Available from www.ilo.org/wcmsp5/groups/public/wcms_204755.pdf
3. Tarwaka. Industrial Ergonomics, Knowledge Fundamentals and Applications at Work. Publisher: Harapan Press Solo. 2010.
4. Fatimah T. Pain in the Back of the Stitching Workers Section at PT Intigarmindo Persada Jakarta. Thesis. Jakarta: Veterans National Development University. 2011.
5. Cindyastira D. Relationship between Circulation with Complaints on Musculoskeletas Disorder in Block Paving Workers at CV Sumber Galian, Makassar City. Makassar Journal: Faculty of Health Community of Hasanuddin University. 2014.
6. Suma'mur PK. Corporate Hygiene and Occupational Health (Hiperkes). Sagung Seto: Jakarta. 2009.
7. Zulfiqor MT. Related Factors with Complaints of Mollusculoskeletal Disorders in Welder in Parts Fabrication of PT. Caterpillar Indonesia in 2010. Scientific Thesis. State Islamic University Syarif Hidayatullah Jakarta. 2010.
8. Karuniasih. Review of physiology and complaints about the impact of musculoskeletal disorders on the driver of the Trans-Jakarta Travel X-Bandung travel destination. Journal. Jakarkat: Indonesian University Community Health Faculty. 2009.
9. Suwanto J. Relationships between Risks of Posture Work with Risk of Complaints on Mollusculoskeletal Workers in the Cutting Section of Iron in the Industrial Center in the Padas Industry in Klaten. Thesis. Health Sciences Faculty. Muhammadiyah University Surakarta. 2016.
10. Nurhayati H. Relationship between Posture Work with Complaints Muskuloskleetal on Work Press Dryer UD. Abioso, Boyolali. Scientific Thesis. Surakarta: UNS. 2013.
11. Margarini AF. Relation of Factors to Characteristics of Individuals, Economical Factors with Complaints on Subjective Musculoskeletal Disorders (MSDs) in Construction Workers of PT. X. Thesis.Surabaya: Faculty of Health, University of North Carolina. 2014.
12. Aisyah F. Relationship Characteristics of Individuals and Position of Work with Complaints of Musculoskeletal Disorders in Cluster Workers in Warehousing of PT AJG Gresik 2014. Thesis. Surabaya: Faculty of Health Community of the University of North Carolina. 2014.
13. Nusa Y, Joseph WB, Lampus BS. Relationships between Tribes, Duration of Work, and Shaking with Complaints on the Musculoskeletal System at Manado-Langowan Route Bus Driver at Karombasan Terminal. Journal. Community Health Faculty, Samrat University repeated. 2013.
14. Puput NF, Catur Y. Secondary Factors Associated With Complaints of Mollusculoskeletal Laundry Workers in Muktiharjo Kidul Village Semarang. Journal of Dian Nuswantoro University Health Faculty. 2015.
15. Supariasa, I.D.N. Nutritional Status Assessment. Jakarta: ECG Medical Book. 2002.

Relationship_between_Work_Posture_and_Musculoskeletal.pdf

ORIGINALITY REPORT

%13	%9	%5	%0
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	eprints.undip.ac.id Internet Source	%2
2	Husda Oktavianno, Zairin Noor Helmi, Ratna Setyaningr. "Correlation between Age and Period of Working with the Musculoskeletal Disorders Complaints on Palm Farmers in Pt. X", Asian Journal of Epidemiology, 2015 Publication	%2
3	www.ijphrd.com Internet Source	%1
4	eprints.ums.ac.id Internet Source	%1
5	talenta.usu.ac.id Internet Source	%1
6	docshare.tips Internet Source	%1
7	Rihul Husnul Juliyatmi, Lina Handayani. "Nutritional Status and Age at Menarche on Female Students of Junior High School",	%1

	International Journal of Evaluation and Research in Education (IJERE), 2015 Publication	
8	eprints.uthm.edu.my Internet Source	%1
9	ejournal.unsri.ac.id Internet Source	<%1
10	repository.unib.ac.id Internet Source	<%1
11	www.atlantis-press.com Internet Source	<%1
12	www.jpcc.in Internet Source	<%1
13	balimedikajurnal.com Internet Source	<%1
14	ascopubs.org Internet Source	<%1
15	Ritesh N Kumar, Dennis W Raisch, Matthew E Borrego. "Quality assessment of economic analyses of pharmacological and nutritional therapy for hyperlipidemia", Expert Review of Pharmacoeconomics & Outcomes Research, 2014 Publication	<%1
16	worldwidescience.org	

Internet Source

<%1

17 DK Sofyan, Amir. "Determination of Musculoskeletal Disorders (MSDs) complaints level with Nordic Body Map (NBM)", IOP Conference Series: Materials Science and Engineering, 2019

Publication

<%1

18 www.iosrjournals.org

Internet Source

<%1

19 Fauziah Andika, Muhammad Yusrizal Syahputra, Marniati. "Infection prevention efforts of pulmonary tuberculosis patients in the local government clinic of Kuta Baro Aceh Besar", AIP Publishing, 2017

Publication

<%1

EXCLUDE QUOTES ON

EXCLUDE BIBLIOGRAPHY ON

EXCLUDE MATCHES < 5 WORDS