

FACTORS RELATED TO MUSCULOSKELETAL DISORDER COMPLAINTS IN HIFTING WORKERSIN THE BULOG WAREHOUSE JAMBI

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ABSTRACT

In Indonesia, there are still some companies that do the work manually. One of these companies that still do the work of lifting-transport manually i.e. Public Company or Logistics Agency bulog perum. Transport workers is one part of the community workers need to get attention because the work they do much to contain risks to health. one of the complaints frequently suffered by transport-lifting is a musculoskeletal disorder

This research was carried out in the Regional divisions of the Bulog Jambi on musculoskeletal keluhan. Determination of the sample of this research as many as 43 people. The population of this research is all workers lift-angkut in the Regional divisions of the Bulog Jambi. Design research is a cross sectional sample is selected by the total sampling techniques. Data retrieval is performed using a questionnaire and analyzed with pulse measurement using univariate analysis and bivariat.

The results of the statistical analysis using chi-square shows there is a connection between the long work with a value of $p = 0.004$, and workload with $p = 0.000$ complaints of musculoskeletal disorder on lift-transport workers in methods of manual handling in the warehouse Bulog Regional Division of Jambi

Should use the workload that is not too heavy in preventing musculoskeletal complaints, work in accordance with the procedure and does not use the working hours can be risky for health.

Keywords: Musculoskeletal, long work, and Workload

ABSTRAK

Di Indonesia masih ada beberapa perusahaan yang melakukan pekerjaan secara manual. Salah satunya perusahaan yang masih melakukan pekerjaan angkat-angkut secara manual yaitu Perusahaan Umum Badan Logistik atau disingkat perum bulog. Buruh angkut merupakan salah satu bagian dari masyarakat pekerja perlu mendapat perhatian karena proses kerja yang mereka lakukan banyak mengandung risiko terhadap kesehatan. salah satu keluhan yang sering diderita oleh angkat-angkut adalah musculoskeletal disorder.

Penelitian ini dilaksanakan di Gudang Bulog Divisi Regional Jambi tentang keluhan muskuloskeletal. Penetapan sampel penelitian ini sebanyak 43 orang. Populasi penelitian ini adalah semua pekerja angkat-angkut di Gudang Bulog Divisi Regional Jambi. Desain penelitian adalah cross sectional dengan sampel dipilih secara teknik total sampling. Pengambilan data dilakukan dengan menggunakan kuesioner dan pengukuran denyut nadi dianalisa dengan menggunakan analisa univariat dan bivariat.

Hasil analisis statistik menggunakan chi-square menunjukkan terdapat hubungan antara lama kerja dengan nilai $p=0.004$, dan beban kerja dengan $p=0.000$ keluhan muskuloskeletal disorder pada pekerja angkat-angkut dengan metode manual handling di Gudang Bulog Divisi Regional Jambi

Hendaknya menggunakan beban kerja yang tidak terlalu berat dalam mencegah keluhan musculoskeletal, bekerja sesuai dengan prosedur dan tidak menggunakan jam kerja yang dapat berisiko bagi kesehatan.

Kata kunci: Muskuloskeletal, Lama Kerja, dan Beban Kerja

INTRODUCTION

Ergonomics in general discusses the relationship between human workers and their tasks and work as well as the design of the objects used. Ergonomics strives to ensure that the work and every task of the job is designed to suit the abilities and capacities of workers, in order to realize work efficiency and welfare. The

role of ergonomics in improving occupational safety and health factors includes: design of a work system to reduce pain and aches in the human skeletal and muscular systems, design of work stations for visual aids (Kuswana 2012)

One of the ergonomic problems that often occur in informal sector workers is musculoskeletal complaints. Musculoskeletal complaints are complaints on the part of the skeletal muscles that are felt by a person ranging from very mild complaints to very painful. If the muscles receive static loads repeatedly and for a long time, they will cause complaints in the form of damage to joints, ligaments and tendons. Complaints to damage are usually referred to as musculoskeletal disorders (MSDs) or injuries to the musculoskeletal system (Tarwaka 2010a)

UU no. 36 of 2009 concerning Health (Health Law) views occupational health efforts as very important to protect workers so that they live healthy lives and are free from health problems, as well as bad relationships caused by work. Therefore, occupational health is regulated in a separate chapter, namely Chapter XII which consists of Articles 164 to Article 166. Occupational health efforts cover workers in the formal sector, namely workers who work in employment and informal relationships, namely workers who work outside of work relations. . The intended occupational health efforts apply to everyone other than workers who are in the workplace environment. (UU No. 36 2009)

Occupational factors that can cause MSDs are related to unnatural posture, load, duration and frequency. The results of H.C Wu's study stated that workers with more years of work and age were more at risk of experiencing MSDs in the upper back, shoulders, wrists and knees. In addition, individual factors in the form of smoking habits can also influence the occurrence of MSDs (H.C Wu, 2012). External factors of workload are workloads that come from outside the worker's body such as tasks, work organization, and work environment. While the internal factors of workload are factors originating from within the body such as somatic factors (gender, age, body size, nutritional status, health conditions, and so on) and psychological factors (motivation, perceptions, beliefs, desires, satisfaction, and so on). (Tarwaka 2010)

The workload of each worker varies, according to the type of work. Workload can be in the form of mental, physical and social burdens. Physical load is determined when workers do work using physical strength such as the work of porters when lifting goods. Physical loads can affect workers' health in the form of work accidents/occurrence of work-related illnesses. One of the diseases that arise from the lifting work process is the emergence of pain in the neck, shoulders and waist, due to the emphasis on the burden on the body (Eko Nurmianto 2011)

The length of time someone works a day well in general is 6-8 hours. The rest (16-18 hours) is used for life in the family and society, rest, sleep, and others. Extending working time beyond this capacity is usually not accompanied by high efficiency, in fact, a decrease in productivity will usually be seen as well as a tendency for fatigue, illness and accidents to occur. Within a week, a person can usually work well for 40-50 hours. More than that, you will see a tendency for negative things to arise (Tarwaka 2004)

American BLS (Bureau of Labor Statistics) data reports the number of work-related diseases in the form of MSDs during 2012 was 29% compared to other

work-related diseases. Data from the EODS (Eurostat figures on recognized occupational diseases) regarding occupational diseases in Europe in 2005, MSDs ranked first at 38.1%. In addition, a survey also conducted on workers in Europe stated that 24.7% of workers complained of back pain, 22.8% muscle pain, and 45.5% reported working in conditions of pain and fatigue where 35% of them worked with heavy loads. Meanwhile in Indonesia, data collected by Herryanto, a researcher from the Health Ecology Research and Development Center at the Ministry of Health in 2004, stated that 8% of brass craftsmen in Central Java complained of pain in the back, shoulders and wrists (BLS 2012)

In Indonesia there are still several companies that do work manually. One of the companies that is still carrying out manual lifting and transport work is the General Logistics Agency Company or abbreviated as Bulog Public Corporation. Perum Bulog is a state-owned public company engaged in food logistics, Bulog was formed on May 10, 1967 based on the decision of the Cabinet Presidium 114/Kep/1967.

Perum Bulog is one of the BUMNs in Indonesia that still employs manual transport workers, namely Perum Bulog Drive Jambi. To store rice that has been harvested and processed by farmers, rice that has been packed in sacks measuring 50 kg must be moved to the storage warehouse by lifting and transporting the rice which is carried out by porters who work in the Bulog warehouse. Activities at Perum Bulog include warehousing and distribution of rice to consumers. In the process of lifting and transporting it, Bulog uses the services of porters to transport rice manually from trucks to warehouses and vice versa. The location of the Bulog warehouse for the Jambi regional division is located at Jalan Bachsan Siagian No. 26, Pasir Putih sub-district, South Jambi District, Jambi City (Profil Perum Bulog 2018)

Transport workers are a part of the working community that needs attention because the work processes they carry out contain many risks to health. Freight workers are jobs that work by selling goods or material transportation services from one place to another. In general, these workers use the body as a means of transportation such as carrying, carrying or shouldering. The distance traveled in lifting depends on the initial location of the goods to the destination (Suma'mur 2009)

The results of Kasjono's research (2017) obtained for the manual handling time variable based on the frequency of lifting or moving operations at the stages of extracting raw materials, forming and drying bricks, there is a relationship with complaints of lower back pain and on the variable manual handling working conditions at the stages of extracting materials. raw there is a relationship between manual handling working conditions with complaints of low back pain. The variable manual handling workload and manual handling posture are not significantly related to low back pain at all stages of brick making.

The results of Dhimas' research (2018) show the relationship between workload and musculoskeletal complaints in porters at the Pasar Gede Surakarta. The work of porters at Pasar Gede Surakarta is included in the heavy workload category so that these porters experience musculoskeletal complaints. (Dhiemas Mahardika Maulida, 2018)

Based on a survey of 10 workers who did the work, all of them experienced complaints in the lower neck, 7 people, 8 people with low back pain, 8 people with right shoulder pain, and 5 people with left shoulder pain. Musculoskeletal complaints are complaints that are often felt by workers in the informal sector. Freight workers are a field of work that cannot be separated from these complaints.

Based on the background that has been described, there are still many complaints experienced by transport workers, so researchers are motivated to conduct research on factors related to musculoskeletal disorder complaints in lift-and-carrier workers using the manual handling method at Bulog Warehouse, Jambi Regional Division

Research Purposes

Knowledge of factors related to musculoskeletal disorder complaints in lift workers using the manual handling method at Bulog Warehouse, Jambi Regional Division

RESEARCH METHODS

This research is a quantitative study with a cross-sectional approach to see the relationship between physical workload, length of work and complaints of musculoskeletal disorders using the manual handling method for lift workers. The research was conducted at the Bulog Warehouse, Jambi Regional Division. The population in this study were all workers in the lifting section at the Bulog Warehouse, Jambi Regional Division, consisting of 43 workers. The sample in this study amounted to 43 workers. The sampling technique was carried out by means of total sampling. Data analysis in this study was Univariate and Bivariate with the chi square test.

RESULTS AND DISCUSSION

Results

Univariate Results

Based on the research that has been done, it was found that 35 respondents (81.4%) had severe musculoskeletal complaints and 39 respondents (90.7%) had long working hours at risk and 35 respondents (81.4%) had heavy workloads. The data can be seen in the following table:

Table.1
Frequency distribution of factors causing musculoskeletal complaints

Variable	Frekuensi	Persentase (%)
Musculoskeletal Complaints		

light	35	81.4
heavy	8	18.6
Long work risk	39	90.7
no risk	4	9.3
work load		
heavy	35	81.4
light	8	18.6
amount	43	100

Bivariate Results

The results of bivariate analysis show that

- There is a relationship between workload and musculoskeletal disorder complaints with the manual handling method for lift workers at the Bulog Warehouse, Jambi Regional Division, with a p-value of 0.004
- There is a relationship between length of physical work and complaints of musculoskeletal disorders with the manual handling method for lift workers at Bulog Warehouse, Jambi Regional Division, p-value 0.000

Table 2

factors related to complaints of musculoskeletal disorders in lift-and-transport workers using the manual handling method at Bulog Warehouse, Jambi Regional Division

Variable	Musculoskeletal Complaints				Total		p-value
	heavy		light		n	%	
	n	%	n	%			
Long work risk	35	89.7	4	10.3	39	100	0,000
No risk	0	0.0	4	100	4	100	
Beban Kerja							0.004
heavy	29	93.5	2	6.5	31	100	
light	6	50.0	6	50.0	12	100	

Discussion

1. The relationship between prolonged physical work and musculoskeletal disorder complaints with the manual handling method for lift workers at Bulog Warehouse, Jambi Regional Division

Based on research data analysis results of the relationship between physical workload and musculoskeletal disorder complaints using the manual handling method, it was found that of the 4 workers who had long working hours at risk, there were 4 (10.3%) who did not have musculoskeletal complaints and for the duration of work that was not at risk, none experienced musculoskeletal complaints. . Statistical test results obtained P value = 0.000, it can be concluded that there is a difference between the proportion of musculoskeletal complaints between workers who have long hours of work at risk and years of work that are not at risk (there is a relationship between length of physical work and complaints

of musculoskeletal disorders with the manual handling method for lift workers at the Jambi Regional Division Bulog Warehouse in 2018.

Based on the bivariate analysis test, it can be seen that there is a relationship between length of work and musculoskeletal complaints. The duration of a person's work can affect complaints about transport workers, which can be seen from the working hours that employees use to work in completing all the work that has become the responsibility of each worker.

The results of this study are in line with research conducted by Neila eldest (2016). Based on the results of statistical analysis, it is known that there is a relationship between work experience and musculoskeletal complaints in loading and unloading workers at the Port of Muara Padang (Neila Sulung 2016). Working period indicates the length of time a person is exposed to exposure at work. Long work periods can affect neck pain because it is an accumulation of loading on the neck muscles due to daily lifting and carrying activities (Budiono S 2016)

However, the results of research conducted by I Putu Ning Arya Dyana did not find a significant relationship between length of work and MSDs complaints. This insignificant result is probably due to the fact that the average workers have similar working hours. In theory, the longer a worker is exposed to risk factors, the greater the risk of MSDs complaints. (Larano BCD 2017)

The results of this study are also in line with (Utami, 2017). shows that most of the respondents worked in conditions that did not meet the requirements for long hours (> 8 hours/day) and insufficient rest, namely less than 1 hour at lunch time at most, after which the respondents immediately continued their activities in the fields. This can cause an increase in the workload of the muscles and joints which will increase due to an imbalance between working time and rest time (Utami, U., Karimuna, S. R., & Jufri 2017)

Length of work can have a negative impact if workers do work for more than 6-7 hours, working time of more than 6-7 hours can eliminate concentration, lose focus, feel tired which makes workers no longer productive in completing their work, and if workers are tired. If you are no longer productive in doing your job, you will be at risk of experiencing work injuries, such as lifting workers who can experience complaints of musculoskeletal pain (Undang-Undang Ketenagakerjaan Pasal 78 Pasal 78 UU Nomor 13 Tahun 2003 2003)

Efforts that can be made to complete work productively in a relatively long time (> 7 hours), the worker must adjust to the condition of the worker's body, rest between jobs.

2. The relationship between workload and complaints of musculoskeletal disorders using the manual handling method for lift workers at Bulog Warehouse, Jambi Regional Division

The results of the analysis of the relationship between workload and musculoskeletal disorder complaints using the manual handling method for lifting workers at the Bulog Warehouse, Jambi Regional Division, found that 2 workers

(6.5%) who had heavy workloads did not experience musculoskeletal complaints, while 6 had mild musculoskeletal complaints. workers (50.0%) who have musculoskeletal complaints. The statistical test results obtained $P = 0.004$, so it can be concluded that there is a difference between the proportion of musculoskeletal complaints between workers who have heavy and light workloads (there is a relationship between workload and musculoskeletal disorder complaints using the manual handling method for lift workers at Bulog Warehouse Regional Division Jambi).

Based on the research results, most workers have a heavy workload. Workload is defined as the difference between the capacity or ability of workers and the demands of the work that must be faced. Given that human work is both mental and physical, each has a different level of loading

According to Hart & Staveland, workload is something that arises from the interaction between task demands, the work environment where it is used as a workplace, skills, behavior and perceptions of workers. Workload can sometimes also be defined operationally on various factors such as task demands or efforts made to do the job (Tarwaka 2010b)

Based on research conducted by Adi Nugroho (2010), it was found that the statistical results showed that there was a relationship between workload and the level of musculoskeletal complaints in melon workers in Curut Village ($p=0.683$). The results of this study are in accordance with Nainggolan Restu Saridevi, that there is a relationship between workload and musculoskeletal complaints. Because workers are informal workers, who can take breaks according to their own wishes. Classification of types of work according to the Ministry of Manpower and Transmigration 2002, workers fall into the medium category of work.(Adi 2010)

The results of this study are in line with research at PT. Maruki Internasional Makassar that there is no significant relationship between weight and MSD's complaints in workers in the factory section because the weights lifted are not too heavy so that the pressure on the musculoskeletal system is not too great. The risk of injury can occur when the body holds a load that is large enough so that a sudden jolt of energy arises. In contrast to studies on loading and unloading workers at the Muara Padang Port, it has been shown that there is a relationship between carrying load and MSD's complaints (Ariyanto J et all 2012)

The energy requirement for moderate activity workers is 3,400 calories. Lifting workload is affected by the physical work environment such as air temperature, ambient, air humidity, radiation temperature. Chemical work environment such as dust, air pollutant gases, metal vapors, fumes in the air. Biological work environment such as bacteria, viruses, fungi, insects. Psychological work environment such as the selection and placement of workers, the relationship between workers and workers, workers and superiors, workers and their families and workers with the social environment that has an impact on work performance in the workplace.

The impact of a workload that is too heavy will cause fatigue both physically and mentally and emotional reactions such as headaches, digestive

disorders and irritability as well as musculoskeletal complaints. Meanwhile, if the workload is too small, where the workload occurs due to repetition of motion, it will cause boredom or a feeling of monotony. Too few tasks or jobs result in a lack of attention to work, potentially endangering work. In his daily work, the severity of the work is determined by the conditions of the work environment. Light work in a comfortable environment will be difficult if working in a hot environment. Work requires long breaks.

There is a weakness in the measurement where the pulse measurement is carried out only one time, namely when the worker is before taking a break. While the actual measurements are at work, before taking a break, and before going home. The pulse will return to normal if the worker is not doing work, the normal pulse is between 60-100 pulse/minute, so when the pulse returns to 60-100 pulse/minute it means the worker can do his work again as before.

Efforts that can be made to overcome workloads that are too heavy are to reduce the weight carried by doing it repeatedly, so that the workload is not too heavy. In addition, you can also adjust the workload to your body condition and use assistive devices (carts).

LIMITATION OF THE STUDY

This research is a descriptive analytic study with a cross-sectional approach to look at the factors that influence musculoskeletal disorder complaints in lift-and-carry workers using the manual handling method at Bulog Warehouse, Jambi Regional Division without including other related variables due to various limitations of the researchers.

This research is only focused on one place, namely transport workers at Perum Bulog employees and it would be better if further research could be carried out also in other places as a comparison in conducting research. This study only took a sample of 43 respondents. Future studies may be able to take more samples than the current study

CONCLUSIONS AND SUGGESTIONS

Conclusion

1. There is a relationship between workload and musculoskeletal disorder complaints with the manual handling method for lift workers at the Bulog Warehouse, Jambi Regional Division, with a p-value of 0.004
2. There is a relationship between prolonged physical work and complaints of musculoskeletal disorders with the manual handling method for transport workers at the Bulog Warehouse, Jambi Regional Division, p-value 0.000

Suggestions

For Bulog Warehouse, Jambi Regional Division It is expected that lift workers will lift workloads that are not too heavy in preventing musculoskeletal complaints and the effects of lifting, work according to procedures and not use working hours which can be a risk to health and improve nutritional status while also reducing workload. by using a cart as a tool to simplify and lighten the workload.

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Conflict of Interest Statement

The authors declare no conflict of interest.

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