Implementation of Ergonomic Work System for Occupational Diseases in Red Onion Porters in Banjarejo Village

Ahmad Farid Naylul Muwafiq1, Mayta Sari Dwianggimawati2
STRADA Indonesia Institute of Health Sciences
Corresponding author : official@iikstrada.ac.id

ABSTRACT

Occupational Safety and Health (K3) issues in general in Indonesia are still often ignored. This is indicated by the still high number of work accidents. In 2014, there were 40,694 cases of Occupational Diseases (PAK) in Indonesia. For this reason, researchers are interested in conducting research on "Implementation of Ergonomic Work Systems on Occupational Diseases in Shallot Porters in Banjarejo Plemahan Village". This study uses the Observational method and cross-sectional study design. With a simple random sampling technique and a sample of 44 respondents was obtained. The results of this study indicate that the ergonomic work system in shallot porters has an effect of 78% on occupational diseases and the other 22% is influenced by other factors that were not studied. It can be concluded that the application of an ergonomic work system has a significant effect on occupational diseases in shallot porters in Banjarejo Plemahan Village.

Keywords: Occupational Diseases, Ergonomics, Porters

BACKGROUND

The development of industry in Indonesia is currently very rapid. The industrialization process is getting faster with the establishment of various companies and workplaces due to the presence of technology experts where the use of increasingly complex machines and work equipment to support the production process causes occupational health and safety problems. (Husein et al., 2009)

One form of problem in industry is work accidents, work accidents not only cause death, material losses, morale and environmental pollution, but can also affect productivity and community welfare. Work accidents also affect the national development and competitiveness index. (ILO, 2018)

According to the International Labor Organization (ILO), every year there are 1.1 million deaths caused by work-related accidents. Around 300 thousand deaths occur from 250 million accidents and the rest are deaths due to work-related diseases, where an estimated 160 million new work-related diseases occur each year. In addition to work-related diseases that cause death, other health problems are mainly deafness, musculoskeletal disorders, reproductive disorders, mental illness and the nervous system. (Seviana, 2016)

Porter is one of the jobs in the informal sector and is a job selling services to carry goods from one place to another by carrying goods. This porter job is very likely to have a high workload. (Darmawan, 2019)

The workload can be in the form of physical, mental and social workload. Physical workload can be determined when workers do work that uses physical strength. The workload between one worker and another is certainly different (ARIFAH, 2018)

In the agricultural sector, it is influenced by the conditions of the work environment, workload, and work position which also contribute to occupational health and safety. (Payuk, 2013). The agricultural sector is a very important sector of economic development in Indonesia

because it produces food, raw materials or energy sources. Therefore, this sector absorbs a lot of labor to drive the wheels of the nation's economy. (Devi et al., 2017)

Data from the Central Statistics Agency in 2018, the number of working age people was 193.55 million people, of which 133.94 million people were included in the workforce and 59.61 million people were not in the workforce. Of the total workforce, 127.07 million people worked in the formal and informal sectors and 6.87 million people were unemployed, in Law Number 36 of 2009 concerning Health it is mandated that occupational health efforts are aimed at protecting workers from health problems and negative effects caused by work. (Ministry of Health of the Republic of Indonesia, 2017)

Occupational Safety and Health (K3) issues in general in Indonesia are still often ignored. This is indicated by the still high number of work accidents. In 2014, there were 40,694 cases of Occupational Diseases (PAK) in Indonesia. A total of 418 cases occurred in South Kalimantan. (Data and Information Center of the Indonesian Ministry of Health, 2015) Based on the results of interviews with 3 red onion porters in Banjarejo Plemahan Village, they stated that they complained of back pain, therefore the researcher was interested in conducting research on "Implementation of Ergonomic Work Systems on Occupational Diseases in Red Onion Porters in Banjarejo Plemahan Village".

METHOD

This study uses an observational research design and a cross-sectional study design, both variables (independent - dependent) will be observed at the same time and only need to be done once per respondent so that it does not require a long time and large costs. The population in this study was 50 red onion porters in Banjarejo Village. The sample is a portion or representative of the population being studied. The sample in this study used simple random sampling and the sample size was 44 porters from a total of 50 porters

RESULTS

Respondent Characteristics

Table 1 Respondent Characteristics

No	Characteristics	f	Σ%
1	**Age (year)**		
	<30	10	23
	31-50	19	43
	> 50	15	34
2	**Pendidikan**		
	Elementary School	23	54
	Junior High School	17	39
	Senior High School	4	7

based on the image above it can be seen that out of 44 respondents, most of the respondents are aged 31-50 years, which is 19 respondents (43%)

based on the image above it can be seen that out of 44 respondents, most of the respondents have an elementary school education, which is 23 respondents (54%).

table 2 cross tabulation

KATEGORI ERGONOMI	PAK				Total	
	Tidak Beresiko		Beresiko			
	F	%	F	%	F	%
Ergonomi	6	13,6	0	0	6	13,6
Tidak Ergonomi	6	13,6	32	72,7	38	86,4
Total	12	27,3	32	72,7	44	100

KATEGORI ERGONOMI	UMUR						Total	
	<30		31-50		>50			
	F	%	F	%	F	%	F	%
Ergonomi	0	0	2	4,5	4	9,1	6	13,6
Tidak Ergonomi	10	22,7	17	38,6	11	25	38	86,4
Total	10	22,7	19	43,2	15	34	44	100
KATEGORI PAK	UMUR						Total	
	<30		31-50		>50			
	F	%	F	%	F	%	F	%
Tidak PAK	0	0	5	11,4	7	15,9	12	27,3
PAK	10	22,7	14	31,8	8	18,2	32	72,7
Total	10	22,7	19	43,2	15	34,1	44	100

Based on the table above, 32 respondents (72.7%) of porters who do not apply an ergonomic work system are at risk of occupational diseases, and 6 respondents (13.6%) who do not apply an ergonomic work system are not at risk of occupational diseases. Based on the table above in aged 31-50 there were 17 respondents (38.6%) who did not implement an ergonomic work system. And at the age of 50 years there were 11 respondents (25%) who did not apply an ergonomic work system, while 6 respondents (13.6%) implemented an ergonomic work system.

In the table above there are 14 respondents (31.8%) aged 31-50 years who have occupational diseases. And there were 10 respondents (22.7%) aged <30 years who had occupational diseases. Meanwhile, there were 0 respondents who did not have work-related diseases aged <30 years.

Statistical test

Variable	B	Wald	Sig	OR	Sig simultan	R square	Hosmer sig
Ergonomic	-494	4.231	0.040	0.610	0.00	0.784	0.717

In the table above, the research model can be accepted and hypothesis testing can be done because there is a significant difference between the model and the questionnaire value where the sig value in the Hosmer test with a sig value of 0.717> 0.05, this means rejecting h0, the ability of the independent variable is 78%, this means that there are 22% other factors outside the study that explain the dependent variable.

Variable x has a significant influence on variable y where the sig value x is 0.00 for sig x of 0.040, this means that the application of an ergonomic work system has a significant influence on work-related diseases.

The magnitude of the influence is indicated by the EXP (B) value or also called the ODDS RATIO (OR). Ergonomics variable with OR 0.610, then people who do not apply Ergonomics (code 1 independent variable), are more at risk of experiencing work-related diseases (code 1 dependent variable) as much as 0.610 times compared to people who apply ergonomics (code 0 independent variable). The value (B) is -494. Because the B value is negative, the application of ergonomics has a negative relationship with the occurrence of PAK, so it can be concluded that people who apply ergonomics have a lower risk of PAK.

DISCUSSION

Application of Ergonomic Work System

Application of ergonomic work system on shallot porters in Banjarejo Village Based on the results of the study, the application of ergonomics on shallot porters in Banjarejo Village is relatively low. Of the 44 respondents, 8 respondents have applied ergonomics (18%). While 36 respondents did not apply ergonomics (82%).

Based on the study, the results obtained explained that the application of the work system on shallot porters was not ergonomic, this can be seen from the workload of each porter

who was over capacity every time they worked. The shallot porters as a whole have not implemented an ergonomic work system where workers here can lift a load of 60 kg per person at one time and usually each time they unload each person can do 10 lifts and in a day they can load and unload 3 times. It is very clear that porters transporting shallots are very risky in their work. On the other hand, the onion porters do their work based on the target and time given.

Occupational Diseases

Occupational diseases in shallot porters in Banjarejo Village Based on the results of the study, occupational diseases in shallot porters in Banjarerojo Village are classified as high risk. Of the 44 respondents, 32 respondents had experienced occupational diseases (73%). While 12 respondents did not experience occupational diseases (27%).

From this study, the PAK that occurred in shallot porters was very risky, ranging from injuries, sprains, and dislocated joints. This is because the workload of each porter is very risky, plus they can load and unload shallots 3 times a day. Shallot porters are accustomed to carrying equipment that helps reduce work accidents, such as covering their heads and helping each other to lift the shallots to make them lighter. The shallot porters themselves usually bring massage medicine and baslem just in case a work accident does not occur. The steps that must be taken are where workers help each other and reduce the lifting load so that it does not have a long-term impact on workers later and use load aids such as carts to make their work easier.

Implementation of Ergonomic Work System

Implementation of ergonomic work system on occupational diseases in shallot porters in Banjarejo Village Based on the research results, the influence of ergonomic system on occupational diseases is 78%, and 22% is caused by other factors.

The steps taken to implement ergonomic system on workers are where workers share tasks in work and reduce lifting load when tools such as carts cannot be used because the work field does not allow. Shallot porters must be aware of occupational safety and health because of the risk of long-term porters which can increase the risk of occupational diseases and on the other hand porters aged 30-40 years where the risk of PAK is greater.

CONCLUSION

1. The application of ergonomic work on shallot porters in Banjarejo village, out of 44 respondents, 8 respondents have implemented ergonomics (18%).
2. Occupational diseases on shallot porters in Banjarerojo village are classified as risky. Out of 44 respondents, 32 respondents have experienced occupational diseases (73%).
3. The effect of the application of an ergonomic work system on occupational diseases on shallot porters in Banjarejo village is 78% and the other 22% are influenced by other factors.

SUGGESTIONS

1. For Educational Institutions
With this research, the IIK STRADA Indonesia educational institution should be able to carry out community service in the field of occupational health and safety.
2. For Respondents
a. It is expected that all shallot porters will implement a good ergonomic system, in order to reduce the causes of work-related diseases.
b. It is expected that all red onion porters will lift the recommended ILO load, Adult Male (40 kg), Male (16-18 years) 15-20 kg.
c. It is expected that all workers should roll and not force themselves to carry heavy loads that exceed the specified limit.
d. It is expected that all workers will use their time to rest as well as possible and stretch their muscles to reduce the risk of muscle injury and carry out regular health checks.
3. For Further Researchers
It is expected that further researchers can complete accurate data to develop variables with a larger population.

DAFTAR PUSTAKA

ARIFAH, H. N. (2018). *GAMBARAN POSTUR KERJA PETANI BAWANG MERAH DENGAN METODE OWAS (Ovako Working Posture Analysis System) DI KELURAHAN TANETE KECAMATAN ANGGERAJA KABUPATEN ENREKANG.*

ASMARA, P. D. (2018). *HUBUNGAN ANTARA POSTUR KERJA PADA PEKERJAAN ANGKAT ANGKUT DENGAN KELUHAN MUSKULOSKELETAL KULI PANGGUL DI PASAR GEDE SURAKARTA.*

Benynda, T. (2016). Hubungan Cara Kerja Angkat Angkut Dengan Keluhan Low Back Pain Pada Porter Di Pasar Tanah Abang Blok A Jakarta Pusat Tahun 2016. *Jurnal Kesehatan Masyarakat*, 1–37. chrome-extension://oemmndcbldboiebfnladdacbdfmadadm/https://digilib.esaunggul.ac.id/public/UEU-Undergraduate-7149-ABSTRAK.pdf

Darmawan, D. (2019). ubungan antara beban kerja dengan keluhan Low Back Pain (LBP) pada kuli panggul perempuan di Pasar Legi Surakarta. *Journal of Chemical Information and Modeling*, *53*(9), 1689–1699. https://doi.org/10.1017/CBO9781107415324.004

Devi, T., Purba, I. G., & Lestari, M. (2017). Faktor Risiko Keluhan Musculoskeletal Disorders (MSDs) Pada Aktivitas Pengangkutan Beras di PT Buyung Poetra Pangan Pegayut Ogan Ilir. *Jurnal Ilmu Kesehatan Masyarakat*, *8*(2), 125–134. https://doi.org/10.26553/jikm.2016.8.2.125-134

Ghozali, I. (2013). Aplikasi Analisis Multivariate dengan Program IBM SPSS 21 :Update PLS Regresi. In *Semarang*. https://doi.org/10.2307/1579941

Hidayat, aziz alimul. (2010). Metode Penelitian kebidanan teknis analisis data. In *Sekolah Tinggi Ilmu Kesehatan U'budiyah*.

Husein, T., Kholil, M., & Sarsono, A. (2009). *Untuk Mengurangi Tingkat Kelelahan*. 45–58.

Kemenkes RI. (2017). Infodatin-K3. In *Pusdatin Kemkes*.

Marfuah, H. H. (2018). Perbaikan Sistem Kerja Yang Ergonomis Untuk Mengurangi Kelelahan Dan Keluhan Muskuloskeletal Dengan Pendekatan Ergonomi Partisipatori. *Dinamika Teknik*, *11*(1), 1–8.

Nursalam. (2012). Konsep Penerapan Metodologi Penelitian Ilmu Keperawatan Pedoman Skripsi, Tesis Dan Instrumen Penelitian Keperawatan. Jilid 1. In *Salemba Medika*. https://doi.org/10.1007/0-387-36274-6_24

Pusat Data dan Informasi Kemenkes RI. (2015). Kesehatan Kerja. *Buletin Jendela Data Dan Informasi Kesehatan*.

RISDIANTI, D. (2018). *HUBUNGAN ANTARA BEBAN KERJA DENGAN KELUHAN LOW BACK PAIN (LBP) PADA KULI PANGGUL PEREMPUAN DI PASAR LEGI SURAKARTA.*

Setyowati, Baju Widjasena, S. J. (2017). Hubungan Beban Kerja, Postur Dan Durasi Jam Kerja Dengan Keluhan Nyeri Leher Pada Porter Di Pelabuhan Penyeberangan Ferry Merak-Banten. *Jurnal Kesehatan Masyarakat (e-Journal)*, *5*(5), 356–368.

Subagyo, J. (2004). Metode Penelitian Dalam Teori Dan Praktek. In *Rineka Cipta*.

Suharsimi;, A. (2013). Dasar-Dasar Evaluasi Pendidikan. In *Jakarta: Bumi Aksara*.

Sumardi Suryabrata. (2014). Metode penelitian. *Metode Penelitian*.

Penerapan Sistem Kerja Yang Ergonomis Terhadap Penyakit Akibat Kerja Pada Kuli Angkut Bawang Merah Di Desa Banjarejo