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The Correlation of Obedience to SOP and Sleep Quality with Workplace Accidents in Slaughterhouse

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Abstract

There were many workplace accidents that occurs in the slaughterhouse and this may cause a disadvantage in time, property and even causes death. Most of these workplace accidents occurred due to human errors. The obedience of the workers to the SOP (Standard Operating Procedure) while working and the sleep quality of the workers is commonly correlated with workplace accidents. This study aims to understand the correlation of obedience to SOP and sleep quality with workplace accidents in Oeba slaughterhouse in Kupang City. This is an observational analytic study with cross sectional design. All 52 workers in the slaughterhouse that fulfilled the criteria of eligibility was taken as study samples. The obedience to SOP, sleep quality and workplace accidents was measured using a questionnaire. Chi square test was performed to analyze the correlation between each variable in this design. The result of this study showed that there was a significant correlation between obedience to SOP with workplace accidents (p = 0.006) and sleep quality with workplace accidents (p = 0.003). We conclude that the obedience to SOP and sleep quality was correlated with workplace accidents in the workers in a slaughterhouse.

Keywords: Obedience to SOP; Workplace Accidents; Sleep Quality.

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1. Introduction

Food plays a very important life in human's life. The main role of food is to ensure the continuity of life, to maintain health, and as an energy source for human to be able to work productively. Meat is one of the sources of food obtained from animals that could fulfill those function. One of a very important steps that determined the production and quality in the SHCH (Safe, Healthy, Complete, and Halal) meat supply chain happened in the slaughterhouse. Slaughterhouse is a building or a building complex with several requirements and design that allowed it to be used as a place to process animal, either poultry or cattle to become a product of consumption to the society. Slaughterhouse was regulated in the ministerial regulations of the minister of agriculture Number 12/Permentan/OT.140/1/2010. A slaughterhouse needed to meet the standard quality and ensure the hygiene and halal status of the meat and this may increase the efficiency of food handling of the meat that was to be sold from the producer to the consumer, which may reduce the spreading of zoonotic disease from animals to human. On the other hand, the quality of the animals processed must be followed by an effort to protect the workers from the potential of possible dangers that may result in workplace accidents. This should be considered by the management and also the workers because the process of processing meat is an activity with high risk for workplace accidents [1]. In Indonesia, study about workplace accidents in slaughterhouse was very limited. However, previous studies have found several types of workplace accidents that were experienced frequently by the workers, such as, getting stabbed, cut, or sliced by a sharp object like knives or animal's horn [2]. Workplace accidents during the slaughtering process was caused either by environmental or human factors. Unsafe behavior is a major factor for the incidence of workplace accidents [3]. Unsafe behavior that resulted in accidents was caused by unsafe behavioral habit and bad physical condition during worktime. Disobedience to the SOP for animal slaughtering is one form of unsafe behavior [4]habit which doesn't affect only the quality of the meat but also causes injury to the workers itself and also other employee. The process of slaughtering the animal in the slaughterhouse are commonly performed during the midnight until dawn in order to obtain a fresh meat and to decrease contamination from flies. This working cycle need to be supported with adequate sleep. Bad sleep quality of the workers will decrease the capability of the workers and potentially cause a workplace accident [5]. Oeba slaughterhouse is a governmental facility built as a slaughterhouse for animal, such as cows. Oeba slaughterhouse was built to fulfil the needs of the citizen for good quality meat that can be consumed by the population. Oeba slaughterhouse are employing 2 veterinarians, 3 halal butchers, and 47 other workers for the process of accepting, skinning, and carcass cutting and most of these workers was from general citizens. Based on the interview with the head of the slaughterhouse, the veterinarians and some other workers in the slaughterhouse had experienced workplace accidents with low category such as sliced, cut, or kicked by the animals and this occurs during the process of slaughtering, skinning and carcass cutting, the workers need to concentrate due to the condition that requires them to use sharp objects. The disobedience to the current SOP such as the usage of personal protective equipment while working increases the risk of workplace accidents. The slaughtering process was performed daily from 01.00 to 06.00 at dawn and this may result in bad sleep quality of the workers which may resulted in the incidence of workplace accidents. The aim of this study was to understand the correlation of obedience to SOP and sleep quality with workplace accidents in Oeba slaughterhouse in Kupang city.

2. Research Method

This research was carried out in the slaughterhouse of Oeba in Kupang City. This is an observational analytic study with cross sectional design. All 52 workers from the slaughterhouse which has meet the criteria of inclusion and didn't meet the criteria of exclusion was taken as study samples. Obedience to SOP was measured with a questionnaire and SOP observational tool, sleep quality was measured using the PSQI (Pittsburgh Sleep Quality Index) and workplace accidents was measured with the workplace accidents questionnaire. Chi square analysis was performed to analyze the correlation between each variable.

3. Results

3.1. Characteristic of the Samples

The sample's age varies from 20 to 70 years old. A total of 40.4% (21) were between 20-30 years old, 26.9% (14) were 31-40 years old, and 21.2% (11) were 41-50 years old, 7.7% (4) were 51-60 years old and 3.8% (2) were 61-70 years old. The majority of the samples had a low education level from elementary school and junior high school (JHS) with each percentage were 34.6^ (18) and 38.5% (20) respectively. There were 9.6% (5) who had completed senior high school and 17.3% (9) who had completed their college.

3.2. The distribution of samples based on the risk factor for accidents

The risk factors observed were the obedience to SOP and sleep quality. The of obedience to SOP and sleep quality of the samples can be seen in the following table.

Table 1: Distribution of the samples based on the risk factors for workplace accidents.

Variabel	Kategori	Amount (%)
Obedience to SOP	Disobey	32 (61,5%)
	Obidient	20 (38,5%)
Sleep Quality	Good sleep	14 (26,9%)
	Bad sleep	38 (73,1%)

Table 1 showed that the majority of the respondents 61.5% (32) disobey the SOP, and 73.1% (38) of the workers had a bad sleep quality.

3.3. Total incidence and Classification of the workplace accidents

The incidence of the workplace accidents in Oeba slaughterhouse can be classified as follows

Table 2 showed that the majority of the samples 63,5%(33) has had a workplace accident. The most common type of accidents experienced were getting cut 38,5% (20) and sliced 23,1%(12). The most common part of the body injured in the accident was arm 38,5% (20) and leg 17,3%(9).

Table 2: Total incidence and classification of the accidents.

Accident Characteristics	Category	Amount(%)
Work Accident	Never	19 (36,5%)
	Ever	33 (63,5%)
Accident Type	Getting Cut	20 (38,5%)
	Horny	0 (0 %)
	Kicked Out	1 (1,9%)
	Dragged in	0 (0%)
	Sliced	12 (23,1%)
Injured Body Part	Head	0 (0%)
	Neck	0 (0%)
	Arm	20 (38,5%)
	Body	4 (7,7%)
	Leg	9 (17,3%)

3.4. The correlation between each variable

The correlation of obedience to SOP and sleep quality with workplace accidents can be seen in the following table:

Table 3: The correlation of obedience to SOP with workplace accidents

	Workplace Accident			
	Never	Ever		
Variabel			Amount (%)	P value
	n (%)	n(%)	N (%)	
Obedience to SOP				
Disobey	7 (36,8)	26 (78,8)	32 (61,5)	0,006
Obey	12 (63,2)	7 (21,2)	20 (38,5)	

Table 3 showed that the respondents that wasn't obeying the SOP experienced more workplace accidents compared to the respondents that was obeying the SOP. Statistical test showed that there was a significant correlation between the obedience to SOP with workplace accidents (p = 0.006).

Table 4: The correlation of sleep quality with workplace accidents.

	Workplace Accident			
Variabel	Never	Ever	Amount (%)	P value
	n (%)	n (%)	N (%)	
Sleep Quality				
Good sleep	10 (52,6)	4 (12,1)	14 (48,1)	0,003
Bad sleep	9 (47,4)	29 (87,9)	38 (51,9)	

Table 4 showed that the respondents which had bad sleep quality experienced more workplace accidents compared to the respondents with good sleep quality. Statistical test showed that there was a significant correlation between sleep quality and workplace accidents (p – 0.003).

4. Discussion

The result of this study showed that the majority of the samples were in between 20-30 years old. Physically, this group of age are better in doing physical activities, however workers in this group of age tend to have lesser experience and precautions while working. These conditions may potentially cause workplace accidents. Previous study by [6] showed that those who were between 23-27 years old experienced more workplace accidents compared to those who were older. this study also showed that there were workers who were over 30 years old and even 61-70 years old. Increase in age will decrease the capability and ability to work and also physical skills such as speed, flexibility, strength and muscle coordination. These happens after 30 years old or above [7]. The level of education was the last education completed by the samples before this study was performed. The result of this study showed that the majority of the samples were having low level of education which were elementary school and JHS. Formal education might affect the way the workers think to prevent workplace accidents while working. Previous study [8] found that there was a correlation between the level of education with unsafe action, however it was not significant. This means, that the majority of the workers doesn't have a sufficient knowledge and skills about workplace accidents. The result of this study showed that the majority of the samples disobeys the SOP. This was caused because the workers feel discomfort when using Personal Protective Equipment (PPE), the use of PPE will slow their works. The result of this study also showed that the majority of the samples had a bad sleep quality, and it showed that the respondent yawn frequently while working. There were more samples that experienced workplace accidents that those who didn't. the most common type of workplace accidents experienced by the workers was getting sliced because the process of processing the meat was done manually using sharp object such as knives or cleaver. The most common part of the body injured by the workplace accident was arm, this was caused by insufficient means of protection, the workers were working without PPE (Personal Protective Equipment) such as gloves. The result of this study was similar with previous study by [9] which stated that most of the workers experience workplace accidents such as getting cut or sliced and the major contributing factor was unsafe behavior such as not using PPE while working.

4.1. The Correlation of Obedience to SOP with Workplace Accidents

Obedience to SOP is one of the safe behaviors and plays an important role in creating safe environment in the workplace. On the other hands, disobedience to the SOP is an unsafe behavior in the workplace. Unsafe behavior during working may result in the incidence of workplace accidents [10], there was a positive correlation between disobedience to procedure with unsafe behavior. The more someone obeys the procedure, he/she will have more safer behavior, vice versa. Other study showed that workplace accidents was caused by an unsafe behavior [11]. The result of this study showed that there was a correlation between obedience or disobedience to the SOP with workplace accidents. The workers that disobeyed the SOP have a higher risk for workplace accidents compared to workers that obeyed the SOP.Standard Operating Procedure was grouped into

two main parts which were SOP for handling the animal and its processed product and the usage of PPE. From handling the animal and its processed product aspects most of them were not performed accordingly to the SOP. The slaughtering was performed by the halal butcher that has completed a training and a Muslim [12]. The skinning process, carcass splitting in Oeba RPH was performed on a floor and this caused the meat and the carcass to be unsafe for consumption. Antemortem and postmortem examination was rarely performed, which resulted in the animal butchered and the meat has unknown health status, whether it was safe or not to be consumed. Antemortem examination must be performed for selecting the animals that are going to be butchered to obtain a clinical information which can be used to diagnose a disease, prevent the spreading of a disease from animal to human [1s3]. In Oeba slaughterhouse the carcass and the meat were packed using plastic sacks and sometimes was distributed without undergoing the packaging process. The distribution of the processed products was done by using motorcycle and pickups cars, which increases the probability of the meat getting contaminated. From the usage of PPE aspects, most of the workers did not use PPE while working. Disobedience to SOP in prior to PPE unsafe is a form of unsafe behavior which will result in workplace accidents. The result of this study showed that only 51.9% of the workers were using gloves, and only 51.9% of the workers were using boots. If we compare it with the part of the body that was most commonly injured by the workplace accidents, then 38.5% of the injury happened at the arm and 17.3% at the leg. We can conclude that there was a correlation between disobedience to the using of PPe with the parts of the body that were injured. The result of the previous study [14] showed that there was a correlation between the application of SOP with workplace accidents. Obedience to use PPE plays an important role in creating a safe working environment and decreasing the incidence of workplace accidents [15] This was similar with previous study [16] that stated that there was a correlation between obedience to the procedure and the incidence of minor injury and this study also in line with the previous study by [17] which found that there was a correlation between obedience to SOP and the usage of PPE with the frequency of workplace accidents. The result of this study showed that the more obedient the workers then the rate of workplace accidents will also be lower, on the contrary the more disobedient the workers then the rate of workplace accidents will be higher. In prior to this, obedience to SOP must be applied in order to minimalize the incidence of workplace accidents.

4.2. The Correlation of Sleep Quality with Workplace Accidents

Sleep quality is the satisfaction of someone to the process of sleeping he/she had. Sleep quality was considered to be good if the period from when someone started to sleep until he/she wake up in the morning was without any issues and showed no signs of exhaustion such as feelings of irritated and agitated, tired, apathetic, inability to concentrate, headache, frequent yawning or feeling sleepy [18]. Sleep quality correlates to sleep sufficiency [19]. Sleep sufficiency was when the duration of sleeping was between 7-8 hours on a day. The result of this study showed that there were more samples which had bad sleep quality compared to those with good sleep quality. The majority of the respondents sleep for 3-4 hours a day, which was far below the standard sleep sufficiency which was 7-8 hours a day. Chi square test showed that there was a correlation between sleep quality and workplace accidents. Respondents which had bad sleep quality experienced more workplace accidents compared to respondents with good sleep quality. The process of butchering the animals was performed in the midnight and this may disturb the circadian rhythms. Disturbed circadian rhythm may affect sleep pattern and affect the sleep quality of the workers [20]. Previous study by [21] found that there was a correlation between

sleep quality in the workers that work during the midnight with the incidence of workplace accidents. Sleep quality relate to alertness when working, the lower the sleep quality, the lower will the alertness and concentration of the worker and this will trigger workplace accidents.[18] Sleep quality is also related to fatigue. The study [22] found 84.78 night bus drivers experienced work fatigue. Bad sleep quality will increase the prevalence of early fatigue during work [23].Sleep quality contributed to 40.0% of fatigue [24] and fatigue during work may trigger workplace accident. Bad sleep quality that was experienced by the workers in Oeba slaughterhouse was marked by bad habit such as not having a sleep prior to work, tendency to not sleep even when feeling asleep, frequent wake up at night during sleep, without trying to have a sleep again, inability to sleep at the morning after worktime and struggle to initiate sleep. When the need to sleep is not fulfilled well, it will cause fatigue which may result in workplace accidents [25]. The result of this study is in line with previous study[26] which showed that sleep quality correlate significantly with workplace accidents. From the discussion above, we can conclude that the lower the sleep quality of someone then the risk of having workplace accidents will increase, on the contrary the better the sleep quality of someone, then the risk of having workplace accidents will become lower. In prior to that, increasing the sleep quality will minimalize the incidence of workplace accidents which will then decrease the prevalence of workplace accidents in the slaughterhouse will decrease

5. Conclusion

The conclusion of this study is that there was a correlation between obedience to SOP and sleep quality with workplace accidents in Oeba slaughterhouse in Kupang City.

6. Recommendations

This research is expected that the workers can comply with the standard operating procedures that exist by always using self-protection tools while working and using the rest time as well as possible in order to minimize accidents while working

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