

The Influence of Workload, Work Fatigue, and Work Behavior on Work Accidents for Female Workers in Informal Sectors in Kupang City

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Abstract

A workplace accident is an unwanted and often unforeseen event that can result in lost time from work, property damage, or death. Work accidents, work fatigue, and worker behavior are some of the problems that are often faced by informal sector workers. The goal of this research was to look into the factors that impact work accidents among women in Kupang's informal sector. An observational study with a cross-sectional design was used in this investigation. From April to July 2019, this research was conducted in Kupang City. Participants in this study were 548 women who worked in the informal sector. The research sample consisted of 140 women from the informal sector who were selected using a basic random selection approach. Interviews were used to obtain data, which was then analyzed bivariately using a basic linear regression test. Workload was discovered to be a factor in the study's findings (0.000) and work fatigue (0.000) affected work accidents, while work behavior (0.076) did not affect work accidents in female workers. Occupational Health and Safety (OHS) procedures and rules in the workplace, counseling regarding the application of OHS with workers, as well as sanctions against the application of OHS in the workplace to workers need to be implemented to reduce workplace accidents.

Keywords: workload, work fatigue, work behavior, work accident

INTRODUCTION

The informal sector in Indonesia employs a wide range of jobs, including workers in home industries, housemaids, construction workers, rickshaw drivers, farmers, and day laborers. The number of informal sector workers in NTT in 2017 was 25% of the total workforce or 34,250 people (Central Bureau of Statistics, 2017). A home industry includes various types of sales ranging from cakes to ready-to-eat food, housemaid jobs, shop assistants, farm laborers, construction workers, and various other jobs.

The informal sector faces numerous limitations both from the work factor and from workers. In terms of work factors, workers are frequently exposed to potential hazards due to a poor work environment, irregular work hours, intense workload, uncovered by regulations, and inadequate occupational health services. Meanwhile, lack of awareness, knowledge of hazards, and safe working conditions make workers more at risk of work accidents.

An accident is an unwanted and unpredictable event. Work-related accidents occur as a result of potential hazards in the workplace, both from the process and the environment (Fitri, 2021). According to the International Labor Organization (2018), more than 380,000 work-related accidents occurred in 2018. Meanwhile, according to BPJS Employment, work accidents reached 173,105 cases in 2018 in Indonesia (BPJS, 2019). Data from BPJS of Employment reported that in 2020, cases of work accidents in Indonesia have increased. There were 182,832 cases reported in 2019 (Saptiyulda, 2021). In Indonesia, approximately 12 workers are permanently disabled every day, and seven die due to work accidents. Manufacturing and construction sectors accounted for 63.6% of all workplace accidents, followed by the transportation sector (9.3%), forestry (3.8%), and mining (2.6%).

Cases of work accidents in NTT Province increased fourfold in 2017 compared to the previous year. There were 19 cases in 2016, which increased significantly to 76 cases in 2017. In 2018, there were 71 cases reported. The data were from claims submitted to BPJS Employment, thus it is only limited to fatal accidents requiring hospitalization. Meanwhile, minor work-related injuries such as scratches are not covered in the data. In addition, the data only includes work accidents in workers registered as members of the BPJS of Employment, which accounts for around 60% of all formal sector workers (BPJS Employment NTT Province, 2019).

Data on work accidents in the informal sector is still very challenging because the number of informal sector workers covered by health insurance only reaches 1% of the total number of workers in this sector. Therefore, if there is a work accident involving unprotected workers, no record will be found. In addition, if a fatal work accident occurs in the informal sector and is treated at a hospital, the data will be recorded as a general accident by the hospital.

Workplace accidents are caused by 88% of risky acts, ten percent by unsafe environments, and 2% by other factors that cannot be considered (Haleda, 2018). Some research results show that the human factor plays a critical part in causing work accidents. Research result (Difya, 2018) states that 80%-85% of work accidents are caused by neglect or human error. Several research findings prove that there are several factors related to unsafe behavior. The causes of unsafe behavior are fatigue from a lack of rest, working hours exceeding the regulated provisions, malnutrition (defined as an imbalance between food intake and the energy required at work), incompetence in the workplace due to untrained employees, and working late at night continuously, even in the early morning. Also, unsafe conditions due to extreme weather, a confined workspace without sufficient fresh air, expired equipment, and inadequate lighting may result in work accidents related to eye damage (Julia, 2021).

Research of Trada (2018) states that personal and work factors contribute to unsafe behavior. Personal factors include age, education, years of service, and knowledge. Age will affect a person's ability to understand and impact decreased speed, dexterity, and strength. The most recent education taken will affect responding to stimuli from outside. Experienced workers are viewed as more capable of carrying out and understanding the work, and this is closely related to their work period. The knowledge level of workers may provide a basic foundation for effective participation in the self-determination of workplace problems. The work factor consists of OHS training, regulations, and policies.

Work accidents in the household can be influenced by various factors, including a lack of understanding of OHS in carrying out daily work. In addition, the use of personal protective equipment (PPE) is still lacking in activities using equipment such as knives, neglecting to use respiratory protection such as masks when lifting or disposing of garbage (Mulyani, 2019). Cases of work accidents that can be experienced by informal workers, especially housemaids and helpers in restaurants such as burns are often experienced due to bad electrical installations, the use of electronic goods with improper electrical energy and the use of electricity that is not according to procedures can also increase the risk occurrence of fire accidents in the work environment. The activity of serving food and drinks in restaurants or at home for breakfast, lunch and dinner can also be at risk of being scratched or injured by sharp objects, MSDs complaints due to non-ergonomic work positions, splashed water and hot food. Control of these hazards can be done by replacing and maintaining the cooking utensils used, designing the kitchen area to suit the anthropometry of the wearer (Braglia et al., 2018).

This study focuses on work accidents in women in the informal sector, especially those engaged in the employment of housemaids and housemaids in restaurants whose work has almost the same risks and occupational hazards. In addition, these two types of work have a work environment that is not much different and uses work equipment that tends to be the same. Work accidents that have been experienced by women workers in the informal sector are slipping/slipping due to slippery floors and lack of care, tripping/spraying due to lack of care at work, hands cut/cut by knives, exposed to hot oil, hands hit by hot pots/objects to blisters, irritation to sores on the hands and feet, complaints of pain in the spine due to a hunched position for a long time, even informal sector workers who have experienced burns in certain body parts due to lack of concentration and caution when working. This study will also look at the triggers for a worker to work unsafely such as the workload received by female informal sector workers, work fatigue, and the behavior of these workers so that preventive measures can be identified so that workers do not experience work accidents that will cause losses. for himself and others around the worker.

METHOD

This is a cross-sectional study with an observational design. From April to July 2019, this study focused on informal workers in Kupang City. The dependent variable in this study was work accidents, while workload, work fatigue, and work behavior were the independent variables. This study's participants were 548 female workers in informal sectors. A simple random sampling strategy was used to choose 140 workers for the sample. The study used a questionnaire as the instrument. The workload and job fatigue questionnaire has 15 and 17 items, respectively, with yes and no answers. A Likert scale with four options was used to measure work behavior: strongly disagree, disagree, agree, and highly agree. Before this study was conducted, respondents were asked to sign an informed consent to participate in this study. Data were collected using interviews, questionnaires, and observation sheets to determine the types of work accidents experienced by workers. The data were then analyzed using a simple linear regression test and presented in tables and narratives. This research has been approved and is following the code of ethics of the Faculty of Public Health, Nusa

Cendana University, accompanied by the Ethical Approval Number: 2019220-KEPK Year 2019 as the basis for research ethics.

RESULTS AND DISCUSSION

The data recorded including workload, work fatigue, work behavior, and work accidents (Table 1).

Table 1
Description of the characteristics of research subjects

Variable	Min.	Max.	Average	Standard Deviation
Workload	14	28	20.34	2.823
Work Fatigue	17	34	23.38	3.735
Work Behavior	48	90	70.21	7.617
Work accident	15	29	21.19	3.317

The analysis of the effect in this study begins with an assumption test consisting of a normality test. The results of this test indicate that the data in this study have met the requirements and can be continued in hypothesis testing with a linear regression. Based on the descriptive statistics table above, it can be seen that the workload of women in the informal sector has the lowest value of 14 and the highest at 28, with an average of 20.34 and a standard deviation of 2.823, while work fatigue in women's work in the informal sector has the lowest value of 17 and the highest 34, on average. mean 23.38 and standard deviation 3.735. The work behavior of women in the informal sector had the lowest score of 48 and the highest score of 90, with an average of 70.21 and a standard deviation of 7,617, while work accidents for women workers in the informal sector had the lowest score of 15 and the highest 29, an average of 21.19 and a standard deviation of 3,317 test (Table 2).

Table 2
Linear Regression Test Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	p
	B	Std. Error	Beta		
(Constant)	11,449	1,876		6.103	0.000
Workload	0.479	0.091	0.407	5.239	0.000
(Constant)	10,597	1,539		6.884	0.000
Work Fatigue	0.453	0.065	0.510	6,965	0.000
(Constant)	25,780	2,588		9.960	0.000
Work Behavior	0-.065	0.037	0.150	-1.785	0.076

Table 2 show that after a simple linear regression test, the results obtained are the value of t-count > t-table (5.239 > 1.97743) and the significance value of $t \leq 0.000$, so it can be concluded that the workload of women workers in the informal sector has a

significant effect on work accidents. It is known that the workload on women workers in the informal sector for work accidents will increase work accidents by 0.479 times. The results of the simple regression test showed that $t\text{-count} > t\text{-table}$ ($6.965 > 1.97743$) and a significance value of $t < = 0.000$, so it can be concluded that work fatigue in women workers in the informal sector has a significant effect on work accidents. The results of a simple linear regression test obtained a regression model of a causal relationship between work fatigue in women workers in the informal sector and work accidents. Based on the regression model, it was found that work fatigue in female workers in the informal sector had a positive and significant effect with a coefficient value of 0.453 and a significant value of 0.000, which means that if the value of work fatigue in female workers in the informal sector increases by 1, work accidents increase by 0.453. The results of the simple regression test show that the $t\text{-count} < t\text{-table}$ ($-1.785 < 1.97743$) and the significance value of $t > = 0.076$, so it can be concluded that the hypothesis is rejected because the work behavior of women workers in the informal sector has no significant effect on work accidents. 000 which means that if the value of work fatigue in women workers in the informal sector increases by 1, the work accident increases by 0.453. The results of the simple regression test show that the $t\text{-count} < t\text{-table}$ ($-1.785 < 1.97743$) and the significance value of $t > = 0.076$, so it can be concluded that the hypothesis is rejected because the work behavior of women workers in the informal sector has no significant effect on work accidents. 000 which means that if the value of work fatigue in women workers in the informal sector increases by 1, the work accident increases by 0.453. The results of the simple regression test show that the $t\text{-count} < t\text{-table}$ ($-1.785 < 1.97743$) and the significance value of $t > = 0.076$, so it can be concluded that the hypothesis is rejected because the work behavior of women workers in the informal sector has no significant effect on work accidents.

Every job is a burden for the perpetrator. This burden can be in the form of a physical burden, a mental burden, or a social burden according to the type of work. Each person has different abilities regarding the workload. Some people are better suited to doing work that is a lot of mental or physical burden. The workload is given to the workforce and their responsibilities, both physically and mentally, must be by the capabilities of the workforce.

The workload is a collection or number of activities that must be completed by an organizational unit or position holder within a certain period (Paramitadewi, 2017). The workload received by a person must be by the physical abilities of the worker. According to Literature (2017) Excessive workload will cause fatigue both physically and mentally and emotional reactions such as headaches, indigestion, and irritability. While the workload is too little where the work that occurs due to reduced motion will cause boredom and a sense of monotony.

Physical workload tends to be related to the physiological condition of workers. When workers receive a workload that exceeds capacity, it will cause fatigue which can lead to boredom and decreased concentration and alertness of workers. These conditions will cause negligence or act unsafely while working which can result in work accidents (Jesica et al., 2018). Meanwhile, the mental workload tends to be related to the psychological condition of workers. When workers have high work demands with short completion times, rest hours are erratic. This can be a mental burden for workers and can cause work stress so that workers are vulnerable to taking unsafe actions (Sofiantika, 2020). The excessive mental workload can lead

to feelings of anxiety and fear that can reduce concentration it can make workers act unsafe while doing their jobs.

The workload of women workers in the informal sector in this study was seen from the number of women workers in the informal sector who felt tired because they stood for too long at work, the number of jobs that had to be completed at the same time, felt that there was too much work to be done every day, working continuously and less break time, and sometimes there are still women workers in the informal sector who do not understand the directions or orders from their bosses so this is a burden for their workers. There are women workers in the informal sector who feel that their work must be done as quickly as possible so that when they are working sometimes they are not focused. According to researchers.

The effect of an uncomfortable working environment, heat, and lack of lighting can increase the workload for women workers in the informal sector. This is supported by previous research that insufficient lighting can cause fatigue and accidents (Diannita, 2020). The excessive physical workload can cause physiological disorders such as fatigue for workers. This situation can reduce morale, concentration level, and alertness so that workers are negligent in doing work by acting unsafely and can have an impact on the occurrence of work accidents (Alviantika, 2020).

A person's workload is also influenced by physical abilities, age, and work activities carried out and then the weight of the load is lifted. If the amount of energy needed is not sufficient it will make workers weak, and difficult to concentrate, and the muscles will lack the energy to contract. If the muscles lose the ability to withstand the load, the worker will not be able to lift the load, so the load being lifted can be at risk of falling which in turn can cause work accidents (Rizka & Mindayani, 2018).

The workload must be adjusted to the ability of one's body, a workload that is greater than the physical ability of the workforce can result in discomfort at work, fatigue, injury, pain, illness, and decreased productivity. In this study, the effect caused by a heavy workload is fatigue among women workers in the informal sector of Kupang City. Fatigue in women workers in the informal sector of Kupang City can be prevented by exercising regularly. Exercise can be done before doing work or at rest. Exercise can make the body's organs and blood circulation smooth so that it can make workers fresh and enthusiastic in doing their jobs so that the fatigue experienced is reduced. In addition to regular exercise, the fulfillment of nutrition for workers must be fulfilled by eating nutritious food every day. Nutrition is one of the factors that cause fatigue. A worker with a good nutritional condition will have a better work capacity and body resistance, and vice versa (Ramadhanti, 2020).

Work fatigue is an important problem that needs to be addressed because it can cause work accidents and can have an impact on workers' health. Work fatigue is a weakened physical situation of the body, activities, and motivation to do work (SNP & Nilamsari, 2018). Work fatigue is one of the crucial problems that need to be addressed because fatigue can cause work skills to disappear, health conditions decline so that it can trigger work accidents, and decrease work productivity and performance (Safira et. al., 2020). Fatigue can also be referred to as a person's body's way of telling that his body has exceeded the limits of its ability to work. So it is necessary to recover by taking rest. Fatigue experienced by a worker is characterized by decreased morale due to work that is done too monotonously, work that is charged too much, demands for fast work completion times, non-ergonomic work postures, abnormal nutritional

status of workers, psychological conditions of workers, age factors, breakfast habits and how long a person's experience is in doing his job (Deyulmar, 2018).

Work fatigue (burnout) can be influenced by a high workload and the attitude of the individual in carrying out nursing. Fatigue due to work is often interpreted as a process of decreasing efficiency, and work performance, and reducing the body's physical strength or endurance to continue to carry out activities that must be done (Rosmiati et. al., 2021). Work fatigue can be caused by internal factors and external actors. Internal factors such as age, sleep quality, nutritional status and gender while external factors such as years of work, work stress, work shifts, workload and physical work environment (Agustin et. al., 2021).

The results showed that work fatigue has an influence on work accidents in women workers in the informal sector of Kupang City. Work fatigue among women workers in the informal sector in this study was seen by several women workers in the informal sector who found it difficult to think, felt nervous about something, tended to forget something, felt less confident, and some even felt reluctant to look people in the eye, reluctant to work nimbly, and feel sluggish. Work accidents that have been experienced by women workers in the informal sector are tripping/spraining due to not being careful at work, cutting hands/cutting knives, being exposed to hot oil, and hands hit by hot pots/objects to the point of blistering.

Work fatigue greatly affects a person so that it can reduce performance concentration, and decrease work concentration. If fatigue is not addressed further and workers are forced to continue working, fatigue will worsen and will result in decreased physical and mental abilities and loss of work efficiency (Bidjuni, H., Kalalo, F., & Majore, 2018). Data from the International Labor Organization (ILO) shows that almost every year as many as two million workers die due to work accidents caused by fatigue (Karbito & Oksandi, 2020).

According to some researchers, fatigue can affect workers' health and reduce work productivity where fatigue can contribute to work accidents (Suma'mur, 2015). Work fatigue in the long term will have an impact on the health of workers, such as heart disease, diabetes, high blood pressure, digestive disorders, low fertility, anxiety, and depression (Tarwaka, 2015a). When doing work, there are changes in body physiologic functions which include oxygen consumption or oxygen demand, heart rate, air circulation or lung ventilation, body temperature, lactic acid concentration in the blood, chemical composition in blood and amount of urine, level of evaporation of sweat, and so on.

The length of work for a person determines his efficiency and productivity. The length of time a person works a day is generally 6-8 hours. In a week people can only work well for 40-50 hours, more than that the tendency for negative things to arise will be even greater (Massie et. al., 2018). The longer the workforce has worked, the more experience the workforce has. Vice versa, the shorter the workforce, the less experience they will gain. Work experience provides a lot of expertise and work skills, on the contrary, limited work experience results in lower levels of expertise and skills (Herdianti & Hamdani, 2018).

Behavior is one aspect of culture and culture has an important influence on behavior. Human behavior is a state of balance between the driving and restraining forces (Surahma & Novita, 2017). Surahma states that behavior is an action or action of an organism that can be observed and even studied. While the definition of work safety behavior according to Subing (2018) Behavior is an action that can be seen from other people, but what someone does or says is not always the same as what is felt. According to Subing (2018) Safe behavior is

behavior that cannot cause accidents or dangerous incidents to workers. Dangerous behavior is a failure (human failure) in following the requirements and correct work procedures, causing work accidents. Using the terms unsafe behavior and accident behavior to describe dangerous behavior at work such as wearing safety equipment inappropriately, lack of skills and failure to detect time (Ningsih, 2018).

The results showed that the work behavior of women workers in the informal sector did not affect work accidents in women workers in the informal sector in Kupang City. This can be seen from the respondents' answers when filling out the questionnaire. Most of the women workers in the informal sector answered that they always follow the work rules that have been set by the business owner, work according to the assigned tasks, use the appropriate equipment for each type of work, and always put the equipment you use back in its place, wash the equipment you use. dirty before being stored in its place, always keeping the workplace neat, and will not do dangerous work even if asked by his superiors. Women workers in the informal sector also always clean up spills of oil or water.

Human behavior at work can create risks related to working safety. Unsafe behavior is considered to be the result of wrongdoing by either the workers directly involved. According to Tarwaka (2015b), each company organization has a different approach to implementing OHS behavior in the workplace, but most of the approaches used are in principle very flexible and can be adapted to the type of company organization and the situation that occurs in each company. Reduce work accidents and improve safety performance, it can be achieved by reducing unsafe behavior through the implementation of the Behavior-Based Safety (BBS) program in the workplace which will ultimately create a safe culture in the workplace. BBS is a process that provides an opportunity for organizations to move to a higher level of safety implementation by promoting a proactive response using an important indicator that can statistically represent, build ownership (Tarwaka, 2015b).

CONCLUSION

From the results of research and data analysis, it can be concluded that the workload of women workers in the informal sector has a significant influence on work accidents. It is known that the workload on women workers in the informal sector for work accidents will increase work accidents by 0.479 times. Work fatigue in women workers in the informal sector has a significant influence on work accidents. The results of a simple linear regression test obtained a regression model of a causal relationship between work fatigue in women workers in the informal sector and work accidents. Based on the regression model, it was found that work fatigue on female workers in the informal sector had a positive and significant effect with a coefficient value of 0.453 and a significant value of 0.000, which means that if the value of work fatigue in female workers in the informal sector increases by 1, work accidents increase by 0.453. While the work behavior of women workers in the informal sector does not have a significant effect on work accidents in women workers in the informal sector because women workers in the informal sector always work by the work rules that have been set by the business owner. always use the appropriate equipment for each type of work, and always put the equipment you use back in its place. The results of this study indicate that the more workload workers receive, the higher the number of work

accidents in the workplace due to work fatigue. It is recommended to all owners of the informal sector in Kupang City that providing workloads must be adjusted to the ability of the workers. The excessive physical workload can cause physiological disorders such as fatigue for workers. This situation can reduce morale, level of concentration, and alertness so that workers are negligent in doing work by acting unsafely and can have an impact on the occurrence of work accidents.

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