
Research Article

Relevance Between Standing Period and Working Fatigue on Simpang Jam Gas Station Operator in Banda Aceh, Indonesia

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Abstract:

Background: *Workplace fatigue* is a major concern that demands proper management, as it can result in various health issues. Gas station attendants who remain stationary for prolonged periods are especially susceptible to this problem. Therefore, this study aims to examine the relationship between standing time and work fatigue among Simpang Jam gas station operators in Banda Aceh City.

Research method: In order to explain the relevance between standing period and work fatigue, this study uses descriptive analytics. All 30 officers participated in the study as the population. At the Simpang Jam Gas Station in Banda Aceh City, this study was carried out in June. *Chi-Square test* was conducted.

Results: 40.0% of respondents reported being at risk and frequently worn out when standing for extended periods. Additionally, 91.7% of respondents experienced discomfort and exhaustion while working in standing positions.

Conclusion: Standing time and work fatigue have a relationship with a *P* value of 0.017, and standing work position and work fatigue have a relationship with a *P* value of 0.005.

Suggestion: When operators begin to experience signs of work fatigue, provide chairs for them and pay closer attention to rest periods.

Key words: work fatigue, standing period, gas station.

Introduction

In order to ensure that humans are in a healthy state, there must be environmental health or ecological balance between humans and the environment. Employee health is impacted by their working environment as well. The performance of employees will be impacted by their working conditions, particularly if they feel unsafe and uncomfortable. This uncomfortable condition can cause delays in the completion of tasks and debilitate employees' motivation. In relation to reducing work-related fatigue, workers' health is crucial to enhancing their performance or stamina while working. Workers' performance will suffer if they become fatigued while working due to a decrease in their stamina. Therefore, occupational health and safety can help to create a safe and healthy work environment, which can help to decrease workplace accidents and illnesses. (1)

The *World Health Organisation* (WHO) predicts that psychological disorders leading to extreme fatigue and depression will become the second leading cause of death by 2020, according to their health model. A study by the Japanese Ministry of Manpower also revealed that out of 12,000 companies with 16,000 randomly selected employees, 65% reported physical fatigue from routine work, 28% reported mental fatigue, and 7% reported severe stress and feelings of exclusion. Similarly, a study of the production division of an Indonesian company found that workers often experience

fatigue accompanied by symptoms like headaches, back pain, dizziness, and shoulder stiffness.(2)

It is worth noting that according to the *National Safety Council*, fatigue plays a role in 13% of workplace accidents. An extensive study was conducted with over 2,000 working adults who experienced accidents, revealing that 97% of them had at least one risk factor for workplace fatigue, and over 80% had multiple risk factors. It is important to keep in mind that the combination of multiple risk factors can significantly increase the likelihood of workplace injuries.(3)

Government Regulation Number 88 of 2019 enforces Law 36 of 2009 with a specific emphasis on occupational health. The goal of occupational health is to safeguard the well-being of those who work in diverse settings, shielding them from any illnesses or adverse effects that may arise from their employment. Any environment, be it enclosed or outdoors, mobile or fixed, that employees frequent for business purposes and where potential hazards exist according to legal standards qualifies as a workplace.(4)

In order to meet the needs of the greater Indonesian population, PT Pertamina (Persero) provides the public infrastructure in the form of gas stations, also referred to as SPBU. Many operators at gas stations, where operators worked standing up for extended periods, complained of symptoms of work fatigue. The initial signs of fatigue include lightheadedness, aches, and difficulty focusing at work. Standing for an extended period can

have a number of negative effects, including varicose veins, muscle and joint pain, and, more seriously, heart disease. (5) The research was conducted at PT. Iskandar Indah *Printing Textile* Surakarta with the intention of examining the relationship between the risk of standing work and the degree of work fatigue based on a preliminary study conducted by Isnaini Misbakhul Khasanah in 2016. According to the preliminary study's findings, of the 47 respondents, 16 (34.0%) were classified as having a low risk of fatigue, and 22 (46.8%) as having a very high level of work fatigue. We can conclude that standing work and work fatigue are significantly correlated.(6)

Simpang Jam is a gas station that is open from 6 a.m. to 11 p.m., according to the researchers' initial survey. There are four work shifts at the Simpang Jam gas station: from 6:00 a.m. to 9:00 a.m., 10:00 p.m. to 2:00 p.m., 3:30 p.m. to 7:00 p.m. and 8:30 p.m. to 11:00 p.m. About 30 people work at the Simpang Jam gas station as an operator. Gas station operators are thought to stand for about three to four and a half hours each shift. We advise standing for 2-4 hours at work, especially for people who spend much time at a desk, according to researchers who published their findings in the *British Journal of Sports Medicine* in 2015. Researchers discovered in their initial survey that chairs were not available for officers who had no customers. Their initial interviews revealed that they became fatigued if they stood for an extended period.

In 2023, the author plans to conduct research on the relationship between length of standing and work fatigue at Simpang Jam gas station operators in Banda Aceh City based on the description provided above. The study's goal is to ascertain how long people stand before becoming fatigued at the Simpang Jam gas station in Banda Aceh City in 2023.

Materials and Methods

This research is descriptive and analytical and uses a quantitative strategy and a *cross-sectional study* design. The population of this research was 30 employees who worked at the Simpang Jam gas station (SPBU) as an operator in Banda Aceh City. Sampling is the process of taking a random sample of 30 people from the entire population. This study was conducted at the Simpang Jam gas station in Banda Aceh City, Sukaramai, Baiturrahman Subdistrict. This research was conducted on June 10–11, 2023.

According to the instructions for the Questionnaire Tool for Measuring Feelings of Work Fatigue (Kuesioner Alat Ukur Perasaan Kelelahan Kerja / KAUPK2), a research tool in the form of a questionnaire was used to ascertain the relationship between length of standing and work fatigue in Simpang Jam gas station operators.(7)

The frequency distribution of the independent variables is examined using a single-variate analysis. The duration of standing per 1-4 hours and standing work position are the independent variables, and work fatigue in gas station (SPBU) employees is the dependent variable. Bivariate analysis is used to see the relationship between the independent variable and the dependent variable. The *Chi-Square* (X^2) statistical test was used to conduct the analysis, and the results show whether there

is a relationship between the independent and dependent variables if the $P < 0.05$ and whether there is no relationship if the $P > 0.05$.

Results and Discussion

PT Pertamina (Persero) has established a gas station infrastructure to meet the fuel demands of the Indonesian populace. The 14th gas station is conveniently located in the Banda Aceh City region at 232-485 Sukaramai. Each gas station features a comprehensive organizational structure that encompasses managers, supervisors, operators, security personnel (security guards), and cleaners. Public facilities, including restrooms, prayer rooms, 3 KG LPG stations, ATMs, and tire filling stations, are provided for customers' convenience. The Simpang gas station operates from 6 a.m. to 11 p.m.

Table 1 below shows the characteristics of respondents based on findings from research on the age, gender, and length of service of respondents:

Table 1. The frequency distribution of respondents' age, gender, and length of service for SPBU Simpang Jam operators in Banda Aceh City in 2023

Respondent Characteristics		F	%
Age	26-30	13	43
	31-35	17	57
Gender	Man	18	60
	Woman	12	40
Length of Work Period	2 years	13	43
	2,5 years	9	30
	3 years	8	27

Based on Table 1, it can be seen that the majority of gas station operator—17 people, or 57%—are between the ages of 31 and 35; men outnumber women by 18 individuals or 60%; the majority of operators —13 people, or 43%—worked for less than two years; nine people, or 30%—worked for more than two years; and eight people, or 27%—worked for less than three years.

The table below shows the duration of standing for one to four hours based on the findings of research done on respondents:

Table 2. The frequency distribution of standing time per 1-4 hours, work position, and fatigue among SPBU Simpang Jam operators in Banda Aceh City in 2023

No	Variable	Category	Total	%
1	Standing Period (1-4 Hours)	Risky	21	70
		Not-Risky	9	30
2	Standing Position while Working	Comfortable	18	60
		Not-Comfortable	12	40
3	Working Fatigue	Frequently Tired	17	57
		Infrequently Tired	13	43

According to Table 2, out of 30 people, SPBU operators who are at risk from standing for 1-4 hours are 21 people (70%), 18

people (60%) feel comfortable in their standing position while working, 17 people (57%) who often experienced fatigue, 13 people (43%) rarely experienced fatigue, and those who never experienced fatigue were 0 people (none).

Table 3. The relevance between the amount of time operators of Simpang Jam gas stations in Banda City spend standing up while working and fatigue

Variable		Working Fatigue				Total	P
		Frequently		Infrequently			
		F	%	F	%		
Standing Period (1-4 Hours)	Risky	12	60,00	8	40,00	20	0,017
	Not-Risky	1	10,00	9	90,00	10	
Standing Position while Working	Comfortable	12	66,07	6	33,03	18	0,005
	Not-Comfortable	1	8,33	11	91,67	12	

According to Table 3, there are 12 respondents out of the 30 who were at risk for standing for extended periods but only occasionally experienced work fatigue, compared to 9 respondents who were not at risk for standing for extended periods but frequently experience fatigue. In comparison to 11 respondents (91.7%) who were uncomfortable in a standing position while working and frequently experienced work fatigue, 12 respondents (66.7%) found it easy to stand while working. According to the findings of statistical tests, there is a relationship between the amount of time spent standing and work exhaustion among the operators of the Simpang Jam gas station in 2023, with a *P* value < 0.05, which is 0.017. At the SPBU Simpang Jam in 2023, statistical analysis revealed a relationship between standing work positions and work fatigue with a *P* value < 0.05, which is 0.005.

Numerous respondents stood for more than 4 to 5 hours prior to changing *shifts*, according to research. Sometimes, less than 30 minutes is allowed for operators to rest. The operators get less rest because so many customers want to refuel. Numerous respondents lamented the muscle pain and dizziness they felt following their shifts, as well as the fact that gas stations did not provide chairs for the operators.

We should stand for 2 to 4 hours while at work, according to researchers in the *British Journal of Sports Medicine*. In addition to increasing the likelihood of developing chronic back pain and muscle joint disorders, standing for longer than necessary will result in muscle disorders in the lower legs.

After conducting research, it was discovered that the respondents did not always stand in an upright or alert position when working; instead, they occasionally sat or leaned wherever it was possible. Occasionally, the respondents also moved their legs to the left and right to stretch their muscles. As a result of the officers' repetitive tasks and the monotonous environment they frequently work in, the standing work position is linked to work fatigue. After finishing their work, the operators notice that they are physically exhausted all over. Gas station operators work in a variety of positions, including standing, stooping while holding the nozzle to refill the tank, bending their back while turning to face the digital board for

The relevance between standing time and work fatigue in Simpang Jam gas station operators in Banda Aceh City was investigated using bivariate analysis and statistical tests. The outcomes are as follows:

several minutes, and finally standing. The definition of a comfortable working position keeps officers from growing tired of performing the same task over and over again. For instance, they could relieve fatigue or pain by taking a short five-minute walk or by bending their legs backward for five to seven minutes.

In order for recovery to take place after rest, Tarwaka (2015) claims that fatigue is a protective mechanism for the body to prevent further harm. Employees who are working may experience work fatigue. Workplace accidents can be caused by a variety of factors, including work fatigue, which is the body's reaction to exposure and activity levels experienced while at work. The body is prone to becoming exhausted after eight hours of work-related activity. Symptoms of physical fatigue include frequent yawning, thirst, feeling sleepy, heavy legs, and trouble focusing. (8)

According to the *International Labor Organization (ILO), Occupational Safety and Health* is improving and maintaining the highest level of physical, mental, and social well-being for all workers across all job types. Additionally, it guards workers in every job against risks arising from elements that can harm health and places and maintain workers in an environment that is suitable for their physiological and psychological conditions. All of these things help prevent health issues brought on by work. Additionally, to ensure that each individual is in harmony with their responsibilities.(9)

The right way to stand, according to experts, can be achieved in a number of ways, including keeping our body upright, not looking up or down, keeping our eyes straight ahead, keeping our shoulders square, and keeping our legs parallel to our shoulders. Work must be ergonomically suitable because standing while working has a significant impact on both physical and mental health. (10)

After working, rest time, also known as downtime, is used to recharge. Workers can work more effectively until the end of working hours if they are given enough time to rest. In fact, there are a number of regulations regarding working hours in place from the government.

Law No. 13 of 2003 regarding employment, as well as PP No.

35 of 2021, which is a part of the Job Creation Law, regulate labor laws pertaining to employee work rights in Indonesia. These laws implement two different sets of employee working hours regulations that businesses may use. Some of them include working seven hours a day, or forty hours per week for six days, with one day off between the two. Eight hours per day, or forty hours per week, for five working days and two weekly days off. According to four hours of nonstop work, the recommended amount of work rest is at least 30 minutes. The calculation of working hours excludes breaks taken at work.(11)

To stand for 2-4 hours while working, according to researchers in the *British Journal of Sports Medicine*. Leg muscle problems will develop if we stand for longer than necessary. Long-term back pain, as well as muscle and joint disorders, are risks associated with this condition. Blood building up in the lower limbs is what causes this condition. While standing for two hours a day does not harm us, it does have negative effects on our health in the long run. Leg cramps and back pain are two examples of health issues that often go unnoticed for a long time after they first appear. Even when standing still, the body must exert significant muscle effort to maintain an upright posture, which is very unhealthy. Inflammation of the blood vessels may result from prolonged standing. Chronic varicose veins, a painful condition, are eventually created by this inflammation. In addition, it can lead to the locking of the joints in the feet, hips, and spine, which will ultimately cause degenerative rheumatic disease because it will damage the tendons and ligaments (which connect the muscles to the bones). It can be uncomfortable and exhausting to work for long periods standing up. Along with that, the back, legs, and neck muscles—muscles used to keep one's head and body upright—experience pain and tension. (siska, 2017)(10)

Conclusions

This research indicates that there is a correlation between the duration of standing (1-4 hours) and work fatigue among gas station operators at Simpang Jam in Banda Aceh City. The value of this correlation is $P < 0.05$, specifically 0.017. Additionally, there is also a correlation between standing work position and work fatigue among the same group of gas station operators. The value of this correlation is also $P < 0.05$, specifically 0.005.

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