

Prolonged standing and work fatigue on sales promotion girl workers at the Kubu Raya Regency Shopping Center

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ABSTRACT

Standing positions are used for almost all jobs, including sales promotion girl or SPG workers. Standing in working positions for long periods can cause work fatigue. This study aimed to analyze the relationship between the length of work in a standing position and the work fatigue of SPG workers. This research is a cross-sectional study. Fatigue data collection was carried out by interviews using the industrial fatigue research committee (IFRC) questionnaire. Data on the length of work in a standing position are obtained by interview and observation. Based on the results of the study, as many as 66.7% of workers at SPG in the shopping center of Kubu Raya Regency, Indonesia in one day work in a standing position for eight hours, and 33.3% work in a standing position for >8 hours. The average level of work fatigue at the beginning of work is 49.38, and after work is 52.95, with the results of statistical analysis showing a p-value of 0.000, meaning that there is a significant relationship between long-standing position and work fatigue. There is a need for supervision and monitoring related to the work safety system regularly carried out by the manager of the shopping center, which is also supervised by the Ministry of Health and the Ministry of Manpower.

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1. INTRODUCTION

Occupational health and safety efforts aim to protect workers so that they live healthy and free from health problems, occupational diseases, and adverse effects caused by work [1]. Ergonomic factors such as an uncomfortable working position and working in a prolonged standing position can result in occupational diseases [2]. Occupational diseases are diseases caused by exposure to risk factors arising from work activities, which can be caused by work environment factors and other risk factors such as ergonomic factors, such as prolonged standing positions [3].

The standing position is used in almost all jobs, including sales promotion girl (SPG) in shopping centers. Sales promotion girl performs work activities in a prolonged standing position for most of her working hours. SPG workers generally spend 50% of their total working hours in a prolonged standing position [4]. SPG workers also have to work long hours by lifting activities, carrying goods, serving customers, offering products, doing repetitive movements, and standing for long periods [5]. Prolonged standing during work has a high risk of causing chronic or acute health problems. Standing for too long reduces the muscles' blood supply, resulting in fatigue [6], [7].

According to Canadian Centre for Occupational Health and Safety (CCOHS) [8] fatigue can impact work accidents. As many as 13% of work accidents are caused by work fatigue, and as many as 16% of workers

experience work accidents at least once due to fatigue. Of the number of accidents that occur in the workplace, 60% are caused by work fatigue [9], [10]; accumulated worldwide, a total of 6000 fatal accidents resulting in many victims [2]. The observations made by researchers at shopping centers in Kubu Raya Regency, Indonesia showed SPG workers work in a standing position during their working hours and the result of interviews with SPG workers work eight hours a day. Workers are exposed to prolonged standing because they spend more than 50% of their total working hours in a standing position.

Based on these problems, the researchers conducted a study on the length of standing work positions and work fatigue on SPG workers at the Kubu Raya Regency shopping center. The purpose of this study is to examine the standing working position, know the long-standing working position, assess fatigue at the start of work and after work, analysis of the relationship between the standing position and work fatigue of SPG workers. This research is necessary because physical and ergonomic factors such as standing work positions need attention and are a common problem in the workplace [11]. The prevalence and severity of health problems are significantly higher in employees who work in a standing position for a long time. Hence, SPG workers need to be research subjects so that later interventions can be carried out [12].

2. RESEARCH METHOD

This research was cross-sectional, involving 60 SPG workers as research respondents. This research has obtained ethical approval from the Health Research Ethics Committee of the Health Polytechnic of the Pontianak Ministry of Health No. 50/KEPK-PK.PKP/III/2022.

Research respondents willing to participate in the study have signed an informed consent form. The research was conducted April-September 2022. SPG workers involved in this study have met the inclusion and exclusion criteria. Data collection on the length of work standing was collected using interviews and observations using questionnaires and checklists. Work fatigue data collection uses the International Fatigue Research Committee of the Japanese Association of Industrial Health or IFRC questionnaire. The IFRC questionnaire contains 30 general fatigue questions used to measure fatigue.

The first 10 questions on the IFRC questionnaire indicate a weakening of activity, the second 10 questions indicate a decline in work motivation, and the last 10 questions indicate fatigue in several body parts or physical fatigue in the respondent. After conducting interviews and collecting respondent data, the next step is to calculate the total score from the answers to the 30 questions organized. The total number becomes the total individual score. This questionnaire was then developed, and the answers to the questionnaire were scored according to four Likert scales.

Based on the results of the fatigue assessment, of the 30 questions, the highest score was 120. The answers to the IFRC questionnaire were divided into four categories, namely very often (SS) with a score of 4, often (S) with a value of 3, sometimes (K) with a score of 2, and never (T) with a value of 1. In determining the fatigue classification, the answers to each question are added and then adjusted to a certain classification. The classifications given score >55 =high fatigue and score 55 =low fatigue [13], [14].

The procedure in this study starts from the preparation stage. It is for the management of research ethics approval, secondary data collection, surveys, and field observations to identify problems, research permits, and meetings between the research team and data collection officers for the division of tasks and research perceptions. The next stage of implementation. It starts with surveys, field observations, and inventory of work activities carried out by SPG workers, meetings with companies to explain the procedures for research activities, determining research respondents, explaining research procedures and actions to respondents, collecting respondent data and collecting work fatigue data before and after work. The research data were then processed and analyzed by descriptive analysis to determine the distribution characteristics of each dependent and independent variable.

The activities of this descriptive statistical analysis include presenting data using tables and graphs with simple calculations such as percentages, averages, and ratios. Furthermore, inferential analysis is carried out using measures with estimation theory. They tested the research hypothesis using the chi-square statistical test using a 95% confidence level so that the relationship between research variables could be known. The test was carried out with a significance level ($\alpha=0.05$). If $p<0.05$, then the test results were significant.

3. RESULTS AND DISCUSSION

3.1. Demographic distribution of SPG workers

The characteristics of the respondents in this study were middle primarily education, consisting of Senior high school (90%) and junior high school (5%). Most SPG workers are 20 years old (20%) with a working period of two years (30%). For full details, the demographic data of respondents by category can be seen in Table 1.

Table 1. Demographic distribution of SPG workers

Variable	Category	n	%
Marital status	Single	48	80
	Married	12	20
Age	< 25 years	46	76.7
	≥ 25 years	14	23.3
Education	Basic education	1	1.7
	Middle education	57	95
	Higher education	2	3.3
Working period	< one years	16	26.7
	1 – 5 years	35	58.3
	> five years	9	15
Working length	≤ eight hours/day	40	66.7
	> eight hours/day	20	33.3

3.2. Work fatigue analysis of SPG workers

Table 2 shows the results of the work fatigue analysis, namely the comparison between the total work fatigue scores before and after working for SPG workers at the Kubu Raya Regency shopping center with a p-value of 0.000 which means there is a significant difference in work fatigue before and after working for SPG workers at the Regency shopping center. Based on the results of the study, the relationship between the length of work in a standing position and work fatigue on SPG workers at the Kubu Raya Regency shopping center with a p-value of 0.000. Work fatigue felt by workers is characterized by decreased work motivation due to repetitive or monotonous work, high workload, demands for work deadlines, non-ergonomic work positions, nutritional status that does not meet the requirements, age and psychological condition of a worker [15].

Table 2. The results of the work fatigue analysis of SPG workers

Work fatigue	Category	n	Mean ± sd	CI=95%		p-value
				min	max	
Fatigue before and after work	Before work	60	49.38 ± 8.87	35	67	0.000
	After work	60	52.95 ± 10.83	35	87	

Fatigue at work is caused by the interaction of many factors, including shift patterns, physical workload, monotonous and unstimulating work, poor sleep habits, and other lifestyle factors. Fatigue can lead to unwanted accidents resulting in reduced work productivity and a significant decline in decision-making skills and memory acuity [16], [17]. Fatigue before work is a sign of someone experiencing chronic fatigue, Fatigue before work is caused by activities carried out by someone that has been going on for a long time and appears throughout the day before doing work activities, causing difficulty sleeping, pain in the head, and digestive problems [18].

Work fatigue before work is caused by work environment, work type, individuals, and work positions [19], [20]. Prolonged standing positions increase fatigue throughout the body, so management of adequate rest time can help reduce work fatigue [20]. The amount of 33.3% of SPG workers at the Kubu Raya Regency shopping center work more than eight hours.

Standard workers generally work eight hours a day in a prolonged standing position. However, if workers work more than the maximum working hours with a prolonged standing position, it can cause workers to experience muscle fatigue [21]. Standing for more than five hours can cause muscle fatigue that lasts more than 30 minutes after work hours [22]. The addition of working hours in a non-ergonomic position can also affect the ability and trigger fatigue in workers. If done continuously can cause chronic fatigue [23].

3.3. Length of work in standing work positions with work fatigue in SPG workers

Table 3 shows the results of the analysis of the relationship between the length of work in a standing position and work fatigue for SPG workers at the Kubu Raya Regency shopping center, the p-value of 0.010, which means there is a relationship between the length of work in a standing position and work fatigue after work. SPG workers generally work in a standing position for hours and even exceed the standing time limit, so they have a great potential to experience work fatigue. According to Garcia *et al.* [22] the standing duration can cause muscle fatigue in the back and lower extremities.

Table 3. The relationship of length of work in standing work positions with work fatigue in SPG workers

Variable	Category	n	CI=95%		r-count (p-value)
			Mean	SD	
Long working relationship with a standing position with fatigue after work	Length of working	60	9.00	1.58	0.32 (0.010)
	Fatigue after work	60	52.95	10.83	

Work that requires long-standing causes discomfort because it requires workers to try to balance their body position and causes a static workload in the back muscles, legs, and physical fatigue [20]. SPG must stand for a long time, for 7-8 hours per day, ergonomic working positions can reduce the risk of injury to workers, however, working postures carried out for a long time without stretching can cause leg circulation problems in blood circulation, swelling in congenital diseases, and cause fatigue located in the leg muscles [24]. Standing for extended periods can cause fatigue in workers, triggering headaches and increasing susceptibility to disease [25].

The intervention has an optional chair or footrest to increase the variety of body positions available to standing workers [26]. In addition to footrests, other interventions are ergonomic training programs for workers regularly and job rotations [27]. Standing interspersed with sitting for a while is an excellent solution to minimize work fatigue associated with the working position standing at work when part of the muscles works lightly to stabilize the body that is experiencing fatigue [28].

Sitting for a long time can also affect health, so changing work positions and sitting using a chair/bench is necessary [7], [29]. Another intervention to reduce work fatigue is continuous muscle contraction to maintain a prolonged posture can increase whole-body fatigue. Rest and stretching can reduce overall body fatigue [20]. Work position when working is very important to determine and analyze the effectiveness of a job, an unfavorable working position and not in accordance with ergonomic principles will cause workers to easily experience work fatigue [30].

Occupational health and safety monitoring work to protect workers from hazards, improve occupational health and safety in the work environment, and prevent accidents and occupational diseases. The purpose of monitoring worker health and safety is to ensure that occupational health and safety programs are implemented effectively [31]. Monitoring of occupational health and safety must also be carried out periodically to find out that the implementation of the occupational health and safety system in the company is running effectively, monitoring a company's occupational health and safety system can reduce the risk of health problems and accidents, increase productivity and reduce unexpected company expenses [32].

Occupational health and safety monitoring activities are carried out by auditing the occupational health and safety management system. The occupational health and safety management system audit aims to protect workers from occupational diseases and the risk of work accidents, increase productivity, minimize risks, and improve the company's image [33]. Occupational safety and health or OHS management system audits are conducted periodically to determine the effectiveness of implementing the OHS management system, audits are carried out independently and systematically by personnel/institutions with the appropriate competencies, the frequency of audits is determined based on a review of the results of previous audits and evidence of identified hazard sources in the workplace environment the management should use the results in the management review process, audits are carried out two times a year and involve all parts of the company in each section/field [34].

Limitations of the study in this study is the relationship between long-standing working positions and work fatigue of SPG workers, not all factors related to work fatigue are variables in this study, such as worker activity before going to work and after returning from work, sleep quality and workload, so further research these variables need to be investigated. The instrument used to measure work fatigue uses a questionnaire, if possible, it is necessary to use work fatigue measuring device. The research contribution from a theoretical perspective is that it can provide knowledge development related to Occupational Safety and Health, especially ergonomics (work position) and work fatigue at SPGs.

Practical perspective: solving problems related to standing for too long and working fatigue of SPG workers, so that it is useful for workers and companies in overcoming working positions for SPG workers who stand for a long time while working. Henceforth, it is necessary to take action in the form of supervision and monitoring related to work safety systems on a regular basis and further carry out technical engineering by making ergonomic work chairs for SPG workers.

4. CONCLUSION

Most SPG workers work in a standing position for eight hours a day. The average fatigue level before work is 49.38, and after work is 52.95. There is a relationship between the length of time spent working in a standing position and the work fatigue of SPG workers. From the results of this research, it is necessary to have supervision and monitoring related to work safety systems carried out periodically by the shopping center management, supervised by the Kubu Raya Regency Health Service and Manpower Service. For further research, worker activity variables before work need to be included.

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