

The Effect of Shift Work on Fatigue in Processing Workers at PTPN IV Kebun Adolina Serdang Bedagai District

Nita Anggina Nasution^{1*},
Reni Agustina Harahap²

^{1,2}Department Of Public Health
Science, Faculty Of Public State
Islamic University Of North
Sumatra

*Email:
nitaanggi03@gmail.com

Received : November 6th 2023

Accepted : November 9th 2023

Published : November 20th 2023

ABSTRACT

Work fatigue is a condition experienced by the workforce which can result in a decrease in vitality and work productivity. Fatigue is a state of tiredness associated with working long hours, long periods without sleep, or the requirement to work hours out of sync with the body's biological rhythms. Work fatigue will reduce performance and increase the level of work errors. Increased work errors will provide opportunities for work accidents in the industry, as well as reduce work effectiveness. This study aims to determine the effect of work shifts on fatigue in processing workers at PTPN IV Kebun Adolina, Serdang Bedagai District. This type of research is quantitative with a cross-sectional research design. A total of 70 respondents were sampled by probability sampling. Univariate and bivariate statistical analysis using the chi-square test. The results of the bivariate analysis showed that there was an effect of shift work on fatigue in processing workers. The results of statistical tests using chi-square obtained a p-value of $0.001 < 0.05$. To overcome this, the company can provide drinks and provide additional nutritious food.

Keywords : Fatigue, Productivity, Shifts, Work Accidents

Copyright © 2023 IIK STRADA Indonesia
All right reserved.



This is an open-access article distributed under the terms of the Creative Commons Attribution-ShareAlike 4.0 International License.

INTRODUCTION

Occupational safety and health is an activity created to ensure and protect the safety and health of workers by preventing accidents and diseases caused by work. This is expected so that workers can do their work safely and comfortably and the risks that arise can be avoided. Comfortable work can make workers able to do a good job so that workers are not easily exhausted (Rino Komalig & Mamusung, 2020). One of the things that can trigger work accidents is fatigue. Fatigue is a state of decreased efficiency and endurance of a person's body. Someone who does work will certainly feel fatigue. Fatigue that is felt such as drowsiness due to work, prolonged anxiety, physical and mental fatigue, fatigue caused by the work environment and lack of sleep (Caldwell et al., 2019).

Work accidents that occurred in Indonesia in 2019 amounted to 77,295 thousand cases. There was an increase in work accidents of around 20% compared to the previous year nationally. As many as 50% of work accident cases come from the contribution of occupational fatigue. Workers feel symptoms of job fatigue such as decreased performance, motivation, and mental and physical activity. This research was conducted at one company in Indonesia in the production department. Work fatigue accounts for half of the work accidents that occur, but is still considered trivial and not prioritized in companies or industries (Taufiq Ihsan, Tivany

Edwin, Yasinta Azwir, 2019) The International Labor Organization (2021) released that every year 2 million workers die due to work accidents caused by feelings of fatigue while working. In 2020, the data on accidents to workers in Indonesia has increased compared to the previous year, namely 177,000 accident cases (Widianto, 2021). In Jambi Province, according to BPJS Ketenagakerjaan data in 2019, there were 1,159 cases of work accidents, including those caused by fatigue in the industry.

Work fatigue accounts for half of the work accidents that occur, but is still considered trivial and not prioritized in companies or industries (Taufiq Ihsan, Tivany Edwin, Yasinta Azwir, 2019) The International Labor Organization (2021) released that every year 2 million workers die due to work accidents caused by feelings of fatigue while working. In 2020, the data on accidents to workers in Indonesia has increased compared to the previous year, namely 177,000 accident cases (Widianto, 2021). In Jambi Province, according to BPJS Ketenagakerjaan data in 2019, there were 1,159 cases of work accidents, including those caused by fatigue in the industry. Companies or industries that operate 24 hours create a work shift system in the workforce, this is one of the causes of fatigue. Work shift is a pattern of work time that has been given to the workforce to do something by the company and is usually divided into morning, afternoon and night work. Shift work is a division of work schedules that are divided alternately over a 24-hour period. Employees involved in the work system take turns, so the rotation or rotation of work will also change according to the specified schedule. But work shifts that are not well organized will affect fatigue in workers which can lead to work accidents.

Industrial accidents 88% are caused by unsafe acts and unsafe conditions often occur in the night shift, while unsafe conditions rarely occur in the morning and afternoon shifts. In line with this statement, it was found that the percentage of work accidents was higher in the night shift at 33.34% than in the morning shift at 20.83%. In the night shift, workers experience fatigue due to disruption of circadian rhythms and lack of supervision regarding work safety, causing unsafe actions and leading to work accidents. Regarding working hours in Indonesia according to Law No.13 of 2003 concerning Manpower, namely, working hours, work breaks, overtime are regulated in articles 77 to 85 of Law No.13 of 2003 concerning Manpower. In some companies, working hours, rest periods and overtime are included in the Collective Labor Agreement (CLA). For employees who work 6 days a week, the working hours are 7 hours a day and 40 hours a week. As for employees with 5 working days in a week, their work obligations are 8 hours in 1 day and 40 hours in 1 week. According to the Law on Working Hours, Working Hours is the time to do work, which can be carried out during the day and or at night (Ministry of Industry, 2003).

METHODS

This type of research is quantitative using a cross sectional approach. The Cross Sectional approach is a study by making observations or measuring variables at one time. The aim to determine the effect of work shifts on work fatigue in workers processing workers at PTPN IV Kebun Adolina Serdang Bedagai.

The location of this research was conducted at PTPN IV Kebun Adolina Perbaungan District Serdang Bedagai Regency in the processing section with a period of data collection in January to May 2023.

The variables used in this study are two variables. independent variables and dependent variables. The independent variable is the variable that affects or cause changes or the emergence of the dependent variable (Sugiyono, 2022). The independent variable in this study is the work shift. The dependent variable in this study is work fatigue.

Population is a generalization area consisting of objects/subjects that have certain qualities and characteristics set by researchers to study and then draw conclusions.

Population in this research is all workers in the processing section at PTPN IV Kebun Adolina District Perbaungan Serdang Bedagai Regency with a total of 70 workers.

This study uses a census sample or total sampling. Total sampling is a sampling technique where all members of the population are sampled. Research conducted on populations under 100 should be done with a census, so that all members of the population are sampled as subjects studied or as respondents providing information (Sugiyono, 2022). respondents providing information (Sugiyono, 2022). In this study There are 70 respondents therefore the sample used in this study is the same as the number of respondents. This research is the same as the number of respondents.

Non-random technique (non-probability sampling) is a technique that is not based on the law of probability so that it does not provide equal opportunities or opportunities for each element or member of the population to be selected into the sample. chosen to be the sample. Elements or members of the population who are selected as samples are based on subjective criteria that have been planned by the researcher.

RESULTS

1. Respondent Characteristics

Table 1 Frequency Distribution of Respondent Characteristics of Processing Workers

Respondent's Identity	Frequency	Presentation (%)
Age		
20-26 Years Old	19	27,1
27-33 Years Old	39	55,7
34-40 Years Old	12	17,2
Gender		
Male	70	100
Female	0	0
Shift		
Morning Shift	34	49
Night Shift	36	51
Length of Service		
<5 Years	52	74,3
>5 Years	18	25,7

Table 1 shows that the respondents in this study were workers in the processing section as many as 70 respondents (100%). Paldal valrialbel kalralkteristik pekerja bagian pengelolaan obtained hasil sebalgali following. The results showed that the respondents aged 20-26 years were 19 respondents (27.1%), those aged 27-33 years were 39 respondents (55.7%), those aged 34-40 years were 12 respondents (17.2%). Workers by gender category were dominated by the Lalki-lalki gender group, 70 respondents (100%). Workers with shift categories were 34 respondents (49%) in the mallalm shift (51%). Workers with the malsal kerjal category of respondents 1-5 talhun were 52 respondents (74.3%), within 6-10 years of service as many as 18 respondents (25.7%).

2. Univariate Analysis

Table 2 Frequency of Work Fatigue

Work Fatigue	n	Total	%
Light	37	52,9	
Heavy	33	47,1	
Total	70	100	

Based on table 2, it can be seen that the frequency of ringaln fatigue was 37 respondents (52.9%) and ringaln fatigue was 33 respondents (47.1%). (47,1%).

3. Bivariate Analysis

Table 3: Relationship between shift work and fatigue in workers

Work Shift	Work Fatigue						P value	OR (CI 95%)
	Light		heavy		Total			
	N	%	N	%	N	%		
Morning	25	67,6	9	27,3	34	42,9	0,001	5.556(1.98-15.560)
Night	12	32,4	24	72,7	36	57,1		
Total	37	100	33	100	70	100		

Based on Table 4 above, it can be seen that workers who experience mild fatigue in the morning shift as many as 25 respondents (67.6%), morning shifts who experienced severe fatigue as many as 9 respondents (27.3%). While workers who experience night shift as many as 12 respondents (32.4%), and experienced severe fatigue in the graveyard shift as many as 24 respondents (72.7%). The results of the Chi-square statistical test analysis obtained $p = 0.001$ ($p < 0.05$), so there is an influence between the two variables, namely work shift. 0.05) then there is an influence between the two variables, namely work shift on job fatigue in workers PTPN IV Kebun Adolina District Serdang Bedagai can also be interpreted that H_0 rejected and H_a accepted.

DISCUSSION

1. The relationship between work shifts and fatigue of workers in the processing section at PTPN IV Kebun Adolina.

Based on the results of research at PTPN IV Kebun Adolina District Serdang Bedagai District, shows that there is fatigue felt by workers either in the night shift or in the morning shift. For fatigue that felt by night shift workers is often experiencing fatigue such as a heavy head, feeling sleepy, heavy eyes, difficulty concentrating, stiff shoulders, and fatigue. concentrate, shoulders feel stiff, and feel dizzy. As for fatigue that is often experienced by morning shift workers, namely physical symptoms, such as pain in the back, fatigue, and dizziness. include feeling pain in the back, heavy eyelids, stiff shoulders, headaches and feeling dizzy. feel stiff, headaches and feel dizzy. Where the majority of workers at PTPN IV Kebun Adolina is male. with a working period ranging from 1 year to 10 years, while for age years to 10 years, while for age starting from the age of 20-40 years.

Based on the results of bivariate analysis of the effect of work shifts on fatigue in PTPN IV Kebun Adolina Subdistrict Bedagai workers seen from the morning shift who experienced mild fatigue as many as 25 respondents (67.6%) and morning shift severe fatigue as many as 9 respondents (27.3%). While the night shift who experienced fatigue as many as 12 respondents (32.4%) and night shifts who experienced severe fatigue as many as 24 respondents (72.3%). fatigue as many as 24 respondents (72.7%).

Work shifts have an influence on fatigue levels and performance. Workers feel most awake and have the best performance on morning shifts, while the workers with the worst fatigue levels and performance occur during the night shift. Employees who have poor performance will have a negative impact on the company as a whole. Fatigue can reduce the level of performance produced and potentially lead to errors in work that have the opportunity to cause work accidents (Fadillah, 2022). Work fatigue is a sign that the body is in condition both physically and psychologically. Someone with condition is characterized by a decrease in the level of alertness and can also reduce the level of motivation at work (Amalia & Widajaj, 2022).

The chi-square test results p value = 0.001 where ($p < 0.05$), test decision H_a is rejected which states that there is an influence of work shifts on job fatigue in PTPN IV Kebun Adolina, Serdang Bedagai District. The results of statistical analysis showed that there was a significant

relationship between work shifts and fatigue and obtained an OR value = 5.556 which means that respondents on the night shift have risk factors. 5 times greater risk factor for fatigue than in the morning shift. In this study, night shift workers were more tired than morning shift workers. morning shift. As is well known, from an early age the human body has been patterned to follow natural cycles. following the natural cycle. During the day someone doing work or activity will increase the pulse rate and blood pressure at night. night. All body functions will decrease and drowsiness arises, which is often referred to as a body clock or cycardian rhytem. often referred to as a body clock or cycardian rhytm. By Therefore, fatigue is influenced by circadian rhythms as well as the quality and quantity of sleep, individual health, the environment and the tasks performed. tasks.

Sleep quality is the measure by which a person can easily initiate and maintain sleep. easy to initiate sleep and to maintain sleep. Most employees have poor sleep quality. This can be caused by the lack of rest time they have. While working employees cannot use the break time given by the company to sleep. When the break time comes, they use it to eat and chat with other employees. Good sleep quality is a condition in which a person's sleep can produce freshness and fitness when awakened. Workers who get work shifts will feel hampered because the work schedule is changing and uncertain, especially in night shift workers, night time that should be used for sleep but used for work. A person who works the night shift although they can rest in the morning but cannot use their sleep time. this is due to the presence of elements that damage the quality of sleep, such as noise in the morning, bright light, and the presence of sleep such as noise in the morning, bright light, and the presence of activities that must be done. activities that must be done. Humans do activities during day because it follows the pattern of the biological clock,. If a person works based on shifts, then automatically the circadian rhythms that have been will change and may result in disruption of the biological clock. sleep and wakefulness, this will affect sleep patterns.

In line with the theory of Kroemer and Grandjean (1997), which explains that circadian rhythms are a factor in triggering work fatigue. explains that circadian rhythms are a trigger factor for work fatigue, if the circadian rhythm is disturbed, a person will experience sleep disturbances that worsen their sleep so that it worsens the quality of sleep. Poor sleep quality in workers can be seen from the length of time workers sleep at night on average only 4-5 hours while according to the National Sleep Foundation adults require a sleep duration of 7-9 hours a day, the problems that are always experienced are problems that hinder their sleep such as not being able to fall asleep for 30 minutes since lying down, waking up during sleep, waking up to go to the bathroom, and being cold / hot at night. and cold / hot at night (Widiyanti et al., 2020).

Shift work is strongly associated with the incidence of fatigue, there are many factors that trigger fatigue due to night shifts. Among them is that people who work at night work shifts are forced to withstand human physiological and psychological functions, the body's circadian function is sleep, sleep is a basic need for all humans from children to the elderly but the need for sleep certainly has its own portion for individual needs and according to human age. Every human being has autonomic and vegetative processes such as (metabolism, body temperature, heart rate, and blood pressure) all these human functions show a regular daily cycle, so that if there is a change in the human resting pattern, there will be an imbalance in the human body. will have an effect on the imbalance that can affect workers. There are other impacts such as absenteeism, influence on sleep quality, mental capacity, psychiatric disorders and digestive disorders.

CONCLUSION

Based on the results of the research that has been carried out, it can be concluded that conclusion that the workers in the processing section are all men. Based on the results of statistical tests using the Chi-square test obtained a p value of 0.001 which means the p value is ≤ 0.05 so that it shows significant results that there is an effect of work shifts on fatigue. on job fatigue. The results of this study also found that there are difference in fatigue in the morning shift and night shift with an average of 0.001 p value. fatigue in processing workers on the night shift is higher than workers who work on the morning shift. than workers who work in the morning shift.

REFERENCES

- Alfikri, R., Halim, R., Syukri, M., Nurdini, L., & Islam, F. (2021). Status Gizi dengan Kelelahan Kerja Karyawan Bagian Proses dan Teknik Pabrik Kelapa Sawit. *Jurnal Kesehatan Komunitas*, 7(3), 271–276. <https://doi.org/10.25311/keskom.vol7.iss3.983>
- Arfan, I., & Firdaus, R. (2020). Faktor yang Berhubungan dengan Kelelahan Kerja pada Pekerja Bagian Produksi di Pabrik Pengolahan Kelapa Sawit. *Jurnal Ilmu Kesehatan Masyarakat*, 9(04), 232–238. <https://doi.org/10.33221/jikm.v9i04.785>
- Caldwell, J. A., Caldwell, J. L., Thompson, L. A., & Lieberman, H. R. (2019). Fatigue and its management in the workplace. *Neuroscience and Biobehavioral Reviews*, 96(November), 272–289. <https://doi.org/10.1016/j.neubiorev.2018.10.024>
- Innah, M., Muhammad Khidri Alwi, Fatmah Afrianty Gobel, & Abbas, H. H. (2021). Faktor yang Berhubungan dengan Kelelahan Kerja pada Penjahit Pasar Sentral Bulukumba. *Window of Public Health Journal*, 01(05), 471–481. <https://doi.org/10.33096/woph.v1i5.160>
- KEMENPERIN. (2003). Undang - Undang RI No 13 tahun 2003. *Ketenagakerjaan*, 1.
- Lusi Febri Sari Sitompul. (2022). *Pengaruh Stres Kerja, Kelelahan Kerja dan Kualitas Kehidupan Kerja Terhadap Niat Ingin Keluar Tenaga Kesehatan Puskesmas Kecamatan Kelapa Gading Pada Masa Pandemi Covid-19*. 11–29. <http://repository.stei.ac.id/id/eprint/8269>
- Menteri Tenaga Kerja dan Transmigrasi RI. (1980). Peraturan Menteri Tenaga Kerja dan Transmigrasi Nomor 2 Tahun 1980 Tentang Pemeriksaan Kesehatan Tenaga Kerja dalam Penyelenggaraan Keselamatan Kerja. *Menteri Tenaga Kerja Dan Transmigrasi RI*, 02, 1–5.
- Mustofani, M., & Dwiyaniti, E. (2019). Relationship between Work Climate and Physical Workload with Work-Related Fatigue. *The Indonesian Journal of Occupational Safety and Health*, 8(2), 150. <https://doi.org/10.20473/ijosh.v8i2.2019.150-157>
- Purbaya, H., & Paskarini, I. (2020). Correlation of Nutritional Status and Subjective Fatigue with the Productivity of Labourers. *The Indonesian Journal of Occupational Safety and Health*, 9(1), 1. <https://doi.org/10.20473/ijosh.v9i1.2020.1-11>
- Rino Komalig, M., & Mamusung, N. (2020). Hubungan Antara Umur Dan Shift Kerja Dengan Kelelahan Kerja Pada Petugas Karcis Parkir Kawasan Megamas Kota Manado. *Media Publikasi Promosi Kesehatan Indonesia (MPPKI)*, 3(1), 26–30. <https://doi.org/10.56338/mppki.v3i1.1015>
- Safira, E. D., Pulungan, R. M., & Arbitera, C. (2020). Kelelahan Kerja pada Pekerja di PT. Indonesia Power Unit Pembangkitan dan Jasa Pembangkitan (UPJP) Priok. *Jurnal*

Kesehatan, 11(2), 265. <https://doi.org/10.26630/jk.v11i2.2134>

- Sesrianty, V., & Marni, S. (2021). Hubungan shift kerja dengan kelelahan kerja perawat di RSUD Adnaan WD Payakumbuh. *Jurnal Cakrawala Ilmiah*, 1(4), 676–679.
- Syafar, S., & Fiatno, A. (2018). Pengaruh Shift Kerja Terhadap Kelelahan Pekerja Pabrik Sawit Di Ptpn V Sei Galuh. *Jurnal Teknik Industri Terintegrasi*, 1(2), 88–97. <https://doi.org/10.31004/jutin.v1i2.323>
- Tahir, M., & Rahmawati Arfah, S. (2022). Efektivitas Sistem Shifting Pada Era New Normal Di Balai Pemasarakatan Kelas I Makassar. *JPPM: Journal of Public Policy and Management*, 4, 2022–2066.
- Taufiq Ihsan, Tivany Edwin, Yasinta Azwir, V. D. (2019). Fatigue Analysis to Evaluate Workloads in Production Area at Crumb Rubber Factories of Padang city, West Sumatra Indonesia Taufiq. *Indian Journal of Occupational and International Medicine*, 23(1), 8–13. <https://doi.org/10.4103/ijoem.IJOEM>
- Tenggor, D., Pondaag, L., & Hamel, R. S. (2019). Faktor-Faktor Yang Berhubungan Dengan Kelelahan Kerja Pada Perawat Di Ruang Rawat Inap Rumah Sakit Umum Gmim Pancaran Kasih Manado. *Jurnal Keperawatan*, 7(1). <https://doi.org/10.35790/jkp.v7i1.24328>
- Tillama, P. I., & Wirawan, I. M. A. (2021). Hubungan Beban Kerja Dan Kelelahan Kerja Dengan Turnover Intention Pada Pekerja Outsourcing Pt X Tahun 2020. *Archive of Community Health*, 8(1), 155. <https://doi.org/10.24843/ach.2021.v08.i01.p11>
- Tri Dwi Hengky Ariyanto, B. Y. (2021). Hubungan Kelelahan Kerja Dengan Beban Kerja Pada Karyawan Bagian Produksi Di PT. Admira Magetan Tahun 2021. *Jurnal Poltekkes*, 1, 1–13.
- Widianto, S. (2021). Kliping Berita Ketenagakerjaan. *Biro Hubungan Masyarakat*, 7. http://perpustakaan.kemnaker.go.id/admin/assets/product_img/pdf/13_Januari_2021.pdf