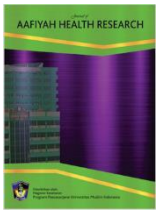
Journal of Aafiyah Health Research (JAHR) 2021. Vol. 2, No. 2. Page 64-72
https://doi.org/10.52103/jahr.v2i2.739

OPEN ACCESS

P-ISSN: 2722-4929, E-ISSN: 2722-4945

JOURNAL OF AAFIYAH HEALTH RESEARCH (JAHR)

Publisher: *Postgraduate Program, Universitas Muslim Indonesia*
Journal Homepage:
http://pascaumi.ac.id/index.php/jahr/index



Original Article

Work Fatigue Analysis on Gas Station Operators in Makassar, Indonesia

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Article History
Received: 17-10- 2021
Revised: 28-11- 2021
Accepted: 27-12-2021

Keywords*: Work Fatigue; Gas Station Operator*

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Abstract

Background: Work fatigue is a complex criterion that not only concerns physiological and psychological fatigue but is dominantly related to decreased physical performance, feelings of fatigue, decreased motivation and decreased work productivity. The existence of this research is to see the relationship between work shift, stress, workload, working period, age, gender and work fatigue.
Aim: This study aims to analyze the factors related to the Work Fatigue of Gas Station Operators in Makassar City in 2021.
Methods: The type of research used is analytic with the Corss Sectional Study approach, which aims to see the relationship between two variables, namely the independent variable and the dependent variable. The population in this study were 62 operators from three gas stations in Makassar, where the first gas station was located at Sudiang Jl.Printis Kemerdekaan KM 16 Front of the Police, 7180277 totaled 20 operators, SPBU II 7490203 Jl.Sultan Hasanuddin Km 4.2 totaled 25 operators and gas station III 7490295 Jl. Talasalapang KM 3.7 Total 17 operators.
Results: The results of this study showed that there was a significant relationship between work fatigue at gas station operators (p value = 0.004) workload, (p value 0.001) work stress, (p value 0.003) age, (p 0.005) years of service, (p value 0.003) Gender (p value 0.660) Shift work. The author suggests Pertamina to pay attention to the condition of the operator while working.
Conclusion: Years of service, length of work, history of disease, smoking habits, weight of burden, and repetitive activities have a significant relationship with complaints of musculoskeletal disorders in workers at CV. Guna Agung Makassar.

INTRODUCTION

Work fatigue is a protective mechanism of the body to avoid further damage so that recovery occurs after rest. Fatigue is regulated centrally by the brain. In the central nervous system there is a system of activation and inhibition. Fatigue shows different conditions from each individual, but all lead to on loss of efficiency and decreased work capacity and body resistance (Tarwaka 2017). The problem that often occurs in gas station operators in Makassar is standing for a long time and continuously when loading or refueling without irregular rest periods so that it can cause disturbances to the body and psychology of workers. The problem for these gas station operators is because of the density of vehicles so that it can cause work fatigue which can result in gas station operators which can result in impaired concentration at work and decreased productivity at work.

According to a research report (CNA 2012) that nearly 80% of employees in Canada experience burnout. Data from a national study on the relationship between health and productivity in the workplace, it is known that of nearly 29,000 working adults interviewed, 38% said they had experienced decreased cognitive function, lack of sleep, or feelings of fatigue (Sajadi, Farsi, dan Rajai 2015). Work fatigue Fatigue is a mechanism that protects the body from further damage so that recovery occurs after rest. Fatigue is regulated centrally by the brain. In the central nervous system there is a system of activation and inhibition. Fatigue shows

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different conditions from each individual, but entirely leads to loss efficiency and decreased work capacity and body resistance (Tarwaka 2017).

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Work fatigue is a protective mechanism of the body to avoid further damage so that recovery occurs after rest. Fatigue is regulated centrally by the brain. In the central nervous system there is a system of activation and inhibition. Fatigue shows different conditions from each individual, but all lead to on loss of efficiency and decreased work capacity and body resistance (Tarwaka 2017). The problem that often occurs with gas station operators in Makassar City is standing for a long time and continuously while loading or refueling without irregular rest periods so that it can cause disturbances to the body and psychology of workers. The problem with gas station operators is because of the density of vehicles that can cause work fatigue which can result in gas station operators which can result in impaired concentration at work and decreased productivity at work. According to a research report (CNA 2012) that nearly 80% of employees in Canada experience fatigue. Data from a national study on the relationship between health and productivity in the workplace, it is known that of nearly 29,000 working adults interviewed, 38% said they had experienced decreased cognitive function, lack of sleep, or feelings of fatigue (Sajadi, Farsi, dan Rajai 2015).

Based on the results of initial observations made by researchers on 3 different gas stations in Makassar which operate for 24 working hours, it was found that operator workers at gas stations experienced fatigue due to work carried out by standing continuously to fill gasoline and there was also a system work shifts, stress, workload, working period, age and gender which will result in work burnout for gas station operators. Then it was found that the number of operator workers and working hours were determined by the gas station, there was no provision regarding the number of operators who wanted to work on predetermined shifts or the working hours given by the gas station to the operator, even though 2 of the 3 gas stations used 8 hour shifts. work, but one of the gas stations does not use 8 hours of work, which is not in accordance with Law No. 13 of 2003 that employees who work 6 days a week, work 7 hours in 1 day and 40 hours in 1 week.

As for employees with 5 working days in 1 week, their obligation to work is 8 hours in 1 day and 40 hours in 1 week. By providing a difference in working hours between men and women where men are given 12 hours of work, and women 6 hours of work, the problem at the gas station is that it gives male operators working hours that exceed the standard working hours so that it can have an impact on operator fatigue. and can also feel lethargic, sleepy, and less concentrated in doing work and can even experience pain in gas station operator workers. And if you look at the safety of the king of the three gas stations, there is one of them who does not apply work safety properly where there are gas station operators who do not use safety shoes and masks when doing work. So from some of the problems found above, the researcher wants to find out more about the work burnout of gas station operator workers in Makassar City in 2021.

METHOD

The type of research used is analytic with the Corss Sectional Study approach, which aims to see the relationship between two variables, namely the independent variable and the dependent variable. This research was conducted using the questionnaire distribution method. Where the independent variables are, work shifts, stress, workload, years of service, age, gender and the dependent variable is the work fatigue of the operator section employees at gas stations in Makassar City in 2021. The population in this study were all employees of the operator section at gas stations in Makassar city in 2021, which amounted to 62 people. The sampling technique in this study used total sampling.

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There are six variables that will be measured in this study, namely shift work, stress, workload, years of service, age, gender as the dependent variable. Measurement of workload was carried out using a questionnaire, and for the measurement of workload variables, subjective measurements were carried out, namely counting the number of pulses using a stopwatch.

RESULTS

From 62 respondents of gas station operators in Makassar City, it was found that 52 respondents were young with a percentage (83.9%), older respondents were 10 people with a percentage (16.1%). Based on the results of the study, it can be seen that there are 40 male respondents with a percentage (64.5%), and 22 female respondents with a percentage (35.5%). Based on the results of the study, it can be seen that the respondents with a new service period were 32 people with a percentage (51.6%%), and respondents with a long service period were 30 people with a percentage (48.4%). as many as 25 people with a percentage (40.3%), gas stations 7180277 as many as 20 people with a percentage (32.3%%) and respondents at gas stations 7490295 as many as 17 people with a percentage (27.4%).

Of the 31 respondents in the measurement of the work shift variable, it was found that most of the respondents worked in the day shift, namely (35.5%), the morning shift (33.9%) and the night shift (30.6%). In the work stress variable, most of the respondents with stress (59.7%) and respondents who are not stressed (40.3%). In the workload variable, it was found that most of the respondents had a light workload (56.5%), and a moderate load (43.5%). In the variable of tenure, it was found that most of the respondents were new workers (51.6%), and old workers (48.4%). The fatigue variable is found in the tired category (61.3%), and not tired (38.7%)

Table 1. Factors Associated with Complaints of Musculosketal Disorders (MSDs)

Variable	Fatigue				Total		p-*value*
	Yes		No				
	n	%	n	%	n	%	
Shift Work	38	61.3	24	38.7	62	100	0.660
Work Stress	38	61.3	24	38.7	62	100	0.001
Workload	38	61.3	24	38.7	62	100	0.004
Years of Services	38	61.3	24	38.7	62	100	0.005
Age	38	61.3	24	38.7	62	100	0.003
Gender	38	61.3	24	38.7	62	100	0.003

Source: Primary Data 2021

In table 1, the interpretations are: (a) there is a significant relationship between work stress and fatigue in gas station operators in Makassar City (p= 0.001), (b) workload has a significant relationship with fatigue in gas station operators in Makassar City (p= 0.004) (c) There is a significant relationship between working age and fatigue in gas station operators in Makassar City (p= 0.005) (d) Working age has a significant relationship with fatigue at gas station operators in Makassar City (p= 0.003) . (e) Gender has a significant relationship with fatigue at gas station operators in Makassar City (p= 0.003), and (f) Shift work has no significant relationship with fatigue at gas station operators in Makassar City (p= 0.660)

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P-ISSN: 2722-4929, E-ISSN: 2722-4945

Table 2. Linear regression analysis of the relationship between work shifts, stress, workload, years of service, age, gender and work fatigue

Variable	Standardized coefficients beta	sig	R Square
Shift Work	-0.223	0.049	0.450
Work Stress	0.342	0.006	
Workload	-0.312	0.005	
Years of Services	-0.217	0.062	
Age	-0.183	0.087	
Gender	-0.058	0.618	

Source: Primary Data 2021

From the results of the regression analysis of the variables Shift work, stress, workload, period of work, age, and gender on work fatigue, the significance value of the variable gender = 0.049, work stress = 0.006 and workload = 0.005 all three have a value smaller than 0.05, which indicates that the variables of workload, stress, and gender are significantly related to work fatigue. The variable period of service has a significant value of 0.062, Age has a significant value of 0.087 and work shift has a significant value of 0.618 where the value is greater than 0.05. These results provide a conclusion that the variables of working period, age, and work shifts are not significantly related to job burnout. The value of R Square is 0.450, this indicates that the contribution of workload, gender and work stress to work fatigue is 45% while the remaining 65% is a contribution from other variables not included in the study. These results also show that of the five independent variables, the most influential on work fatigue is workload, because it has the largest beta value, which is -0.312.

DISCUSSION

Shift work

It was found that most of the operators in each work shift experienced work fatigue. This is because each level of consumer density is almost the same in every work shift, because Pertamina is located in the middle of an urban area, stands continuously, and is very susceptible to exposure to benzene substances that come from fuel oil that is in Pertamina. .

In addition to operators who experience fatigue, there are also several operators who do not experience fatigue, this is due to several factors including, operators who have a young age of <40 years of age do not experience fatigue, the operator's working period is more than 5 years due to long working operators. already able to adjust to their work. Based on the value of the *chi-square* statistical test , the *p* value = 0.660 ($p > \alpha$ = 0.005) was obtained . This means that Ha is rejected and Ho is accepted, so there is no significant relationship between work shifts and work fatigue at gas station operators in Makassar City in 2021.

Based on the researcher's analysis, there is no relationship between work shifts and work fatigue because the division of 8 hours of work (morning shift, afternoon shift, and night shift) by the management has been very good by considering the proportion of the number of vehicles with the number of workers, geographically the location of the three gas stations. Another factor that reduces the level of fatigue of workers is that during working hours workers are given time to sit and rest when not serving refueling, this is very good in applying worker economy so that it does not have an impact on work fatigue. It is indeed very burdensome from the consumer's point of view, but not so based on the results of interviews and through filling out questionnaires it was found that there are very few complaints of work fatigue because more than half of the gas station workers feel that the division of work and rest time is felt to be well regulated by the management and also feels that they have an environment comfortable work. Another reason is that the difference in the number of consumers who fill up fuel in each shift is not too significant, thus allowing worker fatigue on each shift to be at the same level.

This research is in line with research conducted by (Kirana dan Dwiyanti 2017). Based on the value of the *chi-square* statistical test , the value of $p = 0.132$ ($p > \alpha = 0.005$) was obtained . This means that Ha is rejected and Ho is accepted, so there is no significant relationship between shift work and work fatigue in nurse

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workers. This study In contrast to the results of research conducted by (Aini 2019) it was found that the p value = 0.016. which shows there is a very significant relationship between work shifts and fatigue.

The implementation of the shift work system has consequences that need to be realized by every agency using the shift system because there are differences in working conditions between the morning shift, afternoon shift and night shift. The application of work shifts can be exposed to various risks of health problems, this situation is because the application of work shifts can result in changes in circadian rhythm which can develop into sleep disorders and work fatigue (Tarwaka 2015).

Work Stress

Based on the value of the *chi-square* statistical test , the value of $p = 0.001$ ($p < \alpha = 0.005$) was obtained . This means that Ha is accepted and Ho is rejected, so there is a significant relationship between work stress and work fatigue. At gas station operators in Makassar City in 2021. From the results of my analysis, work stress can be caused by internal and external factors in the company. Such as the pressure on the operator, and the presence of probelem outside so that the operator can bring it to work which results in work fatigue.

This study is in line with research conducted by (Josephus, J. Wongkar, D. Rembang 2017) Based on the results of the Kendall's tau statistical test, the correlation coefficient value of 0.722 means that there is a strong positive relationship with a probability of 0.000 ($p < 0.05$) which means Ho is rejected and H1 is accepted, it can be concluded that there is a relationship between work fatigue and work stress in Emergency Unit (ER) and Intensive Care Unit (ICU) nurses at Datoe Binangkag Regional General Hospital, Bolaang Mongondow Regency. In contrast to the results of research conducted on ICU Nurses at Imanuel Hospital Bandung, the results showed that there was no relationship between work stress and work fatigue. With a p value = 0.053.

Work stress and work fatigue of respondents are at a mild level, this is because seen from the years of service of respondents in this hospital, most of them have a working period of > 5 years so that they have long work experience, the longer one's work experience, the more one's ability to deal with problems in the workplace. Increasingly (Deyulmar, Suroto, dan Wahyuni 2018)

The body in a state of stress activates the response and expends more energy which has an impact on the incidence of work fatigue. Work stress is important to note because it can cause work fatigue which has an impact on work productivity, work motivation of nurses, as well as the level of nurse attendance, if nurses work comfortably and are guaranteed occupational safety and health, the work carried out will be successful and will also have an impact on the health of patients and caregivers. institution where the nurse works.

According to theory (Tarwaka 2015), the impact of work-related stress can cause emotional reactions, changes in habits or mentality, and physiological changes. One of the physiological changes is fatigue. Work stress can be reduced and controlled through decorations including color decorations in the work area, the use of music while working, and taking advantage of breaks to do appropriate physical exercise for the workforce (Suma'mur 2009). The more the times develop, the higher the demands of life that a person must have. The demands of life do not only come from oneself, but also from the surrounding environment. If a person is unable to cope with the demands in his life, then it is likely that that person will experience stress which can lead to mental disorders and fatigue at work.

Workload

Based on the value of the *chi-square* statistical test , the value of $p = 0.004$ ($p < \alpha = 0.05$) was obtained . This means that Ha is accepted and Ho is rejected, so there is a significant relationship between workload and work fatigue on gas station operators in Makassar City in 2021. From my analysis, the workload is caused by additional working hours, in which the operator usually given more working hours because usually at the time of changing the work shift the friend who replaces has not arrived. So the operator who has previously rested is still working. And the heavier the workload of a person, the higher the work fatigue for loyal gas station operators. This is because if the workload increases, the ability to work will weaken. A workload that does not match one's work capacity will cause work fatigue.

This study is in line with research conducted by (Wiyarso 2018). Based on the results of statistical analysis, the results obtained are sig. = 0.008 (sig. <0.05), which means that there is a relationship between

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workload and work fatigue on nurses in the inpatient ward Yeheskiel and Hana. at the public hospital, GMIM Pancaran Kasih Manado. This study is inversely proportional to research conducted by (Lestari dan Afandi 2019) which showed that there was no relationship between the radiographer's workload and work fatigue at St. Carolus Hospital with p value = 0.119. based on the results of the study, it was because the care of the burden, duties and responsibilities had been adjusted to the radiographer's ability to accept the workload. In addition, radiographers also work together in carrying out their duties so as to minimize fatigue that occurs.

This agrees with (Tarwaka 2015) which states that the workload received by a person must be appropriate and balanced to the physical, cognitive and human limitations of accepting the burden of accepting the workload. Workload is a collection or number of activities that must be completed by an organizational unit. Workload is a process of analyzing the time used by a person or group of people in completing the tasks of a job (position) or group of positions (work units) carried out under normal circumstances. The factors that affect the workload are divided into two factors, namely external factors and internal factors that can cause work fatigue (Irawati dan Carollina 2017).

Years of service

Based on the value of the *chi-square* statistical test , the value of $p = 0.005$ ($p < \alpha = 0.05$). This means that Ha is accepted and Ho is rejected, so there is a significant relationship between working period and work burnout at gas stations operators in Makassar City in 2021. The average working at Pertamina has a working period of more than 5 years which causes the system to affect the mechanisms in the body (circulatory system, muscles, nerves, and respiration).

The results of research conducted in line with (Ukkas 2017) prove that a longer working period will affect fatigue. Work fatigue is the most experienced by workers with more than 8 (eight) years of service at 69.7%. %). And this research is in line with research conducted by (Atiqoh et al., 2014) which shows that most of the respondents (71%) have worked for more than 10 years. As for the research that is not in line, in which there is no relationship between length of service and work fatigue with p=value 0.126 0.05, for Caretaker and PL workers. Cage PT. Charoen Pokphand Jaya Farm 3 Kuok District. (Indrawati dan Nufus 2018) because this research averages 5 years of work.

A person's work experience will affect the occurrence of work fatigue. Because the longer a person works in a company, during that time the feeling of being bored with his work will affect the level of fatigue he experiences (Maulinda dan Hariyono 2017). Another factor that affects work fatigue is the length of work. The working period is the length of time working from the time you first enter work until the research is carried out (Amalia 2007; Umyati 2010).

Age

Based on the value of the *chi-square* statistical test , the value of $p = 0.003$ ($p < \alpha = 0.005$) was obtained . This means that Ha is accepted and Ho is rejected, so there is a significant relationship between the Age Factor and work fatigue. At the gas station operator in Makassar City in 2021. Because old age is very influential on work fatigue, it is caused by the endurance factor at work.

This study is in line with research conducted (Zulfifa Nita Haryanti 2020) there is a significant relationship between age and work fatigue, obtained p = 0.001 and r = 0.296 in medical staff at the eleventh March medical university, this study is also in line with research conducted (Naimah, Fauzan, dan Ariyanto 2020), there is a significant relationship between age and work fatigue, it is known that from 26 respondents who are young < 40 years old, most of them experience low work fatigue, as many as 21 people (80%, of 14 respondents who are old ≥ 40 years most experienced moderate work fatigue as many as 12 people (85.7%). The results of statistical tests with Chi-square obtained p-value = 0.000 <0.05 then Ho was rejected. And this study is contrary to research (Chesnal, Rattu, dan Lampus 2014) which states that there is no significant relationship between age and work fatigue in the production division of PT. Putra Karameta Popontole, South Minahasa, only p value = 0.807 (p is greater than 0.05).

Age level is very influential on labor productivity because it is related to the physical ability of a worker. Workers who are of productive age tend to be physically stronger than workers of non-productive age. The higher the age of the workforce, the lower the work productivity. Workers who have an older age tend to have low productivity and cause work fatigue. This is because at old age physical strength or energy tends to

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P-ISSN: 2722-4929, E-ISSN: 2722-4945

decrease (Kusgiyanto, Suroto, dan Ekawati 2017). The effect of labor age on labor productivity. Young age reflects a strong physique so that they are able to work quickly so that the resulting output also increases, and vice versa. Age is very influential on the physical ability of the workforce. Young age, the resulting production is large. Old age productivity decreases.

The age of workers who are in the productive age (15-60 years) has a positive relationship with labor productivity. This means that if the age of the workforce is in the productive category, then their work productivity will increase. This is because at the productive age level, the workforce has high creativity for work because it is supported by better knowledge and insight and has a high responsibility for the tasks given.

Gender

Based on the value of the *chi-square* statistical test , the value of $p = 0.003$ ($p < \alpha = 0.005$) was obtained . This means that Ha is accepted and Ho is rejected, so there is a significant relationship between gender and work burnout. At gas station operators in Makassar City in 2021. Because it is influenced by work stress factors, the tendency of women to experience work stress is greater than that of men. women have explosive emotions, besides that, married women will face role conflicts between their roles as operators at gas stations as well as housewives.

This research is in line with the research conducted (Zulfifa Nita Haryanti 2020). There is a significant relationship between gender and work fatigue, obtained p-value = 0.004 and r = 0.341 in medical staff at the eleventh March medical university. And the results of this study are inversely proportional to research conducted by (Astuti, Ekawati, dan Wahyuni 2017) the relationship between individual factors, workload and work shifts with work fatigue on nurses at RSJD dr. amino gondohutomo semarang This research was conducted on 138 nurses and a sample of 58 nurses using the proportional stratified random sampling technique. In this study, the -value of 1,000 was obtained, so it can be concluded that there is no relationship between gender and work fatigue. This study is in line with research conducted by (Bunga et al. 2021) that there is no relationship between gender and work burnout with a P value of 1,000.

Gender classification is divided into men and women. In general, women only have the strength of 2/3 of the physical ability or muscle strength of men. Work problems in women can be caused by hormonal periods, body functions and household chores so that menstrual disorders, abortion, Sleep disturbances and work fatigue are more common in women than men (Faiz 2014). According to (Suma'mur 2015) the body size and muscle strength of female workers are relatively less than men. Biologically, women experience menstrual cycles. Pregnancy and menopause, and socially women are housewives.

CONCLUSION

There is a significant relationship between workload, work stress, length of service, age, and gender, on fatigue at gas station operators in Makassar City. Meanwhile, on work shifts there is a non-significant relationship with fatigue at gas station operators in Makassar City. Based on the conclusions of the research, the suggestions given are: It is hoped that Pertamina's management will pay attention to the workload, work stress, years of service, age, gender at the gas station operator in order to reduce the work fatigue felt by the gas station operator. For gas station operators must take advantage of the time rest well such as adequate rest, it is necessary to consume nutritious food and when you start to feel tired you should stretch the body so that the effects of fatigue do not continue so that the body remains healthy when carrying out work that.

Declaration of Conflicting Interest

All authors state that there is no potential Conflict of Interest in this research and article.

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P-ISSN: 2722-4929, E-ISSN: 2722-4945

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