International Journal of Medical Science and Clinical Research Studies

ISSN(print): 2767-8326, ISSN(online): 2767-8342

Volume 03 Issue 11 November 2023

Page No: 2558-2563

DOI: https://doi.org/10.47191/ijmscrs/v3-i11-02, Impact Factor: 6.597

Factors Associated with Subjective Work Fatigue in Gas Station Pump Attendants

Aria Gusti[1], Dea Anggraini[2], Luthfil Hadi Anshari[3]

[1,2,3] Department of Public Health, Faculty of Public Health, Universitas Andalas, Indonesia

ABSTRACT

The Padang-Solok route is the busiest causeway in West Sumatra. Has 3 Gas Stations with high traffic. Based on a preliminary study, 66.6% of Gas Station pump workers experience severe work fatigue. The study aimed to determine the relationship between factors and fatigue at Gas Station pump worker. This This type of quantitative research uses a cross-a approach, carried out from February to August 2023. The population and sample are 42 people using the total sampling method. The research instruments were questionnaires, scales, stadiometers, and WBGT. Primary and secondary data collection. Univariate and bivariate data processing with the Chi-Square test with a degree of confidence of 95% (α = 0.05. The results showed that 59.5% of respondents experienced severe fatigue, 16.7% were old, 42.9% were female, 33.3% had abnormal BMI, 21.4% had long working hours, 35.7% worked at high temperatures, and 59.5% had poor sleep quality. The statistical test results showed a significant relationship between gender (p- value=0.002), nutritional status/BMI (p-value=0.005), sleep quality (p-value=0.020), and work fatigue. There is no significant relationship between age (p-value=0.210), years of service (p-value=0.60), and ambient temperature (p-value=0.708) with work fatigue. There is a relationship between gender, nutritional status/BMI, and quality of sleep with work fatigue among pump workers. It is recommended that Gas Stations complete rest facilities, provide drinking water and chairs in the pumping machine unit.

KEYWORDS: Work fatigue, pump attendants, Gas Station

ARTICLE DETAILS

Published On:
02 November 2023

Available on:
https://ijmscr.org/

INTRODUCTION

Labor is the main actor who drives the production process so that national productivity is created. Based on this role, it is necessary to improve the quality of the workforce, protect and guarantee a sense of security, as well as provide welfare to the workforce by implementing Occupational Safety and Health (K3) in the work environment. (1) RI Law No. 36 of 2009 article 164 concerning Health, states that occupational health efforts in the workplace aim to protect workers so they can live free from health problems and negative impacts of work. (2)

One of the health problems caused by work is fatigue. Any work that is carried out continuously carries the risk of causing fatigue in workers. Subjective work fatigue is something that cannot be ruled out and must be taken into account because it can significantly reduce productivity, work capacity and work performance. (3) Symptoms of fatigue include decreased mobility, decreased motivation and physical fatigue. Decreased movement is characterized by a heavy head, feeling tired all over the body, heavy legs, frequent yawning, confusion, sleepiness, heavy eyes, stiff and awkward movements, unbalanced standing. Reduced motivation is characterized by difficulty thinking, laziness in speaking, nervousness, difficulty concentrating, lack of focus at work, difficulty controlling one's attitude, inability to keep working. Physical decline is characterized by headaches, stiff shoulders, back pain, difficulty breathing, thirst, hoarseness, dizziness, feeling unwell. (4)

According to 2016 data from the International Labor Organization (ILO), around 32 percent of workers worldwide experience fatigue. The severity level ranges from 18.3-27%. (5) The ILO estimates that 2.78 million workers die every year due to work accidents and occupational diseases. Of these deaths, as many as 2.4 million (86.3%) were due to occupational diseases and as many as 380,000 (13.7%) were due to work accidents. (6) In 2017 the National Safety Council (NSC) conducted research on 2,010 workers in United States and found that 13% of work accidents were caused by fatigue.

It is also known that 97% of workers have one factor, as many as 80% of workers have more than two factors that cause fatigue. (7)

The average number of accidents in Indonesia is 414 every day, 27.8% of which are caused by high levels of fatigue. (8) The latest data reported by BPJS Employment, the number of work accidents increased from 2021 to November 2022 to 265,334 cases. (9) Pusdatinaker records and collects data on work accidents in West Sumatra in the fourth quarter, there were 17 work accidents in 2014 with a total of 21 deaths. (10) Based on BPJS Employment data for West Sumatra, Riau, throughout 2021, 31,801 cases of work accidents occurred in the region.

Fatigue can be caused by individual factors and work environment factors. Individual factors that can cause subjective work fatigue include age, gender, nutritional status, smoking habits, sleep quality, workload, worker's body weight, and length of service. Work environmental factors that influence subjective work fatigue, such as lighting, noise, room temperature, air circulation, etc. Burnout can occur when workers become uncomfortable with their working conditions over time.(3)

Based on research conducted by Magvira, et al (2022) with the title factors related to complaints of work fatigue among pump attendants at Khatib Sulaiman Gas Station and Aia Pacah Gas Station in Padang City, the results showed that 87.5% of pump attendants experienced severe fatigue. The results of statistical tests showed that there was a significant relationship between age and length of service and work fatigue. (1) Another study conducted by Lating, et al (2020) with the title risk factors for work fatigue in public fuel station (Gas Station) workers in Kebun Cengkeh Ambon in 2020, research results showed that there was a relationship between age, length of work, and workload and work complaints. (11)

Gas Station is a public facility provided by companies engaged in processing petroleum and natural gas to meet the fuel needs of the community. (11) Each pump unit is guarded by a person responsible for filling fuel to buyers who is called the pump operator. The SBPU operator's duties include asking consumers how much they want to refill, pressing the button on the automatic pump when asked, collecting money and giving change, then depositing the money at each shift change. Filling is done in a standing position, with one pump per operator.

Every job certainly has its own risks, the risks of working as a Gas Station pump attendant include health problems ranging from mild symptoms such as dizziness to serious disorders, namely blood cancer. When filling up petrol at a Gas Station, both officers and consumers will be exposed to petrol vapor, but officers working will of course be exposed to more petrol vapor. Apart from that, Gas Station operators also work in a standing position continuously to refuel and there is also a work shift system which results in irregular sleep hours which can cause fatigue. Environmental temperature factors can also influence how quickly or slowly workers experience work fatigue, such as noise and hot temperatures. Gas Station attendants who work near highways are exposed to noise and heat, which puts them at risk of fatigue. There are no prevention and control efforts for this health disorder on the part of the company, so officers generally feel tired from work.

One of the cross roads which is a national cross route is the Padang-Solok road. The Padang-Solok Sumatra route is widely accessed by vehicles heading to the cities of Sawahlunto, Jambi, Bengkulu, Palembang, Lampung, and even Java. The Sumatra Padang-Solok route is busier than other routes, this can be seen from the number of destination cities that can be accessed via this route. Another reason this route is busy is because there are various vehicles that use this route, such as loaded trucks, intra-city and inter-city buses, and private vehicles, both cars and motorbikes.

The road conditions on this route are winding, uphill, downhill and have potholes so vehicle speed must be adjusted to road conditions. Fuel consumption is influenced by the length of the trip, vehicle use, and the area of the regional road network traveled. (12) This is proven by the existence of Gas Station units on this route, there are three units, namely Lubuk Selasih Gas Station, Koto Gadang Guguak Gas Station, and Koto Baru Gas Station. Fuel consumption is also proven by the number of fuel distributions and the number of pump machines owned. The average fuel distribution per day at Lubuk Selasih Gas Station is 32 KL with 5 pump machines, Koto Gadang Guguak Gas Station is 28 KL per day with 6 pump machines, and Koto Baru Gas Station is 30 KL every day with 6 pump machines. With so many pump machines, the number of workers is also large. The number of pump attendants from these Gas Stations is 42 people, 15 people at Lubuk Selasih Gas Station, 14 people at Koto Gadang Guguak Gas Station, and 13 people at Koto Baru Gas Station. The three Gas Stations have 3 work shifts, namely shift I (07.00-15.00), shift II (15.00-23.00), and shift III (23.00-07.00).

Based on a preliminary study conducted on 6 pump officers, it was found that 4 (66.6%) people had a high level of subjective work fatigue and 2 (33.3%) people had a low level of fatigue. The tool used to measure subjective fatigue is a subjective self rating rest questionnaire from the Industrial Fatigue Research Committee (IFRC). From the results of the preliminary study, it is also known that the pump attendants are aged around 20-23 years and one person is 47 years old. Officers have a working life that ranges from 1-3 years and one person has a working life of 22 years, body weight and height vary with 2 out of 6 pump officers having an abnormal Body Mass Index (BMI), pulse measurements for pump officers range from 75 -90. Apart from that, 2 out of 6 people have poor sleep quality and there are male officers who smoke. The work environment is influenced by weather conditions due to working in open areas or in the field. Thus, several of these variables can be factors that cause fatigue in Gas Station officers.

Symptoms of fatigue that many pump workers feel are

that 6 people feel heavy in the head, 5 people feel tired in all parts of the body, 4 people often yawn while working, 6 people feel sleepy when working, 3 people easily let go of things, 6 people have headaches, 6 people had shoulder and back pain, and 5 people felt thirsty. From the symptoms of subjective work fatigue, it can be seen that fatigue greatly influences the condition of workers while working, thus having an impact on work productivity.

Based on the description above, it is necessary to conduct research on subjective work fatigue in Gas Station pump attendants by looking at the factors that are thought to influence it.

The aim of this research is to determine the factors associated with subjective work fatigue in Gas Station pump attendants on Jalan Lintas Sumatera Padang-Solok.

METHOD

This type of research is quantitative research using a cross sectional design. This research was conducted at the Lubuk Selasih Gas Station, Guguak Koto Gadang Gas Station and Koto Baru Gas Station from February to August 2023. The population studied were pump officers at Lubuk Selasih Gas Station, Koto Gadang Guguak Gas Station and Koto Baru Gas Station with a total of 42 people.

The sampling technique used is total sampling where the sample is the entire population. The data collection technique uses primary data through interviews using questionnaires and secondary data obtained from data that is already available at each Gas Station. The research instruments were questionnaires, weight scales and height meters.

Data processing uses the SPSS application and presentation in table form. The analysis used is univariate and bivariate analysis. Univariate analysis is to determine the frequency distribution of variables, while bivariate analysis is to determine the relationship between variables. The independent variables in this study are age, gender, nutritional status/BMI, years of work, sleep quality, and environmental temperature. The dependent variable in this study is subjective work fatigue among Gas Station pump attendants on Jalan Lintas Sumatra Padang-Solok.

RESULT

Based on the research results in table 1, it can be seen from 42 pump officers at Lubuk Selasih Gas Station, Koto Gadang Guguak Gas Station, and Koto Baru Gas Station, it was found that more than half of the respondents, namely 25 people (59.5%) experienced severe fatigue, while 17 people (40.5%) %) respondents experienced mild work fatigue. As many as 7 people (16.7%) of respondents were old (≥35 years), less than half of the respondents, 18 people (42.9%) were female, 14 people (33.3%) had an abnormal BMI, respondents with long working periods (≥5 years), namely 9 people (21.4%), 15 people (35.7%) of respondents worked in high temperatures, and 25 people (59.5%) of respondents had poor sleep quality.

Based on the results of statistical tests in table 2, it was found that there was a significant relationship between gender (p-value=0.002), nutritional status/BMI (p-value=0.005), and sleep quality (p-value=0.020) with work fatigue. There is no significant relationship between age (p-value=0.210), years of work (p-value=0.60), and environmental temperature (p-value=0.708) with work fatigue.

Table 1. Frequency Distribution of Respondents

Subjective work fatigue	Frequency	Percentage
Heavy	25	59,5
Light	17	40,5
Age		
Old	7	16,7
Young	35	83,8
Gender		
Male	24	57,1
Female	18	42,9
Nutritional status		
Abnormal	14	33,3
Normal	28	66,7
Years of service		
Long time	9	21,4
New	33	78,6
Ambient temperature		
High	15	35,7
Low	27	64,3
Sleep quality		
Not good	25	59,5
Good	17	40,5

Table 2. Relationship of Age, Gender, Nutritional Status, Years of Service, Ambient Temperature, and Sleep Quality with Subjective Work fatigue

Variable	Subjective Work Fatigue				Total		*p-value*
	Heavy		Light				
	n	%	n	%	n	%	
Age							
Old	6	85,7	1	14,3	7	100	0,210
Young	19	54,3	16	45,7	35	100	
Gender							
Male	9	37,5	15	62,5	24	100	0,002
Female	16	88,9	2	11,1	18	100	
Nutritional Status							
Abnormal	13	92,9	1	7,1	14	100	0.005
Normal	12	42,9	16	57,1	28	100	
Years of Service							
Long time	8	88,9	1	11,1	9	100	0.060
New	17	51,5	16	48,5	33	100	
Ambient Temperature							
High	10	66,7	5	33,3	15	100	0,708
Low	15	55,6	12	44,4	27	100	
Sleep Quality							
Not Good	19	76,0	6	24,0	25	100	0,020
Good	6	35,3	11	64,7	17	100	

DISCUSSION

The results of the bivariate analysis in this study between age and work fatigue obtained a statistical test result of p-value = 0.210, this shows that there is no significant relationship between age and subjective work fatigue (p-value > 0.05). There is no relationship between age and work fatigue because during work many older respondents experience subjective work fatigue, as do young respondents because their body condition is not yet able to adapt to the workload given. According to Suma'mur, the body's physiological functions will change with age. (13) Based on research results, the workers who were respondents were predominantly young so that variations in data regarding age did not show significant figures. Thus, it is best for the person in charge of the Gas Station to always take age into consideration when assigning workload to their workers.

The results of the bivariate analysis of gender and work fatigue show that the statistical test results obtained p-value = 0.002, this shows that there is a significant relationship between gender and subjective work fatigue (p-value ≤ 0.05). This happens because the workload for male and female operators is the same. Female pump workers also experience a menstrual cycle every month, so this will affect their physical and psychological conditions, causing female workers to experience fatigue more easily than male workers. In essence, men have greater physical strength than women. (14) The workload given to male and female workers is the same, each worker is placed in the same unit and exchanges are carried out every day without considering visits to each unit. So, it is best for the person in charge of the Gas Station to avoid placing female workers at pump units that are busy with visitors, such as in queues for motorbike refills.

The results of the bivariate analysis of nutritional status/BMI and work fatigue obtained a statistical test result of p-value = 0.005, this shows that there is a significant relationship between nutritional status/BMI and subjective work fatigue (p-value ≤ 0.05). This is due to the body's energy expenditure when working, people who experience a lack of energy will quickly experience fatigue because any work that uses excessive energy will also require a large amount of energy. (15) Work as a Gas Station pump operator tends to be a monotonous type of work due to standing. with a long position, so that the majority of Gas Station pump attendants who have abnormal nutritional status will tend to experience fatigue more quickly. Based on this, Gas Station pump attendants should pay attention to the nutritional intake consumed, exercise at least once a week to maintain increased body stamina and so that the body mass index (BMI) of pump attendants, which is mostly abnormal, becomes normal.

The results of the bivariate analysis of work period and work fatigue obtained a statistical test result of p-value = 0.060, this shows that there is no significant relationship between work time and subjective work fatigue (p-value > 0.05). This is because fatigue is not influenced by how long a person works. The longer a person works, the higher the body's adaptation process to fatigue. (16) Work experience will also make the body able to differentiate the influence of working conditions from the impact that may arise on oneself. The Gas Station needs to place old workers in the best or most comfortable working position according to the worker's age, such as making adjustments to the placement of the pump unit. Meanwhile, for new workers, the Gas Station can also adjust the workload to work abilities and increase the workload according to the worker's development while working.

The results of the bivariate analysis of environmental temperature and work fatigue showed that statistical test

results obtained p-value = 0.708, this shows that there is no significant relationship between environmental temperature and subjective work fatigue (p-value > 0.05). There is no relationship between heat stress and work fatigue experienced by Gas Station pump operators because the heat in the Gas Station environment is still normal and the outdoor workplace has a protective roof so that it protects workers from direct exposure to the sun, apart from that there are no other heat sources. From the results of measurements at all worker locations at each Gas Station, the ISBB value for the work environment reached 26.96oC. This number can be categorized as a safe risk level and is a comfortable temperature for workers to do work. Work environments that have heat stress should be improved by carrying out regular medical examinations, increasing workers' rest time by providing comfortable rest areas and according to the age of the worker, such as making adjustments in the placement of the pump unit. Meanwhile, for new workers, the Gas Station can also adjust the workload to work abilities and increase the workload according to the worker's development while working.

The results of the bivariate analysis of environmental temperature and work fatigue showed that statistical test results obtained p-value = 0.708, this shows that there is no significant relationship between environmental temperature and subjective work fatigue (p-value > 0.05). There is no relationship between heat stress and work fatigue experienced by Gas Station pump operators because the heat in the Gas Station environment is still normal and the outdoor workplace has a protective roof so that it protects workers from direct exposure to the sun, apart from that there are no other heat sources. From the results of measurements at all worker locations at each Gas Station, the ISBB value for the work environment reached 26.96oC. This number can be categorized as a safe risk level and is a comfortable temperature for workers to do work. Work environments that experience heat stress should be improved by carrying out regular medical examinations, increasing workers' rest time by providing comfortable and cool rest areas, providing drinking water and it is recommended to drink 150-200 cc every 15-20 minutes to avoid dehydration. Heat stress makes workers complain that they often feel thirsty. To avoid these complaints, workers are advised to drink 8 glasses of water every day and wear cotton clothing to facilitate air circulation and reduce the danger of dehydration.

The results of the bivariate analysis between sleep quality and work fatigue obtained a statistical test result of p-value = 0.020, this shows that there is a significant relationship between sleep quality and subjective work fatigue (p-value ≤ 0.05). The results of this research relate to the Gas Station pump shift system. Workers on the night shift have less time to enjoy sleep than other shifts. Poor sleep quality and conditions that require working at abnormal times can cause fatigue. (17) To overcome this, workers must also get enough sleep. It is hoped that workers will use their rest time, especially at night, well by not doing other activities or work. For workers on night shifts, they can take advantage of the rest time after work to get enough sleep to restore their stamina.

CONCLUSIONS AND SUGGESTIONS

Based on the research results, it can be concluded that there is a relationship between gender, nutritional status/BMI and sleep quality with work fatigue in pump attendants, and there is no relationship between age, length of service and environmental temperature and work fatigue in Gas Station pump attendants. It is recommended that Gas Stations provide rest facilities for workers, provide drinking water and provide chairs for each filling machine unit.

REFERENCES

I. Husada S, Wardoyo AV, Zakiah Oktarlina R. iterature Review) Level of Knowledge of Analgesic Drugs in Self-Medication to Manage Acute Pain. Assoc Between Lev Public Knowl Regarding Analg Drugs Self-Medication Acute Pain. 2019;10(2):156-160. doi:10.35816/jiskh.v10i2.138

II. Magvira P, Gusti A, Rahman A. Factors Associated with Complaints of Work Fatigue of Pump Officers at Khatib Sulaiman Gas Station and Aia Pacah Gas Station in Padang City. Journal of Occupational Safety, Health and Environment. 2022;3(2):75–85.

III. Republic of Indonesia Ministry of Health. Law of the Republic of Indonesia Number 36 of 2009 concerning Health. Indonesian Ministry of Health. Jakarta; 2009.

IV. Juliana M, Camelia A, Rahmiwati A. Analysis of Risk Factors for Work Fatigue in Employees of the Production Department of PT. Arwana Anugrah Ceramics, Tbk. Journal of Public Health Sciences. 2018;9(1):53–63.doi:10.26553/jikm.2018.9.1.53-63

V. Tifrizi NV, Nainggolan TH, Wijayaningtyas M. Analysis of construction worker fatigue during the implementation of Safety and Health (K3) in the Villa Batu Malang Development Project. Students Journal Gelagar. 2021;3(1):61–7.

VI. ILO. Workplace Stress: A Collective Challenge. Geneva: International Labour Organization Office; 2016.

VII. ILO. Improving the Safety and Health of Young Workers. In Jakarta: International Labor Office; 2018.

VIII. National Safety Council. Fatigue In The Workplace: Causes and Consequences of Employee Fatigue. Science (80-) [Internet]. 2017;302(5642):51d – 51.

IX. Rahayu RP, Effendi L. Factors Associated with Work Fatigue in the Mcd Production Area Department, Plant M, PT "X" in 2017.

Environmental Occupational Health and Safety Journal. 2017;1(1):51–60.

X. Violleta PT. Miris, The number of work accidents has increased in recent years. Antara Sumbar. 2023.

XI. Pusdatinaker. Types of Work Accidents in Indonesia According to Province Quarter IV. Jakarta: Indonesian Ministry of Manpower.2014.

XII. Lating Z, Sillehu S, Sumanjaya SMS. Risk Factors for Work Fatigue in Public Fuel Station (SPBU) Workers in Clove Plantation in 2020. JUMANTIK (Journal of Health Research). 2021;6(3):241.

XIII. Handajani M, Muldiyanto A, Paramita NI, Permata AN. Analysis of Road Length on Fuel Consumption in City Area (BWK) I Semarang. Journal of Civil Engineering and Planning. 2012;14(1):1–10.

XIV. Suma'mur. Corporate Hygiene and Occupational Health (Hiperkes). Jakarta: Sagung Seto; 2009.

XV. Tarwaka. Industrial Ergonomics. Surakarta: Harapan Press; 2010.

XVI. Asriyani N, Karimuna SR, Jufri NN. Factors Associated with the Occurrence of Work Fatigue in Workers PT. Kalla Kakao Industri Tahun 2017. Public Health Student Scientific Journal. 2017;2(6):1–10.

XVII. Ramdan IM. Work Fatigue in Traditional Sarong Weavers in Samarinda. 1st ed. Uwais. Samarinda; 2018. 11–54 p.

XVIII. Safira ED, Pulungan RM, Arbitera C. Work Fatigue in Workers at PT. Indonesia Power Generation and Generation Services Unit (UPJP) Priok. Health Journal.