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RELATIONSHIP OF NOISE AND FATIGUE AT SULTAN HASANUDDIN AIRPORT APRON WORKERS

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Abstract:-

Fatigue is a particular situation accompanied by a drop in efficiency and durability of work. Fatigue showed differences *in physical and mental, but all the result caused decrease of power and reduction body's resistance to work. In the apron area, the intensity of noise is quite high due to several types of work that cause noise. Workers will feel fatigue if they are exposed to the noise. In addition, age factors, workload, length of work and years of service are some of the causes of work fatigue in apron workers. This study aims to determine the relationship of age, workload, and length of work, work period, and noise intensity with the fatigue of Apron Section workers at Sultan Hasanuddin Airport, Makassar. It uses observational analytic research with a cross sectional study approach. The data collection was conducted in against 71 workers as a sample of 242 populations taken using the proportionate random sampling technique. Work fatigue data is taken by using measurement of reaction timer, measurement of pulse, measurement of noise intensity, data on age, length of work and length of service with the questionnaire. The data analysis was univariate and bivariate with chi square test. The results showed that workers who experienced work fatigue were 48 people (67, 6%) and workers who did not experience work fatigue were 23 people (32, 4%).*

The statistical test results show that there is a relationship between age (p=0,001) (p<0, 05), workload (p=0,001) (p<0, 05), length of work (p=0,001) (p<0, 05), work period (p=0,001) (p<0, 05) and noise intensity (p=0,017) (p<0, 05) with fatigue of Apron Section workers at Sultan Hasanuddin Airport Makassar. The company is advised that the length of work of the workers is according to established standards and to workers to use the Personal Protective Equipment (earplug) provided by the company.

Keywords: - *Work Fatigue, Apron Workers, Noise intensity*

INTRODUCTION

Apron is one of the air sides or places at the airport that has been determined to place aircraft, lower and raise passengers, cargo, post, refueling, as well as carry out aircraft maintenance and maintenance. Workers in the apron area exposed to noise will cause work fatigue. Fatigue experienced by workers in this part of the apron can experience conditions that are accompanied by a decrease in efficiency and endurance at work such as general physical fatigue, nervous exhaustion, fatigue by monotonous environment and fatigue by chronic environment continuously as a permanent factor. Data from the ILO mentions almost every in two million workers died due to work accidents caused by fatigue. The study stated that of 58,115 samples, 32.8% of them or around 18,828 samples suffered from fatigue [1].

The work environment is a hygiene aspect in the workplace which includes physical, chemical, biological, ergonomic and psychological factors whose presence in the workplace can affect workplace safety and health at work [2]. In the apron, the noise intensity is quite high due to several types of work that cause noise such as when refueling aircraft which causes noise, and several other factors that cause noise.

Workers in the apron area exposed to noise will cause work fatigue. Fatigue experienced by workers in this part of the apron can experience conditions that are accompanied by a decrease in efficiency and endurance at work such as general physical fatigue, nervous exhaustion, fatigue by monotonous environment and fatigue by chronic environment continuously as a permanent factor [3].

In addition to noise factors, factors that affect work fatigue such as age, workload, and length of work and years of service. The older a person is, the faster a person experiences fatigue. Too much workload can lead to physical, mental and emotional reactions. Such as headaches, indigestion and irritability. Tired conditions experienced by workers in a long time can in turn have an impact on reducing the level of work productivity [4].

The results of research conducted by Mauludi [5] on workers in the PBD (Paper Bag Division) cement bag production process of PT. Indocement Tunggal Prakarsa Tbk Citeureup-Bogor shows that 100% of workers experience fatigue but to a different degree. The highest level of fatigue is mild work fatigue (KKR) of 38.6%, moderate level of work fatigue (PSC) of 37.5%, while the least level of fatigue is the level of heavy work fatigue (KKB) of 23.9% [6].

The results of research conducted by Arfandi [7] based on the results of fatigue measurements using a reaction timer to determine work fatigue experienced by construction workers at the Makassar Nipah Mall project results show that of the 74 respondents who measured fatigue, 59 respondents (79.7%) experienced fatigue [5].

This research was conducted at PT. Gapura Angkasa which is a ground handling operator serving flights from the Garuda Group, namely Garuda Indonesia Airline and Citilink. Researchers also conducted brief interviews with several workers about fatigue and information obtained that they stated experiencing work fatigue. Based on this, the authors are interested in conducting research on factors related to work fatigue in workers in the Sultan Hasanuddin Airport Apron Section Makassar [7].

METHODOLOGY

The study was conducted in January - February 2019. The research location was conducted at Sultan Hasanuddin Airport in Makassar, Apron Section. This type of research is observational analytic with cross sectional study approach. The population in this study were all apron parts of PT. Gapura Angkasa Sultan Hasanuddin Airport Makassar as many as 242 people. The sampling technique in this study is to use the proportionate stratified random sampling technique because the population is not homogeneous. The data was obtained from the measurement of work fatigue using Reaction Timer measurement tools, pulse measurements, noise measurements using Sound Level Meters. Data were also obtained from observations using questionnaires and interviews with workers and secondary data in the form of the number of workers obtained from the company. Univariate analysis was carried out to obtain a general description of the research problem by describing each variable used, namely by looking at a description of the frequency distribution and percentage of each independent variable (age, workload, length of work, years of service and noise) and the dependent variable (work fatigue) desired from the distribution table. Bivariate analysis was performed to determine the relationship of age, workload, length of work, length of work and noise with work fatigue in the apron section of Sultan Hasanuddin Airport in Makassar by performing the Chi Square test.

RESULTS

Samples in this study were 71 apron workers at Sultan Hasanuddin Makassar Airport. The characteristics identified included age, length of work and years of service. The results of these characteristics were obtained from primary data conducted by researchers.

Based on table 1 show the results of the research with the questionnaire method it can be seen that age is divided into two categories namely Old (≥ 35 years) and Young (< 35 years), it can be seen that from 71 workers obtained by workers aged as many as 25 people with a percentage (35.2%), while young workers are 46 people with a percentage (64.8%). Based on the results of the study it can be seen that of the 71 workers obtained by workers in the category of heavy workloads by 40 people with a percentage (56.3%), while workers in the category of light workload were 31 people with a percentage (43.7%).

The length of work is divided into 2 categories, which are Not Eligible (> 8 hours / day) and Eligible (≤8 hours / day), it can be seen that from 71 workers obtained by workers who did not meet the conditions of 33 people with a percentage (46, 5%), while workers who have worked for a long time qualify as many as 38 people with a percentage (53.5%). The work period is also divided into 2 categories, namely Old (≥ 3 years) and New (< 3 years), it can be seen that from 71 workers there are 56 masa 3 years of work with a percentage (78.9%), while workers those who work for < 3 years are 15 people with a percentage (21.1%).

Based on the results of the study it can be seen that from 71 workers obtained by workers who experienced noise did not meet the requirements of 38 people with a percentage (53.5%), while workers who experienced noise fulfilled the requirements of 33 people with a percentage (46.5%).
Based on the results of the study it can be seen that from 71 workers obtained by workers who experienced work fatigue as many as 48 people with a percentage (67.6%), while workers who did not experience work fatigue as many as 23 people with a percentage.
Based on table 2 show the results using the chi-square test showed that the value of p = 0.001, because the value of p <0.05 then Ho was rejected and Ha was accepted. The interpretation is that there is a relationship between age and work fatigue in workers at the Sultan Hasanuddin Airport Apron Section in Makassar. The results showed that the results using the chi-square test showed that the value of p = 0.001, because the value of p <0.05 then Ho was rejected and Ha was accepted. The interpretation is that there is a relationship between workload and work fatigue for Apron Section workers at the Sultan Hasanuddin Airport in Makassar. The results showed that the results using the chi-square test showed that the value of p = 0.001, because the value of p <0.05 then Ho was rejected and Ha was accepted. The interpretation is that there is a relationship between work time and work fatigue for Apron Section workers at the Sultan Hasanuddin Airport in Makassar. The results showed that the results using the chi-square test showed that the value of p = 0.001, because the value of p <0.05 then Ho was rejected and Ha was accepted. The interpretation is that there is a relationship between work periods and work fatigue for Apron Section workers at the Sultan Hasanuddin Airport in Makassar. The results showed that the results using the Chi-square test showed that the value of p = 0.017, because the value of p <0.05 then Ho was rejected and Ha was accepted. The interpretation is that there is a relationship between noise and work fatigue in workers at the Sultan Hasanuddin Airport Apron Section in Makassar.

DISCUSSION

The word fatigue refers to different physical and mental states, but all of them result in decreased work power and reduced endurance to work [8]. There are two types of fatigue, namely muscle fatigue and general fatigue. Work fatigue is a decrease in the process of efficiency, work performance and reduced strength/physical endurance of the body to continue the activities that must be carried out [9].
Measurement of work fatigue by using a timer action gauge based on its working principle based on the speed of reaction time of workers at the Sultan Hasanuddin Airport Apron Section of Makassar to the stimulation of light that reacts to the measuring instrument used. If workers are in a healthy and fit condition, workers will respond more quickly to stimuli provided, but if workers who have experienced fatigue then workers will longer respond to stimuli provided.

The results of research on subjective fatigue experienced by Apron Section workers at Makassar Sultan Hasanuddin Airport by conducting direct interviews using a questionnaire obtained that most workers claimed to have experienced signs of fatigue such as thirst, headaches, back pain, shoulder stiffness and reluctance to talk after doing work. Some complaints that have been felt by workers are a symptom of fatigue which will ultimately reduce the activity and work productivity of workers. The results of research on subjective fatigue are supported by the results of work fatigue measurements using a reaction timer measuring instrument that results are mostly experiencing fatigue.

Age is the duration of the Apron Sultan Hasanuddin Airport Apron section of workers living (in units of years) from birth to the last birthday at the time of the study. This research is divided into 2 categories: old age if the worker is 35 years old and young if the worker is old 35 years old.
The results of data analysis using the chi-square test obtained the value of p = 0.0001 (p <0.05), this means Ho statistics are rejected and Ha statistics are accepted it can be concluded that age has a relationship with work fatigue in workers at the Sultan Hasanuddin Airport Apron Section .
The age factor has a relationship with work fatigue because physical activity is not based on the age of the worker. Workers who are young and old are both doing physical activities, both physical activities with light workloads, moderate workloads or heavy workloads. the same works to carry out the tasks that have been given to get better performance results. Therefore, the older a person is, the lower the energy requirements. In general, in old age, the ability of muscle work decreases, especially in heavy workers. The physical capacity of the workforce such as vision, hearing and reaction speed tends to decrease after the age of 30 years or more. This affects the maximum productivity of the workforce concerned and tends to experience fatigue more quickly.
Workload is the workload given by the company to employees in the form of work shifts and length of work. A good workload is a workload given to employees exceeding their work capacity [10], [11]. If the workload provided is in balance with the work capacity of employees, optimal performance conditions will occur. However, on the contrary there will be a decrease in work performance if the load is too low or too high.
The results of data analysis using the chi-square test obtained the value of p = 0.0001 (p <0.05), this means that Ho is rejected and Ha is accepted, so it can be concluded that workload has a relationship with work fatigue in workers at the Sultan Hasanuddin Airport Apron Section in Makassar. Workload determines how long a person can work without causing fatigue or disturbance. In work that is too heavy and excessive will also speed up work fatigue for workers.

The length of work is the time someone is at work and doing their work in one work day. The results of data analysis using the chi-square test obtained p value = 0.002 (p <0.05), this means that Ho is rejected and Ha is accepted, so it can be concluded that the length of work has a relationship with work fatigue in workers at the Sultan Hasanuddin Airport Apron Section in Makassar.

If a worker works more than predetermined working hours it will affect the performance, physical, and productivity of workers which will decrease so that if it happens continuously it can result in work fatigue in workers and can also cause workplace accidents.

The working period in this study is the length of time the respondent's work is calculated from the beginning of the Apron Section workers worked until this research was done. The working period can affect workers both positive and negative influences. Positive influence occurs when the longer a worker works, the experience will be in doing his work. Conversely a negative effect occurs when the longer a worker works will cause fatigue and boredom. The longer a worker works, the more workers are exposed to the dangers posed by the work environment [12].

The results of data analysis using the chi-square test obtained p value = 0.0001 ($p < 0.05$), this means that Ho is rejected and Ha is accepted so it can be concluded that the working period has a relationship with fatigue.

Physical work that apron workers do continuously or in a long time so that it will affect the mechanism in the body (circulatory system, digestion, muscles, nerves and breathing) this causes apron workers to experience fatigue. In addition, the longer a person works in a place, the greater the possibility of workers being exposed to physical and chemical work environment factors that can cause health problems or occupational diseases so that it will result in decreased work efficiency and productivity of a worker.

Noise is unwanted sounds originating from aircraft sounds, tools and machines used for aircraft as well as sounds that at some level can cause hearing loss. Noise in this study was measured using a tool that is Sound Level Meter (dB) at the place of workers doing their work. The results of data analysis using the chi-square test obtained p value = 0.033 ($p < 0.05$), this means that Ho is rejected and Ha is accepted so it can be concluded that noise has a relationship with work fatigue in workers at the Sultan Airport Apron Section Hasanuddin Makassar. Noise or unwanted noise can cause workers' hearing loss which will result in workers experiencing physiological and psychological disorders. Psychological disorders that will be experienced by apron workers such as irritation, anxiety and fear that cause workers to feel tired. If work fatigue occurs, work productivity will also decrease. Uncomfortable work environment, such as noise, lighting, work climate can trigger a number of complaints feeling sluggish work, decreased endurance and reluctance to do activities, such complaints are symptoms of work fatigue so it can be seen the emergence of work fatigue.

CONCLUSION

Based on the results of research and discussion, it can be concluded that there is a relationship between age, workload, length of work, length of service and noise with work fatigue for workers at the Sultan Hasanuddin Airport Apron Section in Makassar. Makassar is in accordance with established standards and it is recommended that workers use PPE (earmuff/ earplug) that has been prepared by the company.

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Table 1. Univariate Analysis

Variable	n	%
Age		
Old (≥ 35 years old)	25	35,2
Young (<35 years old)	46	64,8
Workload		
Heavy Workload	56	78,9
Light Workload	15	21,1
Length of working		
Not eligible	33	46,5
Qualify	38	53,5
Years of service		
Long	56	78,9
New	12	21,1
Noise Intensity		
Not eligible	38	53,5
Qualify	33	46,5
Work Fatigue		
Tired	48	67,6
Not tired	23	32,4

Table 2. Relationship of Independent Variables and Dependent Variables in Apron Section Workers at Sultan Hasanuddin Airport in Makassar

Independent Variable	Work Fatigue						Statistical Test Result
	Tired		Not Tired		Total		
	n	%	n	%	n	%	
Age							
Ol d	24	96,0	1	4,0	25	100	p = 0,001
Young	24	52,2	22	47,8	46	100	
Workload Heavy Workload	46	82,1	10	17,9	56	100	p = 0,001
Light Workload	2	13,3	13	86,7	15	100	
Length of Working Not Eligible	29	87,9	4	12,1	33	100	p = 0,001
Qualify	19	50,0	19	50,0	38	100	
Years of Service Long	47	83.9	9	16.1	56	100	p = 0,001
New	1	6.7	14	93.3	15	100	
Noise Intensity Not Eligible	21	55.3	17	44.7	38	100	p = 0,017
Qualify	27	81.8	6	18.2	33	100	