

## RELATED FACTORS TO FATIGUE SUBJECTIVE WORKING ON LABORATORY PERSONNEL HEALTH WORKER IN JAYAPURA 2017

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### ABSTRACT

**Preliminary :** Health care in health centers, especially in laboratory as working is a very complex services and contribute mostly in checking blood samples of patients. The aim of research to determine the factors associated with job burnout or fatigue subjectively in laboratory workers health centers in the city of Jayapura Year 2017.

**Methodology:** The research descriptive analytic cross sectional design. Research conducted in the room of laboratory health centers in the city of Jayapura during May-June 2017. Population and sample in this study were all laboratory workers Public Health Centre in Jayapura that totally 54 people with the sampling method that is saturated sampling. The data were obtained using a questionnaire, pulse measurement, and tools four in one. Analysis of the data used is the Kendall's Tau.

**Results:** The results reveal there were 19 (35.2%) experienced laboratory personnel work fatigue were. Based on univariate analysis variables known lighting 100% does not qualify, for there nutritional status of 32 respondents (59.3%) with normal nutritional status, nutritional status skinny or fatty there were totally 22 respondents (40.7%), room temperature eligible there were 18 (33.3%) while the room temperature did not fulfill requirement there were totally 36 (66.7%). Kendall's Tau test results showed no association of independent variables include the nutritional status variables ( $p$ -value = 0.882 or  $p > 0.05$ ), room temperature ( $p$ -value = 0.162 or  $p > 0.05$ ), workload ( $p$  Value = 0.086 or  $p > 0.05$ ), with fatigue, eyestrain while in the variable ( $p$ -value = 0.029 or  $p < 0.05$ ) there is a relationship with a subjective fatigue in laboratory workers health centers in the city of Jayapura.

**Keywords:** Fatigue Eye, Work Fatigue, Laboratory Workers

### 1. PRELIMINARY

Healthy in the workplace is one of the areas of public health that focuses attention on the working people both in the formal sector and those in the informal sector (MOH RI, 2003). Occupational health aims for workers to obtain the highest degree of health both physical, mental and social. This objective can be achieved by preventive, curative and rehabilitative efforts against diseases or health problems caused by occupational factors, work environment and general illness. Occupational health can be achieved optimally if the three components of work in the form of worker capacity, workload and work environment can interact well and harmoniously (Suma'mur, 1996).

According to the *International Labor Organisation* (ILO) every t cope as much as two million workers died from workplace accidents caused by fatigue factor. In the study described from 58,115 samples, 18,828 of them (32.8%) experienced fatigue.

Meanwhile, if workers have work accidents caused by fatigue factors, it will have a direct impact on the level of work productivity. So the human factor affects the level of work productivity, such as sleep problems, biological needs, and also work fatigue, even expressed that the decline in labor productivity in the field is mostly caused by work fatigue (Sedarmayanti, 2009).

Fatigue is a subjective feeling that everyone is different which all lead to loss of efficiency, reduced working capacity of health problems and coping capacities of the body that result in accidents. While the other opinion says fatigue is a variety of circumstances in addition to decreased efficiency and resilience in work, which caused the main source is the eye (visual fatigue), general physical fatigue, nervous exhaustion, exhaustion by monotonous environment and fatigue by chronic environment as a continuous factor permanently. (Suma'mur in Mauludi, 2010).

There are several studies in Indonesia that discuss about fatigue. One of these studies conducted by Mauludi (2009) on workers in the production process of cement bags PBD (*Paper Bag Division*) PT. Indocemen Tunggal Prakasa TBK Citeureup Bogor, stating that all workers were sampled experiencing fatigue with fatigue level is different where the relationship between marital status with fatigue, was obtained *p-value* of 0.045, which means there is a significant relationship between marital status and fatigue. Work environment factors can also affect the fatigue some of which are noise and heat stress. Results of research conducted Hanifa (2006) states that there is a significant relationship between noise with fatigue. Where the 18 samples studied, it can be concluded that noise can cause fatigue by 42.8%. Ramdan (2007) adds that noise, temperature in the environment can also affect the incidence of fatigue.

Laboratory (abbreviated lab) is a scientific research, experiment, measurement or scientific training is done. Laboratories typically made to allow such activities in a controlled manner (Anonymous, 2007). Activities on laboratory space is a daily routine that requires the allocation of considerable time for workers who are in the room, as many activities as well as activities related to the tests, in addition to relying on hand to operate the equipment too much concentrated and the object under investigation or tested. (Nugroho, 2009).

The workload of lab personnel or health analysts covering the activities carried out such as sampling, sample preparation, sample check, record the results of the inspection, calibration, checking the control sample, and make the reagent. While the average time required to complete each of the main activities, for example, the average time to examine the levels of Hb was 10 minutes, and the mean time to make the reagent A is 15 minutes. (Kurniati in Widhi, 2003).

Data from Jayapura City Health Department regarding the level of *error rate* / error reading in January-March 2015 in 12 health centers, there are 6 health centers made a mistake in analyzing the results of laboratory examinations, 2016 at 13 health centers there are 7 Health Center. The impact of the *error rate* or misreading analysis results is very risky in patients given the drug which should not be given the drug. In the 13 health centers in the city of Jayapura 2016 who works in a laboratory or health analysts as many as 54 people. Laboratory personnel or health analysts mostly in North Jayapura health center with a number of officers laboratory or health analysts 7 people, while the laboratory personnel or health analyst at the

Public Health Center Entrop with the number of officers as much as 2. Based on preliminary data at every health center in the city of Jayapura 2015 total patients who checked in the laboratory of the month from January to December in 12 Public Health Centre City of Jayapura amounted to 76.798 patients. Where patients are checked in the laboratory there on Public Health Centre Kotaraja as highest, amounting to 22.693 patients, and patients who checked in the laboratory room at the health center Yoka which totaled 1.231 in Yoka. While in the Year 2016 total patients who checked in the laboratory of the month from January to December in 13 health centers amounted to 81.279. Patients who checked in laboratory at the health center Kotaraja totaling 24.415 patients as the highest, and patients who checked in the laboratory at the Health Center Twano as the lowest numbered 1.153.

With the number of laboratory workers or limited health analyst coupled with the number of patients each year increased fatigue work can be felt, the impact of fatigue when receiving quite a lot of patients and limited laboratory workers may occur things that are not desirable as one of diagnosing a disease. Based on the description in above, the researchers are interested in doing research with the title of the factors associated with job burnout subjectively in laboratory workers puskesmas in Jayapura City in 2017.

## 2. RESEARCH METHODS

This type of research is quantitative research, in this study to be conducted by researchers using analytic descriptive design with *cross sectional approach*. Descriptive analytic is a research method that seeks to describe and link object in accordance with what it is (Notoatmodjo, 2010).

Research conducted in the laboratory room of Public Health Center (PHC) in the city of Jayapura in May-June 2017. The population in this study is the total number of laboratory personnel in health centers Jayapura City, amounting to 13 *Public Health Centre* (PHC) consists of 54 laboratory personnel or health analyst with the sampling method that is *saturated sampling*. The data were obtained using a questionnaire, pulse measurement, and tools *four in one*. Analysis of the data used is the *Kendall's Tau*. *Kendall's Tau* test used in this study to examine the relationship variable lighting, nutritional status, room temperature, workload, fatigue and eyestrain at work in laboratory workers health centers in the city of Jayapura.

### 3. RESULTS AND DISCUSSION

#### 1. Univariate Analysis

##### Characteristics of Respondents.

Based on the results totally 54 respondents laboratory personnel in mind that in the age group 26-47 years there were 19 respondents (35.2%) experienced fatigue. Age is included in the middle adulthood which is a productive age for a person. At a productive age a person tends to work harder so that there may be work fatigue (Ismafiaty, 2011). From the results of research that has been done got the sex of men there are 12 respondents, while for female gender as much as 42 respondents. In this study showed that the majority of sex female laboratory assistants, because according to the requirement that female laboratory workers more flexibility in the examination of blood samples of patients (Rahayu, 2008).

##### Work Fatigue

Fatigue is a condition that has a sign of reduced capacity for a person to work and reduce the efficiency of achievement, and usually accompanied by feelings tired. Based on the results of research known from 54 respondents who experienced moderate fatigue there are 19 respondents (35.2%), and respondents who suffer from low work fatigue as much as 35 respondents (64.8%).

Factor causes of fatigue are organizing work, psychological factors, work environment, health status and nutritional status. Others suggest that the factors that cause fatigue are physical fitness, smoking habits, psychological problems, health status, sex, nutritional status, work time, workload, age, and work environment (Tarwaka, 2004). Fatigue is a subjective feeling that everyone is different which all lead to loss of efficiency, reduced working capacity of health problems and coping capacities of the body that result in accidents. While other opinion says fatigue is a variety of state accompanied by a decrease in the efficiency and durability in the work, which caused the main source is the eye (visual fatigue), physical exhaustion general, fatigue nervous, exhausted by the environment monotony and fatigue by the environment chronic, sustained as a factor permanently. (Suma'ur in Mawlid, 2010).

Work fatigue will decrease performance and increase the level of work errors. Increased work errors will provide opportunities for workplace accidents in the industry. In addition, fatigue characteristics will increase with the length of work done. Another opinion says that fatigue can decrease

work capacity and work resilience characterized by tired sensation, decreased motivation, decreased activity. (Rizeddin, 2000). Symptoms of work fatigue according to decreased alertness and attention, decreased and perceptual barriers, ways of thinking or anti-social behavior, unsuited to the environment, (depression, lack of energy, loss of initiative), and common symptoms (headache, vertigo, heart, loss of appetite, indigestion, anxiety, behavior change, anxiety, and sleeplessness). Work fatigue can lead to decreased work performance, motor and neural physiological function declines, the body feels bad walking, employment decline spirith.

The results of this study indicate, from 54 respondents in 13 Public Health Centre (PHC) City of Jayapura, the most respondents who have not experienced fatigue category as many as 35 respondents (64.8%) and the fewest respondents who experienced job burnout were 19 (35.2%). The lighting in 13 health centers in the category of ineligible 54 (100.0%). Most of the respondents had normal nutritional status of 32 (59.2%) and at least 22 (40.7%) less nutrition status. The room temperature in 13 health centers in the category of ineligible 36 (66.7%) and the temperature of the room category qualifies 18 (33.3%). The least respondents were workload with category of 4 respondents (7.4%) and the respondent most had respondents had light work category with 50 respondents (92.6%). Most respondents who experienced eye fatigue as much as 42 respondents (77.8%) and respondents at least did not experience eye fatigue as much as 12 respondents (22.2%).

Complaining eyestrain laboratory workers shows that the average of eyestrain complaints experienced by respondents most sick in the head as much as 30 respondents, blurred vision 21 respondents, and difficulty focus 21 respondents. While complaints of eye fatigue at least red eye with 3 respondents. Verage values in *lux* illumination at 85.7685, with the lowest value of 34.50 *lux* and the highest value of 134.50 *lux*. The average nutritional status variable value is 24,630, with a minimum value of 20,0 and maximal 33,0. The average value of the variable  $^{\circ}\text{C}$  31.1019 room temperature with a minimum value of 29.00  $^{\circ}\text{C}$  and a maximum value of 32.50  $^{\circ}\text{C}$ .

From 54 respondents (100%) who have not qualified lighting experiencing job burnout there were 19 respondents (35.2%) and job burnout does not happen as much as 35 (64.8%). Workplace lighting is one of the light sources that illuminate objects in the workplace. Many objects work together with objects or tools and the conditions

around that needs to be seen by labor. It is important to avoid any accidents that may occur. In addition Adequate Lighting gives the impression of better scenery and refreshing environments (Suma'ur, 1996). According to *the International Labor Organisation (ILO, 2000)*, sufficient lighting will improve the comfort and performance of workers, and would make the workplace enjoyable weeks to work. Good quality lighting and adequate will help workers see the object of work quickly and detailed according to the needs of the task.

Based on the survey results revealed that 54 respondents of all ineligible lighting room of Laboratory. Setting the level of lighting in the workplace is supposed to be regulated so that it creates a comfortable working environment for workers. According to Dian Nourmayanti (2009) lighting results obtained from bivariate analyzes are mostly workers who work with lighting levels <300 lux experience eye fatigue.

Table 1. Frequency Distribution of Respondents by Work Fatigue Variables (Lighting, Nutrition Status, Room Temperature, Workload, Eye Fatigue).

No	Variables	Frequency (n = 54)	Percentage (100%)
1	Work Fatigue		
	Low	35	64.8
2	Medium	19	35.2
	Lighting		
3	Not eligible	54	100.0
	Qualify	0	
4	<b>Nutritional status</b>		
	Thin or Fat	22	40.7
5	Normal	32	59.3
	<b>Room temperature</b>		
6	Not eligible	36	66.7
	Qualify	18	33.3
7	<b>Workload</b>		
	Weight	4	7.4
8	Light	50	92.6
	Eye Fatigue		
9	Yes	42	77.8
	No	12	22.2

Source: Primer data, 2017

Table 2. Complaints of Eye Fatigue

Variables	Frequency (n) 54	Percentage (100%)
Eye Fatigue Complaint		
Pain / Feeling Pulsing around the Eye	15	27.8
Blurred Vision	21	38.9
Duplicate Double View	12	22.2
Difficult Focus	21	38.9
Painful eyes	12	22.2
Watery eyes	8	14.8
Red eye	3	5.6
Pain In The Head	30	55.6
Dizziness With Nausea	16	29.6

Source : Primer Data,2017.

Table 3. Average On Variable Lighting, Nutrition Status, Room Temperature

Variables	Mean	Min	Max
Illumination ( <i>Lux</i> )	85,7685	34.50	134.50
Nutritional Status (Kg / Cm)	24,630	20.0	33.0
Room Temperature (C <sup>0</sup> )	31.1019	29.00	32.50

Source : Primer data, 2017.

Table 4. Variable Frequency Distribution Lighting at Work Fatigue In laboratory workers Public Health Centre (PHC ) in Jayapura.

No	Lighting	Work Fatigue		Total
		Yes	No	
1.	Not eligible	19 35.2%	35 64.8%	54 100.0%

Source : Primer data, 2017.

## 2. Bivariate Analysis

### a. Relationship of Nutritional Status with Job Burnout In laboratory workers Public Health Centre (PHC) in Jayapura.

The results of non-parametric statistical tests of correlation *Kendall's Tau*, showed that  $p\text{-value} = 0.882$  where this figure is compared with  $\alpha = 0.05$  so that the  $p\text{-value} > 0.05$ , which means that there is no relationship between nutritional status and work fatigue were subjectively in laboratory Public Health Centre (PHC) workers in Jayapura. In doing the work the body needs energy. Work capacity can be disrupted if the body is deficient in nutrients either qualitatively or quantitatively. The balance between the incoming and outgoing nutrients must be balanced. Powerful nutrients is not enough, so it is necessary so that the necessary conditions of a healthy body in digesting nutrition to eat, (Tarwaka, 2010). The problem of shortage and excess nutrients in adults (aged 18 years and above) is an important issue because in addition to having the risk of a particular disease, it can also affect produktivity as work (Supariasa, 2002).

The results are consistent with pene Litian conducted Rahaningmas (2012), which examines the relationship of nutritional status with job burnout in nurses in the inpatient unit general hospital Kwaingga Keerom District, which concluded that there was no relationship between the nutritional status of respondents with job burnout to nurses in public hospitals were Kwaingga Keerom with *Kendall's* statistical test results obtained  $p\text{-value} = 0.073$ . So that nurses have a balance between *intake* and *output* (normal nutritional status) allowing the nurse to avoid the occurrence of fatigue.

### b. Room Temperature Fatigue relationship with Work In laboratory Public Health Centre (PHC) worker in Jayapura.

The results of non-parametric statistical tests of correlation *Kendall's Tau*, showed that  $p\text{-value} = 0,162$  where as this figure compared with  $\alpha = 0.05$  so that the  $p\text{-value} > 0.05$ , which means

there is no relationship between the temperature of the room with fatigue subjectively in laboratory Public Health Centre (PHC) workers in Jayapura. The recommended temperature at work is 24 - 26 ° C (dry temperature) at 85% - 95% humidity and wet temperature between 22 - 30 ° C, the temperature is the favorable temperature in Indonesia (Suma'mur, 1996). The results of this study are in line with research conducted by Ade Wira Lisriani, et al (2014), who examined the relationship of heat stress with fatigue of nutrition installer workers of Makassar City Hospital, which concluded that there is no correlation between room temperature of respondent with work fatigue on worker Nutrition Makassar City Hospital with spearman correlation test results obtained  $p\text{-value} = 0.406$ . So there is no relationship between heat stress with fatigue at the hospital nutrition installation workers in Makassar City.

### c. Workload relationship with Job Burnout In laboratory Public Health Centre (PHC) worker in Jayapura.

The results of non-parametric statistical tests of correlation *Kendall's Tau*, showed that  $p\text{-value} = 0.086$  where this figure is compared with  $\alpha = 0.05$  so that the  $p\text{-value} > 0.05$ , which means there is no relationship between the fatigue load subjectively in laboratory workers Public Health Centre (PHC) in Jayapura. The workload is something that arises from the interaction between the demands of the tasks, the working environment which is used as a workplace, skills, attitudes and perceptions of workers. Heavy workload sometimes also defined operationally on various factors such as the task demands or efforts done to do the work (Tarwaka, 2010).

Research carried out by measuring the pulse rate and pulse break working at the Laboratory officer Public Health Centre (PHC) in Jayapura showed that laboratory personnel who suffered heavy workload as much as 4 respondents (7.4%) and those with light workload of 50 respondents (92.6%), this is caused by the work performed laboratory personnel are not too heavy, because most officers in the alternate laboratory check samples.

The results of this study are in line with the research conducted by Imelda S. Rahaningmas (2012), which examines the relationship between workload and work fatigue on the nurses at the Karyto Regional Hospital General Hospital of Keerom Regency, which concludes that there is no relationship between the workload of respondents job burnout in nurses at public hospitals were Kwaingga Keerom with *Kendall's* statistical test results obtained *p-value* = 0.259. So there is no relation between workload and work fatigue on the nurses at the inpatient unit of Kwaingga General Hospital in Keerom Regency.

**d. Fatigue Eye Fatigue relationship with Work In laboratory Public Health Centre (PHC) workers in Jayapura.**

The results of non-parametric statistical tests of correlation *Kendall's Tau*, showed that *p-value* = 0.029 where this figure is compared with *a* = 0.05 so that the *p-value* = 0.05, which means that there is a relationship eyestrain and fatigue subjectively working in laboratory workers public health centre in Jayapura City. Good lighting can bring benefits to the workforce, increasing production and reducing costs, increasing opportunities with improved quality results, lowering accident rates, facilitating observations and monitoring, reducing eye strain, reducing damage to work items. Poor lighting can result in eyestrain, prolonged working time, sore complaints in the eye area and headache around the eyes, eye damage, mental fatigue and accidents (Wardhani, et al, 2004). Eye fatigue is a

disorder experienced by the eyes because of the muscles that are forced to work hard especially when having to see the near object in the long term (Padmanaba, 2006).

Laboratory workers who had complaints of eye fatigue as much as 42 respondents, and shall not fatigue the eyes as much as 12 respondents. These can be seen from the duration of the personnel using the microscope for 4-5 hours. According to data *Eyecare Technology* (1995) in Endit (2003) found that the 60 million who suffer from eyesight for use *Video Display Terminal* (VDT) for the use of 3 hours or more a day. Results were confirmed by the results of the study by *Rey and Meyer* (1980) on the use of monitors in an industrial watchmakers in Switzerland, that term of paragraph found significant differences regarding complaints or disorders of the eye on the monitors who work for 6-9 hours per-day with those who work less than 4 hours per day (Oborn, 1995).

According Nourmayanti (2009) for workers who do not perform eye break mostly complained of eyestrain, for the lighting levels are mostly working on light <300 lux, and most of these workers also complain of fatigue eyes. According to the types of eye fatigue complaints most experienced workers are eye irritation. This complaint arises from the high frequency of working in front of the monitor. If the eye is focused on a job, then the eye is too long open without blinking so that the surface of the eye will dry, because the tears that wet have evaporated. Dry eye surface will cause the surface condition of the eyeball is not healthy so it feels sore

Table 5. Recapitulation of the bivariate analysis using *Kendall's Tau* test variables associated with Work Fatigue In laboratory workers Public Health Centre (PHC) in Jayapura.

No.	Variables	Correlation Coefficient	n	<i>P-value</i>	Information
1.	Nutritional status	-.020	54	0.882	No connection
2.	Room temperature	-.192	54	0.162	No connection
3.	Workload	-.236	54	0.086	No connection
4.	Eye fatigue	-.301	54	0.029	There is a Relationship

Source: Primer data, 2017.

**4. CONCLUSION**

Based on the specific purpose of research on factors associated with job burnout subjectively in

laboratory workers *Public Health Centre* (PHC) in Jayapura, then could concluded as the following:

1. The results of work fatigue measurements showed that of 54 respondents who experienced moderate work fatigue as many as 19 respondents

(35.2%), and respondents who suffered light work fatigue as much as 35 respondents (64.8%).

2. There is no significant relationship between nutritional status ( $p$ -value = 0.882 or value of  $p > 0.05$ ) with fatigue in laboratory workers health centers in the city of Jayapura.

3. There is no significant relationship between the temperature of the room ( $p$ -value = 0.162 or value of  $p > 0.05$ ) with fatigue in laboratory workers health centers in the city of Jayapura.

4. There is no significant relationship between bebankerja ( $p$ -value = 0.086 or value of  $p > 0.05$ ) with fatigue in laboratory workers health centers in the city of Jayapura.

5. There is a significant relationship between eye fatigue ( $p$ -value = 0.029 or the value of  $p < 0.05$ ) with fatigue in laboratory workers health centers in the city of Jayapura.

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