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Research Article

The Effect of the On Call Work System on Work Fatigue in Tanah Grogot Hospital Employees

Suyatno[1], Evi Mulyaningsih[2]
[1]*Labour Inspector Middle Expert in Department of Man Power Province Kalimantan Timur, Indonesia, Email: yatnosmail@gmail.com*
[2]*Widyaiswara Middle Expert in the Field of Labor Inspection Manpower, Center Development of Employment Human Resources, Ministry of Manpower, Republic Indonesia, Email: mulyaningsih.evi@gmail.com*

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Abstract. Ideal working hours are 8 hours a day or 40 hours a week but the On Call work system exceeds this requirement. One of the jobs that do the work of the On Call system is service work in hospitals. Employees on call tend to arrive late due to various factors including fatigue. This study aims to determine the effect of the On Call Work System on Work Fatigue in Tanah Grogot Hospital Employees. This study used a Quasi-Experimental Design with a one-way simple randomized design. The results of the study showed that there was an effect of the On Call Work System on the Level of Work Fatigue experienced by Tanah Grogot Hospital employees. Employees with On Call 1 Work Systems have a higher Work Fatigue Level than employees with On Call 2 and Non On Call Work Systems. Employees with the On Call 2 work system have a higher Fatigue Level than employees with the Non On Call Work System.

Keywords: *Work System, On call, Work Fatigue.*

A. INTRODUCTION

Hospitals are health care facilities that carry out activities in the form of outpatient services, inpatient services, emergency services, which include medical services and medical support services (Afriani & Purnama, 2016). As a health service provider, the hospital operates 24 hours a day, seven days a week and 365 days a year. Thus the service in the hospital requires a shift work pattern. Personnel on duty at night can experience increased fatigue due to biorhythmic changes (body rhythms) (MOH, 2003. Human physiological functions cannot fully adapt to changing work patterns. On the other hand, with a shortage of health workers, many health workers who are still working double duty in several hospitals (Amri, 2007).

Working arrangements with the On Call system at Tanah Grogot Hospital cannot be avoided for reasons of service demands and limited staff. The impact of this policy makes employees who have to work with the on call system get additional long working hours. Working arrangements with the On Call system at Tanah Grogot Hospital cannot be avoided for reasons of service demands and limited staff. The impact of this policy makes employees who have to work with the on call system get additional long working hours.

The potential danger found in this on call work system is that even though from the perspective of physical workload they only work if there are patients to serve, but psychologically they have to be on standby 24 hours a day. Employee working hours on call 1 in one week reach 168 hours (39 normal working hours plus 129 working hours on call). Meanwhile, on call 2 reached 115.5 hours (39 hours of normal work plus 76.5 hours of work on call) (Setyawati, 1994). Based on the observations of researchers and confirmation with the Personnel Section of Tanah Grogot Hospital, it shows that most of these on call employees

tend to be late for work because they are tired due to the on call work system. This hampers the service process. Thus, causing complaints to patients and their families.

Article 77 Law no. 13 of 2003 concerning Manpower states that the ideal working time includes 7 hours per day and 40 hours per week for 6 working days in 1 week, or 8 hours per day and 40 hours per week for 5 working days in 1 week (Wahyuni & Dirdjo, 2029). Furthermore, the ILO (2000) states that the ideal working hours are not more than eight hours a day or 40 hours a week, but due to job demands, currently many employees have to work beyond these conditions. Besides the added value obtained, this also results in an increase in the potential for health problems for workers.

Occupational health problems can occur when there is a mismatch in work capacity, workload and work environment. Among them, additional work can increase accidents, reduce productivity and cause fatigue (MOH, 2003). Generally, work fatigue is complained of as a deviation in attitude, orientation, or adjustment to the surroundings. Symptoms can be in the form of symptoms that affect work such as decreased alertness and attention, decreased perception, way of thinking, anti-social attitudes, not suitable for the environment, depression, lack of energy and loss of initiative (Setyawati, 2004).

Work fatigue is a problem for Occupational Safety and Health (K3), which if not handled properly and correctly can result in health problems for employees and will ultimately result in decreased productivity (Mallapiang et al, 2016). Therefore, work fatigue in hospital employees should not be ignored, considering that employees are the main assets that carry out hospital operations. Hospital Occupational Health and Safety (K3RS) is one of the factors in the effort to achieve safe and free operations from all kinds of accidents and occupational diseases, which can be carried out continuously and integrated by all work units in a hospital. Megawati, 2020). Because of the importance of this matter, the Government has stipulated Law no. 1 of 1970 concerning Occupational Safety, Law Number 23 of 1992 concerning Health and a 1997 Ministry of Health Circular Letter concerning an Appeal for Hospitals to form a Hospital Occupational Safety and Health Committee (PK3RS) team.

Recognizing the importance of the problem of work fatigue at this time, especially for employees in hospitals, encouraged researchers to conduct research on the effect of the on call work system on work fatigue in Tanah Grogot Hospital employees. The results of this study are expected to provide input for the Tanah Grogot Hospital in terms of evaluating the arrangement of employee working hours in order to optimize the quality of service to the community and are expected to be a source of reference and inspiration for future researchers for the development of knowledge in the K3 field, especially K3RS.

B. LITERATURE REVIEWS

1. Setting working hours

The 24-hour work arrangement that is carried out in hospitals today is generally a shift work or shift system (Siregar & Wenehenubun, 2019). The definition of work shift is the division of work in hours which includes morning, afternoon and evening work carried out for the benefit of individuals, companies and the community (Setyawati, 2004).

Work shift arrangements in hospitals are generally divided into 3 shifts as follows: morning shift 07.00-14.00; afternoon shift from 14.00-22.00 and night shift from 22.00-07.00. Grandjean (1999), states that the distribution of work shift systems based on rotation and the number of working days consists of *metropolitan rota* and *continental rota*. *The metropolitan rota with* the rotation system used is 2-2-2(morning-afternoon-evening-night-off-holiday). Continental rota, the rotation system used 2-2-3(morning-afternoon-afternoon-evening-evening-holidays).

2. On Call Working Hours in Hospitals

Hart (2004), states that overtime is also called overtime. Overtime is time worked outside normal working hours. Extra work (overtime) is often bad for health. Working overtime tends to make employees more tired, smokers, drink coffee, and eat unhealthy food.

Working hours *on call* at the hospital are carried out outside normal working hours (07.30 to 14.00, six working days a week). In this work system, in addition to working during normal working hours, employees get additional working hours *on call* from 14.00 to 07.30 . During *on call* employees do not have to *stand by* at the hospital but if there are patients being served they have to come. Given the *on call working time* outside of normal working hours, exceeding seven hours a day and 40 hours a week for six working days a week, basically *on call work time* has similar characteristics to overtime *work*. It's just that *on call*, new employees *stand by* at work when patients are served.

3. Work Fatigue

Work fatigue is a state of physical, emotional and mental exhaustion due to long-term work involvement due to the demands of work situations (Moore, 2000). Grandjean & Kroemer (1997), divides fatigue into two , namely: muscle fatigue and general fatigue. Muscle fatigue is a tremor of the muscles or a feeling of pain in the muscles. Fatigue is characterized by decreased ability to work, decreased muscle strength and slowness of movement. Suma'mur (1994)) and Setyawati (1994), suggest that burnout is a condition of workers which is characterized by a decrease in vitality and a slowdown in reaction time as well as a feeling of burnout. Work fatigue is fatigue that is general in nature and has an impact on decreasing efficiency, work performance and reduced physical strength or endurance to be able to continue the activities that must be carried out.

C. METHODS

This study used a Quasi-Experimental Design with a one-way simple randomized design. Sugiyono (2006) stated that in a quasi-experiment, treatment administration was not carried out, because what was considered the experimental group already existed and it was only a matter of choosing, namely the defined group of cases. Thus the treatment has been carried out, so all that remains is to collect data and analyze it. Schematically, the research design is shown in Figure 1. The following:

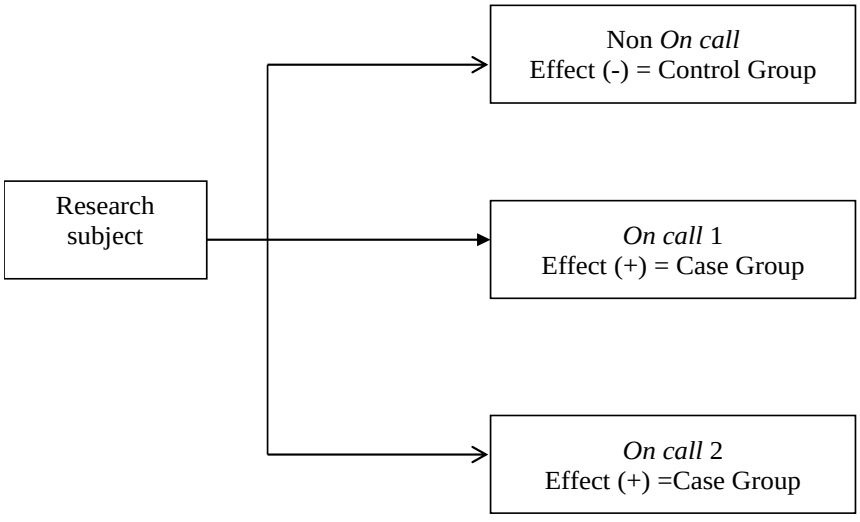

Figure 1 Scheme of Research Design

The research subjects in this study were all employees of the Tanah Grogot Hospital Service Section who worked with the on call system 1 (case group) as many as 17 people, on call 2 (case group) as many as 17 people and who only worked during normal working hours (control group). as many as 17 people. Data collection is done by distributing questionnaires. After the data is collected, the data will be analyzed using the SPSS 25.0 tool in the form of a Hypothesis Test.

D. RESULTS AND DISCUSSION

1. Descriptive Analysis

This analysis uses the Z-test. The results of the Z-test analysis of the two variables are listed in Table 1 below:

Table 1 Z-Test results

Variable	Average		p.s	Significance	Status
	Empirical	Hope			
X_1	35.196	39,000	0.000	Very Significant	Very low
X_2	30.902	51,000	0.000	Very Significant	Very low

Based on table 1, it can be explained from the perspective of the Workload variable that the empirical average value is 35.196, the expectation average is 39.000, and the p value is 0.000. Because the empirical average value > the expected mean value and the p value <0.010, referring to the Z-Test Significance Rule, the workload variable has a very significant level of significance with very low status. Thus it can be concluded that in general the On Call Work System has very low Workload characteristics.

From the perspective of the Work Fatigue Level variable, the empirical average value is 30.902, the expectation average is 51.000, and the p value is 0.000. Because the empirical average value > the expected mean value and the p value <0.010, referring to the Z-Test Significance Rule, the Work Fatigue Level variable has a very significant level of significance with very low status. Thus it can be concluded that work fatigue in research subjects in this study is generally in the very low category.

Based on this theory, it can be explained, the results of the Z test which stated that the workload and work fatigue experienced by research subjects were very low due to:

a. These On Call employees are professional employees who are supported by knowledge, expertise, and skills appropriate to their field of work. So that it can work efficiently and steadily.
b. The number of patients at Tanah Grogot Hospital with type C is still relatively small

2. Assumption Test

The assumption test performed includes the distribution normality test, the relationship linearity test and the variance homogeneity test. If the requirements are met, then the research hypothesis test can be carried out. If the requirements are met, then the research hypothesis test can be carried out. The results of the assumption test can be explained as follows:

a. Distribution Normality Test
   The distribution normality test uses the rule that if the p value is > 0.05, the data distribution is declared normal. The results of the normality test for the distribution of the dependent variable (work fatigue level) obtained a p-value of 0.210. Thus it was concluded that the distribution of variable data depending on this study was normally distributed (Print out of test results attached).
b. Relationship Linearity Test
   The relationship linearity test uses the rule if the p value > 0.05 then the data tested has a linear relationship. The results of the linearity test for the relationship between Work

Systems (independent variable) and Work Fatigue Level (dependent variable) yielded a p-value of 0.254. Thus it can be concluded that the independent variable (work system) has a linear relationship with the dependent variable (work fatigue level). (Print out test results attached).

c. Variance Homogeneity Test

The Homogeneity Test of Variance uses the rule if the p value > 0.05 then the variance of the data is declared homogeneous. The results of the analysis of the homogeneity of variance test using the C test are shown in table 2.

Table 2 Results of Homogeneity Test Analysis

Variable	p.s	Status
Work system	0.263	Homogeneous
Gender	0.477	Homogeneous
Nutritional status	0.218	Homogeneous
Workload	0.418	Homogeneous
Age	0.248	Homogeneous

Based on Table 2. it can be seen that the results of the analysis of the homogeneity test of the independent variables and the controlled variables yielded a p-value of all variables > 0.05. Thus it can be concluded that the work system variables, gender, nutritional status, workload, and age have homogeneous variances.

3. Hypothesis Testing

The hypothesis test in this study will test the magnitude of differences in the levels of work fatigue (the dependent variable) experienced by employees who work with on call 1, on call 2, and non on call systems (independent variables).

Table 3 Inter-A T-test – All Variables

Var. Free	Controlled Variables (Covariables)				Var. Depends	
	Jn Gender	St. nutrition	B. Work	Age	Y	Y ^
Work System	p.s	p.s	p.s	p.s	p.s	p.s
A1 – A2	0.026	0.044	0.002	0.323	0.004	0.018
A1 – A3	0.002	0.648	0.000	0.551	0.000	0.000
A2 – A3	0.262	0.278	0.001	0.699	0.013	0.041

Description: p = two tails. A1 = *On Call 1* , A 2 = *On Call 2* , A3 = *Non On Call*

Table 4 Average of All Variables

Group	N	R average				
		Jn Gender	St. nutrition	B. Work	Age	Work Fatigue
A1	17	1.29	24,19	40.05	37.82	34.59
A2	17	1.64	22.05	36.58	35.41	30.96
A3	17	1.82	23.20	32.64	36.35	27.84

Description: A1 = *On Call 1* , A 2 = *On Call 2* , A3 = *Non On Call*

Based on Table 3 and Table 4 it can be explained that for the On Call 1 – On Call 2 group a p value of 0.009 (p <0.01) was obtained. This means that there is a very significant difference in the level of work fatigue between groups of On Call 1 and On Call 2 employees. Based on the perspective of the average, it shows that the average level of work fatigue on call 1 is 34.23. Meanwhile, the average level of work fatigue on call 2 is 30.94. . This means that in general the On Call 1 Work Fatigue Level is higher than the On Call 2 Work Fatigue Level. Thus the first hypothesis which states, that the On Call 1 Employee Fatigue Level is higher than On Call 2 is accepted.

Based on Table 3 and Table 4 it can be explained that for the On Call 1 – Non On Call group a p value of 0.000 (p <0.01) was obtained. This means that there is a very significant difference in the level of work fatigue between On Call 1 and Non On Call employee groups.

Based on the average perspective, the average On Call 1 Work Fatigue Level is 34.23. Meanwhile, the average Non On Call work fatigue level is 28.64. This means that in general the On Call 1 Work Fatigue Level is higher than the Non On Call Work Fatigue Level. Thus the Second Hypothesis which states that the On Call 1 Employee Fatigue Level is higher than Non On Call is accepted.

Based on Table 3 and Table 4 it can be explained that for the On Call 2 – Non On Call group a p value of 0.020 ($p < 0.05$) was obtained. This means that there is a significant difference in the level of work fatigue between On Call 2 and Non On Call employee groups. Based on the average perspective, it can be seen that the average On Call 2 Work Fatigue Level is 30.94. While the average Non On Call Work Fatigue Level is 28.64. This means that in general the On Call 2 Work Fatigue Level is higher than the Non On Call Work Fatigue Level. Thus the third hypothesis which states that the level of work fatigue of On Call 2 employees is higher than Non On Call is accepted.

The most basic difference between the On Call 1, On Call 2 and Non On Call systems is the number of working hours (work time) and working time.

a. Length of working

From the perspective of length of work, the On Call 1 work system has longer working hours than the On Call 2 and Non On Call working hours. Whereas On Call 2 has longer working hours than Non On Call working hours. Based on Article 77 of Law no. 13 of 2003 concerning Manpower states that the ideal working time includes 7 hours per day and 40 hours per week for 6 working days in 1 week, or 8 hours per day and 40 hours per week for 5 working days in 1 week. Furthermore, the ILO (2000) states that the ideal working hours are not more than eight hours a day or 40 hours a week, but due to job demands, currently many employees have to work beyond these conditions.

Sedarmayanti (1996), states that the longer the physical work is carried out / continuous physical work, affects the five mechanisms carried out by the body (circulatory, digestive, muscle, nervous and respiratory systems), both individually and simultaneously. In this condition fatigue can occur due to the accumulation of waste products in the muscles and blood circulation, where these waste products limit the continuity of muscle activity. Furthermore Suma'mur (1994), states that the length of time a person works well is generally between 6-8 hours and the rest is for rest. Working time of more than 8 hours causes decreased productivity, causes fatigue, illness and accidents due to extending working time beyond that capacity.

b. Working time

From the perspective of working time, the Non On Call work system only works in the morning - during the day, from 07.30 to 14.00. While the On Call 1 and On Call 2 Work Systems besides working in the morning - during the day as the Non On Call work system but at certain times they also work in the afternoon or evening, namely between 14.00 to 07.30. Grandjean & Kroemer (1997), stated that the physiological functions of the body such as heart rate, oxygen consumed, body temperature, blood pressure, urine secretion, adrenaline production, mental and physical capacity markedly change in a 24-hour cycle. Generally all bodily functions increase during the day, begin to weaken in the afternoon, and decrease during the night for recovery and renewal. This phenomenon is known as circadian rhythm. Therefore humans are not ideal for night work because of changes in circadian rhythm that affect physiological functions related to work performance capacity.

Referring to the description above, it can be explained that the difference in the level of fatigue of employees who work with the On Call and Non On Call work systems is caused because employees with the Non On Call work system only work in the mornings and afternoons. Where at that time the circadian rhythm was in peak condition. Whereas employees with the On Call work system besides working in the morning and afternoon, they also have to

work in the afternoon or evening, which means that the circadian rhythm is in a declining and weakened condition.

E. CONCLUSION

The conclusion that can be drawn from this study is that there is an effect of the On Call Work System on the Level of Work Fatigue experienced by Tanah Grogot Hospital employees. Employees with On Call 1 Work Systems have a higher Work Fatigue Level than employees with On Call 2 and Non On Call Work Systems. Employees with the On Call 2 work system have a higher Fatigue Level than employees with the Non On Call Work System. Based on this, the management of Tanah Grogot Hospital needs to evaluate the On Call work system currently implemented, including making changes to the On Call Work System design, by giving employees time off and if possible creating an On Call System with short rotations. For example: OOLLOOLL (O = On Call, L = Holiday).

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