

ANALYSIS OF FACTORS RELATED TO WORK FATIGUE AMONG NURSES AT HOSPITAL IN BANDAR LAMPUNG

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Abstract. Work fatigue is a symptom correlated to the decrease of work efficiency, skills, boredom and the increase of anxiety. Performance of nurses with work fatigue will not be maximum to take care of the patient, and also will decrease the productivity of nurses in providing services. The aim of this study was to determine factors related to work fatigue among nurses at Hospital in Bandar Lampung. This was a Cross Sectional study, the population of this study were 247 nurses in one hospital and the sample were 153 responden selected by consecutive sampling technique. Independent variables were sex, age, marital status, nutritional status, history of disease, work period, and shift work. The dependent variable was work fatigue. Data in this study was analyzed with Chi-Square test, Kolmogorov-Smirnov test and logistic regression test ($\alpha=0.05$). The results showed that 84.3% respondents experienced of work fatigue. There were significant association between work fatigue with sex ($p=0.034$), shift work ($p=0.001$), work period ($p=0,041$). The determinat factor of the work fatigue was work shift (OR=3.479; $p=0.007$; CI 95% 1.398-8.659). Hospital management should make better regulation of work shift to minimize work fatigue among nurses.

Key words: Nurses, sex, shift work, work period, work fatigue

1. Introduction

work fatigue is a condition resulting in decreased of welfare, capacity or performance as a result of work activity (Mississauga 2012). Studies in several countries had shown that fatigue significantly contributes to work accidents (Eraliesa 2008). fatigue contributed in 50% of work accidents (Setyawati 2007). Data from International Labour Organization (ILO) in 2003 showed that almost every year as many as two million workers died due to accidents in work place caused by work fatigue. A study found that from 58.155 samples, approximately 18.828 or 32.8% of the total sample had fatigue (Baiduri 2008).

Fatigue is one of few common symptoms found in hospitals and clinics, about 20-40% of the population complain of severe fatigue (Setyawati 2010). Several studies conducted by Indonesian Ministry of Health obtained 30-40% of health care providers population which provide technical services and operating for 8-24 hours a day experienced of fatigue. This is because of their shift work pattern (Depkes RI 2003). Many studies shown that individual factors such as age, education, work periode, marital status and nutritional status have an association with the occurrence of work fatigue (Oentoro 2004).

Hospital is a health-care facility that operates in 24 hours. One of the resources required in patient care are the adequate number of nurses, especially in inpatient ward. The job of a nurse is inseparable from shift work system (Dian and Sholikhah 2012). Shift Work is an option in organizing work to maximize productivity of workers to meet the patient demands (Joko et al 2012). As it provides benefits to the patient, shift work can also negatively impact the worker, one of which is work fatigue for medical personnel. If nurses experiencing work fatigue, it can be ensured that the performance will not be maximum and also lowers the productivity of nurses in providing services.

Preliminary studies conducted by the author to assess subjective work fatigue using KAUPK2 Questionnaire in 30 nurses showed that 28 nurses experienced of work fatigue, while 11 people feel very tired (36.6%), and 17 (56.7%) feel tired. Based on the description above, authors were interested in conducting research on factors associated with work fatigue on nurses at the inpatient ward of hospital in Bandar Lampung.

2. Method

This study was an observational quantitative study with cross sectional design. Study was conducted at a hospital in Bandar Lampung, population of this study was 247 nurses on inpatient ward. Samples was selected by consecutive sampling technique to nurses who were willing to join the study and we excluded nurses who were pregnant or breastfeeding. Finally we gained 153 respondents in this study. The independent variables were sex, age, marital status, nutritional status, history of illness, work periode, and shift work. While the dependent variable was work fatigue.

The data used in this study were primary data. Subjects filled the questionnaire contained demographic questions (i.e sex, age, marital status, work periode, nutritional status, history of illness), work fatigue were assessed with KAUPK2 Questionnaire. We ruled out all incomplete questionnaire. Data were analyzed using SPSS for windows. The analysis conducted in this study were: a) Univariate analysis to determine the frequency distribution of the independent variables and the dependent variable. b) Bivariate analysis using Chi-Square test and the alternative test was Kolmogorov-Smirnov. c) Multivariate analysis with backward LR logistic regression method. the result is statistically significant was determined by p -value <0.05 and 95% confidential interval (CI).

3. Result

Respondent Characteristics. Data of respondents characteristic of this study are shown in Table 1. The majority of the respondents were female, age less than 40 years, a work period less than 10 years, experience shift work, have a normal nutritional status and with no history of illness.

The Results of KAUPK2 Questionnaire. fatigue assessment using questionnaires found 84.3% of nurses experienced of work fatigue in which 75.8% were fatigue and 8.5% were severe fatigue (Table 2).

Table 1: Respondents Characteristic Distribution

Characteristic	Frequency (n)	Percentage (%)
Sex		
Male	39	25.5
Female	114	74.5
Age		
≤ 40 years	127	83.0
> 40 years	26	17.0
Work periode		
≤ 10 years	107	69.9
> 10 years	46	30.1
Shift Work		
Non shift	44	28.8
Shift	109	71.2
Marital status		
Single	23	15.0
Married	130	85.0
Nutritional state		
Under nutrition	13	8.5
Normal	79	51.6
Over weight	61	39.9
History of disease		
None	130	85.0
Yes	23	15.0

Table 2: Distribution of work fatigue on respondents

Work fatigue	Frequency (n)	Percentage (%)
Less fatigue	24	15.7
Fatigue	116	75.8
Severe fatigue	13	8.5

Risk Factor. In this study, bivariate analysis was conducted to identify related risk factors to work fatigue in respondents (Table 3), and multivariate analysis were performed against risk factors that had a statistical significance among independent variables such as sex ($p = 0.034$), work period ($p = 0.041$) and shift work ($p = 0.001$). Table 4 shows the results of a multivariate analysis of risk factors for fatigue. The results showed statistically significance risk factor of work fatigue was found in shift work ($p = 0.007$; OR = 3,479; 95% CI 1.40-8.80).

Table 3: The Association of work fatigue and several possible risk factors

Characteristic	Less fatigue (n, %)	Fatigue (n,%)	Severe fatigue (n, %)	<i>p</i>
Sex				
Male	2 (5.13)	31 (79.49)	6 (15.38)	0.034
Female	22 (19.3)	85 (74.56)	7 (6.14)	
Age				
≤ 40 years	18 (14.17)	96 (75.6)	13 (10.23)	0.977
> 40 years	6 (23.1)	20 (76.9)	0 (0)	
Work period				
≤ 10 years	15 (4.02)	79 (73.83)	13 (10.23)	0.041
> 10 years	9 (19.57)	37 (80.43)	0 (0)	
Shift work				
Non shift	13 (29.55)	31 (70.45)	0 (0)	0.001
Shift	11 (10.09)	85 (77.82)	13 (8.5)	
Marital status				
Single	2 (8.7)	18 (78.26)	3 (13.04)	0.999
Married	22 (16.92)	98 (75.38)	10 (7.7)	
Nutritional state				
Malnutrition	11 (14.86)	57 (77.03)	6 (8.11)	0.944
Normal	13 (16.46)	59 (74.68)	7 (8.36)	

Table 4: the Result of multivariate analysis on work fatigue risk factors

Variable	<i>p</i>	OR (CI 95%)
Shift work	0.007	3.479 (1.40-8.86)
Sex	0.075	3.970 (0.872-18.082)

4. Discussion

The prevalence of work fatigue among nurses in this study were assessed by KAUPK2 Questionnaire and found 84.3% subjects experienced of work fatigue; while 75.8% felt fatigue, and 8.5% severe fatigue. Work fatigue was more common in female respondents (92 people); 85 subjects were fatigue and 7 subjects were severe fatigue. The bivariate analysis showed a significant association of sex and fatigue ($p = 0.034$). The results are consistent with a study by Inta (2012) that found a significant association between sex and fatigue. This is also consistent with the theory that says the body size and muscle strength of female workers relatively less than male workers. Women also biologically experiences menstrual cycle, pregnancy and menopause, and sociocultural role as mother in the household (Suma'mur 2009). Work fatigue among nurses can be measured from physical and mental fatigue (Barker 2009). physical fatigue can be caused by several things, such as the extension of shift work, problems at work, caffeine consumption, poor quality of sleep, and age (Rogers 2008).

Bivariate analysis on the association of age and fatigue in respondents did not show significant results ($p = 0.977$). Fatigue is mostly found on nurses with age ≤40 years as many as 96 subjects (75.69%) and 13 of them had severe fatigue (10.23%). This was not consistent with the existing theory which states that the older person will experience more of fatigue than the younger. physiology changing of the body may happen due to aging and will affect endurance and work capacity (Suma'mur 2009). People by the age 40-50 years will relatively experience from fatigue faster than younger people (Oentoro 2004). But in this study, there was no significant association between age and fatigue yet it may happen since the older workers might have a better

experience and emotional control which bring stability in performance at work (Saosa et al 2013). Younger worker might have better physical strength than the elder workers. But elder workers were able to handle obstacles easier by experience (Setyawati 2010). Similar results were also obtained in studies conducted by Eraliesa (2008) and Mauludi (2010) that found significant association between age and work fatigue.

In this study we found that work period had a significant association with work fatigue ($p=0.041$). Work period might affect workers both positively and negatively. It would give positive impact if the longer a person works the more experience he/she gain, otherwise it would give negative impact by causing fatigue and boredom (Budiono et al 2003). Work fatigue which was experienced by workers with longer work period is mostly happened due to monotonous task. Work fatigue which occurs continuously resulting in chronic fatigue (Nasution 1998).

Respondents who experienced of work fatigue were mostly nurses who work with shifts pattern (98 respondents) while 85 respondents were fatigue and 13 respondents were severe fatigue. Statistical analysis found an association between shift work and work fatigue ($p=0.001$). This results is consistent with a study by Ida (2001) who found significant association between shift work and work fatigue ($p=0.006$). Physiological function of the worker's body can not completely adjusted to meet the shift work rhythm. Work Fatigue is mostly happened in workers who had night shift because of the physiologic and metabolism factors that can not work in harmony with a stronger parasympathetic effect at night (Suma'mur 2009). On workers who work with shift rotation (morning-afternoon-night) were facing a problem since workers could never perfectly adapted to the work schedule (Virgy 2011).

Marital status ($p=0.999$) and history of the disease ($p=0.372$) did not show a significant association with work fatigue. The same result was found in a study by Cut (2005) which found no significant association between marital status and work fatigue ($p=0.126$), but contrary to study by Eraliesa (2008) whose study found significant association between marital status and fatigue. A study conducted by Mentari et al (2012) stated significant association between history of disease with work fatigue ($p=0.001$). In this study, the small number of respondents who were unmarried and who had a history of disease may lead to no statistically significant association.

Malnutrition, either undernutrition or overweight is an important issue because it could increase the risk of illness and also affect work productivity in workers (Mauludi 2010). Analysis of nutritional state as a risk factor of work fatigue in respondents found no significant association ($p= 0.944$). consistent with the research by Virgy (2011), there was no significant relationship between nutritional state and work fatigue. But this is not consistent with the study by Mentari et al (2012) which states a significant association between nutritional state and work fatigue ($p=0.016$). A worker with a good nutritional state will have better working capacity and endurance, and vice versa. A worker with undernutrition and heavy workload will disrupt the work and lowers the efficiency and endurance at work, and it makes him easier to get ill and accelerate work fatigue (Budiono et al 2003).

Multivariate analysis using backward LR logistic regression methods indicates that the independent variables affecting on work fatigue among nurses was work shift ($p=0.007$; OR=3.479; 95% CI=1.398-8.659). This results is consistent with study by Øyane et al (2013) among nurses with shift work in Norway, especially those who had night shift had a risk of work fatigue 1.78 times greater than nurses who did not have night shift. It is also supported by Yuan et al (2011) whose study found that nurses with shift work felt more fatigue compared to nurses without shift work pattern. There were significant differences between the two groups ($p = 0.032$; OR = 2.44).

Shift work is often associated with fatigue or drowsiness occur due to lack of sleep, irregular sleep schedule and circadian rhythm disorders (Hossain et al 2003). Shift work can cause a greater subjective work fatigue and sleepiness, followed by an increase in probability on occurrence of sleeping at work and an work accidents (Akerstedt et al 2002).

5. Conclusion

The prevalence of fatigue in nurses is 84.3%. Shift work is the most significant related risk factor of work fatigue among nurses at inpatient ward in hospital. Further research is still required to support the results of this study and to explore other risk factors that may affect work fatigue.

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