

Conference Paper

Analysis of Factors Correlated to Work Fatigue of Hospital Nurses in Bandar Lampung

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Abstract

Work fatigue is a symptom correlated to a decrease in work efficiency and skills and an increase in boredom and anxiety. If hospital nurses suffer work fatigue, they will be unable to perform at their best to care for patients, and this will reduce their productivity in providing services. This study aimed to identify the factors correlated to the work fatigue of hospital nurses in Bandar Lampung. This study had a cross-sectional design. The study population included 247 respondents, and the final study sample included 153 respondents. The independent variables in this study were sex, age, marital status, nutritional status, disease history, work period, and shift work. The dependent variable was work fatigue. The study data were analyzed using the Chi-Square test, Kolmogorov-Smirnov test ($\alpha = 0.05$), and logistic regression test. The results showed that 75.8% of the respondents suffered from work fatigue. There were significant correlations between work fatigue and sex ($p = 0.034$), shift work ($p = 0.001$), and work period ($p = 0.041$). The determinant factor of work fatigue was the work shift (OR = 3.479; $p = 0.007$; 95% CI: 1.398–8.659). Therefore, it is suggested that hospital management should better regulate work shifts.

Keywords: Nurses, sex, shift work, work period, work fatigue

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1. INTRODUCTION

Work fatigue is a condition resulting in decreased welfare, capacity, or performance as a result of work activity [11]. Studies in several countries have shown that fatigue significantly contributes to work accidents [6]. Fatigue contributed to 50% of work accidents [15]. Data from the International Labour Organization (ILO) in 2003 showed that every year as many as two million workers died due to accidents in the workplace

caused by work fatigue. A study found that out of 58,155 samples, approximately 18,828 or 32.8% of the total sample had fatigue [1].

Between 20% and 40% of the population complain of severe fatigue [16]. Fatigue is one of a few common symptoms found in hospitals and clinics. Several studies conducted by the Indonesian Ministry of Health have found that 30-40% of health care workers providing technical services and operating for 8-24 hours per day experienced fatigue because of their shift-work pattern (Depkes 2003). Many studies have shown that individual factors such as age, education, work period, marital status and nutritional status are associated with the occurrence of work fatigue [13].

Hospitals operate 24 hours per day and patient care requires an adequate number of nurses, especially in inpatient wards. Thus, the job of a nurse is inseparable from the shift-work system [4]. Shift-work is an option for organizing work in a way that maximizes the productivity of workers to meet patient demands [10]. Despite providing benefits to the patient, shift-work can also have negative impacts, such as work fatigue, on medical personnel. If nurses experience work fatigue, their performance and productivity will be reduced.

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

2. METHODS

This study was an observational, quantitative study with cross-sectional design, and was conducted at a hospital in Bandar Lampung. The study population was the 247 nurses working in the inpatient ward. Samples was selected using a consecutive sampling technique with nurses who were willing to join the study. Nurses who were pregnant or breastfeeding were excluded. There were 153 respondents. The independent variables were sex, age, marital status, nutritional status, history of illness, work period, and shift-work, while the dependent variable was work fatigue.

The data used in this study were primary data. Subjects completed the questionnaire's demographic questions (i.e. sex, age, marital status, work period, nutritional status, history of illness), while work fatigue was assessed with the KAUPK2 questionnaire. Incomplete questionnaires were excluded. Data were analyzed using SPSS for Windows. The analyses conducted were as follows: a) univariate analysis to determine

the frequency distribution of the independent variables and the dependent variable; b) bivariate analysis using a chi-square test and a Kolmogorov-Smirnov test as the alternative; c) multivariate analysis with a backward LR logistic regression method. Statistical significance of the results was determined by p-values of less than 0.05 and a 95% confidence interval (CI).

3. RESULTS

3.1. Respondent characteristics

The data of respondent characteristics are shown in Table 1. The majority of respondents were female, were aged 40 years or younger, had a work period of 10 years or less, were doing shift work, had a normal nutritional status, and had no history of illness.

3.2. Results of KAUPK2 questionnaire

Fatigue assessment using questionnaires found that 84.3% of the nurses experienced moderate fatigue or severe fatigue (75.8% experienced moderate fatigue and 8.5% experienced severe fatigue; see Table 2).

3.3. Risk factor

Bivariate analysis was conducted to identify risk factors relating to work fatigue in the respondents (Table 3), and multivariate analyses 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. Shift work was found to be a statistically significant risk factor for work fatigue ($p = 0.007$; OR = 3.479; 95% CI 1.40–8.80).

4. DISCUSSION

The prevalence of work fatigue among nurses was assessed in this study using the KAUPK2 questionnaire and found that 84.3% of respondents experienced moderate fatigue or severe fatigue. Work fatigue was more common in female respondents (92 female respondents out of 427 respondents experienced work fatigue, of which

TABLE 1: Respondent characteristics distribution.

Characteristic	Frequency (<i>n</i>)	Percentage (%)
Sex		
Male	39	25.5
Female	114	74.5
Age		
≤ 40 years	127	83.0
> 40 years	26	17.0
Work period		
≤ 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 status		
Undernutrition	13	8.5
Normal	79	51.6
Overweight	61	39.9
History of illness		
None	130	85.0
Yes	23	15.0

TABLE 2: Distribution of work fatigue among respondents.

Work fatigue	Frequency (<i>n</i>)	Percentage (%)
No fatigue	24	15.7
Moderate Fatigue	116	75.8
Severe fatigue	13	8.5

85 experienced moderate fatigue and 7 experienced severe fatigue). The bivariate analysis showed a significant association between sex and fatigue ($p = 0.034$), which is consistent with a study by Inta (2012) that also found a significant association between sex and fatigue, and is consistent with the theory stating that female workers have a smaller body size and a lower muscle strength relative to male workers. Women also have the biological experiences of the menstrual cycle, pregnancy, and menopause, and have the sociocultural role of being the mother in the household [17].

Bivariate analysis on the association of age and fatigue in respondents did not show significant results ($p = 0.977$). Fatigue is mostly found in nurses aged 40 years or less, with 96 of these respondents (75.69%) experiencing moderate fatigue and 13 having

TABLE 3: The association of work fatigue and several possible risk factors.

Characteristic	Mild fatigue n (%)	Moderate Fatigue n (%)	Severe fatigue n (%)	p
Sex				
Male	2 (5.13)	31 (79.49)	6 (15.38)	
Female	22 (19.3)	85 (74.56)	7 (6.14)	0.034
Age				
≤ 40 years	18 (14.17)	96 (75.6)	13 (10.23)	
> 40 years	6 (23.1)	20 (76.9)	0 (0.00)	0.977
Work period				
≤ 10 years	15 (4.02)	79 (73.83)	13 (10.23)	
> 10 years	9 (19.57)	37 (80.43)	0 (0.00)	0.041
Shift work				
Non-shift	13 (29.55)	31 (70.45)	0 (0.00)	
Shift	11 (10.09)	85 (77.82)	13 (8.5)	0.001
Marital status				
Single	2 (8.70)	18 (78.26)	3 (13.04)	
Married	22 (16.92)	98 (75.38)	10 (7.70)	0.999
Nutritional status				
Malnourished	11 (14.86)	57 (77.03)	6 (8.11)	
Normal	13 (16.46)	59 (74.68)	7 (8.36)	0.944

TABLE 4: Results of multivariate analysis on work fatigue risk factors.

Variable	p	OR (CI 95%)
Shift work	0.007	3.479 (1.40–8.86)
Sex	0.075	.872–18.082)

severe fatigue (10.23%). This is not consistent with the theory stating that older people will experience more fatigue than younger people. Physiological changes in the body resulting from aging may affect endurance and work capacity [17]. People aged 40–50 years will experience fatigue relatively faster than younger people [13]. In this study, however, there was no significant association between age and fatigue. This could be due to the older workers having more experience and better emotional control, bringing stability in their performance at work [18]. While younger workers may have more physical strength than elder workers, elder workers more easily overcome obstacles through experience [10]. Similar results were also obtained in studies conducted by Eralies (2008) and Mauludi (2010), which both found a significant association between age and work fatigue.

This study found that work period had a significant association with work fatigue ($p = 0.041$). Work period may affect workers both positively and negatively. A longer

work period could have a positive impact through the greater amount of experience the worker gains, while conversely it could have a negative impact through causing increased fatigue and boredom [20]. Work fatigue experienced by workers with a longer work period occurs mostly in relation to monotonous tasks. Work fatigue that occurs continuously can result in chronic fatigue [21].

Respondents who experienced work fatigue (moderate fatigue or severe fatigue) were mostly nurses who work shift patterns (98 respondents, of which 85 experienced moderate fatigue and 13 experienced severe fatigue). Statistical analysis found an association between shift work and work fatigue ($p = 0.001$). This result is consistent with a study by Ida (2001) who found a significant association between shift work and work fatigue ($p = 0.006$). The physiological functioning of the worker's body cannot completely adjust to meet the shift work rhythm. Work fatigue occurs mostly in workers with night shifts because physiological factors and the metabolism cannot work in harmony with a stronger parasympathetic effect at night [17]. Workers who work with shift rotation (morning–afternoon–night) were found to be facing a problem since they could never perfectly adapt to the work schedule [23].

Marital status ($p = 0.999$) and history of illness ($p = 0.372$) did not show a significant association with work fatigue. A similar result was found in a study by Cut (2005), which found no significant association between marital status and work fatigue ($p = 0.126$). A study by Eraliesa (2008), however, did find a significant association between marital status and fatigue, and a study conducted by Mentari et al. (2012) reported a significant association between history of illness and work fatigue ($p = 0.001$). In this study, the lack of statistically significant associations with these factors may be due to the small number of respondents who were unmarried and who had a history of illness.

Malnutrition, either undernutrition or being overweight, is an important issue because it can increase the risk of illness while also affecting workers' productivity [19]. Analysis of nutritional status as a risk factor for work fatigue in respondents found no significant association ($p = 0.944$), which is consistent with the research by Virgy (2011). Mentari et al. (2012), however, reported a significant association between nutritional status and work fatigue ($p = 0.016$). A worker with a good nutritional status will have a greater working capacity and increased endurance (and vice versa), while an undernourished worker with a heavy workload will suffer disruptions in his or her work, will have a lower efficiency and endurance level at work, and will be more likely to get ill and suffer from accelerated work fatigue [20].

Multivariate analysis using backward LR logistic regression methods indicates that the independent variable affecting work fatigue among nurses was shift work ($p = 0.007$; OR = 3.479; 95% CI = 1.398–8.659). This result is consistent with a study by Øyane et al. (2013) among nurses with shift work in Norway, which found that those with night shifts had a risk of work fatigue 1.78 times greater than those who did not have night shifts. 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, with significant differences between the two groups ($p = 0.032$; OR = 2.44).

Shift work is often associated with fatigue or drowsiness due to lack of sleep, irregular sleep schedules, and circadian rhythm disorders [28]. Shift work can cause a greater subjective work fatigue and sleepiness, followed by an increased probability in the occurrence of sleeping at work and work accidents [29].

5. CONCLUSIONS

The prevalence of fatigue in nurses is 84.3%. Shift work was the most significant related risk factor for work fatigue among nurses at the inpatient ward at hospital in Bandar Lampung. 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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