

## **WORK-RELATED FATIGUE AMONG INPATIENT UNIT NURSES**

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### Abstract

Nurse fatigue has been recognized as a threat to both nurse and patient safety. Comparing to other units, inpatient unit has lower nurse to patient ratio. Inpatient unit nurses also work in shift and experience shift rotation. Thus make them more vulnerable to experience fatigue. The purpose of this study was to describe work-related fatigue among inpatient unit nurses. A cross-sectional, descriptive design with cluster sampling technique was used to 93 staffs nurses in six wards. Work-related fatigue was measured using Occupational Fatigue Exhaustion Recovery (OFER) scale. The data were analyzed using descriptive statistics. A total of 93 nurses provided their personal information details and fully completed self-reported fatigue and recovery questionnaire. The mean ( $\pm$ SD) scores were 56.55 ( $\pm$ 15.56), 42.83 ( $\pm$ 19.46), and 51.07 ( $\pm$ 16.98) for acute fatigue, chronic fatigue, and intershift recovery, respectively. Perinatology unit nurses had the highest acute and chronic fatigue and the lowest intershift recovery. Less experienced nurses experienced lower acute fatigue level which tends to increase progressively with increasing experience and accompanied by poorer recovery. Nursing administrators should consider individual factors while planning staff placement in order to optimize quality of care and meet the job demands in every different unit.

Keywords: fatigue, inpatient unit, nurses

## **Introduction**

Fatigue is defined as a state of exhaustion, incapacitation, and decreased efficiency that may follow after prolonged work activity (Koren, 2005; O'Toole, 2013; P. C. Winwood, Winefield, Dawson, & Lushington, 2006). In acute state, depletion of energy result from previous work activity produces inability to perform nonessential task in non-work time. Adequate recovery during intershift period is needed to restore energy in order to achieve fully rested and functionally alert condition at start of the next new work shift (P. C. Winwood, Winefield, Dawson, et al., 2006). Adaptive recovery from acute fatigue prevents development of chronic fatigue, which is found to be more dangerous and susceptible to any negative effects.

Nurse fatigue has been recognized as a threat to both nurse and patient safety (ANA, 2014; CNA, 2010). Being fatigued decreases nurse perceived performance (Barker & Nussbaum, 2010; Pasupathy & Barker, 2011), causes difficulty to concentrate, slow reaction time, decreased hand-eye coordination, memory problem (CNA, 2012); and leads to inaccuracy and lack of motivation (Wolf, Perhats, Delao, & Clark, 2016). Fatigued nurses also tend to be inconsistent in maintaining their judgement policies (McClelland, 2007) and more likely to report decision regret (Scott, Engoren, & Engoren, 2014). In result, fatigue often associated with intervention and medication errors that threaten patient care (Chua, Chua, & Omar, 2010; Dorrian et al., 2008; Seitz, 2016). Occupational injuries, such as needle stick and sharp injuries, have been associated with long work hours (Lo, Chiou, Huang, & Chien, 2016) and high workload (Kebede, Molla, & Sharma, 2012) that is known to be linked with fatigue (Chuang & Liu, 2017; Han, Trinkoff, & Geiger-Brown, 2014). In addition, fatigued nurses drive in drowsy, exposing them to crash risk during commute (Zuraida, Iridiastadi, & Satalaksana, 2017).

Inpatient unit nurses can be more vulnerable to experience fatigue. Comparing to other units, inpatient unit has lower nurse patient ratio, that indicate more patients needed to be cared by one nurse. Inpatient unit nurses also work in shift and experience

shift rotation, which can result in irregular sleep pattern and affect nurse sleep quality (Zhang, Sun, Li, & Tao, 2016).

In Indonesia, study regarding nurse fatigue is still limited. Furthermore, previous studies (Kurniawati & Solikhah, 2012; Maulana, Sitorus, & Hasyim, 2010; Vilia, Saftarina, & Ta, 2014) conducted in inpatient nurses population were not differentiate between acute and chronic fatigue. Nor did they describe nurse fatigue related to nurse individual characteristics. As a result, the purpose of this study was to describe work-related fatigue among inpatient unit nurses, that is indicated by acute fatigue, chronic fatigue, and intershift recovery, and also describe nurse fatigue according to their individual factors.

## **Research Methodology**

A cross-sectional, descriptive design was used in this study. The study was conducted in a governmental general public hospital in Bandung.

The participants were staff nurses who provided direct patient care in all type of general inpatient wards. The sampling used cluster technique sampling to achieve equal representation of nurses from six inpatient wards, 93 staff nurses were sampled in this study. The sample provided their personal information details (age, gender, marital status, educational background, and years of experience), and fully completed self-reported questionnaire of fatigue and recovery. The study protocol was approved by Padjadjaran University Research Ethics Committee (No. 278/UN6.KEP/EC/2018).

Work-related fatigue was measured using Occupational Fatigue Exhaustion Recovery (OFER) scale, which contains three subscales: acute fatigue (5 items), chronic fatigue (5 items), and intershift recovery (5 items). The items use a 7 point-response ranging from "strongly disagree" to "strongly agree". Score on each subscales range from 0 to 100 with higher scores indicating higher level of fatigue or intershift recovery. Scores can be interpreted as low (0-25), low-moderate (26-50), moderate-high (51-75), and high (76-100). OFER scale has demonstrated high content, construct, and discriminant validity,

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with internal reliability of the subscales (Cronbach's alpha coefficient) ranging from 0.83 to 0.89. In the current study, Instruments were translated from English to Indonesian Language with back translation method by linguist on certified institute.

Data were analyzed using frequency distribution statistics were used to summarize the characteristics of individual factors and

numeric statistic (mean, standard deviation scores) were used to computed for acute fatigue, chronic fatigue, and intershift recovery.

### Results

Table 1, describes the the image of fatigue based on work unit

**Table 1. Fatigue mean score based on type of unit**

Work unit	N	Acute Fatigue		Chronic Fatigue		Intershift Recovery	
		Mean	SD	Mean	SD	Mean	SD
VIP	11	46.06	14.52	32.12	9.22	54.55	22.47
First Class	16	52.50	15.56	39.58	15.77	56.04	14.72
Pediatric	18	53.70	12.15	39.26	17.62	49.81	15.44
Surgical	15	61.11	14.46	51.78	22.78	51.33	14.02
Medical	18	52.41	14.41	38.33	17.08	55.00	15.14
Perinatology	15	72.44	10.50	54.89	22.93	39.78	18.49

The mean ( $\pm$ SD) age of the sample and working experience as nurse were 29.58 ( $\pm$ 4.20) years and 6.53 ( $\pm$ 4.16) years. 78.5% participants were female, 80.6% were married, 74.2% were diploma, and 41.9% had low to moderate experience (3 – 5 years) working as nurse. The overall mean ( $\pm$ SD) scores were 56.55 ( $\pm$ 15.56), 42.83 ( $\pm$ 19.46), and 51.07 ( $\pm$ 16.98) for acute fatigue, chronic fatigue, and intershift recovery, respectively, indicating 'low to moderate' level for chronic fatigue and 'moderate to high' for both acute fatigue and intershift recovery.

Based on work unit, there are two pattern of fatigue score, the highest score on intershift recovery and the highest score on acute

fatigue. VIP, first class, and medical unit had the highest score on intershift recovery compared to other two subscales, while pediatric, surgical, and perinatology had the highest score on acute fatigue. Compared to all units, pediatric unit had the highest score of acute (M=72.44, SD=10,50) and chronic fatigue (M=54.89, SD=22.92) and also had the lowest score of intershift recovery (M=39.78, SD=18,49). The lowest score of acute (M=46.06, SD=14.52) and chronic fatigue (M=32.12, SD=9.22) was found in VIP unit, while the highest score of intershift recovery (M=56.04, SD=15) in first class unit.

**Table 2. Fatigue mean score in different groups of characteristics of the sample**

Characteristics	n	Acute Fatigue		Chronic Fatigue		Intershift Recovery	
		Mean	SD	Mean	SD	Mean	SD
Gender							
Male	20	48.83	16.01	38.00	16.30	54.16	10.47
Female	73	58.67	14.85	44.15	20.13	50.22	18.33
Age (years)							
$\leq$ 30	61	55.19	15.95	45.08	20.41	53.06	16.93
>30	32	59.16	14.66	38.54	16.97	47.29	16.68
Marital status							
Single/divorced	18	50.74	14.62	44.81	20.00	52.77	15.26
Married	75	57.95	15.54	42.35	19.43	50.67	17.44

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Education							
Bachelor	24	52.08	12.50	40.55	14.23	56.52	16.07
Diploma	69	58.11	16.28	43.62	21.00	49.17	16.99
Work experience							
Low : 1-2 years	7	50.95	11.00	32.38	11.97	61.42	13.72
Low-moderate: 3-5 years	39	54.44	15.05	47.43	17.17	51.11	15.78
Moderate-high: 6-10 years	29	57.81	15.43	41.03	21.75	50.45	17.19
high: >10 years	18	61.29	17.86	39.81	21.25	47.96	19.87

Based on table 2 above it's got that high scores for acute fatigue found in female nurses, with age > 30 years, diploma education, married and with work experience moderate-high, as for chronic fatigue, high scores are rested on the characteristics female nurses, age <30 years, single/divorced with diploma education and work experience in low moderate categories.

For intershift recovery that the high scores we found at male nurses, with age < 30 years old, single/divorced, with bachelor education and low work experience.

Less experienced nurses experienced lower acute fatigue level which tends to increase progressively with increasing experience and accompanied by poorer recovery.

### Discussion

The present study found that inpatient unit nurses had 'low to moderate' level of chronic fatigue and 'moderate to high' level of acute fatigue and intershift recovery, indicating that inpatient unit nurses experienced energy depletion in the end of the shift as a result from previous work activity, but accompanied by adequate intershift recovery, thus resulting in low level of chronic fatigue. The finding is consistent with other studies that have identified a similar pattern. Study from Fang, Kunaviktikul, Olson, Chontawan, & Kaewthummanukul, (2008), P. C. Winwood, Lushington, & Winefield, (2006) and Peter C. Winwood & Lushington, (2006) demonstrated positive correlation between acute fatigue and chronic fatigue and negative correlation between recovery with both acute and chronic fatigue.

Nurses working in perinatology unit

experience more acute and chronic fatigue and less intershift recovery. Neonates characteristic which is dependant and needed total care may create greater workload to the nurses. When the workload is heavy, the energy expenditure is likely to be high, thus contributing to acute fatigue.

Perinatology nurses also vulnerable to experience higher psychological demands. Caring sick neonates may cause emotional stress. Neonates fragile condition also demand high concentration and accuracy, reflecting higher mental effort needed while caring neonates. As psychological demands are the strongest predictor of recovery from work strain (Peter C. Winwood & Lushington, 2006), psychological strain experienced by perinatology nurses can affects nurses sleep quality and impairs recovery from overall workstrain between shifts. Combine with high acute fatigue level, impaired recovery can lead to chronic fatigue outcome among perinatology nurses.

In the current study, more acute fatigue was found among >30 years old individuals, which is consistent with previous study in which more fatigue found among older nurses aged 30 – 40 years (Chen, Davis, Daraiseh, Pan, & Davis, 2014; Fang et al., 2008). Regarding age, younger nurses aged <30 years showed better recovery than older nurses. Inconsistent findings have been reported in previous research, from no relationship between recovery and age (Han et al., 2014) to positive correlation between age and intershift recovery (Winwood, Winefield, & Lushington, 2006). In the study from Winwood, Winefield, & Lushington (2006), older participants tended to work fewer high-stress shift patterns, thus the

study demonstrated positive correlation of age with recovery, suggest a tendency towards better recovery with greater age, while in this current study older nurses aged >30 years still work in the same shift pattern as younger nurses. In addition, previous study suggested that total sleep hour and sleep efficiency tend to decrease with increasing age (Sahlin, Franklin, Stenlund, & Lindberg, 2009), resulting in poor recovery ability among older individuals.

Regarding marital status, we found insignificant mean score difference between partnered and single nurse. Correlation between marital status and fatigue is still inconsistent in a number of studies. Study from Fang et al. (2008) found significant correlation between marital status and acute fatigue, but had no relationship with chronic fatigue. Han et al. (2014) found significant difference of intershift recovery status between married and single nurses, in which single nurses tend to had better recovery than married nurses, while Geiger-Brown et al. (2012) found higher intershift recovery mean score in nurses who were divorced/separated or widowed than in nurses who were married or single.

Marital status inconsistently affects fatigue among nurses. Fatigue assumed to be affected by marital status regarding domestic responsibility that may influence recovery opportunity, thus contributing to the development of chronic fatigue. Possible explanation for inconsistent marital status influence could be number of dependents, and relatives or assistant presence. In addition, companionship allows work tension sharing and partnered nurses may benefit from anxiolytic effects of physical contact and intimacy (P. C. Winwood, Winefield, & Lushington, 2006).

Working experience affects fatigue interestingly. Less experienced nurses had lower acute fatigue level which tends to increase progressively with increasing experience and accompanied by poorer recovery. The more senior the nurse the more likely the nurse to perform intervention better and appropriately (Nursalam, 2014). Senior nurses also had greater responsibility. They usually became the team leader and had responsibility to train new nurses or nursing

students. Thus make them more vulnerable to experience higher acute fatigue.

This study has a number of implications. First, the relationship between acute fatigue, chronic fatigue and intershift recovery suggest that any efforts to reduce acute fatigue and improve intershift recovery might be seen as interventions that prevent the development of chronic fatigue. Thus the planning of work schedule must provide adequate time between shifts that allow better recovery. Nursing administrator also should consider strategies to optimize recovery. These strategies could include creating exercise day that is known to be effective in improving sleep quality and can increase stress tolerance, thus individual can perform daily activities without excessive fatigue (Rivera-Brown & Frontera, 2012). Second, as individual factors can affect fatigue, nursing administrators should consider individual factors while planning staff placement in order to optimize quality of care and meet the job demands in every different unit. For high demand unit, such as perinatology, nursing administrator can consider to put more younger and less experienced nurses combine with few more experienced nurses which are distributed to each shift to ensure adequate guidance for the less experienced nurses.

### **Conclusion**

Inpatient unit nurses experienced 'low to moderate' level for chronic fatigue and 'moderate to high' for both acute fatigue and intershift recovery. Perinatology unit nurses had the highest acute and chronic fatigue and the lowest intershift recovery. Less experienced nurses experienced lower acute fatigue level which tends to increase progressively with increasing experience and accompanied by poorer recovery. Nursing administrators should consider individual factors while planning staff placement. For high demand unit, such as perinatology, nursing administrator can consider to put more younger and less experienced nurses combine with few more experienced nurses which are distributed to each shift to ensure adequate guidance for the less experienced nurses.



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