The relationship of sleep pattern to fatigue and its effect on clinical decision making among staff nurses

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Abstract

Introduction The purpose of this study was to identify the relationship of sleep quality to fatigue and its effect on the clinical decision making of staff nurses.

Methods This study correlated the effect of sleep quality and fatigue on the clinical decision making among staff nurses at the UERM Memorial Hospital using the Pittsburgh Sleep Quality Index, Fatigue Assessment Scale, and Clinical Decision Making in Nursing Scale for sleep quality, fatigue and clinical decision making, respectively. Spearman rho coefficient was computed to determine the relationship between sleep quality and fatigue, and between sleep quality and clinical decision making. The chance of poor clinical decision making among nurses with and without fatigue were computed.

Results Twenty-eight nurses were included in the study, of which 75% had poor sleep quality, 25% suffered from fatigue and one of five had good decision making. The chance of fatigue among nurses with poor sleep quality over the chance of fatigue among nurses with a good quality of sleep is one (OR = 1.0). The chance of good decision making among nurses with fatigue over the chance of good decision making among nurses without fatigue is two out of five (OR = 0.18). Spearman rho shows a moderate, significant correlation between the Fatigue Assessment Scale and Pittsburgh Sleep Quality Index scores ($r = 0.547$, $p < 0.05$) and a weak, non-significant correlation between Clinical Decision Making in Nursing Scale and Pittsburgh Sleep Quality Index scores ($r = 0.151$, $p = 0.44$).

Conclusion Poor sleep quality is moderately correlated with fatigue but it may not necessarily translate into poor decision making among the staff nurses in the study. Fatigue decreases the chance of good decision making by 80%.

Key words: Sleep quality, fatigue, clinical decision making

Over the past decade, the increasing complexity of clinical nursing has necessitated more informed decision making to ensure effective and safe practice.[1,2] Nurses are increasingly regarded as key decision makers within the healthcare team. They are also expected to use the best available evidence in their judgments and decisions.[3] However, according to statistics, there were 2.7 million nurses in America, and a new survey of more than 3,300 of them found that nurses are stressed, overworked, underappreciated, and underutilized. Sixty-four percent said they rarely get seven to eight hours of

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sleep per night, and 31 percent said they get enough sleep just two to three nights a week. The lack of sleep may affect their concentration and mood resulting in changes in their clinical decision making.[4] Studies have shown that nurses who worked long hours and lacked sleep had an increased risk of committing medical and medication errors.[5-7]

The aim of this study was to determine the relationship of sleep quality and fatigue with clinical decision making among nurses. Specifically, the study aimed to determine the (1) status of sleep quality and fatigue, and clinical decision making among the respondents; (2) relationship between sleep quality and fatigue; (3) effect of sleep quality on clinical decision making; and (4) effect of fatigue on clinical decision making.

Methods

This study correlated the effect of sleep quality and fatigue on the clinical decision making among staff nurses at the UERM Memorial Hospital using separate standard questionnaires for sleep quality, fatigue and clinical decision making, respectively. The study was approved by the Ethics Review Committee and done in 2016.

Nurses with regular appointments assigned to the Pay or Service Hospital who were willing to participate were recruited. Nurses with supervisory or managerial functions, and those applying for work abroad were excluded. A sample size of 25 nurses was computed based on a 95% level of confidence, standard deviation of 12.71 and 5% error. Five nurses from each ward were randomly selected by fishbowl method from the names of all nurses assigned in a particular ward. Written informed consent was obtained prior to the administration of the questionnaires.

The Pittsburgh Sleep Quality Index (PSQI), a 19-item tool that measures sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances use of sleep medication, and daytime dysfunction was used to measure sleep quality.[8] Each item is scored 0 to 3; the global PSQI score is obtained by adding the component scores. A lower score denotes a healthier quality of sleep. The Fatigue Assessment Scale (FAS), a 10-item questionnaire, was used to measure fatigue.[9] It makes use of a 5-point Likert-type scale: (1) never, (2) sometimes, (3) regularly, (4) often and (5) always. A higher score indicates more fatigue. The Clinical Decision Making in Nursing Scale (CDMNS), a 40-item questionnaire that asked what the respondent would do in a specific clinical situation, was used to measure clinical decision making.10 It was answered using a 5-point Likert-type scale: (A) always, (F) frequently, (O) occasionally, (S) seldom, and (N) never.

Descriptive statistics (mean, standard deviation and proportion) were computed for the respondents' demographic characteristics. Spearman rho coefficient was computed to determine the relationship between sleep quality and fatigue, and between sleep quality and clinical decision making. The chance of poor clinical decision making among nurses with and without fatigue were computed.

Results

Majority of 28 respondents recruited were single female nurses in their middle twenties. Almost two-thirds were assigned in wards in the Service Hospital and more than 75% handled 6 to 15 patients during their tour of duty, as seen in Table 1. Table 2 shows that 75% of respondents had poor sleep quality, 25% suffered from fatigue and one of five had good decision making.

As seen in Table 3, the chance of fatigue among nurses with poor sleep quality over the chance of fatigue among nurses with a good quality of sleep is one (OR = 1.0). Table 4 shows that there is a two out of five (OR = 0.18) chance of good decision

Table 1. Demographic characteristics of respondents (N = 28).

Characteristic	n (%)
Age (yr)	25.7
Gender	
Male	12 (42.9)
Female	16 (57.1)
Civil status	
Single	25 (89.3)
Married	3 (10.7)
Assignment	
Pay	10 (35.7)
Service	18 (64.3)
Number of patients per duty	
1 to 5	3 (10.7)
6 to 10	15 (53.6)
11 to 15	7 (25.0)
16 to 20	3 (10.7)

Table 2. Sleep quality, fatigue and decision making among staff nurses (N = 28).

Factor	n (%)
Sleep quality	
Good (0-4)	7 (25.0)
Poor (≥ 5)	21 (75.0)
Fatigue	
With (≥ 21)	7 (25.0)
Without (1-20)	21 (75.0)
Clinical decision making	
Good (≥ 154)	6 (21.4)
Fair (140-153)	7 (25.0)
Poor (≤ 139)	15 (53.6)

making among nurses with fatigue over the chance of good decision making among nurses without fatigue. Spearman rho shows a moderate, significant correlation between the FAS and PSQI scores ($r = 0.547$, $p < 0.05$). There is a weak and non-significant correlation between CDMNS and PSQI scores ($r = 0.151$, $p = 0.44$).

Discussion

Nurses play a role in the health care team, but fatigued and sleep deprived nurses may put their patients and themselves at risk. Nurses, like all health care professionals, use reasoning and judgment to make decisions. In doing so, they must grapple with irreducible clinical uncertainty. But in managing uncertainty, the modes of reasoning used should encourage more good rather than harm. Previous nursing research has found a relationship between the fatigue associated with longer work shifts and a variety of outcomes. Much of this previous research has focused on the impact of shiftwork and fatigue on performance outcomes, showing that fatigue is greatest during longer shifts and leads to poorer performance when compared with shorter shifts.

Our results showed a moderate significant relationship between sleep quality and fatigue. Nurses may become sleep-deprived due to long working hours and shifting schedules, producing symptoms in some staff.[11,12] However, there was a weak correlation between decision making and sleep quality. It is possible that the respondents had already adapted to the workload and shifting schedules such that they are able to cope with the effects of sleep deprivation and fatigue. Thus, poor sleep quality may not necessarily translate into poor decision making among the staff nurses in the study but fatigue may decrease the chance of good decision making by 80%.

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Table 3. Sleep quality and fatigue among staff nurses.

Fatigue/sleep quality	Poor sleep (PSQI > 5)	Good sleep (PSQI < 5)	Total
With fatigue (FAS > 21)	5	2	7
Without fatigue (FAS < 21)	15	6	21
Total	20	8	28

Table 4. Fatigue and clinical decision making among staff nurses.

Decision making/fatigue	With fatigue (FAS > 21)	Without fatigue (FAS < 21)	Total
Good (CDMNS > 140)	1	10	11
Poor (CDMNS < 140)	6	11	17
Total	7	21	28

References

1. Stubbings L, Chaboyer W, McMurray A. Nurses' use of Situation Awareness in decision making: An integrative review. J Adv Nurs 2012; 68(7): 1443-53. doi: 10.1111/j.1365-2648.2012.05989.x.
2. Fonteyn M, Ritter B. Nurses' use of situation awareness in decision making: An integrative review. 2008. Available from: www98.griffith.edu.au.
3. Thompson C, Culum N, McCaughan D, Sheldon T, Raynor P. Nurses, information use, and clinical decision making - the real world potential for evidence-based decisions in nursing. Evid Based Nurs 2004; 7: 68-72. doi: 10.1136/ebn.7.3.68.
4. Hirsch Allen AJ, Park JE, Adhami N, Sirounis D, Tholin H, Dodek P, et al. Impact of work schedules on sleep duration of critical care nurses. Am J Crit Care 2014; 23: 290-5.
5. Lockley SW, Barger LK, Ayas NT, Rothschild JM, Cseizler CA, Landrigan CP, Harvard Work Hours, Health and Safety Group. Effects of health care provider work hours and sleep deprivation on safety and performance. Jt Comm J Qual Patient Saf 2007; 33(11 Suppl): 7-18.
6. Rogers AE. The effects of fatigue and sleepiness on nurse performance and patient safety. In: Hughes RG, ed. Patient Safety and Quality: An Evidence-Based Handbook for Nurses. Rockville (MD): Agency for Healthcare Research and Quality (US); 2008.
7. Antonow JA, Smith AB, Silver MP. Medication error reporting: a survey of nursing staff. J Nurs Care Qual 200; 15(1): 42-8.
8. Buysse DJ, Reynolds CF, Monk TH, Berman SR, Kupfer DJ. The Pitts-burgh Sleep Quality Index: A new instrument for psychiatric practice and research. Psychiatry Research1989; 28(2): 193-213. doi: 10.1016/0165-1781(89)90047-4.
9. Michielsen HJ, de Vries J, van Heck GL. Psychometric qualities of a brief self-rated fatigue measure: The Fatigue Assessment Scale. Journal of Psychosomatic Research 2003; 54(4): 345-52.
10. Jenkins HM. A research tool for measuring perceptions of clinical decision making. Journal of Professional Nursing 1985; 1(4): 221-9.
11. Admi H, Tzischinsky O, Epstein R, Herer P, Lavie P. Shift work in nursing: is it really a risk factor for nurses' health and patients' safety? Nursing Economics 2008; 26(4): 250-7.
12. Bellebaum KL. The relationship between nurses' work hours, fatigue, and occurrence of medication administration errors. PhD dissertation. Ohio State University; 2008.