Open Access Library Journal
2024, Volume 11, e9687
ISSN Online: 2333-9721
ISSN Print: 2333-9705

Fatigue and Job Performance among Nurses at Tertiary Level Hospitals in Dhaka City

Zobaida Khatun, Jotsna Akter, Mohammad Nurul Anowar, Chung Yul Lee

Graduate Nursing Department, BSMMU, Dhaka
Email: zobaidabsmmu@gmail.com

How to cite this paper: Khatun, Z., Akter, J., Anowar, M.N. and Lee, C.Y. (2024) Fatigue and Job Performance among Nurses at Tertiary Level Hospitals in Dhaka City. *Open Access Library Journal*, **11**: e9687.
http://doi.org/10.4236/oalib.1109687

Received: December 15, 2024
Accepted: March 26, 2024
Published: March 29, 2024

Abstract

Background: Fatigue interfere better job performance of nurses and their job performance reflect quality care of patient. Objective: The objective of the study was to examine the level of fatigue and job performance and their relationship among nurses at the two tertiary level hospitals in Bangladesh. Methods: A descriptive cross sectional design was used to conduct this study. A total of 120 registered nurses were selected conveniently. Face to face interview was conducted to collect data by means of a socio-demographic questionnaire (DQ-17 items), 2) Nurses Fatigue Questionnaire (NFQ – 19 items) and 3) Performance Measurement Scale (PMS – 16 items). In this study, the Cronbach's alpha of NFQ was 0.84 and the PMS was 0.78. The data were analyzed by using of two sample t-test, ANOVA and correlation. Results: The total mean score of fatigue was 2.29 (SD = 0.722) in 7 point rating scale, indicated lower than average fatigue level and the total mean score of job performance was 6.26 (SD = 0.618) in 7 point rating scale, indicated higher than average job performance. The Pearson Product correlation found that nurses job performance were negatively correlated with their level of fatigue ($r = -0.303$, $p = 0.001$). Conclusion: This study result demonstrated, nurses fatigue score and job performance score. Nurses' fatigue has negative correlation on job performance. Other significant factor related to job performance was working hour per week. Hospital authority should take initiative to reduce causes of nurses' fatigue and enrich their job performance.

Subject Areas

Health Policy, Nursing

Keywords

Fatigue among Nurses, Nurses Job Performance, Tertiary Level Hospital

1. Introduction

Fatigue among nurses and job performance are two specific nurse outcomes. An ongoing focus on these two nursing outcomes is desired for the need of current nursing quality care because it is now a global issue [1]. Fatigue interference better job performance of nurses and their job performance enhance quality on patients' care [2].

Fatigue among nurses is related to physical, psychological, social and spiritual issues. Physical fatigue was related to workload, nurse shortage, nurse staffing, shifting duty, and lack of sleep [3] [4]. Lack of job security and safety, night shift duty, poor work environment, balance of work and family life had the highest level of psychological and social stress among nurses in [5]. Work environment, coworkers' and supervisors' supports are important for the psychosocial care of nurses. Spiritual suffering among nurses between balance of work and family life conflicts by reason of extended working hours especially night shift duty, shifting work, and inflexible and/or chaotic working programs and weekend day working hours can especially interfere with family needs. As a result, they have accomplished feelings of insufficiency in performance of their work [4].

Nurses' job performance is one of major concern all over the world [6] including in South Asia region [7] [8] conducted a study in India and findings revealed that female nurses suffer from fatigue regarding their job performance.

Health care services are currently focusing on patient safety and quality of care [9]. Nurses job performance are closely associated the quality of health services in health care settings. This is because; nurses are the largest workforce in hospitals for providing clinical and nursing care with other health team members through collaborative approach [10].

However, nurses always face difficulties providing services to clients for various reasons. Like, lack of motivation either intrinsic or extrinsic, lack of concentration, and physical inability especially during posture change of patients [11]. Motivation is a factor that influences nurses' job performance. Concentration deficits is result of take away workers from thinking clearly, make mistake repeatedly, and difficult to complete the physical demands of their work. Such scenario is might responsible for current nurses' poor job performance [12].

Perception of fatigue level and perception of performance are inversely interrelated among hospital nurses [3]. Hospital nurses are likely to continue best work performance, however, fatigue can make threats safe practice and the consequence is poor patient outcomes. Nurses always run into nonstandard work schedule, long work hours, and circadian adjustments to night shifts as well this profession in itself is physically and mentally laborious, thus, they turn into fatigue automatically and their performance become a challenge [13].

2. Objectives

2.1. General Objective

The objective of the study is to examine the level of fatigue and job performance

and their relationship among nurses at two tertiary level hospitals in Dhaka city.

2.2. Specific Objectives

To identify the level of nurses' fatigue at two tertiary level hospitals in Dhaka city.

To assess the level of nurses' job performance at two tertiary level hospitals in Dhaka city.

To examine the relationship between nurses' fatigue and job at two tertiary level hospitals in Dhaka city.

3. Methods

This chapter describes the methodology including study design, study participants, instruments, data collection methods and data analysis.

3.1. Design

A descriptive cross-sectional study design was used to assess fatigue and job performance among nurses at tertiary level hospitals.

3.2. Sample

Registered nurses who were working at hospital. Sample size: In this study sample size was 120 + 24 = 144 (including attrition rate) which was estimated by using G power software analysis with an acceptable level of significance (α) of 0.05, an expected power of 0.80 ($1 - \beta$), and an estimated population effect size of 0.25 (Υ) as the lowest effect size.

Research Period: July 2017-June 2018

Sampling technique: Convenience sampling technique was used to select the sample based on the following inclusion criteria:

- Job experience as a registered nurse for at least 5 years.
- Agreed to participate in this study.

3.3. Instruments

The instrument of this consists of three parts. These are Demographic questionnaire (DQ), Nurses Fatigue Questionnaire (NFQ) and Performance Measurement Scale (PMS).

Part 3.1 Demographic questionnaire (DQ)

This questionnaire consisted to assess the subjects' general and professional data including age, gender, designation, marital status, professional education, duration of service, number of family members, disease, monthly income, job responsibility and shifting duty.

Part3. 2 Nurses' Fatigue Questionnaire (NFQ)

Nurses Fatigue Questionnaire was developed by researcher. This scale consists of 19 items under four subscales. These four subscales are subjective feeling of fatigue (9 items), concentration (4 items), motivation (4 items) and physical ac-

tivity (2 items). Each item was rated using 7 point rating scale, ranging from 1 = strongly disagree to 7 = strongly agree. The Cronbach's alpha for the 19-items scale was 0.84. Among 19 items, 8 items was positive statement. After entering data, these coding items were inverted. For each fatigue items, higher percentages (%) of nurses' agreement indicate higher fatigue, while lower percentages (%) of disagreement indicate the lower fatigue. So overall the higher average score means the higher fatigue.

Part 3.3 Performance Measurement Scale (PMS)

The standard pretested performance scale (Ko, Lee & Lim, 2007) was used in this study. Researcher was modified the performance scale by reconstruct and concise the items for make reliable to use in context of Bangladesh. The Performance measurement scale consists of 16 items under 4 factors. These four factors are competency (7 items), attitude (3 items), willingness to improve (3 items) and application of nursing process (3 items). Each item was rated using 7 point rating scale, ranging from 1 = not well to 7 = very well. The Cronbach's alpha for the 16-item scale was 0.78. For each job performance items, higher percentages of agreement indicate higher job performance and lower percentages of agreement indicate lower job performance.

These instruments were back translated and revised into a bangle version by MD. Atiar Rahman, Asst. Registrar and Dr. Krisna Prio Das, Associate Professor, BSMMU.

3.4. Data Collection

Prior to data collection, the proposal was approved by the Institutional Review Board (IRB), NIANER and BSMMU. Then, permission to collect data was given by Shahid Sawardhy Medical College and Hospital and Bangabandhu Sheikh Mujib Medical University. The objectives of the study were explained to the nursing superintendents and ward in charges to provide help during data collection. The researcher collected eligible candidate list especially those who has 5 years working experiences from nursing superintendents' office. Purpose of the study was explained by the researcher to the subjects. Data was collected by face to face interview through questionnaire. After explaining the purpose of the study, the researcher was requested them for written informed consent from the subjects who agreed to participate in this study.

3.5. Data Analysis

After completion of data collection, data was cheeked & manage for consistency to minimize error. Data was analyzed using computer software.

Descriptive statistics: Descriptive statistics such as frequencies, percentages, mean, and standard deviations was used to describe the sample characteristics.

Inferences statistics: Two sample t-test, ANOVA and correlation were used to test the relationship between demographic variables and nurses' fatigue and job performance.

4. Results

This chapter presents and discuss the findings of the study. Firstly, describes nurses' general characteristics and professional characteristics. Secondly, demonstrates nurses' fatigue and job performance. Thirdly, illustrates relationship between fatigue and job performance, general characteristics and fatigue, professional characteristics and fatigue, general characteristics and job performance, professional characteristics and job performance.

4.1. Nurses' General and Professional Characteristics

The mean age of nurses was 34.59 (SD = 7.06) years. Most of them were female (95.8%) and married (88.3%). Two third (61.7%) of nurse lived with nuclear family and nearly half (47.5%) of them had 3 - 4 family members. 81.7% nurses had no history of having disease. The average family monthly income was 70304.17 (SD = 3346855). The average weekly working hours of the nurses was 45.37 (SD= 4.32) and majority of them worked 41 - 50 hours in a week (Table 1).

According to educational degree, most of nurses (70.0%) has had Diploma in Nursing, while, 21.7% had obtained Bachelor degree and only 8.3% nurses had MPH. The mean working experiences score of nurses was 12.83 (SD = 6.78) years. The majority of them (78.3%) worked as clinical nurse and rests of them were ward in charge (21.7%) (Table 2).

Table 1. Distribution of nurses by their general characteristics (N = 120).

Characteristics	Category(s)	n	(%)	M (SD)
Age (*years*)				34.59 (7.06)
	<30	51	(42.5)	
	30 - 40	45	(37.5)	
	>40	24	(20.0)	
Min = 25 years Max = 56 years				
Sex				
	Male	5	(4.2)	
	Female	115	(95.8)	
Marital Status				
	Married	106	(88.3)	
	Unmarried	11	(9.2)	
	Widowed	3	(2.5)	
Family Type				
	Nuclear family	74	(61.7)	
	Joint family	39	(32.5)	
	Single	7	(5.8)	

Continued

Family members			
1 - 2 members	24	(20.0)	
3 - 4 members	57	(47.5)	
>4 members	39	(32.5)	
Disease			
Disease not have	98	(81.7)	
Disease have	22	(18.3)	
Family monthly income			70304.17 (33468.55)
≤50,000	48	(40.0)	
51000 - 100,000	64	(53.3)	
More than 100,000	8	(6.7)	
Min = 20,000 Max = 200,000			

Table 2. Distribution of nurses by their professional characteristics (N = 120).

Characteristics	Category(s)	N	(%)	M (SD)
Level of professional education				
	Diploma in Nursing	84	(70.0)	
	BSc in Nursing	26	(21.7)	
	MPH	10	(8.3)	
Working experience as Registered Nurse				12.83 (6.78)
	≤10 years	63	(52.5)	
	11 - 20 years	42	(35.0)	
	≥21 years	15	(12.5)	
Min = 5 years, Max = 31 years				
Job responsibility				
	Ward Incharge	26	(21.7)	
	Clinical Nurse	94	(78.3)	
Duty hour per week				45.37 (4.32)
	≤40 hours	5	(4.2)	
	41 - 50 hours	86	(71.2)	
	>50 hours	29	(24.2)	

4.2. Relationship between Fatigue and Job Performance and General and Professional Characteristics

The result showed that elder nurses had comparatively more fatigue than younger. However, it was statistically not significant. r = 0.140, p = 128. Nurses who were widowed showed higher fatigue in compared to married and unmarried and statistically not significant (p = 0.061). Nurses having diseases showed high level of

fatigue than those who have no disease. t = −1.44, p = 0.152. This result was not statistically significant (Table 3).

Professional characteristics and fatigue among nurses showed that nurses having more than 21 years working experience as registered nurse showed higher fatigue score than having less working experience (F = 3.14 p = 0.036). (Table 4)

The relationship between general characteristics and job performance among nurses. According to findings, the aged nurses showed low job performance, but, this result was not significant. r= −0.081, p = 0.382. The study finding also showed that female nurses performed significantly higher job performance than male (t = −2.77 p = 0.003). Finding also revealed that nurses having more family members had relatively better performance in compared to nurses who had less family members. However, it was not statistically significant. F = 2.27, p = 0.170. (Table 5)

Between professional characteristics and job performance among nurses showed that nurses who were worked more than 50 hours in a week had higher job performance than who had worked less hours (F = 3.86, p = 0.024). The Pearson Product correlation found that nurses job performance were negatively

Table 3. The relationship between general characteristics and fatigue among nurses (N = 120).

Variable(s)	Category(s)	M (SD)	t/F/r	p
Age			0.140	0.128
Gender	Male	2.57 (0.711)	0.87	0.383
	Female	2.28 (0.723)		
Marital status	Married	2.27 (0.697)a	2.8	0.061 c. > a, b
	Unmarried	2.26 (0.692)b		
	Widowed	3.27 (1.29)c		
Types of family	Nuclear family	2.33 (0.758)	0.97	0.379
	Joint family	2.18 (0.623)		
	Single	2.54 (0.850)		
Family members	1 - 2 members	2.41 (0.720)	0.72	0.485
	3 - 4 members	2.32 (0.809)		
	>4 members	2.29 (0.722)		
Disease	Disease not have	2.64 (0.646)	−1.44	0.152
	Disease have	2.86 (0.717)		
Family monthly income	≤50,000	2.28 (0.695)	0.27	0.761
	51,000 - 100,000	2.28 (0.749)		
	>100,000	2.48 (0.729)		

correlated with their level of fatigue (r = −0.303, p = 0.001). It means that higher the nurses fatigue, lower the nurses job performance (Table 6).

Table 4. The relationship between professional characteristics and fatigue (N = 120).

Variable(s)	Category(s)	M (SD)	t/F	p
Professional education	Diploma in Nursing	2.29 (0.717)	0.394	0.675
	BSc in Nursing	2.23 (0.569)		
	MPH	2.47 (1.100)		
Working experience	≤10 years	2.32 (0.615)a	3.14	0.036 c > a, b
	11 - 20 years	2.12 (0.726)b		
	≥21 years	2.68 (0.984)c		
Job responsibility	Ward In charge	2.40 (0.736)	0.804	0.423
	Clinical Nurse	2.27 (0.720)		
Duty hour per week	≤40 hours	2.58 (0.699)	0.687	0.505
	41 - 50 hours	2.31 (0.751)		
	>50 hours	2.20 (0.640)		

Table 5. The relationship between general characteristics and job performance among nurses (N = 120).

Variable(s)	Category(s)	M (SD)	t/F/r	p
Age			−0.081	0.382
Gender	Male	5.42 (0.952)	−2.77	0.003
	Female	6.23 (0.568)		
Marital status	Married	6.19 (0.609)	0.257	0.774
	Unmarried	6.32 (0.659)		
	Widowed	6.27 (0.295)		
Types of family	Nuclear family	6.15 (0.585)	1.09	0.340
	Joint family	6.32 (0.599)		
	Single	6.15 (0.837)		
Family members	1 - 2 members	6.14 (0.662)a	2.27	0.170 c > b, a
	3 - 4 members	6.19 (0.589)b		
	>4 members	6.43 (0.612)c		
Disease	Disease not have		−0.482	0.632
	Disease have			
Family monthly income	≤50,000	6.24 (0.637)	1.61	0.202
	51,000 - 100,000	6.22 (0.623)		
	>100,000	6.64 (0.316)		

Table 6. The relationship between professional characteristics and job performance (N = 120).

Variable(s)	Category(s)	M (SD)	t/F/r	P
Professional education	Diploma in Nursing	6.20 (0.632)	0.334	0.717
	BSc in Nursing/BSc in PHN	6.31 (0.565)		
	MSc Nursing/Equivalent MPH	6.41 (0.512)		
Working experience	≤ 10 years	6.18 (0.682)	1.12	0.327
	11 - 20 years	6.30 (0.460)		
	≥21 years	6.20 (0.614)		
Job responsibility	Ward In charge	6.36 (0.641)	0.984	0.327
	Clinical Nurse/Sub-incharge	6.23 (0.611)		
Duty hour per week	≤40 hours	5.60 (0.550)a	3.86	0.024 c, a > b
	41 - 50 hours	6.25 (0.640)b		
	>50 hours	6.41 (0.484)c		
Fatigue			−0.303**	0.001

5. Discussion

The study aim was to examine the level of fatigue and job performance and their relationship among nurses.

The discussion of this study is in following way:

1) Nurses' fatigue

2) Nurses' job performance

3) Relationship between nurses' fatigue and job performance

A descriptive study was conducted to identify the level of fatigue and job performance among nurses in Bangladesh.

In present study, nurses working experience was minimum 5 years, because, 5 years of working experience is turning point to think about promotion, in service education, married, child bearing, and family responsibility and so on. This study conducted in two tertiary hospitals. It might be related to get respondents with minimum 5 years working experience.

5.1. Nurses' Fatigue

Higher score indicates higher level of fatigue. This study found that the nurses mean score of fatigue was 2.66 (SD = 0.722) with minimum 1.95 and maximum 3.16. In this study, nurses seem that they have lower level of fatigue. Despite using different fatigue scale, [14] found that female nurses working in a teaching hospital in Iran had moderate level of fatigue. Similarly, in other study also found that moderate level of fatigue among nurses working in acute care setting [15]. In present study lower level of fatigue among nurses would be due to appointment of new nurse in both study setting and other cause may be the nurses in Bangladesh still perform hands on nursing care rather than focus on specific

patient need. In addition, a qualitative study explored that nurses naturally talking avoid or acknowledging fatigue due to fear of losing their autonomy [16].

However, several study found that some factors contributing to increases the nurses' fatigue due to longer length of work and same work place, longer shift hour per week, work environment, increased workload demands and individual characteristics like role demand and night duty also responsible and associated to total physical fatigue levels [3] [17] and [18]. It was found that nurses who were working more than 40 hours per week in hospitals they felt more fatigue than who had working less than 40 hours. Therefore, this study also revealed that nurses had high level of fatigue; get drowsier due to working shift longer than 12 hours. This result also similar to other study [14].

In present study, nurses reported higher fatigue in 3 items. These were physically I feel exhausted (mean = 3.24), I feel that most of the time I'm just "Living to Work" (mean = 4.85) and My thoughts easily wander* (mean = 3.00) respectively. This result would be due to participated nurses in this study were mostly female and married. So they have to perform their family and social roles beside their job responsibility. In the study, it was also mentioned that fatigue among nurses caused by family roles such as parenting and their relationship with their spouse overlap with their careers [19].

5.2. Nurses' Job Performance

In present study, the total mean score of job performance was 6.26 (SD = .618) with minimum score 5.41 and maximum score 6.68 in 7 point likert like scale. 1 = strongly disagree and 7 = strongly agree. This study finding demonstrated that nurses had higher level job performance. Whereas, a study [20] found that the job performance level among nurses in public hospital in Kingdom of Saudi Arabia was moderate. Other Saudi Arabian study was conducted [21] found that the average nurses job performance was 3.52 in a 5-point rating scale indicating the moderate level of job performance.

The higher job performance among nurses in this study may be due to their long time working experience as registered nurse. The working experience of nurses in this study was range from 5 to 21 years with mean age 12.59 years. In addition of that using self-administered questionnaire may be other reason for showing the higher level of job performance among nurses because they got opportunity to give socially desirable response to job performance items [1].

5.3. Relationship between Fatigue and Job Performance and Others

Nurses' fatigue is one of major contributing factors to decrease job performance. The result of the study showed that, nurses fatigue has significant negative correlation on job performance (($r = -0.303$, $p = 0.001$) which indicates that higher the nurses fatigue, lower the nurses job performance. The findings were similar to other studies.

A study conducted on" Fatigue, performance and the work environment: a survey of registered nurses" by used four fatigue scale (SOFI, F-RSQ, FAS and OFER) and Performance Measurement Instrument (PMI). Study findings reported that fatigue dimensions were correlated with performance measures. Mental fatigue measures tended to have higher negative correlations with the performance measures than did either physical fatigue or total fatigue [3]. Other study finding revealed that nurses reported that work-related fatigue moderately affected their job performance (M = 5.56, SD = 2.49) [13].

In present study, result showed that senior nurses had comparatively more fatigue than younger, though it was not statistically significant. This result is consistent with previous study in India. In this study, result showed that the female nurses in both the age groups *i.e.* 30 - 45 years and 45 - 60 years suffer from fatigue regarding their job performance [8]. In difference with other study [19] conducted a study on "The State of Fatigue and Sleep among Clinical Nurses in Japan". They also focused on nurses who had twenties they had higher rate of fatigue because of 20s and 30 years' nurses play an important role to taking care of family as well as hospital job responsibilities which affects the nurses' physical health that might be increase their fatigue.

6. Conclusion

This study result demonstrated, nurses fatigue score and job performance score. Nurses' fatigue has negative correlation on job performance. Other significant factors related to job performance were working hour per week and male nurse. Hospital authority should take initiative to reduce causes of nurses' fatigue and enrich their job performance.

The findings of the study cannot be generalized, since, the reliability of fatigue questionnaire was tested using Cronbach Alpha with real data rather than test retest reliability because of time limitation. Job performance scale was originally developed (Ko, Lee & Lim, 2007) in Korea used in this study without cultural sensitivity test in contest of Bangladesh. Study sample was selected by using convenience sampling technique rather than random sampling.

Recommendations

- Following recommendations are made base on the findings of this study:
- Qualitative design with in depth interview is needed to explore the real fatigue and job performance among nurses.
- It is essential to develop standard tool for measuring fatigue and job performance of nurses in Bangladesh.
- Further study would be conducted to explore factors related to nurse fatigue in their working place.
- Hospital authority should consider the causes of fatigue among nurses, especially why male nurses perform less job performance and how to reduce nurse fatigue.

- The results (collective information) would be reanalyzed to compare nurses' fatigue and job performance status between two different hospitals.

Conflicts of Interest

The authors declare no conflicts of interest.

References

[1] Al-Hamdan, Z., Manojlovich, M. and Tanima, B. (2017) Jordanian Nursing Work Environments, Intent to Stay, and Job Satisfaction. *Journal of Nursing Scholarship*, **49**, 103-110. https://doi.org/10.1111/jnu.12265

[2] Seaman, C.W. (2015) An Evaluation of Fatigue Management Strategies Implemented on Hospital Nursing Units. Doctoral Dissertation, The University of North Carolina, Chapel Hill.

[3] Barker, L.M. and Nussbaum, M.A. (2011) Fatigue, Performance and the Work Environment: A Survey of Registered Nurses. *Journal of Advanced Nursing*, **67**, 1370-1382. https://doi.org/10.1111/j.1365-2648.2010.05597.x

[4] Kunaviktikul, W., Wichaikhum, O., Nantsupawat, A., Nantsupawat, R., Chontawan, R., Klunklin, A., Roongruangsri, S., Nantachaipan, P., Supamanee, T., Chitpakdee, B. and Akkadechanunt, T. (2015) Nurses' Extended Work Hours: Patient, Nurse and Organizational Outcomes. *International Nursing Review*, **62**, 386-393. https://doi.org/10.1111/inr.12195

[5] Islam, M.Z. and Siengthai, S. (2009) Quality of Work Life and Organizational Performance: Empirical Evidence from Dhaka Export Processing Zone. *Conference on Regulating for Decent Work*, Geneva, 7 July 2009, 1-19.

[6] Platis, C., Reklitis, P. and Zimeras, S. (2015) Relation between Job Satisfaction and Job Performance in Healthcare Services. *Procedia-Social and Behavioral Sciences*, **175**, 480-487. https://doi.org/10.1016/j.sbspro.2015.01.1226

[7] Azmoon, H., Nodooshan, H.S., Jalilian, H., Choobineh, A. and Shouroki, F.K. (2018) The Relationship between Fatigue and Job Burnout Dimensions in Hospital Nurses. *Health Scope*, **7**, e80335. https://doi.org/10.5812/jhealthscope.80335

[8] Rathore, H., Shukla, K., Singh, S. and Tiwari, G. (2012) Shift Work-Problems and Its Impact on Female Nurses in Udaipur, Rajasthan India. *Work*, **41**, 4302-4314. https://doi.org/10.3233/WOR-2012-0725-4302

[9] Simanjorang, A., Dalimunthe, R.F., Mutiara, E. and Silaban, G. (2016) The Influence of Job Stressor to Performance of Nurses in Pirngadi General Hospital of Medan-Indonesia. *International Journal of Nursing, Midwife and Health Related Cases*, **2**, 54-60.

[10] Lee, W.H., Kim, S. and An, J. (2017) Development and Evaluation of Korean Nurses' Core Competency Scale (KNCCS). *Open Journal of Nursing*, **7**, 599-613.

[11] Hee, O.C. and Kamaludin, N.H. (2016) Motivation and Job Performance among Nurses in the Private Hospitals in Malaysia. *International Journal of Caring Sciences*, **9**, 342-347.

[12] Carvalho, D.P., Rocha, L.P., Tomaschewski-Barlem, J.G., Barlem, E.L., Cecagno, D. and Dalmolin, G.D. (2018) Productivity versus Workloads in the Nursing Working Environment. *Revista da Escola de Enfermagem Da USP*, **51**, e03301. https://doi.org/10.1590/s1980-220x2017028903301

[13] Sagherian, K., Clinton, M.E., Abu-Saad Huijer, H. and Geiger-Brown, J. (2017) Fatigue, Work Schedules, and Perceived Performance in Bedside Care Nurses.

Workplace Health & Safety, **65**, 304-312. https://doi.org/10.1177/2165079916665398

[14] Pourmovahed, Z. and Nasiriani, K. (2016) Perception of Fatigue in Female Nurses Employed in Hospitals. *Women Health Open Journal*, **3**, 1-7. https://doi.org/10.17140/WHOJ-3-115

[15] Alahmadi, B.A. and Alharbi, M.F. (2018) Work-Related Fatigue Factors among Hospital Nurses: An Integrative Literature Review. *Nurse Media Journal of Nursing*, **8**, 113-133. https://doi.org/10.14710/nmjn.v8i2.19554

[16] Steege, L.M. and Rainbow, J.G. (2017) Fatigue in Hospital Nurses—"Supernurse" Culture Is a Barrier to Addressing Problems: A Qualitative Interview Study. *International Journal of Nursing Studies*, **67**, 20-28. https://doi.org/10.1016/j.ijnurstu.2016.11.014

[17] Da Silva, F.J., Felli, V.E., Martinez, M.C., Mininel, V.A. and Ratier, A.P. (2016) Association between Work Ability and Fatigue in Brazilian Nursing Workers. *Work*, **53**, 225-232. https://doi.org/10.3233/WOR-152241

[18] Groundwater, M.L. (2014) Exploration of Fatigue in Second Year Nursing Students.

[19] Sumi, N., Sugimura, N., Yoshida, Y. and Yano, R. (2017) The State of Fatigue and Sleep among Clinical Nurses in Japan. *Open Journal of Nursing*, **7**, 1493-1501. https://doi.org/10.4236/ojn.2017.712104

[20] Al-Homayan, A.M., Mohd Shamsudin, F., Subramaniam, C. and Islam, R. (2013) Impacts of Job Performance Level on Nurses in Public Sector Hospitals. *American Journal of Applied Sciences*, **10**, 1115-1123. https://doi.org/10.3844/ajassp.2013.1115.1123

[21] Al-Ahmadi, H. (2009) Factors Affecting Performance of Hospital Nurses in Riyadh Region, Saudi Arabia. *International Journal of Health Care Quality Assurance*, **22**, 40-54. https://doi.org/10.1108/09526860910927943