PREVALENCE OF SLEEP QUALITY AMONG SHIFT NURSES IN A SELECTED PRIVATE HOSPITAL

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ABSTRACT

This study is to determine the level of sleep quality and its relationship between demographic variables among shift nurses in a selected private hospital in Klang Valley, Malaysia. A quantitative cross-sectional design study was conducted on total 286 of shift working nurses. The data were collected by using Pittsburgh sleep quality index (PSQI) to determine the level of sleep quality and survey on demographic information. Findings show that 66.4% (n = 190) with global PSQI score more than 5. There is significance difference between the global PSQI score by the types of family structures and frequency of night duty per month among nurses. Conversely, there are no significance difference in the median global PSQI score between nurses' age, gender, presence of children, presence of child/parents with chronic illness/development disability, as well as their current working department groups. Findings show that majority of the shift work nurses have poor sleep quality. There is a significance different between the global PSQI score by the types of family structures and frequency of night duty per month.

Keywords: *Occupational health; occupational hazard; patient care; PSQI; registered nurses; shift nurses; shift work; sleep quality.*

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1. INTRODUCTION

In partnership with other healthcare teams, nurses are healthcare professionals who are in charge of promoting health and providing high-quality nursing care to both well and ill individuals, their families, and communities. As a result of their working conditions, such as an erratic schedule and night shifts that will impact their circadian rhythms (Cheng & Drake, 2019), shift-working nurses are very likely to experience poor quality sleep. For nurses who work shifts, getting a good night's sleep is crucial because poor sleep affects not only their physical and mental well-being but also their performance, including their capacity for clinical judgement and decision-making, both of which have an impact on patient care and outcomes. The indicators of good sleep quality have been identified by National Sleep Foundation (2019) are falling asleep within 30 minutes time, sleeping at least 85% while in bed, waking up not more than once in a night and being awake for less than 20 minutes after first falling asleep.

Along with the rapid growth in healthcare globally, the selected private hospital is known as one of the top leading tertiary private hospitals in Malaysia. Therefore, nursing workforce demand is increasing at a remarkable rate in order to fulfill the healthcare demands and maintain the quality of patient care. As a result, sick absence rates among the nursing team in the selected private hospital are significantly increased very likely due to exhaustion from frequent night duty and overtime to cover for staff shortage. Hence, good quality of sleep is very essential for the shift work nurses' physical and mental well-being while providing quality of nursing care. Although shift work is the main factor of causing poor sleep quality among shift nurses, shift work is compulsory for most of the nursing staff (Lee et al., 2015). Therefore, a better understanding of their demographic characteristics is important in assisting them to enhance quality of sleep and quality of nursing care among the shift nurses.

In fact, the level of sleep quality among Malaysia shift nurses has not been well studied. The last similar study conducted on the Malaysia public nurses by Nazatul et al. (2008) with their findings revealed that shift working nurses had 2.3 times of poor sleep quality as compared to non-shift working nurses. Therefore, it is time for the researchers to conduct the study as there was no similar study conducted to investigate the sleep quality of shift working nurses after year 2008 in Malaysia. Moreover, few studies have been carried out in other country have presented a significant relationship between the level of sleep quality and demographic variables among the shift working nurses includes their age, gender, working department, professional status, employment status, total years of service

(Dong et al., 2017), working hospital, length of experience (Adam et al., 2019) and the number of night duty (Dong et al., 2017; Adam et al., 2019) among the shift working nurses.

However, lack of the literatures in assessing the possible confounding factors such as family issues that could affect the quality of sleep among shift-working nurses. Single parents are very likely to encounter poor sleep quality as compared to two-parent families (Dong et al., 2017; Adam et al., 2019, Kowitlawkul et al., 2018 & Hamid et al., 2017). Therefore, this study aims to determine the level of sleep quality and identify its possible association with demographic variables by adding the possible confounding variables among the shift duty nurses who are working in the selected private hospital, Klang Valley, Malaysia. This study aims to assess the sleep quality level among shift work nurses in addition to determine the relationship between the sleep quality level and demographic variables among shift working nurses in one of the selected private hospitals.

2. REVIEW OF LITERATURE

A research study done by Dong et al. (2017) on sleep quality of shift-working nurses in six general hospitals in Mainland China. Findings revealed that there were significant positive correlations between age, gender, working department, night shift frequency and total years of service with the level of sleep quality. Moreover, in a recent study in Spain, found there was a positive relationship between marital status and the level of sleep quality (Perez-Fuentes et al., 2019). These demographic variables are benefited to be studied further in assessing the level of sleep quality among shift work nurses because it clearly

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affects the nursing care outcome since the level of sleep quality has shown a positive correlation with the demographic variables.

2.1 Level Of Sleep Quality Among Shift Work Nurses

In Iran, the night sleep quality of the nurses was evaluated by using Pittsburgh Sleep Quality Index (PSQI). The findings showed that 85.7% of the shift-worked nurses were bad sleeper with total PSQI score ≥5 (Akbari et al., 2016). The researchers had suggested there is a need to perform future studies to investigate this highly poor sleep quality among shift work nurses. Furthermore, another study by Momeni and colleague (2016) investigated the degree of sleep quality, work-life quality, and their relationship in 180 clinical nurses working in intensive care units in Mazandaran, Iran, showed that 61.7% of the nurses reported having poor sleep quality. There is another study done in a hospital in North-West Nigeria on sleep quality and the tendency of daytime sleepiness among 100 nurses (Aliyu et al., 2017). In this study, the findings revealed that 61% of the participants had poor sleep quality with the age among the 25-40-year-old group was the most prevalent. In Istanbul, study on 152 nurses revealed that 61.9% of the nurses had poor sleep quality and it is significant associated with night duty, age and increased fatigue and anxiety levels (Tarhan et al., 2018).

2.2 Relationship Between The Level Of Sleep Quality And Demographic Variables Among Shift Work Nurses

According to a study conducted on 200 shift nurses in Iran, 95.5% of the nurses reported poor sleep quality, with an overall

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sleep quality score of below 5 (Sepehrmanesh et al., 2020). One of the PSQI components, daytime dysfunction, had a strong connection with gender. However, there was no correlation between the other PSQI subscales and the demographic factors. Another study by Adam et al. (2019) used the PSQI to assess the sleep quality of 152 shift-working nurses from three non-government hospitals in Palestine. The average PSQI score for all participants in this study was 9.09, which indicated that the majority of them had poor sleep quality. Besides that, the association between level of sleep quality and demographic data of the participants showed type of hospitals with $\rho = 0.023$, length of experience with $\rho = 0.022$ and followed by the number of night duty with $\rho = 0.028$ are statistically significant with the total sleep quality score among the shift duty nurses in this study.

The researchers suggested the development of specific personal strategies for their nature of stress from shift-working nurses themselves and policies from the hospital to reduce long working hours, especially for night duty, introduce rest time in-between shift, providing sufficient meal time and fair distribution on the working schedule. There is another study done by Attia (2016) to determine the effect of shift duty on sleep quality among the nurses. The study was carried out by using a quantitative descriptive survey with a total sample of 100 nurses from 3 different hospitals. Their level of sleep quality was measured by using the PSQI questionnaire. The result of the study revealed that 65% of the nurses were poor sleeper. The findings of the study also demonstrated that participants' age and the working department was significantly associated with total PSQI score with $\rho = 0.033$ and $\rho = 0.013$.

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3. RESEARCH METHODOLOGY
3.1 Research Design and Study Site

A quantitative cross-sectional design study was used in the study to assess sleep quality level among shift nurses and determine the relationship between demographic variables and the status of sleep quality in a private hospital in Petaling Jaya, Selangor. The study was conducted in a selected private hospital, Klang Valley, Malaysia. The hospital is a Malaysian Society for Quality in Health (MSQH) and Australian Council on Healthcare Standards (ACHS) accredited private hospital located in Malaysia. This hospital is established in November 1999 currently with 600 licensed beds, 180 consultation suites, 12 operating theatres which offers comprehensive tertiary and extensive healthcare services including facilities and advanced medical technologies for outpatient and inpatient specialist care, health and wellness programmers, and 24-hour emergency services. The reason for conducting the study in the selected private hospital because this hospital is one of Malaysia's top leading tertiary hospitals. Therefore, nursing workforce demand is increasing at a remarkable rate to fulfill the healthcare demands, causing the nurses on frequent night duty and overtime to cover for staff shortage.

3.2 Sampling Technique

A total of 1000 registered nurses are working shift duty in this hospital, and our target population is 800 participants. This study used a simple random sampling technique. Hence, a total of 800 participants to be generated by Microsoft Excel random sample. Using the Raosoft sample size calculator makes the total sample size 286 participants with a 5% margin error, 95%

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confidence interval, 50% distribution rate, and 10% (n=26) attrition rate added to the calculated sample size. The invitation to participate in this study is based on the inclusion and exclusion criteria. The inclusion criteria were registered nurses who were on shift duty. Exclusion criteria included (a) The nurse manager, (b) a registered nurse is working office hours and permanent night duty, (c) a female registered nurse who is a pregnant, (d) registered nurse with a regular prescription for sleep-related or any other chronic diseases.

3.3 Instrument

The instrument used in the study is the Pittsburgh sleep quality index (PSQI). Permission to use the PSQI instrument has been obtained from the author. The questionnaire is divided into two sections. Section A consists of a total of eleven demographic data. The questions include age, gender, ethnicity, marital status, number of children, children or parents with chronic illness or development disability, family structure, highest educational level, years of service, current working department, and night shift frequency (per month). Section B consists of 19 self-rated questions of PSQI with seven component scores: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication, and daytime dysfunction. The scores of seven component will be add in together then to calculate the global PSQI score. The total score varies between 0 and 21 points, "0" indicating no difficulty, and "21," showing severe challenges in all areas. The higher the total score, the higher the perceived usefulness of the system.

3.4 Pilot Study, Validity And Reliability Test

The pilot study was conducted in another branch of the selected private hospital under same management. It is located 45 min away from the location of the hospital for main study. Thirty registered nurses have carried on the pilot study, and they have excluded from the main study. The director of nursing, the assistant director of nursing, and the senior nurse manager from the critical care unit have been invited as a panel of experts to determine the content validity, relevance, and appropriateness of the language used in the questionnaire. The Cronbach's alpha test is done after the pilot study to evaluate the scale's reliability, and the composite reliability values are 0.717.

However, interesting to note that the component of use of sleeping medication has lower Cronbach's alpha value which is 0.10. Christian et al. (2019) had carried out a study as to survey the prevalence of sleep insufficiency and sleep disorders in nurses at an academic medical center. One of the results showed in this study is total 27% of nurses used medications to assist with sleep and total 13% of nurses using medications to stay awake. Therefore, the component of use of sleeping medications was not removed. Also, the panel of experts have reviewed the result and the component of subjective sleep quality, sleep duration, use of sleeping medication and daytime dysfunction was not removed because its possible factors to contributing to sleep quality.

3.5 Ethical Consideration

The study is approved by the IMU Join Committee (IMUJC) on Research and Ethics with Project ID BN1/2020 (PR-02). Permission to conduct the pilot study and main study have been approved by the Director of Nursing and clinical research center of the selected private hospital with SMRR no: SMRR/SMC/20/018. All participants have invited to participate in the study voluntarily. Purposes of the study has informed and the confidentiality is assured. As the questionnaires have distributed to participants, anonymity will be confirmed. The questionnaires also do not include the participants' names or addresses, and the participants need to sign the consent form attached. The data collection started from August 2020 to September 2020. The explanation as the study information sheet is given to all volunteer participants and signed written informed consent form. Participants is taken 15 to 20 minutes to complete the questionnaire. After completed, the questionnaire seal by participants and put into envelopes. The researcher collected the questionnaire on the same day.

4. RESULTS

In this study, simple random sampling technique via Microsoft Excel random sample was used. A total 286 nurses from general settings (Medical/Surgical ward) and critical care settings (ICU/CCU/HDU/NICU/ER) with the inclusion criteria of working shift duty in the selected private hospital, Klang Valley, Malaysia, were invited to participate in the study.

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4.1 Descriptive Analysis of Demographic Data

Table 1. Demographic data of participants (n =286)

Variables	Categories	Frequency (%)	M±SD
Age			27.96±4.85
	< 28	145 (50.7%)	
	≥ 28	141 (49.3%)	
Gender			
	Female	267 (92.1%)	
	Male	23 (7.9%)	
Ethnicity			
	Chinese	128 (44.8%)	
	Malay	93 (32.5%)	
	Indian	53 (18.5%)	
	Others	12 (4.2%)	
Marital Status			
	Single	204 (71.3%)	
	Married	80 (28%)	
	Divorced	2 (0.7%)	
Have Children			
	Yes	52 (18.2%)	
	No	234 (81.8%)	
Child/Parents with chronic illness / development disability			
	Yes	17 (5.9%)	
	No	269 (94.1%)	
Family Structure			

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	Nuclear family	254 (88.8%)
	Single-parent family	21 (7.3%)
	Stepfamily	2 (0.7%)
	Extended family	9 (3.1%)
Educational level		
	Diploma	267 (92.1%)
	Degree	23 (7.9%)
	Master	267 (92.1%)
Years of service		
	Less than 1 year	28 (9.8%)
	1-5 years	153(53.5%)
	6-10 years	82 (28.7%)
Current working department		
	Critical care (ICU/CCU/HDU/NICU/ER)	107 (37.4%)
	General settings (Medical/Surgical ward)	179 (62.6%)
Night-shift frequency (per month)		
	Few (< 4)	59 (20.6%)
	General (4- 8)	182 (63.6%)
	Many (> 8)	45 (15.7%)

As shown in table 1, the participants' age is ranging from 21 to 52-year-old with the mean age of 28-year-old. Therefore, the

researchers have further categorized the participants into two groups with 50.7% (n = 145) aged between 21 to 27 years and 49.3% (n = 141) aged between 28 to 52 years. 92.1% (n = 267) of the participants are female. Out of 286 participants, 44.8% (n = 128) were Chinese, 32.5% (n = 93) were Malay. In this study, 92.1% (n = 267) of the participants are single, whereas, 28% (n = 80) are married, followed by 0.7% (n = 2) are divorced. Therefore, 81.8% (n = 234) of the participants do not have children yet and the remaining 18.2% (n = 52) have children. Based on the findings, majority of the participants do not have child or parents with chronic illness or development disability which made up of 94.1% (n = 269), and minority, 5.9% n = 17) have child or parents with chronic illness or development disability. There were 88.8% (n = 254) of participants who is living in nuclear family, followed by 7.3% (n = 21) single-parent family, 3.1% (n = 9) extended family and 0.7% (n = 2) stepfamily.

There were 23.8% (n = 68) of the participants with a Bachelor of Nursing, 0.3% (n = 1) with a Master of Nursing, whereas the others with a Diploma of Nursing. Out of 268 participants, 63.3% (n = 181) have 1 to 5 years of nursing working experience, whereas 36.7% (n = 105) have more or equal to 6 years of nursing working experience. More than half of the participants are working in surgical/medical ward which made up of 62.6% (n = 179) and 37.4% (n = 107) are working in ICU/CCU/HDU/NICU/ER. Lastly, the results showed that 20.6% (n = 59) of the participants are having less than 4 nights duty, followed by 63.6% (n = 182) have 4 to 8 nights duty and 15.7% (n =45) have more than 8 nights duty per month.

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4.2 Descriptive Analysis of Pittsburg Sleep Quality Index (PSQI)

Table 2. Descriptive analysis on PSQI components (n = 286)

PSQI components	Component score	Frequency (%)	M ± SD
Subjective sleep quality (Q9)			0.72 ± 0.84
Very good	0	267 (93.4%)	
Fairly good	1	11 (3.8%)	
Fairly bad	2	5 (1.7%)	
Very bad	3	3 (1%)	
Sleep latency (Sum of Q2&Q5a)			1.41 ± 0.84
0	0	40 (14%)	
1-2	1	115 (40.2%)	
3-4	2	104 (27%)	
5-6	3	27 (9.4%)	
Sleep duration (Q4)			1.33 ± 1.02
> 7hours	0	7 (25.9%)	
< 7and ≥6hours	1	88 (30.8%)	
<6 and ≥5hours	2	80 (28%)	
< 5hours	3	44 (15.4%)	
Habitual sleep efficiency (Q1, Q3& Q4)			1.16 ± 1.13
≥ 85%	0	112 (39.2%)	
<85 and ≥75%	1	67 (23.4%)	
<75 and ≥65%	2	56 (19.6%)	
< 65%	3	51 (17.8%)	

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Sleep disturbance (Sum of Q5b-Q5j)			1.04 ± 0.55
0	0	36 (12.6%)	
1-9	1	204 (71.3%)	
10-18	2	44 (15.4%)	
>18	3	2 (0.7%)	
Use of sleeping medication (Q6)			0.10 ± 0.44
Not during the past month	0	145 (50.7%)	
Less than once a week	1	89 (31.1%)	
Once or twice a week	2	42 (14.7%)	
Three or more times a week	3	10 (3.5%)	
Daytime dysfunction (Sum of Q7&Q8)			1.26 ± 0.65
0	0	22 (7.7%)	
1-2	1	177 (61.9%)	
3-4	2	77 (26.9%)	
5-6	3	10 (3.5%)	
Global PSQI score			7.02 ± 3.09
≤5		96 (33.6%)	
>5		190 (66.4%)	

There are seven components in the PSQI questionnaire to measure the level of sleep quality among nurses. The seven components are subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medication and daytime dysfunction. Each of the components has a range of 0-3 points that make up the global

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PSQI score with a range of 0-21 points. A global PSQI score > 5 is indicating poor sleep quality. The frequency of the items for each of the components and the mean between seven components of the sleep quality's comparison are shown in Table 2. Sleep latency has the highest mean, 1.41 with the standard deviation of 0.84, followed by sleep duration (M = 1.33, SD = 1.02), daytime dysfunction (M = 1.26, SD = 0.65), habitual sleep efficiency (M = 1.16, SD = 1.13), sleep disturbances (M = 1.04, SD = 0.55), subjective sleep quality (M = 0.72, SD = 0.84) and lastly use of sleeping medication (M = 0.10, SD = 0.44). The study result shows that more than half of the nurses, 66.4% (n = 190) with global PSQI score more than 5 and 33.6% (n = 96) with global PSQI score equal or less than 5. The global PSQI score mean and the standard deviation was 7.02 and 3.09.

Table 3. Significance different between social demographic data and global Pittsburg Sleep Quality Index score by using Mann-Whitney U test (n = 286)

Variables	Global PSQI score		
	Mann-Whitney U Test	Z value	P value
Age	9859	- .522	0.601
Gender	2976.5	- .127	0.899

Have children	5411.5	- 1.253	0.21
Child/Parents with chronic illness/development disability	1895.5	- 1.188	0.235
Current working department	8857	- 1.068	0.285

4.3 Significance between the Level of Sleep Quality and Social Demographic Data Among Nurses

Mann-Whitney U test in Table 3 showed there was no significance difference in the median global PSQI score between nurses' age, gender, presence of children, presence of child/parents with chronic illness/development disability, as well as their current working department groups.

Table 4. Significance different between social demographic data and global Pittsburg Sleep Quality Index

Variables	Categories	Global PSQI score			
		Median	Mean rank	Kruskal-Wallis Tests	*P* value
Ethnicity				6.381	0.094
	Chinese	6.5	132.14		
	Malay	7	148.46		
	Indian	7	153.1		

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	Others	9.5	183.83		
Marital status				2.112	0.348
	Single	7	140.91		
	Married	7.5	151.65		
	Divorced	5	81.75		
Family structure				9.448	0.024*
	Nuclear family	7	140.69		
	Single parent family	7	147.55		
	Stepfamily	5.5	98.5		
	Extended family	11	223.5		
Educational level				3.682	0.159
	Diploma	7	145.82		
	Degree	7	134.14		
	Master	-	277		
Years of service				2.256	0.521
	Less than 1 year	6	121.32		
	1-5 years	7	146.09		
	6-10 years	7	145.56		
	More than 10 years	7	145.91		

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Night shift frequency (per month)			9.817	0.007*
	Few (< 4)	7	137.04	
	General (4 - 8)	7	136.87	
	Many (> 8)	8	178.79	

Statistically significant, p < 0.05

Kruskal-Wallis test in Table 4 showed there was no significance difference in the median global PSQI score between nurses' marital status, educational level, years of service as well as the ethnicity groups. Conversely, there was a statistically significance difference between the global PSQI score by different types of family structure, ($H(3)$ = 9.448, P = 0.024), with a mean rank of 140.69 for nuclear family, 147.55 for single parent family, 98.5 for stepfamily and 223.5 for extended family as shown in Table 4.4. In addition, the finding also showed that there was a statistically significance different between the global PSQI score by the groups of night duty frequency per month ($H(2)$ = 9.817, P = 0.007), with a mean rank of 137.04 for few (<4) night duty monthly, 136.87 for general (4-8) night duty monthly and 178.79 for many (>8) night duty monthly as shown in Table 4.4 is statistically significant difference with the global PSQI score among the nurses. Post hoc Kruskal-Wallis tests by using a Bonferroni correlation was used to compare all pairs of groups in family structure followed by frequency of night duty per month. The difference in global PSQI score between the nuclear family and extended family was significance difference,

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with the adjusted p = 0.018. On the other hand, the difference in global PSQI score between the general (4-8) and many (>8) night duty per month, followed by few (<4) and many (>8) night duty per month were significance difference, with the adjusted P = 0.007, followed by adjusted P = 0.031. Thus, the null hypothesis in this study is rejected.

5. DISCUSSION

5.1 Level Of Sleep Quality Among The Shift Work Nurses

In this study, findings showed that total 66.4% (n = 190) of shift working nurses have a global PSQI score more than 5 and total 33.6% (n = 96) of shift duty nurses with global PSQI score equal or less than 5 with the overall mean score of 7.02 and standard deviation of 3.09. It implies that majority of the shift working nurses in the selected private hospital experienced poor sleep quality. Similarly, a study conducted by Akbari et al. (2016) also shown that 85.7% (n = 317) have a PSQI score more than 5 with the overall mean score of 7.123 and standard deviation of 2.5.

As shown in the study, shift nurses from the selected private hospital scored the highest in sleep latency component (M = 1.41, SD = 0.84), followed by sleep duration component (M = 1.26, SD = 0.65) which implies that majority of them were taking a long time to fall asleep with short sleep duration. These findings supported by a study conducted by Alshahrani et al. (2016) with the results showed that the healthcare professional who was working shift also scored the highest in sleep latency component (M = 1.61, SD = 1.024), followed by sleep duration component (M = 1.51, SD = 0.946). Therefore, the researchers had stated that it could be result from circadian misalignment

due to rotating shift and their struggles of conflict between commitments to work, social life and sleep.

Moreover, shift nurses in the selected private hospital were highly occupied with multiple nursing tasks and overtime to fulfill the healthcare demand. Therefore, they are at a higher risk of getting psychological and social illness which leads to a higher score of daytime dysfunctions (M = 1.26, SD = 0.65) from this study as according to a study by Silva et al. (2019), the ability of the nurses to stay alert and awake during daytime was significant association with psychological and social illness. In contrast with our study, the study done by Alshahrani et al. (2017) reported lower daytime dysfunction score (M = 1.06, SD = 0.785).

Furthermore, study findings shown nurses' sleep quality in others' components, habitual sleep efficiency, sleep disturbances, subjective sleep quality mean scores, and standard deviation, respectively (M = 1.16, SD = 1.13), (M = 1.04, SD = 0.55) and (M = 0.72, SD = 0.84). Whereas, study findings by Alshahrani et al. (2017), has reported the mean scores and standard deviation of habitual sleep efficiency, sleep disturbances and subjective sleep quality, respectively (M = 0.579, SD = 0.973), (M = 1.17, SD = 0.536) and (M = 1.21, SD = 0.735). Finally, the use of sleeping medication should be restricted as a second-line treatment as the researchers found that non-pharmacological measures have shown a better effect in managing chronic insomnia (Noriega et al., 2018). Therefore, use of sleeping medication component mean score was the lowest among the nurses working in the selected private hospital which was similar to a study finding by Alshahrani et al.

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(2017) with the mean score (M = 0.10, SD = 0.44) and (M = 0.32, SD = 0.778), respectively.

5.2 Significance Difference Between The Demographic Characteristics And Level Of Sleep Quality Among Shift Work Nurses

This study revealed that the global PSQI score between the nuclear family with the mean rank of 98.5 and extended family with the mean rank of 223.5 was significance difference. This shows that the types of family structures especially for the shift working nurses from the selected private hospital who were living in an extended family with various relatives such as cousins, grandparents did reduce their level of sleep quality. No doubt, living in an extended family do promote frequent family contact and support which can be beneficial. However, a study has concluded that the frequent family contact was well associated with poor sleep quality as frequent contact with family members may lead to increase family conflict, irritations, demands as well as reduce privacy that may interfere individual's sleep quality (Ailshire & Burgard, 2012).

Meanwhile, this study showed the frequency of night duty per month is significance difference with the level of sleep quality among shift work nurses. From the findings, more than 8-night duty monthly has the highest mean rank of 178.79, followed by less than 4-night duty monthly with the mean rank of 137.04 and 4 to 8-night duty monthly has the lowest mean rank of 136.87. Correspondingly, it was stated in the study by Yazdi et al. (2014), that the frequency of night duty per month had a significant effect of sleep quality such as problems to fall asleep, problems with sleeping and problem in staying awake which is

a common problem encounter by shift working nurses. Based on the study findings, shift nurses from the selected private hospital with higher night duty frequency monthly may easily suffer from poor sleep quality due to the disturbance of their circadian rhythm, which was consistent with the findings in other studies (Dong et al., 2017; Thapa et al., 2017; McDowall et al., 2017; Shandor, 2012).

6. CONCLUSION, LIMITATION AND RECOMMENDATION

In conclusion, quality of sleep is truly important for nurses' health and mental well-being while guarantee quality nursing care delivering. Based on the study findings, a total of 66.4% of shift nurses from the selected private hospital experiencing poor sleep quality. There is a significance difference between the global PSQI score by the types of family structures and frequency of night duty per month.

Based on the study findings, sleep latency component has the highest mean, 1.41 with a standard deviation of 0.84. This finding indicates that most of the nurses from the selected private hospital take a longer time to fall asleep. On the other hand, use of sleeping medication component has the lowest mean, 0.10 with a standard deviation of 0.44. This implies that minority of the nurses do need to consume sleeping medication due to poor sleep quality (Shandor, 2012). It is recommended that the healthcare institution should develop a system to properly monitor the level of sleep quality among the nurses consistently so that potential nurses who have poor sleep quality can be quickly identified. Furthermore, the healthcare

institutions should carry out frequent stress management and sleep hygiene programs which include counselling, education or strategies sharing to guide nurses the appropriate and effective ways to respond to stress as well as improve their sleep habits (Zavecz et al., 2020). Prolonged in the sleep latency can be due to chronic insomnia disorder which is commonly caused by stress (Zavecz et al., 2020).

Besides that, the nurse manager should consistently evaluate the nurses' individual needs, aware of the staffing pattern as well as allowing night duty staffs to have a short, uninterrupted break to prevent overloaded their staffs. At the same time, shift working nurses should learn how to carry out good sleep habits such as considering to use a sleep mask and earplugs, avoid playing electrical devices 30minutes before sleep and use room darkening curtains all over windows to reduce their time from falling asleep. In addition, stratified sampling technique should be considered to use in future studies to examine the relationship between the level of sleep quality and social demographic characteristics such as marital status, gender, educational level, have children among shift nurses more accurately as stratified sampling technique is beneficial for the researches by ensuring the interest of each subgroups in the targeted population are represented (Maxfield & Babbie, 2018).

This study was done only in the selected private hospital in Klang Valley, Malaysia, with sample size of 286. Therefore, the findings could only be generalized to the nurses from this hospital because it was insufficient to represent nurses from all the government and other private hospitals in Malaysia. Furthermore, the relationship between the level of sleep quality

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and the shift nurses' social demographic characteristics such as marital status, gender, educational level, have children could not be studied accurately due to unequal population of the respondents.

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