

Understanding the Association of Sleep Disorders with Nursing Productivity in Malaysia

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Abstract: This study examines the relationship between sleep disorders and productivity, specifically absenteeism and presenteeism, among nurses in Malaysia. The research objective is to assess the impact of sleep disorders on nurses' productivity by analyzing their absenteeism and presenteeism levels. The study is correlational in design since it is intended to describe the relationship between sleeping disorders and nurses' productivity comprising absenteeism and presenteeism. The study used stratified sampling to select the respondents for the study since two private hospitals were involved. The list of nurses was provided by the hospital management to facilitate the selection process. The questionnaire was personally distributed to the selected employees by the researchers. Total of 200 sets of the questionnaire were received, indicating a 100% response rate. The study's contribution lies in adding to the understanding of the crucial link between sleep disorders and productivity in the nursing profession. By emphasizing the adverse effects of sleep disturbances on nurses' efficiency, the research underscores the importance of targeted interventions and policy measures to support healthcare professionals' well-being and productivity. The implications extend to healthcare management and policymakers, urging them to prioritize sleep health and consider strategies that mitigate the impact of sleep disorders on nursing staff. To advance this field, future research should focus on larger sample sizes and diverse populations to comprehensively explore the broader implications of sleep disorders on productivity. Such studies can lead to more effective measures for improving the work environment, reducing absenteeism, and enhancing overall patient care and outcomes.

Keywords: *Sleep Disorders, Absenteeism, Presenteeism, Nurses, Productivity, Malaysia.*

1. Introduction and Background

Nursing is highly recognized for its commitment to patient care, but it also comes with significant stress due to demanding job requirements, high expectations, and the obligation to work rotating shifts and nights. Nurses encounter extra obstacles, such as severe workloads, unpredictable hours, a lack of support, and problematic work relationships (Er, & Sökmen, 2018; Babapour et al., 2020).

Recent research has raised concerns about poor sleep quality among nursing practitioners all over the world. According to research conducted in Malaysia, married nurses, particularly those with children, suffered higher sleep difficulties because of family duties (Chien et al., 2013). Similarly, in Malaysia, nurses working on shifts reported a greater prevalence of sleep disorders (Roszkowski & Jaffe, 2012).

Studies undertaken in the United States, Taiwan, Norway, and China revealed that poor sleep quality is common among nurses. In the United States, 77.4% of nurses polled from six hospitals reported poor sleep quality. In Taiwan and Norway, sleep disorders affected 57.0% and 32.4% to 37.6% of nurses, respectively. In Malaysia, 57.8% of nurses reported sleep problems (SM Nazatul et al., 2008). In China, 63.5% of tertiary hospital nurses reported poor sleep quality, with 54.8% experiencing severe sleep issues (Dong et al., 2020). These findings highlight the need to address sleep-related issues to improve the well-being and performance of nursing practitioners worldwide.

Sleep disorders represent a cluster of conditions that disrupt natural sleep patterns and are commonly encountered in clinical practice. Poor sleep quality can profoundly disrupt various physiological, cognitive, interpersonal, and affective processes, significantly impacting an individual's overall health, safety, and quality of life (Karna, Sankari, & Tatikonda, 2020). For nursing professionals working in round-the-clock hospital wards, research has unveiled a significant association between shift work sleep disorder and detrimental outcomes. These outcomes include work accidents, decreased job performance and satisfaction, psychological distress, impaired cognitive functioning, and a decline in the overall quality of healthcare service delivery (d'Ettorre, Pellicani, Caroli, & Greco, 2020). The link between high stress levels and poor

sleep quality among nursing professionals has been established in various studies, highlighting the need for interventions that promote better sleep satisfaction and efficiency (Bilgiç, Çelikkalp, & Mısırlı, 2021).

The prevalence of poor sleep quality among nursing professionals raises concerns about their overall well-being and job performance. To enhance the quality of nursing care and improve nurses' well-being, targeted interventions are necessary to address sleep-related concerns. Promoting better sleep satisfaction, duration, and efficiency can lead to significant benefits for nursing professionals' physical and mental health. Additionally, it can contribute to the reduction of absenteeism and presenteeism, two critical challenges faced by the nursing and healthcare sectors (Lee, Mu, Gonzalez, Vinci, & Small, 2021). Absenteeism and presenteeism can be impacted by nurses' sleep status, affecting their effectiveness and overall productivity.

Sleep disorders and poor sleep quality are prevalent among nursing professionals and have a profound impact on their well-being and job performance. The high stress levels and challenging work environments in the nursing profession contribute to these sleep-related concerns (Segon et al., 2022). To address these issues, targeted interventions are necessary to promote better sleep satisfaction, duration, and efficiency among nursing professionals. By focusing on sleep health, the nursing profession can enhance overall productivity, reduce absenteeism and presenteeism, and ultimately improve the quality of healthcare services provided to patients.

The work performance of an organization's personnel has a significant impact on its productivity. Poor performance can lead to reduced output quality and quantity. To maximize human resources' potential, organizations must identify and address factors contributing to poor employee performance. Proactively managing these factors can improve overall productivity and yield better results. In this context, presenteeism and absenteeism play crucial roles. Principally, presenteeism refers to employees coming to work despite being unwell, which can hinder their productivity. Absenteeism, on the other hand, involves employees being absent from work, leading to direct and indirect costs for the organization. This study focuses on nurses working at selected hospitals in Kuala Lumpur. As reported by Jawahir et al. (2021), nurses form the biggest number of healthcare professionals in Malaysia which are 102,564 nurses in both private and public sectors constituting almost 50% of healthcare professionals. Many issues related to nursing such as insufficient staff in the workplace, inadequate skill mix, excessive nurse migration, low job satisfaction, stressful experience, poor retention, and high turnover were reported as not being often overlooked and needing attention (Jawahir et al., 2021).

A recent study has clarified that absenteeism refers to workers' absence from work on scheduled working days, caused by various reasons (Mat Saruan et al., 2020). On the other hand, presenteeism occurs when employees come to work despite feeling sick due to physical or mental health issues. Both absenteeism and presenteeism significantly affect an organization's expenditures (Nowak et al., 2022). Absenteeism leads to direct costs, such as expenses for hiring replacement workers, and indirect costs, like productivity loss due to the absence of the worker and their co-workers or supervisors. Presenteeism, though physically present, results in reduced productivity due to health issues and increases the risk of accidents and infectious diseases in the workplace (Shan et al., 2021). Managing these issues is crucial for ensuring a productive and healthy workforce.

Hence, from the perspective of medical and health management, as the present study confirmed (Nowak et al., 2022; Mat Saruan et al., 2020; Jawahir et al., 2021) the nurses' presenteeism causes a decline in their physical and mental health and their job performance and ultimately leads to productivity loss and increases organizations' costs to cover it. Indeed, Bae's (2021) recent study highlights the significance of considering both presenteeism and absenteeism in analyzing work productivity loss. By understanding and addressing these aspects, organizations can effectively improve overall productivity and foster a more efficient and motivated workforce.

Therefore, this study aimed to investigate the effects of sleeping disorders on productivity among nurses which are represented by absenteeism and presenteeism among nurses in Malaysia.

2. Literature Review

Sleeping disorder is a common problem affecting individual performance in terms of productivity at the workplace. Sleep disorder among adults is a common problem that may further deteriorate their ability to think cognitively, thus jeopardizing their judgment at the workplace. To the extent, the problem of sleep disorder has caused a loss in monetary form to various sectors such as the health system, productivity losses, accident loss as well as individual well-being (Streatfeild, Smith, Mansfield, Pezzullo, & Hillman, 2021). This phenomenon has caused various impacts on other individuals' health, mental, and regulation of their emotions in their daily lives (Kansagra, 2020).

Problems with sleep are prevalent among healthcare workers, including nurses, doctors, and other healthcare workers. Sleep problems are linked to absenteeism and presenteeism, which are associated with work productivity. A study among Malaysian adults using the Pittsburgh Sleep Quality Index (PSQI) found that most of the respondents were found to have inadequate hours of sleep per day (Farah, Saw Yee, & Mohd Rasdi, 2019). The finding was further supported by another study conducted in Egypt among nurses, using the same PSQI had found more than 70% of the respondents who were in the shift working hours experienced sleep disturbance as compared to the morning shift nurses (Ahmed & Hamed, 2020). Many of the healthcare workers who have shift working hours in their lives experienced this sort of sleep disturbance thus impacting their daily lives (Åkerstedt, 2003). Sleep deprivation among nurses was considered one of the common occupational hazards because of the shift working hours of the profession itself. Apart from that, the high workload at the hospital has caused healthcare workers such as nurses to sleep deprivation due to the ever-demanding job at the workplace (Marvaldi, Mallet, Dubertret, Moro, & Guessoum, 2021). Nonetheless, sleep disturbance among workers especially nurses was found to cause various after-effects such as patient quality of care and health outcomes which the utmost importance in healthcare services delivery (Kowalczuk, Krajewska-Kułak, & Sobolewski, 2021). In other words, this phenomenon may cause various consequences to the individual experiencing it as well as the people whom they serve at the workplace or home, especially in a life-saving workplace such as a healthcare setting.

There are a few consequences of sleeping disorders that may impact individual productivity. Among them are absenteeism and presenteeism. Absenteeism is defined as illness-related absence from work because of the worker's health status at that time while presenteeism is the effort to continue attending to work even though the worker is currently experiencing health declining due to health-related factors (Kinman, 2019; Markussen, Røed, Røgeberg, & Gaure, 2011). Both factors were noted to cause a loss of productivity and further increase the worker's stress level at the workplace which hindered the organization from operating effectively (Van Der Feltz-Cornelis, Varley, Allgar, & De Beurs, 2020). A study at several companies in Tokyo, Japan which compared workers that have shorter and longer sleeping hours found a positive relationship between sleep disorders and presenteeism among their workers (Ishibashi & Shimura, 2020). From Malaysia's perspective, a study among healthcare workers, nurses and doctors found psychological and demographic factors that increase the likelihood of sleep disturbance (Ganasegeran et al., 2017). Another study among adult Japanese workers on the association between sleep disturbance measured using popular PSQI found a relationship between sleeping disorder and the workers' presenteeism (Furuichi et al., 2020). Interestingly, a study among inflammatory rheumatoid arthritis found that sleeping disturbance may escalate presenteeism but not absenteeism which is normally associated with older and higher BMI patients (Guła, Kuzmiersz, Gąsowski, Haugeberg, & Korkosz, 2023).

Moreover, several demographic variables such as age, gender, and even marital status play significant roles in sleep disorders, absenteeism, and presenteeism. Evidence shows that females might have more sleep problems than males, and married nurses were found to have shorter sleep duration and sleep latency compared to single nurses, which contributes to sleep problems (Van Nguyen & Liu (2022, Hwang & Yu (2021). Studies show that sleep problems are significantly associated with absenteeism and presenteeism (Firat, et al., 2019; Baek, et al., 2022). Firat and colleagues (2019) found that younger age and female gender were found to be associated with absenteeism, along with poor sleep quality. Also, delays to work were linked to younger age, poor sleep quality, parasomnia, and sleepiness. When both absenteeism and delay to work were present, it became important to consider sleep disorders such as sleepiness, poor sleep quality, and parasomnia. Evaluating and addressing these sleep-related issues could lead to improved worker well-being

and potentially yield additional benefits, such as increased productivity and reduced work-related costs.

Many healthcare workers suffer from sleep problems, particularly insomnia, that may lead to work absenteeism and decreased performance (Sadeghniaat-Haghighi, et al., 2021). It is therefore reasonable in this present study to infer that gender and marital status may influence the sleep quality and performance of healthcare workers, particularly nurses, due to the nature of their profession, which requires working shifts.

3. Research Methodology

This present study is correlational in design since it is intended to describe the relationship between sleeping disorders and nurses' productivity comprising absenteeism and presenteeism in a private hospital in Malaysia. The study used stratified sampling to select the respondents for the study since two private hospitals were involved in the study. The list of nurses was provided by the hospital management to facilitate the selection process. The questionnaire was personally distributed to the selected employees by the researchers. At the end of the data collection period, a total of 200 sets of questionnaires were received, indicating a 100% response rate.

The questionnaire items were adapted from the existing research instrument developed by previous researchers. As defined by the previous author, sleeping disorder refers to clinical conditions that are a consequence of a disturbance in the ability to initiate or maintain the quantity and quality of sleep needed for optimal health, performance, and well-being (Kiley, Twery, & Gibbons (2019). Therefore, the items measuring this construct reflect its definition. The sample item is, "Do you feel restless when you wake up in the morning?". The item was assessed using a 5-point Likert scale ranging from 1 = never to 5 = almost every day. A total of six items were used to measure the quality of sleep.

Absenteeism refers to missing work due to health conditions (Ozminkowski, et al., 2004). Josias (2005) defines absenteeism as a failure of an employee to report to work, despite the reason. The items used to measure this construct were also adapted from the existing validated instrument developed by previous authors. The sample item is, "Have you taken any long-term sick leave during the last 6 months due to sleeping disorders? The item was assessed using a 5-point Likert scale ranging from 1 = never to 5 = almost every day. A total of six items were used to measure absenteeism.

Presenteeism can be defined as a decrement in performance (efficiency, quality, speed, or volume) associated with remaining at work while impaired by health problems (Burton, et al., 1999). The questionnaire items were also adapted from the previous research work that reflects its definition. The sampled item to measure this construct is, "I found decision-making more difficult". The item was assessed using a 5-point Likert scale ranging from 1 = never to 5 = almost every day. The reported Cronbach's alphas for all three sets of questions are very good: exceeding the suggested threshold value of 0.7. A total of six items were used to measure presenteeism.

Data analysis was performed using descriptive statistics, factors analysis, reliability analysis, correlation analysis, and t-test. T-test analysis is meant to explore the potential influence of demographic variables on the main variables, sleeping disorder, absenteeism, and presenteeism.

4. Results

Data analysis for the present study starts with a descriptive analysis to examine the distribution of data. Table 1 shows the results of the descriptive analysis. Regarding gender, as expected, the majority of respondents are female (147 nurses or 73.5%) while only 53 respondents or 26.5% are male nurses. Most respondents are aged below 35 years old. This is also reflective of the nature of work at the hospital; providing patient's care 24/7 while they are in the hospital.

Most of the respondents are diploma holders (157 nurses or 78.5%) as this is the requirement for them to enter into this noble profession. Most of the respondents are staff nurses (139 individuals or 69.5%) followed by nursing practitioners (48 nurses or 24.0%). Most respondents had less than 5 years of job experience. This

is reflected in their marital status as most of them are still single (114 nurses or 57.0%) compared to those who are married (86 nurses or 43.0%).

Profile of Respondents: Table 1 displays a summary of the characteristics of the total sample of nurses who participated in the study.

Table 1: Demographic and Geographic Information Pertaining to Respondents (n=200)

VARIABLE	FREQUENCY	PERCENTAGE
GENDER		
Males	53	26.5%
Females	147	73.5%
Total	200	100%
AGE		
Below 25	55	27.5%
25-30	91	45.5%
31-35	44	22.0%
36-40	8	4.0%
46-50	2	1.0%
Total	200	100%
EDUCATION		
Bachelor degree	28	14.0%
Diploma	157	78.5%
STPM	2	1.0%
SPM	13	6.5%
Total	200	100%
JOB POSITION		
Staff Nurse	139	69.5%
Chief nurse	11	5.5%
Nurse practitioner	48	24.0%
Others	2	1.0%
Total	200	100%
JOB EXPERIENCE		
Less than 1 year	42	21.0%
1-5 years	126	63.0%
6-10 years	21	10.5%
11-15 years	9	4.5%
16-20 years	2	1.0%
Total	200	100%
MARITAL STATUS		
Single	114	57.0%
Married	86	43.0%
Total	200	100%

A principal component factor analysis with varimax rotation was performed to examine the dimensionality of the items measuring the construct. Table 2 shows the results of factor analysis for the independent variable, which is a sleeping disorder. A total of six items were used to measure sleeping disorder and the results show that all six items were loaded into one component, confirming the unidimensional nature of the construct as proposed by the previous author.

The six items explain 61.64% of the variance in the model, which exceeds the suggested value of 60%. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy of .781 shows that the samples are adequate for factor analysis to be conducted. Similarly, the Measure of Sampling Adequacy (MSA) supports this claim with values ranging from .731 to .856. All six items were used to represent the construct of sleeping disorder in the subsequent analysis.

Table 2: Results of Factor Analysis for the Independent Variable

		Component 1
Do you feel restless when you wake up in the morning?		.868
How often do you have difficulty staying asleep?		.854
How often do you take a nap during commuting time or lunch break?		.787
How often do you feel very drowsy when you are at work?		.751
How often do you wake up too early and can't fall asleep again?		.749
Do you feel difficulty waking up in the morning?		.686
% variance explained		61.64
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.781
Bartlett's Test of Sphericity	Approx. Chi-Square	651.771
	df	15
	Sig.	.000
MSA		.731-.856

A principal component factor analysis was also performed to examine the dimensionality of items measuring productivity construct, comprising absenteeism and presenteeism. Table 3 presents the results of the factor analysis. Originally, there were six items measuring absenteeism and presenteeism. After factor analysis, the items loaded on their respective components were originally conceptualized, confirming their validity. A group of six items loaded on component 1, reflecting absenteeism, and another group of six items loaded on component 2, representing presenteeism.

The total of 12 items explained 81.2% of the variance in the model with the first component explaining 42.2% and another component explaining 39%. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy of .871 shows that the samples are sufficient to proceed with the analysis. The MSA values are in the range of .825 and .916, indicating enough samples (variations) for each item. The results of factor analysis provide support for the goodness of measure of nurses' productivity that comprises absenteeism and presenteeism.

Table 3: Results of Factor Analysis for the Dependent Variables

		Component 1	Component 2
Have you taken any long-term sick leave during the last 6 months due to sleeping disorders?		.906	
Have you taken any sick leave during the last 6 months due to sleeping disorders?		.905	
Have you taken any emergency leave during the last 6 months due to sleeping disorders?		.903	
Have you taken a half-day leave during the last 6 months due to sleeping disorders?		.888	
Have you taken any annual leave during the last 6 months due to sleeping disorders?		.884	
Have you been absent from work during the past 6 months due to sleeping disorders?		.856	
I found decision-making more difficult.			.893
I had a problem concentrating.			.885
I had to go to work at a slower pace.			.883
I had to seclude myself.			.880
I had to put off some of my work.			.851
Others had to take over some of my work.			.768
% variance explained (81.20)		42.2	39.0
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.			.871
Bartlett's Test of Sphericity	Approx. Chi-Square		2818.842
	df		66
	Sig.		.000
MSA			.825-.916

Table 4 shows the results of correlation and reliability analyses. With regard to the reliability coefficient of

the construct, the items measuring sleeping disorders have Cronbach's alpha value of 0.874, which is higher than the suggested value of 0.7. Cronbach's alpha value for absenteeism is 0.959 and Cronbach's alpha value for presenteeism is 0.944. Items measuring both constructs are highly reliable to measure the intended constructs. Sleeping disorder has the highest mean score with the value of 2.83 while the lowest mean value is for absenteeism, which is 2.08, indicating the distribution of the score.

Regarding the relationship between sleeping disorder and absenteeism, it is positive and significant ($r = .530$, $p < .01$), indicating a linear relationship between both constructs. Similarly, the sleeping disorder also shows a significant positive relationship with presenteeism ($r = .430$, $p < .01$). The findings provide additional empirical support that sleeping disorders can affect productivity through absenteeism and presenteeism, especially among nurses. The findings are consistent with the earlier studies (Firat, et al., 2019; Hajo, et al., 2020; Fernández-Martínez, et al., 2020; Sadeghniai-Haghighi, et al., 2021).

Table 4: Results of Correlation and Reliability Analyses

No	Variables	Mean	SD	1	2	3
1	Sleeping Disorder	2.83	.86	(.874)		
2	Absenteeism	2.08	.95	.447**	(.959)	
3	Presenteeism	2.71	.87	.530**	.430**	(.944)

Notes: **. Correlation is significant at the 0.01 level (1-tailed). N=200. Cronbach's alphas are in the parentheses along the diagonal.

Additional analyses (t-tests) were performed to explore the influence of selected demographic variables on the main variables in the study. From Table 5, gender does not have any significant influence on the studied variables. The results provide evidence showing that sleeping disorder, absenteeism and presenteeism happen to all nurses regardless of their gender. It contradicts the common understanding among the public that females normally have a higher tendency than male to experience sleeping disorders, absenteeism and presenteeism (Firat, et al., 2019).

Table 5: Results of T-Test (Gender as the Test Variable)

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Sleeping Disorder	Male	53	2.82	.92	.13
	Female	147	2.83	.84	.07
Absenteeism	Male	53	2.15	.74	.10
	Female	147	2.05	1.02	.08
Presenteeism	Male	53	2.54	.82	.11
	Female	147	2.77	.88	.07

Table 6 shows the results of the t-test, exploring the role of marital status in influencing the studied variables. Single nurses have a higher tendency to experience presenteeism than married nurses. The findings imply that single nurses tend to engage in less productive work such as slower decision-making, less concentration at work, self-isolation, putting off some work, and asking others to take over some of their work than married nurses. The most probable reason for this occurrence is that single nurses are less concerned about their jobs than married ones. Married nurses have to think about their families before pursuing unproductive behaviors (Kang & Lee, 2022).

Table 6: Results of T-Test (Marital Status as the Test Variable)

	Marital	N	Mean	Std. Deviation	Std. Error Mean
Sleeping Disorder	Single	114	2.90	.79	.07
	Married	86	2.73	.94	.10
Absenteeism	Single	114	1.98	1.00	.09
	Married	86	2.22	.87	.09
Presenteeism*	Single	114	2.83	.84	.08
	Married	86	2.55	.88	.09

5. Managerial Implications and Recommendations

The present study provides empirical evidence on the association between sleeping disorders and nurses' productivity, particularly absenteeism and presenteeism in the Malaysian context. The findings enrich the existing knowledge on the said association and can be further enhanced by adding some other important variables, extending the scope of the study, exploring other causes of sleeping disorders, utilizing other instruments measuring sleeping disorders, and others. These suggestions, when implemented, can establish the nomological net of the construct.

Regarding the managerial implications of the findings, actions need to be taken by the hospital management to reduce the effect of sleeping disorders. A properly designed work schedule can reduce its impact on sleeping disorders. Nurses should not be assigned a double shift unnecessarily. No nurse should work more than 12 hours per day. Contract nurses should be employed if there is an insufficient number of nurses working for a particular hospital. In addition, management should provide training for nurses on meditation and yoga exercises to reduce stress and promote relaxation in the workplace and enhance sleep at home.

Conclusion: Quality sleep is important for nurses to enhance their productivity. Due to its importance, the present study was undertaken to examine the relationship between sleeping disorders and productivity, which is measured through absenteeism and presenteeism. Using 200 samples from the selected hospitals, the findings of the study prove the significant association between sleep disorder and absenteeism and between sleep disorder and presenteeism. As nurses' jobs require them to be always alert, the hospital management needs to ensure that their staff do not experience sleep disorders and can concentrate on their jobs. By reducing the intensity of sleeping disorders, it is expected that nurses can enhance their productivity by reducing absenteeism and presenteeism.

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