The Effects Of Sleep Deprivation Among Nurses

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Abstract: This study assessed the effects of sleep deprivation encountered among nurses. It dealt with the profile of the respondents in terms of their age, gender, civil status, highest educational attainment, position, and number of years in service. It also focused on the sleep deprivation among nurses along with medication errors, documentation, attitude towards handling patient care, relationship with colleagues, unable to identify patients correctly, equipment-related injuries, and health-related harms. Strategies adopted by the nurses would also be determined to minimize sleep deprivation. A descriptive research design is use in the study to utilize questionnaire as the primary data gathering tool. Questionnaires are adapted from previous literature and studies. Different statistical tools are used in the study like frequency and percentage, weighted mean, t-test, and ANOVA. The study aimed to review the current situation and response regarding the effects of sleep deprivation on performance, health and cognitive functions among the members of the nursing staff. The modern 24-hour shifts progressively involve nursing staff working more than 40 hours a week, and few nurses sleep less than six hours before their change. Sleep deprivation impedes the performance that requires intensive and prolonged attention, which increases the number of errors inpatient care, and nurses were subject to increased risk of health and safety concerns during work. Few sleep-deprived members of the nursing staff were at risk of obesity, diabetes, gastrointestinal disorders, cardiovascular disease, and risk factors for breast cancer and a significantly higher risk for colorectal carcinoma. Furthermore, measures and strategies are recommended to prevent the long-term effects of sleep deprivation. The studies propose programs that focus on lessening and, or eradicating medication errors, documentation issues, problems in identifying patient and safety concerns. Nurses would demonstrate a positive attitude towards patients and relatives, fully rested and ready for work. Lastly, adopt a balanced diet and exercise to maintain weight according to body mass.

Keywords: Adaptability, health, regulation, stress

Introduction

Atypical work schedule causes reduce Sleep leading to drowsiness, fatigue, a decline of cognitive performance, and health problems among the members of the nursing staff. Consequently, the study focuses on understanding current attitudes, situations, and responses regarding the impact of sleep deprivation on health and cognitive functions among the members of the nursing staff. According to the National Center for Biotechnology Information (NCBI), Maryland (2019), and Newson (2021), sleep deprivation impairs the performance of tasks that require intensive and prolonged attention, which increases numerous errors in patient's care, and nurses are subject to increased risk of traffic accidents. Additionally, sleep-deprived members of the nursing staff are at risk of obesity, diabetes, immunity, cognitive impairment, and cardiovascular disease. Sleep is the resting period for our body to recover what it has endured throughout the day. Humanity has never fully comprehended the concept of sleep, such as how or why it happens. Sleep is a vital complex biological process. The brain is constantly at work during the day and gets a short rest during sleep. The human body follows the schedule of the circadian rhythm. The body is always programmed to function in a certain way at a specific time. Gresh (2019) and Lederhouse (2019) mentioned that sleep was divided into five stages, one through four and (Rapid Eye movement) REM sleep. The brain produces slow waves during the first stage of sleep, and respiratory rate, heart rate, and temperature decrease. The first stage of sleep lasts from two to five minutes. In the second stage of sleep, brain waves are slower, and eye movements cease in the next twenty to forty minutes of sleep. The third and fourth stages of sleep are the deepest. Heart rate, oxygen level, and respiratory rate are low; the brain waves are slowest, and the brain releases a growth hormone to repair cells and tissues. Finally, the body enters REM sleep; the brain's activity level equals an awakened state. Muscles are paralyzed, and heart rate, temperature, blood pressure, and respiratory rate rise. The brain accumulates debris but does not possess lymphatic vessels to transport the trash. The brain's waste removal system, the lymphatic system, removes the waste while the body is in REM sleep. REM sleep also stimulates memory, which is extremely important in the developing child. Too long or repeated night shifts reduce the opportunity for sleep; shorten recovery time in nurses, thus endangering their safety and health, the quality of care, and patient's safety. Therefore, considering the significance of the problem, it is necessary to conduct surveys of sleep quality, the health of nurses, and ways to avoid sleep deprivation. Sleep deprivation is a state in which an individual experiences prolonged periods without enough sleep, thus putting Nurses at risk of sleep disorder. Benoite (2016) and Peri (2019) cited that sleep has been a part of everyone's life. Night shift work is essential to some professions, especially among nurses, but it burdens those who must remain awake during a time devoted to sleep. Sleep deprivation happens when; night sleeping occurs at daytime thus; it and interferes with the normal progression of the sleep-wake cycle. Several studies associate working during the night shift and, or working prolonged periods with health and sleep problems. Shorter sleeping times were related to cardiovascular diseases, diabetes, hypertension, obesity, immunological issues, and cognitive impairment. In the Philippines, non-so fun fact nurses who are supposed to be proponents of health and default of good sleep are also unwitting proponents of widespread professionals' culture of sleep deprivation. As nurses, they know it is unnatural and unhealthy to ignore the urge to sleep. They know that staying up late takes its toll on the body, thus depriving us of sleep. The sunsets and rises with us, never catching a wink. Patients come and go with our sleep befuddled brains trying to cope, chugging along like neglected trains long in need of maintenance. Problems arise due to lack of sleep. Let us start with decreased alertness, a decline in cognitive function, fatigue, and more issues and concerns among nurse's

personal life and medical professionals' duties and responsibilities. According to Patient Safety Network (PSNET) (2019), Caldwell (2018), and Lakshmi (2018), they gave the importance of sleep and its known effect on cognitive performance, the link between sleep and patient safety has garnered considerable attention. In 2006, Agency for Healthcare Research and Quality (AHRQ) funded the National Academy of Medicine to synthesize evidence on Nurse Schedules and health care safety to recommend strategies enabling optimization of work schedules and patient safety. In this report, fatigue was characterized as a latent hazard and an unsafe condition in health care that increases the medical error rate. In a classic review of sleep deprivation and decision-making, investigators argued that effective performance in health care environments requires naturalistic decision-making and situation awareness. This type of thinking involves assessing and planning for rapidly changing situations, forming mental models and future status projections, evaluating risks, appreciating the consequences of actions, and rapidly revising plans in light of changing information. These cognitive activities significantly influence prefrontal cortex functions, such as memory and tracking capacity, particularly sensitive to sleep deprivation and fatigue. Acute and chronic sleep deprivation results in increased deficits in function, mood, and heightened irritability, thus causing impairment in communication and coordination within the health care teams. Chronic sleep deprivation can also contribute to burnout, which are recognized as a threat to patient safety. American Academy of Sleep Medicine (2019) and Pacheco (2020) study results showed that 49% of participating nurses at an academic medical center averaged less than 7 hours per night. The overall average nightly sleep time was 6.6 hours. A symptom consistent with chronic insomnia is identified in 31% of nurses, and excessive daytime sleepiness is seen in 4.5% of them. Twenty-seven percent of nurses using drugs to help them sleep, and 13% reported uses drugs to stay awake. Symptoms indicative of shift work disorder were present in 31% of nurses. About 18.5% of nurses also had a moderate-to-severe risk for obstructive sleep apnea. Pilcher (2020) and Morris (2020) cited that sleeping between seven and eight hours a night can decrease the possibility of missing work because of illness, a recent study from the Finnish Institute of Occupational Health indicates. Researchers analyzed 3,760 men and women 30-64 years old in Finland. They asked questions about their sleep habits and conducted a physical exam. Participants who slept five hours or less, or 10 hours or more, missed 4.6 to 8.9 more days of work each year than workers who slept the optimal amount of seven to eight hours. Insomnia symptoms, waking in the early morning, Daytime tiredness, possible sleep apnea, and sleeping pill use was linked to a rise in work absences due to illness. In the release that promoting optimal sleep and detecting and preventing insomnia "not only promotes health and workability among employees, but it can also lead to notable savings in reduced sickness absence costs. In a recent study from National Health and Nutrition Examination Survey (NIOSH) (2016) and Abdalkarem (2021), night-shift workers have the highest risk for sleep problems compared with all other workers. Examined data for nearly 6.35 adults Participants answered questions about the length and quality of their sleep, sleep disorders, and impairment of sleep-related activities of daily living. They also had to identify if their work shift was during the day between (6 a.m. and 6 p.m.), evening (between 4 p.m. and midnight), night (between 7 p.m. and 8 a.m.) rotating, or other. They placed participants into two categories: those who had slept less than seven hours, and those who had gotten seven or more hours of sleep. Additionally, factors such as long work hours and socio-demographic traits results showed that 61.8 percent of night-shift workers slept less than seven hours, compared with 35.9 percent of daytime workers. Moreover, 30.7 percent of night-shift workers reported poor quality sleep, 22.3 percent said they felt extra sleepy during the shift, and 21.7 percent reported difficulty falling asleep, in contrast with 12.7 of daytime workers, thus affecting nursing performance patient safety. Hang (2018) and Garland (2018), their study mentioned that sleep-deprived members of the nursing staff were at risk of obesity, diabetes, gastrointestinal disorders, cardiovascular disease, and depression. The risk factor for breast cancer were increased by 179 times, and there is a significantly higher risk for colorectal carcinoma. Night shifts reduce the opportunity for sleep; shorten recovery time in nurses, thus endangering their safety, health, quality of care, and patient safety. Considering the significance of the problem, it is necessary to conduct surveys of sleep quality and the health status of nurses. Winter (2017) conducted a study to address shift nurses' poor sleep quality. They proposed two levels of approach for considering the individual level and the management/institutional level and enumerated specific interventions that fit every Lifestyle. The recommendations include: improving sleep hygiene; providing a low-stimulation sleep environment; conducting rigorous intervention studies to evaluate the effectiveness of a variety of therapies to deal with shift nurses' sleep disturbances; increasing awareness of sleep health of shift nurses; establishing a flexible rotating work schedule; and putting in place policies such as a 15–30 min nap break, social support, and a suitable working environment. Moreover, Proceedings of the National Academy of Sciences (PNAS) study showed that staying awake at night and sleeping during the day for even just 24-hour period can rapidly lead to changes in more than 100 proteins in the blood, effect on blood sugar, immune function, and metabolism. Over time, these biochemical changes in blood protein levels can elevate the risk for health issues such as diabetes, weight gain, and even cancer. Likewise, Meyers (2019), the University of New York, mentioned that nurses are sleeping, on average, less than the recommended time before work, which may impact their health and job performance. Nursing, especially in hospitals, is dominated by shift work, with nurses working outside of the traditional 9-to-5 day to be at the bedside around the clock. Research showed that shift work causes harm to circadian rhythm and can impair nurse's performance. In addition, 12-hour shifts are standard and often result in unexpected overtime to finish patient care tasks or charting. Taken together with commute times and domestic responsibilities, nurses often have limited time to sleep before or between shifts. Sleep deprivation hurts workers' ability to handle complex and stressful tasks, and work-related sleep loss has led to severe errors in other industries, with the nuclear meltdown at Chernobyl as a particularly devastating example. In healthcare, exhausted nurses risk of making critical mistakes in administering medication or making clinical decisions. Nurses reported getting, on average, just less than 7 hours (414 minutes) of sleep before a workday and more than 8 hours (497 minutes)

before a non-work day. The difference in sleep duration between work and non-work days was 83 minutes, or nearly an hour and a half less sleep before a work shift. In addition, getting less sleep was associated with lower measures of patient safety and quality of care, a finding that may indicate several underlying issues. At the individual level, nurses sleeping less maybe more exhausted at work, resulting in performance impairments. At the organizational level, if nurses are working in an environment that has frequent staffing shortages or high turnover resulting in unexpected overtime and long hours, patient safety may be compromised in part by tired, overworked nurses. Wolter (2018) and Tariq (2021) enumerated the top 7 nursing errors and recommended interventions to prevent them. Protecting the patients from falling by encouraging them to ask for help when needed, and making sure there are no obstacles at the restroom or around the bed. Furthermore, preventing medication errors by utilizing barcoded medication using a scanning device allows nurses to verify the six medication rights more accurately. They prevented documentation errors by monitoring patients regularly and immediately documenting the intervention performed. Lastly, to avoid equipment-related injury, report defects to the risk management department, patient safety department, and safety supervisor. In addition, Stanford University (2017), conducted a study on how sleep deprivation affects performance. The study showed that two consecutive nights of less than 6 hours of sleep, could leave us inactively slow, same with staying up an extra hour, even followed by a full night sleep and going to bed an hour usual than average has an insignificant effect. To support the findings, Zeitzer (2019) explains in his blog post quoted searching the web requires your brain to do few complex tasks. Figure out what terms to search on, type the query, and then process the results to decide which one to click. Even minor differences in the amount of time it would take us to connect. It is indicative of how rapid information was processed. The idea was people have slower processing speeds as they get more tired. The outcome exhibit that over the first 24 hours, having an insufficient night of sleep is associated with 1.2% slower performance on average keystroke timing. Subpar nights of sleep are 4.8 percent lower than two nights with longer than six hours of sleep each (2.7 percent and 7.3 percent increases for click times, respectively.) Furthermore, study also added the boost of caffeine intake that would help improve performance after sleep loss. The research is another example of mobile technology, allowing researchers to collect much larger data sets in real-world time than through formal studies. Zeitzer (2017) cited that the web-scale research provides insight into the impact of sleep deprivation in the real world, where people compensate for lost sleep with extra coffee and nap, otherwise adapt to life circumstances that limit pillow time. The findings largely overlap with small and controlled lab-scale studies, where participants are systematically sleep-deprived and assessed on standardized tests. Humphries (2017) mentioned in her study that, people need sufficient sleep for healing and repair, especially people who underwent anxiety-producing situations. She used this Neuman's Systems Model, which provides a theoretical framework for future sleep study in patients. The stressor relationship between the person and the environment corresponds to sleep homeostasis and effective body system physiological homeostasis, thus disturbing sleep. Furthermore, Ferri (2016) conducted a study related to

inadequate sleep of Nurses connecting shift work to attention, performance, and mood. The subjects rated themselves significantly sleepier when working night versus day shifts and clear-thinking when working day versus night shifts. Despite this, there was a trend toward the better performance of nurses working the night shift compared to those working the day shift, but the difference was not statistically significant. To sum it all, Nurses were sleepier while working nights and had clearer thinking when working days. However, nurses were similarly practical when performing manual and cognitive tests, whether night shifts with day sleep or working day shifts with night sleep. Pacheco (2020) made a study focused on strategies to minimize and control burnout symptoms among nursing professionals. The review identified varied interventions encompassing individual, group, and organizational actions, with a significant prevalence of group actions. The results indicated that the strategies used to cope with burnout were, for the most part, practical, with some remarkable success than others. The various intervention strategies presented in this study can reduce the effects of burnout among nurses. From the 30 reviewed studies, the results did not improve burnout in only three interventions: 1) Psycho-oncological training program, 2) Systematic clinical supervision, and 3) Basic nursing care. The assessments were justified by the following variables: sample size, work environment, and working hours. Philippine Council for Health research and Development (2020) studies showed pieces of evidence that shiftwork or working on shift hours has implications for workers' well-being or health. According to the survey conducted by the International Agency for Research on Cancer (International Agency for Research on Cancer), working on shift hours may increase the risks of psychosomatic disorders of the gastrointestinal tract, cardiovascular diseases, and even cancer among shift-workers. These can be explained by the disruption of the circadian system that is caused by exposure to a disturbance at night that can alter sleep-activity patterns, suppress melatonin production, and deregulate genes involved in tumor development. Additionally, the human body synchronizing to a night and day pattern is known as circadian rhythm or the body's endogenous biological clock. These are the particular part of the brain that monitors the amount of light entering the body from time to time. In the evening, when the light starts to wane, the body clock notices and prompts a flood of brain chemicals called melatonin, which signals the body to fall asleep. Overnight, melatonin levels remain high, drop at daybreak, and remain low during the day. During the daytime, neurotransmitters such as noradrenaline and acetylcholine increase and keep the body awake. This system keeps the body synchronized, affecting somebody's functions including, temperature, digestion, heart rate, and blood pressure. The School of Medicine and Veterans Affairs Healthcare System (SMVAHS) conducted a study at the University of California and Gibson (2020), have reported that continuous distracted sleeping patterns will lead to sleep deprivation that might negatively affect the brain and cognitive functions, eventually causing errors in patient identification. National Center for Biotechnology Information (2019) conducted a global study that includes the Philippines about the impact of sleep deprivation on an adolescent's cognitive ability, mood, and judgment. Insufficient sleep can contribute to aberrant behavior; subjects who are chronically sleep-restricted may exhibit

increased risk-taking behavior and subjectively may show deficiencies in reasoning that result from seeking premature conclusions without considering all aspects of a problem. This type of impulsivity may also manifest as increased but unnoticed risk-seeking. Sleep loss can have adverse effects on the control of mood and behavior. Irritability, moodiness, and poor frustration tolerance are the most frequently described symptoms in subjects suffering from sleep restriction. Adolescents complained of tiredness upon awakening (46%), anxiety, and general weakness; university students reported experiencing excessive drowsiness (50%), tension, and nervousness; and working adults suffered mostly from negative moods, such as tension (49%), fear, and irritability. Department of Health and Rizal Memorial Medical City (2018) by Tina Panganiban-Perez and Peterson (2016) made a video showing sleeping emergency room staff at the Rizal Medical center that went viral, incurring the wrath of social media users. Moreover, the uploader of the video narrated how the medical staff's alleged negligence resulted in the patient's death. The latter was checked in the facility's emergency room ward on May 21. When her mother's condition worsened around 2:30 a.m. to 4:30 a.m., the uploader claimed to have been unable to receive proper help as most of the staff present were asleep. Despite seeking assistance from one Doctor, her mother passed away three days later. In line with this incident, the study recommended regulating working hours in the emergency response industry after documenting the threatening effect of having medical workers sleep-deprived. Emergency workers, whose shifts can last up to 48 have straight, are in danger of suffering from the various health risks posed by sleep deprivation, such as cardiovascular disease and Alzheimer's. Furthermore, the proposal was to allow emergency workers to get a 96-hour break after the 48-hour shifts. Harvard Medical School requested that dorms will be install next to emergency rooms so staff can rest for optimum performance. A 2004 study by the US National Center for Biotechnology Information documented the drop in performance of nurses at emergency rooms due to fatigue. ABS-CBN Lifestyle (2020) focused on how being "PUYAT" sleep deprivation further puts our immunity at risk of COVID-19 virus. Uneasiness resulting in sleepless nights is inevitable in times of crisis. Some would often find themselves awake in the wee hours despite tucking in bed early, all worried about the COVID-19 virus. Some would binge-watch series on TV or glue themselves on their phones to distract themselves. Frontlines would end up with not much sleep at all given the demands and pressure of their jobs. Bottom-line is: Many people are sleep-deprived one way or another, with their health on the line. It is said that a good night's sleep is vital to overall well-being. Online correspondence ABS-CBN Lifestyle, Dr. Alejandro Saranglao Jr. (2020), and Concord Hospital in New Hampshire, noted several reasons why a good sleep routine could help people become more robust against coronavirus. First, he emphasized the importance of sleep and rest to the immune system. Studies have shown that people who do not get enough sleep are more likely to get sick after being exposed to a virus, even for common colds. Thus, lack of sleep also lengthens recovery time if we do get sick, he mentioned. Dr. Saranglao Jr. and Gualano (2020) also noted how rest keeps the brain alert, but when neglected, it can lead to a lack of creativity, poor memory, judgment, and slower reaction time. In a time of a viral pandemic, doctors, nurses, and healthcare workers need to

think clearly to avoid making medical errors, not only to protect their patients but also themselves by avoiding preventable lapses. More so, since reports on most COVID-19 casualties showed how people with underlying conditions, including diabetes and hypertension, are greatly affected by the virus. They also mentioned that sleep can maintain your physical health and longevity. Poor sleep habits is link to increase the risk for cardiovascular disease, diabetes, inflammatory conditions, and infection, thus increase in in mortality. Hanvey (2019) and White (2021) cited that while the coronavirus is taking its toll on thousands of lives around the world, the disease is also having its physical and emotional impact on those caring for patients with COVID19, Dalai Lama noted that Real care of the sick does not begin with costly procedures, but with the simple gifts of affection, love, and concern. The current COVID19 pandemic brings unique stressors that thwart physicians and other healthcare professionals from delivering this level of exceptional, genuine care. World Health Organization (WHO) suggests several steps that first responders and healthcare frontline caretakers can adopt to manage their mental health and psychosocial well-being better:

- She is taking care of herself.
- Adopt helpful coping strategies such as ensuring adequate rest and respite during work or between shifts, eating sufficient and healthy food, engaging in physical activity, and stay contact with family and friends.
- Prevent using unhelpful coping strategies such as tobacco use, alcohol, or other drugs.
- Relay to colleagues and other trusted persons for support. Additionally, Medical health professionals are wise to think well, to eat well, to move well, to sleep well, to love well, and to leave well; thus, it is easier said than done. However, it is achieved with the proper mindset, right rational self-talk, direct positive vision, right stress-reducing moments of deep breathing, and healthy reasonable protective boundaries. Consequently, go to reliable sources only for necessary information. If anxiety becomes interrupting, which interferes with professional and personal responsibilities, it is time to obtain help, ideally from a trusted counselor that focuses on cognitive-behavioral transformation.

Sleep Foundation (2021), Johnson (2019), and Rogen (2018) published an article correlating excessive sleepiness and workplace accident. These sort of sleep deprivation and daytime fatigue can lead to severe consequences both personally and professionally. A lack of sleep impacts both physical and mental health. People who sleep poorly are at higher risk for high blood pressure, stroke, heart disease, and obesity. They are also at risk for developing anxiety and depression. In the workplace, excessive sleepiness can significantly increase the likelihood of a workplace accident, resulting in injury and even death. It also has a significant impact on other aspects of job performance, including productivity, task management, and meeting goals. Sleep deprivation leads to cognitive impairment. It degrades cognitive_processing, affecting everything from memory to reflexes. With less sleep, your reaction time slows. This means we make decisions less quickly and accurately. You are also more likely to misjudge our abilities and take unwise risks. As a result, excessive sleepiness can lead to

consequential errors and accidents that gravely impact the workplace.

Conceptual Framework

This study determined the effects of sleep deprivation among Nurses of Northern Luzon Adventist Hospital. Part I deals with the demographic profile of the nurses in terms of their age, gender, civil status, highest educational attainment, position, and number of years in service. Part II focused on the effects of sleep deprivation among nurses along with the medication errors, documentation Issues, perspective towards handling patient care, relationship with colleagues, unable to identify patients correct, equipment-related injuries, and health-related diseases. Part III deals with the strategies adopted by the nurses to overcome sleep deprivation, thus performing their duties and responsibilities safely and effectively while on task

Statement of the Problem

This study determined the effects of sleep deprivation among Nurses at Northern Luzon Adventist Hospital in Artacho Sison Pangasinan.

It specifically aimed to answer the following questions:
1. What is the profile of the respondents in terms of their
   - a. Age;
   - b. Gender;
   - c. Civil Status;
   - d. Highest Educational Attainment;
   - e. Area of Assignment;
   - f. Position, and
   - g. Number of years in service;
2. What are the effects of sleep deprivation among Nurses, along with the
   - a. Medication Errors;
   - b. Documentation Issues;
   - c. Attitude towards handling patient care and relationship with Colleagues;
   - d. Unable to identify patient correctly;
   - e. Equipment related injuries;
3. What are the strategies adopted by the Nurses to overcome sleep deprivation?

4. Is there a significant difference between the effects of sleep deprivation among nurses across their profile variables?
5. Is there a significant relationship between the effects of sleep deprivation among nurses across their profile variables?
6. Based on the study, what are the proposed plans that can be formulated to minimize sleep deprivation among nurses?

Hypotheses

The following hypothesis was tested in their null form at a 0.05 level of significance;
1. There is no significant difference between the effects of sleep deprivation among nurses across their profile variables.
2. There is no significant relationship between the effects of sleep deprivation among nurses across their profile variables.

METHODOLOGY

Research Design

Quantitative methods emphasize objective measurements and the statistical, mathematical, or numerical analysis of data collected through questionnaires, surveys, or by manipulating pre-existing statistical data using computational techniques. Quantitative research focuses on gathering numerical data, generalizing it across the group, and explaining a particular phenomenon.

Population and Locale of the study

The respondents included the Nurse Supervisors, Head Nurses, and Staff nurses of Northern Luzon Adventist Hospital at Sison Pangasinan. Total enumerations was utilized, and the respondents were composed of 50 nurses.

Data Gathering Instrument

Before data gathering, the researcher prepared a letter of approval addressed to the Chief of the Hospital thru the Chief Nurse to administer the questionnaires. Likewise, the researcher has personally retrieved the same questionnaires immediately after that. The responses were tallied and computed using appropriate statistical treatment interpreted and analyzed accordingly. The questionnaires were based on the researcher's readings of professional books, journals, unpublished research, and dissertations related to the study. The researcher gathered items significant to the present study as sources in the formulation of the questionnaire. The study utilized the questionnaire as the primary tool in data gathering. Part I deals with the demographic profile of the respondents in terms of their age, gender, civil status, highest educational attainment, area of assignment, position, and several years in service. Part II dealt with the effects of sleep deprivation among nurses. Part III tackled the strategies adopted by the Nurses to overcome sleep deprivation.

Treatment of Data

Different statistical tools were used in the study:

Part I on the profile of the respondent's frequency and percentage are used.

Formula $P = \frac{f}{n}(100\%)$

P = Percentage
f = Number of respondents
n = Total number of respondents

Part II and Part III deals with the effects of sleep deprivation and strategies adopted by the respondents to minimize the impact of sleep deprivation. The weighted mean is used.

Formula $AWM = \frac{\sum WM}{c}$

Where: WM = weighted mean of each category

AWM = average weighted mean for each area

f = number of respondents per bracket

n = total number of respondents

x = point value per classification.

RESULTS AND DISCUSSIONS

This chapter presents the findings of the study and discussions of results.

Respondent's Profile

Table 1 presents the respondents' profile variables.

Age. As shown from the table, most of the respondents were in the age bracket of 26-30 with a frequency of 21 or 37 percent, followed by those 31-35 years old with a frequency of 13 or 23.2 percent. It showed that most of the respondents were young and in service for a few years at Northern Luzon Adventist Hospital in Cauringan Sison, Pangasinan.

Gender. The majority of the respondents were female with a frequency of 40 or 71.4 percent compared to the males, composed of 16 or 28 percent. It connotes that the respondents are female-dominated. Moreover, respondents consisted of 50 Nurses. The finding is a reflection that the majority of the nurses were female.

Civil status. It can be glean that most of the respondents were married with a frequency of 30 or 53 percent while those single had a frequency of 22 or 39 percent. It means that most of the respondents have their own families. According to Deng, Liu, and Fang (2020) majority of the nurses are married and working rotating shifts.

Educational attainment. It showed that most of the respondents were bachelor's degree holders with a frequency of 31 or 55 percent, followed by those with master units with a frequency of 16 or 26.8 percent. It showed that most respondents did not pursue a higher degree of learning after their baccalaureate degree. Following Rosseter (2019), nearly all of the nurses were bachelor's degree holders; incentives are offered to those nurses that will pursue their studies to advance their education to a higher degree.

Table 1
Distribution of the Respondents in terms of their Profile Variables
n=56
(a)

Profile Variables	Frequency	Percentage
Age (in years)		
21 – 25	5	8.9
(b) 26 – 30	21	37.5
31 – 35	13	23.2
36 – 40	5	8.9
41 – 45	4	7.1
46 and above	8	14.3
Gender		
Male	16	28.6
Female	40	71.4
Civil Status		
Single	22	39.3
Married	30	53.6
Separated	4	7.1
Educational Attainment		
Bachelor's Degree	31	55.4
With Master's Units	15	26.8
Master's Degree Holder	9	16.1
With Doctorate Units	1	1.8
Area of Assignment		

Profile Variables	Frequency	Percentage
Emergency Room	19	33.9
Triage Room	6	10.7
OPD	5	8.9
General Ward	21	37.5
Operating Room	3	5.4
Delivery Room	2	3.6
Position		
Staff Nurse	50	89.3
Head Nurse	3	5.4
Nurse Supervisor	3	5.4
(b)		
Number of Years in Service		
Less than 1	1	1.8
1 – 5	28	50.0
6 – 10	15	26.8
11 – 15	9	16.1
16 and above	3	5.4

The number of years in service. Most of the nurses were in the nursing service for 1-5 years with a frequency of 28 or 50 percent, followed by those with 6-10 years in service with a frequency of 15 or 26.8 percent, 11-15 years with a frequency of 9 or 16.1 percent and 16 years and above with a frequency of 9 or 16.1 percent. According to Matsukaro (2019), Nurses just spent a few years working locally due to numerous job offers overseas with competitive salaries, can support their family financially, provide a better future and career opportunities.

Effects of Sleep Deprivation among Nurses along with Medication Errors

Table 2 presents the effects of sleep deprivation among nurses and medication errors. As gleaned from the table, 8 of the indicators 1, 2, 3, 5, 6, 7, 9 and 10 were rated slightly affects however the highest among this indicator are numbers 5 and 6" administered medication at the wrong time" and "administered medication at the wrong interval". The lowest among the indicators are item numbers 4 and 8" incorrect medication to the wrong patient" and "did not follow the physician's medication order" with a weighted mean of 1.41 and 1.48 or not affects. It reflects that the nurses are so careful in the giving of correct medications and overall, on the effects of sleep deprivation among nurses along medication administration got an overall weighted mean of 1.79 or slightly affects. It implies that sleep deprivation slightly affects the role of nurses in medication administration. The problem also coincides with the results revealed in the studies of National Center for Biotechnology Information (NCBI) Maryland (2019), Bio Energy Medical Center (2019), Patient Safety Network (PSNET) (2019), University Hospital (2019), Mantell (2020), and Sleep Foundation (2021) that sleep deprivation among night shift nurses most especially demonstrated a decline in cognitive function contributing to more issues and problems among Nurses medical professionals duties and responsibilities. Moreover, memory is significantly affected, particularly sensitive to sleep deprivation, causes deficiencies in reasoning that result from seeking premature conclusions without considering all aspects of a problem, and finally affects job capabilities, including productivity, task management, and meeting goals.

Table 2

Indicators	Weighted Mean	Descriptive Equivalent
The nurse……		
1. administered incorrect medication.	1.57	Slightly Affects
2. give an incorrect dose.	1.8	Slightly Affects
3.administered the incorrect route of a drug.	1.5	Slightly Affects
4. incorrect medication to the wrong patient.	1.48	Not Affects
5.administered medication at the wrong time.	2.34	Slightly Affects
6. administered medication at the wrong interval.	2.27	Slightly Affects
7. forgot to check the patient's allergy before administration.	1.95	Slightly Affects
8. did not follow the physician's medication order.	1.41	Not Affects
9. inaccurately transcribes the medication ordered.	1.98	Slightly Affects
10.did not do the proper preparation before administration.	1.61	Slightly Affects
Average Weighted Mean	**1.79**	**Slightly Affects**

Legend :

Statistical Range	Transmuted Rating	Descriptive Equivalent
4.50 – 5.00	Always	Highly Affects
3.50 – 4.49	Often	Affects
2.50 – 3.49	Sometimes	Moderately Affects
1.50 – 2.49	Seldom	Slightly Affects
1.00 – 1.49	Never	Not Affects

Effects of Sleep Deprivation among Nurses and Documentation Issues

Table 3 presents the effects of sleep deprivation among nurses and documentation issues. As gleaned from the table, the highest indicators were rated slightly affects and highest item include number 2" The nurse's handwriting is sloppy or illegible" with a weighted mean of 3.21 or moderately affects. It showed that the sleep deprivation affects penmanship to be illegible and hard to read. Moreover, the lowest among the indicators is item number 9" The nurse accepts unclear orders without verifying the Doctor" with a weighted mean of 1.34 or not affects. It showed that the doctor's order has no effect on the sleep deprivation of the nurses along documentation issues. The result of the study was consistent with the reflection from National Center for

Biotechnology Information (NCBI), Maryland (2019), and Myers (2019), who mentioned that sleep deprivation impairs the performance of tasks that require intensive and prolonged attention. Additionally, nurses are sleeping less than the recommended hours before work, which may impact their job performance and shows that shift work takes a toll on circadian rhythm. Moreover, 12-hour shifts are standard and often result in unexpected overtime to finish patient care tasks or charting.

Effects of Sleep Deprivation among Nurses and Documentation Issues

Table 3
Effects of Sleep Deprivation Among Nurses Along Documentation Issues
n=56
(a)

Indicators	Weighted Mean	Descriptive Equivalent
1. The nurse fails to recall placing the date and time in the nurse's notes.	2.16	Slightly Affects
2. The nurse's handwriting is sloppy or illegible.	3.21	Moderately Affects
3. The nurse fails to sign documentation entries.	2.39	Slightly Affects
4. The nurse did not document omitted medications or treatment.	1.91	Slightly Affects
(b) 5. The nurse intentional leave blanks on the forms of the patient's file	2.09	Slightly Affects
6. The nurse uses inappropriate abbreviations.	1.7	Slightly Affects
7. The nurse adds multiple addendum out of their shift.	2.32	Slightly Affects
8. The nurse enters information into the wrong patient chart.	1.63	Slightly Affects
9. The nurse accepts unclear orders without verifying the Doctor.	1.34	Not Affects
10. The nurse fails to update documentation regarding a patient current health condition.	1.84	Slightly Affects
Average Weighted Mean	**2.06**	**Slightly Affects**

Legend:

Statistical Range	Transmuted Rating	Descriptive Equivalent
4.50 – 5.00	Always	Highly Affects
3.50 – 4.49	Often	Affects
2.50 – 3.49	Sometimes	Moderately Affects
1.50 – 2.49	Seldom	Slightly Affects
1.00 – 1.49	Never	Not Affects

As gleaned from the table, the highest indicators were rated slightly affects and highest item include number 2" The nurse's handwriting is sloppy or illegible" with a weighted mean of 3.21 or moderately affects. It showed that the sleep deprivation affects penmanship to be illegible and hard to read. Moreover, the lowest among the indicators is item number 9" The nurse accepts unclear orders without verifying the Doctor" with a weighted mean of 1.34 or not affects. It showed that the doctor's order has no effect on the sleep deprivation of the nurses along documentation issues. The result of the study was consistent with the reflection from National Center for Biotechnology Information (NCBI), Maryland (2019), and Myers (2019), who mentioned that sleep deprivation impairs the performance of tasks that require intensive and prolonged attention. Additionally, nurses are sleeping less than the recommended hours before work, which may impact their job performance and shows that shift work takes a toll on circadian rhythm. Moreover, 12-hour shifts are standard and often result in unexpected overtime to finish patient care tasks or charting.

Effects of Sleep Deprivation among Nurses along with Attitude Towards Handling Patient Care and Relationship with Colleagues

Table 4
Effects of Sleep Deprivation Among Nurses Along Attitude Towards Handling Patient Care and Relationship with Colleagues
n=56
(a)

Indicators	Weighted Mean	Descriptive Equivalent
1. The nurse treats the patient disrespectfully and presumptuously.	2.04	Slightly Affects
2. The nurse is uncivil and discourteous to a primary caregiver.	1.93	Slightly Affects
(b) 3. The nurse shows a disagreeable attitude to family members.	2.04	Slightly Affects
4. The nurse is impatient in providing health teaching.	1.93	Slightly Affects
5. The nurse speedily renders nursing intervention without tender loving care.	2.05	Slightly Affects
6. The nurse inconsiderately performs nursing intervention.	1.93	Slightly Affects
7. The nurse is unpleasant and impolite to colleagues throughout the shift.	1.86	Slightly Affects
8. The nurse is involved in incident reports relating to attitude.	1.73	Slightly Affects
9. The nurse is not attending patient's calls or as needed to provide the care required.	1.86	Slightly Affects
10. The nurse skips important unit meetings as required according to hospital policy.	2.43	Slightly Affects
Average Weighted Mean	**1.98**	**Slightly Affects**

Legend:

Statistical Range	Transmuted Rating	Descriptive Equivalent
4.50 – 5.00	Always	Highly Affects
3.50 – 4.49	Often	Affects
2.50 – 3.49	Sometimes	Moderately Affects
1.50 – 2.49	Seldom	Slightly Affects
1.00 – 1.49	Never	Not Affects

It can be gleaned from the table that all the indicators were rated slightly affects however the highest are item numbers 5 and 10" The nurse speedily renders nursing intervention without tender loving care" and "The nurse skips important unit meetings as required according to hospital policy" with a weighted mean of 2.05 and 2.43. The lowest among the indicators is item number 8" The nurse is involved in incident reports relating to attitude" with a weighted mean of 1.73 or slightly affects. Overall effects of sleep deprivation and attitude towards handling patient care and relationship with colleagues got an overall weighted mean of 1.98 or slightly affected. It showed that sleep deprivation had a little bearing on their attitude toward inpatient care and relationship with their colleagues. The findings also were correlated to the results revealed in the study of the National Center for Biotechnology Information (2019) conducted a global study that includes the Philippines about the impact of sleep deprivation on an adolescent's mood and behavior.

Insufficient sleep can contribute to aberrant behavior may show deficiencies in reasoning that result from seeking premature conclusions without considering all aspects of a problem, irritability, moodiness, and poor frustration tolerance may also manifest.

Effects of Sleep Deprivation among Nurses Along Unable to Identify Patient Properly

Table 5
Effects of Sleep Deprivation Among Nurses Along Unable to Identify Patient Properly
(a)

Indicators	Weighted Mean	Descriptive Equivalent
1. The nurse enters the wrong patient's room in providing nursing intervention.	2.14	Slightly Affects
(b) 2. The nurse fails to ask the patient's name before rendering patient care.	2	Slightly Affects
3. The nurse unable to check patient hospital number correctly before giving patient care	1.75	Slightly Affects
4. The nurse placed the wrong patient's name at the patient's door tag upon admission.	1.59	Slightly Affects
5. The nurse applied the wrong identification bracelet.	1.45	Not Affects
6. The nurse wrote the wrong information in the identification bracelet during admission and when it's unreadable.	1.52	Slightly Affects
7. The nurse lost the patient's identification bracelet when giving patient care.	1.73	Slightly Affects
8. The nurse rendered intervention to the wrong patient.	1.54	Slightly Affects
9. The nurse discharged infants to the wrong family.	1.27	Not Affects
10. The nurse mischarges supplies and procedures to the wrong patient.	2.2	Slightly Affects
Average Weighted Mean	**1.72**	**Slightly Affects**

Legend:

Statistical Range	Transmuted Rating	Descriptive Equivalent
4.50 – 5.00	Always	Highly Affects
3.50 – 4.49	Often	Affects
2.50 – 3.49	Sometimes	Moderately Affects
1.50 – 2.49	Seldom	Slightly Affects
1.00 – 1.49	Never	Not Affects

It can be gleaned from the table that the highest indicators are item numbers 1 and 10" The nurse enters the wrong patient's room in providing nursing intervention." and "The nurse mischarges supplies and procedures to the wrong patient" with a weighted mean of 2.14 and 2.20 or slightly affects. The lowest indicators are item numbers 9 and 5" The nurse discharged infants to the wrong family" and" The nurse applied the wrong identification bracelet" with a weighted mean of 1.45 and 1.27, Overall, on the effects of sleep deprivation along unable to identify patient properly got an overall weighted mean of 1.72 or slightly affects. It showed that sleep deprivation has a little effect in identifying patient properly among the nurses. The finding also was paralleled with the results revealed on the studies of Bio Energy Medical Center (2019), Patient Safety Network (PSNET) (2019), University Hospital (2019), Mantell (2020), and Sleep Foundation (2021) that sleep deprivation among night shift nurses most especially demonstrated a decline in cognitive function contributing to more issues and problems among Nurses medical professionals' duties and responsibilities.

Effects of Sleep Deprivation among Nurses along with equipment-related Injury

Table 6
Effects of Sleep Deprivation Among Nurses Along Equipment-Related Injury
n=56
(a)

Indicators	Weighted Mean	Descriptive Equivalent
1. The nurse had a needle stick injury when administering parenteral injections.	2.13	Slightly Affects
2. The nurse slips, trips, and had a fall accident while at work.	2	Slightly Affects

3. The nurse accidentally breaks medication jars, vials, or ampules while preparing medications.	2.23	Slightly Affects
4. The nurse accidentally drops portable hospital equipment on their way to the patient's room.	2.16	Slightly Affects
(b) 5. The Nurse experiences muscle strains and sprains in using improperly functioning equipment in the hospital	3.11	Moderately Affects
6. The nurse was exposed to radiation during radiological diagnostics of the patient.	1.98	Slightly Affects
7. The nurse is vulnerable to chemical hazards during disinfection.	3.04	Moderately Affects
8. The nurse is at risk of latex allergy due to frequent exposure.	3.68	Affects
9. The nurse experience eye strain due to the constant use of a computer monitor during documentation.	3.54	Affects
Average Weighted Mean	**2.65**	**Moderately Affects**

Legend:

Statistical Range	Transmuted Rating	Descriptive Rating
4.50 – 5.00	Always	Highly Affects
3.50 – 4.49	Often	Affects
2.50 – 3.49	Sometimes	Moderately Affects
1.50 – 2.49	Seldom	Slightly Affects
1.00 – 1.49	Never	Not Affects

The lowest indicators are item numbers 2 and 6" The nurse slips, trips, and had a fall accident while at work" and "the nurse was exposed to radiation during radiological diagnostics of the patient" with a weighted mean of 1.98 and 2.00 or slightly affects. Overall on the effects of sleep deprivation along equipment-related injury got an average weighted mean of 2.65 or moderately affects. It showed that the nurses experienced equipment related injury. The findings also correspond with the results revealed in the study of Sleep Foundation (2021) published an article correlating excessive sleepiness and workplace accident affects our reflexes that can significantly increase the likelihood of a workplace accident, which can result in injury even death. Furthermore, with less sleep, our reaction time slows. It means nurses make decisions less quickly and accurately and are likely to misjudge thus can lead to consequential injuries that gravely impact the workplace.

Effects of Sleep Deprivation among Nurses and health-Related Diseases

It can be gleaned from the table that the highest among the indicators is item number 4" The nurse experiences frequent urination, excessive thirst and extreme hunger" with a weighted mean of 2.57 or moderately affects. It showed that the nurses experienced health related diseases due to sleep deprivation.

Table 7
Effects of Sleep Deprivation Among Nurses Along Health-Related Diseases
n=56
(a)

Indicators	Weighted Mean	Descriptive Equivalent
1. The nurse experiences daytime sleepiness and memory problems.	2.88	Moderately Affects
2. The nurse experiences bloating and an increase in the size of the pelvic area and abdomen with pain	2.27	Slightly Affects
3. The nurse experiences changes in elimination habits and persistent persistent abdominal pain	2.3	Slightly Affects
4. The nurse experiences frequent urination, excessive thirst and extreme hunger	2.57	Moderately Affects
5. The nurse shows blood in the urine, nose bleeding, headache, and vision problems.	1.73	Slightly Affects
(b) 6. The nurse experiences chest pain, chest tightness, chest pressure, and chest discomfort (angina).	1.8	Slightly Affects
7. The nurse experiences a sudden change in weight	1.7	Slightly Affects
8. The nurse experiences easy fatigability, lightheadedness, and shortness of breath	2.21	Slightly Affects

9. The nurse experiences sudden numbness or weakness of the body, confusion, trouble speaking, or difficulty and understanding speech.	2.13	Slightly Affects
10. The nurse experiences reduced exercise tolerance, lethargy, fatigue, nocturnal cough, wheeze. and ankle swelling	2.23	Slightly Affects
Average Weighted Mean	**2.2**	**Slightly Affects**

Legend:

Statistical Range	Transmuted Rating	Descriptive Equivalent
4.50 – 5.00	Always	Highly Affects
3.50 – 4.49	Often	Affects
2.50 – 3.49	Sometimes	Moderately Affects
1.50 – 2.49	Seldom	Slightly Affects
1.00 – 1.49	Never	Not Affects

The lowest indicators are item numbers 5 and 7" The nurse shows blood in the urine, nose bleeding, headache, and vision problems" and "The nurse experiences a sudden change in weight" with a weighted mean of 1.73 and 1.70 or slightly affects. Overall on the effects of sleep deprivation along health related diseases got and average weighted mean of 2.20 or slightly affects. It showed that the nurses experienced some health related diseases due to sleep deprivation. The result is in support of what was cited by Milutinovic (2016), Sleep foundation (2021), and BioEnergy Medical Center (2019) that sleep deprivation during the night forces sleeping to occur during the daytime and interferes with the normal progression of sleep-wake cycle. Several studies associate working during the night shift and, or working prolonged periods with health and sleep problems. Nurses who sleep poorly are at higher risk for high blood pressure, stroke, heart disease, and obesity. Too long or repeated shifts reduce the opportunity for sleep; shorten recovery time in nurses, thus endangering their safety and health.

Effects of Sleep Deprivation among Nurses

Table 8
Effects of Sleep Deprivation Among Nurses
n=56
(a)

Categories	Weighted Mean	Descriptive Equivalent
Medication Errors	1.79	Slightly Affects
Documentation Issues	2.06	Slightly Affects
Attitude Towards Handling Patient Care and Relationship with Colleagues	1.98	Slightly Affects
Unable to Identify patient Properly	1.72	Slightly Affects
Equipment-Related Injury	2.65	Moderately Affects
Health-Related Diseases	2.2	Slightly affects
Overall Weighted Mean	**2.07**	**Slightly Affects**

Legend:

Statistical Range	Transmuted Rating	Descriptive Equivalent
4.50 – 5.00	Always	Highly Affects
3.50 – 4.49	Often	Affects
2.50 – 3.49	Sometimes	Moderately Affects
1.50 – 2.49	Seldom	Slightly Affects
1.00 – 1.49	Never	Not Affects

It can be gleaned from the table on the categories on the effects of sleep deprivation among nurses, the highest category that have an effect on sleep deprivation is equipment related diseases with a weighted mean of 2.65 or moderately affects. It showed that this category has more effect on the nurses due to sleep deprivation. Moreover, 5 of the categories- medication errors, documentation issues, attitude towards handling patient care and relationship with colleagues, unable to identify patient properly and health-related diseases got a weighted mean of 1.79, 2.06, 1.98, 1.72 and 2.20 or slightly affects. It showed that the nurses had only some effects on the mentioned categories due to sleep deprivation in congruence with the study of the National Center for Biotechnology Information (2019), which includes the Philippines about the impact of sleep deprivation on an adolescent's mood and attitude.

Strategies Utilized by the Nurses to Overcome Sleep Deprivation

Table 9
Strategies Utilized by the Nurses to Overcome Sleep Deprivation
n=56
(a)

Indicators	Weighted Mean	Descriptive Equivalent
1. The nurse took medications such as anxiolytics, sleeping pills, etc.	1.88	Slightly Utilized
2. The nurse took a shower before sleeping.	4.45	Utilized
3. The nurse reads a book.	2.57	Moderately Utilized
4. The nurse listens to music.	3.3	Moderately Utilized
5. The nurse applies and smells soothing ointment.	2.63	Moderately Utilized
(b) 6. The nurse makes room for better sleeping (darken the room with good ventilation and invested in a high-quality mat4.45,tress).	4	Utilized
7. The nurse eats a balanced and healthy diet.	3.71	Utilized
8. The nurse takes vitamins and other food supplements.	4.2	Utilized
9. The nurse takes leisure time during day off.	3.3	Moderately Utilized
10. The nurse pamper time by going out with friends.	3.8	Utilized
11. The nurse focuses on self-encouragement and a positive mindset .	4.45	Utilized
12. The nurse performs yoga, meditation, exercise.	2.79	Moderately Utilized
13. The nurse stops using gadgets an hour before sleeping.	3.29	Moderately Utilized
14. The nurse uses the gadget until falling asleep.	3.75	Utilized
15. The nurse avoids eating few hours before sleeping.	3	Moderately Utilized
(b) 16. The nurse avoids caffeine, nicotine, and alcoholic beverages before sleeping.	2.43	Slightly Utilized
17. The nurse engages in a sexual relationship with a partner before sleeping.	2.02	Slightly Utilized
18. The nurse drinks warm milk before sleeping.	2.8	Moderately Utilized
Average Weighted Mean	**3.24**	**Moderately Utilized**

Legend:

Statistical Range	Transmuted Rating	Descriptive Equivalent
4.50 – 5.00	Always	Highly Utilized
3.50 – 4.49	Often	Utilized
2.50 – 3.49	Sometimes	Moderately Utilized
1.50 – 2.49	Seldom	Slightly Utilized
1.00 – 1.49	Never	Utilized

It can be gleaned from the table that the highest items are numbers 2, 6, 7, 8, 10, 11 and 14 " the nurse took a shower before sleeping", "the nurse darken the room with good ventilation and invested in a high-quality mattress", "the nurse eats a balanced and healthy diet", "the nurse takes vitamins and other food supplements", " the nurse pamper time by going out with friends."," the nurse focuses on self-encouragement and a positive mindset" and "The nurse uses the gadget until falling asleep" with a weighted mean of 4.45, 4.00, 3.71, 4.20, 3.80, 4.45 and 3.75. It showed that the nurses utilized the mentioned strategies to overcome their sleep deprivation. The findings also coincide with the study results of Larson and Dautovich (2021) that for better cognitive functioning, mood, and productivity to reduced risk for multiple health conditions, including decreased mortality rates, the effects of prioritizing sleep will positively impact most areas of Nurses life. Adopting strategies such as a warm bath and a welcoming environment to encourage sleep would greatly help rest and sleep. Moreover, nurses moderately utilized item numbers 3, 4, 5, 9, 12, 13, 15 and 18" The nurse reads a book", "The nurse listens to music", "The nurse applies and smells soothing ointment", "The nurse takes leisure time during day off ", "The nurse performs yoga, meditation, exercise", "The nurse stops using gadgets an hour before sleeping", "The nurse avoids eating few hours before sleeping", and "The nurse drinks warm milk before sleeping" with a weighted mean of 2.57, 3.30, 2.63, 2.79, 3.29, 3.00 and 2.80 or moderately utilized. The lowest items slightly utilized by the nurses are numbers 1, 16 and 17 "The nurse took medications such as anxiolytics, sleeping pills, etc", "The nurse avoids caffeine, nicotine, and alcoholic beverages before sleeping" and "The nurse engages in a sexual relationship with a partner before sleeping" with a weighted mean of 1.88, 2.02 and 2.43. Overall,   on   the

strategies utilized by the nurses to overcome sleep deprivation got an average weighted mean of 3.24 or moderately utilized. It revealed that the nurses utilized the strategies to overcome sleep deprivation.

ANOVA Results on the Difference in the Effects of Sleep Deprivation among Nurses across Age

Table 10
ANOVA Results on the Difference in the Effects of Sleep Deprivation Among Nurses Across Age

	Source of Variation	Sum of Squares	df	Mean Squares	F-value	Sig	Remarks
Medication Errors	Between Groups	1.569	5	0.314	0.875	0.505	Not Significant
	Within Groups	17.936	50	0.359			
	Total	19.506	55				
Documentation Issues	Between Groups	2.635	5	0.527	1.083	0.381	Not Significant
	Within Groups	24.321	50	0.486			
	Total	26.956	55				
Attitude towards Handling Patient Care and Relationship	Between Groups	2.834	5	0.567	1.512	0.203	Not Significant
	Within Groups	18.74	50	0.375			
	Total	21.574	55				
Unable to Identify Patient Properly	Between Groups	9.483	5	1.897	5.322	0.001	Significant
	Within Groups	17.819	50	0.356			
	Total	27.302	55				
Equipment-Related Injury	Between Groups	4.928	5	0.986	1.69	0.154	Not Significant
	Within Groups	29.165	50	0.583			
	Total	34.093	55				
Health-Related Diseases	Between Groups	0.552	5	0.11	0.284	0.92	Not Significant
	Within Groups	19.466	50	0.389			
	Total	20.019	55				
Overall Effect	Between Groups	2.414	5	0.483	1.855	0.119	Not Significant
	Within Groups	13.014	50	0.26			
	Total	15.429	55				

The computed F-values along medication errors, documentation issues, attitude towards handling patient care and relationship with colleagues, equipment-related injury and health-related diseases signify no significant differences when the nurses' age are considered. This means that the effects of sleep deprivation among the nurses along these areas are comparable. On the other hand, a significant difference was detected along unable to identify patient properly. The next table will show the particular age groups that has shown significant differences along this aspect. However when taken as a whole, mean squares revealed no significant differences when the nurses' age are examined this suggest effect of sleep deprivation among the nurses along these areas are comparable. The National Center for Biotechnology Information (2019) conducted a global study that includes the Philippines about the impact of sleep deprivation on an adolescent's mood and behavior, while University Hospital (2019), Mantell (2020), and Sleep Foundation (2021) mentioned that sleep deprivation among night shift nurses most especially demonstrated a decline in cognitive function contributing to more issues, and problems

among Nurses medical professionals duties and responsibilities such as medication errors, documentation issues, and equipment-related injury.

Scheffe Test Results on the Significant Difference in the Effects of Sleep Deprivation among Nurses across Age

Table 11
Scheffe Test Results on the Significant Difference in the Effects of Sleep Deprivation Among Nurses Across Age

Aspect	Compared Age Groups	Mean Difference	Sig
Unable to Identify Patient Properly	21-25 vs 26-30	1.241	0.01
	21-25 vs 31-35	1.529	0

It can be noted that the nurses who belong to the age bracket 21-25 are compared to the 26-30 and 31-35 age groups. The positive mean differences suggest that the nurses aged 21-25 are more unable to identify patients properly when deprived of sleep as compared to nurses who are 26-30 and 31-35 years of age. These can be explain by the study of University Hospital (2019), Mantell (2020), Sleep Foundation (2021), and Alsharari (2021) that sleep deprivation among night shift nurses most especially demonstrated a decline in cognitive function, contributing to more issues and problems among Nurses medical professionals' duties, and responsibilities. Additionally, nurses belonging to the younger age group, long years of work experience, and being involved in fixed rotating shiftwork were risk factors for experiencing performance and safety issues.

t-Test Results on the difference in the Effects of Sleep Deprivation among Nurses across Gender

Table 12
t-Test Results on the Difference in the Effects of Sleep Deprivation Among Nurses Across Gender

Aspect	Gender	N	Mean	Mean Difference	Standard Error Difference	df	t-value	Sig	Remarks
Medication Errors	Male	18	1.8	0.013	0.178	54	0.07	0.94	Not Significant
	Female	40	1.79						
Documentation Issues	Male	18	2.08	0.031	0.209	54	0.15	0.88	Not Significant
	Female	40	2.05						
Attitude towards Handling Patient Care and	Male	18	2.05	0.1	0.186	54	0.536	0.59	Not Significant
	Female	40	1.95						
Unable to Identify Patient Properly	Male	18	1.59	-0.174	0.209	54	-0.831	0.41	Not Significant
	Female	40	1.77						
Equipment-Related Injury	Male	18	2.83	0.255	0.232	54	1.096	0.28	Not Significant
	Female	40	2.58						
Health-Related Diseases	Male	18	2.3	0.146	0.179	54	0.813	0.42	Not Significant
	Female	40	2.15						
Overall Effect	Male	18	2.11	0.059	0.158	54	0.371	0.71	Not Significant
	Female	40	2.05						

Results show that the results are not significant which means that the effect of sleep deprivation among male and female nurses along all the indicated aspects are comparable. These could be expounded in the study of Newson (2021) trying to work while underlet can significantly impact job performance. Without enough sleep, neurons in the brain become overworked, impairing thinking, slowing physical reactions, and leaving people feeling emotionally drained. These short-term side effects of sleep deprivation can wreak havoc on a day's work. Chronic sleep deprivation can have even more drastic consequences, including an increased risk of obesity, heart disease, cognitive decline, and dementia.

ANOVA Results on the difference in the Effects of Sleep Deprivation among Nurses across Civil Status

Table 13
ANOVA Results on the Difference in the Effects of Sleep Deprivation Among Nurses Across Civil Status

	Source of Variation	Sum of Squares	df	Mean Squares	F-value	Sig	Remarks
Medication Errors	Between Groups	0.371	2	0.186	0.514	0.601	Not Significant
	Within Groups	19.134	53	0.361			
	Total	19.506	55				
Documentation Issues	Between Groups	2.211	2	1.105	2.368	0.104	Not Significant
	Within Groups	24.745	53	0.467			
	Total	26.956	55				
Attitude towards Handling Patient Care and Relationship	Between Groups	0.399	2	0.2	0.499	0.61	Not Significant
	Within Groups	21.175	53	0.4			
	Total	21.574	55				
Unable to Identify Patient Properly	Between Groups	0.033	2	0.017	0.033	0.968	Not Significant
	Within Groups	27.269	53	0.515			
	Total	27.302	55				
Equipment-Related Injury	Between Groups	1.09	2	0.545	0.875	0.423	Not Significant
	Within Groups	33.003	53	0.623			
	Total	34.093	55				
Health-Related Diseases	Between Groups	0.93	2	0.465	1.291	0.283	Not Significant
	Within Groups	19.089	53	0.36			
	Total	20.019	55				
Overall Effect	Between Groups	0.527	2	0.263	0.937	0.398	Not Significant
	Within Groups	14.902	53	0.281			
	Total	15.429	55				

The computed F-values in all the aspects enumerated generated significance values that are higher than the set .05 level of significance. This suggests that there exists no significant difference in the effects of sleep deprivations among nurses when grouped according to civil status. This means that single, separated and married nurses share the same effects of sleep deprivation. It is specified in the study done by Deng, Liu, and Fang (2020) most of the nurses were married, and most of them were working in rotating shifts

with caution and resiliency in performing their tasks and responsibilities.

ANOVA Results on the difference in the Effects of Sleep Deprivation among Nurses across Highest Educational Attainment

Table 14
ANOVA Results on the Difference in the Effects of Sleep Deprivation Among Nurses Across Highest Educational Attainment

	Source of Variation	Sum of Squares	df	Mean Squares	F-value	Sig	Remarks
Medication Errors	Between Groups	1.78	3	0.593	1.74	0.17	Not Significant
	Within Groups	17.726	52	0.341			
	Total	19.506	55				
Documentation Issues	Between Groups	0.885	3	0.295	0.588	0.625	Not Significant
	Within Groups	26.071	52	0.501			
	Total	26.956	55				
Attitude towards Handling Patient Care and Relationship	Between Groups	2.196	3	0.732	1.962	0.131	Not Significant
	Within Groups	19.378	52	0.373			
	Total	21.574	55				
Unable to Identify Patient Properly	Between Groups	2.548	3	0.849	1.784	0.162	Not Significant
	Within Groups	24.755	52	0.476			
	Total	27.302	55				
Equipment-Related Injury	Between Groups	0.907	3	0.302	0.474	0.702	Not Significant
	Within Groups	33.186	52	0.638			
	Total	34.093	55				
Health-Related Diseases	Between Groups	0.489	3	0.163	0.434	0.729	Not Significant
	Within Groups	19.529	52	0.376			
	Total	20.019	55				
Overall Effect	Between Groups	0.741	3	0.247	0.874	0.461	Not Significant
	Within Groups	14.688	52	0.282			
	Total	15.429	55				

The computed F-values along the different aspects have corresponding significance values which are higher than the set .05 level of significance. This indicates that the educational background of the nurses does not cause any variation in the effects of sleep deprivation. Regardless of the educational attainment of the nurses, they experienced the same effects of sleep deprivation.

ANOVA Results on the Difference in the Effects of Sleep Deprivation Among Nurses Across Area of Assignment

Table 15
ANOVA Results on the Difference in the Effects of Sleep Deprivation Among Nurses Across Area of Assignment

	Source of Variation	Sum of Squares	df	Mean Squares	F-value	Sig	Remarks
Medication Errors	Between Groups	0.353	5	0.071	0.185	0.967	Not Significant
	Within Groups	19.152	50	0.383			
	Total	19.506	55				
Documentation Issues	Between Groups	0.271	5	0.054	0.102	0.991	Not Significant
	Within Groups	26.685	50	0.534			
	Total	26.956	55				
Attitude towards Handling Patient Care and Relationship	Between Groups	1.023	5	0.205	0.498	0.776	Not Significant
	Within Groups	20.551	50	0.411			
	Total	21.574	55				
Unable to Identify Patient Properly	Between Groups	0.816	5	0.163	0.308	0.906	Not Significant
	Within Groups	26.486	50	0.53			
	Total	27.302	55				
Equipment-Related Injury	Between Groups	0.901	5	0.18	0.272	0.927	Not Significant
	Within Groups	33.191	50	0.664			
	Total	34.093	55				
Health-Related Diseases	Between Groups	1.172	5	0.234	0.622	0.684	Not Significant
	Within Groups	18.847	50	0.377			
	Total	20.019	55				
Overall Effect	Between Groups	0.391	5	0.078	0.26	0.933	Not Significant
	Within Groups	15.038	50	0.301			
	Total	15.429	55				

Computed values reveal insignificant results. This means that no matter which area of the hospital the nurses are assigned, sleep deprivation has the same effect as to their experiences in committing medication errors, documentation issues, attitude towards handling patient care and relationship with colleagues, inability to identify patient properly, equipment-related injury and health-related diseases. These can be describe in the study by Alsharari (2021); it is investigated that the negative impact of night shiftwork has shown that it affects workers' health, mainly causing fatigue, sleepiness, mood changes, and weight gain. Furthermore, reported problems with job performances and psychosocial well-being. Night shiftwork, which requires nurses to work at night and sleep during the day, also significantly alters the circadian rhythm of affected persons. Moreover, it has shown that night shiftwork is associated with the poor performance; thus the adoption of low safety indicators within a rotating shift schedule showed that fixed night shiftwork could be related to increased job dissatisfaction. More so, the challenge of shiftwork is associated with resignation. Thus, turnover of nurses and night work were factors for future disability retirement. These challenges have led to calls for the introduction of napping during night shifts among nursing staff.

ANOVA Results on the Difference in the Effects of Sleep Deprivation Among Nurses Across Position

Table 16
ANOVA Results on the Difference in the Effects of Sleep Deprivation Among Nurses Across Position

	Source of Variation	Sum of Squares	df	Mean Squares	F-value	Sig	Remarks
Medication Errors	Between Groups	0.412	2	0.206	0.572	0.568	Not Significant
	Within Groups	19.093	53	0.36			
	Total	19.506	55				
Documentation Issues	Between Groups	1.609	2	0.805	1.683	0.196	Not Significant
	Within Groups	25.346	53	0.478			
	Total	26.956	55				
Attitude towards Handling Patient Care and Relationship	Between Groups	0.468	2	0.234	0.588	0.559	Not Significant
	Within Groups	21.106	53	0.398			
	Total	21.574	55				
Unable to Identify Patient Properly	Between Groups	0.754	2	0.377	0.752	0.476	Not Significant
	Within Groups	26.548	53	0.501			
	Total	27.302	55				
Equipment-Related Injury	Between Groups	0.606	2	0.303	0.479	0.622	Not Significant
	Within Groups	33.487	53	0.632			
	Total	34.093	55				
Health-Related Diseases	Between Groups	0.869	2	0.434	1.202	0.309	Not Significant
	Within Groups	19.15	53	0.361			
	Total	20.019	55				
Overall Effect	Between Groups	0.605	2	0.303	1.082	0.346	Not Significant
	Within Groups	14.823	53	0.28			
	Total	15.429	55				

The computed F-values generated significance values higher than the set .05 level of significance. This leads to insignificant result which implies that no matter what position the nurses hold, they still experience the same effect of sleep deprivation leading to medication errors, documentation issues, affected attitude towards handling patient care and relationship with colleagues, inability to identify patient properly, equipment-related injuries and health-related diseases. These can be describe in the study by White (2021) that Nurse Superiors were carrying the burden worried about their staff, their health, and burnout. They related keeping this worry inside and described that they had to absorb all the staff nurses' concerns. They reported not seeking help themselves and carried this burden alone. Furthermore, communicating with staff about their fears and anxiety, comforting those crying, and encouraging those afraid to work with COVID-19 patients. Consequently, fear of contagion was especially prevalent when the virus was unknown, thus affecting rest and sleep.

ANOVA Results on the Difference in the Effects of Sleep Deprivation among Nurses across Number of Years in Service

Table 17
ANOVA Results on the Difference in the Effects of Sleep Deprivation Among Nurses Across Number of Years in Service

	Source of Variation	Sum of Squares	df	Mean Squares	F-value	Sig	Remarks
Medication Errors	Between Groups	1.153	4	0.288	0.801	0.53	Not Significant
	Within Groups	18.353	51	0.36			
	Total	19.506	55				
Documentation Issues	Between Groups	0.313	4	0.078	0.15	0.96	Not Significant
	Within Groups	26.643	51	0.522			
	Total	26.956	55				
Attitude towards Handling Patient Care and Relationship	Between Groups	1.651	4	0.413	1.057	0.39	Not Significant
	Within Groups	19.923	51	0.391			
	Total	21.574	55				
Unable to Identify Patient Properly	Between Groups	2.176	4	0.544	1.103	0.37	Not Significant
	Within Groups	25.126	51	0.493			
	Total	27.302	55				
Equipment-Related Injury	Between Groups	0.896	4	0.224	0.344	0.85	Not Significant
	Within Groups	33.197	51	0.651			
	Total	34.093	55				
Health-Related Diseases	Between Groups	1.083	4	0.271	0.729	0.58	Not Significant
	Within Groups	18.936	51	0.371			
	Total	20.019	55				
Overall Effect	Between Groups	0.743	4	0.186	0.645	0.63	Not Significant
	Within Groups	14.686	51	0.288			
	Total	15.429	55				

The computed F-values reveal significance values which are higher than the set .05 level of significance. This suggests that the results are not significant leading to the acceptance of the null hypothesis which states that there exists no significant difference in the effects of sleep deprivation among nurses across their profile variables specifically in their length of service. This means that novice or seasoned nurses alike share similar experiences in the effects of sleep deprivation. As cited in the study done by Ketchell (2021), poor sleep can harm well-being, shown to be a decisive risk factor for cognitive decline and early mortality. The expert in sleep and stress among middle-aged adults in the workplace, and the research has found that work-related stress influences sleep quantity and quality. Furthermore, poor sleep may increase the risk of adverse health outcomes for both health care workers and their patients.

Relationship between the Effects of Sleep Deprivation Among Nurses And their Profile variables

Table 18
Relationship Between the Effects of Sleep Deprivation Among Nurses and their Profile variables

Profile Variable	A		B		C		D		E		F	
	r-value	sig	r-value	sig	r-value	sig	r-value	sig	r-value	sig	r-value	sig
Age	-0.028	0.84	0.066	0.63	0.004	0.98	-0.058	0.67	0.002	0.99	-0.025	0.86
Gender	-0.01	0.94	-0.02	0.88	-0.07	0.59	0.112	0.41	-0.15	0.28	-0.11	0.42
Civil Status	0.057	0.68	0.24	0.08	-0.01	0.94	0.034	0.8	0.178	0.19	0.187	0.17
Highest Educational Attainment	-0.201	0.14	-0.09	0.5	**-0.313***	0.02	-0.244	0.07	0.142	0.3	0.133	0.33
Area of Assignment	-0.073	0.59	0.001	1	-0.03	0.82	0.01	0.94	-0.07	0.63	-0.049	0.72
Position	0.005	0.97	-0.04	751	0.005	0.97	-0.154	0.26	0.027	0.84	0.014	0.92
Years in Service	-0.014	0.92	0.022	0.88	0.101	0.46	0.005	0.97	0.12	0.38	0.014	0.92

It can be clearly spotted in the table that there is a single entry that shows significant results. The effect of sleep deprivation along attitude towards handling patient care and relationship with colleagues is significantly related to highest educational attainment. The negative significant r-value of -.313 with sig value of .019 indicate that the lower the educational attainment of the nurse, the greater has been the effect of sleep deprivation on their attitude towards patient care as well as on their dealings with colleagues. On the other hand, no significant relationships have already been detected along the other aspects and profile variables.

According to the study done by Better Health Channel (2020), it showed people who are sleep-deprived report an increase in negative moods, anger, frustration, irritability, sadness, and decreases in positive spirits. Moreover, sleeplessness is often a symptom of mood disorders, depression and anxiety. It can also raise the risk of, and even contribute to, developing some mood disorders.

Proposed Program to prevent Sleep Deprivation among Nurses

Area	Objectives	Activities	Strategies	Person Involved	Time Frame	Expected Output
A. Medication Error	To accurately transcribe the medication order	Asking the AP for the corrections of the medicine ordered if not clear.	Listen carefully to AP during rounds.	Nurses	Immediately after Dr's rounds.	To prevent medication errors.
	Administration of drugs at the right time.	Giving the medicine on the right time.	Familiarize with the Drugs.	Doctors	Following standard time for giving medication.	Drugs are given on time
				Nusing Supervisor		
			Use of Medication ticket	Nurses		
				Nursing Supervisor		
B.Equipment related injury	Check equipment and it's functionality.	Checking the equipment before using	Checking the date of inspection and asking the maintenance personnel	Nurses	Before using any equipment	Routinely checking the equipment to maintain functionality.
	To be aware on the effects of the chemicals during disinfection.	Using gloves and eye googles		Maentenance personnel		
		Writing legibly on the Nurses notes.	Proper disposal of used PPE and proper use and storage of chemicals	Nurses	Before , during and after disinfection.	Observed at all times during disinfection.
				Maentenance personnel		

SUMMARY, CONCLUSIONS AND THE RECOMMENDATIONS

This chapter presents the summary of findings in the study, the conclusions drawn, and the recommendations of the study.

SUMMARY

The study dealt with sleep deprivation among Nurses in a secondary Hospital. It dealt with the profile of the respondents in terms of age, gender, civil status, highest educational attainment, and a number of years in service. The Descriptive research design, utilizes a questionnaire as the primary instrument in gathering data. Statistical tools used are frequency and percentage, weighted mean, T-test, Schffe test, and ANOVA. Findings revealed that the respondents were in the age bracket of 26-30 years old, female married, bachelor's degree holder, and in the service of 1-5 years. Regarding sleep deprivation, the equipment-related injury was the most significant factor, particularly in the risk of latex allergy and eye strain due to the constant use of computer monitors during documentation. Along with strategies to overcome sleep deprivation, the respondents focused on self-encouragement and a positive mindset, taking a shower before sleeping, taking multivitamins and other food supplements, and good ventilation.

CONCLUSIONS

Based on the findings, the following conclusions were concluded:

1. The Nurse administers medication at the time and interval.
2. Equipment-related injury was the highest among the variables.
3. The Nurse is a young adult, female-dominated, had their own families, did not pursue a higher level of learning like Mastered, and had been employed for a few years.
4. There were many strategies utilized by the Nurses to overcome sleep deprivation, the highest was on taking a shower before sleeping, taking multivitamins and other supplements, and having a positive mindset.
5. There is no significant difference between the variables except those Nurses in the bracket 21-25 years old who are more unable to identify patients correctly when deprived of sleep.
6. The effects of sleep deprivation relating to attitude towards handling patient care and relationship with colleagues are significantly associated with the highest educational attainment.
7. The submitted program can be used to minimize the effects of sleep deprivation.

RECOMMENDATIONS

Based on the conclusions provided, the following were recommended.

1. Chief Nurse, Nurse Supervisor, and Head Nurses must establish a change in identifying patients in the facility like adopting an Electronic identification technology coding such as barcoding or RFID. Additionally, the Hospital Supplies, equipment supervisor, and Budget Heads should change the latest supplies to non-latex to prevent latex allergy among hospital staff.
2. The Nurse must pursue a higher level of learning and training to enhance their competencies, thereby minimizing the effects of sleep deprivation.
3. The Nursing Department should coordinate with the safe Hospital Supervisor to add more hazard signs, on-slip rugs, place non-slip stickers on the stairs, and hallway to lessen and further prevent accidental slips, trips and fall accidents at work. Furthermore, the Hospital Administration must build quarters for nurses for napping purposes.
4. The recommendation can still adapt strategies of minimizing sleep deprivation aside from those mentioned.
5. Nurses must be physically, emotionally, psychologically prepared before attending to their graveyard duties.
6. Nurses must undergo related seminars and training to overcome Sleep deprivation.
7. The submitted program from this study would be presented to the Hospital Chief Nurse, Nursing supervisor, and Head Nurses to help their Nurses overcome the effects of sleep deprivation, thus assisting the Hospital to prevent resignation, having unauthorized leave, absences that consequently increase productivity rate, and improving income of the Hospital.

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