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SLEEP DEPRIVATION AND ITS IMPLICATIONS FOR NURSES WORKING AT CRITICAL CARE UNITS IN THE CHILDREN'S HOSPITAL, MULTAN, PAKISTAN

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ABSTRACT

Background: In today's societies, sleep deprivation is a serious public health concern.
Objective: The current study intends to evaluate the degree of sleep deprivation experienced by nurses working in critical care units and identify the effects of sleep deprivation,
Materials and Methods: In this study, a descriptive design has been used. From October 20, 2023, until March 20, 2024, it was conducted at the critical care units of Children Hospital located in the city of Multan. For the night shift, a non-probability sampling strategy using purposeful samples of the 163 nurses working in critical care units has been chosen. The degree of sleep deprivation was measured using the expert committee's modified sleep deprivation scale, and the general health condition was assessed using the General Health Questionnaire (GHQ-28), which has 28 items and covers the physical, social, depressive, and anxious domains.
Results: The findings also showed that, except the depressive domain, which was evaluated well, the majority of the domains (physical, social, and anxiety) had intermediate assessments. The general state of health and sleep deprivation are significantly correlated.
Conclusion: Based on the data, it was determined that most nurses had a moderate degree of sleep deprivation and a moderate level of overall health status.

Keywords: Nurses, Sleep Deprivation, Critical Care Unit, Children Hospital

INTRODUCTION

To maintain the body and brain comfortable, sleep is essential because it replenishes the body's natural physiological and mental activities. The World Health Organization (WHO, 1998) states that any number of factors, including fatigue, poor focus, stress, and an increased risk of accidents or injuries, might result in a tumultuous day the following morning (Medrzycka-Dabrowska et al. 2018). Sleep is an essential component of the 24-hour cycle that the body needs to prevent physiological and psychological stress, according to Maslow. Sleep is the experience and achievement of natural rest as

a basic physiological need required (Louca, Esmailnia, and Thoma 2021). A reduction in the number of hours of sleep that a person receives below their average amount is known as sleep deprivation (SD). In addition, partial sleep deprivation is referred to as sleep restriction (SR). It was discovered that they interfered with overall health and wellness, including a reduction in immunity and a decline in mental and emotional well-being. According to the National Sleep Foundation of the United States (US), 7-8 hours of sleep per night are essential for reestablishing metabolic equilibrium (Bishir et al. 2020).

Working the night shift at the incorrect biological hours will seriously disrupt the biological clock that corresponds with normal days. The internal biological clock is in charge of coordinating periods of alertness and slumber. The body's physiology is harmed by this circadian rhythm imbalance and insufficient sleep, which results in obesity, cardiovascular disease, and cognitive decline (Kaliyaperumal et al. 2017). Lack of sleep over an extended period of time may impair cardiovascular function and raise the risk of cardiovascular crisis. The pathophysiology of cardiovascular disease and the mechanisms underlying inadequate sleep function may help to improve recovery techniques and lessen the detrimental effects of sleep deprivation on human cardiovascular health (Kervezee, Kosmadopoulos, and Boivin 2020). When compared to non-shift nurses, sleep loss may also contribute to cardiovascular disorders among night shift workers. Regretfully, the pathophysiological pathways linked to issues during night shifts remain incompletely understood. Crucially, knowledge of those mechanisms can help plan or schedule work cycles, developing shift work safety procedures, and solving related issues (VARDAR and ŞARLI GÜNDÜZ, 2021).

MATERIALS AND METHODS

A descriptive design was employed in this investigation. It was held at the critical care facilities of the Children Hospital in Multan from October 20, 2023, until March 20, 2024. A non-probability sampling technique has been used for the night shift, utilizing intentional samples of the 163 nurses employed in critical care units. The General Health Questionnaire (GHQ-28), which comprises 28 items and covers the physical, social, depressed, and anxious domains, was used to evaluate the general state of health, while the expert committee's modified sleep deprivation scale was used to determine the degree of sleep deprivation.

By using a questionnaire akin to the study sample in the hospital, which is non-probability (purposive sample), data is gathered through the use of two techniques: an interview and a questionnaire with the nurses of critical care units during their work in the night shift.

RESULTS

Table 1. Background Characteristics of the Nurses

Items		Sample(n) Total = 163	
		Frequency	Percentage
Age	20-29	106	65.0
	30-39	33	20.2
	40-49	16	9.8
	50-59	8	4.9
Gender	Male	112	68.7
	Female	51	31.3
Marital status	Married	102	62.6
	Single	54	33.1
	Divorced	2	1.2
	Widowed	4	2.5

	Separated	1	0.6
Years of Experience	1-12	137	84.0
	13-24	19	11.7
	25-36	7	4.3
Level of education	Diploma in Nursing	64	39.3
	Bachelor in Nursing	61	37.4
	Master in Nursing	38	23.3
Department	Emergency	113	69.3
	RCU	28	17.2
	CCU	22	13.5

Table 2. Assessment of Sleep Deprivation among Nurses Working at Critical Care Units

No.	Somatic domain	Groups	Freq. (N=163)	%
1.	Do you think your sleep is sufficient?	Completely sufficient	11	6.7
		Fairly sufficient	28	17.2
		Somewhat	44	27.0
		insufficient		
		Clearly insufficient	28	17.2
		Highly insufficient	52	31.9
2.	How well-rested do you feel when you wake up?	Very Well	14	8.6
		Fairly Well	22	13.5
		Groggy	13	8.0
		Very Tired	83	50.9
		Extremely Tired	31	19.0
3.	How often do you have insufficient sleep due to work schedule?	Never	16	9.8
		1-2 per month	13	8.0
		1-2 per week	62	38.0
		3-4 per week	26	16.0
		almost	46	28.2
		always/every day		
4.	How long have you been suffering from insufficient sleep due to work schedule?	Never	20	12.3
		Less than one	10	6.1
		month		
		One month	15	9.2
		Two months	11	6.7
		Three months	107	65.6
5.	What is the longest length of the time you have gone without sleep due to work schedule?	(<16) hr.	32	19.6
		(17-18) hr.	58	35.6
		(19-20) hr.	20	12.3
		(21-22) hr.	10	6.1
		(23-24) hr.	43	26.4
6.	How often do you have daytime sleep instead of nocturnal sleep?	Never	28	17.2
		1-2 per month	23	14.1
		1-2 per week	44	27.0
		3-4 per week	25	15.3
		almost	43	26.4

		always/every day		

Table 3. Nurses' responses about the 28-GH (general health status domains)

No.	Items	MS	SD	Assessment
Somatic Domain				
1	You have been feeling well and in good health?	2.80	0.95	Moderate
2	You have been feeling like you need enough sleep or rest?	2.96	1.06	Moderate
3	You have been feeling your health is deteriorating?	2.67	0.97	Moderate
4	You have felt sick?	2.53	0.95	Moderate
5	You have been getting head pain?	1.77	0.88	Good
6	You have been getting a feeling of tightness or pressure in the head?	1.67	0.84	Good
7	You have been having hot or cold spells?	1.96	0.84	Good
Anxiety Domain				
1	You have lost much sleep over worry?	2.31	0.92	Moderate
2	Having difficulty staying asleep once you are off?	2.70	0.87	Moderate
3	You have felt constantly under strain?	1.85	0.93	Good
4	You have been edgy and bad tempered?	1.80	0.93	Good
5	You have been getting scared and panicky for no good reason?	1.74	0.84	Good
6	You have found everything getting on top of you?	2.10	0.85	Moderate
7	You have been feeling nervous and strung-up all the time?	2.55	0.97	Moderate
Social Domain				
1	You have been managing to keep yourself busy and occupied?	1.52	0.88	Good
2	You have been taking longer you over things you do?	1.81	0.98	Good
3	You have felt on the whole you were doing things well?	1.73	1.02	Good
4	You have been satisfied with the way you carry out a task?	1.76	0.96	Good
5	You have felt that you are playing a useful part in things?	2.14	0.90	Moderate
6	You have felt capable of making decisions about things?	1.63	0.95	Good
	You have been able to enjoy your normal day-to - day activities?	1.82	1.04	Good
Depression Domain				
1	You have been thinking of yourself as a worthless person?	2.41	1.00	Moderate
2	You have felt that life is entirely hopeless?	3.10	0.88	Poor
3	You have felt that life is not worth living?	2.28	0.94	Moderate
4	You have thought of the possibility that you might do away with yourself?	1.98	0.93	Good
5	You have found at times you couldn't do anything because your nerves were so bad?	2.57	0.99	Moderate
6	You have found yourself wishing you were dead and away from it all?	2.53	1.02	Moderate
7	You have found that the idea of taking your own life kept coming into your mind?	2.35	1.13	Moderate

Table 4. The correlation between the level of the total 28-GH assessment and the level of sleep deprivation assessment (SDA)

Sleep Deprivation Assessment	**Level of 28-GH Assessment**		
	Good	Moderate	Poor
Completely Sufficient	0	0	1
	0.0%	0.0%	100.0%
Moderately	8	9	0

Sufficient	47.1%	52.9%	0.0%
Moderately	38	44	4
Insufficient	44.2%	51.2%	4.7%
Insufficient	14	43	2

Discussion

The present study sample has inadvertently been classified according to the demographic features displayed in Table 1. Age-wise, the majority of the age groups comprised 65.0% of the sample as a whole and were between the ages of 20 and 29. This outcome, which matched age, years of experience, and educational attainment (Bachelor's degree), may be a reflection of the demanding nature of work in critical care units, which calls for a high level of endurance and strength, qualities that are typically associated with younger ages. According to Books et al. (2017), the findings of this study are consistent with those of an American study that looked at the same age range. The bulk of the nurses in the critical care units are youthful, bachelor's degree holders, according to the same table. They have strong talents and the capacity to tolerate the strain and difficulties of job, even with their limited experience. This is understandable given the nature of work in critical care units, which demands a high degree of effort and education (Köse and Öztunç 2016).

Whereas, most of the sample has a social status (married), the majority of them are males, and the majority of them work in the Emergency Department. This result reflects the nature of the work in the critical care units during the night shift in Iraqi society (Rasheed, Aziz, and Osman 2022). The nursing staff is concentrated in large numbers in hospitals that provide wide services, while it has been found that the Emergency Department includes more numbers and this reflects the volume of service provided by the emergency department. However, the current study agrees with a study 2021 that has been conducted in Korea on the time and urgent need for cadres in line with their rest times (Ko and Park 2022).

An indicator of the degree of sleep deprivation that describes the work-related axis and the number of hours of sleep for a minimum of three months at work is provided in Table 2. The nurses work long shifts that surpass the prescribed limit of seven hours of sleep, which results in them being extremely tired and not getting enough sleep. This outcome is in line with the Italian study (Leso et al. 2021) and reflects the policies, regulations, and work schedules of the healthcare facility, which call for night work to provide medical services within 24 hours. According to Table 2, the nurses' sleep experiences range from slightly inadequate to nonexistent, and this outcome is associated with the critical care unit's night shift work schedule. However, an Iranian study found that critical care nurses' sleep quality decreased (Akbarzadeh et al. 2014). An investigation was carried out by Ramadan 2014 to ascertain the impact of sleep deprivation on the frequency of errors made by nurses who work the night shift in critical care units. On the Pittsburgh Sleep Quality Index (PSQI), nurses who were sleep deprived had lower sleep quality than nurses who were not. Short naps have been demonstrated to help people recover, and altering the work schedule to include shorter night shifts and less hours per week may enhance sleep quality and lessen sleep deprivation (Ramadan and Al-Saleh 2014).

The stress levels of the nurses working night shifts in the intensive care unit are displayed in Table 3. These levels are indicative of the nurses' overall health state. The levels exhibit a modest degree of intensity. Depression is one effect that has not been amply proven because it is a risk factor for the future, except certain sections of the general health status, such as the depression area, which appears at a good level. This finding relates to nurses' inadequate sleep and the nature of night job; it contradicts a 2015 study by Muhammad that found a significant inverse relationship between depression and sleep deprivation (Al-Abri 2015).

The general health state in all of its dimensions and sleep deprivation have a strong positive direct association, as Table 4 demonstrates. This outcome is supported by scientific evidence that sleep deprivation has physiological, psychological, mental, and cognitive effects. These effects are manifested in a variety of symptoms and issues, such as a decline in effectiveness and general well-being, difficulty focusing, fatigue, headaches, blurred vision, sluggish reactions, and a higher frequency of mistakes made in the workplace. In addition, a lack of sleep raises the risk of colorectal cancer as well as obesity, diabetes, cardiovascular disease, and gastrointestinal issues.

Psychological problems include anxiety, depression, excessive tension, irrational rage at the smallest things, and tension itself. In this brief synopsis. Throughout the lesson, various themes covered the impacts and long-term health implications of sleep deprivation. Due to its significant financial cost, Public Health (PH) states that inadequate sleep in all age groups is regarded as a public health problem that is typically not acknowledged or documented. Additionally, it demonstrated how sleep deprivation causes the body to deviate from its normal course, which raises the risk of both physical and mental illnesses (Chattu et al. 2019).

Conclusion

Based on the findings and results that are reached in this work, it is concluded that:

- The majority of critical care unit nurses are exposed to sleep deprivation as a result of the nature of their work in night shifts. The levels of sleep deprivation among them have reached a moderate rate, ranging from total sleep deprivation to partial sleep deprivation (insufficient sleep).
- The general health status has appeared at a moderate level among Critical Care Unit nurses. The majority of them suffered from extreme fatigue, moderate anxiety, a sense of nervous and behavioral agitation, and social withdrawal.
- Depression did not occur among them, as it is a risk indicator of sleep deprivation, this reflects the importance of the strong positive association between sleep deprivation, general health status and workplace (units), and the foregoing indicates that consequences did not occur clearly.
- This may be because the majority of nurses are young, their ages range between 20-29 years, and they have enough energy and adaptation, which warning a risk in the future, which may be reflected in deteriorating health if solutions are not developed.

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