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Consequences of sleep deprivation among nurses at critical care units in Al-Najaf city

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***Abstract*---**Sleep deprivation is a major public health challenge in modern societies. The current study aims to assess the level of sleep deprivation of the nurses in critical care units, reveal the consequences of sleep deprivation, and characterize the relationship between them with the demographic data of nurses. A descriptive design has been performed in the current study. It has been carried out in the critical care units of hospitals in the city of Najaf from October 20, 2021 to March 20, 2022. A Non-probability a technique of (purposive) samples of the (163) nurses in critical care units for night shifts has been selected. Measurement level of sleep deprivation through the sleep deprivation scale modified by expert committee, and the general health status was determined from the General Health Questionnaire (GHQ-28) consisting of (28) items, and it includes four aspects: physical, social, depression, and anxiety. The results of the current study have shown that the level of sleep deprivation is moderate. The results also have revealed that the assessment of most domains (physical, social, and anxiety) was moderate, except for the domain of depression, which was good. There is a significant relationship between sleep deprivation and general health status. It has been concluded that the majority of the nurses showed a moderate level of sleep deprivation and most of them showed a moderate level of general health status.

***Keywords*---**sleep, sleep deprivation, health consequences, critical care units, night shift, nurses.

Introduction

Sleep is a necessary and important lifestyle for the comfort of the body and the brain, as it restores the body's activity at the physiological and mental level. According to World Health Organization (WHO, 1998) A night without sleep or abnormal or bad sleep will be followed by a turbulent day no matter the cause, feeling tired, poor concentration, stress, and a greater possibility of accidents or injury (Medrzycka-Dabrowska et al. 2018). According to Maslow, sleep is the feeling and achievement of natural rest as a basic physiological need required, and it is an essential part of the 24-hour cycle that the body needs to prevent physiological and psychological stress (Louca, Esmailnia, and Thoma 2021). Sleep deprivation (SD) is a decrease or decrease in hours of sleep below the normal level for the individual. At the same time, sleep restriction (SR) refers to a partial loss of sleep. Their interference with health and wellness in general, especially a decrease in immunity and a decrease in cognitive function and emotional well-being, was revealed. The National Sleep Foundation, United States (US), that 7-8 hours of sleep is a basic need to restore metabolic balance (Bishir et al. 2020).

The biological clock that coincides with normal days will be greatly damaged when working the night shift at the wrong biological times. The biological clock is guided from inside and working to organize periods of sleepiness and alertness. This imbalance in the circadian rhythm and incomplete sleep damages the body's physiology, causing obesity, cardiovascular disease, and cognitive impairment (Kaliyaperumal et al. 2017). Chronic sleep deprivation may weaken cardiovascular capacity and increase chance of developing cardiovascular crisis. Identification of the mechanisms underlying insufficient sleep function as well as the pathogenesis of cardiovascular disease may wish to facilitate the improvement of recovery techniques to reduce the unfavorable consequences of sleep deprivation on human cardiovascular health (Kervezee, Kosmadopoulos, and Boivin 2020). Sleep deprivation may also facilitate manner for cardiovascular disorder in night-shift nurses as compared to non-shift nurses. Unfortunately, the pathophysiological mechanisms associated with night-shift problems have not been fully resolved. Importantly, expertise approximately those mechanisms can be beneficial in making plans or scheduling work cycles, safety strategies for shift work and associated problems (ŞARLI GÜNDÜZ and VARDAR 2021)

Materials and Methods

Through the application of the study questionnaire, data is collected by the use of two techniques, an interview and a questionnaire with the nurses of critical care units during their work in the night shift, using a questionnaire similar to the study sample in hospitals and the sample is non-probability (purposive sample).

Results

Table 4.1
The Statistical distribution of the nurses by their Socio-Demographic Data

Items	Sub-groups	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
Total= 163			
Gender	Male	112	68.7
	Female	51	31.3
Total= 163			
Marital status	Married	102	62.6
	Single	54	33.1
	Divorced	2	1.2
	Widowed	4	2.5
	Separated	1	0.6
Total= 163			
Years of Experience	1-12	137	84.0
	13-24	19	11.7
	25-36	7	4.3
Total= 163			
Monthly Income	< 300000	5	3.1
	300000-599000	67	41.1
	600000-899000	68	41.7
	≥ 900000	23	14.1
Total= 163			
Level of education	secondary	36	22.1
	institute	61	37.4
	college	64	39.3
	more	2	1.2
Total= 163			
Hospital	Al-Sadr	62	38.0
	Al-Hakeem	36	22.1
	Al-Zahraa	35	21.5
	Al-Forat	30	18.4
Total= 163			
Department	Emergency	113	69.3
	RCU	28	17.2
	CCU	22	13.5
Total= 163			

Table 4.2
The Descriptive Statistics and assessment of The Sleep Deprivation Scale (SDS) among the nurses

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 insufficient	44	27.0
		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 always/every day	46	28.2
4.	How long have you been suffering from insufficient sleep due to work schedule?	Never	20	12.3
		Less than one month	10	6.1
		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 always/every day	43	26.4

MS: Mean of Scores; SD: Standard deviation

Table 4.3
The Descriptive Statistics of nurses' level of sleep deprivation according to their total sleep deprivation assessment

	Nurses' Level of Sleep Deprivation Assessment			
	Completely Sufficient	Moderately Sufficient	Moderately Insufficient	Insufficient
Frequency	1	17	86	59
Percentage	0.61	10.43	52.76	36.20

Completely Sufficient: Total = 6; Moderately Sufficient: Total = 7-14; Moderately Insufficient: MS =15-22; Insufficient: Total= ≥23.

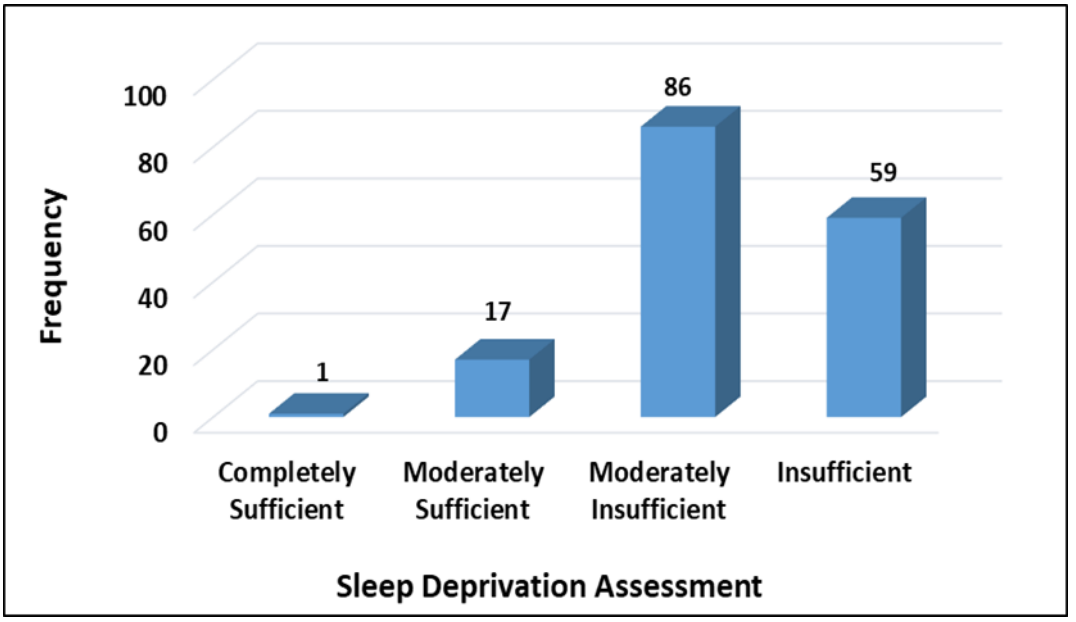

Figure 4.1. The Descriptive Statistics of the nurses' level of the total sleep deprivation assessment

Table 4.4
The Assessment and mean of scores of the 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

MS: Mean of Scores; SD: Standard Deviation; Good: MS = 1-1.99; Moderate: MS =2.0-2.99; Poor: MS≥3.0

Table 4.5
The Descriptive Statistics of the nurses' level of the GH-28 domains and overall assessment among nurses

GH-28 Domains	No.	M.S.	S.D.	95% C. I. for Mean		Ass.
				L.b.	U.b.	
The Somatic Domain	163	2.33	0.52	1.85	2.82	Moderate
The Social Domain	163	2.14	0.37	1.79	2.5	Moderate

The Depression Domain	163	1.77	0.19	1.59	1.95	Good
The Anxiety Domain	163	2.46	0.34	2.14	2.77	Moderate
The Global Mean of Score for GH-28	163	2.18	0.36	1.84	2.51	Moderate

MS : Mean of Scores; SD : Standard Deviation ; Good : MS = 1-1.99 ; Moderate : MS = 2-2.99 ; Poor : MS ≥ 2 ; L.b. : lower border ; U.b. : Upper border

Table 4.6
The Descriptive Statistics of the nurses' level of the total score of the 28-GH assessment

Nurses' level of 28-GH assessment		Level of 28-GH Assessment		
		Good	Moderate	Poor
	Frequency	60	96	7
	Percentage	36.81	58.90	4.29

Good : MS = 1-1.99 ; Moderate : MS = 2-2.99 ; Poor : MS ≥ 2

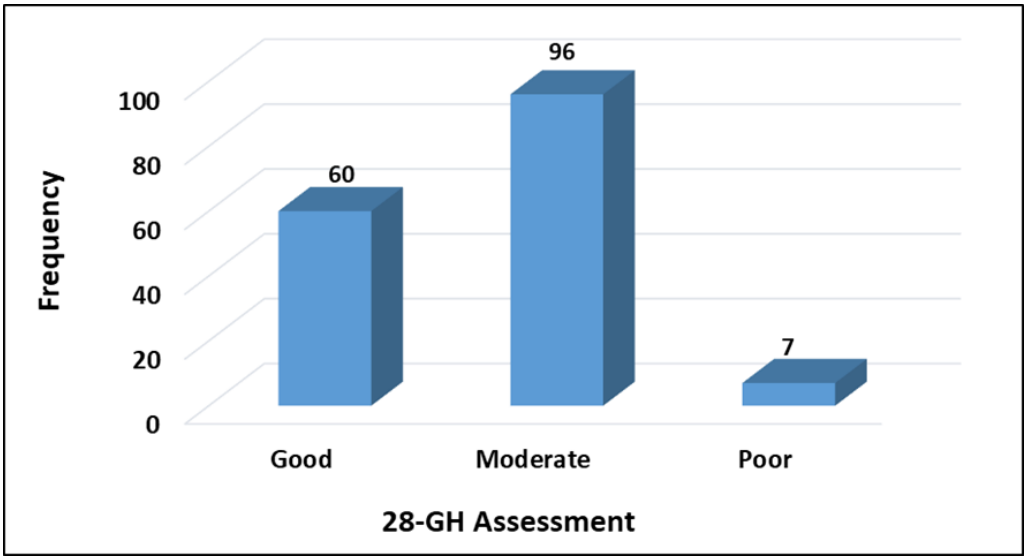

Figure 4.2. The Descriptive Statistics of the nurses' level of the total score of the 28-GH assessment

Table 4.7
The Contingency Table for the correlation between the level of the total 28-GH assessment and level of sleep deprivation assessment (SDA)

Level of Sleep Deprivation Assessment		Level of 28-GH Assessment		
		Good	Moderate	Poor
	Completely	0	0	1
	Sufficient	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

		23.7%	72.9%	3.4%
	Chi Square	30.58		
	(P value)	(0.000)		

Significant at P<0.05

Table 4.8
The Pearson's Correlation coefficients between the level of total the 28-GH assessment and level of sleep deprivation assessment

Scales	Level of 28-GH domains
Level of Sleep Deprivation	r = 0.282*

* Significant at P<0.05

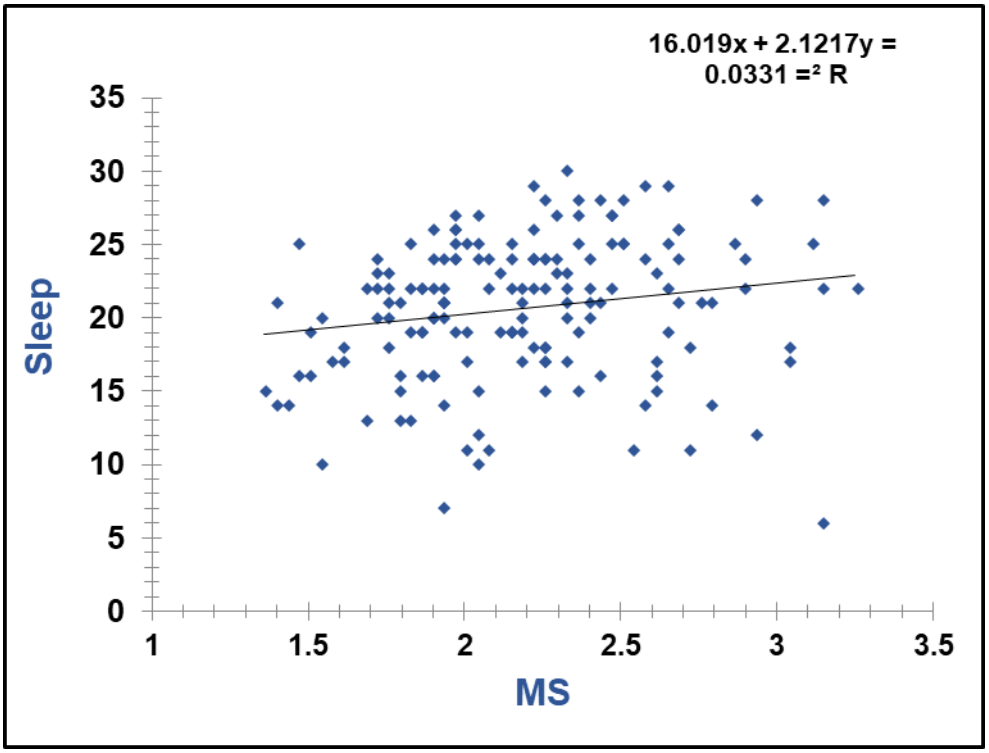

Figure 4.3. The Scatter plot and regression equation between the level of total 28-GH assessment and level of sleep deprivation assessment

Table 4.9
The Correlation between the level of overall sleep deprivation assessment of nurses and their socio-demographic data

Items	Sub-groups	Level of Sleep Deprivation Assessment				Chi Square P value	significant
		Completely Sufficient	Moderately Sufficient	Moderately Insufficient	Insufficient		
Age	20-29	1 0.9%	11 10.4%	60 56.6%	34 32.1%	5.73 (0.76)	NS

	30-39	0 0.0%	3 9.1%	14 42.4%	16 48.5%		
	40-49	0 0.0%	3 18.8%	7 43.8%	6 37.5%		
	50-59	0 0.0%	0 0.0%	5 62.5%	3 37.5%		
Gender	Male	0 0.0%	10 8.9%	58 51.8%	44 39.3%	3.97 (0.26)	NS
	Female	1 2.0%	7 13.7%	28 54.9%	15 29.4%		
Marital status	Married	0 0.0%	11 10.8%	55 53.9%	36 35.3%	4.56 (0.97)	NS
	Single	1 1.9%	6 11.1%	26 48.1%	21 38.9%		
	Divorced	0 0.0%	0 0.0%	1 50.0%	1 50.0%		
	Widowed	0 0.0%	0 0.0%	3 75.0%	1 25.0%		
	Separated	0 0.0%	0 0.0%	1 100.0%	0 0.0%		
Years of Experience	1-12	1 0.7%	14 10.2%	73 53.3%	49 35.8%	1.68 (0.94)	NS
	13-24	0 0.0%	3 15.8%	9 47.4%	7 36.8%		
	25-36	0 0.0%	0 0.0%	4 57.1%	3 42.9%		
Monthly Income	< 300000	0 0.0%	0 0.0%	4 80.0%	1 20.0%	7.06 (0.62)	NS
	300000-599000	1 1.5%	7 10.4%	39 58.2%	20 29.9%		
	600000-899000	0 0.0%	6 8.8%	32 47.1%	30 44.1%		
	≥ 900000	0 0.0%	4 17.4%	11 47.8%	8 34.8%		
Level of education	secondary	0 0.0%	3 8.3%	23 63.9%	10 27.8%	9.27 (0.41)	NS
	institute	1 1.6%	8 13.1%	31 50.8%	21 34.4%		
	college	0 0.0%	5 7.8%	31 48.4%	28 43.8%		
	more	0 0.0%	1 50.0%	1 50.0%	0 0.0%		
	more						
Hospital	Al-Sadr	0 0.0%	4 6.5%	34 54.8%	24 38.7%	10.56 (0.30)	NS
	Al-Hakeem	0 0.0%	5 13.9%	15 41.7%	16 44.4%		
	Al-Zahraa	0 0.0%	4 11.4%	18 51.4%	13 37.1%		

	Al-Forat	1 3.3%	4 13.3%	19 63.3%	6 20.0%		
Department	Emergency	0 0.0%	10 8.8%	54 47.8%	49 43.4%	12.82 (0.04)	S
	RCU	1 3.6%	4 14.3%	17 60.7%	6 21.4%		
	CCU	0 0.0%	3 13.6%	15 68.2%	4 18.2%		

Significant at P<0.05 NS : Non-significant ; S : Significant

Table 4.10
The correlation between the level of 28-GHQ total assessment of the nurses and their socio-demographic data

Items	Sub-groups	Level of 28-GH Assessment			Chi Square P value	significant
		Good	Moderate	Poor		
Age	20-29	34 32.1%	67 63.2%	5 4.7%	15.87 (0.01)	S
	30-39	9 27.3%	23 69.7%	1 3.0%		
	40-49	12 75.0%	3 18.8%	1 6.3%		
	50-59	5 62.5%	3 37.5%	0 0.0%		
Gender	Male	47 42.0%	64 57.1%	1 0.9%	12.41 (0.002)	S
	Female	13 25.5%	32 62.7%	6 11.8%		
Marital status	Married	43 42.2%	53 52.0%	6 5.9%	6.78 (0.56)	NS
	Single	15 27.8%	38 70.4%	1 1.9%		
	Divorced	1 50.0%	1 50.0%	0 0.0%		
	Widowed	1 25.0%	3 75.0%	0 0.0%		
	Separated	0 0.0%	1 100.0%	0 0.0%		
Years of Experience	1-12	43 31.4%	87 63.5%	7 5.1%	11.44 (0.02)	S
	13-24	12 63.2%	7 36.8%	0 0.0%		
	25-36	5 71.4%	2 28.6%	0 0.0%		
Monthly Income	< 300000	2 40.0%	2 40.0%	1 20.0%	16.89 (0.01)	S
	300000-599000	17 25.4%	45 67.2%	5 7.5%		

	600000-899000	27 39.7%	41 60.3%	0 0.0%		
	≥ 900000	14 60.9%	8 34.8%	1 4.3%		
Job Title	secondary	12 33.3%	21 58.3%	3 8.3%	5.74 (0.45)	NS
	institute	27 44.3%	31 50.8%	3 4.9%		
	college	20 31.3%	43 67.2%	1 1.6%		
	more	1 50.0%	1 50.0%	0 0.0%		
Hospital	Al-Sadr	22 35.5%	38 61.3%	2 3.2%	1.09 (0.98)	NS
	Al-Hakeem	14 38.9%	21 58.3%	1 2.8%		
	Al-Zahraa	13 37.1%	20 57.1%	2 5.7%		
	Al-Forat	11 36.7%	17 56.7%	2 6.7%		
Department	Emergency	35 31.0%	72 63.7%	6 5.3%	14.49 (0.006)	S
	RCU	9 32.1%	18 64.3%	1 3.6%		
	CCU	16 72.7%	6 27.3%	0 0.0%		

Significant at P<0.05 NS: Non-significant; S: Significant

Discussion

Demographic Data

In an unintended manner, the current study sample has been categorized by demographic characteristics as shown in Table (4.1). As for age, most of the age groups ranged between (20-29) years and constitute (65.0%) of the total sample. This result came in a matching among socio-demographic data of age, educational level(Bachelor's) and years of experience, and the result may be a reflection of the nature of work in critical care units that require the strength and high effort to endurance, which is usually associated with young ages. The results of this study are in line with the results of an American study conducted on the same age group (Books et al. 2017). The same table reveals that the majority of the nurses in the critical care units are young with a bachelor's degree. Despite their few years of experience, they have high skills and abilities to withstand the effort and challenges of work. This can be attributed to the nature of work in critical care units, as this profession requires a high level of education and high effort (Köse and Öztunç 2016).

Whereas, most of the sample has a social status (married), and the majority of them are males, with a sufficient economic level, and that 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). It has been noticed that 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).

Measurement of sleep deprivation among the CCUs nurses

Table 4-2 gives an indicator of the level of the sleep deprivation that explains the axes of the nature of work and the number of hours of sleep for at least three months at work. The nurses suffer from insufficient sleep and extreme fatigue for long working hours that exceed the recommended limit, which is at least 7 hours of sleep. This result reflects the health institution's policy, requirements and work schedules that require night work to deliver health service within 24 hours, and this finding is consistent with the Italian study (Leso et al. 2021). Table 4-3 indicates that the nurses have experienced moderately insufficient sleep to completely insufficient sleep, respectively, and this result is related to the work system in the night shifts of the intensive care units. While the Iranian study confirmed this from a decrease in sleep quality among intensive care nurses (Akbarzadeh et al. 2014). A study that has been conducted by Ramadan 2014 to determine the effect of sleep deprivation on the occurrence of errors by nurses working in the night-shift system in critical care departments. The sleep quality of nurses who were sleep-deprived was worse at Pittsburgh Sleep Quality Index (PSQI) than those who were not sleep-deprived. Changing the work schedule, introducing shorter night shifts and fewer hours per week may improve sleep quality and reduce sleep deprivation, and short naps have been shown to recover (Ramadan and Al-Saleh 2014).

The General health status among the CCUs nurses

Table 4-4 and 4-6 present the stress levels of the intensive care unit nurses during the night shifts, which reflects their level of general health status in general. The levels appear at a moderate intensity level. With the exception of some areas of the general health status, which is the depression area, which appears at a good level, Depression is one consequence that has not been clearly demonstrated because it is a risk factor for the future. This result is related to the insufficient sleep among nurses and the nature of night work , and do not agree with a study that is conducted by Muhammad 2015 that has shown a strong and inverse correlation between the sleep deprivation and depression (Al-Abri 2015).

The Somatic domain among the CCUs nurses

Table 4-5 show the level of the physical aspect of the nurses in the critical care unit, which indicates a moderate level of the physical aspect, and this result may be interpreted by the fact that most of them are young. Where their working period does not exceed 12 years, and another possible reason is the time of work and exposure to the pressures of the work environment such as staying up late and noise, as the current study indicated that the majority of nurses spend

between (17). and (18). Working hours, and these long hours are compensated by rest the next day, usually after a day or two of work, and this relieves symptoms of physical fatigue and this was confirmed by the Brazilian study about the presence of moderate stress levels and the majority of participants ranged from 9 to 11 years of service (Andolhe et al. 2015). The community health and nurses who are part of that community are affected by different elements of circumstances. The environmental conditions surrounding a person affect his health, in terms of the place in which we live, the state of the environment, genetics, the level of his social and economic status, and contacts with surrounding friends and family all have significant effects on the level of health, but the other side that opposes these effects is to follow a lifestyle health and use of health care services (Kiserud et al. 2017).

The Anxiety domain among the CCUs nurses

Table 4-5 explains the level of the anxiety among the critical care unit nurses who provide health care to patients and indicate a moderate level of anxiety. This result can be attributed to the fact that when they are deprived of sleep, they experience a state of tension and turmoil, and anxiety appears as a result of this disorder. There are other reasons in this regard, perhaps the critical cases of patients that need continuous care and follow-up and alarm devices for any emergency, in addition to the lack of a special environment for stable sleep. There is a study that advances some realistic facts by revealing many research studies on the topics of the relationship between sleep deprivation and anxiety, where the study confirmed the focus of the controversy, which shows a steady increase in acute anxiety. While extensive studies in rodents have yielded inconsistent results that lack realistic evidence, the use of animal models to assess the relationship lacks translational applicability (Pires, Tufik, and Andersen 2015). It has been noted that working during the night shifts in the critical care unit environment is the great challenge in the face of sleep deprivation and the difficulty of adapting to this environment because it requires a large and continuous time in isolation from the personal life of the individual (the nurse), who considers the home as the only refuge for his peace, sleep and rest (Ferri et al. 2016).

The Social domain among the CCUs nurses

Table 4-5 indicates that most of the critical care unit nurses from the social field are of the (medium level) and the explanation of the reason for these results is due to the nature of night work and the accompanying sleeplessness, restlessness, effort and deprivation of night sleep for times of up to 17 or 18 hours. This forced them to isolate themselves from society by sleeping and resting during the day. What supports this current study is the American study that provided answers to the question: Does sleep deprivation lead to feelings of loneliness and social isolation? The answer was that lack of sleep leads to a neurological and behavioral pattern of social withdrawal and loneliness (Ben Simon and Walker 2018).

The Depression domain among the CCUs nurses

Table 4-5 show that the depression aspect of intensive care nurses is relatively good, and interpretation for this result is that Depression is not as clear an effect among the sleep-deprived nurses as it is a risk indicator for the future, and may came to matched with that they have a high level of education and knowledge, especially in the medical field. Which made them in positions of responsibility and problem-solving at the same time. In addition to a good economic level and social and emotional support from family and friends has a great impact. The present study contrasts with a study conducted by Al-Maddah which showed the presence of depressive symptoms resulting from sleep deprivation, due to the variance and difference in individual, societal and environmental characteristics (Al-Maddah, Al-Dabal, and Khalil 2015). It has been observed that social support by family members and friends has a significant effect in reducing depression and controlling satisfaction in the work-family balance (Werner-Seidler et al. 2017).

The Correlation between the sleep deprivation and GH-28 domains

Table 4.8 and 4.9 explains that there is a strong positive direct correlation between the sleep deprivation and the general health status in all its dimensions. This result is justified with what has been scientifically proven that sleep deprivation has the physiological, psychological, mental and cognitive consequences, embodied in many symptoms and problems, including the deterioration of well-being and effectiveness, and the difficulty of maintaining focus, Constant headaches and fatigue, vision disturbances, slow reactions and an increased number of professional errors. Sleep deprivation also increases the risk of obesity, diabetes, cardiovascular disease and gastrointestinal disorders, and increases the risk of colorectal cancer. As for psychological conditions, many of them are anxiety, bad mood, extreme tension and anger for the simplest things, as well as tension. In this simple description. The effects and health consequences of sleep deprivation during the class were discussed under several axes. According to Public Health (PH), insufficient sleep across different age groups is considered a public health epidemic that is usually not recognized or reported, as it has a rather high economic burden. It also showed that sleep deprivation leads to a deviation of the body's functions and functions from its proper course, which leads to an increase in the incidence of physiological and mental diseases (Chattu et al. 2019).

The Correlation between the socio-demographic data and sleep deprivation

Table 4-8 explains that there is no statistically significant relationship between sleep deprivation in nurses and their demographic data, except for hospital units that have an effect on changing the level of sleep deprivation in nurses and formed high percentage in the emergency department, and This result is in many dimensions related to long working hours and the management of immediate efforts at a high level, as in the Emergency Department, which requires high effort and continuity of work 24 hours, and may there are factors that play an important role such as environmental characteristics and differences in the working climate. An extensive study has been conducted in the United States (US)

provided evidence that climate change may disrupt human sleep through the relationship between sleep and ambient temperatures (Obradovich et al. 2017).

The Correlation between the socio-demographic data and GH-28 domains

Table 4-8 elucidates that there is no statistically significant relationship between the patients' general health status and their demographic data, except for age, gender, years of experience, monthly income, and the nurses' department. The interpretation for this is due to the personal characteristics and lifestyle of the individual with his surroundings and previously mentioned in Table 4-1. A study in England has indicated that women are more likely than men to suffer from depression, anxiety and stress-related disorders, with many social and cultural factors playing an important role in mental and physical health (Gulland 2016). According to the World Health Organization, it showed that the general health of the individual changes during age in two directions: negative towards problems and deterioration, or positive towards wellness and optimal health, in which the signs of opportunities and contributions appear, and the physiological age appears to be younger than the chronological age. An inevitable consequence of society.

The basic life cycle of the population passes through differences and variations in the state of health because it is the basis of biological change in individuals as they age. These observed changes in health status arise through many different causal pathways or mechanisms operating across different sections and stages of the population. Then the sources of heterogeneity in health status are contemporaneous with the same observed variances. Populations can be divided according to any number of different characteristics. But the sections of interest are those that consistently show clear heterogeneity of health status across their subgroups in many diverse settings (Hertzman, Frank, and Evans 2019)

Conclusion

On the basis of 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.
- The 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), foregoing indicates that consequences did not occur clearly.
- This may be due to the fact that majority of nurses are young, their ages ranged between 20-29 years, 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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