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The Psychological Stress of Intensive Care Unit Nurses During the Covid-19 Pandemic in King Khalid and Central Hospital of Hafr Albatin City

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ABSTRACT
Nurses, particularly intensive care nurses, are stressed as a result of the emerging coronavirus illness (COVID-19) epidemic. The pandemic is a calamity that may leave a devastating psychological imprint on nurses, particularly those who are working in intensive care units. The purpose of this study was to look into the psychological stress (PS) of intensive care unit (ICU) nurses during the Covid-19 pandemic. Method: the study was cross-sectional exploratory in the nature. Setting of the study: ICU in King Khaled and Central hospital in Hafr Albatin. Subject: convenience sample included (109) nurses both male and female worked in ICU with one year, and trainee nursing students. One tool was used in the study. It includes the questionnaire sheet which gathered information on socio-demographics and clinical data such as gander, age, nationality, residence, level of education, marital status, years of experience. In addition, the clinical history data of studied group include smoking, duration if smoking, and comorbid disease. Moreover, the Warwick Edinburgh mental wellbeing scale modified by researchers to assess of ICU nurse psychological indicators (anxiety, depression, and insomnia). Results: The third (23.9%) of the percipients age from 36-45 years, and the majority of percipients (73.4%) was male, more than half (69.2%) of subjects represents a bachelor's degree, and (49.5%) of them have 1-5 years of experience. in addition, half of the participants (50.9%) weren't had any diseases comorbidities. Most of participant answer often to sentence (I have had energy to spare), large number have (4-6) average number of sleeping hours, and experience (1-2) sleep interruptions. Conclusion: This study found that even extremely robust nurses had some level of psychological stress, including symptoms of sadness, anxiety, and insomnia, as well as perceived stress.

Keywords: COVID-19 Pandemic; Intensive Care Unit Nurses; Psychological Stress.

Background
Coronavirus Disease 2019 (COVID-19) is newly respiratory infectious disease, which was first identified on December 2019, in Wuhan, China. Coronaviruses (CoV) are the most popular viruses that cause illness ranging

from the common cold to more severe illness such as Middle East Respiratory Syndrome (MERS-CoV) and severe acute respiratory syndrome (SARS-CoV) which discovered on January 2020 coming from Wuhan to United Arab Emirates. Since the announcement of first case of the COVID-19 virus in the Kingdom on March 2, 2020, the confirmed cases and contacts have increase in different regions, and on the 23rd of August of the same year, the total number of cases registered in the Kingdom reached 307,479 positive cases of COVID-19. [1]

As the coronavirus illness 2019 (COVID-19) pandemic spreads, worldwide health care systems have become overburdened with ICU nurses, putting significant psychological strain on ICU nurses caring for critically ill COVID-19 patients. [2] Due to its tremendous virulence and infectivity, the disease in question swiftly claimed victims in such large numbers that the number of ICU beds was running out, causing panic among the intensive care team and the public populace. [3] However, the front-line workforce, which includes ICU doctors, nurses, and physiotherapists, is under more psychological stress. According to this definition, stress is the natural, psychological, and social reaction that a person has to adverse developments. [4]

The severity of psychological and mental health issues among medical staff in the ICU brought on by COVID-19 increased. Numerous psychological issues had an impact on ICU nurses; during the pandemic, there were high rates of psychological distress, anxiety, irritability, insomnia, fear, and anguish that were likely caused by the lack of personal protective equipment and the excessively high workloads.[5] Additionally, the initial wave of the Corona virus revealed that doctors and nurses were depressed and anxious as a result of (COVID 19) caused fatigue [5,6]. Numerous earlier research' findings indicated that during the early phases of the pandemic, medical professionals and nursing staff were exposed to a condition of worry and sadness, which led to an increase in psychological burnout levels [5-8].

Burnout is a state of physical, emotional, and mental tiredness caused by long-term involvement in emotionally stressful work settings. Chronic interpersonal stressors at work, particularly among ICU nurses, may increase burnout [9]. Three characteristics of this condition—emotional weariness, depersonalization, and a lack of personal accomplishment—are harmful to professionals' mental and physical health. Burnout, in fact, predisposes ICU nurses to sadness, anxiety, insomnia, and even suicidal ideation [5]. The aim of this study was to investigate the psychological stress experienced by ICU nurses during the COVID-19 pandemic.

SUBJECT AND METHODS

Study design: The PSexperienced by ICU nurses during the COVID-19 epidemic is being investigated in a cross-sectional exploratory study design. This investigation was carried out in the ICU of the King Khalid General Hospital and the Hafr Albatin Central Hospital. Sample: Nursing student trainees and (109), both male and female, ICU nurses with one year of experience were included in a convenience sample. At the ICU department, all subjects took part in the study.

Outcome measures: The questionnaire sheet gathered information on socio-demographics and clinical data such as gander, age, nationality, residence, level of education, marital status, and years of experience. In addition, the clinical history data of studied group include smoking, duration if smoking, and comorbid disease. Moreover, the Warwick Edinburgh mental wellbeing scale modified by researchers [10] to assess of ICU nurse psychological indicators (anxiety, depression, and insomnia). The scoring system: pointed from one (none of the time) to five (all the time), The minimum score is 6 and the maximum is 30 that refer to 6-13 (mild) 14-21 (moderate) 22 up to 30 (severe).

Ethical consideration:

Ethical consideration to implement this study approval for data collection was gained from the target group ICU nurse participate in the study and answer the questionnaire after clarifying the purpose of the study, as they were assured that the information that will be obtained will be strictly confidential and used for the purpose of the study.

The researchers obtained the approval of the Scientific Research Ethics Committee by the Deanship of Scientific Research at King Faisal University number (KFU-REC-2023-FEB-ETHICS548).

%	N (109)	**Table 1. Socio-demographic** variable
		Gender
73.40%	80	-Female
26.60%	29	Male-
		Age
29.50%	54	25≤
14.70%	16	26-35
23.90%	26	36-45
11%	13	45-55
		Nationality
89.90%	98	Saudi
11.10%	11	Other
		Marital statue
57.40%	62	Single
42.60%	46	Married
		Residence
89.60%	95	In the same city as the workplace
10.40%	11	Other
		Level of education
16.80%	18	Diploma
69.20%	74	Bachelorette
14%	15	Master’s degree
		Setting
8.30%	9	Anesthetic care unit
16.70%	18	Coronary care unit
13%	14	Post-surgery care unit
26.90%	29	Emergency
35.20%	38	Other
		Years of experience
49.50%	54	5-Jan
22.90%	25	10-May
20.20%	22	20-Oct
7.30%	8	20-30

Validity and reliability:

The validity of the questionnaire, the research team had a group of experts in environmental psychology and climate science review the questionnaire. The experts were asked to provide feedback on the relevance and accuracy of the questions, as well as their clarity and comprehensibility. Based on the feedback from the experts, the research team made revisions to the questionnaire to ensure that it was measuring the intended constructs accurately and that the questions were appropriate for the target population. The reliability of the measure was assessed by calculating Cronbach's alpha, which was found to be 0.917. This indicates that the items within the measure were highly interrelated and consistent in measuring the underlying construct**.**

Preparatory phase:

To minimize face-to-face contacts with all participants and to allow nurses who worked extensively during the emergency period to participate, an online questionnaire was used. The form was created in Google Forms and is being distributed electronically (through Facebook, Instagram, and WhatsApp) from October 2021 to November 2021.

Implementation phase:

During the COVID-19 pandemic, the ICU nurses were recruited from the ICUs of King Khalid General Hospital and Hafr Albatin Central Hospital. The COVID-19 patients will be treated at these hospitals. The ICU nurses who were full-time and had direct nursing care experience with COVID-19 inpatients met the inclusion criteria and participated in filling out the questionnaire. The electronic question sheet was distributed by the researcher via Facebook, Instagram, and WhatsApp to all nurses in the ICU and coronary care unit, which takes 3 to 5 minutes to complete.

Analytical statistics:

Data was collected from the target group, entered, reviewed, and analyzed by using Google Forms, which conducts a survey and analyzes the results.

Descriptive statistics (Likert scale and graphs) were used to present the data that were surveyed from the target group.

SPSS version 26 was used to code and analyze the data. Descriptive statistics were employed to summarize the data. To investigate the relationships between categorical variables; Chi-square test was utilized. A p-value < 0.05 is considered as significant.

Results

Concerning gender, it was found (73.4%) male and (26.6%) female. The majority of the participants aged ≥25 (29.5%). In addition to marital status (57.4%) single. In addition, the residents (69.2%) were in the same city as the workplace. Further the educational level it was found that Bachelorette (84%). While the setting (35.2%) for other. Moreover, the years of experience was found 1-5 (49.5%) (Table 1). The majority of participants were none smoker (84.3%). Furthermore, the duration of smoking (84.1%) was none. In addition, co-morbidities (50.9%) more than half weren't had any diseases (Table 2).

Table 2. Clinical data variable	Study subject No =109	
	N	%
Smoking		
Yes	17	15.70%
No	91	84.30%
Duration of smoking		
Non smoker	90	84.10%
1 year≤	1	0.90%
5 years≤	8	7.50%
10 years≤	3	2.80%
<10 years	5	4.70%
Comorbid disease		
Diabetic 1	2	1.90%
Diabetic 2	7	6.50%
Hypertension	9	8.30%
Asthma	15	
Coronary artery disease	2	13.90%

COPD	1	1.90%
AIDS	0	0.90%
Cancer	3	0%
Non	55	2.80%
Other	14	50.90%
		13%

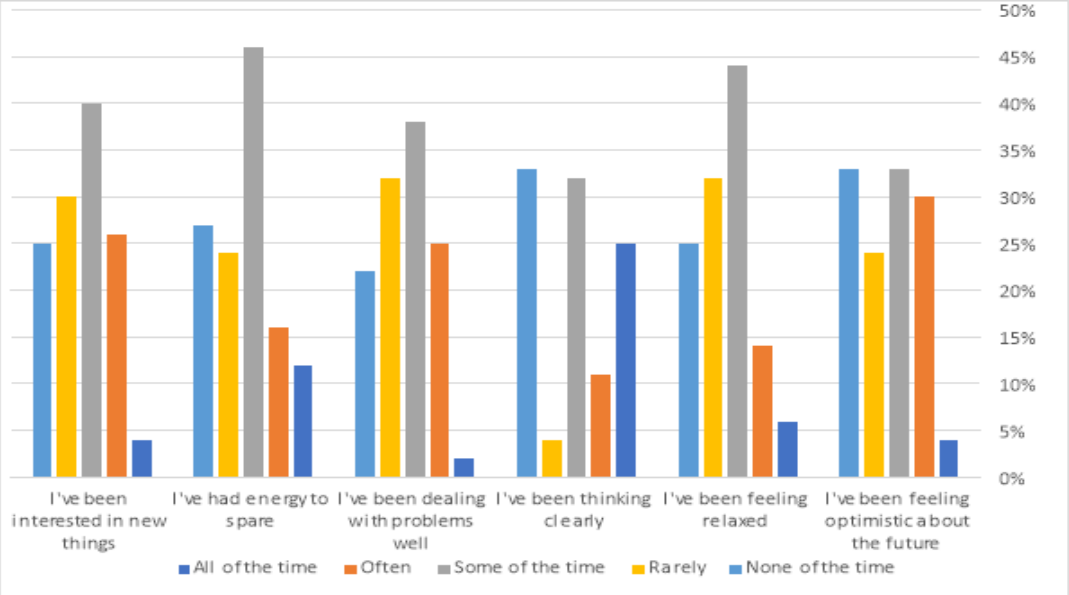

Figure 1: PS indicators (Anxiety, Insomnia and Depression):

The figure shows that the quarter of studies group had feeling optimistic about the future pointed that none of the time was (33%). Also (44%) were some of the times, feeling relaxed and (32%) were none of the time. In addition to thinking clearly (33%) were none of the time. Further, the dealing with problems well (38%) were some of the times. While they had energy to spare (46%) were some of the times. Concerning interested in new things (40%) were some of the times and (30%) were rarely.

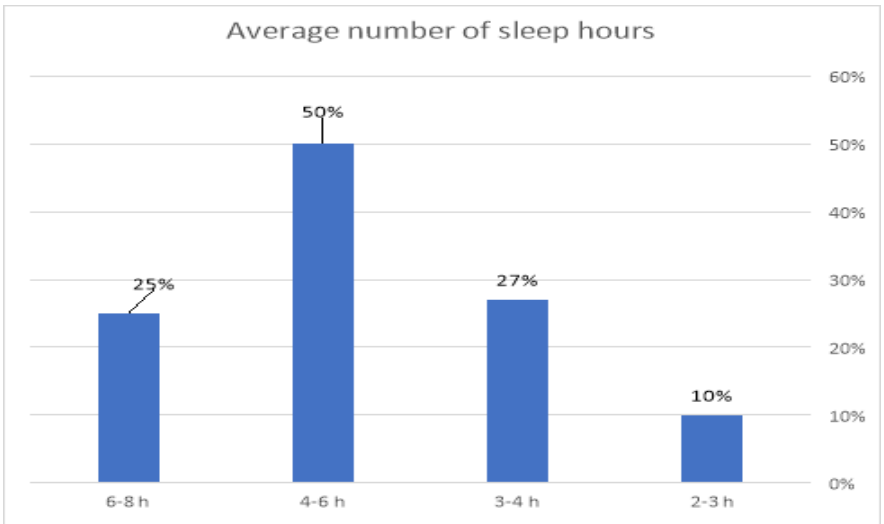

Figure 2: Average number of sleep hours (duration). These figured noted that (50%) half of participants had sleep for (4-6h). Also, (27%) of them had duration for (3-5h). In addition to (25%) of them had duration for (6-8h). While (10%) of them had duration for (2-3h).

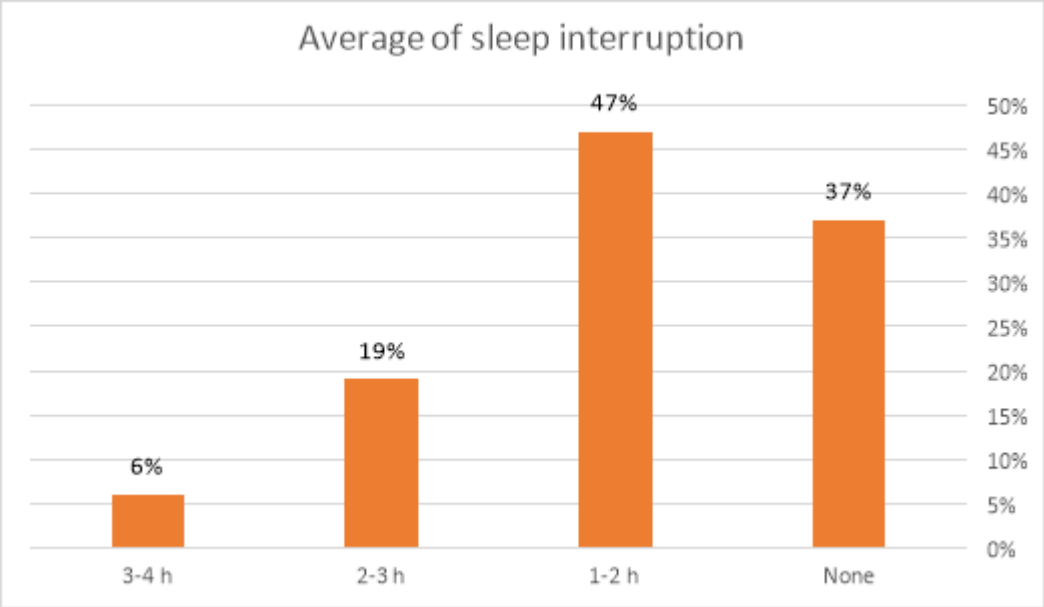

Figure 3: Average number of sleep (interruption). The majority were (47%) had sleep interruption for 1-2 hours. Furthermore, (37%) of participants had none sleep interruption. In addition, (19%) had sleep interruption for 2-3 hours. In addition to (6%) had sleep interruption for 3-4hours.

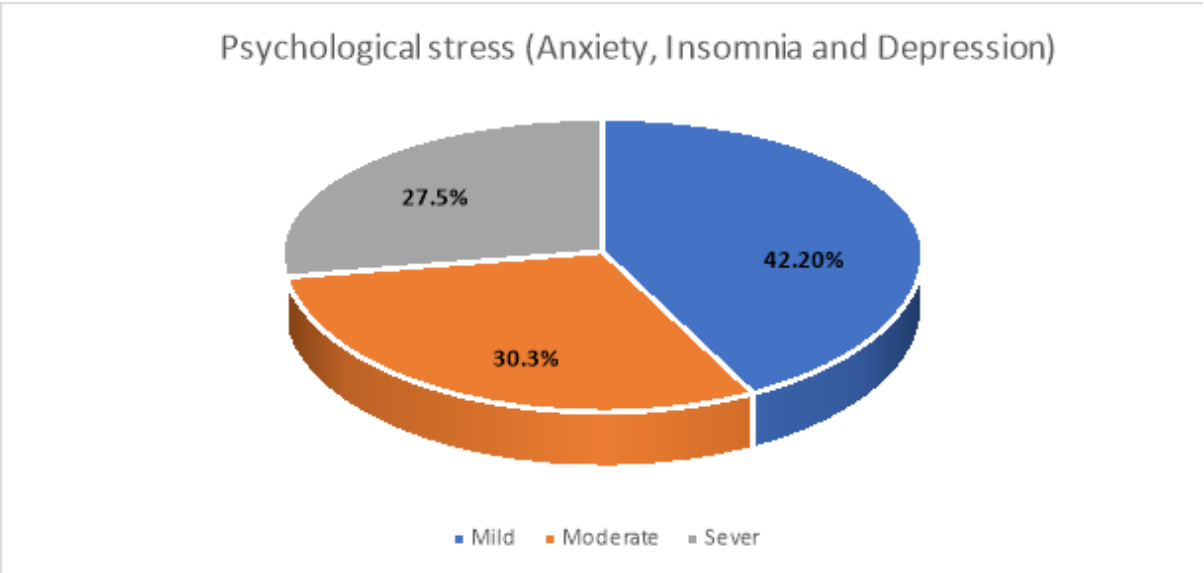

Figure 4: These figured found that less than half (42.20%) of participants had a mild PS indicator. In addition, (30.3%) of participant had a moderate PS indicator. In addition, we found some (27.5%) of participant had a severe PS indicator.

Table (3): Relationship between demographic and psychological stress.

Variable 1	Variable 2	p-value
Smoking	Male	0
Comorbid disease	Male asthma	0.005
I've been feeling relaxed	Male some of the time	0.02
Age with		
Smoking	36-45	0.013
Comorbid disease	36-45 asthma	0

I've had energy to spare	Less than or equal 25 some of the time	0.004
I've been interested in new things	Less than or equal 25 some of the time	0.014
Average of sleep interruption	Less than or equal 25 (1-2)	0.037
Nationality with		
Comorbid disease	Non-Saudi DM2	0
I've been dealing with problems well	Saudi some of the time	0.015
I've had energy to spare	Saudi some of the time	0.02
I've been interested in new things	Non-Saudi some of the time	0.024
Marital status with		
Smoking	Married	0
Duration of smoking	Nonsmoker single	0
Residence with		
Smoking	Other-smoker	0
Duration of smoking	Other -nonsmoker	0
Comorbid disease	Other -asthma	0.021
I've been thinking clearly	Other -often	0.044
I've had energy to spare	In the same city-some of the time	0.009
I've been interested in new things	Other -often	0.041
level of education with		
Smoking	Master	0
Duration of smoking	Bachelor-nonsmoker	0.003
Comorbid disease	Diploma -asthma	0.003
I've been dealing with problems well	Master-some of the time	0.028
I've been interested in new things	Master-often	0.032
Setting with		
Smoking	Post-surgery care unit	0
Comorbid diseases	Coronary care unit-asthma	0.004
Years of experience with		
Comorbid disease	20-30 HTN	0
I've been feeling relaxed	20-30 some of the time	0.02
I've been dealing with problems well	10-20 some of the time	0.027
I've had energy to spare	1-5 some of the time	0
I've been interested in new things	20-30 often	0.003

This table shows that gender and smoking are significantly associated with the outcome of interest, with a p-value of 0.000. Comorbid disease, specifically male asthma and non-Saudi DM2, are also significantly

associated with the outcome, with p-values of 0.005 and 0.000, respectively**.** In addition, age and smoking are significantly associated with the outcome, with a p-value of 0.013 for the age group of 36-45. Comorbid disease, specifically asthma in the age group of 36-45, is also significantly associated with the outcome, with a p-value of 0.000**.**

Self-reported measures of well-being, such as feeling relaxed and having energy to spare, are also significantly associated with the outcome. The p-values for feeling relaxed among males and in the age group of less than or equal to 25 are 0.020 and 0.020, respectively. The p-value for having energy to spare in the age group of less than or equal to 25 is 0.004**.**

Nationality is significantly associated with comorbid disease, with a p-value of 0.000 for non-Saudi DM2. Marital status and smoking are also significantly associated with the outcome, with p-values of 0.000 for married individuals who smoke and nonsmoker singles, respectively**.**

Residence is significantly associated with smoking and comorbid disease, with p-values of 0.000 for other smokers and nonsmokers, and 0.021 for other asthma, respectively. Self-reported measures of well-being, such as thinking clearly, having energy to spare, and being interested in new things, are also significantly associated with the outcome. The p-values for thinking clearly, having energy to spare in the same city, and being interested in new things in other locations are 0.044, 0.009, and 0.041, respectively**.**

With p-values of 0.000 for master's degree holders who smoke and 0.003 for diploma holders with asthma, education level is substantially correlated with smoking and concomitant illness. Results are connected with self-reported well-being indicators, such as ability to manage issues and interest in learning new things. The p-values for masters' problem-solving skills and interest in learning new things are 0.028 and 0.032, respectively. For nonsmokers with a bachelor's degree, the p-value is 0.003.

Setting and years of experience are also significantly associated with the outcome. The p-value for smoking in the post-surgery care unit is 0.000, while the p-value for asthma in the coronary care unit is 0.004. The p-value for comorbid disease of 20-30 years of experience with HTN is 0.000. Self-reported measures of well-being, such as feeling relaxed, dealing with problems well, having energy to spare, and being interested in new things, are also significantly associated with the outcome. The p-values for feeling relaxed, dealing with problems well, having energy to spare, and being interested in new things among individuals with 20-30 years of experience are 0.020, 0.027, 0.000, and 0.003, respectively.

DISCUSSION

The tremendous PS endured by nurses working in the ICU during the COVID-19 period appears to be significant, and it may have an effect on psychological well-being. Several studies have been conducted to evaluate the psychological impact of critical care unit nurses throughout the COVID-19 period. In addition, the prevalence, severity, and associated factors of burnout syndrome among ICU nurses will be investigated. This study looks at the amount of PS and may be useful to future scholars looking for solutions to this problem. [7-9]. The purpose of this study is to analyze the PS of ICU nurses working in the critical care unit, cardiac care unit, King Khaled Hospital, and central hospital during the COVID-19 pandemic.

The current study found that the majority of the study participants were female in terms of the socio-demographic features of the studied sample. In this regard, Antonio (2020) [11] claimed that because a substantial percentage of participants were non-smokers, the majority of them were female. The recent study revealed that the majority of individuals hold bachelor's degrees, which is the highest nursing degree. The majority of the subjects, according to Jill (2021) [12], hold bachelor's degrees. In addition, this study showed that the one third of participant age was ≤25, this was correspondingly to Min (2020) [13] they revealed that the mean age was from 36-40 years old.

In relation to setting of studied subject, the majority (72%) was selected from anesthetic care unit, coronary care unit, postsurgical care unit, and emergency room. In the same line, similarly, a study in Iran (2020) [14] found higher rates of psychological burnout among nurses who served on the frontlines of the pandemic compared to the others. According to years of experience, the current study found that nearly half of study participants had 1–5 years of experience, as did Min (2020) [13], who discovered that the biggest percentage of the sample had

1–5 years of experience. In terms of smoking, the current study found that 15.7% of the 109 individuals were smokers. In a similar vein, Elie et al. (2020) [8] They observed that 9.7% of nurses in the ICU smoked out of 1001 respondents, which could be related to the fact that most of the participants are female nurses.

In terms of the psychological health of critical care nurses, the current study found that while the majority of participants expressed an interest in trying new things, 30% of them said they did so infrequently. Additionally, 32% of participants mentioned their incapacity to address issues, and 33% of participants said they never felt secure and optimistic about the future. These may be to blame for the fact that a high percentage of healthcare professionals experience anxiety and depression. Our findings corroborated those of an Italian study by Lasalvia et al. (2021) [11] who found that staff members working in intensive care units (ICUs) during COVID-19 or sub-intensive COVID-19 units were significantly more likely to experience negative psychological outcomes, specifically post-traumatic distress symptoms and depression. Similar studies by Bruvneel et al. (2021) [15] and Stocchetti (2021) [16] discovered that 60% of Italian ICU healthcare providers had burnout syndrome at the time of the studies. The authors also found that compared to other healthcare workers, nurses had much higher levels of anxiety and were more likely to have trouble sleeping. According to Shen et al. (2020) [17], because they deal with critically ill patients on a daily basis, healthcare providers experience a number of problems, including anxiety, fear of infection, an excessive workload, extreme fatigue, and depression, all of which may indirectly cause burnout syndrome to occur. Elmeçe (2020) [18] added that the significant psychological pressure and excessive workload to which nursing staff in critical care units were exposed during the pandemic may also be responsible for the impact of stress, anxiety, and burnout levels on the quality of life of COVID-19 patients. Additionally, significant levels of stress, anxiety, and burnout were found in a study of 240 healthcare professionals in Turkey, all of which had a detrimental effect on the standard of care on quality of life.

The current investigation found a link between sleep disruption and the psychological status of two intensive care patients during the COVID-19 epidemic. As the rate of sleep interruption one to two times represented 50% and two to three times represented 19%, this was consistent with Azoulay et al. (2020) [8], who discovered that (37.4%) of nurses take sleeping pills and half of European intensivists (51% experienced severe burnout). Similarly, Yu-Yin et al. (2021) [19] discovered that (49.5%) of healthcare personnel experienced moderate to severe personal burnout during the COVID-19 pandemic. Furthermore, Silmara et al. (2023) [20] and Korkmaz et al. (2020) [21] discovered an increase in anxiety and sleep disorders, which not only have a negative impact on critical care nurses but can also impair their problem-solving abilities.

This finding is similar to those of Philip et al. (2020, 2022) [22-23], who emphasized that the COVID-19 pandemic has exacerbated this unmet demand by making it more difficult for patients with respiratory disease to seek healthcare**.**

In the same context, Chen et al. (2020) [24] reported that emotional exhaustion was more common in female nurses who worked in COVID-19-designated hospitals or intensive care units and provided care for COVID-19 patients than in male nurses and those who did not. Working as a woman in a COVID-19-recognized hospital, working in intensive care units and critical care units, and working in COVID-19-related departments were all found to be significant predictors of burnout in the logistic regression study.

Several studies have also found that identifying as a woman or a man had a varied impact on trauma. Women were more likely than men to be traumatized after experiencing stressful situations; our findings are consistent with previous research (De Stefano et al. (2018) [25]; Jones et al. (2020) [26]).

Additionally, John et al. (2022) [27] and Juhee et al. (2022) [28-29] found that the Warwick-Edinburgh Mental Well-Being Scale (WEMWBS) is a psychometrically advantageous measure in assessing the mental health of frontline nurses in Saudi Arabia during the COVID-19 pandemic. The authors suggest using the WEMWBS to evaluate the good mental health of nursing professionals during a public health emergency. Additionally, Mohamed et al. (2019) [26] found that the levels of stress, anxiety, and depression among Saudi nurses vary significantly by nationality. Arab nurses had the largest mental health burden, followed by Indian and Pakistani nurses, while Filipino and Indonesian nurses had the lowest[30].

CONCLUSION

The current examination tracked down a solid relationship between psychological status of intensive nurses and COVID 19 pandemic. The main of them facing psychological symptoms of depression, anxiety, and insomnia most of time even who has short years of experience which present most of them.

This study found that even extremely robust nurses had some level of psychological stress, including symptoms of sadness, anxiety, and insomnia, as well as perceived stress. A modest PS indication is present in fewer than half (42.20%) of individuals, according to the current study. A moderate PS signal is present in 30.3% of participants as well. Furthermore, we discovered that a small percentage of participants (27.5%) had signs of significant psychological stress.

LIMITATION OF STUDY

Regarding the psychological state of health workers who experienced anxiety and stress, our results were slightly lower than those of other studies [13,14] conducted during the outbreak of COVID-19, and this may be related to the long time since the beginning of the epidemic, and the discovery of types of vaccines that led to relaxation and adaptation.

RECOMMENDATIONS

Based on main study findings the following recommendations are suggested:

i. Education programs for nurses working in ICU to deal with PS during this serious pandemic.

ii. Administrative developing programs for periodic examination of IC Unurses.

iii. Setting hospital polices in King Khaled General and Central Hospitals that stipulate reducing the number of patients for each ICU nurse, so that each nurse cares of one critical patient during nurse work period.

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