The perceived stress and resilience during COVID-19 1 pandemic among critical care nurses in Saudi Arabia: a correlational study (#66125)

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Line 91 where mentioned that it is essential for critical care compare to the rest health care providers, you may explain why?

The Research question well defined, relevant Literature well referenced.

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The perceived stress and resilience during COVID-19 pandemic among critical care nurses in Saudi Arabia: a correlational study

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Background: The COVID-19 pandemic is a horrific phenomenon for everyone, including healthcare workers. Nurses are operating at the forefront of the pandemic and face numerous physical and psychological challenges. The fact that critical care nurses have reported high levels of stress even before the COVID-19 pandemic is compounding the situation, compared to any other nursing specialty. This study aims to assess the level of perceived stress along with the resilience among critical care nurses. **Methodology:** in this correlational study critical care nursers (n=139) were recruited via gatekeeper in the selected governmental university hospital in Riyadh city, between 12 March and 8 April 2021, to complete an online questionnaire. The used measurement tools are Connor Davidson Resilience Scale 10 (CD-RISC-10) and COVID-PSS-10 items. Data analysed using descriptive and inferential analysis. **Results:** One hundred and thirty-nine critical care nurse (64%) responded. The perceived levels of stress were no stress (8%; n=12), mild (14%; n = 21), moderate (38%; n = 55), and high (22%; n = 32), severe (18%; n=26). The level of stress and resilience for the majority of critical care nurses was moderate, there was no significant correlation between the Covid-19-related stress and resilience among the critical care nurses. Severe lever of stress was mostly reported among critical care nurses working in NICU and high level of stress was reported among whose working in emergency department. The nurses are highly positive that they are able to handle personal epidemic related with a mean score of 2.36. This reflects on having high level of resilience (42%; n=62) was ~~is~~ significantly associated with years of experience (p <.0027).

Conclusion: Though the results showed high level of resilience and less stress compared to its level at the beginning of this Covid-19 pandemic, continuous monitoring of the level of stress for this high-risk group is highly essential. Further research is needed to test the effectiveness of psycho-social support interventions.

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among critical care nurses in Saudi Arabia: a correlational study

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Abstract

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Conclusion: Though the results showed high level of resilience and less stress compared to its level at the beginning of this Covid-19 pandemic, continues monitoring of the level of stress for this high-risk group is highly essential. Further research is needed to test the effectiveness of psych-social support interventions.

Keywords: stress, resilience, critical care nurses, Covid-19, Saudi Arabia

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Introduction

The whole world was dramatically changed when the World Health Organization (WHO, 2020) announced ~~about~~ the outbreak of Novel Coronavirus Disease 2019 (COVID-19). After 12 weeks of pandemic spread internationally in 66 nations around the world (Arab news, 2020), the Saudi Ministry of Health (MOH) declared the first case of COVID-19 on March 2, 2020 (MOH, 2020). The overall number of cities reporting at least one case was 197 as of 2 July 2020, with a total number of 1698 deaths. Saudi authorities banned sporting activities, closed educational facilities, parks, and malls, stopped domestic public transit, and implemented partial curfews in just one month (Yezli, & Khan, 2020).

A year after COVID-19 pandemic outbreak, nurses are still staidly set on the front line facing an extreme pressure taking care of critically ill patients. It is evident that critical care nurses are experiencing high level of stress compared to other clinical settings even prior to covid-19 pandemic. Nurses tend to disregard their own interests through unforeseen natural disasters and viral outbreaks to willingly participate in anti-epidemic work and make selfless sacrifices out of moral and ethical responsibility (Maben et al., 2020).

Several Saudi studies were conducted, during covid-19, among health care providers, report higher rates of stress, anxiety, burnout (Alotni et al., 2020). A study aimed to investigate the psychological distress impact during COVID-19 pandemic in Saudi Arabia population showed that health care professionals, specifically those who were on the front lines experiencing significant levels of psychological distress (Al Hanawi et al., 2020). Another descriptive cross-sectional study done on 650 healthcare workers in Saudi Arabia during covid-19 pandemic indicated that over 30% of healthcare workers suffer from depression.

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It also revealed that nurses were highly affected by depression in comparison to their physician colleagues (Al Mutair et al., 2021). Healthcare provider working at an organization that hosts COVID-19 patients and providing care with such patients were both linked with a high significant level of anxiety (Alenazi et al., 2020).

These mental issues are associated with many factors, including the high risk of infection dealing directly with Covid-19 patients, numerous deaths, workload, shortage of protective supplies, family isolation, and physical exhaustion (Nobles et al., 2020; Chew et al., 2020; Zhu et al., 2020; Brooks et al., 2020). A couple of studies done in Saudi Arabia and Tunisia found that young age and female gender were a predictive risk factors (Mohsin et al., 2021; Slama et al., 2021). The level of depression among respondents aged 31–40 years old was substantially greater than the level of depression among respondents aged 50 and more. (Al Mutair et al., 2021) However, coping mechanisms were found to be more prevalent in those aged 25–34 years, females, married, and those with a bachelor's degree (Natividad et al., 2021), professional position, number of family members, and years of experience in the medical sector were all linked to burnout. (Aljhani et al., 2021)

In India nurses who works in emergency departments reported high risk burnout, due to the excessive workload and critical patients' cases (Dhandapani & Cyriac, 2020). Consistent exposure to stress can lead to many psychological problems, therefor early identification of stressor and adjustment of individual personality traits and psychological functions are very essential stages to prevent these problems.

Psychological resilience, a notion of personality qualities that guard against stress, has recently been found. Resilience refers to a person's ability to adapt to major stressors such as trauma, threat, tragedy, familial and relationship troubles, job, and financial concerns (American Psychological Association, 2012). Nurses need resilience since they deal with a lot of risk factors on a daily basis and have to deliver standard care to their patients.

With the continues rapid spread of Covid-19 and increase hospitalized cases, critical care nurses exposed

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to high level of stress compared to other health care providers. Therefore, assessing the stress along with resilience level among this population is highly essential.

Materials & Methods

A descriptive correlational quantitative study was conducted among a convenience sample of nurses working in critical care units during the Covid-19 in Riyadh city, Saudi Arabia, including emergency Room (ER), Adult intensive care unit (ICU), pediatric intensive care unit (PICU), neonatal intensive care unit (NICU), operating room (OR), Post-anesthesia care unit (PACU), Cardiac Surgery OR (CSOR). The Princess Nourah Bint Abdulrahman University granted Ethical approval to carry out the study within its facilities (Ethical Application Ref: 21-0055). The participants' informed consent to take part in the research beforehand collection of data was safeguarded. The study subjects were ensured the right to withdraw from the study.

The sample size was calculated using Epi Info for statistical calculation on the confidence level of 95%, sample error 5%. A total of 217 questionaries were send to emails of critical care nurses via the research unit at the selected hospital. A total of 139 critical care nurses completed the online questionnaire giving a response rate of 64%.

Data collection methods

The first tool used for the study is the COVID-PSS-10 items which contains 10 items, each item has a maximum score of 4 (always) and a minimum score of 0 (Never). Items n. 1, 2, 3, 6, 9, and 10 are scored from 0 to 4; items n. 4, 5, 7, and 8 are scored reversely, from 4 to 0. The scores range between 0 and 40, scores equal to 25 or higher were considered as high perceived stress associated with COVID-19 (Pedrozo Pupo et al., 2020).

The second tool is Connor-Davidson Resilience Scale 10 (CD-RISC-10) (Campbell-Sills et al.,

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2007). This scale contains 10 items, the scale serves mainly as a measure of hardiness, with items corresponding to flexibility (1, 2 and 4), sense of self-efficacy (3,4), ability to regulate emotion (8,10), optimism (6 and 9) and cognitive focus/maintaining attention under stress (7). Each item is scored on a five-point scale ranging from 0 to 4, with 0 representing that the resilience statement is not at all true and a score of 4 indicating that the statement is true nearly all the time. The total score is obtained by adding up all 10 items. The total can therefore range from 0 to 40. Higher scores suggest greater resilience and lower scores suggest less resilience, or more difficulty in bouncing back from adversity.

Data analysis

Statistical analysis was managed by using IBM SPSS, version 22. (SPSS Inc., Chicago, IL, USA). Descriptive statistics specifically percentage was used to determine the distribution of the respondents according to their profile: age, marital status, years of work experience, and level of education. Mean scores were used to determine the level of covid-19 related stress and outlook and percentage was used to determine the distribution of the level of stress experienced by the respondents. Percentage was used to determine the distribution of the respondents according to the categories of the resilience level. An inferential statistics regression analysis was used to determine whether the profile of the respondents have linear relationship to their level of covid-19 related stress and resilience.

Interval scale and interpretation:

No stress/very low= 1-1.80, low= 1.81-2.60; moderate= 2.61-3.40; high =3.41-4.20; severe =4.21-5. Sum of scores were used to determine the resilience and mean scores were further used to categorize the levels of resilience.

Results

The demographical profile

The demographical profile of the participants has been analysed and presented in Table 1. Majority which is 60% are ages 30-40, followed by ages 25-30 which is 27%, 45 years and above is 8%, and only 5% are ages 20-25. It also shows that 52% of the respondents are single, and 41% are married while only 5% and 2% are divorced and widowed respectively, the majority which is almost half (42%) of the respondents worked from 6-9 years, followed by 10-15 years which is 25%, 3-5 years which is 16%, and those who worked as long as 15 years and above is 149 11%, and very few worked under one year to 2 years. For the level of education of the respondents. Majority, which is 81%, are bachelor's degree holders while only 10% are diploma graduates, and 9% have master's degree. No one of them have doctoral degree. It also shows that 86.4% of the respondents took care of a patient with Covid-19 and only 14% had no patient with Covid-19.

Table 1

Demographical Profile of the respondents

Profile	Frequency	Percentage
Age		
20-25	7	5%
25-30	39	27%
30-45	88	60%
>45	12	8%
Marital Status		
Single	76	52%
Divorced	2	2%
Widowed	7	5%
Married	60	41%

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Level of Education		
Diploma	14	10%
Bachelor	119	81%
Master	13	9%
Doctoral	0	0%
Years of Work Experience		
Under one year	3	2%
1-2 years	6	4%
3-5 years	23	16%
6-9 years	61	42%
10-15 years	37	25%
>15 years	16	11%
Patient Care Experience		
With Covid-19	126	86%
Without Covid-19	20	14%

Level of perceived stress during covid-19 and its correlation to demographic profile

Table 2 shows the level of stress according to their demographic profile that majority of the nurses who are single (19.8%) have moderate levels of covid-19 related stress. The majority of those with moderate level of stress (30.1%) are those with bachelor's degree. The level of Covid-19 related stress of the nurses when grouped according to their years of work experience. Those with less than one year of work experience have mild level of stress. Majority of those with 1-2 years of experience which is 2.7% have moderate level of stress, while majority of those with 3-5 years which is 5.4% also have moderate level of stress. Majority of those with 6-9, 10-15, and more than 15 years of experiences have moderate level of stress (15%,9.5% and 4.1% respectively. Majority (3.4%) of those with no stress to very low, mild (4.1%), moderate (9.5%), and high (13%) levels of stress are those with 6-9 years of work experience.

Majority (9.5%) of those with severe level of stress are those with 10-15 years of work experience. Various levels of stress according to their clinical area of assignment. Majority of the nurses who have severe stress

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are from the NICU, and majority of those with high level of stress are from the ED. It also shows that even those nurses who have not taken care of patients with Covid-19 still experience Covid-19 related stress from very low to severe levels.

Also, Table 2 table shows the predictive test between the profile of the respondents to the level of Covid-19 related stress. The data show that age has a p value= 0.4528 which is greater than the alpha=.05 which is not statistically significant and indicates strong evidence for the null hypothesis. The data also show similar findings with Marital Status with p=0.7138; educational status with p=0.2299, and whether or not the respondent took care of a patient with Covid-19 with p=0.415, and clinical area with a p= 0.1343. All respective p values are greater than the alpha=.05 indicating non statistical significance. The non-significance means that the null hypothesis is not rejected which indicates that age, marital status, education status, and whether the nurses took care or not of a patient with Covid-19 do not predict the level of Covid-19 related stress among the nurses.

Table 2

Level of stress and its association with participants' demographical profile

Level of stress when grouped according to	No Stress-	Mild	Moderate	High	Severe	Sig.
Marital Status						0.7138
Single	2.7%	**9.5%**	**19.8%**	8.9%	**8.9%**	
Divorced/Widow	0	0%	**4%**	0.6%	0.6%	
Married	**4.7%**	4.7%	**13.6%**	**11.6**%	8.2%	
Level of Educational						0.2299
Diploma	0.6%	1.7%	**4.7%**	2.7%	1.7%	
Bachelor	**5.4**	**11.6%**	**30.1**%	**15.7%**	**15%**	
Masters	2%	1.7%	**2.7%**	2%	0%	
PhD	0%	0%	0%	0%	0%	
Work Experience						**0.0309**
Under 1 year	0%	**2.0%**	0%	0%	0%	
1-2	0	0.6%	**2.7%**	0.6%	0%	
3-5	2.0%	2.0%	**5.4%**	2.7%	2.0%	

6-9	**3.4%**	**4.1%**	**15%**	**13%**	5.4%	
10-15	0.6%	3.4%	**9.5%**	2.7%	**9.5%**	
<15	1.3%	2.0%	**4.1%**	2.7%	0.6%	
Clinical Area						
OR	**4.7%**	4.1%	**5.4%**	3.4%	3.4%	
ED	0	**4.7%**	15%	**6.8%**	2.7%	
NICU	1 .6%	1.3%	**6.1%**	4.1%	**4.1%**	
PACU	1.6%	0	0	1.3%	0	
ICU	1 .6%	2%	**6.8%**	1.3%	3.4%	
PICU	1 .6%	.6%	1.3%	**2%**	.6%	
Intervention	0	.6%	.6%	.6%	.6%	
CS1	0	1.6%	**2%**	.6%	1.3%	
Patient Care Experience With Covid-19						0.415
No	1.7%	1.7%	**4.1%**	**4.1%**	2.7%	
Yes	**6.8%**	**12.3%**	**33.5%**	**17.1%**	**15%**	

Table 3 below shows the level of stress on the specific domains of the Covid-19 related stress. The nurses are severely stressed that something serious will happen unexpectedly with the epidemic as shown by a means score of 3.47. They are also highly stressed by the epidemic itself as shown by the mean score of 3.57. They are moderately stressed with the inability to control the important things in their lives due to the pandemic, inability to cope with what must be done to control possible infection, moderately upset that things related to the epidemic are out of their control, and that the difficulties accumulate during the epidemic that made them feel unable to overcome with the corresponding mean scores of 3.31, 2.91, 3.15, and 2.96.

Table 3

Level of stress related to specific domain of the Covid-19 related stress

Covid-19 related Stress Domains	n	SD	Mean Score	Level of Stress
I have felt affected as if something serious will happen unexpectedly with the epidemic	146	1.15	3.47	Severe

I have felt that I am unable to control the important things in my life due to the epidemic	146	1.23	3.31	Moderate
I have been nervous or stressed by the epidemic	146	1.02	3.57	High
I have felt unable to cope with the things I have to do to control the possible infection	146	1.18	2.91	Moderate
I have been upset that things related to the epidemic are out of my control	146	1.18	3.15	Moderate
I have felt that the difficulties accumulate in these days of the epidemic and I feel unable to overcome them	146	1.15	2.96	Moderate

On the other hand, the results showed the Covid-19 related positive outlook of the nurses as illustrate in Table 4. The nurses are highly positive that they are able to handle personal epidemic related with a mean score of 2.36. They have moderate positive outlook that things are going well with the epidemic with a mean score of 2.58; moderate on the feeling of being able to control the difficulties that appear in their lives due to infection with a mean score of 2.72; and moderately felt that everything related to the epidemic are under their control as shown by a mean 203 score of 2.85.

Table 4

Covid-19 related positive outlook of the nurses

Covid-19 related Positive Outlook	n	SD	Mean score	Level of Positivity
I have been confident about my ability to handle my personal epidemic related	146	.90	2.36	High
I have felt that things are going well (optimistic) with the epidemic	146	1.12	2.58	Moderate
I have felt that I can control the difficulties that could appear in my life due to the infection.	146	1.04	2.72	Moderate
I have felt that I have everything under control in relation to the epidemic	146	1.02	2.85	Moderate

Level of resilience

Majority, which is 62 (n=146) or 42%, of the nurses have moderate level of resilience with

scores ranging from 21-30 while 47 which is 32% of them have high level of resilience as shown

by scores ranging from 31-40. There are 26 which is 18% of them who have low resilience;

and 11 which is 8% have very low or poor resilience as shown in Table 5.

Table 5

Level of Resilience of the Nurses

Mean Scale	Level of Resilience	Frequency	Percentage
0-10	Very Low	11	8
11-20	Low	26	18
21-30	Moderate	62	42
31-40	High	47	32
		n=146	100%

Correlation between Covid-19 Related Stress, Covid-19 related Positive outlook, Resilience

Table 6 shows the correlation matrix of resilience, Covid-19 related stress and positive outlook and resilience. The matrix shows that Covid-19 related stress has negligible positive correlation to Covid-19 related positive outlook as shown by the r= 0.07. It also shows that Covid-19-related stress has a negligible negative correlation with resilience as shown by r= -0.051.

Table 6

Correlation Matrix (Covid-19 Related Stress, Covid-19 related Positive outlook, Resilience)

	Covid-19 Related Stress	- Covid-19 Positive Outlook	related Resilience	Correlation	
Covid-19 Related Stress	-	--	--		
Covid-19 related Positive Outlook	0.07	--	--	negligible correlation	positive

Resilience	-0.051	--	--	negligible correlation	negative

Table 8 shows that the r (144) =0.07< t=1.976 for Covid-19 related stress and positive outlook. It indicates that the values are not significant, hence, the null hypothesis is not rejected.

This means that there is no significant correlation between covid-19-related stress is and positive outlook to Covid-19 pandemic.

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Furthermore, the table also shows that the r (144) = -0.05 < t=1.976 for Covid-19-related stress and resilience. This also indicates that there is no significant correlation between the Covid236 19-related stress and resilience among the nurses. The null hypothesis is therefore not rejected.

Table 8

Test of Significance

	Covid-19 Related Stress				
	r	df	alpha	Critical value	Significance
Covid-19 related Positive outlook	0.07	144	.05	1.976	Not significant
Resilience	-0.5				Not significant

Discussion

The results showed that the majority of critical care nurses 38% 22% have a moderate to high level of Covid-19-related stress, similarly to other previous studies done in Saudi Arabia (Mohsin et al., 2021; Alotni et al., 2020) which stated that healthcare workers and critical care nurses specifically were having a moderate to high level of fear, anxiety and burnout. Our study revealed that nurses were severely stressed that something serious will happen unexpectedly with the epidemic, which can be justified that nurses were

afraid that they could transmitted COVID-19 to their families and friends, followed by thinking of inadequacy of personal protective equipment (Natividad et al., 2021). The current study showed that high level of stress among nurses who took care after patients with covid-19, in line with other studies (Crowe et al., 2020; Said et al., 2020). Hence, it is very important to point out that working at a hospital that hosts "COVID- 19 patients "regardless whether healthcare workers have dealt with covid-19 patients or not is linked to have a significant degree of anxiety (p-value 0.0001) (Alenazi et al., 2020).

Interestingly, the results of our study showed that the majority of nurses 42%- 32% have moderate to high level of resilience, similarly in Philbein where the resilience level among nurses was 51% (Labrague & Santos, 2020). A positive correlation was found between stress and nurses' years of experience, we found out that stress was statistically significant with nurses' years of experience p=0.0309. What is very surprising is that when we measured the level of stress according to their years of experience, we found out that nurses who have longer years of experience reported sever stress unlike those with less than a year to two years of experience who have reported non to mild stress. This is contrary to what was stated in serval studies which highlighted a connection between fewer years of work experience and an increased posttraumatic stress symptoms risk in health care workers (Mohsin et al., 2020; Slama et al., 2021; Li et al.,2020). This probably because the dependency of heath intuitions and the workload during Covid-19 were shifted to those who were more qualified (AlJhani et al., 2021). The level of stress according to their clinical area of assignment, the majority 6.8% of nurses with a high level of stress come from the emergency departments, and the majority 6.8% of those with a moderate level of stress come from the intensive care unit as (Lu et al., 2020), pointed out that those who's working in respiratory, emergency, infectious disease, and ICU departments were 1.4 times more likely experience fear, as well as twice as likely to experience

anxiety and depression (Li et al., 2020; Zhu et al., 2020). Finally, the current study showed that there is no significant correlation between Covid-19-related stress and resilience as shown by r= -0.051. which is completely opposite from the previous study p=0.05 (Setiawati et al., 2021). A possible explanation for these results could be because of the time data was obtained. Our data was after curfew ended and covid 19 cases was significantly declined due to affective vaccine campaigns and following WHO precautions. By the time the stress level was reduced, the level of resilience started to increase due successful implantations of the governmental health protocols in regard to covid-19.

Conclusions

The present study was designed to assess the level of stress and resilience among critical care nurses during COVID-19 pandemic in Saudi Arabia and to measure their level of stress based on their demographic profile. Nurses' level of stress and resilience were both moderate. There was a negative correlation between stress and resilience. Years of experience was a significant predictive factor for stress p=0.0309. The level of stress according to nurse's clinical area of assignment were high in emergency and neonatal intensive care unit. Further studies are suggested to determine factors that could affect the level of stress and resilience among critical care nurses.

Recommendations

Based on our findings the following reconditioned are made. We suggest further studies on critical care nurses and prove them with psychological consultations. Administrators must make a report every mid-year on the nurses' stress level and accordingly the interventions should made. Finally, preparing workshops for nurses to enhance psychological resilience.

Limitations

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Commented [u53]: 2)Provision of consultations by psychologists for those in need.3)

Commented [u54]: 4) Workshops for the enhancement of nurses'psychological resilience.

Commented [u55]: 3) Annual reports of nurses' stress levels by administrator every mid-year and appropriate intervention

Commented [u56]:

One of the limitations of the study was unavailability of critical care nurses to fill in the questionnaire because of their overload work of their units which might eventually lead to low response rate.

Commented [u57]: is the low response rate of nurses to fill the questionnaire due to work load, which might lead to a selection bias in favor of nurses that have lower levels of stress and resilience.

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