


ORIGINAL ARTICLE

# Psychological and mental wellbeing of healthcare workers in Saudi Arabia during the COVID-19 pandemic

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## ABSTRACT

**Background:** The COVID-19 pandemic has induced a substantial burden on healthcare organizations, with increased workload and stress for healthcare providers. Healthcare professionals working on the frontline are vulnerable to stress, putting their psychological and mental wellbeing in considerable jeopardy.

**Methods:** This is a cross-sectional study using data collected from a self-administered questionnaire that was distributed electronically to healthcare workers. The validated Kessler Psychological Distress Scale (K10) and the General Self-Efficacy Scale (GSE) were used to measure the level of stress of the healthcare professionals and the psychological impact of the pandemic on them.

**Results:** Two hundred and thirteen participants were included. A third of the responders (34.3%) were previously infected with COVID-19, while 72.3% had to self-isolate during the pandemic. The average score for the K10 questionnaire was  $24.8 \pm 9$  out of 50, where almost a third of the responders (33.3%) had very high psychological stress levels. The average score for the GSE was  $30.2 \pm 5.3$  points out of 40. Nurses and physicians ( $p = 0.033$ ) showed significantly higher scores on the K10 survey. Furthermore, nurses between ages 20 and 29 ( $p = 0.025$ ) and nurses of any age ( $p = 0.009$ ) had significantly high levels of psychological stress.

**Conclusion:** Healthcare professionals are at significant risk of psychological and mental adverse effects, particularly nurses on the frontline. Such findings should drive initiatives to prepare task forces that can put forward and implement strategies to minimize the risk imposed on the psychological and mental wellbeing of frontline health workers.

**Keywords:** COVID-19, Saudi Arabia, frontline, psychological, mental, stress.

## Introduction

The novel SARS-CoV-2 virus that causes COVID-19 has resulted in a global pandemic throughout the last year. The viral infection was first detected in China at the end of November 2019 [1]. Transmission of the virus was rapid and progressive not only among the Chinese population but also worldwide [2]. Consequently, the World Health Organization labeled COVID-19 as a pandemic by the first quarter of 2020. The number of admitted patients and the mortality rate have steadily increased globally since this announcement, and the number of deaths due to COVID-19 had approached more than two million by the third quarter of 2020 [3].

Increasing numbers of cases have led to a significant burden upon healthcare organizations, putting

healthcare providers under severe pressure, which potentially affects their ability to safely provide health services [4]. Unfortunately, the pandemic has exhausted healthcare in terms of challenges in the supply chain and internal burn-out rate when staff morale has reduced and stress has increased. This may result in patients not being admitted in time or

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the staff being unable to provide any effective help; moreover, the combination of these alongside other factors such as the struggle with finances may cause a collapse of the healthcare system in some countries [5]. Exhaustion among healthcare workers, particularly those working on the frontline, may quicken the process of this collapse [6].

Multiple factors have contributed to the exhaustion of clinicians and healthcare personnel [7]. Some of the major causes were redeployment to departments with high loads of COVID-19 cases as well as the increased possibility of transmission among healthcare workers; this, in turn, increases the burden on their colleagues as the infected need to be isolated [8]. The COVID-19 crisis has led to an overwhelming mental impact on health care workers, which manifests as severe burnout and anxiety [9].

Recent reports from China and European countries have demonstrated that frontline workers have suffered significant psychological burdens. These are primarily related to their colleagues and family members getting infected in addition to the increased workload [10,11]. In some instances, this psychological impact is severe, leading to significant anxiety or even depression [12].

Despite the information available from western countries on the magnitude of psychological and mental effects on healthcare professionals during the COVID-19 crisis, there is a scarcity of data regarding the mental and psychological effects in Arab countries. Accordingly, this study aimed to assess the magnitude of the mental challenge caused by the pandemic and identify the factors contributing to psychological and mental stress imposed on healthcare professionals during such a time of crisis.

## Materials and Methods

### Study design

This quantitative study included a self-reported survey distributed to the staff working at the Emergency Department of King Saud Medical City (KSMC) during the COVID-19 pandemic, between March 2020 and August 2020.

### Data collection

The survey included questions on both professional and demographic information including age, gender, years of experience, and specialty. Additionally, to evaluate the psychological burden, two validated questionnaires were used. The Kessler Psychological Distress Scale (K10), which is a widely used self-reporting questionnaire, has a 5-point Likert scale ranging from 1 (none of the time) to 5 (all of the time) [13]. It measures psychophysiological, emotional, behavioral, and cognitive manifestations. It is a 10-item measure of the frequency recording the respondent's history of anxiety, depression, or distress concerning any difficult and challenging situation. Scoring of the K10 survey includes the following: low (10 to 15 points, indicating minimal or no psychological stress),

moderate (16 to 21), high (22 to 29), and very high (30 to 50).

To measure the effect on mental wellbeing, a General Self-Efficacy Scale (GSE) was utilized, which identifies emotions and work satisfaction. Scores were given from 1 (not at all true) to 4 (exactly true). Then, the total score is summed for all items. For the GSE, the total score ranges from 10 to 40. It should be recognized that a higher score represents increased self-efficacy [14].

### Statistical analysis

All categorical variables were illustrated in the form of frequencies and percentages, while numerical variables were illustrated in the form of means and standard deviations. Comparisons between mean scores with demographic information were made using one-way analysis of variances (ANOVA), where  $p < 0.05$  was considered to be statistically significant. Meanwhile, comparisons for categorical variables were made using chi-square testing at the same level of significance. To minimize missed data, we made sure that all responses by default were completed and that no submissions were allowed before the completion of all elements. Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) version 23.0 (SPSS Inc., IBM, Armonk, NY).

## Results

Two hundred and thirteen workers in KSMC were included in this study. Table 1 describes the demographics of the study population.

### Demographic information of workers

Out of the 213 responders, 63.4% were females. Among the workers, 45.5% were between 30 and 39 years old; moreover, 56.8% were married, as illustrated in Table 1.

### Professional information of workers

As for the specialty, 57.7% of the responders were nurses; two responders were from the administrative staff. In terms of the education level, 82.6% had a

**Table 1.** Demographic information of workers.

	Number	Percent
Gender		
Female	135	63.4
Male	78	36.6
Age		
18 to 29	84	39.4
30 to 39	97	45.5
40 and above	32	15.0
Marital status		
Married	121	56.8
Single	92	43.2

bachelor's degree, and 62.9% had more than 5 years of work experience (Table 2).

Responders were also asked if they were previously infected with COVID-19; almost a third of the responders (34.3%) were previously infected.

Almost three-quarters (72.3%) of the responders had to self-isolate during the COVID-19 pandemic.

### Responses to the Kessler Psychological Distress Scale survey

The average score for K10 responses was  $24.8 \pm 9$ , with a minimum score of 10 and a maximum score of 50. Almost a third of the responders responded with “some of the time” for all the 10 questions, as illustrated in Table 3.

The K10 questionnaire scores were also classified into low, moderate, high, and very high. Almost a third of the participants (33.3%) were experiencing very high levels of psychological stress, followed by 27.2% experiencing high-stress levels, as demonstrated in Figure 1.

### Responses to the GSE survey

The average GSE score was  $30.19 \pm 5.3$  points, with a minimum score of 11 and a maximum score of 40. The responses demonstrated significant mental stress with almost half of the responses being “moderately true” for all the questions, as shown in Table 4.

### Comparison between the different demographic variables and scores for both surveys

The mean scores for both surveys were compared with other demographic variables through one-way ANOVA. Being a nurse or a physician ( $p = 0.033$ ), having a diploma ( $p = 0.049$ ), and having 2 to 5 years of work experience ( $p = 0.031$ ) were all notable factors that showed significantly higher scores on the K10 survey.

In the GSE survey, factors that increased the score included being an emergency medical services worker or a respiratory therapist ( $p < 0.001$ ) and having had a previous COVID-19 infection ( $p = 0.041$ ); these were significantly associated with higher GSE scores, as demonstrated in Table 5.

Table 2. Professional and educational information.

		Count	Percent
Specialty	Nurses	123	57.7
	Physicians	61	28.6
	Emergency medical services	19	8.9
	Respiratory therapists	8	3.8
	Emergency department administration	2	0.9
Level of education	Bachelor's degree	176	82.6
	Diploma	19	8.9
	Master's degree	18	8.5
Work experience	Less than 2 years	22	10.3
	2 to 5 years	57	26.8
	More than 5 years	134	62.9

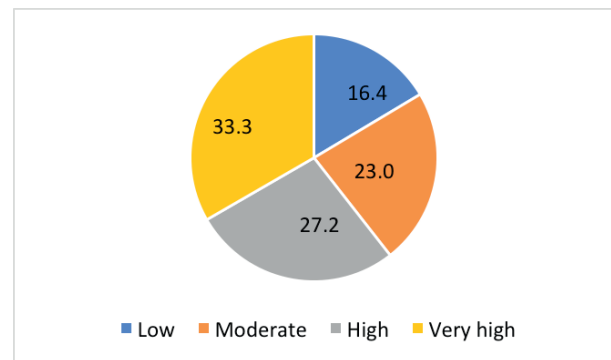


Figure 1. Score classification for the Kessler Psychological Distress Scale survey.

Table 3. Responses to Kessler Psychological Distress Scale questionnaire.

	None of the time	A little of the time	Some of the time	Most of the time	All of the time
1. During the last 30 days, how often did you feel exhausted for no good reason?	6.6	17.4	38.5	23	14.6
2. During the last 30 days, how often did you feel nervous?	13.6	25.8	33.8	20.2	6.6
3. During the last 30 days, how often did you feel so nervous that nothing could calm you down?	33.8	26.8	29.1	8	2.3
4. During the last 30 days, how often did you feel hopeless?	42.7	23.9	21.6	7.5	4.2
5. During the last 30 days, how often did you feel restless or fidgety?	26.8	23	29.1	14.1	7
6. During the last 30 days, how often did you feel so restless that you could not sit still?	42.7	24.9	20.2	7	5.2
7. During the last 30 days, how often did you feel depressed?	27.2	26.8	31	9.9	5.2
8. During the last 30 days, how often did you feel that everything was an effort?	12.2	21.1	38.5	18.3	9.9
9. During the last 30 days, how often did you feel so sad that nothing could cheer you up?	25.4	29.6	24.9	12.7	7.5
10. During the last 30 days, how often did you feel worthless?	36.6	24.4	25.8	8.9	4.2

**Table 4.** Responses to the GSE survey.

	Not at all true	Hardly true	Moderately true	Exactly true
1. I can always manage to solve difficult problems if I try hard enough.	4.2	17.8	48.8	29.1
2. If someone opposes me, I can find the means and ways to get what I want.	8.9	21.6	51.2	18.3
3. It is easy for me to stick to my aims and accomplish my goals.	3.3	17.8	53.5	25.4
4. I am confident that I can deal efficiently with unexpected events.	3.8	14.1	55.4	26.8
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.	0.5	20.2	55.4	23.9
6. I can solve most problems if I invest the necessary effort.	2.3	19.2	43.2	35.2
7. I can remain calm when facing difficulties because I can rely on my coping abilities.	2.3	19.2	49.3	29.1
8. When I am confronted with a problem, I can usually find several solutions.	3.3	17.8	52.6	26.3
9. If I am in trouble, I can usually think of a solution.	2.3	16.9	49.8	31
10. I can usually handle whatever comes my way.	3.8	20.7	46.5	29.1

**Table 5.** Factors influencing mental and psychological stress during the COVID-19 pandemic.

		K10		p-value	GSE		p-value
		Mean	SD		Mean	SD	
Gender	Male	24.9	9.0	0.982	29.9	5.6	0.597
	Female	24.8	9.0		30.3	5.2	
Age	18 to 29	26.6	9.5	0.071	29.8	5.3	0.569
	30 to 39	23.8	8.5		30.2	5.6	
	40 and above	23.5	8.8		31.0	5.0	
Marital status	Single	24.5	8.8	0.600	31.0	4.8	0.062
	Married	25.1	9.2		29.6	5.7	
Specialty	Nurses	25.5	9.3	0.033*	30.0	5.7	< 0.001*
	Physicians	25.7	8.7		28.6	4.2	
	Paramedics	19.8	8.0		34.4	3.9	
	Respiratory therapists	20.5	6.4		34.8	3.7	
	Emergency department administrators	24.5	6.4		31.5	2.1	
Education	Bachelor's	24.5	9.0	0.049*	30.5	5.4	0.231
	Diploma	27.0	8.8		29.5	6.0	
	Master's	25.6	9.5		28.3	3.6	
Years of work experience	Less than 2 years	25.6	8.6	0.031*	29.3	3.3	0.578
	2 to 5 years	26.9	9.1		29.9	6.0	
	More than 5 years	23.8	8.9		30.5	5.4	
Previous COVID-19 infection	Yes	24.2	8.5	0.460	31.2	4.6	0.041*
	No	25.2	9.3		29.7	5.6	
Self-isolation	Yes	25.0	9.0	0.728	30.4	5.2	0.342
	No	24.5	9.3		29.6	5.8	

\* means significant p value < 0.05

The K10 scores (low, moderate, high, and very high psychological stress) were compared to different demographic and professional variables using Chi-square testing at a significance level of  $p < 0.05$ .

We showed that being female ( $p = 0.022$ ), 18 to 29 years old ( $p = 0.025$ ), a nurse ( $p = 0.009$ ), and having higher education levels ( $p = 0.041$ ) were all factors that significantly contributed to very high levels of psychological stress during the COVID-19 pandemic, as shown in Table 6.

## Discussion

The COVID-19 pandemic has imposed a significant workload on hospital nursing staff, medical specialists,

and administrative workers [15]. The increased number of admitted patients increases the risk of hospital staff becoming infected or required to self-isolate; moreover, it also raises the risk of potentially transmitting the infection to their families [16]. All these factors have contributed to significant stress for these workers, which is underexamined in the Gulf area [17].

This investigation measured the psychological and mental stress levels of Saudi healthcare workers in a hospital in Saudi Arabia during the COVID-19 pandemic. The study demonstrated that both medical and administrative staff significantly suffered from very high risks of psychological and mental distress.

**Table 6.** Factors influencing a very high level of psychological stress.

		Low	Moderate	High	Very high	p-value
Gender	Male	17.9%	19.2%	34.6%	28.2%	0.022*
	Female	15.6%	25.2%	23.0%	36.3%	
Age	18 to 29	10.7%	23.8%	28.6%	36.9%	0.025*
	30 to 39	17.5%	25.8%	27.8%	28.9%	
	40 and above	28.1%	12.5%	21.9%	37.5%	
Marital status	Single	15.2%	26.1%	22.8%	35.9%	0.516
	Married	17.4%	20.7%	30.6%	31.4%	
Specialty	Nurses	13.0%	26.0%	22.0%	39.0%	0.009*
	Physicians	16.4%	14.8%	36.1%	32.8%	
	Paramedics	36.8%	26.3%	26.3%	10.5%	
	Respiratory therapists	25.0%	25.0%	37.5%	12.5%	
	Emergency department administration	0.0%	50.0%	50.0%	0.0%	
Education	Bachelor's	16.5%	26.1%	25.0%	32.4%	0.041*
	Diploma	5.3%	15.8%	47.4%	31.6%	
	Master's	27.8%	0.0%	27.8%	44.4%	
Years of work experience	Less than 2 years	13.6%	22.7%	27.3%	36.4%	0.667
	2 to 5 years	10.5%	19.3%	33.3%	36.8%	
	More than 5 years	13.6%	22.7%	27.3%	36.4%	
Previous COVID-19 infection	Yes	21.9%	16.4%	30.1%	31.5%	0.206
	No	13.6%	26.4%	25.7%	34.3%	
Self-isolation	Yes	15.6%	22.7%	28.6%	33.1%	0.888
	No	18.6%	23.7%	23.7%	33.9%	

Psychological stress and mental wellbeing have previously been examined among healthcare professionals in different contexts. Li et al. [18] have assessed the psychological distress that frontline nurses have suffered during the COVID-19 pandemic; they have demonstrated that frontline nurses have significantly higher stress levels in comparison to those of the nurses working on non-frontline services ( $p < 0.001$ ). This lower stress level was contributed to a psychological training program given to frontline nurses [18].

In this investigation, more than half of the individuals in the included cohort were females and nurses. It has been revealed that females and nurses are at a significantly higher risk of having very high levels of psychological stress ( $p = 0.002$  and  $0.033$ , respectively). Accordingly, a psychological training program proposed by Li et al. [18] recommends a viable solution for the medical staff, particularly nurses, to reduce their psychological stress.

Furthermore, Kang et al. [19] have illustrated that the most common type of psychological stress among physicians is anxiety in a mild form, representing 34.4% of the responders. However, Kang et al. [19] have also shown that almost half of the healthcare workers have access to some psychological support materials through media, which help to decrease their psychological burden [19].

Huang et al. [20] have demonstrated a higher anxiety level among nurses than among the doctors ( $p = 0.039$ ). Furthermore, Huang et al. [20] have also

demonstrated that females are at a significantly high risk of increased anxiety ( $p < 0.045$ ), while 16.09% of the healthcare professionals have mild psychological distress [20].

Chung et al. [21] conducted a survey in which psychological and emotional stress experienced by frontline physicians and hospital staff was examined. Chung et al. [21] have revealed that frontline physicians have higher mental and psychological levels of stress as they fear they will become infected and transmit the disease to their families. These findings are similar to the results of our study, which demonstrate that nurses and physicians are at significant risk of the highest levels of stress.

It is important to understand that this study suffered from some limitations. Due to the self-reported questionnaire technique used in this study, the participants' responses were solely dependent on their subjective opinions, which could affect the outcome reliability. Furthermore, this survey investigated a single center in Saudi Arabia, which makes external validity questionable and difficult. Furthermore, the professionals who attended psychological training or attempted to reduce their COVID-19 crisis-induced stress were too few for us to be able to compare and assess the usefulness of such solutions.

## Conclusion

Healthcare workers and the administrative staff working on the frontline in Saudi hospitals during the COVID-19 pandemic have suffered from significantly

high levels of psychological and mental stress. These findings should drive initiatives and regulations to mitigate the impact of such disasters, decrease stress levels, and keep the morale as high and positive as possible. Future studies are also required to measure the correlations between the psychological and mental wellbeing of the working staff and the impact on the provided healthcare services. Moreover, more studies are needed to evaluate the mental and psychological well-being of healthcare workers in other areas of Saudi Arabia.

#### List of Abbreviations

GSE General Self-Efficacy Scale  
ANOVA One-way analysis of variances  
SPSS Statistical Package for Social Sciences  
KSMC King Saud Medical City

#### Conflict of interest

The authors declare that there is no conflict of interest regarding the publication of this article.

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#### Consent to participate

Written informed consent was obtained from all the participants.

#### Ethical approval

Ethical approval was granted by Institutional Review Board via reference no. H1R1-16-Jul20-01.

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