

Psychological status of healthcare workers during COVID-19 pandemic in Saudi Arabia

ABSTRACT

Background: The 2019 Corona Virus Disease (COVID-19) is a global pandemic affecting the lower respiratory tract that is caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov2). It has caused psychological stress on people around the world, particularly those in the medical field. The purpose of this study is to determine the levels of anxiety, depression, burnout, and the sources of anxiety among healthcare workers (HCW) in Saudi Arabia during the COVID-19 pandemic. Also, to determine the coping strategies of HCWs in dealing with mental health issues that may affect them during the pandemic.

Methodology: An observational cross-sectional study was carried out between May 2020 to November 2021 in Saudi Arabia. A Total of 260 HCW of both genders who are working in private and governmental hospitals were selected. However, non-healthcare workers such as technicians, administrators, clerical staff and maintenance workers were excluded.

Results: A total of 260 HCWs 98 (37.7%) doctors, 27 (10.4%) nurses, 6 (2.3%) pharmacists, 5(1.9%) physiotherapists, 113(43.5%) interns and 11 (4.2%) others, of whom 127 (48.8%) were male and 133 (51.2%) were female. The majority of participants aged from 20-29 years old 205 (78.5%), followed by 30-39 years old 26 (10%), 40-49 years old 18(6.9%), and 50-59 years old 10(3.8%), and 70-79 years old 1(0.4%). Around 42(16.2%) HCWs were working in ER, 82(31.5%) in wards, 83(31.9%) in outpatient clinics, 15(5.8%) were working in both wards and outpatient clinics, 6 (2.3%) in ICU and around 32(12.3%) in all demographics.

Conclusion: The results of this study illustrated the burden of psychological problems among different healthcare workers during the COVID-19 pandemic. The findings suggest that all health care workers (HCWs) were affected by varying degrees severity of anxiety and depression, insomnia and complaining from cardiovascular symptoms

Comment [tb1]: This was description of yours
Observational study not the result of yours study
gool please listed the msot important result like how
was most effectec group doctor , nurses other

Keywords: COVID-19 pandemic, Healthcare Workers, Anxiety, Depression.

1. INTRODUCTION

The 2019 Corona Virus Disease (COVID-19) was first reported in December 2019 in Wuhan, China, which rapidly spread across the country [1]. It is a global pandemic affecting the lower respiratory tract that is caused by Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-Cov2) [2]. COVID-19 is more likely to affect old men who have comorbidities, diseases causing a severe and possibly fatal lower respiratory tract disease such as Acute Respiratory Distress Syndrome (ARDS) [3].

Formatted: Justified

In March 2020, COVID-19 was announced to be a pandemic, making it a global emergency. Since then, governments all around the world have taken several actions and precautions to limit the spread of the virus, such as work and school closure, quarantines, as well as the limitation of different transportation means [4]. By the 8th of April 2020, WHO documented approximately 42,000 healthcare workers (HCW) were confirmed to have COVID-19 in China, and 22,073 cases in 52 countries [5].

In a cross-sectional study conducted in China that involved 2285 HCW, 56.59% were found to have insomnia, anxiety, and depression symptoms. Out of this, 38.47% had mild symptoms while 18.12% suffered from moderate/severe symptoms [5]. Additionally, a study carried out in Riyadh, Saudi Arabia, suggested that the source of anxiety for the majority of HCW was the possibility of transmitting COVID-19 to their families, rather than themselves [6]. Other studies revealed that the persons at higher risk of developing psychological consequences due to COVID-19 were HCW. Furthermore, nurses were shown to have higher levels of anxiety than doctors [7]. Another consequence of exposure to stressors is burnout, which is commonly defined as multidimensional, consisting of emotional exhaustion, depersonalization and diminished sense of personal accomplishment [8]. HCWs are very often vulnerable to job burnout, with the highest levels of job burnout reported among HCWs working in the emergency and ICU environment where they are exposed to an overwhelming amount of job-related stress [9].

In addition, evidence suggests that successful coping strategies can reduce the risk of burnout dramatically. A clinical trial examining the effects of a 12-week incentivized physical exercise program in physician trainees has demonstrated improvement in burnout scores as compared with controls. Furthermore, the study showed significant improvement in quality of life as assessed by a validated single-item linear self-assessment scale [8].

All except one previous study that measured the psychological impact of COVID-19 on HCW were conducted outside Saudi Arabia, mainly in China. The only study that was conducted in [Saudi Arabia, KSA](#) was limited due to small sample size. It was also exposed to selection bias owing to the non-randomized selection of participants. Our study aims to identify the adverse psychological effects of COVID-19 on HCW, coping strategies with the use of a larger, more randomized sample, to determine the levels of anxiety, depression and burnout among HCW in Saudi Arabia during COVID-19 pandemic, to identify the sources of anxiety in HCW during the COVID-19 pandemic and to determine the coping strategies of HCWs in dealing with mental health issues that may affect them during the pandemic.

2. MATERIAL AND METHODS

- 1- 2.1 Study design:
- 2- This is **CROSS-SECTIONAL OBSERVATIONAL RESEARCH WAS** carried out in Saudi Arabia.
- 3- 2.2 Subject:

Formatted: Indent: Left: 0.25", No bullets or numbering

Formatted: No bullets or numbering

4. Participants, recruitment, and sampling procedure Study participants included are doctors, nurses, allied healthcare workers (pharmacists, physiotherapists, occupational therapists), ...etc. The sample **WAS** collect**ED** randomly.

~~5.~~

6. 2.3 Inclusion criteria:

- Health care workers: Private and governmental hospitals
- Male and Female
- Saudi and non-**SAUDI**

Formatted: Indent: Left: 0.25", No bullets or numbering

UNDER PEER REVIEW

- Agree to Participate

7. 2.4 Exclusion criteria:

8. Not a healthcare worker: technicians, administrators, clerical staff and maintenance workers, ... etc.

9-2.5 2-5 Method for data collection and instrument:

10. A self-administered randomized anonymous questionnaire, written in English, was used as a study tool. The questionnaires **WAS SENT** to participants via online (**MEDICAL** groups, E-mail) and also will be face to face in Hospital, PHC). The Nine-Item Patient Health Questionnaire (PHQ-9) was used to identify depressed symptoms during the previous two weeks, which has shown high consistency with a diagnosis of major depression based on structured interviews. Cut-off points of 5, 10, and 15 were classified as mild, moderate, and severe depression, respectively. A PHQ-9 score ≥ 10 was previously reported to have a sensitivity of 88% and specificity of 88% for major depression. Besides, to measure the anxiety level, we used Hamilton Anxiety Scale (HAMA) which contains 14 questions. Each question includes 5 items. Responses are scored as 0 (never), 1 (mild), 2 (moderate), 3 (severe), or 4 (extremely serious). Overall, the total score of HAMA is operationally categorized as follows: no anxiety (score 0–6), mild and moderate anxiety (score 7–13), severe anxiety (score ≥ 14). Moreover, to assess the sources of anxiety we asked the HCW to choose the most significant source of anxiety affecting them, which include 8 sources of anxiety: (1) access to appropriate personal protective equipment, (2) being exposed to COVID-19 at work and taking the infection home to their family, (3) not having rapid access to testing if they develop COVID-19 symptoms and concomitant fear of propagating infection at work, (4) uncertainty that their organization will support/take care of their personal and family needs if they develop an infection, (5) access to child care during increased work hours and school closures, (6) support for other personal and family needs as work hours and demands increase (food, hydration, lodging, transportation), (7) being able to provide competent medical care if deployed to a new area (eg, non-ICU nurses having to function as ICU nurses), and (8) lack of access to up-to-date information and communication. The Copenhagen Burnout Inventory (CBI) scale was also included in our survey. Questions in this scale are divided into three parts: personal burnout, work-related burnout, and client related burnout. Responses are scored as 0 (Never), 25 (Seldom), 50 (Sometimes), 75 (Often), 100 (Always). Some other questions, however, have different response categories but with the same scoring system. Responses are: "to a very high degree", "to a high degree", "somewhat", "to a low degree", and "to a very low degree". One additional scale that we used is Brief COPE, a shortened version of the original COPE scale, which is designed to assess and spectate how individuals respond to stress and cope with certain situations. The Brief COPE scale includes a set of statements reflecting coping mechanisms, and responses were coded as follow: (1 = I usually **DON'T DO** this at all, 2 = I usually do this a little bit, 3 = I usually do this a medium amount, 4 = I usually do this a lot).

11.

12. 2.6 Analyzes and entry method:

13. Data was entered on the computer using the "Microsoft Office Excel Software" program (2016) for windows. Data was then transferred to the Statistical Package of Social Science Software (SPSS) program, version 20 (IBM SPSS Statistics for Windows, Version 20.0. Armonk, NY: IBM Corp.) to be statistically analyzed.

14.

15. 3. results and discussion

16.

Formatted: Indent: Left: 0", Hanging: 0.25", No bullets or numbering

Formatted: Outline numbered + Level: 2 + Numbering Style: 1, 2, 3, ... + Start at: 5 + Alignment: Left + Aligned at: 0" + Indent at: 0.25"

Formatted: Indent: Left: 0", Hanging: 0.25", No bullets or numbering

Formatted: Indent: Left: 0.25", No bullets or numbering

Formatted: Indent: Left: 0", Hanging: 0.25", No bullets or numbering

Formatted: Indent: Left: 0.25", No bullets or numbering

Formatted: Indent: Left: 0", Hanging: 0.25", No bullets or numbering

Formatted: Indent: Left: 0.25", No bullets or numbering

This study aimed to estimate the psychological effects of COVID-19 on HCW in Saudi Arabia. During this Cross-sectional study which was conducted during 2020-2021 a total of 260 HCWs 98 (37.7%) doctors, 27 (10.4%) nurses, 6 (2.3%) pharmacists, 5(1.9%) physiotherapists, 113(43.5%) interns and 11 (4.2%) others, of whom 127 (48.8%) were male and 133 (51.2%) were female. The majority of participants aged from 20-29 years old 205 (78.5%), followed by 30-39 years old 26 (10%), 40-49 years old 18(6.9%), and 50-59 years old 10(3.8%), and 70-79 years old 1(0.4%). Around 42(16.2%) HCWs were working in ER, 82(31.5%) in wards, 83(31.9%) in outpatient clinics, 15(5.8%) were working in both wards and outpatient clinics, 6 (2.3%) in ICU and around 32(12.3%) in all demographics.

Regarding the working place 26(10%) were working in the north region of Saudi Arabia, 23(8.8%) in the south, 151(58.1%) in the east, 52(20%) in the west and 8(3.1%) in Riyadh. As for working hours, 157(60.4%) were working less than 40 hours, 96(36.9%) from 40 to 60 hours and 7(2.7%) more than 60 hours. About 66(25.4%) were dealing directly with COVID-19 patients and 194(74.6%) of them were not. The most significant source of anxiety that affect HCWs is being exposed to COVID-19 at work and taking the infection home to your family 175(67.3%) followed by access to appropriate personal protective equipment 23(8.8%).

According to Hamilton Anxiety Rating Scale (HAM-A), 149(57.1%) were <17 which indicates mild anxiety, 35(13.4%) scored 18-24 which indicates mild to moderate anxiety, 29(11.1%) scored 25-30 which suggests moderate to severe anxiety and 47(18%) scored 31-56 which is very severe anxiety level. Furthermore, PHQ-9 total score for the nine items ranges from 0 to 27. In our study, the PHQ-9 depression severity score were 34(13%), 74(28.4%), 88(33.7%), 38(14.6%) and 26(10%) which indicates minimal depression, mild, moderate, moderately severe and severe depression, respectively.

The results of Copenhagen Burnout Inventory (CBI) were summarized in table I. Moreover, table II shows brief COPE scale.

In studying the relationship between working hours and Hamilton anxiety scale the results showed that 66 of HCWs who work <40 hours are not complaining of insomnia, 39 have mild insomnia, 31 have moderate insomnia, 10 have severe insomnia, and 11 of them have very severe insomnia. While 20 of HCW who works 40-60 hours are not complaining of insomnia, 24 have mild insomnia, 30 have moderate insomnia, 14 have severe insomnia, and 8 of them have very severe insomnia. Also, 3 HCWs who work >60 hours are not complaining of insomnia, 0 have mild insomnia, 1 have moderate insomnia, 2 have severe insomnia, and 1 of them have very severe insomnia.

Regarding feelings of tension, 52 HCWs who work <40 hours are not suffering of tension, 36 have mild tension, 39 have moderate tension, 15 have severe tension, and 15 have very severe tension. In addition, 12 HCWs who work 40-60 hours are not suffering of tension, 19 have mild tension, 39 have moderate tension, 18 have severe tension, and 8 have very severe tension. Furthermore, no one of HCWs who work >60 hours are suffering of tension, 2 have mild tension, 1 have moderate tension, 1 have severe tension, and 3 have very severe tension.

Formatted: Justified

Comment [tb2]: Please add the exact period month and days of starting and ending

Comment [tb3]: How many questioner return (number of responses)????

Additionally, 56 of HCWs who work <40 hours are not experiencing difficulties in concentration and poor memory, 40 HCWs have mild difficulty, 33 moderate, 21 severe, and 7 very severe difficulty. While 21 of HCWs who work from 40-60 hours are not experiencing difficulties in concentration and poor memory, 22 HCWs have mild difficulty, 24 moderate, 24 severe, and 5 very severe difficulty. Also, 3 of HCWs who work >60 hours are not experiencing difficulties in concentration and poor memory, 0 HCWs have mild difficulty, 1 moderate, 1 severe, and 2 very severe difficulty.

An additional point, 49 HCWs who work <40 hours are not complaining of depressed mood, 49 have mildly depressed mood, 27 have moderately depressed mood, 23 have severely depressed mood, 9 have very severely depressed mood. 18 HCWs who work 40-60 hours are not complaining of depressed mood, 14 have mildly depressed mood, 34 have moderately depressed mood, 21 have severely depressed mood, 9 have very severely depressed mood. 3 HCWs who work >60 hours are not complaining of depressed mood, 0 have mildly depressed mood, 2 have moderately depressed mood, 0 have severely depressed mood, 2 have very severely depressed mood.

Moreover, 94 HCWs who work <40 hours have no cardiovascular symptoms, 30 have mild symptoms, 25 moderate, 7 severe, and 1 have very severe symptoms. In addition, 28 HCWs who work 40-60 hours have no cardiovascular symptoms, 23 have mild symptoms, 26 moderate, 13 severe, and 6 have very severe symptoms. 3 HCWs who work >60 hours have no cardiovascular symptoms, 1 have mild symptoms, 1 moderate, 2 severe, and 0 have very severe symptoms.

Furthermore, 106 HCWs who work <40 hours have no respiratory symptoms, 23 have mild symptoms, 19 moderate, 8 severe, and 1 have very severe symptoms. In addition, 38 HCWs who work 40-60 hours have no cardiovascular symptoms, 16 have mild symptoms, 21 moderate, 14 severe, and 7 have very severe symptoms. 3 HCWs who work >60 hours have no cardiovascular symptoms, 1 have mild symptoms, 1 moderate, 0 severe, and 2 have very severe symptoms.

Finally, 76 HCWs who work <40 hours have no gastrointestinal symptoms, 39 have mild symptoms, 27 moderate, 11 severe, and 4 have very severe symptoms. In addition, 29 HCWs who work 40-60 hours have no cardiovascular symptoms, 19 have mild symptoms, 21 moderate, 19 severe, and 8 have very severe symptoms. 5 HCWs who work >60 hours have no cardiovascular symptoms, 0 have mild symptoms, 0 moderate, 0 severe, and 2 have very severe symptoms.

The relationship between depression scale (PHQ-9) and dealing directly with COVID-19 patients is illustrated in table III.

Moreover, table IV shows the relationship between sources of anxiety and the demographics.

Comment [tb4]: This study was good but the most group that effect must be clearly noted such as nurses or doctors, how works more than 60 hours in ER or not and like that

Table I. Copenhagen Burnout Inventory (CBI). Scales, items and response frequencies

	Always or To a very high degree (Scoring 100) %	Often or To a high degree (Scoring 75) %	Sometimes or somewhat (Scoring 50) %	Seldom or To a low degree (Scoring 25) %	Never/ almost never or To a very low degree (Scoring 0) %
Personal burnout					
How often do you feel tired?	12.6	26.4	33.3	20.3	6.9
How often are you physically exhausted?	11.9	18.8	44.4	16.5	8
How often are you emotionally exhausted?	12.6	28	30.3	18.8	10
How often do you think: "I can't take it anymore"?	9.2	20.3	34.9	19.5	15.7
How often do you feel worn out?	7.3	20.7	38.7	18.8	14.2
How often do you feel weak and susceptible to illness?	6.5	14.2	36	29.1	13.8

Work-related burnout					
Do you feel worn out at the end of the working day?	17.2	18.8	33.7	18	11.9
Are you exhausted in the morning at the thought of another day at work?	13.8	21.8	27.2	22.6	14.2
Do you feel that every working hour is tiring for you?	5.4	17.2	27.6	28.7	20.7
Do you have enough energy for family and friends during leisure time?	18.8	21.1	38.7	13.4	7.7
Is your work emotionally exhausting?	8.4	24.9	31.8	17.6	16.9
Does your work frustrate you?	10.3	13.8	31.8	21.8	21.8
Do you feel burnt out because of your work?	10.3	19.2	33.7	16.9	19.5
Client-related burnout					
Do you find it hard to work with clients?	3.1	16.1	28.7	32.2	19.5
Does it drain your energy to work with clients?	8.8	13.4	28	19.2	30.3
Do you find it frustrating to work with clients?	1.1	13.8	30.3	24.1	30.3
Do you feel that you give more than you get back when you work with clients?	5.4	15.7	29.1	19.9	29.5
Are you tired of working with clients?	3.1	9.2	32.2	30.7	24.5
Do you sometimes wonder how long you will be able to continue working with clients?	9.2	17.6	31	13.4	28.4

Table II. Brief COPE. Scale, items and response frequencies.

	I have not	I have been	I have been	I have been
--	------------	-------------	-------------	-------------

	been doing this at all	doing this a little bit	doing this a medium amount	doing this a lot
I've been turning to work or other activities to take my mind off things.	15.3	39.5	31	13
I've been concentrating my efforts on doing something about the situation I'm in.	19.2	31	33.3	16.1
I've been saying to myself "this isn't real."	36	33.3	17.6	12.6
I've been getting emotional support from others.	19.9	31.8	31.4	16.5
I've been giving up trying to deal with it.	39.5	29.1	21.5	9.6
I've been taking action to try to make the situation better.	19.9	33	28.4	18.4
I've been refusing to believe that it has happened.	36	33.3	17.6	12.6
I've been saying things to let my unpleasant feelings escape.	23.4	39.8	25.3	11.1
I've been getting help and advice from other people.	33.3	26.4	26.1	13.8
I've been using alcohol or other drugs to help me get through it.	54.8	24.5	8	12.3
I've been trying to see it in a different light, to make it seem more positive.	19.9	31.8	31.4	16.5
I've been criticizing myself.	23.8	40.6	21.1	14.2
I've been trying to come up with a strategy about what to do.	18.8	33.7	28.4	18.8
I've been getting comfort and understanding from someone.	24.9	33.7	26.8	14.2
I've been giving up the attempt to cope.	35.6	33	19.5	11.5
I've been looking for something good in what is happening.	20.3	30.3	21.8	27.2
I've been making jokes about it.	19.9	29.9	31.8	18
I've been doing something to think about it less, such as going to movies,	15.3	32.6	26.8	24.9

watching TV, reading,
daydreaming, sleeping, or
shopping.

Depression PHQ	Not at all	Several days	More than half the days	Nearly	Formatted Table
I've been accepting the reality of the fact that it has happened.	21.1	29.9	26.1	22.6	
I've been expressing my negative feelings.	26.4	33.7	28.4	11.1	
I've been trying to find comfort in my religion or spiritual beliefs.	14.2	28.4	35.2	21.8	
I've been trying to get advice or help from other people about what to do.	23.4	28.4	35.2	12.6	
I've been learning to live with it.	12.6	25.3	33.7	28	
I've been thinking hard about what steps to take.	33.7	25.3	26.1	14.6	
I've been blaming myself for things that happened.	30.7	33.3	21.8	13.8	
I've been praying or meditating.	23	28.4	30.3	18	
I've been making fun of the situation.	22.2	29.5	33	14.9	

Table III. Relationship between depression scale (PHQ-9) and dealing directly with COVID-19 patients.

	Dealing directly with COVID-19 patients	Not dealing directly with COVID-19 patients	Dealing directly with COVID-19 patients	Not dealing directly with COVID-19 patients	Dealing directly with COVID-19 patients	Not dealing directly with COVID-19 patients	Dealing directly with COVID-19 patients	Not dealing directly with COVID-19 patients
Little interest or pleasure in doing things	10	75	23	63	25	37	8	19
Feeling down, depressed	11	69	24	68	23	34	8	23
Trouble falling or staying asleep, or sleeping too much, or hopeless	8	71	27	55	26	43	5	25
Feeling tired or having little energy	7	50	22	75	30	38	7	31
Poor appetite or overeating	17	61	19	55	15	55	15	23
Feeling bad about yourself or that you are a failure or have let your self or your family down	16	73	22	50	19	51	9	20
Trouble concentrating on things, such as reading the newspaper or watching television	23	74	21	55	11	47	11	18
Moving or	35	105	17	42	12	35	2	12

speaking so slowly that other people could have noticed. Or the opposite being so figety or restless that you have been moving around a lot more than usual

Thoughts that you would be better off dead, or of hurting yourself	35	103	14	39	10	37	7	15
--	----	-----	----	----	----	----	---	----

Table IV. Relationship between sources of anxiety and the demographics.

	ER	ward	outpatient	Ward+outpatient	ICU	All
access to appropriate personal protective equipment	5	12	5	0	1	0
being exposed to COVID-19 at work and taking the infection home to their family	26	51	54	10	4	30
not having rapid access to testing if they develop COVID-19 symptoms and concomitant fear of propagating infection at work	3	2	6	0	0	0

uncertainty that their organization will support/take care of their personal and family needs if they develop infection	5	5	4	2	0	0
access to childcare during increased work hours and school closures	0	4	7	0	0	0
support for other personal and family needs as work hours and demands increase (food, hydration, lodging, transportation)	2	3	2	2	1	0
being able to provide competent medical care if deployed to a new area (eg, non-ICU nurses having to function as ICU nurses)	1	5	5	1	0	2

Discussion:

It is well established that the 2019 coronavirus pandemic could have an important psychological impact. Due to the deep changes determined by the SARS-CoV-2 in the workplaces, and in the way to perform work activities, it can be hypothesized that some occupational and organizational factors could play a relevant role in the mental health of workers and their ability to cope with a new challenging working scenario [9]. HCWs, as the first line of defence in any outbreak, experience mental distress during and even after the outbreak. The Ebola virus and the SARS outbreak both produced similar results. Concerns about the psychological well-being of HCWs in the face of the SARS-CoV-2 outbreak have also been expressed. The number of people infected with COVID-19 is skyrocketing. This results in a greater workload in life-threatening situations, which has a negative impact on the psychological health of hospital staff. Controlling the infection is a serious challenge due to the virus's high transmission rate and the lack of any vaccine or medicine. SARS-high CoV-2's morbidity and mortality can exacerbate risk perception in healthcare workers. Furthermore, the rising number of patients and scarcity of protective equipment add to the strain on health-care systems [10].

In our study, (57.1%) of participants had mild anxiety, (13.4%) had mild to moderate anxiety, (11.1%) had moderate to severe anxiety and (18%) had very severe anxiety level. The depression severity score was (13%), (28.4%), (33.7%), (14.6%) and (10%) minimal depression, mild, moderate, moderately severe and severe depression, respectively. This was comparable to results of previous studies. According to a systemic review and meta-analysis, the prevalence of depression or depressive symptoms was approximately 28.8 percent in a pooled analysis of 54 observational studies, ranging from 20.9 percent to 43.2 percent in individual studies depending on the scale used [10]. Another study found high levels of depressive and anxiety symptoms in physicians, indicating that urgent psychological intervention plans are needed to prevent burnout and suicide risk in physicians while also lowering the risk of medical errors [11]. Lower results were reported in a study as (10.0%) of HCWs developed moderate-to-severe anxiety disorder, and 237 (27.9%)

developed depression. Problems with anxiety and fear of infection and death, isolation and unreasonable treatment, and motivation and escape from work were higher in the depression group than in the non-depression group [12]. According to a Chinese survey, 53.8 percent of participants rated the psychological impact as moderate-to-severe, 28.8 percent reported moderate-to-severe anxiety, and 14.6 percent developed depression symptoms [13, 14]. A recent study on SARS-CoV-2 found a significant imbalance in favour of health figures who are the most psychologically affected. Staff who worked in high-risk wards (direct and prolonged contact with SARS-CoV-2 infected patients) reported significantly higher levels of fear ($p = 0.024$), anxiety ($p = 0.005$), and depression ($p = 0.007$) than non-clinical personnel, and obviously higher levels of anxiety ($p = 0.026$) than low-risk medical personnel. In any case, stress levels in any job should not be underestimated [15].

Higher figures were reported in a study as healthcare workers reported high rates of anxiety (44.6%), depression (50.4%), and insomnia (34.0%) [16]. Even higher results were reported in another study as overall, 68.7, 53.3, 52.2, and 40.3% of all participants presented mild to extremely severe symptoms of insomnia, depression, anxiety, and stress, respectively [17].

Another study using the Generalized Anxiety Disorder-7 scale discovered that 35.6 percent of healthcare workers in China during the COVID-19 outbreak had generalized anxiety disorder [18]. During the COVID-19 outbreak, 22.6 percent of healthcare workers had mild to moderate anxiety, while only 2.9 percent had severe anxiety, according to a study using the Hamilton Anxiety Scale [19]. A study found a high level of anxiety in comparison to previous reports; however, there is no mental health support for physicians who are on the frontlines of both COVID-19 and the civil war, risking their lives for patients. As a result, these healthcare workers require an effective mental health support system and intervention plans, such as online meetings or telephonic counselling, which will allow them to discuss their concerns and enable them to work more effectively [20]. In comparison to non-medical HCWs, Zhang et al. [21] discovered that medical HCWs had significantly higher levels of insomnia, anxiety, depression, somatization, and OCD symptoms. This was also reflected in a large study conducted in Fujian province, China, which found that medical staff experienced significantly higher levels of anxiety than administrative staff [22]. A systematic review of 22 studies found that the percentage of healthcare workers experiencing anxiety ranged from 9% to 90%, with a median of 24%. There was information from 19 studies on depression. The proportion of people suffering from depression ranged from 5% to 51%, with a median of 21% [23].

Regarding insomnia symptoms, our results indicate that 66 of HCWs who work <40 hours are not complaining of insomnia, 39 have mild insomnia, 31 have moderate insomnia, 10 have severe insomnia, and 11 of them have very severe insomnia. While 20 of HCW who works 40-60 hours are not complaining of insomnia, 24 have mild insomnia, 30 have moderate insomnia, 14 have severe insomnia, and 8 of them have very severe insomnia. Also, 3 HCWs who work >60 hours are not complaining of insomnia, 0 have mild insomnia, 1 have moderate insomnia, 2 have severe insomnia, and 1 of them have very severe insomnia. A study reported that the mean symptom score has been increasing by 20% in the overall sample. However, this finding did not result in a corresponding increase in the prevalence of clinically relevant insomnia symptoms, suggesting an overall worsening of insomnia in the sample, although below the limits of clinical relevance [24]. Another study reported that 6% of all participants presented severe symptoms of insomnia, and 10.4, 19.9, and 11% of all participants presented severe to extremely severe symptoms of depression, anxiety, and stress, respectively [25]. Data from six studies showed that the percentage of people who had sleeping problems ranged from 34% to 65%, with a median of 37%. There were data from 13 studies on distress. The percentage of people in distress ranged from 7% to 97 percent, with a median of 37% [26]. In one study, 34.0 percent of participants reported

insomnia [27]. Anxiety, stress, and self-efficacy were found to be mediators of sleep quality and social support. Anxiety levels had a negative impact on sleep quality [18]. HCWs' social support, on the other hand, was positively associated with self-efficacy and sleep quality and negatively associated with anxiety and stress [28].

The serious psychiatric issues observed in healthcare workers caring for high-risk patients during the COVID-19 outbreak are significant. It should be noted that the majority of healthcare workers work in isolation units, and isolation, combined with limited resources and inadequate training, may put them at risk of increased stress and psychological effects. To alleviate the psychological effects of this global pandemic, psychological intervention and efficient resource utilization are required. Furthermore, it is critical to increase surveillance and improve detection of early cases of depressive and anxiety symptoms in order to avoid catastrophic outcomes [10].

Some actions can be taken to reduce the severity of the psychological consequences, including avoiding intense exposure to COVID-19 media coverage (a phenomenon that has spread on a global scale) and maintaining a compassionate and positive lifestyle by supporting others. To deal with the pandemic's side effects, resilience training programs for healthcare professionals, law enforcement, and the general public should be implemented: (a) balancing family life and work; (b) clear and timely information on the disease and its consequences on psychological well-being; (c) education and preparation of societies for future pandemics and epidemics; and (d) validation and evaluation of frontline healthcare personnel's contribution [23].

4. Conclusion

The results of this study illustrated the burden of psychological problems among different healthcare workers during the COVID-19 pandemic. The findings suggest that all health care workers (HCWs) were affected by varying degrees severity of anxiety and depression, insomnia and complaining from cardiovascular symptoms. The most significant source of anxiety that affect HCWs is being exposed to COVID-19 at work and taking the infection home to their families followed by access to appropriate personal protective equipment and dealing directly with COVID-19 patients. Severity of Insomnia and cardiovascular symptoms were significantly related to the number of working hours. These findings will help us to improve our understanding of the impact of the epidemic on the mental health of medical personnel and recommend measures that go beyond saving the lives of COVID19 patients; Psychosocial intervention and support for medical personnel should be included to respond to the COVID19 pandemic. Intervention and support of HCWs are needed for short-term psychological problems such as anxiety, depression, and insomnia. In addition, emphasis should be placed on self-relaxation training, regular exercise, and a healthy lifestyle. More research on medical personnel needs to be done to explore the long-term effects of the COVID19 pandemic (such as depression and stress disorder) and psychosocial interventions to improve mental health of the vulnerable groups of HCW.

CONSENT

Informed consent was obtained from all participants included in the study

Formatted: Justified

ETHICAL APPROVAL

The research proposal was approved by the Regional Research and Ethics committee of Imam Abdulrahman Bin Faisal University with Ethical approval number (IEB-UGS-2021-01-259).

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

References

1. W. Cai, B. Lian, X. Song, T. Hou, G. Deng, and H. Li, "A cross-sectional study on mental health among health care workers during the outbreak of Corona Virus Disease 2019," *Asian J. Psychiatr.*, vol. 51, no. March, p. 102111, 2020, doi: 10.1016/j.ajp.2020.102111.
2. Y. G. Dabholkar, "COVID19 Infection in Health Care Professionals: Risks , Work-Safety and Psychological Issues," *Indian J. Otolaryngol. Head Neck Surg.*, 2020, doi: 10.1007/s12070-020-01928-4.
3. Q. Yin et al., "Posttraumatic stress symptoms of health care workers during the corona virus disease 2019," *Clin. Psychol. Psychother.*, vol. 27, no. 3, pp. 384–395, 2020, doi: 10.1002/cpp.2477.
4. C. Y. Liu et al., "The prevalence and influencing factors in anxiety in medical workers fighting COVID-19 in China: A cross-sectional survey," *Epidemiol. Infect.*, 2020, doi: 10.1017/S0950268820001107.
5. J. Que et al., "Psychological impact of the COVID-19 pandemic on healthcare workers: a cross-sectional study in China," *Gen. Psychiatry*, vol. 33, no. 3, p. e100259, 2020, doi: 10.1136/gpsych-2020-100259.
6. M. Temsah et al., "The psychological impact of COVID-19 pandemic on health care workers in a MERS-CoV endemic country," no. January, 2020.
7. M. S. Spoorthy, "Mental health problems faced by healthcare workers due to the COVID-19 pandemic–A review," *Asian J. Psychiatr.*, vol. 51, p. 102119, 2020, doi: 10.1016/j.ajp.2020.102119.

8. Heath, C., Sommerfield, A., & von Ungern-Sternberg, B. S. (2020). Resilience strategies to manage psychological distress among healthcare workers during the COVID-19 pandemic: a narrative review. *Anaesthesia*, 75(10), 1364-1371.
9. Talaei, N., Varahram, M., Jamaati, H., Salimi, A., Attarchi, M., Sadr, M., ... & Seyedmehdi, S. M. (2020). Stress and burnout in health care workers during COVID-19 pandemic: validation of a questionnaire. *Zeitschrift für Gesundheitswissenschaften= Journal of Public Health*, 1-6.
10. Rajkumar R.P. COVID-19 and mental health: A review of the existing literature. *Asian J. Psychiatry*. 2020 doi: 10.1016/j.ajp.2020.102066.
11. Mata D.A., Ramos M.A., Bansal N., Khan R., Guille C., Di Angelantonio E., Sen S. Prevalence of depression and depressive symptoms among resident physicians: a systematic review and meta-analysis. *Jama*. 2015;314(22):2373–2383.
12. Stehman C.R., Testo Z., Gershaw R.S., Kellogg A.R. Burnout, drop out, suicide: physician loss in emergency medicine, part I. *West. J. Emerg. Med*. 2019;20(3):485–494.
13. Awano, N., Oyama, N., Akiyama, K., Inomata, M., Kuse, N., Tone, M., Takada, K., Muto, Y., Fujimoto, K., Akagi, Y., Mawatari, M., Ueda, A., Kawakami, J., Komatsu, J., & Izumo, T. (2020). Anxiety, Depression, and Resilience of Healthcare Workers in Japan During the Coronavirus Disease 2019 Outbreak. *Internal medicine (Tokyo, Japan)*, 59(21), 2693–2699. <https://doi.org/10.2169/internalmedicine.5694-20>
14. Wang C, Pan R, Wan X, et al. . Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *Int J Environ Res Public Health* 17: 1729, 2020.
15. Lei L, Huang X, Zhang S, Yang J, Yang L, Xu M. Comparison of prevalence and associated factors of anxiety and depression among people affected by versus people unaffected by quarantine during the COVID-19 epidemic in Southwestern China. *Med Sci Monit* 26: e924609, 2020.
16. Lu W., Wang H., Lin Y., Li L. Psychological status of medical workforce during the COVID-19 pandemic: A cross-sectional study. *Psychiatry Res*. 2020;288:112936. doi: 10.1016/j.psychres.2020.112936.
17. Löwe B, Decker O, Müller S, et al. . Validation and standardization of the generalized anxiety disorder screener (GAD-7) in the general population. *Med Care* 46: 266-274, 2008.
18. Tiete J, Guatteri M, Lachaux A, et al. Mental Health Outcomes in Healthcare Workers in COVID-19 and Non-COVID-19 Care Units: A Cross-Sectional Survey in Belgium. *Front Psychol*. 2021;11:612241. Published 2021 Jan 5. doi:10.3389/fpsyg.2020.612241
19. Huang Y., Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: a web-based cross-sectional survey. *Psychiatry Res*. 2020;288(112954) doi: 10.1016/j.psychres.2020.112954.
20. Lu W., Wang H., Lin Y., Li L. Psychological status of medical workforce during the COVID-19 pandemic: a cross-sectional study. *Psychiatry Res*. 2020;288

Formatted: Norwegian Bokmål (Norway)

21. Elhadi M, Msherghi A, Elgzairi M, et al. Psychological status of healthcare workers during the civil war and COVID-19 pandemic: A cross-sectional study [published online ahead of print, 2020 Aug 16]. *J Psychosom Res.* 2020;137:110221. doi:10.1016/j.jpsychores.2020.110221

Formatted: Norwegian Bokmål (Norway)

22. Zhang W, Wang K, Yin L, Zhao W, Xue Q, Peng M, et al. Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China. *Psychother Psychosom.* 2020;89(4):1–9. <https://doi.org/10.1159/000507639>.

23. Lu W, Wang H, Lin Y, Li L. Psychological status of medical workforce during the COVID-19 pandemic: a cross-sectional study. *Psychiatry Res.* 2020;288:112936. <https://doi.org/10.1016/j.psychres.2020.112936>.

Formatted: Norwegian Bokmål (Norway)

24. Muller AE, Hafstad EV, Himmels JPW, et al. The mental health impact of the covid-19 pandemic on healthcare workers, and interventions to help them: A rapid systematic review. *Psychiatry Res.* 2020;293:113441. doi:10.1016/j.psychres.2020.113441

25. Rossi R, Soggi V, Jannini TB, et al. Mental Health Outcomes Among Italian Health Care Workers During the COVID-19 Pandemic. *JAMA Netw Open.* 2021;4(11):e2136143. doi:10.1001/jamanetworkopen.2021.36143

26. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, Wu J, du H, Chen T, Li R, Tan H, Kang L, Yao L, Huang M, Wang H, Wang G, Liu Z, Hu S. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open.* 2020;3(3):e203976. doi: 10.1001/jamanetworkopen.2020.3976.

27. Xiao H, Zhang Y, Kong D, Li S, Yang N. The Effects of Social Support on Sleep Quality of Medical Staff Treating Patients with Coronavirus Disease 2019 (COVID-19) in January and February 2020 in China. *Medical science monitor : international medical journal of experimental and clinical research.* 2020;26:e923549. 10.12659/msm.923549.

28. Mukhtar S. Psychological health during the coronavirus disease 2019 pandemic outbreak. *Int. J. Soc. Psychiatry.* 2020;66:512–516. doi: 10.1177/0020764020925835