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The symptoms of COVID-19 and the post-COVID-19 impact on health among workers in Hail Region hospitals, KSA

[1]Alanoud Alenazi, [1,2]Sadaf Jahan*

[1] Department of Medical Laboratory Sciences, College of Applied Medical Sciences, Majmaah University, Al-Majmaah 11952, Saudi Arabia.

2 Health and Basic Sciences Research Center, Majmaah University, 11952 Majmaah, Saudi Arabia

***Correspondence Author:** Sadaf Jahan (ORCID ID - https://orcid.org/0000-0002-6976-5672); Email: s.jahan@mu.edu.sa

Affiliation Institute: Department of Medical Laboratory Sciences, College of Applied Medical Sciences, Majmaah University, Majmaah, 11952, Saudi Arabia and Health and Basic Sciences Research Center, Majmaah University, 11952 Majmaah, Saudi Arabia

Abstract

Background: Data concerning symptoms of COVID-19 infection and health status of hospital workers post infection are limited. Thus, the current study aims to explore the symptoms of COVID-19 infection and the post effect of COVID-19 infection on health among hospital workers in Hail region.

Method: Cross-sectional data included 350 hospital workers (physicians, nurses, Specialist non physicians. Manager, workers) working in Hail, Saudi Arabia, who were infected with corona various. Demographic, anthropometrics, and health related data were collected via an online survey that was distributed using online google forms. **Results:** Less than one percent (0.60%) of hospital workers reported severe critical symptoms of COVID-19 infection. The most common reported symptoms during COVID-19 infection were fever (43.7%) and tiredness (25.9%), while the most reported uncommon symptoms during COVID-19 infection were anosmia (35.1%) and headache (32.0%). The most reported symptoms that continued after recovery from COVID-19 infection were anosmia (13.7%), tiredness, and dry cough (8.00%, for both). Sixty-two percent of hospital workers (n= 217) reported increased time spent on resting after the start of the COVID-19 pandemic, whereas 60.0% (n= 210) and 43.1% (n= 151) of hospital workers reported increased financial stress and stress from home, respectively. About half of the sample (48.3%, n= 169) reported feeling anxious, terrified, and helpless during the COVID-19 pandemic, while 24.0% (n= 84) and 46.6% (n= 163) of hospital workers reported getting support from friends and family members during the pandemic, respectively. An increase in the need to share feeling with family members and others during the pandemic was reported by 43.1% (n= 151) and 23.4% (n= 82) of hospital workers, respectively. Most of the sample (71.1%, n= 249) were interested in lifestyle changes related to mental health during COVID-19 pandemic. Model exploring common symptoms during COVID-19 infection indicated that BMI of hospital workers increase the odds of experiencing breathing difficulty, lethargy, and fever. In addition, male workers have lower odds of experiencing dry cough, breathing difficulty, and headache compared to female workers. Data concerning symptoms that continued after recovery from COVID-19 infection indicated that the BMI of hospital workers increase the odds of experiencing fever, whereas male workers have lower odds of experiencing anosmia, dry cough, hair loss, tiredness, and dyspnea.

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Conclusion: The results of the study showed that Age, gender, and weight status of hospital workers are linked to symptoms and health status post-COVID-19 infection. The hospital workers experience a range of psychological and emotional effects, from anxiety to psychological distress, after recovering from the virus or th**e** COVID-19 effect.

Key-words: COVID-19 infection, symptoms, post effect, hospital workers, Hail, Saudi Arabia.

Introduction

During December 2019, several acute atypical respiratory infections appeared throughout China, which immediately expanded globally. The WHO classified this occurrence here as a pandemic and labeled as Coronavirus disease 19. (COVID-19) [1]. There have been estimated to be 250 million documented cases globally so far, including over 4 million fatalities related to COVID-19 sequelae [2]. The high frequency of COVID-19 case scenarios are linked to either nasal aerosol transfer or direct contact. According to news reports, COVID-19 can adjust to a changing habitat via polymorphisms and yet is designed to alter; consequently, the risks are ongoing and long-term [3]. The most at-risk populations affected by COVID are the elderly and geriatric population. According to preliminary studies, people above the age of 59 are approximately five times higher following mortality rate than those with the onset of COVID-19 symptoms between the ages of 30 and 59. For minimize fatal outcomes, it's indeed crucial to assess at-risk older individuals early and be aware of any unusual clinical presentations in the aged population [4].

COVID-19 is a pandemic globally with more than 4 million deaths. It affects the hospital workers and puts them at high risk for mortality. The symptoms of COVID-19 are evolving and presenting with atypical symptoms, especially in the hospital worker. It is critical to identify at-risk hospital workers early and to be aware of any aberrant clinical presentations in the hospital worker, and to be aware about the effect on their health. Overall, latency among the COVID-19 symptoms to fatality varied between 6 to 41 days, about a 14 day median. Such a period, though, is determined by the patient's age and immune response status. The incubation time was lower in patients beyond the age of 70 compared to those under the age of 70 [5]. Despite their rising susceptibility with age and pre-existing conditions, several elderly people are twice as likely as a young 30-year-old to become infected. The increased prevalence of respiratory symptoms towards the old can be associated with variations in lung anatomy with age, and further muscle atrophy that leads to changes in immunity physiological functions [6].

Health care workers who are the front lines of defense against the COVID-19 pandemic have a higher risk of infection, due to frequent and prolonged contact with large numbers of infected patients, lack of availability of personal protective equipment (PPE), inadequate infection control training on some occasions, and exposure to unknown COVID-19 patients [7]. A large systematic review and meta-analysis examined 41 studies to estimate the prevalence of individual symptoms of a post-COVID-19 condition across participants with SARS-CoV-2 who experienced symptoms at least 28 days after the index date (first PCR test/diagnosis and hospitalization date, date of discharge, or date of clinical recovery/negative test) [8].

Materials and Methods:

Study design and population

This cross-sectional data included 350 hospital workers (physicians, nurses, Specialist non-physicians. Manager, workers) working in Hail region who were infected with COVID-19. Exclusion criteria includes (Individuals out of Hail region, Individuals who are tested negative for COVID-19, and Incorporative individuals). Ethical approval to conduct this study was obtained (IRB Log Number 2023-27). Consent to collect personal information was obtained from each participant online before data was gathered.

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Data collection

Data were collected on April, 2023 via online survey that was distributed using online google forms, the survey included question concerning sociodemographic/socioeconomic characteristics (age group (years), sex, monthly income (SR), education level, employment status), Presenting symptoms (fever, dyspnea, dry cough, lethargy, and diarrhea),Uncommon COVID-19 symptom ,Co-morbidities (Hypertension, Diabetes, cardiovascular disease, and smoking),The severity of the infection (Asymptomatic, Mild, Moderate, Severe, Critical),Symptoms continued after recovery from COVID-19 ,Duration from onset of symptoms in days ,Types of treatments received during the infection, and the post COVID-19 infection effect on health [9]. Height in centimeters and weight in kilograms were self-reported. Data for height and weight were used to calculate the body mass index (BMI) of each participant and the World Health Organization cutoffs were used to define weight status (< 18.5 kg/m^2 were categorized as underweight; 18.5 to 24.9 kg/m^2 were categorized as healthy weight; 25.0 to 29.9 kg/m^2 were categorized as overweight; ≥ 30.0 kg/m^2 were categorized as obese (Obese grade I: 30.0 to 34.9 kg/m^2; obese grade II: 35.0 to 39.9 kg/m^2; obese grade III ≥ 40.0 kg/m^2).

Data analysis

Data presented in this study were analyzed using the Statistical Package for the Social Sciences (SPSS 20, SPSS Inc, Chicago, IL, USA) [10]. Descriptive data for categorical variables are presented as frequency (percentage), while data for continues variables are presented as mean ± standard deviation. Fisher's Exact test/chi-square test was used to explore the differences in proportions across the groups. Multinomial logistic regression analysis was used to explore the associations of age (19-40 years=1; >40 years=2), Gender (male=1; female=2), and weight status (underweight=1; healthy weight=2; overweight=3; obese=4) with symptoms during and after COVID-19 infection, and odds ratios (OR) with associated 95% confidence intervals (CI) were calculated. All tests performed were two-tailed and a significant level of 95% was used.

Results

Sample characteristics

A total of 350 hospital workers were included in the final analysis. Fifty-five percent (n= 192) of the sample were males, while 72.9% (n= 255) were ≤ 40 years old. **Table 1** shows distribution of age group among male and female hospital workers where significantly higher proportion of males were > 40 years compared to female hospital workers. Most hospital workers were Saudis (83.4%, n= 292), whereas 88.6% (n= 310) received university education. Ninety percent of hospital workers have full-time jobs (n= 316), while 48.3% (n= 169) were specialists (non-physician). Over quarter of the sample (27.1%, n= 95) reported monthly income of > 15,000 SR. Over three-quarter of the sample were overweight or obese (70.3%, n= 246, based on including all obesity grades), whereas similar prevalence was found among males and female hospital workers. The detailed data of sample characteristics are presented in Table 1.

Table 1. Sample characteristics of hospital workers (n= 350).

Variable	n	%
Gender		
Male	192	54.9
Female	158	45.1
Age group(years)		
19-30 years	122	34.9
31-40 years	133	38.0
41-50 years	66	18.9
51-60 years	27	7.70
> 60 years	2	0.60
Nationality		
Saudi	292	83.4
Non-Saudi	58	16.6
Education level		
≤ High school/Diploma	40	11.4
Bachelor	209	59.7
Masters	74	21.1
PhD/Fellowship	27	7.70
Employment status		
Part-time	34	9.70
Full-time	316	90.3
Job		
Specialist (non-physician)	169	48.3
Physician	53	15.1
Nurse	46	13.1
Manager	74	21.1
Worker	8	2.30
Monthly income		
< SR 5,000	57	16.3
SR 5,000-15,000	198	56.6
> SR 15,000	95	27.1

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Weight status		
Underweight (BMI < 18.5 kg/m^2)	4	1.10
Healthy weight (BMI between 18.5 and 24.9 kg/m^2)	100	28.6
Overweight (BMI between 25.0 and 29.9 kg/m^2)	138	39.4
Obesity grade I (BMI between 30.0 and 34.9 kg/m^2)	82	23.4
Obesity grade II (BMI between 35.0-39.9 kg/m^2)	14	4.00
Obesity grade III (BMI ≥ 40.0 kg/m^2)	12	3.40
Smoking status		
Non-smoker	257	73.4
Smoker	93	26.6
Chronic diseases		
No	306	87.4
Yes	44	12.6

Symptoms of COVID-19 infection among hospital workers

Two-thirds of the hospital workers (68.0%, n= 238) were diagnosed with COVID-19 infection after one year of the start of the pandemic. Forty-eight percent of hospital workers (n= 169) reported recovery within one week, while only 11.4% reported a duration of recovery from COVID-19 infection of ≥ 3 weeks. Most of the hospital workers (72.3%, n= 253) reported using medicine to treat symptoms of COVID-19 infection. Seventy-three percent (n= 255) of the sample reported infection of at least one family member with COVID-19 (Table 2).

Fourteen percent (n= 49) of hospital workers were asymptomatic, whereas only 0.60% (n= 2) of hospital workers reported severe-critical symptoms of COVID-19 infection. The most common reported symptoms during COVID-19 infection were fever (43.7%, n= 108) and tiredness (25.9%, n= 64), while the most uncommon, reported symptoms during COVID-19 infection were anosmia (35.1%, n= 80) and headache (32.0%, n= 73). No significant complications of COVID-19 infection associated with health and smoking status were reported by 85.1% (n= 298) of the study sample. Sixty-five percent (n= 228) of hospital workers reported a duration of symptoms during COVID-19 infection of < 7 days, 31.4% have symptoms more than 7 to 14 days while only 3.4% retains symptoms more than 14 days.

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Furthermore, symptoms that continued after recovery from COVID-19 infection were anosmia (13.7%, n= 48), tiredness, and dry cough (8.00%, n= 28, for both). Uncommon symptoms, common symptoms, and symptoms that continued after recovery from COVID-19 infection were significantly associated with gender (**Figures 1 & 2**), while common symptoms were not linked to gender. About two-thirds of the sample (64.9%, n= 227) reported no post-effect of COVID-19 infection on health. While total 155 individuals had post effect of infection, therefore around 36.8% (n= 57) of hospital workers reported the post impact after one week recovery and 23.9% suffered with those symptoms after one month of recovery. Symptoms of COVID-19 infection presented in hospital workers are provided in detail in **Table 2**.

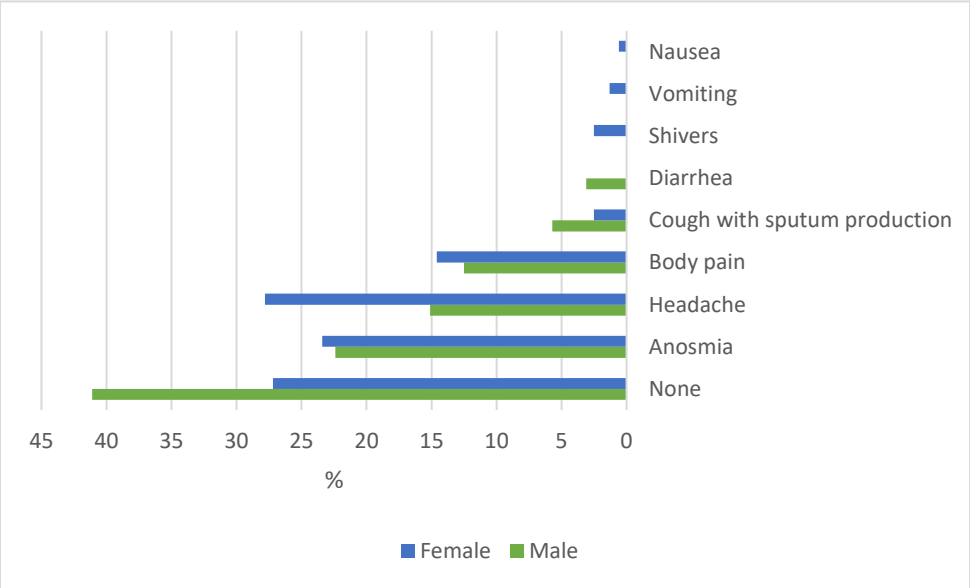

Figure 1. Uncommon symptoms during COVID-19 infection among male and female hospital workers.

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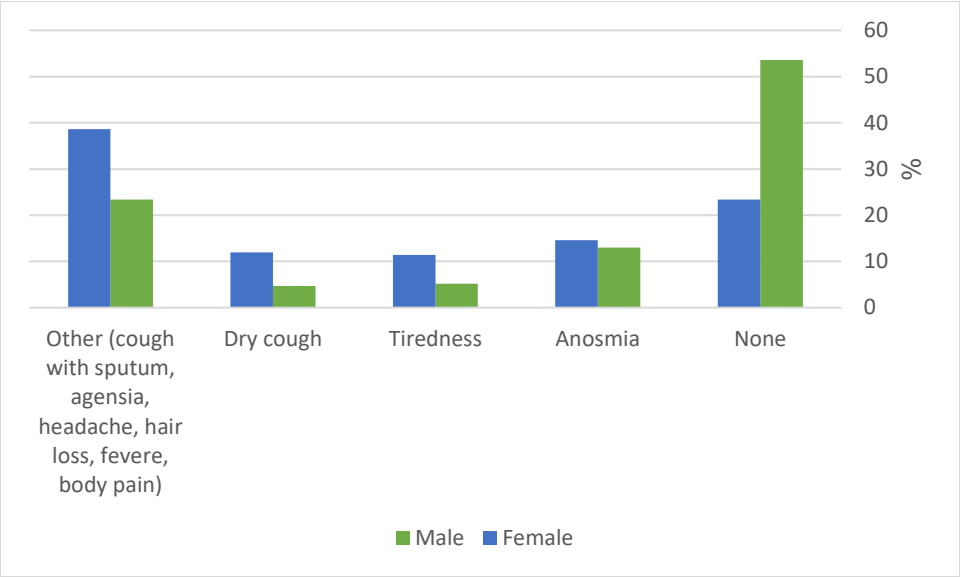

Figure 2. Symptoms that continued after recovery from COVID-19 infection among male and female hospital workers.

Table 2. Symptoms of COVID-19 infection presented in hospital workers (n= 350).

Variable	n	%
Diagnosis since the start of COVID-19 pandemic		
< 3 months	61	17.4
3-6 months	24	6.90
6-12 months	27	7.70
> 1 year	238	68.0
Duration of recovery from COVID-19 infection		
1 week	169	48.3
2 weeks	141	40.3
3 weeks	20	5.70
> 3 weeks	20	5.70
Type of treatment received during COVID-19 infection		
Medicine	253	72.3
Herbal	28	8.00
No treatment	69	19.7
COVID-19 infection within family		
No	95	27.1
Yes	255	72.9

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Severity of COVID-19 infection		
Asymptomatic	49	14.0
Mild	94	26.9
Moderate	152	43.4
Severe	53	15.1
Critical	2	0.60
Common symptoms during COVID-19 infection * (n= 247)		
Fever	108	43.7
Tiredness	64	25.9
Dry cough	40	16.2
Dyspnea	17	6.88
Breathing difficulty	14	5.67
Chest stiffness	4	1.62
Uncommon symptoms of COVID-19 infection * (n= 228)		
Anosmia	80	35.1
Headache	73	32.0
Body pain	47	20.6
Cough with sputum production	15	6.58
Diarrhea	6	2.63
Shivers	4	1.75
Vomiting	2	0.88
Nausea	1	0.44
Complications of COVID-19 infection associated with health and smoking status		
None	298	85.1
Hypertension	13	3.70
Diabetes	14	4.00
Cardiovascular disease	2	0.60
Fever	13	3.70
Smoking	10	2.90
Duration of symptoms during COVID-19 infection		
< 7 days	228	65.1
7-14 days	110	31.4

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> 14 days	12	3.40
Symptoms that continued after recovery from COVID-19 infection		
None	140	40.0
Anosmia	48	13.7
Tiredness	28	8.00
Dry cough	28	8.00
Hair loss	21	6.00
Body pain	19	5.40
Headache	16	4.60
Fever	14	4.00
Cough with sputum production	13	3.70
Ageusia	13	3.70
Dyspnea	9	2.60
Nausea	1	0.30
Post-effect of COVID-19 infection on health		
None	227	64.9
Anxiety	49	14.0
Psychological stress	28	8.00
Stress	26	7.40
Depression	20	5.70
Duration for post-effect of COVID-19 infection on health (if presented) * (n= 155)		
1 week after recovery	57	36.8
2 weeks after recovery	30	19.4
1 month after recovery	31	20.0
> 1 month after recovery	37	23.9
Complications occur within 3 months of COVID-19 infection		
None	338	96.6
Myocardial infarction	6	1.70
Pulmonary infarction	6	1.70

* Total n is not equal to 350.

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Post COVID-19 infection effect on health among hospital workers

Detailed data post COVID-19 infection effect on health among hospital workers are presented in Table 3. Sixty-two percent of hospital workers (n= 217) reported increased time spent on resting after the start of the COVID-19 pandemic, whereas 60.0% (n= 210) and 43.1% (n= 151) of hospital workers reported increased financial stress and stress from home, respectively. About half of the sample (48.3%, n= 169) reported feeling anxious, terrified, and helpless during the COVID-19 pandemic, while 24.0% (n= 84) and 46.6% (n= 163) of hospital workers reported getting support from friends and family members during the pandemic, respectively. Increase the need to share feeling with family members and others during the pandemic was reported by 43.1% (n= 151) and 23.4% (n= 82) of hospital workers, respectively. Most of the sample (71.1%, n= 249) were interested in lifestyle changes related to mental health during COVID-19 pandemic.

Table 3. Post COVID-19 infection effect on health of hospital workers (n= 350).

Variable	n	%
Increase time spent on resting since the start of the COVID-19 pandemic		
No	133	38.0
Yes	217	62.0
Increase financial stress during the COVID-19 pandemic		
No	140	40.0
Yes	210	60.0
Increase stress from home during the COVID-19 pandemic		
No	199	56.9
Yes	151	43.1
Feel anxious, terrified, and helpless during COVID-19 pandemic		
No	181	51.7
Yes	169	48.3
Get support from friends during COVID-19 pandemic		
Decreased	62	17.7
Same as before	204	58.3
Increased	84	24.0
Get support from family members during COVID-19 pandemic		
Decreased	31	8.90
Same as before	156	44.6
Increased	163	46.6
Share my feelings with family members during COVID-19 pandemic		

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Decreased	43	12.3
Same as before	156	44.6
Increased	151	43.1
Share my feelings with others after the COVID-19 pandemic		
Decreased	71	20.3
Same as before	197	56.3
Increased	82	23.4
Interested in lifestyle changes related to mental health during COVID-19 pandemic		
Less	101	28.9
More	249	71.1

Symptoms of COVID-19 infection and post COVID-19 infection effect on health in relation to age of hospital workers

Age group of hospital workers was significantly associated with duration of recovery from COVID-19 infection [11] (p= 0.039), complications of COVID-19 infection associated with health and smoking status (p= 0.001), duration of symptoms during COVID-19 infection (p= 0.001), and post-effect of COVID-19 infection on health (p= 0.012). All other variables were not associated with the age group of hospital workers. All data is represented in Table 4.

Table 4. Symptoms of COVID-19 infection reported in hospital workers in relation to age group of hospital workers.

Variable	19-40 years (n= 255)	> 40 years (n= 95)	p-value
Diagnosis since the start of COVID-19 pandemic			
< 3 months	39 (63.9)	22 (36.1)	0.248
3-6 months	19 (79.2)	5 (20.8)	
6-12 months	18 (66.7)	9 (33.3)	
> 1 year	179 (75.2)	59 (24.8)	
Duration of recovery from COVID-19 infection			
1 week	116 (68.6)	53 (31.4)	0.039*
2 weeks	112 (79.4)	29 (20.6)	
3 weeks	11 (55.0)	9 (45.0)	
> 3 weeks	16 (80.0)	4 (20.0)	
Type of treatment received during COVID-19 infection			
None	50 (72.5)	19 (27.5)	0.779

Medicine	183 (72.3)	70 (27.7)	
Herbal	22 (78.6)	6 (21.4)	
COVID-19 infection within family			
No	64 (67.4)	31 (32.6)	0.177
Yes	191 (74.9)	64 (25.1)	
Severity of COVID-19 infection			
Asymptomatic	42 (85.7)	7 (14.3)	0.094
Mild	62 (66.0)	32 (34.0)	
Moderate	113 (74.3)	39 (25.7)	
Severe	36 (67.9)	17 (32.1)	
Critical	2 (100)	0 (0.00)	
Common symptoms during COVID-19 infection * (n= 247)			
Fever	75 (69.4)	33 (30.6)	0.620
Tiredness	44 (68.8)	20 (31.2)	
Dry cough	27 (67.5)	13 (32.5)	
Others (dyspnea; Breathing difficulty; Chest stiffness)	51 (77.3)	15 (22.7)	
Uncommon symptoms of COVID-19 infection * (n= 228)			
Anosmia	56 (70.0)	24 (30.0)	0.757
Headache	55 (75.3)	18 (24.7)	
Body pain	33 (70.2)	14 (29.8)	
Others (cough with sputum production; diarrhea; shivers; vomiting; nausea)	22 (78.6)	6 (21.4)	
Complications of COVID-19 infection associated with health and smoking status			
None	227 (76.2)	71 (23.8)	0.001*
Hypertension	7 (53.8)	6 (46.2)	
Diabetes	4 (28.6)	10 (71.4)	
Cardiovascular disease	2 (100)	0 (0.00)	

Fever	9 (69.2)	4 (30.8)	
Smoking	6 (60.0)	4 (40.0)	
Duration of symptoms during COVID-19 infection			
< 7 days	167 (73.2)	61 (26.8)	0.001*
7-14 days	85 (77.3)	25 (22.7)	
> 14 days	3 (25.0)	9 (75.0)	
Symptoms that continued after recovery from COVID-19 infection			
None	96 (68.6)	44 (31.4)	0.108
Anosmia	34 (70.8)	14 (29.2)	
Tiredness	17 (60.7)	11 (39.3)	
Dry cough	23 (82.1)	5 (17.9)	
Others (hair loss; body pain; headache; fever; cough with sputum production; ageusia; dyspnea; nausea)	85 (80.2)	21 (19.8)	
Post-effect of COVID-19 infection on health			
None	159 (70.0)	68 (30.0)	0.012*
Anxiety	40 (81.6)	9 (18.4)	
Psychological stress	25 (89.3)	3 (10.7)	
Stress	14 (53.8)	12 (46.2)	
Depression	17 (85.0)	3 (15.0)	
Duration for post-effect of COVID-19 infection on health (if presented) * (n= 155)			
1 week after recovery	49 (86.0)	8 (14.0)	0.124
2 weeks after recovery	21 (70.0)	9 (30.0)	
1 month after recovery	28 (90.3)	3 (9.70)	

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> 1 month after recovery	28 (75.7)	9 (24.3)	
Complications occur within 3 months of COVID-19 infection			
None	246 (72.8)	92 (27.2)	0.798
Myocardial infarction	4 (66.7)	2 (33.3)	
Pulmonary infarction	5 (83.3)	1 (16.7)	

* Statistically significantly different at 95% confidence level. Fisher's Exact test/chi-square test was used to assess differences across groups.

Data concerning post COVID-19 infection effect on health among hospital workers in relation to age group are presented in detail in **Table 5**. Age group was significantly linked to increase time spent on resting since the start of the COVID-19 pandemic (p= 0.002), Increase financial stress during the COVID-19 pandemic (p= 0.019), increase stress from home during the COVID-19 pandemic (p= 0.016), and feel anxious, terrified, and helpless during COVID-19 pandemic (p= 0.041). All other variables were not associated with the age group of hospital workers.

Table 5. Post COVID-19 infection impact on health of hospital workers in relation to age group.

Variable	19-40 years (n= 255)	> 40 years (n= 95)	p-value
Increase time spent on resting since the start of the COVID-19 pandemic			
No	84 (63.2)	49 (36.8)	0.002*
Yes	171 (78.8)	46 (21.2)	
Increase financial stress during the COVID-19 pandemic			
No	92 (65.7)	48 (34.3)	0.019*
Yes	163 (77.6)	47 (22.4)	
Increase stress from home during the COVID-19 pandemic			
No	135 (67.8)	64 (32.2)	0.016*
Yes	120 (79.5)	31 (20.5)	
Feel anxious, terrified, and helpless during COVID-19 pandemic			
No	123 (68.0)	58 (32.0)	0.041*
Yes	132 (78.1)	37 (21.9)	
Get support from friends during COVID-19 pandemic			
Decreased	44 (71.0)	18 (29.0)	0.845
Same as before	151 (74.0)	53 (26.0)	

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Increased	60 (71.4)	24 (28.6)	
Get support from family members during COVID-19 pandemic			
Decreased	19 (61.3)	12 (38.7)	0.315
Same as before	115 (73.7)	41 (26.3)	
Increased	121 (74.2)	42 (25.8)	
Share my feelings with family members during COVID-19 pandemic			
Decreased	32 (74.4)	11 (25.6)	0.916
Same as before	112 (71.8)	44 (28.2)	
Increased	111 (73.5)	40 (26.5)	
Share my feelings with others after the COVID-19 pandemic			
Decreased	59 (83.1)	12 (16.9)	0.084
Same as before	140 (71.1)	57 (28.9)	
Increased	56 (68.3)	26 (31.7)	
Interested in lifestyle changes related to mental health during COVID-19 pandemic			
Less	68 (67.3)	33 (32.7)	0.146
More	187 (75.1)	62 (24.9)	

* Statistically significantly different at 95% confidence level. Fisher's Exact test/chi-square test was used to assess differences across groups.

Symptoms of COVID-19 infection and post COVID-19 infection effect on health in relation to weight status of hospital workers

Duration of recovery from COVID-19 infection ($p < 0.001$), common and uncommon symptoms during COVID-19 infection ($p= 0.034$ and $p= 0.035$, respectively), and duration of symptoms during COVID-19 infection ($p= 0.008$) were significantly associated with weight status of hospital workers. All other variables were not linked to weight status of hospital workers (see **Table 6**).

Table 6. Symptoms of COVID-19 infection presented in hospital workers in relation to weight status.

Variable	Underweight (n= 4)	Healthy weight (n= 10)	Overweight (n= 138)	Obese (n= 108)	p-value
Diagnosis since the start of COVID-19 pandemic					
< 3 months	0 (0.00)	14 (23.0)	22 (36.1)	25 (41.0)	0.289
3-6 months	0 (0.00)	6 (25.0)	6 (25.0)	12 (50.0)	
6-12 months	0 (0.00)	7 (25.9)	11 (40.7)	9 (33.3)	
> 1 year	4 (1.70)	73 (30.7)	99 (41.6)	62 (26.1)	
Duration of recovery from COVID-19 infection					

1 week	4 (2.40)	35 (20.7)	82 (48.5)	48 (28.4)	<0.001*
2 weeks	0 (0.00)	55 (39.0)	39 (27.7)	47 (33.3)	
3 weeks	0 (0.00)	2 (10.0)	15 (75.0)	3 (15.0)	
> 3 weeks	0 (0.00)	8 (40.0)	2 (10.0)	10 (50.0)	
Type of treatment received during COVID-19 infection					
None	3 (4.30)	20 (29.0)	29 (42.0)	17 (24.6)	0.144
Medicine	1 (0.40)	72 (28.5)	95 (37.5)	85 (33.3)	
Herbal	0 (0.00)	8 (28.6)	14 (50.0)	6 (21.4)	
COVID-19 infection within family					
No	0 (0.00)	29 (30.5)	41 (43.2)	25 (26.3)	0.461
Yes	4 (1.60)	71 (27.8)	97 (38.0)	83 (32.5)	
Severity of COVID-19 infection					
Asymptomatic	1 (2.00)	17 (34.7)	23 (46.9)	8 (16.3)	0.067
Mild	3 (3.20)	23 (24.5)	37 (39.4)	31 (33.0)	
Moderate	0 (0.00)	41 (27.0)	56 (36.8)	55 (36.2)	
Severe	0 (0.00)	19 (35.8)	22 (41.5)	12 (22.6)	
Critical	0 (0.00)	0 (0.00)	0 (0.00)	2 (100)	
Common symptoms during COVID-19 infection * (n= 247)					
Fever	0 (0.00)	37 (34.3)	29 (26.9)	42 (38.9)	0.034*
Tiredness	0 (0.00)	13 (20.3)	34 (53.1)	17 (26.6)	
Dry cough	0 (0.00)	9 (22.5)	14 (35.0)	17 (42.5)	
Others (dyspnea; Breathing difficulty; Chest stiffness)	1 (1.50)	22 (33.3)	25 (37.9)	18 (27.3)	
Uncommon symptoms of COVID-19 infection * (n= 228)					
Anosmia	1 (1.20)	17 (21.2)	30 (37.5)	32 (40.0)	0.035*
Headache	1 (1.40)	23 (31.5)	22 (30.1)	27 (37.0)	
Body pain	0 (0.00)	18 (38.3)	24 (51.1)	5 (10.6)	
Others (cough with sputum production; diarrhea; shivers; vomiting; nausea)	0 (0.00)	7 (25.0)	14 (50.0)	7 (25.0)	
Complications of COVID-19 infection associated with health and smoking status					
None	4 (1.30)	83 (27.9)	123 (41.3)	88 (29.5)	0.045

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Hypertension	0 (0.00)	3 (23.1)	2 (15.4)	8 (61.5)	
Diabetes	0 (0.00)	1 (7.10)	7 (50.0)	6 (42.9)	
Cardiovascular disease	0 (0.00)	2 (100)	0 (0.00)	0 (0.00)	
Fever	0 (0.00)	6 (60.0)	4 (40.0)	0 (0.00)	
Smoking					
Duration of symptoms during COVID-19 infection					
< 7 days	1 (0.40)	57 (25.0)	103 (45.2)	67 (29.4)	0.008*
7-14 days	2 (1.80)	37 (33.6)	33 (30.0)	38 (34.5)	
> 14 days	1 (8.30)	6 (50.0)	2 (16.7)	3 (25.0)	
Symptoms that continued after recovery from COVID-19 infection					
None	4 (2.90)	39 (27.9)	59 (42.1)	38 (27.1)	0.404
Anosmia	0 (0.00)	18 (37.5)	12 (25.0)	18 (37.5)	
Tiredness	0 (0.00)	6 (21.4)	12 (42.9)	10 (35.7)	
Dry cough	0 (0.00)	7 (25.0)	12 (42.9)	9 (32.1)	
Others (hair loss; body pain; headache; fever; cough with sputum production; ageusia; dyspnea; nausea)	0 (0.00)	30 (28.3)	43 (40.6)	33 (31.1)	
Post-effect of COVID-19 infection on health					
None	4 (1.80)	63 (27.8)	93 (41.0)	67 (29.5)	0.781
Anxiety	0 (0.00)	10 (20.4)	20 (40.8)	19 (38.8)	
Psychological stress	0 (0.00)	12 (42.9)	9 (32.1)	7 (25.0)	
Stress	0 (0.00)	10 (38.5)	8 (30.8)	8 (30.8)	
Depression	0 (0.00)	5 (25.0)	8 (40.0)	7 (35.0)	
Duration for post-effect of COVID-19 infection on health (if presented) * (n= 155)					
1 week after recovery	1 (1.80)	15 (26.3)	22 (38.6)	19 (33.3)	0.096
2 weeks after recovery	0 (0.00)	5 (16.7)	13 (43.3)	12 (40.0)	
1 month after recovery	0 (0.00)	9 (29.0)	10 (32.3)	12 (38.7)	

> 1 month after recovery	0 (0.00)	19 (51.4)	13 (35.1)	5 (13.5)	
Complications occur within 3 months of COVID-19 infection					
None	4 (1.20)	98 (29.0)	`135 (39.9)	101 (29.9)	0.307
Myocardial infarction	0 (0.00)	0 (0.00)	2 (33.3)	4 (66.7)	
Pulmonary infarction	0 (0.00)	2 (33.3)	1 (16.7)	3 (50.0)	

* Statistically significantly different at 95% confidence level. Fisher's Exact test/chi-square test was used to assess differences across groups.

Weight status of hospital workers was significantly associated with increase stress from home during the COVID-19 pandemic (p= 0.010), feel anxious, terrified, and helpless during COVID-19 pandemic (p=0.037), and get support from friends during COVID-19 pandemic (p= 0.007). All other variables were not linked to weight status of hospital workers (**Table 7**).

Table 7. Post COVID-19 infection effect on health of hospital workers in relation to weight status of hospital workers (n= 350).

Variable	Underweight (n= 4)	Healthy weight (n= 100)	Overweight (n= 138)	Obese (n= 108)	p-value
Increase time spent on resting since the start of the COVID-19 pandemic					
No	1 (0.80)	30 (22.6)	57 (42.9)	45 (33.8)	0.217
Yes	3 (1.40)	70 (32.3)	81 (37.3)	63 (29.0)	
Increase financial stress during the COVID-19 pandemic					
No	1 (0.07)	32 (22.9)	64 (45.7)	43 (30.7)	0.146
Yes	3 (1.40)	68 (32.4)	74 (35.2)	65 (31.0)	
Increase stress from home during the COVID-19 pandemic					
No	2 (1.00)	43 (21.6)	88 (44.2)	66 (33.2)	0.010*
Yes	2 (1.30)	57 (37.7)	50 (33.1)	42 (27.8)	
Feel anxious, terrified, and helpless during COVID-19 pandemic					
No	2 (1.10)	64 (35.4)	65 (35.9)	50 (27.6)	0.037*
Yes	2 (1.20)	36 (21.3)	73 (43.2)	58 (34.3)	
Get support from friends during COVID-19 pandemic					
Decreased	0 (0.00)	20 (32.3)	13 (21.0)	29 (46.8)	0.007*
Same as before	3 (1.50)	63 (30.9)	83 (40.7)	55 (27.0)	

Increased	1 (1.20)	17 (20.2)	42 (50.0)	24 (28.6)	
Get support from family members during COVID-19 pandemic					
Decreased	0 (0.00)	11 (35.5)	8 (25.8)	12 (38.7)	0.150
Same as before	0 (0.00)	39 (25.0)	65 (41.7)	52 (33.3)	
Increased	4 (2.50)	50 (30.7)	65 (39.9)	44 (27.0)	
Share my feelings with family members during COVID-19 pandemic					
Decreased	0 (0.00)	15 (34.9)	13 (30.2)	15 (34.9)	0.348
Same as before	1 (0.60)	45 (28.8)	57 (36.5)	53 (34.0)	
Increased	3 (2.00)	40 (26.5)	68 (45.0)	40 (26.5)	
Share my feelings with others after the COVID-19 pandemic					
Decreased	2 (2.80)	22 (31.0)	19 (26.8)	28 (39.4)	0.104
Same as before	2 (1.00)	52 (26.4)	82 (41.6)	61 (31.0)	
Increased	0 (0.00)	26 (31.7)	37 (45.1)	19 (23.2)	
Interested in lifestyle changes related to mental health during COVID-19 pandemic					
Less	2 (2.00)	31 (30.7)	33 (32.7)	35 (34.7)	0.334
More	2 (0.80)	69 (27.7)	105 (42.2)	73 (29.3)	

* Statistically significantly different at 95% confidence level. Fisher's Exact test/chi-square test was used to assess differences across groups.

Findings obtained from multinomial regression analyses of the associations of age, gender, and weight status with symptoms during and after COVID-19 infection are presented in **Table 8**. Model exploring common symptoms during COVID-19 infection indicated that BMI of hospital workers increase the odds of experiencing breathing difficulty (OR: 1.15, p= 0.004), lethargy (OR: 1.11, p= 0.016), and fever (OR: 1.08, p= 0.023). In addition, male workers have lower odds of experiencing dry cough (OR: 0.33, p= 0.009), breathing difficulty (OR: 0.19, p= 0.015), and headache (OR: 0.38, p= 0.002) compare to female workers. Data concerning symptoms that continued after recovery from COVID-19 infection indicated that BMI of hospital workers increase the odds of experiencing fever (OR: 1.16, p< 0.001), whereas male workers have lower odds of experiencing anosmia (OR: 0.42, p= 0.015), dry cough (OR: 0.18, p< 0.001), hair loss (OR: 0.04, p< 0.001), tiredness (OR: 0.19, p< 0.001), and dyspnea (OR: 0.12, p= 0.010).

Table 8. Multinomial regression analyses of the associations of age, gender, and weight status with symptoms during and after COVID-19 infection.

Outcome	Factors	p-value	OR	95% Confidence Interval	
				Lower Bound	Upper Bound
Common symptoms during COVID-19 infection					

Dry cough	BMI	0.056	1.08	0.998	1.176
	19-40 years	0.112	0.47	0.186	1.191
	> 40 years	Reference Category			
	Male	0.009*	0.329	0.143	.757
	Female	Reference Category			
Breathing difficulty	BMI	0.004*	1.15	1.05	1.26
	19-40 years	0.046	0.27	0.08	0.98
	> 40 years	Reference Category			
	Male	0.015*	0.19	0.05	0.72
	Female	Reference Category			
Lethargy	BMI	0.016*	1.11	1.02	1.20
	19-40 years	0.501	1.49	0.47	4.70
	> 40 years	Reference Category			
	Male	0.719	0.85	0.35	2.08
	Female	Reference Category			
Tiredness	BMI	0.073	1.07	0.99	1.15
	19-40 years	0.164	0.56	0.25	1.27
	> 40 years	Reference Category			
	Male	0.174	.607	.295	1.25
	Female	Reference Category			
Fever	BMI	0.023*	1.08	1.01	1.16
	19-40 years	0.182	0.60	0.29	1.27
	> 40 years	Reference Category			
	Male	0.270	0.70	0.37	1.33
	Female	Reference Category			
Dyspnea	BMI	0.106	1.088	0.98	1.21
	19-40 years	0.686	0.76	0.21	2.82
	> 40 years	Reference Category			
	Male	0.089	0.38	0.12	1.16
	Female	Reference Category			
Chest stiffness	BMI	0.733	0.96	0.74	1.23
	19-40 years	.	.	.	.
	> 40 years	Reference Category			
	Male	0.542	0.52	0.07	4.22

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	Female	Reference Category			
Uncommon symptoms during COVID-19 infection					
Headache	BMI	0.192	1.04	0.98	1.10
	19-40 years	0.953	1.02	0.51	2.05
	> 40 years	Reference Category			
	Male	0.002*	0.38	0.21	0.70
	Female	Reference Category			
Cough with sputum production	BMI	0.589	0.97	0.86	1.09
	19-40 years	0.287	2.36	0.49	11.5
	> 40 years	Reference Category			
	Male	0.488	1.55	0.45	5.29
	Female	Reference Category			
Anosmia	BMI	0.123	1.04	0.99	1.10
	19-40 years	0.677	0.87	0.46	1.66
	> 40 years	Reference Category			
	Male	0.172	0.66	0.37	1.20
	Female	Reference Category			
Body pain	BMI	0.166	0.95	0.87	1.02
	19-40 years	0.363	0.70	0.32	1.52
	> 40 years	Reference Category			
	Male	0.056	0.50	0.25	1.02
	Female	Reference Category			
Diarrhea	BMI	0.581	1.05	0.88	1.25
	19-40 years	0.464	0.53	0.10	2.93
	> 40 years	Reference Category			
	Male	.	.	.	.
	Female	Reference Category			
Vomiting	BMI	0.895	0.98	0.73	1.32
	19-40 years	.	.	.	.
	> 40 years	Reference Category			
	Male	.	.	.	.
	Female	Reference Category			
Shivers	BMI	0.112	1.10	0.98	1.23
	19-40 years	0.746	0.68	0.06	7.14

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	> 40 years	Reference Category			
	Male	.	.	.	.
	Female	Reference Category			
Nausea	BMI	0.976	0.99	0.68	1.47
	19-40 years	.	.	.	.
	> 40 years	Reference Category			
	Male	.	.	.	.
	Female	Reference Category			
Symptoms that continued after recovery from COVID-19 infection					
Cough with sputum production	BMI	0.062	1.10	1.00	1.21
	19-40 years	0.142	3.27	0.67	15.8
	> 40 years	Reference Category			
	Male	0.494	1.63	0.40	6.59
	Female	Reference Category			
Ageusia	BMI	0.865	1.01	0.90	1.14
	19-40 years	0.318	2.24	0.46	10.9
	> 40 years	Reference Category			
	Male	0.072	0.34	0.10	1.10
	Female	Reference Category			
Anosmia	BMI	0.206	1.04	0.98	1.12
	19-40 years	0.826	1.09	0.51	2.30
	> 40 years	Reference Category			
	Male	0.015*	0.42	0.21	0.84
	Female	Reference Category			
Dry cough	BMI	0.952	1.00	0.92	1.10
	19-40 years	0.336	1.69	0.58	4.96
	> 40 years	Reference Category			
	Male	<0.001*	0.18	0.07	0.44
	Female	Reference Category			
Headache	BMI	0.675	0.98	0.87	1.10
	19-40 years	0.834	1.14	0.33	3.92
	> 40 years	Reference Category			
	Male	0.057	0.35	0.12	1.03
	Female	Reference Category			

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Hair loss	BMI	0.445	0.96	0.85	1.07
	19-40 years	.	.	.	.
	> 40 years	Reference Category			
	Male	<0.001*	0.04	0.01	0.19
	Female	Reference Category			
Body pain	BMI	0.987	1.00	0.90	1.12
	19-40 years	0.123	0.45	0.16	1.24
	> 40 years	Reference Category			
	Male	0.046	0.36	0.13	0.98
	Female	Reference Category			
Fever	BMI	<0.001*	1.16	1.07	1.25
	19-40 years	0.206	2.79	0.57	13.7
	> 40 years	Reference Category			
	Male	0.229	0.47	0.14	1.61
	Female	Reference Category			
Tiredness	BMI	0.880	1.01	0.92	1.10
	19-40 years	0.227	0.58	0.24	1.41
	> 40 years	Reference Category			
	Male	<0.001*	0.19	0.08	0.45
	Female	Reference Category			
Dyspnea	BMI	0.342	1.06	0.94	1.19
	19-40 years	0.748	1.31	0.25	6.87
	> 40 years	Reference Category			
	Male	0.010*	0.12	0.02	0.60
	Female	Reference Category			
Nausea	BMI	0.883	0.97	0.62	1.50
	19-40 years	.	.	.	.
	> 40 years	Reference Category			
	Male	.	.	.	.
	Female	Reference Category			

* Statistically significantly different at 95% confidence level. The reference category for all models is “None”. OR: odd ratio.

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Discussion

This study examined the symptoms and post-COVID-19 effects on health among hospital workers in Hail region of Saudi Arabia. Hospitals in the region were under immense pressure due to the pandemic, and this study sought to investigate the health effects of this pressure. To the best of our knowledge, this is the first study to explore symptoms and post COVID-19 infection effect on health among hospital workers in Saudi Arabia

Findings of this study indicated that less than one percent of hospital workers reported severe-critical symptoms of COVID-19 infection. Fever was the most common presenting symptom associated with COVID-19, followed by tiredness, and dry cough, and other symptoms are less common. Body pains Cough with sputum production, Diarrhea, Headache. Nausea Shivers, and Vomiting were reported by many participants after recovery.

Other studies [12] [13] [14] reported similar symptoms, the most uncommon, reported symptoms during COVID-19 infection were anosmia, which was not well-known at the beginning of the pandemic. Researchers such as Lechien et al. [15] and Tawfik et al [16] reported this symptom as well. In an article by the Wall Street Journal, Dr. Jane Parker reported that out of the 45 participants that she studied who had contacted COVID-19, 15 developed parosmia [17]. This symptom was reported to be more common in individuals between the ages of 20-50, but it was also found in people of all ages, genders, and ethnicities. This further highlights the importance of recognizing the wide range of COVID-19 symptoms, and not relying on anosmia as the only indicator for diagnosis.

The results show that patients experienced anxiety, followed by psychological distress, and stress. An online survey conducted in Saudi Arabia reported mild to moderate rates of anxiety among the participants [18]. Overall, the findings of this study provide valuable insight into the post-COVID effects of recovering from the virus. The survey results support the idea that patients experience a range of psychological and emotional effects, from anxiety to psychological distress, after recovering from the COVID-19.

The majority of the sample was interested in changes in lifestyle that could be related to mental health during the COVID-19 pandemic. Sixty-two percent of hospital workers reported more time spent for rest after the COVID-19 pandemic started. This finding highlights the importance of self-care and the recognition of the toll the pandemic has taken on healthcare professionals, whereas 60.0% and 43.1% of hospital workers reported greater financial stress and stress from home, respectively. Another study in the MENA region found that over one-third of the participants experienced increased stress related to work and financial matters, and over half of the participants had increased stress related to home matters [19]. A study among Egyptian adults illustrated similar trends, with 34.1% of participants reporting an increase in stress from work. In addition, 55.7% have increased financial stress, and 62.7% have experienced stress related to home matters [20]. This finding underscores the challenges faced by healthcare professionals who not only deal with the demands of their work but also have to navigate the added pressures arising from their personal lives during the pandemic.

A meta-analysis showed that after COVID-19, fatigue can significantly worsen the quality of life but is also associated with other symptoms such as dyspnea, anosmia, sleep disturbances and impaired mental health [21]. In our study, half of the sample reported feeling anxious, terrified, and helpless during the COVID-19 pandemic.

The results of the survey conducted regarding the family and social support during the pandemic showed that half of the participants reported an increase in support from family members, quarter received increased support from friends, and less than half stated increased shared feelings with their family members. The increased family support observed in this study was in line with previous studies from Egypt and China which demonstrated that family and friends were much valued in a time of crisis [22] [23] [24]. This indicates that social and family support can be a great source of comfort during difficult times. It is encouraging to see that so many people have been able to turn to their family and friends for assistance and understanding during the pandemic. Moreover, the strong bonds and relationships that have been created or strengthened during this time are a testament to the power of community support.

According to this study, the vast majority of patients infected with COVID-19 have not experienced any complications. However, a smaller proportion of patients have been diagnosed with myocardial infarction or pulmonary infarction. In the study of Tawfik et al. [16] Myocardial infarction was reported in 2 male participant. This research has revealed that these complications can be caused by the virus, and treatment is necessary to prevent further damage. These conditions can be managed with both home remedies and medical intervention, depending on the severity. It is important for those with COVI-19infection to seek medical assistance as soon as possible to avoid or lessen the severity of these conditions.

This study revealed that the age group was significantly linked to lifestyle changes like increased time spent on resting, financial stress, stress from home, and feel anxious, terrified, and helpless during COVID-19 pandemic.

Model exploring common symptoms during COVID-19 infection indicated that BMI of hospital workers increase the odds of experiencing breathing difficulty, lethargy, and fever. In addition, male workers have lower odds of experiencing dry cough, breathing difficulty, and headache compared to female workers. Data concerning symptoms that continued after recovery from COVID-19 infection indicated that BMI of hospital workers increase the odds of experiencing fever, whereas male workers have lower odds of experiencing anosmia, dry cough, hair loss, tiredness, and dyspnea. This indicates that there is a gender disparity in the experience of symptoms and recovery from COVID-19 infection. Further research is needed to identify the underlying causes of this disparity.

Limitations of study

There is only a limited number of studies available on the symptom and post COVID-19 infection for this group of people. This study has several limitations. Firstly, the use of a self-reported questionnaire may have led to some respondent bias or misreporting of data. Secondly, the sampling method used to collect data may limit the generalizability of the study findings, as hospital workers with busy schedules and direct exposure with COVID-19 cases might be unwilling to participate in online surveys, and by using an online survey, the reach of the survey was limited to those with access to social media, which reduced the potential for generalizable results. Additionally, the cross-sectional design used in this study limits the ability to establish case and effect association between symptoms

and post COVID-19 infection on health and potential factors. Finally, the sample size of the survey was quite small, leading to limited statistical power. All these factors could have affected the accuracy and generalizability of the results. Further research is needed to understand the long-term effects of the virus and to identify effective strategies to mitigate them.

Conclusion

The results of the study showed that Age, gender, and weight status of hospital workers are linked to symptoms and health status post-COVID-19 infection. The hospital workers experience a range of psychological and emotional effects, from anxiety to psychological distress, after recovering from the virus, and reported increased resting time, financial stress, and stress from home. The findings of this study will inform policymakers in healthcare entities concerning factors related to post-COVID-19 infection on health to prevent severe symptoms and post-infection effect. Future longitudinal research should be directed to explore the association between post-COVID-19 infection effect on health and performance of healthcare workers.

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Conflicts of Interest: The authors declare no conflict of interest.

Data Availability: The data supporting the results of this study are available from the corresponding author on reasonable request.

References

1. Masters-Waage, T.C.; Jha, N.; Reb, J. COVID-19, Coronavirus, Wuhan Virus, or China Virus? Understanding How to "Do No Harm" When Naming an Infectious Disease. *Front. Psychol.* **2020**, *11*, 561270.
2. WHO WHO Coronavirus Disease (COVID-19) Dashboard Available online: https://covid19.who.int/.
3. Yuki, K.; Fujiogi, M.; Koutsogiannaki, S. COVID-19 Pathophysiology: A Review. *Clin. Immunol.* **2020**, *215*, 108427.
4. Neumann-Podczaska, A.; Al-Saad, S.R.; Karbowski, L.M.; Chojnicki, M.; Tobis, S.; Wieczorowska-Tobis, K. COVID 19-Clinical Picture in the Elderly Population: A Qualitative Systematic Review. *Aging Dis.* **2020**, *11*, 988.
5. Meis-Pinheiro, U.; Lopez-Segui, F.; Walsh, S.; Ussi, A.; Santaeugenia, S.; Garcia-Navarro, J.A.; San-Jose, A.; Andreu, A.L.; Campins, M.; Almirante, B. Clinical Characteristics of COVID-19 in Older Adults. A Retrospective Study in Long-Term Nursing Homes in Catalonia. *PLoS One* **2021**, *16*, e0255141.

6. Rothan, H.A.; Byrareddy, S.N. The Epidemiology and Pathogenesis of Coronavirus Disease (COVID-19) Outbreak. *J. Autoimmun.* **2020**, *109*, 102433.
7. Prevention, C. for D.C. and Centers for Disease Control and Prevention Coronavirus Disease 2019 (COVID-19). *United States centers Dis. Control Prev. Available from https//www. cdc. gov/coron avirus/2019-ncov/index. html Accessed* **2020**, *25*.
8. Heinzerling, A.; Stuckey, M.J.; Scheuer, T.; Xu, K.; Perkins, K.M.; Resseger, H.; Magill, S.; Verani, J.R.; Jain, S.; Acosta, M. Transmission of COVID-19 to Health Care Personnel during Exposures to a Hospitalized Patient—Solano County, California, February 2020. *Morb. Mortal. Wkly. Rep.* **2020**, *69*, 472.
9. Chen, C.; Haupert, S.R.; Zimmermann, L.; Shi, X.; Fritsche, L.G.; Mukherjee, B. Global Prevalence of Post-Coronavirus Disease 2019 (COVID-19) Condition or Long COVID: A Meta-Analysis and Systematic Review. *J. Infect. Dis.* **2022**, *226*, 1593–1607.
10. Arbuckle, J.L. IBM SPSS Amos 20 User's Guide. *Amos Dev. Corp. SPSS Inc* **2011**, 226–229.
11. Al Maskari, Z.; Al Blushi, A.; Khamis, F.; Al Tai, A.; Al Salmi, I.; Al Harthi, H.; Al Saadi, M.; Al Mughairy, A.; Gutierrez, R.; Al Blushi, Z. Characteristics of Healthcare Workers Infected with COVID-19: A Cross-Sectional Observational Study. *Int. J. Infect. Dis.* **2021**, *102*, 32–36.
12. Hopkins, C.; Surda, P.; Kumar, N. Presentation of New Onset Anosmia during the COVID-19 Pandemic. *Rhinology* **2020**, *58*, 295–298.
13. Hopkins, C.; Surda, P.; Whitehead, E.; Kumar, B.N. Early Recovery Following New Onset Anosmia during the COVID-19 Pandemic–an Observational Cohort Study. *J. Otolaryngol. Neck Surg.* **2020**, *49*, 1–6.
14. Melley, L.E.; Bress, E.; Polan, E. Hypogeusia as the Initial Presenting Symptom of COVID-19. *BMJ Case Reports CP* **2020**, *13*, e236080.
15. Lechien, J.R.; Vaira, L.A.; Saussez, S. Prevalence and 24-month Recovery of Olfactory Dysfunction in COVID-19 Patients: A Multicentre Prospective Study. *J. Intern. Med.* **2023**, *293*, 82–90.
16. Tawfik, H.M.; Shaaban, H.M.; Tawfik, A.M. Post-COVID-19 Syndrome in Egyptian Healthcare Staff: Highlighting the Carers Sufferings. Electron J Gen Med. 2021; 18 (3): Em291 2021.
17. Parker, J.K.; Kelly, C.E.; Smith, B.C.; Kirkwood, A.F.; Hopkins, C.; Gane, S. Patients' Perspectives on Qualitative Olfactory Dysfunction: Thematic Analysis of Social Media Posts. *JMIR Form. Res.* **2021**, *5*, e29086.
18. Albagmi, F.M.; AlNujaidi, H.Y.; Al Shawan, D.S. Anxiety Levels amid the COVID-19 Lockdown in Saudi Arabia. *Int. J. Gen. Med.* **2021**, 2161–2170.
19. Al Dhaheri, A.S.; Bataineh, M.F.; Mohamad, M.N.; Ajab, A.; Al Marzouqi, A.; Jarrar, A.H.; Habib-Mourad, C.; Abu Jamous, D.O.; Ali, H.I.; Al Sabbah, H. Impact of COVID-19 on Mental Health and Quality of Life: Is There Any Effect? A Cross-Sectional Study of the MENA Region. *PLoS One* **2021**, *16*, e0249107.
20. Aly, H.M.; Nemr, N.A.; Kishk, R.M.; bakr Elsaid, N.M.A. Stress, Anxiety and Depression among Healthcare Workers Facing COVID-19 Pandemic in Egypt: A Cross-Sectional Online-Based Study. *BMJ Open* **2021**, *11*, e045281.
21. Malik, P.; Patel, K.; Pinto, C.; Jaiswal, R.; Tirupathi, R.; Pillai, S.; Patel, U. Post-acute COVID-19 Syndrome (PCS) and Health-related Quality of Life (HRQoL)—A Systematic Review and Meta-analysis. *J. Med. Virol.* **2022**, *94*, 253–262.
22. Shaikh, A.; Peprah, E.; Mohamed, R.H.; Asghar, A.; Andharia, N.V.; Lajot, N.A.; Qureshi, M.F.H. COVID-19 and Mental Health: A Multi-Country Study—the Effects of Lockdown on the Mental Health of Young Adults. *Middle East Curr. Psychiatry* **2021**, *28*, 1–10.
23. El-Zoghby, S.M.; Soltan, E.M.; Salama, H.M. Impact of the COVID-19 Pandemic on Mental Health and Social Support among Adult Egyptians. *J. Community Health* **2020**, *45*, 689–695.
24. Liu, C.-Y.; Yang, Y.; Zhang, X.-M.; Xu, X.; Dou, Q.-L.; Zhang, W.-W.; Cheng, A.S.K. The Prevalence and Influencing Factors in Anxiety in Medical Workers Fighting COVID-19 in China: A Cross-Sectional Survey. *Epidemiol. Infect.* **2020**, *148*.