

Psychosocial Impact of COVID-19 on Healthcare Workers

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INTRODUCTION

COVID-19 pandemic has significantly impacted frontline workers over the past year. It is essential to evaluate the psychosocial impact of this pandemic on Healthcare workers to minimize the negative impacts of this pandemic as well as potential pandemics in the future in this group. Many of these individuals have been experiencing high levels of stress and symptoms of both anxiety and depression. This is exceptionally worrisome as if left untreated, can lead to long-term mental health problems.

Since December 2019, many people have been infected with the coronavirus around the world. Today, there are more than 140 million confirmed cases of coronavirus globally, with more than three million deaths as a result of this disease (COVID-19 situation update worldwide, 2020). In many ways, this virus has caused fear, stress, anxiety, and adverse psychosocial impacts. The National Health Commission of China has released multiple reports about the mental health crisis related to coronavirus and its negative emotional, psychological, and social impacts on the medical workers (Kang et al., 2020). According to a recent article by Lai et al., there is a great

concern on social and mental pressures on healthcare professionals during an outbreak. Other recent study suggested that compare to the general population, healthcare workers were more likely to experience the burden of depression, mainly because of fear of getting infected and passing it on to their family members and loved ones, lack of personal protective equipment, and working too many hours during the COVID19 pandemic (Krishnamoorthy et al., 2020). Previous reports have shown that in similar events in the past such as severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS) outbreaks, healthcare professionals experienced a great level of anxiety, fear, mental pressure, and symptoms of depression even after control of the outbreak. Moreover, recent data have shown the most underestimated problem during this pandemic is every day increase of workload on healthcare professionals which can be triggered to developing anxiety and psychiatric disorders (Delgado-Gallegos et al., 2020). In a study by Wang et al., during the initial phase of an outbreak across China, more than half of participants reported as experiencing a moderate to severe psychological impact and with over a third of them showed signs of moderate to severe anxiety. At this time, the main focus of public health departments and the World Health Organization is on how to prevent the spread of COVID-19 and protect our healthcare workers from exposure. Therefore, further research is necessary to study the pandemic's holistic impacts and look into ways to promote mental wellbeing among healthcare workers. The objective of our study is to evaluate the impact of COVID-19 on healthcare workers at Hurley Medical Center and identify individuals at highest risk to establish preventative interventions to ameliorate the negative impact of similar events on the vulnerable population in the future.

MATERIALS AND METHODS

In order to investigate the psychosocial impact of COVID-19 pandemic among Healthcare workers at Hurley Medical Center (HMC), we sent out a web-based survey to all HMC employees on July 28, 2020 that remained open until August 30, 2020 with a reminder sent on August 17, 2020. A self-administered online survey was developed via Google Forms where all responses are automatically collected in an Excel spreadsheet for future analysis by using charts and other complex spreadsheet models (Google, 2016). Informed consents were obtained electronically prior to start participating in the survey. All electronic study data were collected and transmitted through protected Hurley email. In order to calculate the scores for depression

and stress, we assigned a unique study number to each participant. The study was deemed exempt from human subjects review by the Hurley Medical Center Institutional Review Board.

The survey instrument consisted of 21 questions (Appendix A) which captured the participant's gender, age, race/ethnicity, departments, and their level of education. Additionally, perceived stress via 4-items scale (PSS-4) which is a validated scale to help measure the participants stress by asking them to share their thoughts and feelings (MacArthur SES & Health Network: Research, 2020), this scale consists of 4 questions with a five-point scale: 0= never, 1 = almost never, 2 = sometimes, 3 = fairly often, and 4 = very often). For each participant, if they scored above the average then they would be considered as being stressed. Keep in mind that this is not a diagnostic tool but a brief tool to measure the stress perceptions.

Depression assessment via Patient Health Questionnaire-2 (PHQ-2) which is not designed to determine the diagnosis of depression nor to monitor its severity. Those individuals who screened positive with PHQ-2 should be further evaluated with Patient Health Questionnaire-9 (PHQ-9) and other validated mental health screening tools (Instrument: Patient Health Questionnaire-2 (PHQ-2), 2020). In addition, family, spiritual, financial, and physical activity levels were also included in our questionnaire. Family, physical, and spiritual impacts were captured with a Likert scale on a continuum from strongly agree to strongly disagree. Both of our outcomes, the likelihood of depression and stress were treated as a dichotomous variable, with "Yes" defined as likelihood of having depression or stress and "No" as not being depressed nor experiencing stress.

STATISTICAL ANALYSIS

Frequency distributions were performed to describe the characteristics of the healthcare workers (Table 1). Multivariable logistic regression analysis was performed in order to identify the potential risk factors for stress and likelihood of depression among healthcare workers. The p-value (two-tailed test) of 0.05 was used as the threshold for statistical significance. All statistical analyses were performed by using Stata version 15.1 (StataCorp) and Statistical Analysis Software (SAS 9.4). All data with missing information were categorized to an unknown category for our study analysis.

RESULT

In total, 390 respondents completed the online survey. The vast majority of these individuals were women (78.7%), worked in clinical settings (64.4%) while 130 (33.3%) were Nurses. Over three-fourths (76.9%) of the respondents were white, followed by 12.8 percent of the respondents who indicated they were African American/Black. Additionally, 72.6% were under 55 years of age; the mean average age of the sample was 43.7, followed by the median of 43.5, and standard deviation of 12.3. Participants' level of education ranged from High school graduate to a Ph.D., or Medical degree. Of these, 30.3% completed their bachelor's degree, followed by an Associate degree (26.7%), some college education (13.6%), Master's degree (10.8%), Ph.D., or Medical degree (9.7%), some postgraduate (4.9%), High school graduates (2.6%), and other advanced degree beyond a master's degree (1.5%).

For the outcome of likelihood of depression, the multivariable logistic regression model suggested that healthcare workers who provided direct care to patients with COVID-19 were associated with a higher risk of screening for depression however a more comprehensive evaluation for depression is needed to confirm the diagnosis (aOR = 1.7; *p-value* = 0.030, 95% CI [1.06, 2.86]). Also, individuals who had a significant decrease in their level of physical activities ("strongly agreed") had greater odds of screening positive for depression (aOR = 1.9; *p-value* = 0.03, 95% CI [1.08, 3.25]) in comparison to individuals who "disagree", "strongly disagree", and "neither agree nor disagree"(Table 2).

For the outcome of stress, the multivariable logistic regression model indicated that Individuals were more likely to experience stress if their family members were negatively impacted by COVID-19 outbreaks (aOR = 3.4; *p-value*<0.001, 95% CI [1.77, 6.47]). Also, those who reported that their level of physical activities had significantly declined since the COVID-19 pandemic were more likely to be stressed in comparison to those who "disagree", "strongly disagree", and "neither agree nor disagree", (aOR = 2.3;*p-value* = 0.010, 95% CI [1.22, 4.19]).Lastly, healthcare workers who neither agree nor disagree that their spiritual or religious rituals have been disrupted due to COVID-19 pandemic were more likely to be stressed with aOR of 2.1,95% CI [1.07, 3.97], and *p-value* of 0.032 compared to those who agreed or disagreed that COVID-19 had a negative effects on their religious rituals(Table 3).

DISCUSSION

Studies have shown that a pandemic can lead to unpredictable levels of stress, physical exhaustion, and mental distress among healthcare workers (Cooch, 2020). For example, during the SARS outbreak, many healthcare workers were struggling with anxiety and burnout caused by uncertainty, fear of the unknown, and higher workload which in many cases was replaced with depression and mental health issues after the infection was under control (Giusti et al., 2020).

Our study suggested that specific groups of individuals might be more vulnerable to experience stress or have greater odds of screening positive for depression during or even after the pandemic is over, therefore appropriate psychosocial techniques and interventions such as: Providing social supports to their families and loved ones, minimizing negative thoughts, ensuring where and how the staff can access supportive and mental health services, will help preserve and improve their psychosocial health issues since they require special attention during these unprecedented times (Emotional Well-Being and Coping During COVID-19, 2020). One interesting finding of this study was that those individuals who reported that their level of physical activities had declined significantly since the COVID-19 pandemic had greater odds of screening positive for depression and being stressed during or even sometimes after a pandemic. Previous studies have shown that regular physical activity for at least 1 hour per week will have a protective factor against future depression, it may be effective to promote and incorporate more influential methods to increase the level of physical activity among healthcare workers (Harvey et al., 2018).

Our findings are corroborated by other studies showing the rise of mental and social problems among healthcare workers due to a pandemic. A study by Que et al. demonstrated that healthcare workers; especially those who participated in front-line work, were at increased risk of having depression, anxiety, insomnia, and fear during the COVID-19 pandemic. Therefore, broader dissemination of guidelines regarding psychosocial interventions and support for short-term psychological management during its early stages is essential, if these measures are not planned in a timely manner then there will be a possibility of a new surge in patients struggling with psychological health problems (Natasha et al., 2020).

Our study had some limitations. First limitation is that our sample was collected from a single center which will result in a smaller sample size and may not represent the general

population. Due to the busy schedule of our healthcare workers and limited availability of their time, this survey was focused on the essential questions, and it was not comprehensive enough to capture all psychological and social impacts of COVID-19 on their lives.

One of the disadvantages of self-reporting surveys is that the participants might not remember the event or answer truthfully in order to represent themselves in a way that is socially accepted which may lead to a response bias (Self-report study, 2020, June 14). For better examining the psychosocial impacts of COVID-19 on healthcare workers a larger sample size would be more desirable and generally will lead to increased precision of this type of study, however determining the ideal sample size could be tricky and is not a straightforward task when it comes to survey study design.

CONCLUSION

A study by Zerbini et al. demonstrated an increase in risk of psychological burden and strain in healthcare workers especially the ones who had direct contact with COVID-19 patients; based on their findings this was mainly caused by higher workload and longer time in close contact with COVID-19 patients. Our study indicated a significant impact of COVID-19 on healthcare workers which might be related to many challenges facing in health policy and healthcare systems during a crisis like this. Therefore, it's essential to provide psychosocial support to healthcare workers not just during an outbreak but more so in the months and years after the outbreak is under control. The goal is to identify individuals at risk to establish evidence-based preventative interventions, treatment tools, and mitigate or at least minimize the negative psychosocial impact of the novel coronavirus. In addition, at the time of crisis it is necessary to prioritize and monitor both mental health and psychosocial well-being of healthcare workers.

By increasing the knowledge and training of healthcare workers as well as implementing infection control and prevention measures and ensuring a safe and healthy workplace can significantly contribute to the enhancement of mental, physical, and social health being of healthcare workers which can lead to productivity and efficiency (Temsah et al, 2020).

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Appendix A.

- 1) What is your role in patients care?
 - Nurse
 - Social worker
 - Physician Assistant
 - Physician
 - Residents
 - Other (specify):_____

- 2) Have you provided direct care to COVID-19 patients?
 - Yes
 - No (Skip to Question 4)

- 3) Please indicate the duration of direct care.
 - Only a few hours
 - 1-14 days
 - 15-29 days
 - 1 month
 - More than 1 month

- 4) Are you concerned that you may have contracted the COVID-19?
 - Yes
 - No

- 5) Which department are you working in?
 - Medical-Surgical Unit

- Critical Care Unit
- Stepdown Unit
- OBGYN
- Pediatrics
- None-Patient Care Area
- Other (specify):_____

6) How would you describe your gender?

- Female
- Male
- Prefer Not to Answer

7) Please specify your race/ethnicity:

- White
- Black or African-American
- Non-white Hispanic
- American Indian or Alaskan Native
- Asian
- Native Hawaiian or other Pacific islander
- From multiple races
- Some other race (specify)_____

8) What is your current age?_____ (Years)

9) What is your current completed education level?

- High school graduate
- Some college
- Associate degree
- Bachelor's degree
- Some postgraduate
- Master's degree

- Ph.D., or Medical degree
- Other advanced degree beyond a master's degree

Perceived Stress

10) In the last month, how often have you felt that you were unable to control the important things in your life?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

11) In the last month, how often have you felt confident about your ability to handle your personal problems?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

12) In the last month, how often have you felt that things were going your way?

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

13) In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

- Never

- Almost Never
- Sometimes
- Fairly Often
- Very Often

Depression Assessment

Over the last 2 weeks, how often have you been bothered by the following problems?

14) Little interest or pleasure in doing things:

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

15) Feeling down, depressed or hopeless

- Never
- Almost Never
- Sometimes
- Fairly Often
- Very Often

Family Impact

16) The COVID-19 outbreak had a negative impact on my family.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Physical Impact

17) My physical activities have decreased significantly since the COVID-19 pandemic.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Spiritual Impact

18) My spiritual/religious rituals have been disrupted due to the COVID-19 pandemic.

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Financial Impact

19) Have your finances been impacted as a result of COVID-19 outbreak?

- Yes
- No

Quality of life

20) How would you rate your current overall quality of life?

- Excellent
- Good

	<ul style="list-style-type: none"> ● Satisfactory ● Fair ● Poor
21)	How would you rate your overall quality of life prior to COVID-19 outbreak?
	<ul style="list-style-type: none"> ● Excellent ● Good ● Satisfactory ● Fair ● Poor

Table 1. Demographic characteristics of the respondents	
Characteristics	n (%)
Race	
Asian	16 (4.10%)
Black or African American	50 (12.82%)
From Multiple Races	8 (2.05%)
Hispanic	10 (2.56%)
Unknown	6 (1.54%)
White	300 (76.92%)
Clinical vs. Non-Clinical Role	
Clinical	251 (64.36%)
Non-Clinical	117 (30.0%)
Unknown	22 (5.64%)
Direct Care with COVID-19 Patients	
Yes	209 (53.59%)
No	181 (46.41%)
Gender	
Female	307 (78.72%)

Male	78 (20.00%)
Unknown	5 (1.28%)
Education Level	
Associate degree	104 (26.67%)
Bachelor's degree	118 (30.26%)
High school graduate	10 (2.56%)
Master's degree	42 (10.77%)
Other advanced degree beyond a master's degree	6 (1.54%)
Ph.D., or Medical degree	38 (9.74%)
Some college	53 (13.59%)
Some postgraduate	19 (4.87%)
Role in patient-care	
Clinical	251 (64.36%)
Non-clinical	117 (30.00%)
Unknown	22 (5.64%)
Age category	
Under 24 yrs.	5 (1.28%)
25-34 yrs.	106 (27.18%)
35-44 yrs.	90 (23.08%)
45-54 yrs.	82 (21.03%)
55-64 yrs.	79 (20.26%)
65 or older	14 (3.59%)
Unknown	14 (3.59%)

Table 2. Multivariable logistic regression with outcome of likelihood depression				
	Odds Ratio	P-Value	95% CI LL	95% CI UL
Direct Care with COVID-19				

Patients (Reference: No)				
Yes	1.74	0.030	1.06	2.86
Physical Activity (Reference: Agree)				
Disagree	.67	0.266	.33	1.36
Neither agree nor disagree	1.33	0.461	.62	2.83
Strongly agree	1.87	0.026	1.08	3.25
Strongly disagree	.41	0.057	.17	1.02
Education level (Reference: Associate degree)				
Bachelor's degree	.62	0.105	.35	1.10
High school graduate	.50	0.375	.11	2.29
Master's degree	.56	0.151	.26	1.24
Other advanced degree beyond a master's degree	.55	0.522	.09	3.38
Ph.D., or Medical degree	.23	0.003	.09	.60

Some college	.90	0.788	.43	1.89
Some postgraduate	.86	0.780	.30	2.47
Family Impact (Reference: Agree)				
Disagree	.60	0.272	.25	1.49
Neither agree nor disagree	.64	0.131	.35	1.14
Strongly agree	1.71	0.072	.95	3.05
Strongly disagree	.28	0.073	.07	1.13
Role in patient-care (Reference: Clinical)				
Non-clinical	1.28	0.409	.72	2.28
Unknown	1.99	0.180	.73	5.42

Table 3. Multivariable logistic regression with the outcome of stress				
	Odds Ratio	P-Value	95% CI LL	95% CI UL
Direct Care with COVID-19 Patients (Reference: No)				

Yes	1.14	0.625	.68	1.92
Education level (Reference: Associate degree)				
Bachelor's degree	.92	0.808	.49	1.75
High school graduate	1.22	0.824	.21	7.02
Master's degree	.49	0.139	.19	1.26
Other advanced degree beyond a master's degree	1.21	0.854	.16	9.11
Ph.D., or Medical degree	.77	0.589	.30	1.99
Some college	1.39	0.423	.62	3.08
Some postgraduate	.46	0.299	.11	1.99
Family Impact (Reference: Agree)				
Disagree	.42	0.151	.13	1.37
Neither agree nor disagree	.72	0.333	.37	1.40
Strongly agree	3.38	<0.001	1.77	6.47

Strongly disagree	.53	0.451	.10	2.73
Spiritual Impact (Reference: Agree)				
Disagree	.49	0.106	.20	1.17
Neither agree nor disagree	2.06	0.032	1.07	3.97
Strongly agree	.77	0.515	.34	1.71
Strongly disagree	.38	0.067	.14	1.07
Concerned contracted COVID19 (Reference: No)				
Unknown	.66	0.659	.11	4.07
Yes	1.31	0.366	.73	2.37
Physical Activity (Reference: Agree)				
Disagree	.75	0.472	.34	1.65
Neither agree nor disagree	1.73	0.199	.75	4.01
Strongly agree	2.26	0.010	1.22	4.19
Strongly disagree	.48	0.196	.16	1.45