Original Article

Ayeni. AJPHN 2024; 1 (X): - http://doi.org/10.62377/pak29s07

Healthcare Workers' Knowledge and Attitude Towards COVID-19 and Its Effect on Their Mental Health in England

Ifedayo Eunice Ayeni, John Kainesie, Madhini Sivasubramanian

Faculty of health science and wellbeing, University of Sunderland in London, England.
*Corresponding author:ayeni.ifedayo@yahoo.com

Abstract

Submitted: 18.03.2024
Accepted: 17.04.2024
Published: 27.04.2024

Background: Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is a highly infectious disease that is presently a global public health concern. Evidence from previous disease outbreaks, along with early evidence from the COVID-19 pandemic, suggests that these events have significant short and long-term effects on the mental health of healthcare workers. All healthcare stakeholders should create short and long-term plans to support the mental health of workers during and after the COVID-19 pandemic. This research examines the knowledge and attitude of healthcare workers towards the COVID-19 crisis, investigates the impact on their mental health. **Methods:** The study used a cross-sectional quantitative design with a closed ended structured anonymous questionnaire as a tool to explore data online from healthcare workers at the study site in selected hospitals in England. The quantitative data analysis software SPSS was used to analyse the data using inferential statistics and cross tabulation. **Results:** Data from this quantitative study was collected using a questionnaire and analysed using SPSS and inferential statistics. Findings show that 80% of the respondents significantly have general good knowledge of COVID-19 and 11% had moderate and poor knowledge respectively. A good attitude towards COVID-19 was found among 73% of respondents while a poor attitude among 27%. An increase in death rate (10.9%), close contact with the patient (10.9%), and getting infected thereby transmitting the virus to family were most of the factors linked to the effect on their mental health. Accepting responsibility (9.9%), escaping evidence to relieve stress (9.7%), and calling a friend (9.6%) were methods adopted by the respondents as a coping strategy. **Conclusion:** Healthcare workers' mental well-being has been negatively affected by the COVID-19 pandemic, resulting in depression, anxiety, and stress. It is recommended that healthcare authorities ensure that they provide necessary assistance, proper information, and training and substantiate practical resources. Self-care is one of the important needs during mental disorders thus it is recommended that healthcare workers should focus on taking time out to mentally relax themselves during work.

Keywords: COVID-19, Mental Health, Health Personnel, Attitude of Health Personnel

Introduction

COVID-19 is a virus triggered by the "SARS-CoV-2" virus that affects most of the country around the world by inhaling and touching the infected ones (Huynh et al., 2020). It had a far-reaching, negative impact on healthcare systems worldwide and healthcare workers play a critical role in the country's healthcare delivery system, as they facilitate a continuum of care and containment of diseases such as the COVID-19 pandemic. Healthcare workers have been playing a huge frontline role globally in treating infected people, according to Patwary et al., (2022) and they are at risk of covid 19 infection due to their direct exposure to suspected and confirmed cases of patient in healthcare facilities. Alwani et al., (2020) stated that there are high chances of development of mental health issues among healthcare workers because of constantly working under pressure and risking their lives. It was documented that most of the healthcare workers are encountering signs of depression, distress, sleeplessness, and anxiety. This is because, they are very closely working and dealing with ill patients and are at the highest danger of contracting the virus (Bhagavathula et al., 2020).

A study by Cortez et al., (2020) reported that in Italy almost 45% of healthcare workers have some sort of mental disorder that was majorly due to the overburden of responsibilities and tasks to be accomplished along with getting

Ayeni. AJPHN 2024; 1 (X): - http://doi.org/10.62377/pak29s07

infected and carrying the infection to their home. Similarly, research by Baloran, (2020) stated that in China almost 25% of healthcare workers have developed some sort of mental disorder because of working in stressful situations and seeing people losing their lives due to this virus. Another study by Xu et al., (2020) reported that 23% of the healthcare staff had anxiety issues in UK. Ahmed et al., (2021) observed that most of the healthcare staff is depressed because of the huge number of individuals dying daily and not being able to save them because of critical situations. Moreover, Xu et al., (2020) reported that because of insufficient spaces for infected people, the staff members were depressed as they couldn't accommodate all the patients and couldn't provide them treatment. Alwani et al., (2020) declared the mental reaction of healthcare workers to an outbreak could be subject to many elements which might cause uneasiness and stress, for example, feeling helpless against deterioration caused by the virus, absence of authority over the circumstance, the rapid spread of the infection, wellbeing of their family, and being quarantined. Alrubaiee et al., (2020) discussed that having the necessary knowledge related to the ongoing crisis and knowing approaches to handle the situation is necessary to shape the attitude of the individuals towards it.

De Vroege & van den Broek, (2021) revealed that talking with family and friends is an effective coping strategy as they could share their experience with them and provide them relevant knowledge about the virus. Sorokin et al., (2020) indicated that to reduce the stress of the healthcare workers the hospital authorities need to implement safety protocols in the hospital by providing them with proper protective kits to cover themselves up so that no physical contact is made with the patients. Maharlouei et al., (2020) added that staying connected with their religious beliefs is another coping strategy used by most healthcare workers. This study specifically addresses the knowledge and attitude of healthcare workers and aims to investigate whether the appropriate knowledge and attitude help in reducing mental health issues in healthcare workers.

Method

We used quantitative study with closed ended structured anonymous questionnaire as a tool to collected data. Purposive sampling technique was used to recruit health workers at the study site including nurses, physician, pharmacy, occupational therapist, administration working in the selected hospital. Total of 100 respondents were employed purposively to get appropriate meaningful results for the study. An ethical approval form and consent form was sent to get informed consent and approval. The result was analysed using SPSS and inferential statistics including frequency, tables, percentages, and hypotheses. The 100 questionnaires administered were returned and completed appropriately; these were used for analysis with a response rate of 100%. The first section reports the demographic characteristics of the respondents including their age, qualification, sex, occupation, religion, marital status, experience, financial condition, house members, their department, and sources of information related to COVID-19. The second part examines the knowledge of respondents related to the covid-19 and the third part examines their attitude towards it. The fourth part examines the mental health issues faced by the respondents and the fifth part highlights the coping strategies implemented by respondents to reduce the impact of the COVID-19 crisis on the mental health of healthcare workers. The dependent variable (knowledge, attitude and mental health) and independent variables (demographic characteristics of the participants) was investigated using the T-test and ANOV. The results were analysed using SPSS and are presented in table form and graphs along with the interpretations. Analysis was considered statistically significant when p value <0.05.

Inferential statistical methods that are used to draw inferences about the relationships between variables are referred to as inferential statistics. They vary from descriptive statistics in that they are specifically designed to test hypotheses rather than to provide descriptive information. Inferential statistics use the characteristics of your sample to make educated estimates about the broader population as a whole and make use of hypothesis testing. the aim is to compare populations or analyse connections between variables by examining samples of data. Statistical tests are used to determine whether hypotheses or forecasts are correct. Statistical tests are classified into three types: comparison tests, correlation tests, and regression tests. Participants were given one point for a correct answer (strongly agree and agree) in the knowledge of COVID-19 section while zero points were given for wrong answers (strongly disagree and disagree). They were also given one point for correct answers (yes) in the attitude section and zero points for wrong answers (no) (Parajuli et al., 2020).

Results

Socio-demographic Analysis of respondents

Table 1 summarise the sociodemographic characteristics of the respondent. 32% of the healthcare workers who participated in the survey are between the age group of 20 to 29 years. Almost 31% of the healthcare workers were between the age group of 30 to 39 years, 24% were between the age group of 40-49 years and 13% were above 50 years. about half of the healthcare workers who participated in the survey were male whereas; 40% of them

Ayeni. AJPHN 2024; 1 (X): - http://doi.org/10.62377/pak29s07

were female. Whereas 5% refrain from mentioning their gender and 2% selected nonbinary/third gender. 39% of the healthcare workers who participated in the survey were single, 42% of them were married. 15% of them were divorced and only 5% of them were widowers. Most of the respondents were nurses (39%), the rest were physicians (34%), pharmacists (13%), occupational therapist (9%) and physical therapist (5%).

Table 1 Socio-demographic Analysis of respondents

Variable	Response	Frequency	Percent
Age	20 to 29 years	32	32.0
	30 to 39 years	31	31.0
	40 to 49 years	24	24.0
	Above 50 years	13	13.0
	Total	**100**	**100.0**
Sex	Male	53	53.0
	Female	40	40.0
	Prefer not to say	5	5.0
	Non-binary/third gender	2	2.0
	Total	**100**	**100.0**
Marital Status	Single	39	39.0
	Married	46	46.0
	Divorced	10	10.0
	Widower	5	5.0
	Total	**100**	**100.0**
Occupation	Physician	34	34.0
	Nurse	39	39.0
	Pharmacy	13	13.0
	Occupational Therapist	9	9.0
	Physical Therapist	5	5.0
	Total	**100**	**100.0**
Religion	Christian	66	66.0
	Muslim	10	10.0
	Judaism	8	8.0
	Hinduism	5	5.0
	Buddhism	11	11.0
	Total	**100**	**100.0**
House Members	1	32	32.0
	2	19	19.0
	3	24	24.0
	<3	25	25.0
	Total	**100**	**100.0**
Financial Situation	No change	33	33.0
	Better than usual	24	24.0
	Worse than usual	43	43.0
	Total	**100**	**100.0**
Experience	>5 years	19	19.0
	5-10 years	42	42.0
	10-20 years	26	26.0
	<20 years	13	13.0
	Total	**100**	**100.0**
Health Sector	Acute care	33	33.0
	Intensive unit	24	24.0
	Home care	16	16.0
	Outpatient clinic	15	15.0
	Emergency	8	8.0
	Others	4	4.0
	Total	**100**	**100.0**
Level of Education	Primary	**7**	**7**.0
	High school/ diploma	27	27.0
	College level	46	46.0
	Postgraduate	20	20.0

Ayeni. AJPHN 2024; 1 (X): - http://doi.org/10.62377/pak29s07

	Total	**100**	**100.0**
COVID-19 Sources	Television	18	18.0
	Social media	51	51.0
	Website of hospital/ health ministry	4	4.0
	Friends	10	10.0
	Relative	17	17.0
	Total	**100**	**100.0**

Knowledge of healthcare workers about COVID-19

Table 2 summarise knowledge of healthcare workers about COVID-19. The pie chart below depicts respondents' knowledge about COVID-19. It indicates that 89.125% of the healthcare workers possess good knowledge related to COVID-19, its symptoms, treatment, and prevention, whereas; 10.875% of the healthcare workers possess poor knowledge.

Table 2 Knowledge of healthcare workers about COVID-19

	Questions	Response	Frequency	Percent
KNW1	Fever, dry cough, difficulty in breathing are the common clinical symptoms of COVID 19	Strongly Agree	66	66.0
		Agree	30	30.0
		Disagree	4	4.0
		Strongly Disagree	0	0.0
		Total	100	100.0
KNW2	Sneezing runny nose, stuffy nose, and headache are less common in persons affected with COVID 19	Strongly Agree	30	30.0
		Agree	49	49.0
		Disagree	17	17.0
		Strongly Disagree	4	4.0
		Total	100	100.0
KNW3	Loss of taste and smell are also common features of COVID-19 infection	Strongly Agree	54	54.0
		Agree	44	44.0
		Disagree	2	2.0
		Strongly Disagree	0	0.0
		Total	100	100.0
KNW4	Currently, there is no treatment for COVID-19 infection, but early symptoms and supportive treatment can help most patients recover from infection	Strongly Agree	42	42.0
		Agree	32	32.0
		Disagree	18	18.0
		Strongly Disagree	8	8.0
		Total	100	100.0
KNW5	Most COVID-19 infective patients will not develop severe illness but elderly patients having chronic illness DM, and COPD are likely to develop severe illness	Strongly Agree	47	47.0
		Agree	35	35.0
		Disagree	18	18.0
		Strongly Disagree	0	0.0
		Total	100	100.0
KNW6	COVID-19 does not affect children	Strongly Agree	42	42.0
		Agree	39	39.0
		Disagree	15	15.0
		Strongly Disagree	4	4.0
		Total	100	100.0
KNW7	A COVID-19-infected person with fever can infect other people	Strongly Agree	57	57.0
		Agree	33	33.0
		Disagree	8	8.0
		Strongly Disagree	2	2.0
		Total	100	100.0
KNW8	COVID-19 virus spread via respiratory droplets	Strongly Agree	44	44.0
		Agree	39	39.0
		Disagree	11	11.0
		Strongly Disagree	6	6.0
		Total	100	100.0

KNW9	Ordinary people should wear a general mask	Strongly Agree	50	50.0
		Agree	42	42.0
		Disagree	8	8.0
		Strongly Disagree	0	0.0
		Total	100	100.0
KNW10	Lockdown is an effective measure to slow down the spread of infection.	Strongly Agree	84	84.0
		Agree	16	16.0
		Disagree	0	0
		Strongly Disagree	0	0
		Total	100	100.0
KNW11	People infected with COVID-19 should immediately be placed in proper isolation	Strongly Agree	96	96
		Agree	4	4
		Disagree	0.0	0.0
		Strongly Disagree	0.0	0.0
		Total	100	100.0
KNW12	Health care professionals with direct contact should take tablet hydroxychloroquine is a prophylaxis	Strongly Agree	32	32.0
		Agree	51	51.0
		Disagree	13	13.0
		Strongly Disagree	4	4.0
		Total	100	100.0
KNW13	COVID-19 is resistant to sanitizers with at least 70% alcohol	Strongly Agree	38	38.0
		Agree	38	38.0
		Disagree	14	14.0
		Strongly Disagree	10	10.0
		Total	100	100.0
KNW14	A COVID-19 vaccine has started to be administered	Strongly Agree	74	74.0
		Agree	26	26.0
		Disagree	0	0.0
		Strongly Disagree	0	0.0
		Total	100	100.0
KNW15	A patient infected with COVID-19 should wear a surgical mask	Strongly Agree	46	46.0
		Agree	46	46.0
		Disagree	8	8.0
		Strongly Disagree	0	0.0
		Total	100	100.0
KNW16	The estimated incubation period is 2-14 days.	Strongly Agree	64	64.0
		Agree	36	36.0
		Disagree	0	0.0
		Strongly Disagree	0	0.0
		Total	100	100.0

Overall Attitude of Healthcare Workers on COVID-19

Table 3 summarise respondents Overall Attitude of Healthcare Workers on COVID-19 The pie chart below depicts healthcare workers' attitudes towards COVID-19 in healthcare facilities in England. It indicates that 73.167% of the healthcare workers have a positive attitude towards COVID-19, whereas; 26.833% of the healthcare workers have a negative attitude towards COVID-19.

Table 3 Overall Attitude of Healthcare Workers on COVID-19

	Question	Response	Frequency	Percent
ATT1	Can England win the battle against Covid-19	Yes	78	78.0
		No	22	22.0
		Total	100	100.0
ATT2	Are you confident about working in a hospital during the COVID-19 pandemic?	Yes	92	92.0
		No	8	8.0
		Total	100	100.0
ATT3		Yes	89	89.0

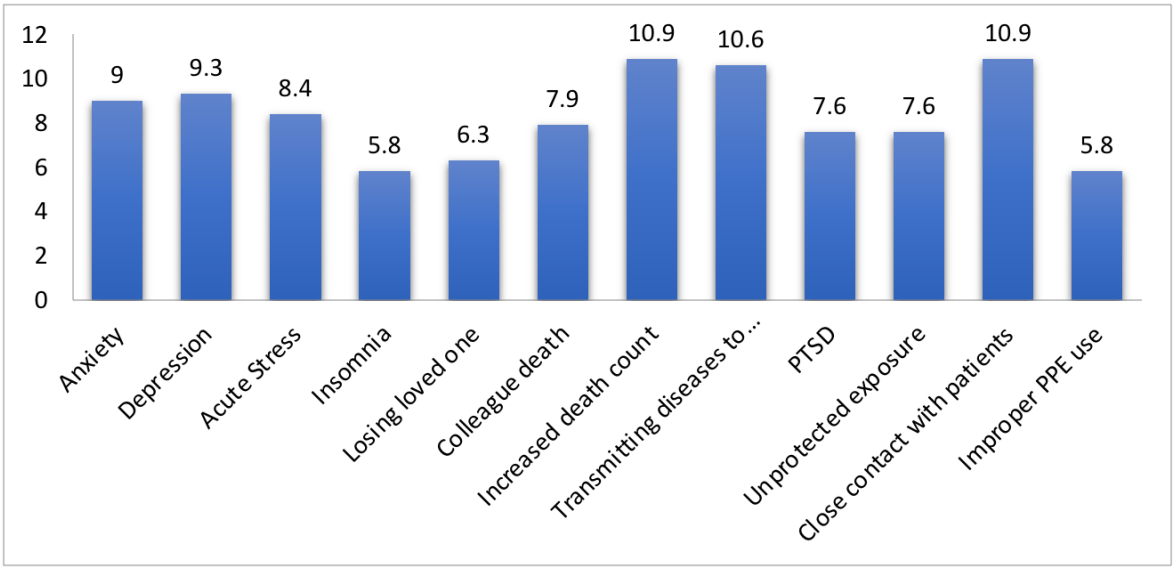
Ayeni. AJPHN 2024; 1 (X): - http://doi.org/10.62377/pak29s07

	Does your family support you to work in the hospital during the pandemic?	No	11	11.0
		Total	100	100.0
ATT4	Do you experience anxiety and fear while working during the pandemic?	Yes	83	83.0
		No	17	17.0
		Total	100	100.0
ATT5	Are you being trained to work for COVID-19 patients?	Yes	87	87.0
		No	13	13.0
		Total	100	100.0
ATT6	Do you regularly follow infection prevention measures?	Yes	100	100.0
		No	0	0
		Total	100	100.0
ATT7	Have you been wearing face mask and gloves during hospital practice?	Yes	96	96.0
		No	4	4.0
		Total	100	100.0
ATT8	Do you feel under pressure as you could carry COVID 19 to your family?	Yes	86	86.0
		No	14	14.0
		Total	100	100.0
ATT9	Do you have sufficient knowledge about protective measures against COVID-19?	Yes	89	89.0
		No	11	11.0
		Total	100	100.0
ATT10	All patients with a confirmed diagnosis of COVID-19 should be admitted to the intensive care unit	Yes	51	51.0
		No	49	49.0
		Total	100	100.0
ATT11	Are you worried about being infected with COVID-19?	Yes	76	76.0
		No	24	24.0
		Total	100	100.0
ATT12	If getting COVID-19, will you accept isolation in health facilities?	Yes	89	89.0
		No	11	11.0
		Total	100	100.0

Mental Health Issues among Healthcare Workers on COVID-19

Table 4 summarises Mental Health Issues among Healthcare Workers on covid 19. The above graph results show that out of 100, 83 respondents have developed mental health problems due to the increasing death count in the country and working in close contact with the infected patients. 81 healthcare workers feel stressed as they feel they will get infected and will transmit the virus to their families.

Table 4 Mental Health Issues among Healthcare Workers

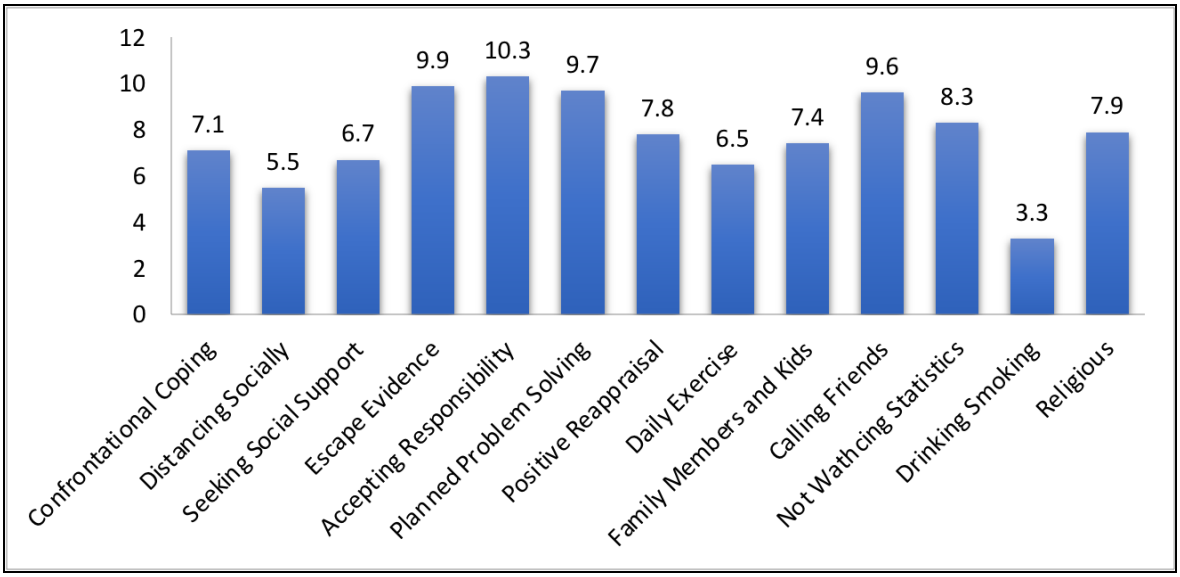


Ayeni. AJPHN 2024; 1 (X): - http://doi.org/10.62377/pak29s07

Respondents Coping Strategies during COVID-19

Table 5 summaries coping strategies implemented by healthcare workers during covid 19. The resulting graph below indicates that out of 100 respondents, 78 respondents declared that accepting responsibility is the best coping strategy for them. 75 respondents revealed that escaping evidence is one of the coping strategies they adopt to relieve their stress, 74 declared planned problem solving and 73 declared calling friends as their coping strategies to relieve mental stress. Out of 100, 63 respondents responded that not watching statistics as the appropriate coping strategy to stay away from mental stress. 60 respondents find mental relief in religiousness and praying. Other coping strategies highlighted during the analysis were positive appraisal (59 respondents), spending time with family members and kids (56 respondents), confrontational coping (54 respondents), seeking social support (51 respondents), daily exercise (49 respondents), social distancing (42 respondents) and only 25 respondents have reported to drink and smoke to relieve stress caused by COVID-19.

Table 5. Respondents Coping Strategies,



HCWs within the age group 30-39 had a slightly positive mean score than other age groups ($p<0.001$). HCWs in the age group 30-39 also had better mental health mean scores than those in other age groups ($p= 0.022$). HCWs with more than 20 years of experience had slightly more significant knowledge mean score than the others ($p=0.006$). Those with less than 5 years of experience had higher mental health mean scores than the rest ($p=0.032$).

Occupational and Physical therapists had slightly higher knowledge mean score than nurses, physicians, and pharmacists ($p=0.016$). Physicians had a higher attitude mean score than the other HCWs ($p=0.001$). COVID-19 sources from relatives had slightly more significant knowledge mean scores than the other sources ($p<0.001$). HCWs whose financial situations are better than usual had a higher mental health mean score than those with no change or worse than usual financial situations ($p=0.015$).

Discussion

Knowledge and Attitude of Healthcare Workers towards COVID-19

The result revealed that healthcare workers possess a good amount of knowledge related to the origin, symptoms, treatment, and precautions related to covid-19 outbreak. Similar results were reported Yıldırım & Güler, (2020) as they also observed that as the situation is new in the healthcare system therefore, they have properly educated their healthcare workers by providing them with proper training to handle the situation. Social media plays a major role in enhancing the knowledge of healthcare workers. Muruganandam et al., (2020) also reported that social media has now become an important source of information as due to this people stay updated with everything going around and keep track of the news. However, Tadesse et al., (2020) argued that social media also spreads negativity because many fake news and statistics that are circulated increase the mental pressure on individuals. The results of the study specified that the majority of the respondents were completely aware of the indications of COVID-19 patients like fever, runny nose, loss of taste and smell, and headache. Also, all the respondents knew that loss of taste and smell are common symptoms of COVID-19 in most of the patients. However, most of the

respondents believed that there is no definitive treatment for COVID-19 but identifying symptoms at the initial stage and providing supportive treatments can help most patients recover from the infection.

It was also indicated through the result that those patients who are already suffering from major health problems such as respiratory or cardiac issues are less likely to recover from the virus. Alrubaiee et al., (2020) also corroborate that patients with low immunity due to other diseases are more prone to coronavirus because of weak health conditions. The results however indicate that most of the healthcare workers agreed that COVID-19 does not affect children.

Mental Health Issues in Healthcare Workers

The result of the study carried out by conducting quantitative analysis revealed that the majority of the healthcare workers reported having some sort of mental health issues because of the ongoing coronavirus outbreak. Answering the second research question it was concluded that the consequences of COVID-19 on the psychological state of healthcare workers are deteriorating as most of them reported developing anxiety, acute stress, depression, and insomnia. Most of the respondents reveal that they get tensed and depressed when they hear about death in the ward, someone in the hospital staff contracting the virus, and an increase in several cases. Other than that, the fear of losing someone dear and working in close contact with the patients increases anxiety levels in most healthcare workers. Similar outcomes were reported by Bakshi et al., (2020) as they found that healthcare workers fear contracting the virus as they are more exposed to the patients, and for that, they wear PPE kits during their duty hours to stay protected. They also reported that when anyone from the hospital gets a virus it increases their stress level, and they take extra measures to protect themselves.

Coping Strategies of Healthcare Workers

It was identified that accepting their current duty in the COVID-19 ward as their responsibility is one of the best coping strategies because when they keep reminding themselves that they are playing the most critical role in fighting against the virus they feel motivated and confident. It was indicated in the literature and analysis that implementing strategies to protect themselves helps healthcare workers more confident because when they are protected and tension-free about their health only then they will be able to provide care to others. The results also indicated that staying away from the current statistics is another way to keep the negativity away because sometimes the statistics are not real and do not depict the actual situation thus misguiding the people. Also taking protective measures, connecting with friends and family, escaping the evidence by not looking at the statistics, and planned problem-solving were also identified as viable coping strategies. Other than that, a few of the respondents also reported that exercising to relax their body and spiritual connection were also effective coping strategies for them to relax their minds.

There are certain limitations of this study that need to be addressed by future researchers to make their study more beneficial and significant. Thus, it is recommended that future researchers conduct qualitative analysis to gain better insights into the responses of the respondents. The reasoning can enhance the significance of the study by increasing its applicability. Secondly, it is recommended that a larger sample size in quantitative analysis can reveal more generalisable results thus future researchers need to survey with a larger sample size. Lastly, involving healthcare workers from more hospitals can increase the generalisability of the results and can provide more extensive findings.

Acknowledgments

I would like to acknowledge Dr Russell Kabir who took the time to read through and implement edits in this manuscript.

References

Ahmed, G.K., Ramadan, H.K.A., Refay, S.M. and Khashbah, M.A., 2021. Comparison of knowledge, attitude, socioeconomic burden, and mental health disorders of COVID-19 pandemic between general population and health care workers in Egypt. The Egyptian Journal of Neurology, psychiatry, and Neurosurgery, 57(1), pp.1-11.

Alrubaiee, G.G., Al-Qalah, T.A.H. and Al-Aawar, M.S.A., 2020. Knowledge, attitudes, anxiety, and preventive behaviours towards COVID-19 among health care providers in Yemen: an online cross-sectional survey. BMC Public Health, 20(1), pp.1-11.

Alwani, S.S., Majeed, M.M., Hirwani, M.Z., Rauf, S., Saad, S.M., Shah, S.H. and Hamirani, F.M., 2020.

Evaluation of knowledge, practices, attitude, and anxiety of Pakistani nurses towards COVID-19 during the current outbreak in Pakistan. MedRxiv.

Bakshi, S., Toshniwal, V., Agrawal, A., Acharya, S. and Shukla, S., 2020. Awareness and psychosocial effects of covid-19 pandemic on healthcare professionals and medical students across the state of Maharashtra. International Journal of Current Research and Review, pp. 5-122.

Baloran, E.T., 2020. Knowledge, attitudes, anxiety, and coping strategies of students during COVID-19 pandemic. Journal of Loss and Trauma, 25(8), pp.635-642.

Bhagavathula, A.S., Aldhaleei, W.A., Rahmani, J., Mahabadi, M.A. and Bandari, D.K., 2020. Knowledge and perceptions of COVID-19 among health care workers: cross-sectional study. JMIR public health and surveillance, 6(2), p.e19160

Cetin, M.H. and Korkmaz, S. (2020). Investigation of the concentration rate and aggregation behaviour of nano-silver added colloidal suspensions on wear behaviour of metallic materials by using ANOVA method. Tribology International, 147, p.106273.

Chatterjee, S.S., Bhattacharyya, R., Bhattacharyya, S., Gupta, S., Das, S. and Banerjee, B.B., 2020. Attitude, practice, behavior, and mental health impact of COVID-19 on doctors. Indian Journal of Psychiatry, 62(3), p.257.

Cortez, P.A., Joseph, S.J., Das, N., Bhandari, S.S. and Shoib, S., 2020. Tools to measure the psychological impact of the COVID-19 pandemic: What do we have in the platter? Asian Journal of Psychiatry, 53, p.102371.

De Vroege, L. and Van Den Broek, A., 2021. Results of mental support for health care professionals and mental care during the COVID-19 pandemic. Journal of Public Health (Oxford, England).

Ejeh, F.E., Saidu, A.S., Owoicho, S., Maurice, N.A., Jauro, S., Madukaji, L. and Okon, K.O., 2020. Knowledge, attitude, and practice among healthcare workers towards COVID-19 outbreak in Nigeria. Heliyon, 6(11), p.e05557.

Grech, V., Gauci, C. and Agius, S., 2020. Vaccine hesitancy among Maltese healthcare workers toward influenza and novel COVID-19 vaccination. Early human development.

Huynh, G., Nguyen, T.N.H., Vo, K.N. and Pham, L.A., 2020. Knowledge and attitude toward COVID-19 among healthcare workers at District 2 Hospital, Ho Chi Minh City. Asian Pacific Journal of Tropical Medicine, 13(6), p.260.

Kassie, B.A., Adane, A., Tilahun, Y.T., Kassahun, E.A., Ayele, A.S. and Belew, A.K., 2020. Knowledge and attitude towards COVID-19 and associated factors among health care providers in Northwest Ethiopia. PloS one, 15(8), p.e0238415.

Kontoangelos, K., Economou, M. and Papageorgiou, C., 2020. Mental health effects of COVID-19 pandemia: a review of clinical and psychological traits. Psychiatry investigation, 17(6), p.491.

Maharlouei, N., Asadi, N., Bazrafshan, K., Roozmeh, S., Rezaianzadeh, A., Zahed-Roozegar, M.H., Shaygani, F., Kharmandar, A., Honarvar, B., Hemyari, C. and Omidifar, N., 2020. Knowledge and Attitude regarding COVID-19 among Pregnant Women in Southwestern Iran in the Early Period of its Outbreak: A Cross-Sectional Study. The American Journal of Tropical Medicine and Hygiene, 103(6), p.2368.

Maheshwari, S., Gupta, P.K., Sinha, R. and Rawat, P., 2020. Knowledge, attitude, and practice towards coronavirus disease 2019 (COVID-19) among medical students: A cross-sectional study. Journal of Acute Disease, 9(3), p.100.

Moitra, M., Rahman, M., Collins, P.Y., Gohar, F., Weaver, M., Kinuthia, J., Rössler, W., Peterson, S.S., Unutzer, J., Saxena, S. and Servili, C., 2021. Mental health consequences for healthcare workers during the COVID-19 pandemic: a scoping review to draw lessons for LMICs. Frontiers in psychiatry, 12, p.22.

Morgul, E., Bener, A., Atak, M., Akyel, S., Aktaş, S., Bhugra, D., Ventriglio, A. and Jordan, T.R., 2021. COVID-19 pandemic and psychological fatigue in Turkey. The International Journal of Social Psychiatry, 67(2), p.128. Mukhtar, S. (2020). Mental health and emotional impact of COVID-19: Applying Health Belief Model for medical staff to general public of Pakistan. Brain, Behavior, and Immunity.

Muruganandam, P., Neelamegam, S., Menon, V., Alexander, J. and Chaturvedi, S.K., 2020. COVID-19 and severe mental illness: impact on patients and its relationship with their awareness about COVID-19. Psychiatry Research, 291, p.113265.

Nemati, M., Ebrahimi, B. and Nemati, F., 2020. Assessment of Iranian nurses' knowledge and anxiety toward COVID-19 during the current outbreak in Iran. Arch Clin Infect Dis, 15(COVID-19), p.e102848.

Nguyen, P.T.L., Nguyen, T.B.L., Pham, A.G., Duong, K.N.C., Gloria, M.A.J., Vo, T.V., Vo, B.V. and Phung, T.L., 2021. Psychological Stress Risk Factors, Concerns, and Mental Health Support Among Health Care Workers in Vietnam During the Coronavirus Disease 2019 (COVID-19) Outbreak. Frontiers in public health, 9, p.232.

Parajuli, J., Mishra, P., Sharma, S., Bohora, K.B., Rathour, P.S., Joshi, J., Kamar, S.B., Pandey, H. and Chaudhary, A., 2020. Knowledge and attitude about COVID-19 among healthcare workers working in Seti Provincial Hospital. Concern, 3, p.5.

Patwary, M. M., Hossain, M. R., Sultana, R., Dazhamyar, A. R., Parsa, A. D., Kabir, R., & Shoib, S. (2022). Knowledge, attitudes, and practices of healthcare professionals toward the novel coronavirus during the early stage of COVID-19 in a lower and middle-income country, Bangladesh. Frontiers in public health, 10,

988063. https://doi.org/10.3389/fpubh.2022.988063
Roy, D., Tripathy, S., Kar, S.K., Sharma, N., Verma, S.K. and Kaushal, V., 2020. Study of knowledge, attitude, anxiety & perceived mental healthcare need in Indian population during COVID-19 pandemic. Asian Journal of Psychiatry, 51, p.102083.
Sallam, M., Dababseh, D., Yaseen, A., Al-Haidar, A., Taim, D., Eid, H., Ababneh, N.A., Bakri, F.G. and Mahafzah, A., 2020. COVID-19 misinformation: Mere harmless delusions or much more? A knowledge and attitude cross-sectional study among the public residing in Jordan. PloS one, 15(12), p.e0243264
Simione, L. and Gnagnarella, C., 2020. Differences between health workers and general population in risk perception, behaviors, and psychological distress related to COVID-19 spread in Italy. Frontiers in Psychology, 11, p.2166.
Sorokin, M.Y., Kasyanov, E.D., Rukavishnikov, G.V., Makarevich, O.V., Neznanov, N.G., Morozov, P.V., Lutova, N.B. and Mazo, G.E., 2020. Stress and stigmatization in healthcare workers during the COVID-19 pandemic. Indian Journal of Psychiatry, 62(Suppl 3), p.S445.
Tadesse, D.B., Gebrewahd, G.T. and Demoz, G.T., 2020. Knowledge, attitude, practice, and psychological response toward COVID-19 among nurses during the COVID-19 outbreak in northern Ethiopia, 2020. New Microbes and New Infections, 38, p.100787
Tan, B.Y., Chew, N.W., Lee, G.K., Jing, M., Goh, Y., Yeo, L.L., Zhang, K., Chin, H.K., Ahmad, A., Khan, F.A. and Shanmugam, G.N., 2020. Psychological impact of the COVID-19 pandemic on healthcare workers in Singapore. Annals of Internal Medicine, 173(4), pp.317-320.
Temsah, M.H., Al Huzaimi, A., Alrabiaah, A., Alamro, N., Al-Sohime, F., Al-Eyadhy, A., Alhasan, K., Kari, J.A., Alhaboob, A., Alsalmi, A. and AlMuhanna, W., 2021. Changes in healthcare workers' knowledge, attitudes, practices, and stress during the COVID-19 pandemic. Medicine, 100(18).
Xu, H., Mendez, M.J.G., Guo, L., Chen, Q., Zheng, L., Chen, P., Cao, X., Liu, S., Sun, X., Zhang, S. and Qiao, Y., 2020. Knowledge, awareness, and attitudes relating to the COVID-19 pandemic among different populations in central China: cross-sectional survey. Journal of medical Internet research, 22(10), p.e22628.
Yıldırım, M. and Güler, A., 2020. COVID-19 severity, self-efficacy, knowledge, preventive behaviors, and mental health in Turkey. Death Studies, pp.1-8.

Creative Commons License Statement

© 2024 The Author(s). Open Access. This article is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits use, sharing, adaptation, distribution, and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the license, and indicate if changes were made. To view a copy of this license, visit https://creativecommons.org/licenses/by/4.0/