PSYCHOLOGICAL AND MENTAL HEALTH IMPACT OF COVID-19 PANDEMIC ON FRONTLINE HEALTH WORKERS IN NIGERIA

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Abstract

Infectious disease outbreaks have always been associated with psychological and mental challenges such as was experienced during the CORONA VIRUS DISEASE 2019 (COVID-19) pandemic. Healthcare workers are often exposed to unique stressors that go beyond typical occupational hazards, affecting their psychological and mental well-being as well as their personal relationships. The purpose of this study was to assess the impact of the COVID-19 pandemic on the Psychological and Mental health of frontline health workers who attended to COVID-19 patients in different healthcare facilities where patients were being diagnosed, referred, and treated during the pandemic in Nigeria. This study utilized standardized and validated instruments of psychological distress (GHQ-12), General Anxiety Disorders (GAD-7), and the WHO Well-Being Assessment questionnaire (WHO-5) on 160 healthcare workers in facilities where COVID-19 patients were being diagnosed, referred, and treated using a descriptive survey research method. The study participants included healthcare professionals from different fields who were drawn through a convenience sampling procedure. All demographic data were analyzed using descriptive statistics of frequency count and percentages, while the research data were analyzed using Analysis of Variance (ANOVA) and independent sample t-test at a p-value of 0.05.. The results revealed that COVID-19 disease significantly caused psychological distress, general anxiety disorders, and affected the well-being of frontline health workers in Nigeria during the COVID-19 pandemic. The study concluded that the mental health challenges faced by healthcare workers during infectious disease outbreaks such as COVID-19 pandemic, represent a critical public health concern that requires systematic attention and evidence-based interventions. It is therefore recommended that comprehensive support strategies should be organized for frontline healthcare workers to protect their psychological and mental well-being during health emergencies and outbreaks.

Keyword: Covid-19, Frontline Health workers, Mental Health, Pandemic, Psychological-Impact

Introduction

The World Health Organization declared COVID-19 a global pandemic after its emergence in Wuhan, China in December 2019. The disease, characterized by symptoms like fever, cough, and breathing difficulties, led to worldwide disruption, including border closures and new safety protocols. The COVID-19 pandemic

created unprecedented challenges for healthcare systems worldwide, placing extraordinary pressure on Frontline Healthcare Workers (HCWs) (Grasselli et al., 2020). The majority of COVID-19 research concentrated on biomedical aspects, including viral biology, transmission patterns, prevention strategies, diagnostic methods, and treatment protocols, however, there is a growing acknowledgment of the need to address the psychological and medical needs of healthcare professionals responding to this unprecedented global health emergency. While The healthcare professionals battled the virus on the frontlines; they faced not only physical health risks but also significant psychological and mental health challenges that have had lasting implications on their wellbeing and professional capacity (Savold et al., 2021). The pandemic has highlighted the vulnerability of healthcare workers to mental health problems, with studies revealing alarming rates of psychological distress among this essential workforce (Li et al., 2021). A landmark investigation that represented one of the first comprehensive examinations of COVID-19 's mental health impact on healthcare workers was conducted in early 2020 across 34 hospitals in China during a period when the country reported over 10,000 confirmed COVID-19 cases. The study, which employed validated psychological assessment instruments, evaluated healthcare workers' levels of depression, anxiety, sleep disturbances, and general psychological distress revealed significant disparities in psychological symptoms based on healthcare workers' roles and responsibilities. Healthcare professionals with direct involvement in COVID-19 patient care experienced markedly more severe mental health symptoms compared to those in supportive or indirect care roles (Wu et al., 2020). This initial research in China, as the

first country severely impacted by COVID-19, underscored the critical need for ongoing mental health monitoring of healthcare workers across all affected nations throughout the pandemic's duration.

Nigerian healthcare workers experienced significant anxiety due to inadequate facilities and insufficient personal protective equipment (PPE). Many chose to isolate themselves from family members to reduce transmission risks. This social isolation, combined with the stress of potential quarantine, took a heavy toll on their mental health. Drawing from the Severe Acute Respiratory Syndrome (SARS) epidemic studies, such conditions were known to lead to acute stress disorder, depression, and post-traumatic stress symptoms. Some workers responded by minimizing patient contact or stopping work entirely. The situation highlighted the need for scientific research to understand COVID-19's impact on frontline healthcare workers' mental well-being and to support their continued effectiveness in fighting future epidemics and pandemics

Statement of the problem
The COVID-19 pandemic had a global devastating impact on the different sectors of the economy, however, healthcare workers on the frontlines bore a larger portion of the burden. The healthcare professionals were directly responsible for diagnosing, treating, and caring for COVID-19 patients, and faced the risks of psychological distress and mental health challenges. In Nigeria, healthcare workers faced additional challenges due to inadequate facilities and insufficient personal protective equipment (PPE). While not being adequately equipped to face the pandemic, many struggle with internal anxiety and distress, particularly when faced with quarantine after

testing positive. To protect their families, many chose self-isolation, either living separately from family members or maintaining distance within their own homes. These disruptions to their social and emotional support systems created ongoing challenges that persisted all throughout the period of fighting the COVID-19 Pandemic. This situation faced by these healthcare workers highlighted the need to examine the psychological toll of COVID-19 on healthcare workers. Therefore, this study aimed at examining the impact of the COVID 19 pandemic on the healthcare workers who were frontliners during the COVID-19 pandemic and recommending evidence-based measures to address the problem.

Purpose of the study

The purpose of this study was to examine the psychological and mental health impact of COVID-19 pandemic on frontline healthcare workers in Nigeri**a**

Objective of the study

The study aimed at achieving the following objectives:

1. Determine the impact of the COVID-19 pandemic on the General Anxiety Disorder experienced by healthcare workers in Nigeria.
2. Assess the impact of the COVID-19 pandemic on psychological distress experienced by frontline healthcare workers in Nigeria.
3. Investigate the impact of the COVID-19 pandemic on the well-being of frontline healthcare workers in Nigeria.

Research Questions

1. What is the impact of the COVID-19 pandemic on General Anxiety Disorder experienced by frontline healthcare workers in Nigeria?
2. What is the impact of the COVID-19 pandemic on the psychological distress experienced by frontline healthcare workers in Nigeria?
3. What is the impact of the COVID-19 pandemic on the well-being of frontline healthcare workers in Nigeria?

Research Hypotheses:

1. H0: The COVID-19 pandemic had no significant impact on General Anxiety Disorders experienced by health workers in Nigeria
2. H0: The COVID-19 pandemic had no significant impact on Psychological distress experienced by frontline health workers in Nigeria
3. H0: The COVID-19 pandemic had no significant impact on the well-being of frontline healthcare workers in Nigeria

Literature Review

Infectious disease outbreaks has always been associated with psychological challenges such as was experienced during the 2014 to 2016 West African Ebola epidemic and the Covid-19 pandemic. Nigeria, with its population of over 200 million and already strained healthcare system, faced different challenges in combating the COVID-19 pandemic. The country's first case was recorded on February 27, 2020, through an Italian visitor. From this period, healthcare workers found themselves on the frontlines, working under difficult conditions while facing multiple risks ranging from virus exposure to mental health challenges and family separation. Healthcare workers were particularly vulnerable during the pandemic, with some infections

occurring from patients who had subclinical coronavirus infections and presented to hospitals with other conditions while concealing vital information about their exposure history.

As of the early period of the pandemic, in the mid-year of 2020, 812 (NCDC, 2021) healthcare personnel (representing 6.5% of the positive cases were reported to have contracted COVID-19, and since March 2020, more than 150,400 COVID-19 infections in health workers across the African Region were reported, accounting for about 70% of all COVID-19 infections reported in health workers. Between the outset of the pandemic in 2020 and the midyear of 2022, Nigeria recorded a total case of 260, 764, while as of the 2020-2021 period, Africa had reported 7,110,817 total cases (Statista, 2022).

At the early stage of the COVID 19 pandemic, the majority of research studies concentrated on biomedical aspects, including viral biology, transmission patterns, prevention strategies, diagnostic methods, and treatment protocols, thereafter there arose a growing acknowledgment of the need to address the psychological and medical needs of healthcare professionals responding to this unprecedented global health emergency (Wu et al., 2020; Graselli et al., 2020; Savold et al., 2021)]. A landmark investigation that represented one of the first comprehensive examinations of COVID-19 's mental health impact on healthcare workers was conducted in early 2020 across 34 hospitals in China during a period when the country reported over 10,000 confirmed COVID-19 cases. This initial research in China, which employed validated psychological assessment instruments, evaluated healthcare workers' levels of depression, anxiety, sleep disturbances, and general psychological distress revealed significant disparities in psychological symptoms based on healthcare workers' roles and responsibilities. Additionally, as the first country severely impacted by COVID-19, the study underscored the critical need for ongoing mental health monitoring of healthcare workers across all affected nations throughout the pandemic's duration. (Sovold et al., 2021

Mental health conditions experienced commonly during the COVID 19 pandemic include: Depression: Research has revealed concerning rates of depression among healthcare workers during the COVID-19 pandemic. A comprehensive systematic review and meta-analysis found that the pooled prevalence of depression was 21.7% among healthcare workers globally with a higher rate, recorded by another study revealing one-third of healthcare workers suffered from depression during the COVID-19 pandemic demonstrating the widespread nature of this mental health challenge (Sialakis et al., 2023).

Anxiety disorders: were equally reported to be prevalent among frontline healthcare workers. Studies have shown that a great proportion of the frontline healthcare workers suffered from anxiety and depression, since frontline healthcare professionals treating patients with COVID-19 are likely to be exposed to the highest risk of being infected as a result of their close, frequent contact with COVID-19 patients (Deng & Naslung, 2020). Fear of the unknown or becoming infected were at the forefront of the mental challenges faced by healthcare workers. This fear manifested in various ways, including persistent worry about contracting the virus, concerns about transmitting it to family members, and anxiety about the adequacy of personal protective equipment (PPE) (Cabarkapa et al, 2020)

Post-traumatic stress disorder (PTSD): also emerged as a significant mental health concern among healthcare workers during the pandemic. Longitudinal studies have shown that the PTSD prevalence rate in healthcare workers increased from 10.73% at the beginning of the pandemic to 20.84% later in the pandemic period, indicating a worsening trend over time (Ouyang et al, 2022). The mental health impact of COVID-19 on healthcare workers has shown persistence over time with healthcare workers reporting significantly higher PTSD scores at later stages of the pandemic compared to earlier stages, suggesting that the psychological burden may worsen with prolonged exposure to pandemic-related stressors (Ouyang et al, 2022).

Sleep Related Disturbances were additionally commonly experienced by Healthcare workers as most health care workers experienced significant sleep disturbances, with close contact with COVID-19 cases being a predictor of higher levels of anxiety, depression and insomnia with other surveys suggesting higher rates of psychological stress, depression, anxiety and insomnia for the group (Tomlin et al, 2020). ~~Emotional Distress and Burnout~~
Emotional Distress and Burnout were also experienced by Health care workers as the pandemic resulted in elevated psychological distress, burnout, and increased risk of mental illness among healthcare workers with high levels of depression, stress, anxiety, distress, anger, fear, insomnia, and post-traumatic stress disorder were documented across various healthcare settings (Shaukat et al, 2020),

The overall mental health impact of COVID-19 pandemic has been substantial. A systematic review of 65 studies from around the world involving 97,333 health care workers found that one in five have experienced depression, anxiety, and/or PTSD while the COVID-19 pandemic disease was ongoing (Sialakis et al, 2023). Among public health workers specifically, 53% reported symptoms of at least one mental health condition in the past 2 weeks during the pandemic period (US CDC, 2021)

Methodology
This study utilized a quantitative cross-sectional survey design implemented through digital data collection methods. A structured questionnaire was developed using Google Forms (Google LLC, Mountain View, CA), a cloud-based survey platform, and distributed electronically via WhatsApp Messenger (Meta Platforms, Inc.) to ensure broad accessibility among the target demographic. The cross-sectional study examined the demographic factors of the participants. It also examined the Psychological distress, the general anxiety disorder and the overall mental wellbeing of the participants during the COVID 19 Pandemic. The population of the study comprised frontline health workers; Doctors, Nurses, Pharmacists, Medical Laboratory Personnel, Health Information Personnel, Radiographers and others that worked in isolation centers and healthcare facilities where Covid-19 disease was treated in different states across the country. The sample for the study comprised 160 healthcare workers who were drawn through convenience sampling technique and recruited from healthcare facilities which served as treatment centres for COVID-19 disease.

A Google form survey platform was used for data collection. The questionnaire was structured into four sections to elicit demographic information, and information on the three variables stated in the hypotheses which are: Psychological Distress, Mental Wellbeing and,

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and General anxiety. Section A was assessed using self-structured demography questionnaire, while sections B, C and D contain assessment on psychological distress, wellbeing assessment, and General Anxiety Disorder (GAD) and were assessed using standardized instrument of World Health Organization (WHO) Wellbeing Assessment Questionnaire (WHO-5), General Anxiety Disorder Questionnaire(GAD-7) and Pschological distress (GHQ-12) . The validity and reliability of the Research Instrument were ascertained through the use of questionnaire adapted from standardized instruments that have been developed, tested, and used for a long period of years with established psychometric properties which are valid over the years. However, a pre-test of the instrument was conducted by administering the questionnaire to 10 participants who were not part of the original study to determine any issues that might come up in the course of the study and ascertain the reliability of the instrument. Identified ambiguous questions were restructured and the flow of questions was modified.

The questionnaire was administered online through Google Forms design. The respondents were recruited through social media platforms of different health care workers in health care facilities where COVID-19 disease was treated across the country. Survey responses were automatically validated through Google Forms' built-in validation features. Duplicate responses were prevented through email verification and one-response-per-device settings. Incomplete responses were excluded. The responsive design ensured compatibility across different device types and screen sizes, and Google Forms' secure infrastructure was utilized to protect participant data, with responses stored on Google's encrypted servers. Ethical considerations were observed by obtaining informed consent of the participants through an initial consent page in the Google Form. Privacy Protection was ensured by pre-informing the Participants about data usage and storage. The survey was designed anonymously with no personally identifiable information collected to ensure confidentiality, and voluntary participation was indicated with clear information about the right to withdraw at any point. Survey responses were automatically compiled in Google Sheets and subsequently exported to Excel and R for statistical analysis. The data was analyzed using the descriptive statistics of frequency count and Percentages, for the presentation of the socio-demographic and independent sample t-test for the research data at a p-value of less than 0.05 alpha.

Results

Table 1: Responses on the socio-demographic assessment of the participants

	Frequencies	**Percentages**
Gender		
Male	56	35.0
Female	104	65.0
Total	160	100
Age		
20-29	25	15.6
30-39	98	61.3
40 years& above	37	23.1
Total	160	100
Marital Status		
Single	38	23.8
Married	119	74.3
Widow/widower	3	1.9
Total	160	100
Education		
College/University	154	96.3
Non graduate	6	3.7
Total	160	100
Job Designation		
Doctor	16	10.0
Nurse	36	22.5
Pharmacy	25	15.6
Medical Laboratory	20	12.5
Health Information	24	15.0
Radiography/Sonography	7	4.4
Others	32	20.0
Total		
	160	100.0

In Table 1, the percentages of the age distribution of the participants revealed age group 20-29 years (15.6%), 30-39 years (61.3%), 40 years and above (23.1%). In the gender distribution, the male constituted 35.0% while the female constituted 65.0%, no other gender group was indicated. The indications under the educational level revealed 96.3 % of the participants obtained

college/university qualifications while 3.7 % were non-graduates. The marital status revealed 23.8% were single, 74.3% were married and 1.9% widow/widowed. The job description of the participants further revealed 10.0 % were doctors, 22.5% Nurses, 15.6% from pharmacy, 12.5% from the medical laboratory, 15.0% from health information, 4.4 from radiography while 20.0% were categorized under the other health care workers.

Hypothesis Testing

Hypothesis 1: H0: The COVID-19 pandemic had no significant impact on General Anxiety Disorders experienced by health workers in Nigeria

Table 1.1: Descriptive Statistics on impact of the COVID-19 pandemic on General Anxiety Disorders experience among frontline health workers

Dependent Variable: Job Designation

Having trouble relaxing	Becoming easily annoyed or irritable	Mean	Std. Deviation	N
Not at all	Not at all	1.6522	.48154	46
	Total	1.6522	.48154	46
Less than usual	Less than usual	2.7391	.44898	23
	Same as usual	3.0000	.00000	4
	Total	2.7778	.42366	27
Same as usual	Same as usual	4.2632	.64449	38
	Total	4.2632	.64449	38
More than usual	Same as usual	5.0000	.00000	5
	More than usual	6.9773	.99974	44
	Total	6.7755	1.12297	49
Total	Not at all	1.6522	.48154	46
	Less than usual	2.7391	.44898	23
	Same as usual	4.2340	.72869	47
	More than usual	6.9773	.99974	44
	Total	4.0313	2.19325	160

Table 1.2: Tests of Between-Subjects Effects

Dependent Variable: Job Designation

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	691.628[a]	5	138.326	290.952	.000
Intercept	1891.557	1	1891.557	3978.676	.000
Q4	9.057	2	4.529	9.525	.000
Q6	17.785	2	8.893	18.705	.000
Q4 * Q6	.000	0	.	.	.
Error	73.215	154	.475		
Total	3365.000	160			
Corrected Total	764.844	159			

a. R Squared = .904 (Adjusted R Squared = .901)

Q4   Having trouble relaxing?

Q6   Becoming easily irritable or annoyed?

Decision: Reject the null hypothesis and accept the alternate if P <0.0005

From the above test, p = 0.000 which is less than 0.0005, therefore Covid-19 Pandemic has a significant difference on anxiety disorder experienced by healthcare workers in Nigeria

Table 1.3: Homogeneous Subsets
Job Designation

Becoming easily annoyed or irritable	N	Subset			
		1	2	3	4
Not at all	46	1.6522			
Less than usual	23		2.7391		
Same as usual	47			4.2340	
More than usual	44				6.9773
Sig.		1.000	1.000	1.000	1.000

Means for groups in homogeneous subsets are displayed.

Based on observed means.

The error term is Mean Square(Error) = .475.

a. Uses Harmonic Mean Sample Size = 36.623.

b. The group sizes are unequal. The harmonic mean of the group sizes is used. Type I error levels are not guaranteed.

c. Alpha = .05.

Table 1.4: T-Test
Group Statistics

	Job Designation	N	Mean	Std. Deviation	Std. Error Mean
Becoming easily annoyed or irritable	Medical Doctor	16	1.0000	.00000	.00000
	Nurse	36	1.1667	.37796	.06299

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Becoming easily annoyed or irritable	Equal variances assumed	19.231	.000	-1.754	50	.086	-.16667	.09501	-.35751	.02418
	Equal variances not assumed			-2.646	35.000	**.012**	-.16667	.06299	-.29455	-.03878

From the above table, the value of Sig(2-tailed) is 0.012 which is less than 0.05, therefore we reject the null hypothesis, therefore, Covid-19 Pandemic has a significant difference on anxiety disorders experienced by healthcare workers in Nigeria

Hypothesis 2: H0: The COVID-19 pandemic had no significant impact on Psychological distress experienced by health workers in Nigeria.

Table 2.0: T-Test for Psychological Distress
Group Statistics

	Felt you were playing a useful part in your job	N	Mean	Std. Deviation	Std. Error Mean
Job Designation	Not at all	18	1.1111	.32338	.07622
	Less than usual	18	2.0000	.00000	.00000

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
									Lower	Upper	
Job Designation	Equal variances assumed	11.102	.002	-11.662	34	.000	-.88889	.07622	-1.04379	-.73399	
	Equal variances not assumed			-11.662	17.000	.000	-.88889	.07622	-1.04970	-.72808	

Independent sample t-test showing the impact of Covid-19 Pandemic on Psychological distress experience of frontline healthcare workers in Nigeria. From the above table, the value of Sig(2-tailesd) is 0.000 which is less than 0.05, therefore we reject the null hypothesis, implying Covid-19 Pandemic has a significant effect on Psychological distress experienced by frontline healthcare workers in Nigeria

Hypothesis 3
Hypothesis 3: H0: The COVID-19 pandemic had no significant impact on the well-being of frontline healthcare workers in Nigeria

Table 3.0: T-Test for Mental Wellbeing Status

Group Statistics

	Job Designation	N	Mean	Std. Deviation	Std. Error Mean
Felt calm and relaxed	Medical Doctor	16	1.3125	.47871	.11968
	Nurse	36	2.1667	.37796	.06299

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means							
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference		
									Lower	Upper	
Felt calm and relax Ed	Equal variances assumed	4.724	.035	-6.920	50	.000	-.85417	.12343	-1.10208	-.60626	
	Equal variances not assumed			-6.316	23.684	.000	-.85417	.13524	-1.13350	-.57484	

From the above table, the value of Sig (2-tailed) is 0.000 which is less than 0.05, therefore we reject the null hypothesis, implying Covid-19 Pandemic has a significant difference on the mental well-being of healthcare workers in Nigeria.

Discussion

From the analysis of the research data, the Psychological distress assessment (GHQ-12), revealed a significant impact of COVID 19 Pandemic on the psychological distress experienced by frontline healthcare workers during the pandemic. This finding is in line with the study of Wu, Styra and Gold (2020) which established the experience of psychological distress by health care workers as a result of provision of direct care to patients, experience of vicarious trauma, quarantine and subjection to personal isolation in some cases. The finding is further corroborated by the study of Li et al., 2021, which revealed alarming rates of psychological distress among this essential workforce. Additionally, from the General Anxiety Disorder Assessment, among the frontline health workers, the result of this study revealed a significant effect of the pandemic on the general anxiety disorder experienced by the frontline health care workers, This finding is further supported by the study of Jiambo et al., 2020 which reported high rate of symptoms of anxiety disorders experienced by the frontline health care workers. Furthermore, the wellbeing assessment of the frontline health workers using the WHO-5 assessment revealed the impact of COVID-19 pandemic on the wellbeing of frontline health workers. This finding received a further support by the early studies of Lai, et al., 2020, Wu et

al., 2020 and Savold et al., 2021 which reported high rates of symptoms of depression, anxiety, insomnia, and distress among frontline health workers responding to the spread of COVID-19 pandemic with the pandemic having unprecedented impact on the mental health and well-being of health workers on the frontlines of pandemic response efforts,

Conclusion

This study evaluated the psychological distress, mental wellbeing and the general anxiety disorders experienced by healthcare workers in various health care facilities where Covid19 disease was being diagnosed, referred and treated. Our findings showed that frontline healthcare workers employed in the fight against the spread of COVID 19 pandemic in Nigeria reported high rates of psychological distress, general anxiety disorders and reduced mental wellbeing, thereby establishing that frontline health care workers are at the highest risk of psychological distress, general anxiety disorders and reduced mental wellbeing during the COVID-19 outbreak. This study therefore concludes that the mental health challenges faced by healthcare workers during infectious disease outbreaks such as COVID-19 Pandemic, represent a critical public health concern that requires systematic attention and evidence-based interventions.

Recommendations

Protecting health care workers is an important component of public health measures in the period of disease outbreaks. It is therefore recommended that comprehensive support strategies should be organized for frontline healthcare workers to protect their psychological and mental well-being during health emergencies and outbreaks through pre response mental well-being preparedness for health workers, special interventions and constitution of health care workers mental health support team in health care facilities

References

Cabarkapa, S., Nadjidai, S. E., Murgier, J., & HNg, C. (2020) The Psychological impact of COVID-19 and other viral epidemics on frontline healthcare workers and ways to address it: A rapid systematic review. PMCID: PMC7494453 PMID: 32959031 https://pmc.ncbi.nlm.nih. gov/articles/PMC7494453/

Cavallo JJ, Donaho DA , & Forman HP . Hospital capacity and operations in the coronavirus disease (COVID-19) pandemic: planning for the Nth patient. *JAMA Health Forum*. 2020;1(3):e200345. doi:10.1001/jamahealthforum.2020.0345ArticleGoogle Scholar

Deng D. & Naslund, J. A. (2020) Psychological Impact of COVID-19 Pandemic on Frontline Health Workers in Low- and Middle-Income Countries. PMCID: PMC7785092 NIHMSID: NIHMS1639166 PMID: 33409499

Grasselli G , Pesenti A , & Cecconi M (2020) . Critical care utilization for the COVID-19 outbreak in Lombardy, Italy: early experience and forecast during an emergency response [published online March 13,2020]. *JAMA*. doi:10.1001/jama. 2020.4031

Jessica G. (2020), The Covid-19 crisis too few are talking about: health care workers' mental health https://www. statnews.com/2020/04/03/the-covid-19-crisis-too-few-are-talking-about-health- care-workers-mental-health/

Joanna, R., Haja, W., & Witter, S., (2018) Health workers' experiences of coping with the Ebola epidemic in Sierra Leone's health system: a qualitative study. BMC Health Services Research (2018) 18:251 https://doi.org/10.1186 /s12913-018-3072-3

Jiambo, L., Simeng, M., & Ying,W., (2020) Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open*.2020;3(3) :e203976. doi:10.1001/jamanet workopen.2020.3976ArticlePubMedGoogle Scholar

Keohane, L M. (2020) Expanding ventilator capacity: the need for state and regional planning [published online April 1, 2020]. *JAMA Health Forum*. doi:10.1001/jamahealthforum.2020.0397 Article Google Scholar

Li , Y., Scherer, N., Felix, L., Kuper, H., (2021) Prevalence of depression, anxiety and post-traumatic stress disorder in health care workers during the COVID-19 pandemic: A systematic review and meta- analysis, *PLOS One*, 16(3), e0246454. https://doi.org/ 10.1371/journal.pone.0246454

Mason, D. J., & Friese, C. R. (2020) Protecting health care workers against COVID-19—and being prepared for future pandemics. *JAMA Health Forum*. 2020; 1(3):e200353. doi: 10.1001 /jamahealthforum.2020.0353ArticleGoogle Scholar

Muller, A.E., Hafstad, E.V., Himmels, J.P.W., Smedslund, G., Flottorp, S., Stensland, S., Stroobants, S., Velde, S.V., & Vist, G. E (2020). The mental health impact of the covid-19 pandemic on healthcare workers, and interventions to help them: A rapid systematic review doi: 10.1016/j. psychre .2020.113441.

NDDC (2021) Covid-19 Daily Update in Nigeria, July 20, 2020 published by Samuel Oyekanmi, Nairametrics

Ning, L., Jia, H., Yu, J., Gao, S., Shang, P., Cao, P., Yu, X. (2022) Mental health among healthcare workers during the prolonged COVID-19 pandemic: A cross-sectional survey in Jilin Province in China. doi: 10.3389/fpubh.2022.1030808. eCollection 2022.

Ouyang, H., Geng, S., Zhou, Y., Wang, J., Zhan, J., Shang, Z., Jia, Y., Yan,W., Zhang, Y., Li, X., & Liu, W.(2022)The increase of PTSD in affront-line health care workers during COVID-19 pandemic and the mediating role of risk perception: a one-year follow-up study

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Shaukat, N., Ali, D. M., & Razzak, J. (2020) Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review. PMID: **32689925** 2020 Jul 20;13(1):40.doi: 10.1186/s12245-   020-00299-5.

Sialakis C., Sialaki P. A., Frantzana A., Iliadis C., Ouzounakis P., Kourkouta L. (2023) Prevalence of anxiety and depression of health care workers during COVID-19 – a systematic review and meta-analysis. PMCID: PMC10419692 PMID: 37577023

Siddharth, C. &Mutahi K. (2021)Health workers are the frontline soldiers against COVID-19. Let's protect them retrieved from: https://www.un. org/africarenewal/web-features/coronavirus/health-   workers-are-frontline-soldiers-against-covid-19-let's-protect-them

Søvold, L. E., Naslund, J. A., Kousoulis, A. A., Saxena, S., Qoronfleh, M. W., Grobler, C., & Münter, L.   (2021) Prioritizing the Mental Health and Well-Being of Healthcare Workers: An Urgent Global   Public Health Priority. *Front. Public Health* 9:679397. doi: 10.3389/fpubh.2021.679397

Sun, P., Wang, M., Song, T., Wu, Y., Luo, J., Chen, L., & Yan, L.(2021) The Psychological Impact of COVID-19 Pandemic on Health Care Workers: a systematic Review and Meta-Analysis.
https://www.frontiersin.org/journals/psychology/articles/10.3389/fpsyg.2021.626547/full

Statista (2022) Cumulative number of Corona Virus Cases (COVID-19) in Nigeria from February 28, 2020   to   July   26,   2022)   https://www.statista.com /statistics/1110879/coronavirus-cumulative-cases-in-nigeria/

This Day Newspaper (2020) Nigeria: Protecting Health Workers Against COVID-19 PandemicPublished 9th April,   2020   retrieved   from:https:// allafrica.com/stories/202004090416.html

Tomlin, J., Dalgleish-Warburton, B., & Lamph, G.(2020) Psychological Support for Healthcare Workers   During the COVID-19 Pandemic. https://www.frontiersin.org/journals/ psychology   /articles/10.3389/fpsyg.2020.01960/full

US CDC. (2021). Symptoms of Depression, Anxiety, Post-Traumatic Stress Disorder, and Suicidal Ideation   Among State, Tribal, Local, and Territorial Public Health Workers During the COVID-19 Pandemic. *MMWR*, 70(26), 947-952.

WHO (2020) Corona virus disease (COVID-19) outbreak: rights, roles and responsibilities of health workers, including key considerations for occupational safety and health March, 2020

Wu, P. E., Styra, R., & Gold, W. I., (2020) Mitigating the psychological effects of COVID-19 on health care workers 192 (17) E459-E460; DOI: CMAJ April 27, 2020 https://doi.org/10.1503/cmaj.200519

1.   Xiao H, Zhang Y, &Kong D,. The effects of social support on sleep quality of medical staff treating patients with corona virus disease 2019 (COVID-19) in January and February 2020 in China. *Med Sci Monit* 2020*;*26*:*e923549.