

The Mental Well-Being of Physicians in Nigeria during the COVID-19 Pandemic

Dabota Yvonne Buowari¹, Aminat Oluwabukola Jimoh², Ogechukwu Mary-Anne Isokariari³, Mary Oluwakemisola Agoyi⁴, Omoadoni Diana Emeagui⁵, Nana Awaya Emeribe⁶, Evonemo Susan Esievoadje⁷, Chioma Laura Odimegwu⁸, Vivian Ifeoma Ogbonna⁹

¹Department of Accident and Emergency, University of Port Harcourt Teaching Hospital, Port Harcourt, ²Department of Community Medicine, University of Port Harcourt Teaching Hospital, Port Harcourt, Rivers State, Nigeria, ³Department of Surgery, Ahmadu Bello University Teaching Hospital, Kaduna State, ⁴Association of Medical Students of the University of Lagos Secretariat, College Library Alley, College of Medicine of the University of Lagos, Lagos University Teaching Hospital, Idi-Araba, Lagos, Departments of ⁵Paediatrics and ⁶Family Medicine, Federal Medical Centre, Delta State, ⁷Department of Community Medicine, Jos University Teaching Hospital, Jos, Plateau State, ⁸Department of Paediatrics, University of Nigeria Teaching Hospital and Faculty of Medical Sciences, University of Nigeria, Ituku Ozalla, Enugu State, Nigeria

Abstract

Background: The Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), the causative agent of the coronavirus disease-2019 (COVID-19) has caused a crisis in healthcare systems worldwide. Doctors are on the frontline in the fight against this war. The frontline workers are putting in all their efforts and skills to caring for patients who have contracted this novel contagious virus. The mental well-being of doctors is important. The SARS-CoV-2 has become a nosocomial infection and occupational hazard to healthcare workers. **Aim:** The aim is to investigate the mental well-being of doctors' practicing in Nigeria during the COVID-19 pandemic. **Materials and Methods:** This is part of a larger study. It is a cross-sectional survey carried out among doctors in Nigeria. Two questionnaires were adapted and used for this which included the World Health Organisation (WHO-5) well-being index, a validated and reliable short questionnaire on mental well-being. Participants in the study were recruited online. The research populations are doctors and dentists working in Nigeria. **Results:** The participants were 302 comprising 195 (64.6%) women doctors. The mean WHO well-being index for women was 69.90 ± 18.81 , $t = 3.295$; $P = 0.001$ which was statistically significant. Multiple regression analysis of predictors of WHO well-being among medical doctors amidst the COVID-19 pandemic for the female gender coefficient = -4.384 ; $P = 0.048$. The female gender was a predictor of poor well-being. **Conclusion:** The mental well-being of doctors is very important. Female doctors had significantly lower mental well-being compared to their male counterparts. Physicians should have access to psychological support from their employers regularly.

Keywords: Coronavirus disease-2019, physicians, severe acute respiratory syndrome coronavirus-2, well-being

INTRODUCTION

In January 2020, the World Health Organisation (WHO) declared the outbreak of a new coronavirus disease 2019 (COVID-19) to be a public health emergency of international concern.^[1] WHO categorised Nigeria as one of the 13 high-risk African countries with regard to the spread of COVID-19 and following the declaration, the Coronavirus Preparedness Group was constituted on January 31 in Nigeria.^[2]

Healthcare workers are the frontline fighters against the COVID-19 pandemic. This has introduced multiple stressors and burdens with heavy workloads in extremely stressful conditions. In addition, at the same time, their resources are lacking required to care for patients. Healthcare workers

are now faced with a high risk of exposure to the virus is potentially jeopardy to both their health lives and their families.^[3] The COVID-19 pandemic has caused a crisis in healthcare systems. The physician's pledge states that "I will attend to my health, mental well-being and abilities to provide care of the highest standard"^[4] which means that the mental

Address for correspondence: Dr. Dabota Yvonne Buowari, Department of Accident and Emergency, University of Port Harcourt Teaching Hospital, Port Harcourt, Rivers, Nigeria. E-mail: dabotabuowari@yahoo.com

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Buowari DY, Jimoh AO, Isokariari OM, Agoyi MO, Emeagui OD, Emeribe NA, *et al.* The mental well-being of physicians in Nigeria during the COVID-19 pandemic. Niger J Med 2022;31:569-75.

Submitted: 15-Apr-2022

Revised: 29-Jun-2022

Accepted: 03-Oct-2022

Published: 29-Nov-2022

Access this article online

Quick Response Code:



Website:
www.njmonline.org

DOI:
10.4103/NJM.NJM_52_22

health and well-being of the physicians are very important. The physician needs to have stable mental well-being. According to the WHO, healthcare workers should protect their mental health and psychological well-being during the COVID-19 pandemic.^[5] This is important because there is the possibility that it may affect their psychological and mental well-being.^[6] The COVID-19 pandemic has caused a lot of psychological problems among the populace including healthcare workers.^[7] It is uncertain how long the COVID-19 pandemic will last, it is presumed that some of its effects on mental health may be long-term,^[8] therefore, self-care is very important. A necessary dimension of quality of life is subjective well-being.^[9] The two components that make up well-being are the carrying out of daily routine satisfactorily and the feeling that one is healthy. It is necessary to study the well-being of healthcare workers during the COVID-19 pandemic because it has been demonstrated in literature that there is a direct relationship between psychological, physical, and mental well-being.^[10]

Literature review

The psychological well-being of doctors and nurses working on the frontline in Nigeria during the COVID-19 pandemic was investigated. The respondents in this Nigerian study showed that there was a significant risk for depression which was considered to be due to several factors which may be emotional and social.^[7]

A cross-sectional web-based survey on the mental health impact of COVID-19 on healthcare workers in the United States of America reported 49% with an abnormal perceived stress score-4 score.^[3] A survey by the British Medical Association revealed that increased stress, anxiety, and emotional exhaustion are some of the effects of the COVID-19 pandemic on doctors in the United Kingdom.^[11] A web-based survey in Oman on the impact of the COVID-19 outbreak on the physicians' mental health showed an impact on physicians' mental health, especially among the female and young physicians.^[12] A web survey done on the impact of COVID-19 on doctors' well-being during the lockdown in Italy registered 58.9% with poor well-being and 93.8% with psychological distress among the doctors' especially those who worked in the most affected regions.^[1]

There has been more than 1.3 million death toll to COVID-19 globally. Some healthcare workers have lost their lives as they are in crucial roles throughout the response, yet they continue to serve at the front lines.^[13] Therefore, it is necessary that the leaders in the healthcare systems which are the hospital managers and administrators ensure that healthcare workers have access to mental health services since they are prone to psychological distress and suicide during the COVID-19 pandemic.^[14] This is because the healthcare workers are exposed to the infection and are at risk of contracting the virus in the course of their work during outbreaks of infectious diseases. Short- and long-term impacts on the mental health of the healthcare workers are imminent.^[3,12] The role of Nigerian

doctors is paramount as the frontline workers in containing the virus in Nigeria. There has been a dearth of literature assessing the mental well-being of Nigerian doctors during the COVID-19 pandemic as more focus has been on minimising or aborting the risk of transmission in society. Hence, the basis for this study is to assess the mental well-being of the doctors in Nigeria during the COVID-19 pandemic.

MATERIALS AND METHODS

This web-based cross-sectional study was conducted in Nigeria. The population for this study comprised dental and medical practitioners working in Nigeria irrespective of their race, nationality, or specialty. The participants in the study were recruited online by distributing the questionnaire on various doctors' and dentists' WhatsApp and telegram platforms. Data were collected for four months from September 11 to December 24, 2020.

The mental well-being of participants in this study was assessed in this study by adapting two questionnaires. These are the WHO-5 well-being index and WHO RD Blueprint Novel Coronavirus Research Protocol April 2020. The questionnaire comprised sections on demographics and assessment of mental well-being. The first section of the research instrument comprised of questions related to the sociodemographics which include the age at the last birthday, gender, marital status, location of the respondent who worked in an urban or rural setting, cadre/rank, department of the hospital where the respondent is structured into departments, hospital ownership structure, job role, number of children living in the home and if the respondent had a caring responsibility for an adult with a disability or senior citizen above the age of 70 years.

A WHO-5 well-being index is a tool used for the evaluation and screening of depression and psychological well-being comprising five questions.^[7,9,10,14-20] It was drafted by the WHO in a survey on quality of care in patients with insulin-dependent diabetes mellitus in Europe. In 1998, the regional office of the WHO in Europe introduced the WHO-5 during the DEPCARE Project on well-being.^[16] The WHO-5 is a short research tool that measures mental well-being in the past two weeks that can be self-administered.^[16,19] It was first published in 1998, with more than 30 translations used in various research globally.^[21] It has been used in various studies and translated into several languages.^[16] The WHO-5 is a valid, reliable, and psychometrically sound tool for the assessment of mental and psychological well-being.^[7,9,10,17-19] The English version of the WHO-5 and the various translations into other languages such as Persian, Swahili, Turkish, Japanese, Bangla, and Farsi are valid and reliable by various studies with good internal consistency and psychometric properties.^[7,10,11,18-20,22,23] Therefore it is considered an appropriate instrument for the evaluation of psychological well-being.^[7,18,21,22] The WHO-5 is easy to administer it takes only approximately 3-4 minutes to

complete.^[19,23] The WHO-5 has been used in various studies and settings.^[23] The WHO-5 consists of five questions that investigate depression, anxiety, stress, psychological and mental well-being, interests, self-esteem, quality of life, and mood.^[7,10,19] It is rated on a 6-Likert scale ranging from 0-5 – at no time = 0, some of the time = 1, less than half of the time = 2, more than half of the time = 3, most of the time = 4, and all the time = 5.^[10,16,19] The total responses are summed up and range from 0 to 25. This is then multiplied by 4 to get the final score.^[16,19,21] In the scoring system of the WHO-5, 0 represents the worst well-being while 100 represents the best well-being.^[16] Scores less than 50 indicate poor well-being, and scores of 50 and above indicate good well-being.^[19,24]

Two variables of the WHO RD Blueprint were used to assess the well-being of the doctors which are the social and professional role and emotional variables. The variables were assessed on a 5-Likert scale, strongly disagree, disagree, neither agree nor disagree, agree and strongly agree. The social professional role was accessed with one question which is “I feel it is my professional responsibility to take all measures necessary to care for COVID-19 patients.”

Emotion was accessed with five questions as follows:

- I am concerned about the risk to myself of becoming ill with COVID-19
- I am concerned about the risk to my family related to COVID-19 as a result of my job role
- I am afraid of looking after patients who are ill with COVID-19
- I accept that the risk of getting COVID-19 is part of my job
- Whether I get infected with COVID-19 is within my control.

The study was approved by the National Health Research Ethics Committee of Nigeria with the approval number: NHREC/01/01/2007-25/08/2020. The questionnaire was distributed online using Google forms. It was forwarded to the research participants’ WhatsApp and telegram social media platforms. The data were cleaned and entered into an excel sheet, it was then transferred to IBM Statistical Package for Social Sciences (SPSS) version 21 (United States of America) software which was employed in the analysis of data.

RESULTS

The number of participants in this study was 302 doctors and dentists working in Nigeria.

Demographics of study participants

In this cross-sectional study, 107 (43%) males and 195 (64.57%) females participated in this study. The majority of the research participants were within the age range of 35–44 years 140 (46.36%). The demographics of the research participants showed a mean age of 36.1 ± 7.4 years. The majority of the participants 190 (62.91%) were married and practiced medicine or dentistry in an urban area 281 (93.05%). Most of the research

Table 1: Demographic distribution of respondents

Demographic distribution of medical doctors in the study (n=302)

Demographic variables	Frequency, n (%)
Age (years)	
<25	25 (1.7)
25-34	131 (43.4)
35-44	140 (46.4)
45-54	19 (6.2)
55-64	4 (1.3)
≥65	3 (1.0)
Sex	
Male	107 (35.4)
Female	195 (64.6)
Marital status	
Single	107 (35.4)
Married	191 (63.3)
Separated/divorced	1 (0.3)
Widowed	3 (1.0)
Living locality	
Urban	281 (93.0)
Rural	21 (7.0)

Table 2: Distribution of work-related characteristics of research participants (n=302)

Work-related variables	Frequency, n (%)
Cadre	
House officer	16 (5.3)
Medical officer	81 (26.7)
Senior medical officer	21 (7.0)
Principal medical officer	9 (3.0)
Chief medical officer	5 (1.7)
Registrar	67 (22.2)
Senior registrar	65 (21.5)
Consultant	38 (12.6)
Type of health facility of practice	
Public	249 (82.4)
Private	44 (14.6)
NGO	9 (3.0)
Work timing	
Full time	238 (78.8)
Part time	64 (21.2)

NGO: Nongovernmental organisation

respondents were dental/medical officers 88 (29.14%). Table 1 shows the demographics of the study participants while Table 2 shows the distribution of work-related characteristics. The demographics and work-related variables were expressed as frequencies and proportions.

The social/professional role and emotional variables

None of the research participants strongly disagreed with the question “I feel it is my professional responsibility to take all measures necessary to care for patients infected with the COVID-19.” The response of the majority of the respondents in this question was strongly agree 167 (55.30%). The majority

Table 3: Social/professional role and emotional variables

	Strongly disagree, n (%)	Disagree, n (%)	Undecided, n (%)	Agree, n (%)	Strongly agree, n (%)	Total, n (%)
Social/professional role						
I feel it is my professional responsibility to take all measures necessary to care for COVID-19 patients	0 (0.00)	6 (1.99)	16 (5.30)	113 (37.42)	167 (55.30)	302 (100.0)
Emotions						
I am concerned about the risk to myself of becoming ill with COVID-19	3 (0.99)	13 (4.30)	29 (9.60)	134 (44.37)	123 (40.73)	302 (100.0)
I am concerned about the risk to my family related to COVID-19 as a result of my job role	3 (0.99)	14 (4.64)	17 (5.63)	117 (38.74)	151 (50.00)	302 (100.0)
I am afraid of looking after patients who are ill with COVID-19	12 (3.97)	65 (21.52)	92 (30.46)	85 (28.15)	48 (15.89)	302 (100.0)
I accept that the risk of getting COVID-19 is part of my job	6 (1.99)	15 (4.97)	50 (16.56)	143 (47.35)	88 (29.14)	302 (100.0)
Whether I get infected with COVID-19 is within my control	22 (7.28)	54 (17.88)	93 (30.79)	83 (27.48)	50 (16.56)	302 (100.0)

COVID-19: Coronavirus disease-2019

Table 4: The relationship between gender, World Health Organisation well-being, social/professional role and emotion

Variables	Gender		Total, n (%)	χ^2	P
	Male, n (%)	Female, n (%)			
Social/professional role					
Agree	99 (32.9)	181 (59.8)	280 (92.7)	0.007	0.934
Disagree	8 (2.7)	14 (4.7)	22 (7.3)		
Total	107 (35.5)	195 (64.5)	302 (100.0)		
Emotion					
Agree	59 (19.6)	101 (33.2)	160 (52.8)	0.357	0.550
Disagree	48 (15.9)	94 (31.2)	142 (47.2)		
Total	107 (35.5)	195 (64.5)	302 (100.0)		
WHO well-being					
All of the time	13 (4.3)	43 (14.3)	56 (18.6)	4.568	0.033
At no time	94 (31.2)	152 (50.2)	246 (81.4)		
Total	107 (35.5)	195 (64.5)	302 (100.0)		

WHO: World Health Organisation

of the respondents strongly agreed with the question “I am concerned about the risk of my job role” 151 (50%). Table 3 shows the respondents’ responses to the social/professional role and emotions. Table 4 shows the relationship between gender, the World Health Organisation well-being and the social/professional role and emotion. Table 5 compares the mean World Health Organisation well-being by sociodemographic characteristics while Table 6 compares the mean World Health Organisation well-being by work related characteristics.

The multiple regression

The WHO well-being was compared across the demographics and work-related characteristics. Using the independent *t*-test and one-way analysis of variance (ANOVA), multiple linear regression analysis was performed to identify the predictors of the well-being among the research participants. The multiple linear regression revealed that females had significantly lower well-being. There was a significant relationship between gender and the well-being ($\chi^2 = 4.568, P = 0.033$). In this study, there was a relationship between gender and mental well-being. The female doctor had a lower mental well-being, emotional, and social/professional role.

In the statistical analysis of the age category, there was a significant relationship between age category and WHO well-being, and social/professional role ($\chi^2 = 12.100, 12.913, P = 0.033$), respectively. The WHO well-being percentage comprised the dependent variable and it was expressed using the summary indices. A comparison of the scores of the WHO well-being index across demographic, work-related, and risk exposure levels was carried out using an independent *t*-test and One-way ANOVA as appropriate. Multiple linear regression analysis was performed to identify predictors of WHO well-being. The variables of social/professional role ($\chi^2 = 4.203, P = 0.040$) were significantly associated with emotion. Table 7 shows the multiple regression analysis of the predictors of World Health Organisation well-being among medical doctors amidst the coronavirus-2019 pandemic.

DISCUSSION

COVID-19 being a communicable disease and global public health emergency places a unique challenge on healthcare workers.^[15] Our study assessed the mental well-being of doctors

Table 5: Comparison of mean World Health Organisation well-being by sociodemographic characteristics

Demographic variables	WHO well-being percentage (mean±SD)
Age (years)	
<25	76.00±18.84
25-34	68.74±18.75
35-44	71.14±18.08
45-54	78.16±18.72
55-64	57.50±28.72
≥65	73.33±2.89
ANOVA; <i>P</i>	1.418; 0.217
Sex	
Male	75.14±17.24
Female	67.90±18.81
<i>t</i> ; <i>P</i>	3.295; 0.001*
Marital status	
Single	69.30±17.89
Married	71.07±19.11
Separated/divorced	60.00±0.00
Widowed	76.68±2.89
ANOVA; <i>P</i>	0.424; 0.736
Living locality	
Urban	70.53±17.99
Rural	59.52±25.69
<i>t</i> ; <i>P</i>	0.240; 0.810

*Statistically significant. SD: Standard deviation, ANOVA: Analysis of variance, WHO: World Health Organisation

Table 6: Comparison of mean World Health Organisation well-being by work-related characteristics

Work-related variables	WHO well-being percentage (mean±SD)
Cadre	
House officer	72.18±17.89
Medical officer	69.57±18.74
Senior medical officer	69.29±23.30
Principal medical officer	73.33±15.81
Chief medical officer	67.00±29.50
Registrar	66.57±18.75
Senior registrar	71.69±17.19
Consultant	76.58±16.07
ANOVA; <i>P</i>	1.187; 0.310
Type of health facility of practice	
Public	69.90±18.98
Private	74.09±16.58
NGO	68.33±15.61
ANOVA; <i>P</i>	1.014; 0.364
Work timing	
Full time	69.66±18.81
Part-time	73.44±17.48
<i>t</i> ; <i>P</i>	1.446; 0.149

SD: Standard deviation, ANOVA: Analysis of variance, WHO: World Health Organisation, NGO: Nongovernmental organisation

in Nigeria during the COVID-19 pandemic and its association with COVID-19 caregiving.

In this study, female doctors and dentists had lower well-being compared to their male counterparts. The respondents felt that it is their professional responsibility to protect themselves from the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) while caring for their patients during the COVID-19 pandemic. Only a few disagreed with this. Doctors were worried about their risk of contracting the COVID-19 pandemic as it is now a nosocomial infection. The well-being will be affected by anxiety, if the doctors and dentists are worried, they will have lower well-being. The doctors are afraid of caring for patients infected with COVID-19. This can be explained by the fact that it is an infectious disease that can be contracted in the medical workplace. That may also be why some of them accepted that it is their job has now become risky because of the COVID-19 pandemic. It is also within their control if COVID-19 is contracted at the workplace.

The mental well-being of an individual is important in the mental health of an individual.^[25] Healthcare workers are also affected especially those directly caring for people infected with the SARS-CoV-2. The result of this study is similar to other studies in which the mental well-being of women doctors and other female healthcare workers was lower compared to male healthcare workers including doctors who are men. Some of these studies were conducted with the WHO well-being index while some of the studies were conducted with other instruments used to access mental well-being. In a study conducted on women among physicians during the COVID-19 pandemic in which the WHO-well-being-5 index was utilised female and young physicians had poor mental well-being as there was a negative impact of the COVID-19 pandemic on the woman among healthcare workers during the COVID-19 pandemic of the impact, the pandemic had on the mental health. The mental health of the healthcare workers was affected more by healthcare workers who are of the female gender and young as there were more predisposed to anxiety and depression.^[12] The results of this study are similar to other studies where the female gender was a risk factor in the psychological well-being of healthcare workers during the COVID-19 pandemic in Pakistan, the USA, Europe, in Wuhan, China, United Arab Emirates, Qatar, Saudi Arabia and also in a review of 24 studies.^[3,26-32] There was a high rate of anxiety, depression, and emotional and mental stress among women doctors and women healthcare workers compared to doctors and healthcare workers who are level of psychological and mental disorders among all categories of healthcare professionals during the pandemic especially physicians and nurses.^[3,27,33] A survey conducted in the United Kingdom among healthcare workers on the causes of psychological stress and distress during the COVID-19 pandemic is the new environment of working during the pandemic coupled with the increased workload and extra office hours, shortage of personal protective equipment, being afraid of contracting SARS-Cov-2 as a nosocomial infection and watching people passing away from COVID-19.^[11] These findings are similar to this study as the majority of the doctors were scared of providing medical care

Table 7: Multiple linear regression analysis of predictors of World Health Organisation well-being among medical doctors amidst the coronavirus disease-2019 pandemic

Independent variables	Coefficient (B)	P
Female gender	-4.384	0.048*
I am concerned about the risk to myself of becoming ill with COVID-19	1.377	0.523
I am concerned about the risk to my family related to COVID-19 as a result of my job role	0.836	0.702
I am afraid of looking after patients who are ill with COVID-19	0.443	0.782
I accept that the risk of getting COVID-19 is part of my job	3.080	0.054
Whether I get infected with COVID-19 is within my control	5.411	0.0001*

*Statistically significant. COVID-19: Coronavirus disease-2019

to patients infected with COVID-19. It is clear from the result of this study that there is a significant relationship between the female gender and the mental well-being of physicians during the COVID-19 pandemic in Nigeria. Women physicians' health must be addressed.^[34]

Recommendations

Following the findings of this study, it is recommended that Strategies should be put in place to address the mental health and well-being of doctors and every healthcare worker involved in the care of patients suspected or confirmed with COVID-19. Hospital administrators and managers should provide psychological support for all physicians.

Limitations of the study

The study is web-based therefore doctors who do not have access to the Internet could not participate in the study. Furthermore, the majority of the participants in this study resided in urban areas.

CONCLUSION

The COVID-19 pandemic has affected every country on every continent. Women doctors reported lower mental well-being compared to their male counterparts during the COVID-19 pandemic. Some respondents are worried about caring for patients with COVID-19. The SARS-CoV-2 has now become a nosocomial infection and it is now their responsibility to protect themselves from contracting the infection in the medical workplace.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- De Sio S, Buomprisco G, La Torre G, Lapteva E, Perri R, Greco E, *et al.* The impact of COVID-19 on doctors' well-being: Results of a web survey during the lockdown in Italy. *Eur Rev Med Pharmacol Sci* 2020;24:7869-79.
- Amzat J, Aminu K, Kolo VI, Akinyele AA, Ogundairo JA, Danjibo MC. Coronavirus outbreak in Nigeria: Burden and socio-medical response during the first 100 days. *Int J Infect Dis* 2020;98:218-24.
- Aiyer A, Sarani S, Ratnani I, Surani S. Mental health impact of COVID-19 healthcare workers in the USA: A cross-sectional web-based survey. *J Depression Anxiety* 2020;9:373.
- World Medical Association. WMA Declaration of Geneva. The physicians pledge. Available from: <https://www.wma.net/policies-post/wma-declaration-of-geneva>. [Last accessed on 2020 Jan 05].
- World Health Organisation. Mental health and psychological considerations during COVID-19 outbreak. March 2020. Available from: <https://www.who.int/docs/default-source/coronavirus/mental-health-considerations.pdf>. [Last accessed on 2020 Oct 10].
- Gray NS, O'Connor C, Knowles J, Pink J, Simkiss NJ, Williams SD, *et al.* The Influence of the COVID-19 Pandemic on Mental Well-Being and Psychological Distress: Impact Upon a single country. *Front Psychiatry* 2020;11:594115.
- Seb-Akahomen OJ, Okogbenin EO, Obagaye OM, Erohubie PO, Aweh BE. The 5-Item World Health Organisation well-being index as a screening tool for depression in a population of doctors and nurses in Nigeria during the COVID-19 pandemic. *Open J Depress* 2021;10:43-53.
- Villani L, Pastorino R, Molinari E, Anelli F, Ricciardi W, Graffigna G, *et al.* Impact of the COVID-19 pandemic on psychological well-being of students in an Italian university: A web-based cross-sectional survey. *Global Health* 2021;17:39.
- Sischa PE, Costa AP, Steffan G, Schmidt AF. The WHO-5 well-being index validation based on item response theory and the analysis of measurement invariance across 35 countries. *J Affect Disord Rep* 2020;1:100020.
- Dadfar M, Momeni Safarabad N, Asgharnejad Farid AA, Nemati Shirzy M, Ghazie Pour Abarghouie F. Reliability, validity, and factorial structure of the World Health Organisation-5 well-being index (WHO-5) in Iranian psychiatric outpatients. *Trends Psychiatry Psychother* 2018;40:79-84.
- BMA Survey Reveals the Effects of COVID-19 on Doctors' Well-Being. *Hospital Times*. Available from: www.hospitaltimes.co.uk/bma-survey-on-19/02/2021. [Last accessed on 2019 Jun 01].
- Badahdah A, Khamis F, Al Mahiyari N, Al Balushi M, Al Hatmi H, Al Salmi I, *et al.* The mental health of health care workers in Oman during the COVID-19 pandemic. *Int J Soc Psychiatry* 2021;67:90-5.
- Andrew G. A tribute to some of the doctors who died from COVID-19. *Lancet* 2020;396:1720-9. Available from: www.thelancet.com/journals/lancet/article/014032021. [Last accessed on 2020 Oct 10].
- Galbraith N, Boyda D, McFeeters D, Hassan T. The mental health of doctors during the COVID-19 pandemic. *BJPsych Bull* 2021;45:93-7.
- Brooks SK, Dunn R, Amlôt R, Rubin GJ, Greenberg N. A systematic, thematic review of social and occupational factors associated with psychological outcomes in healthcare employees during an infectious disease outbreak. *J Occup Environ Med* 2018;60:248-57.
- Anna Fund National Centre for Children and Families. Outcome and Experience Measures. Available from: www.corc.uk.net. [Last accessed on 2020 Oct 10].
- Pracheth R. The utility of World Health Organisation five-well-being index as a screening tool for depression among elderly. *Inter J Comm Med Public Health* 2015;2:651-5.
- Eser E, Çevik C, Baydur H, Güneş S, Esgin TA, Öztekin ÇS, *et al.* Reliability and validity of the Turkish version of the WHO-5, in adults and older adults for its use in primary care settings. *Prim Health Care Res Dev* 2019;20:e100.
- Omani-Samani R, Maroufizadeh S, Almasi-Hashiani A, Sepidarkish M,

- Amini P. The WHO-5 well-being index: A validation study in people with infertility. *Iran J Public Health* 2019;48:2058-64.
20. Awata S, Bech P, Yoshida S, Hirai M, Suzuki S, Yamashita M, *et al.* Reliability and validity of the Japanese version of the World Health Organisation-Five well-being index in the context of detecting depression in diabetic patients. *Psychiatry Clin Neurosci* 2007;61:112-9.
 21. Topp CW, Østergaard SD, Søndergaard S, Bech P. The WHO-5 well-being index: A systematic review of the literature. *Psychother Psychosom* 2015;84:167-76.
 22. Chongwo E, Ssewanyana D, Nasambu C, Mwangala PN, Mwangi PM, Nyongesa MK, *et al.* Validation of a Swahili version of the World Health Organisation 5-item well-being index among adults living with HIV and epilepsy in rural coastal Kenya. *Glob Health Res Policy* 2018;3:26.
 23. Faruk MO, Alam F, Chowdhury KU, Soron TR. Validation of the bangla WHO-5 well-being index. *Glob Ment Health (Camb)* 2021;8:e26.
 24. Mortazavi F, Mehrabadi M, Kiaetabar R. Pregnant women's well-being and worry during the COVID-19 pandemic: A cross-sectional study. *BMC Pregnancy Childbirth* 2021;21:59.
 25. de Souza CM, Hidalgo MP. World Health Organisation 5-item well-being index: Validation of the Brazilian Portuguese version. *Eur Arch Psychiatry Clin Neurosci* 2012;262:239-44.
 26. Shahbaz S, Ashraf MZ, Zakar R, Fischer F. Psychosocial, emotional and professional challenges faced by female healthcare professionals during the COVID-19 outbreak in Lahore, Pakistan: A qualitative study. *BMC Womens Health* 2021;21:197.
 27. van Hout D, Hutchinson P, Wanat M, Pilbeam C, Goossens H, Anthierens S, *et al.* The experience of European hospital-based health care workers on following infection prevention and control procedures and their wellbeing during the first wave of the COVID-19 pandemic. *PLoS One* 2022;17:e0245182.
 28. Li G, Miao J, Wang H, Xu S, Sun W, Fan Y, *et al.* Psychological impact on women health workers involved in COVID-19 outbreak in Wuhan: A cross-sectional study. *J Neurol Neurosurg Psychiatry* 2020;91:895-7.
 29. Saddik B, Elbarazi I, Temsah MH, Saheb Sharif-Askari F, Kheder W, Hussein A, *et al.* Psychological distress and anxiety levels among health care workers at the height of the COVID-19 pandemic in the United Arab emirates. *Int J Public Health* 2021;66:1604369. doi: 10.3389/ijph.2021.1604369.
 30. Khodoruth MA, Al-Nuaimi SK, Al-Salihy Z, Ghaffar A, Khodoruth WN, Ouanes S. Factors associated with mental health outcomes among medical residents exposed to COVID-19. *BJPsych Open* 2021;7:e52.
 31. Al Ammari M, Sultana K, Thomas A, Al Swaidan L, Al Harthi N. Mental health outcomes amongst health care workers during COVID 19 pandemic in Saudi Arabia. *Front Psychiatry* 2020;11:619540.
 32. De Kock JH, Latham HA, Leslie SJ, Grindle M, Munoz SA, Ellis L, *et al.* A rapid review of the impact of COVID-19 on the mental health of healthcare workers: Implications for supporting psychological well-being. *BMC Public Health* 2021;21:104.
 33. Lai J, Ma S, Wang Y, Cai Z, Hu J, Wei N, *et al.* Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open* 2020;3:e203976.
 34. Gu Y, Zhu Y, Xu G. Factors associated with mental health outcomes among health care workers in the Fangcang shelter hospital in China. *Int J Soc Psychiatry* 2022;68:64-72.