Journal of Health, Medicine and Nursing
ISSN 2422-8419 An International Peer-reviewed Journal
Vol.112, 2023

The Psychological Impact of the COVID-19 Pandemic on Health Workers at the Primary Level in the Greater Accra Region

N K Allotey, B. Pharmacy, MSc, PhD, FWAPCP; S Adams, BA, MPH, MSc
Research and Development Division, Ghana Health Service, Post Office Box MB190, Accra-Ghana
Corresponding author: S Adams (sherifdeen.adams@ghs.gov.gh)

Abstract
Background: The COVID-19 pandemic had a negative impact on lives and livelihoods since its outbreak in the health sector. Health workers in Ghana have been at increased risk of contracting the virus due to their close contact with infected patients and some have become ill or died as a result, placing a significant mental and emotional burden on healthcare workers in Ghana.
Objectives: This study examines the psychological impact of COVID-19 on primary healthcare workers in the Greater Accra Region.
Methods: The study adopted a cross-sectional design. Data were collected using the Generalized Anxiety Disorder 7-Item (GAD-7) scale, Patient Health Questionnaire (PHQ-9) and Impact Event Scale 6 (IES-R) to evaluate the mental health conditions of 97 healthcare workers providing healthcare services in health centres and health posts (called CHPS zones) in the Greater Accra Region. Results were presented using Frequencies, Percentages, and univariate and multivariate logistic regression.
Results: Overall, the majority of health workers were depressed (71.1%) in relation to COVID-19. 59.8% and 50.6% had psychological stress and anxiety respectively at the height of the COVID-19 pandemic. Family avoidance, alcohol, and role (CHO, public health nurse and other categories) were significantly associated with anxiety, depression, and stress in health workers at the height of the COVID-19 pandemic.
Conclusion: Generally, approximately half of the workers at the primary levels felt depressed, anxious, or felt stressed about COVID-19. Family avoidance, alcohol and role (CHO, public health nurse and other categories) were significantly associated with anxiety, depression and stress in health workers at the height of the COVID-19 pandemic. There is a need for the health system to recognize the presence of these adverse psychological effects in primary health workers and take pragmatic steps to address them.
Keywords: COVID-19 pandemic, Health workers, Anxiety, Stress, Depression, Psychological impact, Ghana Health Service.
DOI: 10.7176/JHMN/112-01
Publication date: December 31st 2023

INTRODUCTION:

Background

The emergence of COVID-19 and its rapid spread around the globe have had devastating consequences on many countries' health systems and economies [1,3,20]. The impact on populations includes risk and actual contraction of COVID-19 and its related health problems, socioeconomic impact and even gender issues. In fact, the risk of contracting the disease is higher for personnel of some occupations than others. For example, it is estimated that 10% (14.4 M) of employees in the USA were at risk of being exposed to the disease once a week and 18.4% at least once a month [5]. Narrowing down to the health sector, the pandemic significantly impacted healthcare systems. For example, about 4% of confirmed cases in Wuhan, China were health workers [34].

Healthcare workers are usually at the forefront of these pandemic crises and constitute a vulnerable population with an increased risk of infection. Additionally, health workers also face the psychological impact of the disease such as stress, anxiety, depression, and fear [6,29,35]. Recent studies including systematic reviews have reported a 39% - 71% prevalence of anxiety, stress, depression, and insomnia among health workers in relation to the COVID-19 pandemic and females were more likely to be affected [6,17,21,28,29,31]. Healthcare workers in Ghana have also been exposed to contracting the virus due to their close contact with infected patients. As a result, some have become ill or died. For instance, by July 2020, about 2,065 healthcare workers had been infected with COVID-19 with up to 10 deaths. Many more were unable to work as they were in isolation waiting for their test results [27].

There have been studies on the mental health impact of COVID-19 on health workers and some studies have been carried out in Ghana. However, there is a paucity of information on primary healthcare workers such as community health officers (CHOs) who as part of their job description, go on community outreach services (Williams & Moyer, 2020 (unpublished); Kwabla, 2020 (unpublished)). The present study, therefore, aimed at assessing COVID-19-related stress, anxiety, and depression among primary healthcare workers of the Ghana Health Service and also identified factors relating to mental health conditions.

METHODOLOGY

Study design

The study was carried out using a cross-sectional study design comprising a quantitative data collection method.

Study area

The study was conducted in health facilities in five sub-metros/sub-districts in the Accra Metropolitan and Ga Central districts of the Greater Accra Region (GAR). There is a total of one hundred and seventy-five primary health facilities according to the District Health Information Management System (DHIMS 2) database in the study areas. These include 5 polyclinics, 5 health centres, 88 community-based health planning services (CHPS; these facilities are comparable to health posts), 61 clinics and 16 maternity homes.

Study population

The study population was primary health workers providing healthcare services in some selected primary health facilities within the Ghana Health Service in Greater Accra Region.

Sampling and sample size

The study was part of a larger study and project. The sponsors of the Project had pre-selected health facilities for their intervention but the investigators randomly selected non-intervention facilities as comparators in this particular paper, however, we did not separate facilities by intervention and comparators. The study was a quick survey to assess mental health issues relating to COVID-19. As a result, convenience sampling was used to recruit as many health workers as were available at the time of data collection. Therefore, the sample size was not calculated. A total of 97 participants were recruited for the study.

Procedure

The study procedure used a series of questions to determine participants' level of exposure to COVID-19. The scores were then scaled to 100. Those who scored between 50-100 were considered at risk of contracting COVID-19 [5]. In addition, to determine the percentage of health workers who were suspected to have been exposed to the disease, participants were asked a series of questions based on the cardinal symptoms of COVID-19 based on WHO cardinal symptoms [33]. To evaluate the following mental health conditions relating to COVID-19 of stress, depression and anxiety, the 22-item Impact of Event Scale-Revised (IES-R), Patient Health Questionnaire-9 (PHQ-9), and Generalised Anxiety Disorder 7-item (GAD-7), respectively were utilised as was carried out by Zhu et al. [36]. Depression was assessed using the PHQ-9 Scale a and cut-off of ≥10 was used to determine a person with depression. GAD-7 Scale was used to assess anxiety. A person with a cut-off score ≥8 was considered to have anxiety. IES-R was also used to assess stress and a cut-off for stress of 33 points was used to determine if the health worker is stressed.

Data collection and analysis

Descriptive statistics employing frequencies and percentages were applied to interpret the socio-demographic data of respondents and determine the likelihood of exposure to mental health conditions at the height of the COVID-19 pandemic. The logistic regression model was further applied to determine the factors that were likely to be associated with mental health conditions in health workers. Statistical significance was set at 0.05 and confidence intervals of 95% were assessed.

Ethical considerations

The protocol for this study was approved by the Ghana Health Service Ethics Review Committee (GHS ERC) with approval number GHS-ERC: 006/07/21.

RESULTS

A total of 97 health workers providing health care services at the selected CHPS zones and health centres were sampled for the study. They included physician assistants, and nurses, (including community health nurses or officers (CHNs/CHOs) and midwives). From table 1 below, health workers in the age range0 30-39 years were more exposed to mental health conditions (anxiety (54.4%); depression (56.5%) and stress (53.5%)) at the height of COVID-19 pandemic than the other age groups. Of the respondents, female health workers were more exposed to mental health conditions at the height of COVID-19 pandemic than their males' counterparts with a score indicating anxiety (88.6%); depression (85.5%) and stress (93.1%).

Health workers with tertiary education were more exposed to anxiety (94.9%); depression (91.35) and stress (91.4%) than those who completed SSS/SHS/Vocational education. In terms of job category, CHNs were more exposed to anxiety (32.9%); depression (30.4%) and stress (39.75) compared to the other categories. In terms of work experience, health workers with less than 5 years working experience had more exposure to anxiety 65 (82.3%); depression 57 (82.6%); and stress 44 (75.9%).

Participants from the health centres were more exposed to mental health conditions (anxiety (58.6%); depression (44.8%) and stress (51.7%)) than health workers providing health care services at the CHPS zones. The overall majority of health workers had scores indicating depression (71.1%) while (59.8%) and (50.6%) had psychological stress and anxiety respectively at the height of the COVID-19 pandemic.

Table 1: Sociodemographic Characteristics of Health Workers Exposed to Mental Health conditions at the Height of COVID-19 Pandemic (N=97)

Characteristics	Anxiety		Depression		Stress	
	Exp	Non exp	Exp	Non exp	Exp	Non exp
***Age** (years)*						
<30	26 (32.9%)	4 (22.2%)	20 (29.0%)	10 (35.7%)	20 (34.5%)	10 (25.6%)
30-39	43 (54.4%)	13 (72.2%)	39 (56.5%)	17 (60.7%)	31 (53.5%)	25 (64.1%)
40+	10 (12.7%)	1 (5.6%)	10 (14.5%)	1 (3.6%)	7 (12.1%)	4 (10.3%)
Sex						
Female	70 (88.6%)	17 (94.4%)	59 (85.5%)	28 (47.2%)	54 (93.1%)	33 (84.6%)
Male	9 (11.4%)	1 (5.6%)	10 (14.5%)	0 (0.0%)	4 (6.9%)	6 (15.4%)
Educational Level						
SSS/SHS/Vocational	4 (5.1%)	2 (11.1%)	6 (8.7%)	0 (0.0%)	5 (8.6%)	1 (2.6%)
Tertiary	75 (94.9%)	16 (88.9%)	63 (91.3%)	28 (47.2%)	53 (91.4%)	38 (97.4%)
Job Category						
CHN	26 (32.9%)	8 (44.4%)	21 (30.4%)	13 (46.4%)	23 (39.7%)	11 (28.2%)
CHO	9 (11.4%)	3 (16.7%)	11 (15.9%)	1 (3.6%)	8 (13.8%)	4 (10.3%)
Enrolled Nurse	8 (10.1%)	2 (11.1%)	7 (10.1%)	3 (10.7%)	9 (15.5%)	1 (2.6%)
Professional Nurse	7 (8.9%)	2 (11.1%)	6 (8.7%)	3 (10.7%)	5 (8.6%)	4 (10.3%)
Public Health Nurse	14 (17.7%)	2 (11.1%)	11 (15.9%)	5 (17.9%)	7 (12.1%)	9 (23.1%)
Other categories	15 (19.0%)	1 (5.6%)	13 (18.8%)	3 (10.7%)	6 (10.3%)	10 (25.6%)
Work experience						
10 to 14 years	3 (3.8%)	2 (11.1%)	3 (4.4%)	2 (7.1%)	4 (6.9%)	1 (2.6%)
5 to 9 years	11 (13.9%)	4 (22.2%)	9 (13.0%)	6 (21.4%)	10 (17.2%)	5 (12.8%)
Less than 5 years	65 (82.3%)	12 (66.7%)	57 (82.6%)	20 (71.4%)	44 (75.9%)	33 (84.6%)
Facility type						
health centres	58.6%		54.8%		51.7%	
CHPS zones	30.0%		46.2%		46.2%	
Family avoidance						
Agree	12 (15.2%)	7 (38.9%)	13 (18.8%)	6 (21.4%)	7 (12.1%)	12 (30.8%)
Disagree	67 (84.8%)	11 (61.1%)	56 (81.2%)	22 (78.65)	51 (87.9%)	27 (69.2%)
Diagnosed of Covid						
No	72 (91.1%)	16 (88.9%)	61 (88.4%)	27 (96.4%)	50 (86.2%)	38 (97.4%)
Yes	7 (8.9%)	2 (11.1%)	8 (11.6%)	1 (3.6%)	8 (13.8%)	1 (2.6%)
Alcohol						
No	70 (88.6%)	12 (66.7%)	60 (87.0%)	22 (78.6%)	49 (84.5%)	33 (84.6%)
Yes	9 (11.4%)	6 (33.3%)	9 (13.0%)	6 (21.4%)	9 (15.5%)	6 (15.4%)
Underlying condition						
No	69 (87.3%)	17 (94.4%)	63 (91.3%)	23 (82.1%)	50 (86.2%)	36 (92.3%)
Yes	10 (12.7%)	1 (5.6%)	6 (8.7%)	5 (17.9%)	8 (13.8%)	3 (7.7%)
Mental health						
No	72 (91.1%)	17 (94.4%)	63 (91.3%)	26 (92.9%)	53 (91.4%)	36 (92.3%)
Yes	7 (8.9%)	1 (5.6%)	6 (8.7%)	2 (7.1%)	5 (8.6%)	3 (7.7%)
Total Risk of exposure at height of pandemic	41 (50.6%)	40 (49.4%)	69 (71.1%)	28 (28.9%)	58 (59.8%)	39 (40.2%)

Table 2 shows the test of factors associated with anxiety in health workers at the height of COVID-19 pandemic. With the crude odds ratio, variables that were significantly associated with anxiety in health workers are family avoidance and alcohol.

After adjusting for confounders, family avoidance and alcohol were again significantly associated with anxiety in health workers. Participants who disagreed to family avoidance had 8.17 times the odds of being anxious (AOR: 8.17, 95% CI 1.63 - 40.89). Among those who responded yes, there were 90% reduced odds of drinking alcohol as a result of anxiety in health workers compared with those who responded no, when all the other cofounders were taken into consideration (AOR: 0.10, 95% CI 0.01 - 0.68).

Table 2: Summary Table Showing Factors Associated with Anxiety in Health Workers at the Height of COVID-19 Pandemic.

Variables	Crude OR (95%CI)	*p*-value	Adjusted OR (95%CI)	*p*-value
Age (years)				
<30	Ref		Ref	
30-39	0.51 (0.15 - 1.73)	0.28	0.53 (0.11 - 2.62)	0.44
40+	1.54 (0.15 - 15.49)	0.72	1.78 (0.11 - 30.09)	0.69
Sex				
Female	Ref		Ref	
Male	2.19 (0.26 - 18.45)	0.47	0.22 (0.01 - 6.77)	0.39
Educational level				
SSS/SHS/Vocational	Ref		Ref	
Tertiary	2.34 (0.39 - 13.91)	0.35	0.43 (0.01 - 22.18)	0.68
Job Category				
CHN	Ref		Ref	
CHO	0.92 (0.20 - 4.26)	0.92	1.04 (0.13 - 8.48)	0.97
Enrolled Nurse	1.23 (0.22 - 7.01)	0.82	0.33 (0.03 - 3.68)	0.37
Professional Nurse	1.08 (0.19 - 6.26)	0.93	0.54 (0.05 - 5.58)	0.61
Public Health Nurse	2.15 (0.40 - 11.56)	0.37	9.14 (0.54 - 155.36)	0.13
Other categories	4.62 (0.52 - 40.58)	0.17	8.46 (0.21 - 345.45)	0.26
Work experience				
10 to 14 years	Ref		Ref	
5 to 9 years	1.83 (0.22 - 15.33)	0.58	0.80 (0.03 - 22.01)	0.90
Less than 5 years	3.61 (0.54 - 23.96)	0.18	4.19 (0.20 - 87.82)	0.36
Family avoidance				
Agree	Ref		Ref	
Disagree	3.55 (1.15 - 10.99)	0.03*	8.17 (1.63 - 40.89)	0.01*
Diagnosed of Covid				
No	Ref			
Yes	0.78 (0.15 - 4.10)	0.77	-	-
Alcohol				
No	Ref		Ref	
Yes	0.26 (0.08 - 0.85)	0.03*	0.10 (0.01 - 0.68)	0.02*
Underlying condition				
No	Ref		Ref	
Yes	2.46 (0.29 - 20.59)	0.41	3.51 (0.26 - 47.52)	0.35
Mental health				
No	Ref		Ref	
Yes	1.65 (0.19 - 14.34)	0.65	1.46 (0.09 - 24.13)	0.79

Table 3 shows the test of factors associated with depression in health workers at the height of COVID-19 pandemic. With the crude odds ratio, none of the variables were significantly associated with depression in health workers.

After adjusting for confounders, only CHOs among job category was significantly associated with depression. The odds of job category up to CHO as a result of depression is 16.11 times higher compared to those who are CHN, when all the other cofounders were taken into consideration (AOR: 16.11, 95% CI 1.20 - 216.00).

Table 3: Summary Table Showing Factors Associated with Depression in Health Workers at the Height of COVID-19 Pandemic.

Variables	Crude OR (95%CI)	*p*-value	Adjusted OR (95%CI)	*p*-value
Age (years)				
<30	Ref		Ref	
30-39	1.45 (0.44 - 2.96)	0.78	1.77 (0.48 - 6.62)	0.39
40+	5.00 (0.56 - 44.73)	0.15	7.94 (0.64 - 97.97)	0.11
Sex				
Female				
Male	-	-	-	-
Educational level				
SSS/SHS/Vocational		-		
Tertiary	-	-	-	-
Job Category				
CHN	Ref		Ref	
CHO	6.81 (0.78 - 59.09)	0.08	16.11 (1.20 - 216.00)	0.04*
Enrolled Nurse	1.44 (0.32 - 6.60)	0.64	1.79 (0.27 - 11.80)	0.54
Professional Nurse	1.24 (0.26 - 5.83)	0.79	2.04 (0.35 - 11.83)	0.43
Public Health Nurse	1.36 (0.39 - 4.82)	0.63	2.01 (0.23 - 17.55)	0.53
Other categories	2.68 (0.64 - 11.25)	0.18	3.39 (0.62 - 18.51)	0.16
Work experience				
10 to 14 years	Ref		Ref	
5 to 9 years	1.00 (0.13 - 7.89)	1.00	0.91 (0.05 - 17.29)	0.95
Less than 5 years	1.9 (0.30 - 12.21)	0.50	4.00 (0.29 - 55.29)	0.30
Family avoidance				
Agree	Ref		Ref	
Disagree	1.17 (1.40 - 3.48)	0.77	1.46 (0.37 - 5.72)	0.59
Diagnosed of Covid				
No	Ref			
Yes	3.54 (0.42 - 29.73)	0.24	-	-
Alcohol				
No	Ref		Ref	
Yes	0.55 (0.18 - 1.72)	0.31	0.77 (0.16 - 3.63)	0.74
Underlying condition				
No	Ref		Ref	
Yes	0.44 (0.12 - 1.57)	0.21	0.41 (0.07 - 2.38)	0.32
Mental health				
No	Ref		Ref	
Yes	1.24 (0.23 - 6.54)	0.80	2.26 (0.20 - 25.81)	0.51

Table 4 shows the test of factors associated with stress in health workers at the height of COVID-19 pandemic. After adjusting for confounders, public health nurse and “other categories” among job category, and family avoidance were significantly associated with stress with Covid-19. The odds of job category up to public health nurse as a result of stress is 0.03 times higher compared to those who are CHN, when all the other cofounders were taken into consideration (AOR: 0.03, 95% CI 0.00 - 0.28). The odds of job category up to “other categories” as a result of stress is 0.05 times higher compared to those who are CHN, when all the other cofounders were taken into consideration (AOR: 0.05, 95% CI 0.00 - 0.70). The odds of family avoidance as a result of stress was 25.71 times higher compared to those who agreed, when all the other cofounders were taken into consideration (AOR: 25.71, 95% CI 3.13 - 21.90).

Table 4: Summary Table Showing Factors Associated with Stress in Health Workers at the Height of COVID-19 Pandemic.

Variables	Crude OR (95%CI)	*p*-value	Adjusted OR (95%CI)	*p*-value
Age (years)				
<30	Ref		Ref	
30-39	0.62 (0.25 - 1.56)	0.31	0 .28 (0.04 - 1.81)	0.18
40+	0.88 (0.21 - 3.71)	0.86	1.42 (0.09 - 23.69)	0.81
Sex				
Female	Ref		Ref	
Male	0.41 (0.11 - 1.55)	0.19	1.77 (0.15 - 21.29)	0.65
Educational level				
SSS/SHS/Vocational	Ref		Ref	
Tertiary	0.28 (0.03 - 2.49)	0.25	0.17 (0.00 - 7.68)	0.36
Job Category				
CHN	Ref		Ref	
CHO	0.96 (0.24 - 3.87)	0.95	0.18 (0.02 - 1.42)	0.11
Enrolled Nurse	4.30 (0.48 - 38.36)	0.19	2.83 (0.10 - 83.21)	0.55
Professional Nurse	0.60 (0.13 - 2.67)	0.50	0.23 (0.01 - 3.78)	0.30
Public Health Nurse	0.37 (0.11 - 1.26)	0.11	0.03 (0.00 - 0.28)	0.00*
Other categories	0.29 (0.08 - 0.99)	0.05*	0.05 (0.00 - 0.70)	0.03*
Work experience				
10 to 14 years	Ref		Ref	
5 to 9 years	0.5 (0.04 - 5.74)	0.58	0.69 (0.02 - 21.83)	0.83
Less than 5 years	0.33 (0.04 - 3.12)	0.34	0.44 (0.02 - 9.58)	0.60
Family avoidance				
Agree	Ref		Ref	
Disagree	3.24 (1.14 - 9.18)	0.03*	25.71 (3.13 - 21.90)	0.00*
Diagnosed of Covid				
No	Ref			
Yes	6.08 (0.73 - 50.72)	0.10	-	-
Alcohol				
No	Ref		Ref	
Yes	1.01 (0.33 - 3.11)	1.00	1.34 (0.15 - 12.21)	0.79
Underlying condition				
No	Ref		Ref	
Yes	1.92 (0.48 - 7.74)	0.36	2.34 (0.13 - 42.04)	0.57
Mental health				
No	Ref		Ref	
Yes	1.13 (0.25 - 5.04)	0.87	1.15 (0.02 - 66.56)	0.94

DISCUSSION

Findings from the study showed that the overall majority of health workers experienced mental health conditions at the height of the COVID-19 pandemic. Generally, over seventy percent of the health workers felt depressed (71.1%), almost sixty percent felt stressed (59.8%), and about half of respondents felt anxious (50.6%) about COVID-19. High depression, stress, and anxiety among health workers in Ghana aligns with global evidence of mental health conditions during the pandemic, including in Ghana and other African countries [7,9,24].

This trend was observed more in depression among health workers. It is also possible that the relatively higher numbers of COVID infected cases reported in other parts of the world [12, 32] may have constituted intense pressure and contributed to the higher occurrence of depression, stress and anxiety recorded in the current study. Also, the differences in findings could also stem from cultural differences in expression of depression, stress, and anxiety [13].

This present study is similar to Zhu et al. [36], Afulani et al. [2], and Ofori et al. [25] studies. In their studies, health workers reported stress, depression, and anxiety symptoms. These similarities might be as a result of the similar demographic characteristics between these studies. Interestingly, in the present study, the proportion of health workers who felt exposed to COVID-19 experienced more depression (71.1%), unlike in both Zhu et al. [36] and Ofori et al. [25] studies where stress and anxiety symptoms were experienced more. The disparities in findings may largely be due to differences in the time the studies were conducted relative to the outbreak of COVID-19. Further study is needed for ascertain the reason for the increased level of depression in the present study.

Also, in the present study, female health workers were more exposed to mental health conditions than their males' counterparts and similar findings were found in Zhu et al. [36] study where women were risk factors for anxiety and stress. A considerable number of studies have suggested that females have higher risk of depression, anxiety, and psychological stress [2,4,6,11,16,17,18,21,22,24]. This could be because of the differences in brain chemistry and hormone fluctuations in females [15]. Reproductive events across a woman's life are associated with hormonal changes, which have been linked to anxiety and stress [26]. The female health workers therefore experience anxiety and stress as result of Covid-19.

Generally, health workers such as nurses and midwives who form majority of the health workforce are predominantly females [19,23]. This is not different from the current study where more than half of the participants were females. However, the current findings are in contrast with the findings of Konlan et al and Ofori et al [14,25], where they did not find an association between gender and depression, stress, anxiety, and fear of COVID-19 among health workers. It is not clear why there is a disparity. Further studies would be needed to ascertain the reason for the disparity.

The findings of the present study showed that health workers with less than 5 years working experience had more exposure to anxiety, depression and stress. This is in line with the results of previous studies where psychological conditions are more common in inexperienced staff [8,14,23,24]. However, on the contrary, in Zhu et al. [36] study, health workers with working experience greater than 10 years where risk factors for anxiety and stress. Elghazally & Abdeldaim, [10] also found that health workers years of practice was not statistically significant with psychological conditions during COVID-19. These differences might be as a result of the different demographic characteristics between the two study sites in Ghana and China. In addition, the differences may be related to the different measurements used in these studies. The present study findings may also be attributed to the fact that health workers with less working experience are not familiar to the unique pressures and working conditions or with less occupational exhaustion.

Health workers that completed tertiary education were more exposed to anxiety, depression, and stress respectively than those who completed SSS/SHS/Vocational education. The high exposure among those with high educational qualification could largely be due to the increased demands at work on highly educated staff. The overload of work could overwhelm them leading to exposure to anxiety, depression, and stress at the height of Covid-19 pandemic [14].

In terms of job category, CHNs were more exposed to mental health conditions compared to the other categories. Probably because of their direct engagement with potentially infected patients visiting the health facilities to access care. Another reason is that CHNs carry out outreaches and feel more at risk of contracting COVID-19. The current study does not align with findings from Ofori et al. [25] and Elghazally & Abdeldaim, [10] studies. In the two studies, health workers job category was not statistically significant with psychological conditions during COVID-19, and it is unclear why this is so.

Among the age group of health workers those that ranged from 30-39 presented higher rates of mental health conditions at the height of COVID-19 pandemic than the other age groups. This is in line with the results of previous studies where psychological conditions are more common in younger staff [8,23,24]. On the contrary, some studies found out that older health workers aged 40-45 years have a greater risk to psychological and physical conditions such as stress resulting from overworking and carrying out tedious responsibilities, while others found that health workers age was not statistically significant with psychological conditions during COVID-19 [2,9,10,19,30].

With facility type, those at the health centres were more exposed to mental health conditions than health workers providing health care services at the CHPS zones. This may probably be as result of differences in the availability of personal protective equipment (PPEs) that underlie these adverse psychological effects across the health facilities [25].

Conclusions

This study highlighted several sociodemographic characteristics of health workers exposed to mental health conditions and **f**actors associated with depression, anxiety, and stress in health workers at the height of COVID-19 pandemic. Generally, approximately half of the workers at the primary levels felt depressed, anxious, or felt stressed about COVID 19. Family avoidance, alcohol, and role (CHOs, public health nurse and other categories) were significantly associated with anxiety, depression and stress in health workers at the height of COVID-19 pandemic. There is a need for the health system to recognize the presence of these adverse psychological effects in health workers and take pragmatic steps to address them such ensuring that there is availability of PPEs.

REFERENCES

1. Acter, T., Uddin, N., Das, J., Akhter, A., Choudhury, T.R. & Kim, S. (2020). Evolution of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as coronavirus disease 2019 (COVID-19) pandemic: A global health emergency. *Science of the Total Environment*, *730*, p.138996.

2. Afulani, P.A., Gyamerah, A.O., Nutor, J.J., Laar, A., Aborigo, R.A., Malechi, H., et al. (2021). Inadequate preparedness for response to COVID-19 is associated with stress and burnout among healthcare workers in Ghana. PLoS ONE. 2021; 199;16(4 April), 1–20. https://doi.org/10.1371/journal.pone.0250294 PMID: 33861808.
3. Armocida, B., Formenti, B., Ussai, S., Palestra, F. & Missoni, E. (2020). The Italian health system and the COVID-19 challenge. *The Lancet Public Health*, *5*(5), p.e253. 3.
4. Audet MC. (2019). Stress-induced disturbances along the gut microbiota-immune-brain axis and implications for mental health: Does sex matter? Frontiers in neuroendocrinology 2019; 54:100772.
5. Baker, M. G., Peckham, T. K., & Seixas, N. S. (2020). Estimating the burden of United States workers exposed to infection or disease: a key factor in containing risk of COVID-19 infection. *PLoS ONE*, *15*(4), 4–11. https://doi.org/10.1371/journal.pone.0232452.
6. Cabarkapa, S., Nadjidai, S.E., Murgier, J., et al. (2020). The psychological impact of COVID-19 and other viral epidemics on frontline healthcare workers and ways to address it: a rapid systematic review. *Brain Behav Immun Health* 2020; 8: 100144.
7. Chersich, M.F., Gray, G., Fairlie, L., Eichbaum, Q., Mayhew, S., Allwood, B., et al. (2020). COVID-19 in Africa: care and protection for frontline healthcare workers. Vol. 16, Globalization and health. NLM (Medline); 2020. p. 46. https://doi.org/10.1186/s12992-020-00574-3 PMID: 32414379.
8. Cocchiara R, Peruzzo M, Mannocci A, Ottolenghi L, Villari P, Polimeni Aet al. The Use of Yoga to Manage Stress and Burnout in Healthcare Workers: A Systematic Review. Journal of Clinical Medicine. 2019; 8(3), 284. https://doi.org/10.3390/jcm8030284.
9. Dubale, B.W., Friedman, L.E., Chemali, Z., Denninger, J.W., Mehta, D.H., Alem, A., et al. (2019). Systematic review of burnout among healthcare providers in sub-Saharan Africa. BMC Public Health. 2019; 19(1):1247. https://doi.org/10.1186/s12889-019 7566-7 PMID: 31510975.
10. Elghazally, N., & Abdeldaim, D. (2021). Depression among medical staff during the coronavirus disease-19 pandemic in Egypt; A comparative web based cross-sectional study. Macedonian Journal of Medical Sciences. 2021; 9, 1578–1785.
11. García-Reyna, B., Castillo-García, G.D., Barbosa-Camacho, F.J., et al. (2020). Fear of COVID-19 Scale for Hospital Staff in Regional Hospitals in Mexico: a survey study 2020. Int J Ment Health Addict. Epub ahead of print 04 November 2020. DOI: 10.1007/ s11469- 020-00413-x.
12. Ghana Health Service. (2020). Situation update, COVID-19 outbreak in Ghana, https://www.ghanahealthservice.org/covid19/archive.php (Accessed 25 September 2020).
13. Hofmann, S.G., Anu, A. M., & Hinton, D.E. (2010). Cultural aspects in social anxiety and social anxiety disorder. Depress Anxiety 2010; 27: 1117–1127.
14. Konlan, K.D., Asampong, E., Dako-Gyeke, P., & Glozah, F.N. (2022). Burnout syndrome among healthcare workers during COVID-19 Pandemic in Accra, Ghana. PLoS ONE 17(6): e0268404. https:// doi.org/10.1371/journal.pone.0268404.
15. Kundakovic, M., & Rocks, D. (2022). Sex hormone fluctuation and increased female risk for depression and anxiety disorders: from clinical evidence to molecular mechanisms. Front Neuroendocrinal. 2022 Jul; 66: 101010. doi: 10.1016/j.yfrne.2022.101010 PMID: 35716803.
16. Labrague, L.J., & de Los Santos, J.A.A. (2020). Fear of Covid-19, psychological distress, work satisfaction and turnover intention among frontline nurses. J Nurs Manage. Epub ahead of print 27 September 2020. DOI: 10.1111/jonm.13168.
17. Lai, J., Ma, S., Wang, Y., et al. (2020). Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. JAMA Netw Open 2020; 3: e203976.
18. Maunder, R.G., Lancee, W.J., Rourke, S., et al. (2004). Factors associated with the psychological impact of severe acute respiratory syndrome on nurses and other hospital workers in Toronto. Psychosomatic medicine 2004; 66:938-42.
19. Mbanga, C., Makebe, H., Tim, D., Fonkou, S., Toukam, L., Njim, T. (2018). Determinants of burnout syndrome among nurses in Cameroon. BMC Research Notes. 2018; 11(1). https://doi.org/10.1186/s13104-018-4004-3 PMID: 30547848.
20. Morgan, A.K., & Awafo, B.A., (2020). Lessons for averting the delayed and reduced patronage of non-COVID-19 medical services by older people in Ghana. *Journal of Gerontological Social Work*, *63*(6-7), pp.728-731.
21. Muller, R.A.E., Hafstad, E.V., Himmels, J.P.W., et al. (2020). The mental health impact of the Covid-19 pandemic on healthcare workers, and interventions to help them: a rapid systematic review. *Psychiatry Res* 2020; 293: 113441.
22. Nickell, L.A., Crighton, E.J., Tracy, C.S., et al. (2004). Psychosocial effects of SARS on hospital staff: survey of a large tertiary care institution. CMAJ: Canadian Medical Association journal = journal de l'Association medicale canadienne 2004; 170:793-8.

23. Njim, T., Mbanga, C., Mouemba, D., Makebe, H., Toukam, L., Kika, B., et al. (2018). Determinants of burnout syndrome among nursing students in Cameroon: cross - sectional study. BMC Research Notes. 2018; 1–6.
24. Odonkor, S.T., & Frimpong, K. (2020). Burnout among Healthcare Professionals in Ghana: A Critical Assessment. BioMed Res Int. 2020 Mar 21; 2020:1–8. https://doi.org/10.1155/2020/1614968 PMID: 32280676.
25. Ofori, A.A., Osarfo, J., Agbeno, E.K., Manu, D.O., & Amoah, E. (2021). Psychological impact of COVID-19 on health workers in Ghana: A multicentre, cross-sectional study. SAGE Open Medicine. Vol 9: 1–10. DOI: 10.1177/20503121211000919 journals.sagepub.com/home/smo.
26. Olivia, R. (2016). Women are far more anxious than men – here's the science. Anxiety: gender specific. University of Cambridge.
27. Reuters, W.S.C. (2020). Ghana health workers warn of potential COVID-19 calamity, https://www.usnews.com/news/world/articles/2020-07-09/Ghana-health-workers-warn-of- potential covid-19-calamity (accessed 9 July 2020).
28. Shaukat, N., Ali, D.M., & Razzak, J. (2020). Physical and mental health impacts of COVID-19 on healthcare workers: a scoping review. *Int J Emerg Med* 2020; 13:40.
29. Stuijfzand, S., Deforges, C., Sandoz, V., et al. (2020). psychological impact of an epidemic/pandemic on the mental health of healthcare professionals: a rapid review. *BMC Public Health* 2020; 20: 1230.
30. Suleiman, A., Bsisu, I., Guzu, H., Santarisi, A., Alsatari, M., Abbad, A., et al. (2020). Preparedness of Frontline Doctors in Jordan Healthcare Facilities to COVID-19 Outbreak. Int J Environ Res Public Health. 2020 May 2; 17 (9):3181. https://doi.org/10.3390/ijerph17093181 PMID: 32370275.
31. Wilson, W., Raj, J.P., Rao, S., et al. (2020). Prevalence and predictors of stress, anxiety, and depression among healthcare workers managing COVID-19 pandemic in India: a nationwide observational study. Indian J Psychol Med 2020; 42(4): 353–358.
32. Worldometer. (2020). COVID-19 coronavirus pandemic, https:// www.worldometers.info/coronavirus/#countries (accessed 16 December 2020).
33. World Health Organisation. (2021). Coronavirus disease (COVID-19). Retrieved from https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19.
34. Wu, Z., & McGoogan, J. M. (2020). *Characteristics of and important lessons from the Coronavirus Disease 2019 (COVID-19) outbreak in China: summary of a report of 72,314 cases from the Chinese Center for Disease Control and Prevention*. *Journal of American Medical Association-Viewpoint* (Vol. 323). Retrieved from https://jamanetwork.com.
35. Xiang, Y.T., Jin, Y., Wang, Y., Zhang, Q., Zhang, L., & Cheung, T. (2020). Tribute to health workers in China: a group of respectable population during the outbreak of the. *International Journal of Biological Sciences*, *16*(10), 1739–1740. https://doi.org/10.7150/ijbs.45135.
36. Zhu, Z., Xu, S., Wang, H., Liu, Z., Wu, J., Li, G., & Wang, W. (2020). *COVID-19 in Wuhan: immediate psychological impact on 5062 health workers*. https://doi.org/https://doi.org/10.1101/2020.02.20.20025338.