



Original Article

Psychological challenges and coping strategies of quarantined healthcare workers exposed to confirmed COVID-19 cases in a tertiary hospital in Edo state

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ABSTRACT

Objectives: Healthcare workers (HCWs) face a significant risk of exposure to the new SARS-CoV-2 virus due to its high infectivity. This study aimed to determine the mental health consequences of quarantine and the coping strategies used by quarantined healthcare workers (HCW) at the University of Benin Teaching Hospital (UBTH).

Materials and Methods: This was a cross-sectional survey of 32 HCWs quarantined due to exposure to confirmed case of COVID-19. The primary outcome variables were the frequency of depression, anxiety, and anxiety-depression. Data was collected with the use of a self-administered questionnaire adapted from the patient health questionnaire-9 and the general anxiety disorder-7 questionnaires respectively.

Results: There were 32 quarantined health workers with a mean \pm SD age of 32.4 ± 8.4 years, and 59.4% were female. Twenty-three (71.9%) had spent <5 years in service. Doctors and nurses made up an equal proportion of 46.9% of the respondents, respectively. The prevalence of anxiety, depression, and anxiety-depression was 9.4%, 12.5%, and 9.4%, respectively. Coping measures employed by the health workers centered on preventing boredom and improving communication.

Conclusion: There was a low frequency of anxiety, depression, and anxiety-depression in HCWs who were quarantined as a result of exposure to COVID-19. Health-care managers need to support the establish formal workplace mental health programs to support the psychological well-being of all staff.

Keywords: Quarantine, Coronavirus disease 2019, Healthcare workers, Mental health, Coping strategies

INTRODUCTION

Healthcare workers (HCWs) face significant risk of exposure to the SARS-CoV-2 virus due to its route of transmission and high infectivity.^[1,2] Although the severity of adverse outcomes of coronavirus disease 2019 (COVID-19) is determined by factors such as age and the presence of comorbid conditions,^[3] awareness of being exposed to the virus is nevertheless a significant source of psychological distress to HCWs caring for patients.^[4] Health workers who are not adequately protected (i.e., not using a face mask and within six feet of someone for a cumulative total of 15 min or more over a 24-h period)^[5] and exposed to confirmed cases of COVID-19 were required to undergo quarantine to reduce the risk of infecting patients, other health workers, or their families. Quarantine is the act of separating and restricting the movement of persons

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who are exposed to an infectious disease to observe if they become sick.^[6] Quarantine is not a pleasurable experience for those who undergo it due to separation from family and friends, the loss of freedom, uncertainty over disease status, and the likelihood of boredom.^[7] The psychological impact of quarantine could be extensive, significant, or even long-term^[7] and may include depression, anxiety, fear, stress, and even physical symptoms such as shortness of breath and headaches.^[8,9] A study of health workers in a hospital in East Taiwan following the 2003 SARS outbreak revealed that of 41 quarantined health workers, 8 (20.0%) reported symptoms of anxiety, 6 (15.0%) irritability, and 9 (22.0%) insomnia.^[10] Psychological reactions displayed by quarantined health workers also include lack of control, anger, and frustration.^[9]

Sleep disorders, post-traumatic stress disorder (PTSD), and alcohol dependence have all been documented following episodes of quarantine.^[11-14] Avoidance behavior has also been reported as another consequence of quarantine. HCWs who were quarantined displayed avoidance behaviors, such as minimizing direct contact with patients and not reporting to work.^[15] Long-term behavioral changes after the quarantine such as habitual hand washing and avoiding crowds have also been reported; and for some persons, the return to their normal life was delayed by many months.^[16]

Measures adopted to reduce the adverse consequences of quarantine include providing as much information regarding the disease and the reason for quarantine, providing adequate basic supplies, measures geared toward reducing boredom and improving communication.^[7] Other strategies include engaging in activities such as prayers, sports, exercise, and chatting with friends and family to obtain support.^[17] Research also suggests that support groups targeted at persons who were quarantined at home during disease outbreaks may also be useful in mitigating the negative consequences of quarantine.^[7,18]

Effective use of quarantine as a tool in disease control requires the mitigation, as far as possible of the undesirable effects linked with it. Health facility managers need to take steps to pre-emptively safeguard the mental health of staff.^[19] Considering how the COVID-19 pandemic has evolved, hospital managers require data to guide the development of policies on health workers' welfare and safety.^[7]

The need for reliable data on the psychological impact of quarantine on HCWs and its effects on mental health provides a justification for this study. The aim of the study was to identify the mental health consequences of quarantine and document the coping strategies used by healthcare exposed to confirmed COVID-19 cases in University of Benin Teaching Hospital (UBTH).

MATERIALS AND METHODS

Study area and study setting

The study was conducted at the UBTH, a federal government-owned tertiary health-care facility situated along the Benin-Lagos highway in Benin City, Edo State, in Nigeria. Edo is one of the states in the South-south geo-political zone of the country. UBTH is an 860-bed hospital that provides a wide range of multidisciplinary clinical services through several clinical departments.^[20] The first case of COVID-19 in Nigeria was reported in Lagos, South-west Nigeria on February 27, 2020. The first two cases of COVID-19 in the hospital were reported on March 31, 2020. Early in the pandemic, the response taken by the hospital to its staff being exposed to a confirmed case of COVID-19 was for the infection control unit to assess the exposure risk and place the individual into risk categories – high, medium, or low risk depending on certain criteria. However, all health workers exposed to a confirmed COVID-19 case, no matter the risk categorization was required to proceed on quarantine for 14 days. The health workers undertook the quarantine in their homes and were monitored by personnel of the hospital's Infection Prevention and Control Committee using text messages, phone calls, and spot checks to ensure adherence. All quarantined HCWs returned to work after the mandatory 14-day period.

Study design and study participants

This was a cross-sectional survey of HCWs quarantined due to exposure to confirmed COVID-19 cases in UBTH during April and May 2020. The HCWs were quarantined due to direct or indirect exposure to patients who were subsequently confirmed positive to COVID-19. Quarantined HCWs who did not give their consent were excluded from participating in the study.

Sample size

A total of all (32) quarantined HCWs directly or indirectly exposed to the positive COVID-19 case in the hospital who consented to be part of the study were recruited. A direct exposure was deemed as direct contact/exposure to a positive COVID-19 case while an indirect exposure was deemed as contact/exposure to anyone who had direct contact/exposure to a confirmed positive COVID-19 case. The hospital has 3840 staff across 29 clinical and 35 non-clinical departments.^[20]

Variables

The primary outcome variables were the prevalence of depression, anxiety, and anxiety-depression and strategies adopted in coping with the quarantine period. The severity of depression, anxiety, anxiety-depression, and their determinants were taken as the secondary outcome variables.

Covariates/confounders

Bereavement, history of a manic episode (Bipolar Disorder), and a physical disorder that could cause distress, medication, or other drugs that could alter mood and cause depressive symptoms (Beta-blockers, calcium-channel blockers, corticosteroids, carbamazepine, oral contraceptives, and anti-depressants, Statins).

Study tool, data collection, and scoring

Data were collected quantitatively with the use of a self-administered tool adapted from the patient health questionnaire-9 (PHQ-9), the general anxiety disorder-7 (GAD-7), and a study on HCWs emotions, perceived stressors, and coping strategies during a MERS-CoV outbreak in Saudi Arabia.^[17,21,22]

The tool was administered to all quarantined HCWs who were directly or indirectly exposed to COVID-19 positive patients in the course of their routine clinical duties. The HCW completed and returned the tool afterward.

The tool assessed the prevalence and severity of anxiety and depression while identifying the coping strategies used by quarantined HCWs. The PHQ-9 and GAD-7 are among the best validated and most commonly used depression and anxiety measures, respectively, available for free in the public domain.^[23]

The PHQ-9 has nine questions that seek to determine depression and the severity of depression. Subjects were asked how often, over the past 2 weeks they have been bothered by each of the depressive symptoms. Response options are “not at all,” “several days,” “more than half the days,” and “nearly every day,” scored as 0, 1, 2, and 3, respectively. PHQ-9 scores range from 0 to 27, with scores of ≥ 5 , ≥ 10 , ≥ 15 , and ≥ 20 representing mild, moderate, moderately severe, and severe levels of depression severity.^[21,23,24]

A cutoff point of 10 or greater is considered clinically significant depression. The final question on the PHQ asks the patients to report – how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people? This single patient-rated difficulty item represents the patient’s global impression of symptom-related impairment.^[24]

The GAD-7 has seven items with response options identical to the PHQ-9 and is scored as a continuous variable from 0 to 21 (with higher scores representing more severe anxiety). It was initially designed as a screening and severity measure for generalized anxiety disorder, the GAD-7 scale has moderately good operating characteristics for three other common anxiety disorders – panic disorder, social anxiety disorder, and PTSD. Scores of ≥ 5 , ≥ 10 , and ≥ 15 represent cutoff points for mild, moderate, and severe anxiety, respectively. A cutoff point of 10 or greater is considered clinically significant anxiety.^[22-24]

The PHQ-9 and GAD-7 have strong internal and test-retest reliability as well as construct and factor structure validity.^[23]

In this study, a composite of both PHQ-9 and GAD-7, the patient health questionnaire anxiety-depression scale was used.^[23] The patient health questionnaire anxiety-depression scale is a 16-item scale comprising the PHQ-9 and GAD-7 – as a composite measure of depression and anxiety. The PHQ-ADS is the sum of the PHQ-9 and GAD-7 scores and ranges from 0 to 48, with higher scores indicating higher levels of depression and anxiety symptomatology. Cutoff points of ≥ 10 , ≥ 20 , and ≥ 30 on the PHQ-ADS are used to categorize mild, moderate, and severe depression/anxiety symptoms, respectively.^[23]

Statistical analysis

The questionnaires were screened for completeness, coded, and entered into the IBM SPSS statistics version 21.0 software. Continuous variables (such as age and years of service) and categorical data (such as sex, the designation of health workers, and severity of anxiety or depression) were summarized using the appropriate statistical methods. The frequency of depression and anxiety was computed as the proportion of HCWs with the stated outcome. Bivariate analyses were done to test the relationships between the primary/secondary outcome measures and various independent variables such as age, sex of worker, or marital status. The level of statistical significance was set at 0.05.

Ethical considerations

Consent was obtained from each participant and confidentiality was maintained. Respondents were informed of their right to decline participation or to withdraw from the study at any time. Respondents were also informed that there were no penalties or loss of benefits for refusal to participate in the study or withdrawal from it. All data were kept secure and made available only to the researcher.

RESULTS

A total of 32 quarantined HCWs participated. Half, 16 of the HCWs were aged 20–29 years, and 19 (59.4%) of the HCWs were female [Table 1]. Sixteen (50%) of the respondents were married and 14 (43.8%) had children.

The majority of respondents, 71.9% had worked <5 years in the hospital; 9 (28.2%) respondents were medical interns, and 13 (40.6%) were from the Department of Internal Medicine [Table 2].

One (3.1%) respondent had a history of a chronic medical condition; 2 (6.3%) respondents were bereaved; 3 (9.4%) had a history of manic-depressive episodes, and 2 (6.3%) respondents were using medication at the time of their quarantine. Twenty-nine (90.6%) HCWs had direct contact with a confirmed case of COVID-19.

Three (9.4%) HCWs had mild anxiety; 4 (12.5%) had mild depression, and 3 (9.4%) had mild anxiety-depression. No health worker had moderate or severe forms of either anxiety, depression, or anxiety-depression [Table 3].

There was no statistically significant association between any sociodemographic or medical characteristics and anxiety, depression, or anxiety-depression.

The strategies used by the respondents to help cope with the stress of quarantining included: Chatting with friends (90.6%); sharing jokes/humor (87.5%); engaging in religious activities (84.4%); trying to keep busy (84.4%); and avoiding news media such as newspapers, radio, and television (34.4%) [Table 4].

DISCUSSION

This study highlights the psychological challenges and coping strategies deployed by HCWs quarantining due to exposure to a patient with COVID-19 infection. In the initial phase of the COVID-19 pandemic when little was known about the virus, quarantine was the major strategy deployed to prevent persons who had been exposed to the confirmed case from infecting other persons. During the quarantine period, the exposed person would monitor their temperature and lookout for symptoms and signs of COVID-19 infection. This measure or strategy of restricting

Table 1: Socio-demographic and occupational characteristics of the study population.

Variable	Frequency (n=32)	%
Age group (years)		
20–29	16	50.0
30–39	11	34.4
40–49	3	9.4
≥50	2	6.2
Mean±SD age	32.4±8.4 years	
Sex		
Female	19	59.4
Male	13	40.6
Religion		
Christianity	32	100.0
Islam	0	0.0
African Traditional Religion	0	0.0
Marital status		
Single	16	50.0
Married	16	50.0
Have children		
Yes	14	43.8
No	18	56.2
Level of Education		
Primary	0	0.0
Secondary	2	6.3
Tertiary	26	81.3
Postgraduate	4	12.5

movement, while looking out for symptoms of illness, is capable of affecting the psychological well-being of such individuals.^[10] The prevalence of anxiety, depression, and

Table 2 : Occupational characteristics of study population.

Variable	Frequency (n=32)	%
Duration of service (years)		
<5	23	71.9
6–10	3	9.4
11–15	5	15.6
>20	1	3.1
Designation		
Doctor	15	46.9
Nurse	15	46.9
Health attendant	2	6.3
Cadre/Rank		
Registrar	6	18.8
Medical Intern	9	28.2
ADNS	1	3.1
PNO	2	6.3
SNO	1	3.1
Nursing Officer 1	6	18.7
Nursing Officer II	2	6.2
Senior Community Health Officer	1	3.1
Nurse Intern	2	6.2
Health Assistant	2	6.3
Years postgraduation		
<5	16	53.3
6–10	6	20.0
11–15	3	10.0
>20	5	16.7
Department		
Internal Medicine	13	40.6
ER Medical	7	21.9
ER Surgical	6	18.8
General Practice Clinic	2	6.2
Others	4	
Isolation Ward	1	3.1

ER: Emergency room, ADNS: Assistant director nursing services, PNO: Principal nursing officer, SNO: Senior nursing officer. Others: Isolation ward, Children Emergency room, Male Medical and Oncology Ward

Table 3: Prevalence of anxiety, depression, and anxiety-depression among healthcare workers.

Variable	Frequency (n=32)	%
Anxiety		
None	29	90.6
Mild	3	9.4
Depression		
None	28	87.5
Mild	4	12.5
Anxiety-depression		
None	29	90.6
Mild	3	9.4

Table 4: Strategies/activities that assisted respondents in coping.

Variable	Frequency* (n=32)	%
Relying on the communication that no colleague under quarantine had developed COVID-19 symptoms	29	90.6
Sharing jokes/humor	28	87.5
Using positive attitudes displayed by colleagues	27	84.4
Relaxation/exercises	27	84.4
Engaging in religious activities	27	84.4
Tried to keep busy with domestic activities	27	84.4
Chatting with family friends	29	90.6
Using self-motivating talk	25	78.1
Believing information about COVID-19 symptoms not being very severe	24	75.0
Getting help from specialist physicians	17	53.1
Avoided news media	11	34.4
Vented emotions by crying/screaming	4	12.5

*Multiple responses

anxiety-depression was low from our study, with about a tenth of the study population displaying any type of psychological disorder. The prevalence of depression was slightly higher in this study compared with anxiety.

The prevalence of psychological disorders in our study is much lower when compared to the results of a systematic review of psychological disorders in health workers during the COVID-19 pandemic, which revealed that the prevalence of anxiety and depression were 23.2% and 22.8%, respectively.^[25] Other studies report the prevalence of 20.0% for anxiety^[10] and 31.2% for depression.^[13] The reason for the low figures from our study may be related to the low sample size a priori which is a limitation of this study; however, the challenges of living and coping in an environment with poor social amenities, poor remuneration, insecurity, and poor working conditions may have allowed the health workers build up psychological buffers against adverse situations. Thus, stressors that ordinarily would have tipped others into psychological disorders are largely overcome.

Data from our study show that the majority of our study population had worked in the hospital for <5 years. This may be related to younger health workers being in the frontline of managing patients and thus being at risk of occupational exposures. In addition, younger health workers due to inexperience may adhere less to precautions meant to protect them and ensure their safety. Research shows that occupational exposures in healthcare are more prevalent among workers staff who had worked fewer years in the health settings such as interns.^[26]

Apart from anxiety and depression, other psychological disorders reported from other studies include stigma, sleep

disorders, alcohol dependence, and PTSD.^[9-11] Our study did not focus on these other psychological consequences of quarantine; hence, it would be difficult to ascertain if the respondents suffered from any of these psychological disorders reported above.

Doctors and nurses were the major categories of health workers noted to be in quarantine. This is unsurprising because these categories of health workers provide the closest care to patients and thus are the most likely to suffer a work-related exposure to COVID-19.

Health-care managers need to pay more attention to training staff especially younger healthcare professionals on standard precautions in infection control. Furthermore, more experienced health workers need to devote more time to teaching younger professionals about infection control practices. Proper use of personal protective equipment (PPEs) also goes a long way to protect healthcare staff from occupational exposures in the healthcare setting. Staff who is fully protected by the appropriate PPEs is less likely to experience psychological disorders following exposure to infectious agents during their routine work.^[27]

Our study also reveals that there was no statistically significant association between sociodemographic or medical characteristics and any of the outcomes of anxiety, depression, or anxiety-depression. Although the low prevalence of anxiety or depression in our study with a relatively small sample size may have been responsible for this result.

Younger age and lower levels of education were reported as predictors of psychological distress from a study conducted in Australia among the general population whose movement was restricted or quarantined due to an outbreak of infectious equine influenza.^[28] A review of the impact of COVID-19 on the mental health of health workers revealed that younger age, female gender, having an underlying illness, and being an only child as sociodemographic risk factors of adverse mental health outcomes. The researchers also reported that experience, training, and the use of PPEs were protective against adverse mental health outcomes.^[27]

Coping measures employed by health workers in our study include relying on improving communication about colleagues who were under similar quarantine to ascertain that they had not developed any symptoms or signs of COVID-19. This information has a way of enhancing the emotional well-being of individuals as they believe that their cases will also be similar. Other strategies mentioned by our respondents included sharing jokes with friends and families, keeping themselves busy around their homes, and engaging in exercises. The health workers used these activities to keep their minds off the psychological stress of thinking about the possibility of being infected with COVID-19, especially against the background of little information regarding the disease at the time. Similar

coping measures reported in other studies include reducing boredom, improving communication, engaging in religious activities and sports, and chatting with loved ones.^[7,17] Another measure that is useful in helping persons cope with the stress of quarantine includes setting up support groups.^[18] The use of technology and virtual platforms will help promote the core ideals of setting up support groups.

In addition, more than half of the health workers in our study sought help from professional colleagues. An organized and formal mental health program for workers who experience similar work-related or occupational exposure may go a long way in supporting their ability to cope. However, mental healthcare in developing settings like ours is viewed with a lot of stigmas.^[29] Organizational support has been identified as a predictor of HCWs' ability to cope during times of distress.^[15] Health managers in developing settings like ours need prioritize the development of programs and activities that address the psychological well-being of their staff. This will, in turn, boost their productivity and reduce the incidence of mental health disorders.

In addition to the small sample size, another limitation of this study was that it was difficult to verify the responses given by the health workers. We, however, encouraged the respondents to respond candidly to the questions. We guaranteed the confidentiality of their data by ensuring the forms that were filled were anonymous by excluding names. Excluding the names on each questionnaire ensured that the responses given could not be tied to any particular health worker. Serial numbers were used to identify the questionnaires. This is very important because of the issues of stigma around mental health disorders in our setting.

CONCLUSION

There was a low prevalence of psychological disorders in HCWs who were quarantined as a result of COVID-19. Coping measures employed by the health workers centered on preventing boredom and improving communication. Formal organizational support and the formation of support groups are core activities that should become a policy in healthcare settings. Healthcare managers need to support the setting up of formal workplace mental health programs as an ongoing activity to support the well-being of staff in such institutions.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

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Conflicts of interest

There are no conflicts of interest.

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