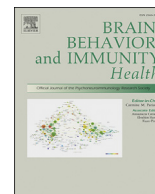


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Psychosocial health effects of Covid-19 infection on persons in treatment centers in Lagos, Nigeria



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ABSTRACT

Introduction: Prior research has highlighted the psychosocial impact of infectious diseases on individuals and the community at large. However, little is known about the psychosocial implications of COVID-19. This study set out to determine the rate as well as correlates of anxiety and depressive symptoms among persons managed as in-patients for COVID-19 in Lagos, Nigeria.

Materials and methods: We conducted an online survey between April to June ending 2020 using a consecutive sampling technique of persons positive for COVID-19 and who were managed as in-patients across five (5) treatment centres in Lagos, Nigeria. The survey collected information on demographic as well as clinical data including suicidality. Anxiety and depressive symptoms were assessed using the Hospital Anxiety and Depression Scale (HADS).

Results: There were one hundred and sixty participants in total. The mean age of respondents was 36.4 (± 9.7) years with a higher proportion (56.9%) being males. With regards to diagnosis, 28.1% and 27.5% of the respondents were categorised as probable cases of depression and anxiety respectively, while 3.8% respondents reported suicidal ideation. Majority of the respondents (61.9%) reported the fear of infecting their loved ones. The variables that showed association with psychiatric morbidity were a past history of an emotional concern, employment status, guilt about infecting others and boredom.

Conclusion: This study revealed a high burden of psychological/psychiatric morbidity among persons treated for COVID-19, particularly persons who have had prior emotional concerns. The findings from this study reiterate the need to pay attention to the mental health of people during disease outbreaks and to incorporate psychosocial interventions as part of the management package.

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1. Introduction

On the 21st of December, 2019, pneumonia of unknown etymology was recorded to have started spreading among the inhabitants of Wuhan in Hubei Province of China (Rodríguez-Rey et al., 2020; World Health Organization (WHO), 2020). It was determined that these symptoms were caused by a beta coronavirus, SARS-CoV-2, and the resultant disease was eventually referred to as COVID-19 (Santos, 2020; World Health Organization (WHO), 2020). On the 30th of January, 2020, the World Health Organization (WHO) declared the COVID-19 outbreak a public health emergency of international concern (World Health Organization (WHO), 2020). Subsequently, COVID-19 swept across the globe and on the 11th of March, 2020 the WHO declared the outbreak a global pandemic (World Health Organization (WHO), 2020). As of the 22nd of April, 2021, there were over 143 million recorded infected cases and approximately 3,051,000 COVID-19 related deaths globally ((World Health Organization (WHO), 2020).

The first case of COVID-19 in Nigeria was reported and isolated on the 27th of February 2020 and the country has experienced a steady rise in the number of infected cases till date. On March 30, 2020, the Federal Government of Nigeria imposed an initial strict 2-weeks lockdown, which was subsequently extended, to curb the spread of coronavirus and there are currently over 164,000 confirmed cases and 2060 COVID-19 related deaths (Nigerian Center for Disease Control (NCDC), n.d.).

Prior to the current COVID-19 pandemic, three other major pandemics have been reported in the 20th century (Kilbourne, 2006) among which was the H1N1 virus (Spanish flu) in 1918, while the Severe Acute Respiratory Syndrome, SARS-CoV, presented in the 21st century (Sim and Chua, 2004). These were reported to have had some psychosocial impacts on individuals, and the community at large across the globe (Chong et al., 2004; Huremović, 2019). Prominent themes such as stress, anxiety, sadness, anger and stigmatization among infected individuals were observed (Mauder et al., 2003; Zheng et al., 2005).

As with previous disease outbreaks, the rapidly increasing numbers of COVID-19 infections, its attendant growing mortality rate as well as the social restrictions (self-isolation, quarantines, lockdowns) imposed as control measures have been reported to result in psychological breakdowns (Brooks et al., 2020; Wang et al., 2020). People infected with COVID-19, as it was with the SARS outbreak, may experience a fear of infecting others, getting ill, dying, job loss, social exclusion and separation from loved ones by being placed in isolation. Additionally, they may feel angry, confused, helpless, lonely, and experience anxiety, depression or posttraumatic stress disorder/posttraumatic stress symptoms (PTSD/PTSS) (Brooks et al., 2020). Oftentimes, patients who suffered from prior mental health issues found it difficult to cope, as this was observed to lead to the worsening of pre-existing mental disorders and so should be considered as high risk (Santos, 2020).

The psychological effects of the COVID-19 pandemic are likely to rise with increasing reports of death, media reporting, as well as the number of new cases. More studies will have to be conducted to get a full understanding of the psychological effects of this pandemic. Considering the recent onset of the COVID-19 outbreak, very few studies have focused on the ensuing psychological implications among patients, their carers (formal and informal) as well as the larger community. Currently, studies on this topic are limited in the literature especially in our environment, Nigeria; a country reputed to be the most populous country in Africa. Therefore, this study was designed to examine and explore the psychiatric and psychological burden of the COVID-19 pandemic among a subset of individuals diagnosed with and managed for COVID-19 as inpatients over a twelve week period across treatment centres in Lagos Nigeria.

2. Methodology

2.1. Design

The study was a cross-sectional descriptive study that was conducted among persons who were diagnosed with COVID-19 and managed as inpatients. All eligible and consenting respondents were sampled for data collection during the duration of the study. Data was obtained via electronic means including WhatsApp and text messaging in order to mitigate the risk of researchers being infected with COVID-19.

2.2. Study population and locations

The research was carried out among people diagnosed with and treated for COVID-19 at the Lagos state designated treatment centres within the Lagos metropolis, Nigeria. As at the time of data collection, five (5) centres had been identified as treatment centres for COVID-19 including the Infectious Diseases Hospital (IDH), Yaba, Lagos and the Lagos University Teaching Hospital among others. All of the isolation centres are government-funded hospitals and designated for use by all citizens of the country and foreigners. Between April and June ending 2020, which was the period of this data collection, the psychosocial response team had followed up a total 1183 inpatients while there had been over 14,000 positive cases of COVID-19 diagnosed in Lagos, Nigeria.

2.3. Study criteria

The inclusion criteria for the study were individuals with an established diagnosis of COVID-19 using the polymerase chain reaction (PCR) technique, undergoing treatment for COVID-19 at one of the designated treatment centres and who had been on admission for up to five (5) days, had access to an internet-enabled mobile phone to allow them respond to the questions and those who were clinically stable to answer questions. Potential participants who were too sick to participate in the study as well as those who did not possess an internet-enabled device were excluded from the study. All eligible individuals were approached and only those who gave informed consent were recruited into the study. Data collection was over a twelve week period. All data was obtained by sending the link to the questionnaire via electronic means, including: WhatsApp and text messaging.

2.4. Measures

A questionnaire was designed to elicit some socio-demographic and clinical data. Some of the variables collected included age, gender, marital status, employment status and a previous history of emotional health concerns. The respondents were also presented with a number of possible concerns that they may have following infection with COVID-19 such as having guilt feelings about infecting their loved ones, fear of dying etc.

The Hospital Anxiety and Depression Scale (HADS) is a frequently used self-rating scale developed to measure anxiety and depression in a general medical population of patients. It is simple, easy to administer and takes 2–5 minutes to complete. It consists of two subscales; anxiety and depression with a total of 14 items; seven items for the anxiety subscale (HADS Anxiety) and seven for the depression subscale (HADS Depression). HADS anxiety focuses mainly on symptoms of generalized anxiety disorder and HADS Depression is focused on anhedonia, the main symptom of depression (Snaith, 2003). Each item was scored on a four-point response scale with scores ranging from 0 to 3. Six items on the

scale were reverse scored and all the responses were summed to obtain the total score on either subscale. Respondents who scored 8 and above on either the anxiety or depression subscales were categorised as having either probable anxiety or depression respectively (Bjelland et al., 2002; Zigmond and Snaith, 1983). Such respondents were referred to as “case” while those who did not were categorised as “noncase”. Subscales were further categorised as mild (8–10), moderate (11–14) or severe (>15). The HADS was administered to all the respondents. Respondents previous history of emotional health concerns was assessed by asking them to tick either Yes or No to the question: “Have you had any concern about your mental or emotional health in the past to the extent that you considered seeking treatment”?

2.5. Data collection procedure

Potential participants were recruited electronically (WhatsApp and text messaging) in the course of the psychosocial support service that was given to them by members of the Lagos COVID psychosocial team. The average response time for the questionnaires was estimated by the researchers to be about 5 minutes. The Psychosocial team was multidisciplinary in composition with different cadres of the mental health field and lay persons as volunteers. Training of team volunteers was provided on some key areas relevant to the diagnosis and treatment of COVID-19, Infection prevention and control, psychological first aid, breaking of bad news, coping skills, phone etiquette. Guidance was developed for calls and a system for call log reporting was put in place. Psychological support as indicated was given remotely to the affected persons and their significant others during isolation and care. There were different responses to the routine calls by the participants; while some were appreciative a few others were displeased with the calls. However, members of the psychosocial team had been trained not to bother persons who did not desire the service. The respondents were assessed prior to any form of intervention by members of the psychosocial support team.

All the patients were consecutively recruited by their respective case workers over the phone. The case workers emphasized the voluntary nature of their responses and reassured that their decision to decline would have no untoward effects on the quality of care that they would receive from the psychosocial team. Only those who gave consent for the study were recruited and sent links to the consent document and questionnaire, unwilling persons still received support as usual without any discrimination to them. The calls were held in private spaces by the psychosocial team members assigned to each patient as per call protocols, this was to ensure privacy and confidentiality of the discussions.

2.6. Ethical considerations

Ethical approval (approval number - LUTHHREC/EREV/0420/14) was obtained from the health research and ethics committee (HREC) of the Lagos University Teaching Hospital (LUTH). Informed consent was obtained from all the eligible participants. There was a clear opportunity for all eligible participants to accept or decline to participate in the study and non-participation did not have any untoward effect on the support that they received. All the respondents who were categorised as cases as well as those who reported having suicidal ideation were referred to the crisis management team of the COVID-19 psychosocial response team for further review and follow-up.

2.7. Data analysis

Data analysis was done using SPSS-20. The primary outcome or dependent variables were the severity of anxiety and depression symptoms as determined by HADs. Descriptive analyses were carried out using frequency tables; percentages, mean and to determine prevalence. Comparative analyses were done using chi-square and t-tests to determine associations, and to identify associated factors while the p-value was set at <0.05.

3. Results

About a third (36.2%) of respondents were health workers including medical doctors, nurses, surveillance officers and ambulance staff, who were also admitted into the hospital after testing positive for COVID- 19. About a fifth (19.7%) of the respondents reported a history of emotional health problems. Other sociodemographic and clinical variables are as depicted in Tables 1 and 2.

Regarding diagnosis using the HADS, 45 (28.1%) of the respondents met criteria for probable depression while 44 (27.5%) met criteria for probable anxiety disorder (Fig. 1) In terms of severity of depressive symptoms (Table 3), 28(17.5%), 14(8.8%) and 3(1.9%) of all the respondents were categorised as mild, moderate and severe respectively while on the other hand, 22(13.8%), 13(8.1%) and 9(5.6%) respondents fulfilled criteria for mild, moderate and severe forms of anxiety respectively. Twenty-five (15.6%) of all the respondents met cut-off for both probable anxiety and depression.

Six (3.8%) of the respondents reported suicidal ideation which was elicited by the question; “I feel that I may be better off dead”. Regarding the presence of concerns about COVID-19 which is shown in Fig. 2, the most common was the fear of infecting loved ones which was reported by 99 (61.9%) of the respondents while only 13 (8.1%) of them reported no concerns at all. Other concerns reported by the respondents included; the fear of exclusion and discrimination (36.9%), fear of losing their livelihood/income (25.6%), fear of dying (26.3%), experiencing boredom (33.1%) and guilt of infecting others (37.5%).

Following bivariate analysis of all the sociodemographic and clinical variables described, there was an association between respondents’ employment status and probable depression ($\chi^2 = 4.352, p = 0.037$) as thirty-eight (25.7%) of respondents who were employed had probable depression compared with seven (58.3%) of those who were unemployed. Additionally, having previous emotional health concerns showed a statistically significant relationship with both probable anxiety and depression ($\chi^2 = 3.868, p = 0.049$). Eighteen (39.1%) of the respondents who reported a history of an emotional concern had symptoms of an anxiety disorder compared with 26 (22.8%) of those without ($\chi^2 = 4.380, p = 0.036$) while 18 (39.1%) of the respondents who had a history of an emotional concern had symptoms of a depressive disorder compared with 27(23.7%) of those without.

With regards to the respondents concerns, we found association between respondents’ experience of boredom and probable anxiety ($\chi^2 = 5.842, p = 0.016$) as 21 (39.6%) of respondents who reported being

Table 1
Relationship between Sociodemographic/clinical characteristics and probable anxiety among respondents.

Variable	N(%)	Case	Non-case	χ^2	P
Age (Years)		36.41(9.68)	35.71(9.86)	-0.404 ^π	0.687
Gender				0.000	1.000
Male	91(56.9)	25(27.5)	66(72.5)		
Female	69(43.1)	17(27.5)	50(72.5)		
Marital status				0.057	0.811
Married	83(51.9)	24(28.9)	59(71.1)		
Unmarried	77(48.1)	20(26.0)	57(74.0)		
Employment status				0.651	0.420
Employed	148(92.5)	39(26.4)	109(73.6)		
Unemployed	12(7.5)	5(41.7)	7(58.3)		
No of COVID-19 Positive Family Members				0.000	1.000
0	114(71.2)	31(27.2)	83(72.8)		
≥1	46(28.8)	13(28.3)	33(71.7)		
Health care Worker				1.615	0.204
Yes	58(36.2)	12(20.7)	46(79.3)		
No	102(63.8)	32(31.4)	70(68.6)		
Past history Emotional Health Concern				4.380	0.036
Yes	46(28.8)	18(39.1)	28(60.9)		
No	114(71.2)	26(22.8)	88(77.2)		

^π = t – test.

Table 2
Relationship between Sociodemographic/clinical characteristics and probable depression among respondents.

Variable	N(%)	Case	Non-case	χ^2	P
Age (Years)		37.29(9.88)	35.36(9.74)	-1.124 ^π	0.283
Gender				1.065	0.302
Male	91(56.9)	29(31.9)	62(68.1)		
Female	69(43.1)	16(23.2)	53(76.8)		
Marital status				0.421	0.516
Married	83(51.9)	21(25.3)	62(74.7)		
Unmarried	77(48.1)	24(31.2)	53(68.8)		
Employment status				4.352	0.037*
Employed	148(92.5)	38(25.7)	110(74.3)		
Unemployed	12(7.5)	7(58.3)	5(41.7)		
No of COVID-19 Positive Family Members				0.000	1.000
0	114(71.2)	32(28.1)	82(71.9)		
≥1	46(28.8)	13(28.3)	33(71.7)		
Health care Worker				1.058	0.304
Yes	58(36.2)	13(22.4)	45(77.6)		
No	102(63.8)	32(31.4)	70(68.6)		
Past history Emotional Health Concern				3.868	0.049*
Yes	46(28.8)	18(39.1)	28(60.9)		
No	114(71.2)	27(23.7)	87(76.3)		

^π = t - test.

bored had probable anxiety compared with 23 (21.5%) of those who did not report being bored. Twenty three (38.3%) of the respondents who reported having guilty feeling of infecting others had probable anxiety compared with 21 (21.0%) of those who did not. The relationship between having guilt feelings of infecting others with COVID-19 and having probable anxiety was statistically significant ($\chi^2 = 5.651, p = 0.017$). As is depicted in Tables 4 and 5, we found no further association between all the other concerns reported by the patients and probable anxiety or depression.

4. Discussion

This study presents our findings on the mental wellbeing of persons hospitalized on account of COVID-19 infection. Notably, our study provides an insight into the experience of probable depression and anxiety by persons hospitalized on account of COVID-19 infection in Lagos, Nigeria thereby adding to the body of knowledge on the impact of the COVID-19 pandemic.

The demographic parameters revealed that the participants in this

Table 3
Distribution of all patients in the severity ratings of probable depression and anxiety according to the HADS.

HADS - HADS-D Severity (score range)	n (%) N = 45	HADS-A Severity (score range)	n (%) N = 44
Mild (8–10)	28(17.5)	Mild (8–10)	22(13.8)
Moderate (11–14)	14(8.8)	Moderate (11–14)	13(8.1)
Severe (15–21)	3(1.9)	Severe (15–21)	9(5.6)
Any Depression (≥8)	45(28.1)	Any Anxiety (≥8)	44 (27.5%)

HADS-D = Hospital Anxiety and Depression Scale – Depression subscale.
HADS-A = Hospital Anxiety and Depression Scale – Anxiety subscale.

study had a mean age of 36 years which is similar to the findings reported in the first report on patients managed for COVID-19 in Nigeria who reported the mean age of their participants as 38 years (Bowale et al., 2020). Additionally, as was reported in the study by Bowale and colleagues, (2020), our study participants included more males (56.9%) compared to females. This supports the earlier reports of the probable vulnerability of males to the COVID-19 infection (Jordan et al., 2020; Sharma and Volgman, 2020). Several factors have been suggested as reasons for the increased vulnerability of males to COVID-19 including higher rates of smoking and its associated co-morbidities (Jordan et al., 2020; Livingston and Bucher, 2020). Majority of the respondents in our study were either young or in their middle ages (<45 years old) and were employed (92.5%) which reflects the enormous impact that the COVID-19 pandemic may have on the productive age group within the society. Earlier reports on the management of the COVID-19 among patients in Nigeria had reported a median hospital stay of 12 days supporting the huge toll that this may have on both the individuals and their productivity considering that persons hospitalized are not able to engage in any fruitful work during the period of illness, hospitalization as well as recovery(Bowale et al., 2020).

About three in ten respondents (28.1%) in our study met criteria for probable depression and were categorised as cases using the HADS which is several-fold the proportion of depression among the general population of inhabitants of Lagos as reported in an earlier study by Adewuya et al. (2018) who recorded a depression prevalence of 5.5% in a household survey of 11, 246 adults in Lagos Nigeria(Adewuya et al., 2018). There are limited studies looking at depression prevalence among patients with COVID-19, however, Zhang et al. (2020) also found a similar prevalence of depression among this population put at 29.2% in China(Zhang et al., 2020). A hospital-based study of attendees of a general practitioner clinic

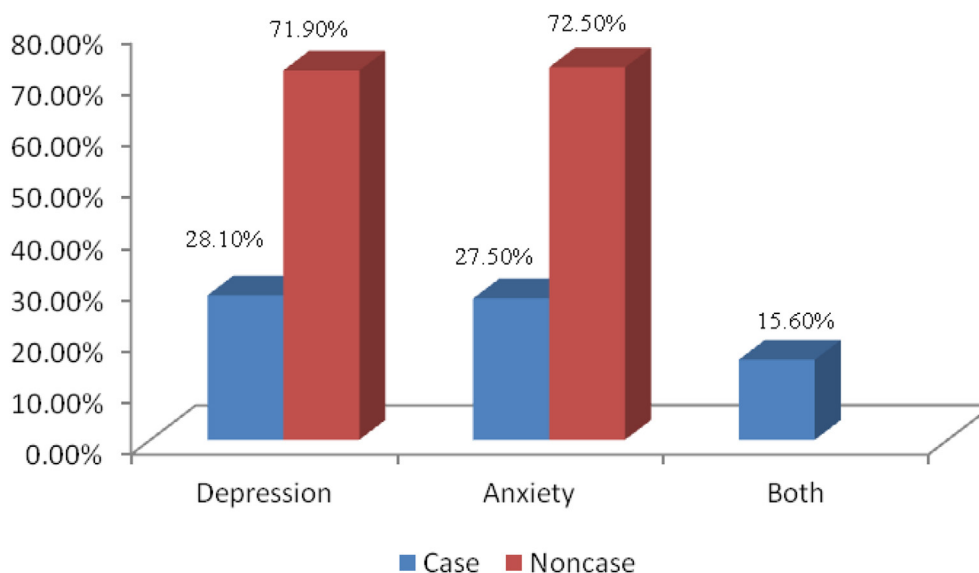


Fig. 1. Prevalence of probable depression and anxiety among COVID-19 positive inpatients.

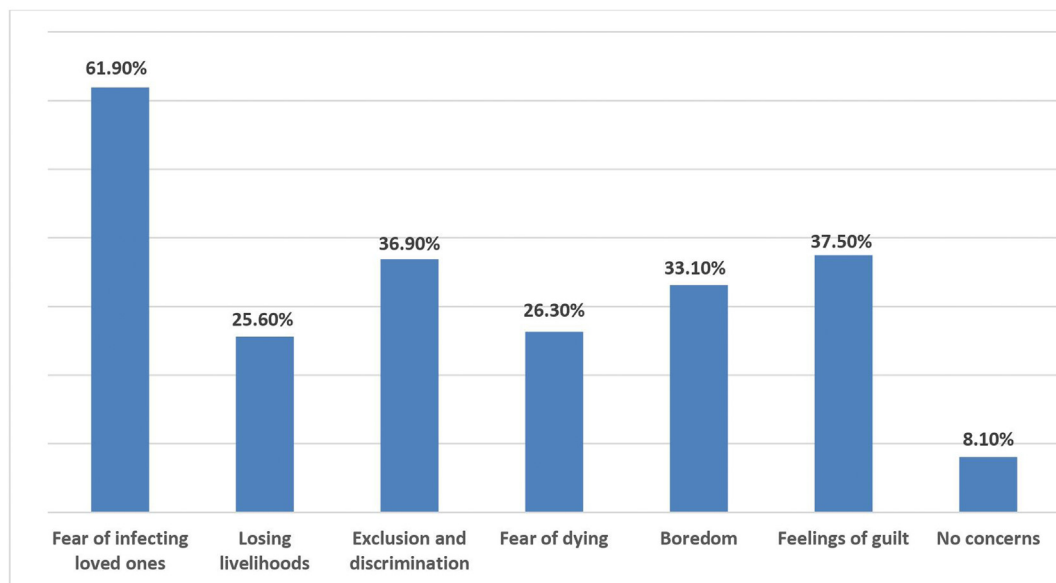


Fig. 2. Concerns expressed by COVID-19 positive in-patients, Lagos, Nigeria.

Table 4
Relationship between patients concerns and probable anxiety among respondents.

Variable	n(%)	Case	Non-case	χ^2	p
Fear of infecting loved ones					
Yes	99(61.9)	30(30.3)	69(69.7)	1.023	0.312
No	61(38.1)	14(23.0)	47(77.0)		
Fear of losing livelihood					
Yes	41(25.6)	16(39.0)	25(61.0)	3.672	0.055
No	119(74.4)	28(23.5)	91(76.5)		
Exclusion and discrimination					
Yes	59(36.9)	20(33.9)	39(66.1)	1.919	0.166
No	101(63.1)	24(23.8)	77(76.2)		
Fear of dying					
Yes	42(26.3)	16(38.1)	26(61.9)	3.207	0.173
No	118(73.7)	28(23.7)	90(76.3)		
Boredom					
Yes	53(33.1)	21(39.6)	32(60.4)	5.842	0.016
No	107(66.9)	23(21.5)	84(78.5)		
Guilt of infecting others					
Yes	60(37.5)	23(38.3)	37(61.7)	5.651	0.017
No	100(62.5)	21(21.0)	79(79.0)		
No concerns					
Yes	13(8.1)	2(15.4)	11(84.6)	1.042	0.307
No	147(91.9)	42(28.6)	105(71.4)		

Table 5
Relationship between patients concerns and probable Depression among respondents.

Variable	n(%)	Case	Non-case	χ^2	p
Fear of infecting loved ones					
Yes	99(61.9)	31(31.3)	68(68.7)	1.306	0.253
No	61(38.1)	14(23.0)	47(77.0)		
Fear of losing livelihood					
Yes	41(25.6)	12(29.3)	29(70.7)	0.036	0.850
No	119(74.4)	33(27.7)	86(72.3)		
Exclusion and discrimination					
Yes	59(36.9)	17(28.8)	42(71.2)	0.022	0.882
No	101(63.1)	28(27.7)	73(72.3)		
Fear of dying					
Yes	42(26.3)	15(35.7)	27(64.3)	1.623	0.203
No	118(73.7)	30(25.4)	88(74.6)		
Boredom					
Yes	53(33.1)	20(37.7)	33(62.3)	3.621	0.057
No	107(66.9)	25(23.4)	82(76.6)		
Guilt of infecting others					
Yes	60(37.5)	21(35.0)	39(55.0)	2.245	0.134
No	100(62.5)	24(24.0)	76(76.0)		
No concerns					
Yes	13(8.1)	1(7.7)	12(92.3)	2.922	0.087
No	147(91.9)	44(29.9)	103(70.1)		

that was conducted in Northern Nigeria using the HADS reported findings that are similar to ours with the rate of depression being 24.9%; however, in their study 21.2%, 3.55% and 0.2% of their respondents met criteria for mild, moderate and severe forms of depression (Sanni et al., 2018) compared to 17.5%, 8.8% and 1.9% reported in our study. The finding of higher rates in our sample may reflect the huge effect of COVID-19 on an individual's mental health compared to some other medical conditions that may also warrant presentation to hospitals.

This study findings with regards to the burden of probable anxiety is also similar to that of probable depression with equally about three in ten (27.5%) of the respondents in this study, meeting criteria for a probable anxiety disorder based on HADS. In China, a prevalence of 20.8% was reported for anxiety among Chinese who were COVID-19 positive (Zhang et al., 2020) and this is not too far from the findings from this current study. Again, compared with the general population, this is several folds the rate of anxiety reported by Adewuya et al. (2018) who found a far lower prevalence rate of 3.5% among inhabitants of Lagos, Nigeria (Adewuya et al., 2018). The relatively high prevalence of probable

anxiety and depression in this study compared with that of the general population may be attributable to both the direct and indirect effects of COVID-19 infection even though this is not fully understood presently (Vindegaard and Benros, 2020).

A recent study that was conducted among patients hospitalized on account of COVID-19 in China reported that 34.72% and 28.47% of their 144 respondents had symptoms of anxiety or depression, respectively (Kong et al., 2020). The findings from the study by Kong and colleagues align with ours and reveal the extent of emotional burden that patients with COVID-19 have to endure. It was interesting to note that almost a fifth of the respondents in our study had significant co-morbid anxiety and depression symptoms suggesting that a major proportion of patients with COVID-19 may also have to endure co-morbid mental health concerns that may contribute to their overall morbidity and affect treatment outcome. Studies have highlighted the deleterious impact that emotional disorders including anxiety and depression can have on the outcome of other disease processes (Hamer et al., 2019; Oliveira et al., 2019; Pompe et al., 2018). It is also important to note that studies have shown that

these mental health conditions may persist beyond the period of treatment for COVID-19. In a study of SARS-CoV-1 patient population in Hong Kong, the authors reported various psychiatric symptoms including depression and anxiety disorders among a sample of survivors using clinical interviews (Lam et al., 2009).

Six (3.8%) of the respondents in our study reported suicidal ideation by acknowledging that they felt that they would be better off dead. A study using data for 40,469 COVID-19 positive adult patients derived from a network of health care organizations (TriNetX database) revealed that 0.2% of the patients had suicidal ideation (Nalleballe et al., 2020). The higher rate of suicidality found in our study may be due to a number of reasons; the fact that the patients in our study were on admission may suggest that they had severe forms of infection necessitating admission and thus putting them under enormous physical and mental strain. Another study conducted among uninfected adult Americans reported that 10.7% of the respondents in their survey had seriously considered suicide in the 30 days before completing the survey suggesting that the impact of the COVID-19 pandemic is beyond persons infected by the virus (Czeisler et al., 2020). Indeed literature also suggests a link between the impact of COVID-19 on people's economic wellbeing and suicidality (Kawohl and Nordt, 2020).

Contrary to the study conducted by Kong and colleagues in China (2020), the only variables that were associated with either anxiety or depression in our study include a past history of emotional concern, employment status, experience of being bored and having guilt feeling of infecting others (Kong et al., 2020). Going by the findings in our study, unemployed respondents reported significantly higher rates of depressive symptoms compared to those who were employed suggesting that employment may be a protective factor in this regard. It is also possible that being unemployed may have been a risk factor for depression among these respondents even prior to becoming infected with COVID-19. Further, we found that respondents who acknowledged having prior concerns about their emotional wellbeing reported significantly higher rates of anxiety and depression compared to those who responded otherwise suggesting the need to have a high index of suspicion for exacerbation of mental health problems among persons with previous concerns. With regards to the respondents concerns, those who reported experience of boredom also reported higher levels of anxiety symptoms. While it may be difficult to determine the exact relationship between boredom and anxiety symptoms, it is possible that persons who were on admission were more likely to focus on their prevailing circumstances as a result of being bored which in itself may serve as a stressor to provoke an anxiety response. Additionally, having guilt feelings of infecting others with COVID-19 was also more likely to be associated with higher levels of anxiety symptoms. It is likely that the experience of guilt surrounding COVID-19 puts vulnerable persons under significant strain as to trigger an anxiety response. Finally, it is possible that we did not find any more correlates for anxiety or depression as we examined only a few sociodemographic or clinical variables to avoid overburdening the respondents who were hospitalized.

Our study is not without some limitations. Firstly, we employed a non-probability sampling technique which may have introduced bias into the selection of respondents. Also, we did not have a control group thus weakening our ability to determine the true effects of COVID-19 on our study population. The questionnaires were respondent based and the respondents may have given responses that they considered desirable. The study is also cross-sectional in design and this precludes determination of causality. Some of the participants may have had pre-COVID-19 history of a psychiatric disorder and there was no provision for the exclusion of such. It is also important to note that in assessing past history of emotional health concerns; the question may have been vague and may have been misinterpreted by the respondents which could therefore have affected their responses. This study employed the use of the HADS which is a screening instrument and cannot reliably be used to make a diagnosis of either anxiety or depressive disorders. Despite the limitations, one major strength of our study is the fact that it is a pace setter,

being the first study as far as we are aware of in this environment to examine the mental health implications of COVID-19 among patients diagnosed and hospitalized on account of the disease. Also, the study was conducted among respondents across all the isolation centres in Lagos as at the time of the data collection.

5. Conclusion

This study demonstrated that Nigerians that were infected with the Covid-19 virus also manifested with anxiety and depressive symptomatology. Findings from this study can be used to inform decisions regarding mental health intervention strategies such that persons at risk of psychological distress during disease outbreaks can be better assisted in coping with the situation both in Nigeria and indeed globally.

Our study highlights the need to pay attention to the mental health of patients diagnosed with COVID-19. incorporate psychosocial interventions as part of treatment during disease outbreaks and the need for mental health professionals to be considered as a standard part of multidisciplinary teams in the care of patients.

Finally, there is a need for more robust studies with larger sample sizes as well as longitudinal studies to examine the enormity of the mental health impact of COVID-19 pandemic on patients.

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Declaration of competing interest

The authors have no conflicts of interest to report.

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