



COVID-19 and Students' Mental Wellbeing: A Cross-Sectional Study across Selected Nigerian Universities

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

The emergence of the coronavirus pandemic has affected the global population in an unprecedented way, which has disrupted livelihoods, as well as social activities including the closure of schools. The effect of the pandemic and the associated lockdown measures amplified the mental status of tertiary institution students in Nigeria, which has not been taken into proper view. To this effect, this study was conducted to assess the extent to which the coronavirus pandemic and lockdown measures impacted the mental health of tertiary university students in Southwestern,

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Nigeria. A cross-sectional online survey, using the standardized Patient Health Questionnaire-9 (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7) depression and anxiety questionnaires were used, and appropriate summary statistics were carried out. In all (122 respondents), more than a third (35.5%) of the respondents had daily uncontrolled worries, 6.7% had suicidal intent, and over a tenth (14.2%) and (13.9%) had depression and anxiety respectively. The psychological impact of the coronavirus pandemic and associated lockdown measures on Nigerian university students is quite significant. Therefore, the mental well-being of Nigerian students should be taken into awareness and prioritized.

Keywords: Students; Mental Health; COVID-19; Depression; Anxiety.

1. INTRODUCTION

The coronavirus (COVID-19), which began in Wuhan China, in December 2019 as an epidemic, rapidly became a global pandemic [1]. The pandemic was declared a Public Health Emergency of International Concern (PHEIC) by the World Health Organization (WHO) on January 30, 2020 [2] affecting, not only the global economy, also individual lives, families, business institutions, and educational systems, predicted by various studies to cause mental health deterioration due to psychological pressure, anxiety, fear and worry among the global population, including students [3].

Since the Nigeria Centre for Disease Control (NCDC) reported the first case of the coronavirus in Nigeria on February 27, 2020 [4], the federal government in almost all states initiated complete or partial lockdowns, including movement restrictions, indefinite closure of religious centers and schools to curb the spread of the virus. The COVID-19 pandemic and lockdown measures have been associated with dire socio-economic concerns, which have had enormous psychological effects on the populace, particularly students. These effects on students in higher institutions are a result of the unexpected shift from interactive face to face learning to online mode of teaching [5], which most universities in Nigeria have not once considered due to lack of preparedness for the probability of whatsoever that may hinder the education system such as pandemic lockdown [6].

Tertiary institution students globally are gradually being recognised as vulnerable people, suffering from anxiety and depression as compared to the general population [1]; and with the pandemic and lockdown, the increased burden on the psychological state of this already vulnerable group is unavoidable. Studies from various countries reported that the majority of university students during the first phase of the pandemic

and lockdown experienced loneliness due to social isolation, difficulty in adjusting to online classes, uncertainties about future career prospects, as well as having financial concerns [7,8,9]. For instance, in the first quarter of the pandemic and lockdown in South Africa, 45.6% had subjective anxiety and 35% depression; and females in the early years of study also living in informal settlements were most at risk of experiencing emotional difficulties [8]. Around 20% of students in Malaysia experienced mild to moderate anxiety, 6.6% marked to severe, and 2.8% extremely severe, with main stressors including financial limitation, virtual learning, uncertainty regarding academic performances [9], while 58.7% of Pakistani university students reported mild to moderate anxiety, 9.1% marked to severe, and 6.9% most extreme due to social distancing, online teaching, concerns about academic performance and worries about forthcoming academic sessions [10]. In the United States, 60.8% of college students in their senior year reported increased anxiety, 54.1% loneliness, and 59.8% depression [11]. In addition, around 60% of students reported difficulty in completing their semester at home, particularly those with strained relationships with family members [11].

As reported by several studies, the impacts of the COVID-19 pandemic and the related lockdown measures in Nigeria has not been prioritised, as well as reducing the burden of mental difficulties have not been contextualised [5]. The pandemic lockdown created a spectrum of psychological consequences for Nigerian university students, ranging from anxiety, depression, and substance misuse to behavioural changes like stress-eating and difficulty in sleeping; also exposing some youths in abusive homes to increasing abuse [12] and this could have led to stress, social isolation, loneliness and depression. A study carried out among medical students at the University of Ibadan reported that students in their final

academic year were more negatively affected by the lockdown that resulted in abrupt school closure due to delay in studies, graduation, and future employment prospects, with mild to moderate depression in around 19%, and severe to extremely severe depression in about 5% of students, and around 10% had mild to moderate anxiety, and 7.5% severe to extremely severe anxiety; approximately 16% had mild to moderate stress [13]. Increased levels of depression, stress, anxiety, and post-traumatic stress disorder (PTSD) related symptoms were associated with increased time on social media, movies, and television, as well as the duration of sleep and decrease in physical activity [13]. Overall, the COVID-19 pandemic is undoubtedly one of the most extensive global challenges, with a lack of certainty on the mental health status of students all around the world. In this regard, this study aimed to provide valuable insights into the potential impacts of the COVID-19 pandemic on the mental health of tertiary institution students in selected universities in Nigeria. Information obtained from this study will help to know the extent of harm the pandemic has posed on the mental health of students and also proffer suggestions to necessary health authorities and policymakers.

2. METHODOLOGY

The study deployed a descriptive cross-sectional design. The target population was university students from the Federal University of Technology, Akure (FUTA) and Baptist Christian Nigerian University (BOWEN); a federal and private institution located in Ondo, and Osun State respectively, Nigeria. The study group was undergraduate students in the universities. Postgraduate students, distance learning students, and students from other institutions apart from the aforementioned were excluded from the study. The study objectives were to identify the impact of COVID-19 lockdown on respondents, the impact of COVID-19 on the mental wellbeing of respondents as well as identify the predictors of students' mental wellbeing amidst the COVID-19 pandemic. An online administered structured questionnaire was used to obtain information from the respondents in alignment with the study objectives. A total of one hundred and twenty-two (N=122) respondents completed the survey.

The survey questions were in two sections A and B. Section A presented the socio-demographic characteristics and impact of lockdown on students while section B contained questions

relating to the respondents' mental health. The mental wellbeing of respondents was measured using standardized scales; the Patient Health Questionnaire -9 (PHQ-9) as validated by Kroenke et al. (2001) and Generalized Anxiety Disorder -7 (GAD-7) developed by Spitzer et al. (2006) for depression and anxiety respectively [14]. Items on both scales were scored from 0 to 3 points with 21 and 27 representing the maximum obtainable scores for GAD-7 and PHQ-9 respectively. Scores greater than or equal to 5 were categorised as anxiety on GAD-7 and depression on PHQ-9 respectively [14,15].

The questionnaire was developed using google forms and a convenience sampling technique, as well as snowball sampling was used to select the respondents i.e the form was made accessible through a weblink for the respondents on social media platforms such as Whatsapp and it was requested of them to share with their colleagues. Respondents' responses were downloaded online in excel format, and this was finally imported into Statistical Package for Social Science (SPSS) for analysis. The data was analysed using descriptive statistics (such as mean, median, mode, and percentage), and the association between variables were tested using statistics such as Chi-square and Fisher's Exact Test at $p < 0.05$. Statistical Package for Social Science (SPSS version 21) was used for the data analysis and results were summarised and presented in tables and charts.

3. RESULTS

As seen in Table 1, the mean age of respondents was 20.08 ± 4.06 . Also, female respondents (56.6) were slightly more than the males (43.4) and almost all the respondents were single (99.2%), 79.5% were never in any relationship, one-third are in the sciences and more than one-third are in their 2nd year of study. The majority are Yoruba (83.5%) and Christians (92.6%). Only a few (9.2%) have households with front-line health workers, 31.7% earn a salary, 66.2% engaged in some training during COVID-19 lockdown. Only 1 out of 123 have ever tested positive to COVID-19. Most (93.4%) believe that COVID-19 is real. Only about one-tenth (10.7%) know of someone that has tested positive to COVID-19. More than half of respondents reported that their family finances have been affected by COVID-19.

As presented in Table 2 below, the mean scores for anxiety and depression were 6.04 ± 4.76 and 7.07 ± 5.91 SD respectively. The prevalence of

depressive symptoms (mild to severe) was 60.7% while prevalence of anxiety (mild to severe) was about 56% among respondents.

According to Fig. 1, majority (76.0%) reported that they have not been able to see their loved ones due to the lockdown restrictions, 64.5% reported that their family finances have been affected, 73% said they are routinely bored due to school closure and majority are bothered because they do not know when school will resume fully.

Table 3 shows the impacts of COVID-19 on respondent lifestyle. According to Table 3, about

one-tenth (13.9%) had the feeling of nervousness nearly every day, more than one-third (35.5%) had uncontrolled worries, 12.4% had trouble relaxing nearly every day, 36.1% become easily annoyed on several days, 14.2% were afraid that something awful might happen to them and 29.2% had little interest in engaging in any activities. More than one-tenth (14.2%) had depression nearly every day, 15.0% could not nearly every day, 31.4% had lost appetite several days, 20.2% had bad feelings about themselves on several days. About one-fifth (21.0%) had trouble concentrating on several days and 6.7% are thinking of dying or hurting themselves.

Table 1. Socio-demographics characteristics of respondents

Socio-demographics	Frequency	Percentage
Age (Mean ±SD)	20.08± 4.06	
Gender (n=122)		
Male	53	43.4
Female	69	56.6
Marital status (n=122)		
Single	121	99.2
Married	1	0.8
In a relationship (n=122)		
Yes	25	20.5
No	97	79.5
Faculty (n=121)		
College of Medicine	26	21.5
Engineering/Technology	27	22.3
Science	40	33.1
Law	3	2.5
Arts	11	9.1
Education	9	7.4
Agriculture science	2	1.7
Social science	3	2.5
Level of study (n=120)		
100	27	22.5
200	45	37.5
300	27	22.5
400	15	12.5
500	5	4.2
600	1	0.8
Ethnicity (n=121)		
Yoruba	101	83.5
Igbo	8	6.6
Hausa	4	3.3
others	8	6.6
Religion (n=121)		
Christianity	112	92.6
Islam	6	5.0
Atheist	3	2.5
Household with front-line health workers (n=120)		
Yes	11	9.2
No	109	90.8

Earning salary (n=120)		
Yes	38	31.7
No	82	68.3
Training during COVID-19 (n=71)		
No	24	33.8
Yes	47	66.2
Believe COVID-19 is real (n=122)		
Yes	114	93.4
No	8	6.6
Ever tested for COVID-19 (n=122)		
Yes	1	0.8
No	121	99.2
Has family, friend, or colleague that has tested positive to COVID-19 (n=122)		
Yes	13	10.7
No	109	89.3
Friend/colleague with COVID-19 (n=122)		
Yes	6	4.9
No	116	95.1
Has your family been affected financially as a result of this (n=121)		
Yes	78	64.5
No	43	35.5

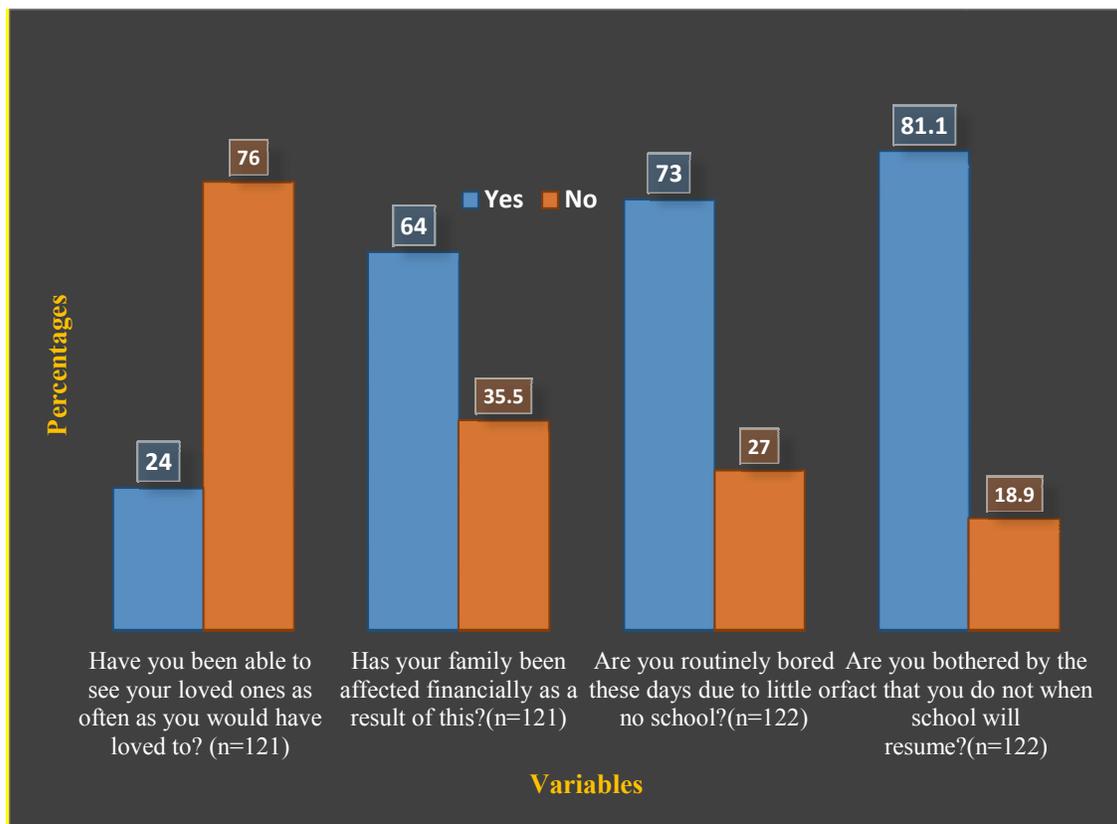


Fig. 1. Social & economic impact of lockdown on respondents

Table 2. Mean scores for anxiety and depressive symptoms

Variables	Frequency	percentage
GAD-7 (mean± SD)	6.04± 4.76	
Anxiety	69	56.1
No anxiety	53	43.4
PHQ-9 (mean-SD)	7.07± 5.91	
Depression	74	60.7
No depression	48	39.3

Table 4a shows the results of chi-square analyses for the test of association between the socio-demographics variables and level of anxiety. Among tested variables, having family, friends and colleagues that has tested positive to COVID-19 was significantly associated with anxiety while other variables failed to attain the level of significance at P<0.05.

Table 4b below shows the results of bi-variate analyses for the test of associations between the socio-demographic variables and level of mental well beings. No significant association was found between the tested variables and depression at P<0.05.

Table 3. Impacts of COVID-19 on the mental well-being of Respondents

Variables	Not at all	Several days	More than half days	Nearly every day
GAD				
Feeling Nervous, anxious (n=121)	57 (46.7)	37 (30.3)	11 (9.0)	17 (13.9)
Not being able to stop or control worrying (n=121)	55 (45.5)	43 (35.5)	12 (9.9)	11 (9.1)
Worrying too much about different things (n=121)	32 (26.4)	49 (40.5)	24 (19.8)	16 (13.2)
Trouble relaxing (n=122)	71 (58.2)	29 (23.8)	5 (4.1)	17 (13.9)
Restless and hard to sit still (n=121)	75 (62)	21 (17.4)	10 (8.3)	15 (12.4)
Becoming easily irritable/annoyed (n=119)	49(41.2)	43 (36.1)	14 (11.8)	13 (10.9)
Feeling afraid as if something awful or bad might happens (n=120)	67 (55.8)	27 (22.5)	9 (7.5)	17 (14.2)
PHQ	Not at all	Several days	More than half days	Nearly every day
Little interest in doing something (n=122)	39 (32.0)	53 (43.4)	13 (10.7)	17 (13.9)
Feeling down, depressed or hopeless (n=120)	62 (51.7)	35 (29.2)	6 (5.0)	17 (14.2)
Trouble falling/staying asleep (n=121)	44 (36.4)	42 (34.7)	13 (10.8)	18 (15.0)
Poor appetite or overeating (n=121)	52 (43.0)	38 (31.4)	17 (14.0)	14 (11.6)
Feeling bad about yourself or that you are a failure (n=119)	76 (63.9)	24 (20.2)	9 (7.6)	10 (8.4)
Trouble concentrating on things such as reading newspaper (n=119)	68 (57.1)	25 (21.0)	11 (9.2)	15 (12.6)
Moving or speaking so slowly that others could have no (n=118)	87 (73.7)	17 (14.4)	6 (5.1)	8 (6.8)
Thought that you would be better off dead or hurting you (n=120)	100 (83.3)	7 (5.8)	5 (4.2)	8(6.7)

Table 4a. Association between socio-demographic characteristics and anxiety

Socio-demographics	Anxiety	No anxiety	X²	P -value
Gender				
Male	30(55.6)	24(44.4)	0.0	1.0
Female	10(55.6)	8(44.4)		
Marital status				
Single	67(55.8)	53(44.2)	0.79	0.38
Married	1(100.0)	0(0.0)		
In a relationship				
Yes	15(62.5)	9(37.5)	0.48	0.49
No	53(54.6)	44(45.4)		
Faculty				
College of Medicine	15(57.7)	11(42.3)	3.32	0.89
Engineering/Technology	13(48.1)	14(51.9)		
Science	22(56.4)	17(43.6)		
Law	3(100.0)	0(0.0)		
Arts	6(54.5)	5(45.5)		
Education	5(55.6)	4(44.4)		
Agriculture science	1(50.0)	1(33.3)		
Social science	2(66.7)	53(44.2)		
Ethnicity				
Yoruba	52(52.0)	48(48.0)	3.30*	0.31
Igbo	6(75.0)	2(25.0)		
Hausa	3(75.0)	1(25.0)		
others	6(75.0)	2(25.0)		
Religion				
Christianity	60(54.1)	51(45.9)	2.40*	0.27
Islam	4(66.7)	2(33.3)		
Atheist	3(100.0)	0(0.0)		
Have frontline health workers as member of Household				
Yes	9(81.8)	2(18.2)	3.12	0.08
No	59(54.1)	50(45.9)		
Earning Salary				
Yes	20(54.1)	17(45.9)	0.04	0.84
No	46(56.1)	36(43.9)		
Training during COVID-19				
No	13(56.5)	10(43.5)	0.07	0.79
Yes	25(53.2)	22(46.8)		
Believe COVID-19 is real (n=122)				
Yes	63(55.3)	51(44.7)	1.19	0.28
No	6(75.0)	2(25.0)		
Ever tested for COVID-19				
Yes	1(100.0)	0(0.0)	0.77	1.00
No	68(56.2)	53(43.8)		
Has family, friend or colleague that has tested positive to COVID-19 (n=122)				
Yes	11(84.6)	2(15.4)	4.66	0.03
No	58(53.2)	51(46.8)		
Friend/colleague with COVID-19				
Yes	4(66.7)	2(33.3)	0.26	0.61
No	65(56.0)	51(44.0)		

Table 4b. Association between socio-demographic characteristics and depression

Socio-demographics	No depression	Depression	X ²	P -value
Gender				
Male	24(44.4)	30(55.6)	1.56	0.21
Female	5(27.8)	13(72.2)		
Marital status				
Single	48(40.0)	72(60.0)	0.66	0.42
Married	0(0.0)	1(100.0)		
In a relationship				
Yes	10(41.7)	14(58.3)	0.05	0.82
No	38(39.2)	59(60.8)		
Faculty				
College of Medicine	10(38.5)	16(61.5)	5.33*	0.56
Engineering/Technology	10(37.0)	17(63.0)		
Science	19(48.7)	20(51.3)		
Law	0(0.0)	3(100.0)		
Arts	5(45.5)	6(54.5)		
Education	2(22.2)	7(77.8)		
Agriculture science	0(0.0)	2(100.0)		
Social science	1(33.3)	2(66.7)		
Ethnicity				
Yoruba	44(44.0)	56(56.0)	5.38*	0.12
Igbo	3(37.5)	5(62.5)		
Hausa	0(0.0)	4(100.0)		
others	1(12.5)	7(87.5)		
Religion				
Christianity	43(38.7)	68(61.3)	1.41*	0.65
Islam	3(50.0)	3(50.0)		
Atheist	2(66.7)	1(33.3)		
Have frontline health workers as member of Household				
Yes	3(27.3)	8(72.7)	0.72	0.53*
No	44(40.4)	65(59.6)		
Earning Salary				
Yes	17(45.9)	20(54.1)	0.94	0.33
No	30(36.6)	52(63.4)		
Training during COVID-19				
No	21(44.7)	26(55.3)	1.31	0.25
Yes	7(30.4)	16(69.6)		
Believe COVID-19 is real(n=122)				
Yes	45(39.5)	69(60.5)	0.012	0.91
No	3(37.5)	5(62.5)		
Ever tested for COVID-19				
Yes	0(0.0)	1(100.0)	0.65	0.42
No	48(39.7)	73(60.3)		
Has family, friend or colleague that has tested positive to COVID-19(n=122)				
Yes	5(38.5)	8(61.5)	0.005	0.95
No	43(39.4)	66(60.6)		
Friend/colleague with COVID-19				
Yes	1(16.7)	5(83.3)	1.36	0.24
No	47(40.5)	69(59.5)		

4. DISCUSSION

COVID-19 pandemic and the lockdown impacted people all over the world in different ways. Our study revealed that the COVID-19 pandemic and lockdown had negative impacts on social interactions, finances and the mental wellbeing of students who participated in the study. For instance, 76% of the students were prevented from seeing their loved ones due to the lockdown restrictions which is slightly higher than a similar study in Italy which reported that 70.26% of students suffered from not seeing their friends and 75.94% suffered from separation from their partners [16]. As a result, the thoughts of loneliness and feelings of loss of connections to friends and loved ones are inevitable. Sadly, prolonged loneliness negatively impacts both physical and mental well-being in unprecedented ways contributing to increased morbidity [17]. Moreover, a comparable number (73%) of students in our study reported routine boredom due to school closure. Since students were estranged from their routine extracurricular activities often in the school environment, heightened boredom was expected although some students deployed alternative means to connect with friends and cope. Although this study did not directly explore coping methods, research suggests that students resorted to increased social media networking, watching Netflix/TV programmes, and internet surfing [18]. Baloran et al., (2020) reported similar coping strategies such as chatting with loved ones, family, and friends on social media among students [19].

Besides, 64.5% of students reported declining family finances during lockdown which increased their worries. Additionally, a significant cause for worry among the respondents in this study was the uncertainty around school resumption and the length of lockdown. Amalu (2020) in her review of the psychological impact of the pandemic on Nigerian students' mental health further asserted that the uncertainty regarding students' future potentially has an additive effect on worrying and likely development of mental issues among students [20].

Our study further revealed that the COVID-19 pandemic and the lockdown negatively affected the mental wellbeing of students who participated in the survey. For example, more than half of the respondents (56% and 60.7% respectively) showed at least mild anxiety and depressive symptoms. The mean anxiety and depression scores (6.04 ± 4.76 , 7.07 ± 5.9) were above the

set cut off (5) implying that on the average, the students experienced at least a mild anxiety or depression. A similar study in Italy reported slightly higher prevalence of depression (72.93%) among respondents 72.93% [10]. The difference could be attributed to the fact that Italy was among the early countries that the pandemic hit with a high infection and fatality rates. Likewise, Baloch et al. (2021) reported up to 16% severe anxiety among Pakistani students [15]. Invariably, a study among US students reported 45%, 40%, and 14% respectively of high, moderate, and low levels of psychological effects (depression inclusive) [21]. The varying level of psychological impacts is traceable to geographical differences in COVID-19 magnitude and intervention responses. Another study in Greece reported a high magnitude of depression (74.3%), suicidal thoughts (63.3%), and anxiety (42.5%) among university students. Apart from depression, 36.1%, 35.3%, 29.2%, 21%, 13.9%, and 6.7% of students in our study respectively reported getting annoyed on several days, uncontrolled worries, reduced enthusiasm to engage in activities, difficulty to concentrate on several days, nervousness nearly every day and suicidal thoughts. Our findings, therefore, reinforce the assertion that COVID 19 pandemic and lockdown elevated the susceptibility of undergraduate students to depression, loneliness, and anxiety [22].

While no significant association was found between the tested variables and depression in our study, having family, friends and colleagues that has tested positive to COVID-19 was significantly associated with increased level of anxiety ($P < .05$). This finding aligns with the report that having close contacts of those who tested positive promotes fear and elevates anxiety among students [23]. Although our study revealed no significant association, past studies reported increased anxiety among female compared to their male counterparts [10,15]. This could be explained by the gender differences in thoughts control mechanisms and hormonal fluctuations in women [24].

5. CONCLUSION

The empirical data from this study indicate that 35.5% of students had daily uncontrolled worries, 6.7% had suicidal intent, and 14.2% and 13.9% had depression and anxiety respectively, during the COVID-19 pandemic lockdown. Some of the stressors were financial constraints, remote online learning associated with loneliness, and uncertainties about academic performances. This

is a call for key stakeholders, including those in the education sector to recognize the need for a swift and holistic policy in identifying and managing the mental effect of the COVID-19 pandemic or future pandemics on students.

Tertiary institutions can play a vital role in helping students cope with anxiety and depression, through mandatory counselling, provision of mental health services, either face to face or virtual, as this will help to reduce the psychological impacts on students. Additionally, universities should work together in creating structured extra-curricular programs that can help to reduce anxiety and depression in students. From a broader standpoint, the government, health organizations, ministries, and related agencies should create timely, accurate, and effective communication and information platforms that can educate students on the causes and outcomes of pandemics without causing unnecessary panic.

The coronavirus pandemic and associated lockdown have effects on the mental well-being of Nigerian students. Therefore, stakeholders must work hand-in-hand in addressing the growing mental health problems among students as the fight against the coronavirus continues.

6. STUDY LIMITATIONS

This study has limitations in the aspect of low sample size and generalisability. This, could however, be explained as an extended impact of the lockdown. Besides, the data obtained were self-reported and could be prone to bias.

CONSENT

Confidentiality of data was strictly adhered to. The participants' names and other identifiers were not requested on the forms.

ETHICAL APPROVAL

The study was conducted in accordance with standard institutional ethical principles and guidelines relating to research on human subjects. The proposal for the study was submitted and the ethical approval was obtained at Ekiti State University Teaching Hospital (EKSUTH) with the Approval Number "EKSUTH/A67/2020/08/001".

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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