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Depression, Anxiety, and Stress among Employees in Nigeria during COVID-19

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Abstract
Before the COVID-19 pandemic, research has focused considerably on employees' mental health because of the great ways it affects organizational outcomes. COVID-19 presented adverse situations in the economy and experiences that threatened employees' mental health, suggesting an increased level of depression, anxiety, and stress. This study investigated the prevalence and the factors predicting depression, anxiety, and stress among the employee population in Nigeria. The study utilized a cross-sectional approach using a descriptive survey research design in a sample of 3,950 employees from public and private organizations. A demographic questionnaire and the 21-item depression, anxiety, and stress scale (DASS-21) were used to collect data for the study. Mean, standard deviation, frequency, regression analysis, and Chi-square were used to analyze data. The result showed high levels of anxiety and stress and a moderate level of depression among employees in Nigeria. 90.51% of employees had moderate to high levels of anxiety, 51.52% of the employees had high and or moderate levels of depressive symptoms, while 94.13% of employees had moderate to high levels of stress. Job type, employer, and location accounted for significant differences in depressive symptoms, anxiety, and stress. It is concluded that there is a high prevalence of depression, anxiety, and stress due to the COVID-19 pandemic, necessitating reinforced mental health services among employees.

Keywords: Depression, Anxiety, Stress, Employees, COVID-19

Introduction

The outbreak of COVID-19 and the associated containment measures posed a heightened threat to lives worldwide. The pandemic led to a global economic crisis and a complete meltdown of the world GDP (Daud, & Leila, 2020; Fernandes, 2020; McKibbin & Fernando, 2020; Onyeaka, et al., 2020). The long-term changes resulting from the pandemic could have unequal impacts on employees across the globe (Onyeaka, et al., 2020; Onyishi, 2020a). Following the pandemic, workplaces were closed, threatening employees' job security. Employees across private and public organizations were working from home (World Bank. 2020). Private businesses and organizations were threatened, and many organizations could not cope with the payment of employees' wages (ILO, 2020). Additionally, there was a massive loss of jobs to the tune of 25 million worldwide during and after the pandemic (Cox, 2020; Fernandes, 2020; International Labour Organization-ILO, 2020). Many self-employed individuals and traders were at home following the close of shops and markets, thus perpetuating hunger and poverty, predisposing them to mental health problems. On the other hand, the rising global death toll caused by the COVID-19 pandemic is progressively more devastating, thereby raising employees' uncertainties and stress. Between January and Early July 2020, COVID-19 has accounted for about 397,000 deaths (WHO, 2020) in 6.8 million confirmed cases worldwide (Katz, et al., 2020; Mayberry, et al., 2020; Triggle, 2020).

Other potential stressors during a pandemic are 1) perception of safety, threat, and risk of contagion (Xiang et al., 2020); 2) uncertainties and the Unknown (Gao *et al.*, 2020) 3) quarantine and confinement (Qiuet al., 2020; Wang et al., 2020), 4) stigma and social exclusion (Xiang et al., 2020) and 5) financial loss and job insecurity (Onyishi, 2020a; Zhou *et al.*, 2020). Hence, these economic quandaries, coupled with the life threats, uncertainties, and social challenges associated with COVID-19, could amount to psychological strain among the employees in degrees that could impact their performances. More importantly, it could increase mental health issues such as depression, anxiety and stress among workers (Cummins *et al.*, 2015). Symptoms of Depression (e.g., sadness and loss of interest), anxiety (e.g., restlessness) (Drapeau *et al.*, 2011; Sun, et al., 2022), and stress (e.g somatic symptoms like insomnia, headache, eating disorders) (Drapeau *et al.*,2011; Onyishi, 2020a) tend to threaten employees work performance. The increased stressors associated with the pandemic exacerbated the prevalence of depression, anxiety and stress in the entire workforce. For instance, a study in Singapore during the 2003 SARS-CoV outbreak showed that 27% of health workers reported psychiatric symptoms (Lee et al., 2018). Studies show that situations like pandemics can cause mental health disorders such as stress, anxiety, depressive symptoms, insomnia, denial, anger, and fear (Jones et al., 2017; Kang et al., 2020; Mowbray, 2020; Torales, et al., 2020; Onyishi, 2020b) that can be sustained even after the pandemic.

A study surveyed the levels of psychological distress in the forms of anxiety, depression, and stress in the general public during the initial stage of the COVID-19 outbreak (Wang et al., 2020). The study found that 53.8% of the adult population in China showed the outbreak's moderate or severe psychological impact; 16.5% had moderate to severe depressive symptoms; 28.8% had anxiety symptoms; and 8.1% reported moderate to severe stress levels (Wang et al., 2020). Other studies indicate that the public experiences anxiety and depression symptoms during a pandemic (Liao, et al., 2014; Van Bortel, et al., 2016). Emerging studies have revealed that COVID-19 causes moderate-to-severe anxiety and depression in about one-third of adults (Wang, Pan, Wan, Tan, Xu, Ho, Ho, 2020; Zhou et al., 2020). It has also caused public panic and stress (Bao, Sun, Meng, Shi, Lu, 2020). Employees in low and middle-income countries such as Nigeria and other African countries are more likely to experience mental health challenges due to limited palliatives, increased job insecurity and poverty. They are also less likely to receive attention from mental health professionals due to a lack of staff (Oyewunmi & Oyewunmi, 2014; Oyewunmi, et al., 2015; WHO-AIMS, 2006).

For instance, in Nigeria, mental health disorders associated with job have been widespread among employees prior to covid-19 (Oyewunmi, et al., 2015). This psychological distress due to a person's job has been linked to poor wage payment and a high rate of dependence on a few employed people (Oyewunmi & Oyewunmi, 2014). During the covid-19 lockdown, salaries were disrupted, wage bills increased, daily family expenditure increased thus increasing family instability (Gentilini, et al., 2020; Nicola, et al., 2020; Wenham, Smith & Morgan, 2020). In the same vein government palliatives are scarcely available for the people; it is equally expected that, given the aversive situation of this pandemic period and limited palliative measures, a good number of workers in Nigeria are battling with

psychological distress during the pandemic. Further, an effective mental health system that helps to lessen negative psychological consequences of COVID-19 in high-income countries is lacking in Nigeria (Qiuet al., 2020; Zhang et al., 2020a; Zhou et al., 2020). This could suggest an increased prevalence of psychological distress among the employee population.

On the other hand, it is also possible that some demographic variables such as age, gender, job status, employer (being employed by Government, private organizations, or self), and location may play some roles in depression, anxiety, and stress, among the employees. Pieces of evidence show that demographic variables predict depression (Familiar, et al., 2016; Onyishi, 2020a; 2020a); Anxiety (Kamberi, et al., 2019); and stress (Check, & Okwo, 2012). Further, a study from China showed that demographic variables correlate with psychological health problems in adolescents during the COVID-19 (Zhou, Zhang, Wang, Guo, Wang, Chen,..& Chen, 2020). The study demonstrated that gender and grade were significant factors in depression and anxiety during COVID-19, suggesting that the prevalence of the disorders is relative to such variables. However, it is not known the prevalence of psychological distress (depression, anxiety, and stress) among employees and the determining demographic variables during the present pandemic. These, therefore, underscore the need to assess the levels of depression, anxiety, and stress symptoms during the COVID-19 pandemic. The current study sought to evaluate the prevalence of depression, anxiety, and stress symptoms and their demographic correlates during the COVID-19 pandemic among the employee population in Nigeria.

Methods

Ethical Consideration

Approval to conduct the study was obtained from the Faculty of the Education ethical Committee University of Nigeria. The participants were required to sign written consent before participating in the study. Those who failed to sign the consent forms were excluded from participating in the study. The study had no negative impact on the participants.

Design of the Study

The present study utilized a cross-sectional approach using a descriptive survey research design to capitalize on quantitative data. Online questionnaires were administered to all the participants.

Participants and Sampling

A total of 3,950 employees from public and private organizations in six states, one state from each of the six geopolitical zones in Nigeria participated in the study. Participants were recruited based on inclusion criteria, which include that 1) must be an adult not below the age of 24 years; 2) must be a worker in either public/private organizations, or is self-employed; 3) must be willing to participate in the study and signed a consent form. Participants were recruited using phone calls, WhatsApp, SMS, and emails through a convenience sampling technique (snowballing).

Data Collection Tool

The tool for data collection was made up of two sections. The first section was a demographic questionnaire that collected data about the participants' factors such as name, age, gender, job type, employers, and location. The second section was the 21-item depression, anxiety, and stress scale (DASS-21) meant to collect data on the prevalence of depression, anxiety, and stress.

Depression, Anxiety, and Stress Scale- 21 items (DASS-21)

The DASS-21 was used to collect information on the psychological disorders of employees. DASS is meant to source information on three dimensions of psychological disorders (depression, stress, and anxiety) in three subscales. Out of the 21 questions in DASS-21, seven questions address each one of stress, anxiety, and depression. Items of the depression sub-scale covered dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. The anxiety subscale measures autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale assesses the present level of arousal as orthogonal to relaxation, nervous arousal, and being easily upset/agitated, irritable / over-reactive, and impatient (Lovibond, & Lovibond, 1995). DASS-21 is measured on a four-point Likert scale. DASS-Anxiety = 2 + 4 + 7 + 9 + 15 + 19 + 20; DASS-Depression = 3 + 5 + 10 + 13 + 16 + 17 + 21 and DASS-Stress = 1

+ 6 + 8 + 11 + 12 + 14 +18. In this study, the total obtainable score was were 84 (Total DASS); 28 in each case of the DASS dimensions. In decision-making, Total DASS scores ranging from 21-32.5 were regarded as low, 32.6-50.4 was termed moderate, and 50.5+ was regarded as a high score. For each of the dimensions (depression, anxiety and stress), 7-10.4 = low; 10.5-17.5= moderate; and 17.5+= high. DASS has good reliability in other countries such as (Tran, Tran & Fisher, 2013). Cronbach's α was high for all subscales: 0.81, 0.82, and 0.74 respectively for depression, anxiety, and stress subscales when trial-tested in 67 adults in Nigeria.

Data Collection and Statistical analysis

Questionnaires were distributed online in Google form format shared to the employees via WhatsApp platforms and emails between Jun 1 to Jul 1, 2020. Out of the total of 3,950 recruited to participate in the study, a total of 3,701 returned their responses. Questionnaires completed by subjects not meeting the inclusion criteria were discarded (n=67). Also, questionnaires not well completed were discarded during data coding (n=62). Thus, a total of 3,572 questionnaires were analyzed. SPSS ver. 24.0 was used to analyze data for this study. All results were reported quantitatively, using mean, standard deviation, and frequency (percentage) (%) to ascertain the prevalence of depression, anxiety, and stress. Regression analysis was used to assess the predictions. The Chi-square test and multiple regressions were used to establish the links between dependent and independent variables. Chi-square was used to assess the association between independent and dependent variables based on demographic variables. A p-value < 0.01 was regarded as statistically significant, while a greater p-value was regarded as non-significant.

Result

Table 1:

Participants' Demographic Characteristics

Variable	Characteristics	N	Percentage	Chi-Square	p-value
Age	25-35	1076	30.1	47.268a	.000
	36-45	1109	31.2		
	Above 46	1378	38.7		
	Total	3563	100		
Gender	Male	1446	40.9	117.290b	.000
	Female	2090	59.1		
	Total	3536	100.0		
Job Type	Health workers	206	5.8		
	Educators	1402	39.6		
	Management	784	22.2	911.321c	.000
	Others	1144	32.4		
	Total	3536	100.0		
Employer	Government	1622	45.9	267.437a	.000
	Private Org.	1058	29.9		
	Self-employment	856	24.2		
	Total	3536	100.0		
Location	Urban	2168	61.3		
	Rural	1368	38.7	2033.498a	.000
	Total	3536	100		

Table 1 show the participants' distribution based on socio-demographic characteristics. Participants' age was grouped into25-35 (30.1%: n=1076), 36-45 (31.2: n=1109), 46 and above (38.7: n=1378); (`Chi-square=47.268a; p=.000). On gender, 40.9% (n=1446) were males while 59.1% (n=2090) were females (Chi-square=117.290b; p=.000). On Job-type, 5.8% (n=204) were health workers, 39.6% (n= 1402) were educators, 22.2% (n=784) were in management while 32.4% (n=1144) were in different other jobs. Further, 45.9% (n=1622) were Government workers, 29.9% (n=1058) were employers of private organizations while 24.2% were self-employed. Additionally, 61.3% (n=2168) were in the city/urban area, while 38.7% (n=1368) were residing in the rural area (Chi-square=2033.498a; p=.000).

Table 2:
Participants' levels of depression, anxiety, and stress

		DASS Anxiety		DASS Depression		DASS Stress	
		N	%	N	%	N	%
1	Low	336	9.50	1713	48.45	199	5.62
	Moderate	1189	33.63	1012	28.63	1242	35.13
	High	2012	56.88	810	22.92	2094	59.23
	Total	3535	100	3535	100	3535	100

Table 2 shows the level of respondents' anxiety, depression, and stress in percentage. We found that majority of the respondents had moderate to high levels of stress, anxiety, and depression. For instance, a high percentage of the respondents (56.88%) rated themselves as being highly anxious,33.63% were moderately anxious, while only 9.50% indicated low anxiety (n 336).

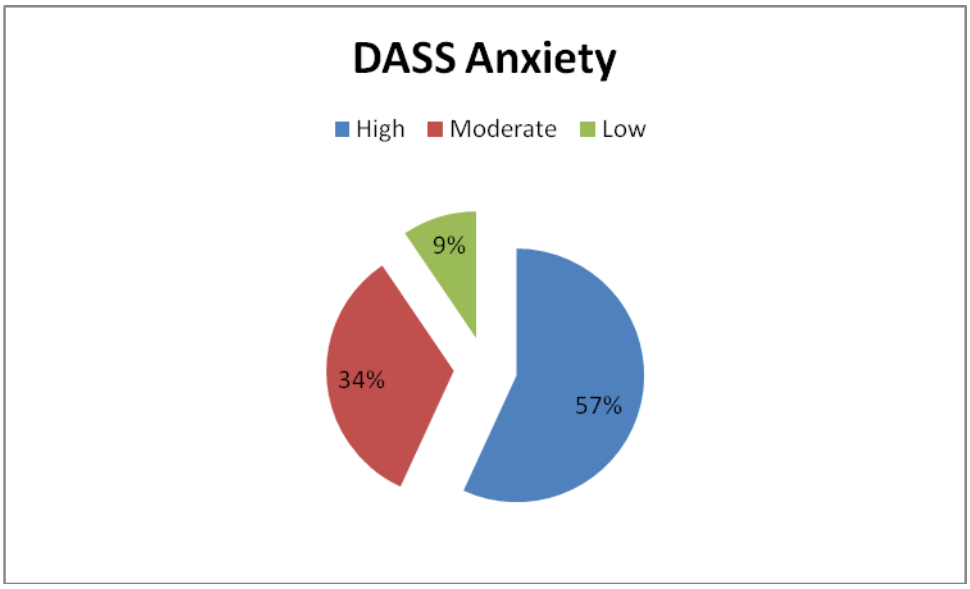

Figure 1: *Pie chart showing the percentage of the respondents that have high, moderate, and low stress during COVID-19*

Depressive symptoms were also found to be high in 22.91% (810) of the participants, moderate in 28.28% (n=1713) of the respondents, and low in 48.45% of the participants. This indicated that the majority (about 72.40) of the respondents showed moderate to high depressive symptoms.

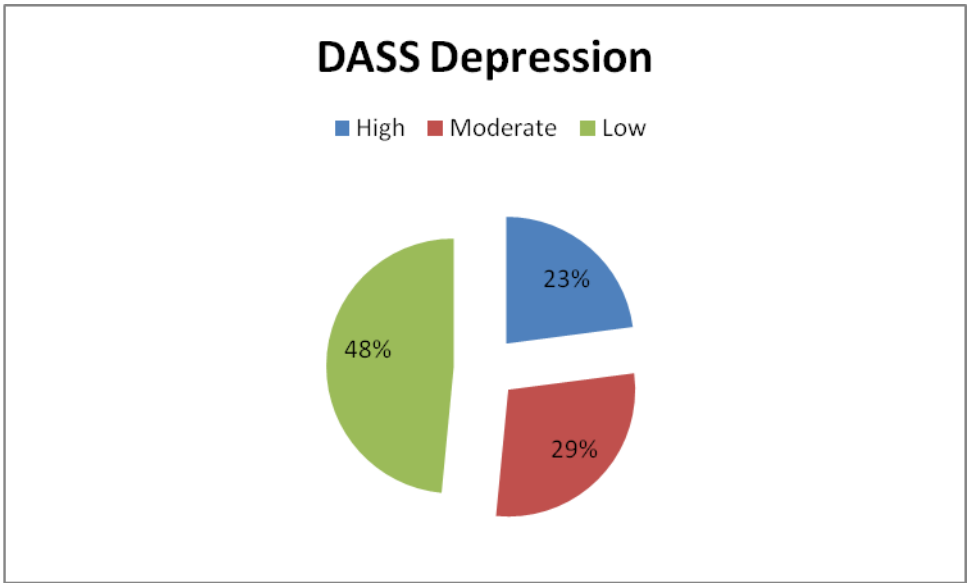

Figure 2: *Pie chart showing the percentage of the respondents that have high, moderate, and low depression during COVID-19*

The stress level was the highest among the respondents. 59.23% (n=2094) of the respondents had a high level of stress, 35.13% (n=1242) had a moderate level of stress, while 5.62% (n=199) had a low-stress level. Hence, the respondents' stress level was the highest, followed by the anxiety level and then the depression level.

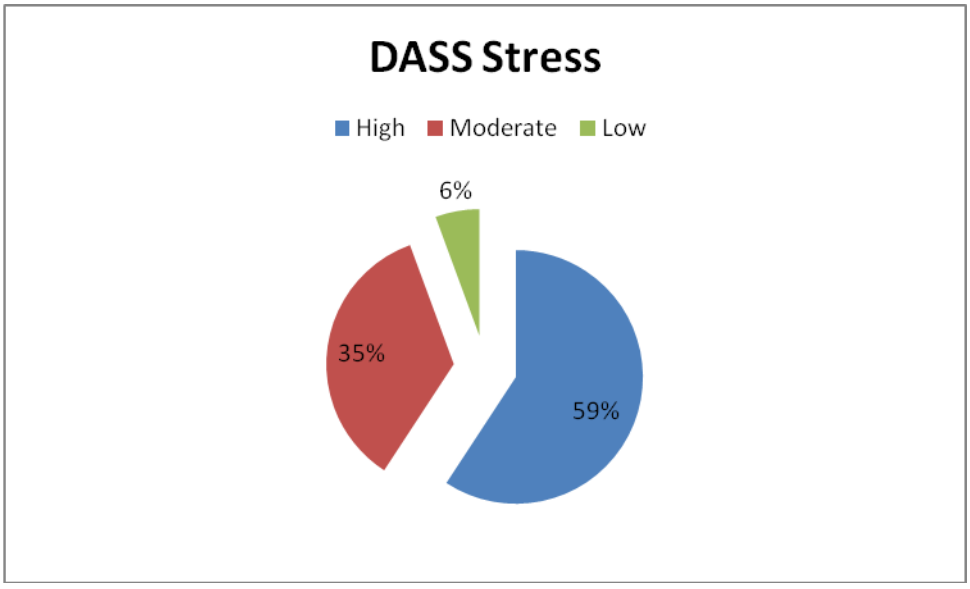

Figure 3: *Pie chart showing the percentage of the respondents that have high, moderate, and low stress during the COVID-19 pandemic*

Table 3:
Participants' Depression, Anxiety and Stress based on demographics

Variable	Characteristics	DASS Depression		DASS Anxiety		DASS Stress	
		Mean ± SD	P-value	Mean ± SD	p-value	Mean ± SD	P-value
Age	25-35	21.78 ±4.35		22.05 ±4.02		22.18±4.02	
	36-45	22.27±4.05	.088	21.83±4.40	.281	22.25±3.97	.069
	46 and above	22.41±3.97		22.04±4.41		22.53±3.96	
	Total	22.26±4.01		21.90±4.39		22.34±3.99	
Gender	Male	21.81±4.29		22.30 ± 3.89		22.44±3.94	
	Female	21.96±4.46	.299	22.43 ± 4.09	.102	22.48±4.01	.140
	Total	21.90 ±4.39		22.26 ± 4.01		22.39±3.99	
Job Type	Health workers	24.63 ± 4.20		24.28± 4.56		24.86 ± 3.55	
	Educators	21.70 ± 4.29	.000	22.12 ±3.83	.000	22.10 ± 3.94	.000
	Managerial	21.71 ± 4.41		22.14 ±4.04		22.28 ± 3.99	
	Others	21.78 ± 4.37		22.14 ± 4.02		22.22 ± 3.97	
	Total	21.90 ± 4.39		22.34 ± 3.99		22.34 ± 3.99	
Employer	Government	21.97± 4.56		22.29 ±4.30		22.68 ± 4.02	
	Private	21.65± 4.27	.91	22.22 3.63	.08	22.12 ± 3.71	.000
	Self	22.07± 4.19		22.24± 3.90		21.96 ± 4.20	
	Total	21.90± 4.39		22.26 ±4.01		22.34 ± 3.99	
Location	Urban	21.85 ± 4.36		22.22± 3.94		22.70 ± 3.92	
	Rural	21.97 ± 4.43	.10	22.31± 4.12	.10	22.09 ± 4.09	.01
	Total	21.90± 4.39		22.26 ± 4.01		22..39± 3.99	

Table 3 shows the respondents' depression, anxiety, and stress according to their demographic status. Results showed high mean scores in all the dependent variables, indicating that depression, anxiety, and stress were high among the employees in Nigeria. The Univariate analysis in Table 3 further showed no significant differences in depressive symptoms, anxiety, and stress based on all the demographic information, except job type, religion, and disability status. The table suggests that based on job type, health workers had significantly higher scores in depression (24.63 ± 4.20), anxiety (24.28± 4.56), and stress (24.86 ± 3.55) during this pandemic (p=.000) than their counterparts in Education, managerial and other employment positions. Religion also accounted for significant differences in the participants' depression (p=000), anxiety (p=000), and stress (p=000). Further, there were significant differences in the respondents' depression, anxiety, and stress based on their disability status, p=.000. Basically, respondents who indicated the presence of disability had high rating scores in depression (25.34±2.87), anxiety (24.19± 3.39), and stress (25.78±2.74).

Table 4:
Predicting participants' depression, anxiety, and stress

Model	Predictor Variable	Dependent Variable	B	Std. Error	Beta	T	Sig
		DASS Depression					
	Age		.13	.09	.02	1.50	.132
	Gender		.15	.15	.02	1.04	.299
	Job-Type		-.30	.07	-.36	-3.95	.000
	Employer		.01	.09	.00	.13	.894
	Location		.78	.15	.40	5.28	.000
		DASS Anxiety					
	Age		.17	.08	.05	2.18	.029
	Gender		.12	.03	.05	1.09	.102
	job type		-.23	.07	-.06	-.95	.001
	Employer		-.02	.08	-.01	-.31	.758
	Location		.55	.14	.07	4.08	.000
		DASS Stress					
	Age		.08	.08	.06	.91	.207
	Gender		.33	.15	.04	2.46	.140
	job type		-.26	.07	-.06	-3.71	.000
	Employer		-.37	.08	-.07	-4.55	.000
	Location		.55	.14	.07	4.08	.000

In Table 4, Multiple-regression revealed that among all the variables explored, job type and location showed significant contributions to the level of depressive symptoms of the participants. On the other hand, age, gender, and employer did not predict depression significantly. Location significantly predicted depression in the participants (B=.78; β=.40; t=5.28; p=000). Job-type also predicted depression (B=-.30; β=-.36; t=-3.95; p=000). On the other hand, only job type and location were significant predictors of anxiety in the respondents (p-value ≤ .001 in each case).

In explaining scores on stress, job type, employer and location were significant predictors of stress in the respondents (p-value ≤ .001 in each case). Other variables (gender, age, marital status, educational level, and religion) were not significant predictors. Job-type was negatively and significantly related to stress (B=-.26; β=.06; t= -3.71; p=000). This means that participants who are health workers reported more stress in comparison to other workers in Education, management, and others. Employer also negatively and significantly predicted participants' stress scores (B=-.37; β=-.07; t= -4.55; p=000). Among all the demographic variables explored, job type, employer, and location accounted for significant differences in depressive symptoms, anxiety, and stress.

Regarding job type, health workers showed the highest depression symptoms, anxiety, and stress compared to their counterparts in Education, managerial and other employment positions. In predicting the dependent variables, we found that age, job type, and location were significant predictors

of anxiety and depression in the respondents. In contrast, job type, employer, and location were significant predictors of stress.

Discussion

This study investigated the prevalence of depression, anxiety, and stress and their demographic predictors in the Nigerian employee population during the COVID-19 pandemic. We found that generally, there was a high level of anxiety and stress and a moderate level of depression among employees in Nigeria. In this study, 90.51% of employees had moderate to high levels of anxiety, and 51.52% of the employees had high and or moderate levels of depressive symptoms. In comparison, 94.13% of employees in Nigeria had moderate to high-stress levels. It was revealed that job type, employer, and location accounted for significant differences in depressive symptoms, anxiety, and stress among all the demographic variables explored. Regarding job type, health workers showed the highest depression symptoms, anxiety, and stress compared to their counterparts in Education, managerial and other employment positions. In predicting the dependent variables, we found that age, job type, and location were significant predictors of anxiety and depression in the respondents. In contrast, job type, employer, and location were significant predictors of stress. On the other hand, gender, and age, did not predict depression, anxiety, and stress.

The outcome of this study supports that of a systematic review and meta-analysis by Salari, et al. (2020) found that 29.6%prevalence of stress, 31.9% prevalence of anxiety, and 33.7% prevalence of depression in community samples. Similarly, De Kock, Latham, Leslie, Grindle, Munoz, Ellis, & O'Malley (2021) found that COVID-19 considerably impacted the psychological wellbeing of hospital staff. Though the present study is not on hospital staff, the outcome supports the previous study by showing that the mental health of other employees was also at risk during the pandemic. Similar result was found in a comparative study, Agberotimi, et al. (2020). In a cross-sectional study investigating the levels of fear, anxiety, depression, stress, social support, and the associated factors experienced by Jordanian healthcare workers during the COVID-19 Pandemic, Alnazly, (2021) presented severe depression 40%, extremely severe anxiety 60%, and 35% severely distressed among health workers. Another study of the general Iranian population showed an overall prevalence of moderate-to-extremely severe depression, anxiety, and stress in 26.1%, 33.2%, and 5.8% of the population. Most of these studies on the prevalence of depression, anxiety, and stress were conducted outside Nigeria and are primarily in the healthcare employee population. Therefore, the outcome of the present study enriches the existing outcome by establishing a high prevalence of depression, anxiety, and stress in the employee population in Nigeria.

The demographic variables predicting depression, anxiety, and stress among the employees found that being employed by private organizations, working in a hospital, and being in an urban area were risk factors for increased depression and anxiety. Another study by Mohammadi, et al. (2019) found that a higher age (15–18), being female, and the father's unemployment were associated with an increased odds ratio for depressive disorders. The age of 10–14, the age of 15–18, female gender, and the father's unemployment were significant positive predictors, whereas the mother's job (as a housewife) and a history of psychiatric hospitalization of the father and or mother were negative predictors for depressive symptoms. Factors determined to be associated with psychological distress were being male, married, aged 40 years and older, and having more clinical experience. (Alnazly et al., 2021). However, in this study, gender and age were not significant factors in the employees' level of stress, anxiety, and depression. This could be because all employees who participated in this study were adults and may not be significantly different in their situational perceptions.

A study conducted by Özdin, & BayrakÖzdin, (2020) found that 23.6% of the population scored above the depression cut-off point, and 45.1% scored above the cut-off point for anxiety. The present study was conducted in a different context; however, when laid side-by-side with prior outcomes, employees in Nigeria were most affected compared to other countries. The study found that 90.51% of employees had moderate to high anxiety levels, 51.52% had high and or moderate levels of depressive symptoms, and 94.13%. Thus, the outcome of the present study shows that the employees in Nigeria were highly affected in their mental health during the pandemic, even though the death toll was reduced in Nigeria compared to western countries. Another similar study found gender as the most potent predictor of post-traumatic stress disorder symptoms after pandemics (Liu et al., 2020). The present study found a contrary result as it shows that gender was not a significant factor in depression, anxiety,

and stress. Symptoms of anxiety, depression, and stress are seen more frequently during the COVID-19 pandemic (Torales et al., 2020). Anxiety disorder has been seen at three-fold higher levels in women than in men during the COVID-19 pandemic (Wang et al., 2020). Location was also found to be a significant factor for depression, anxiety, and stress among employees. This could be because viruses can be transmitted more quickly in urban and central areas with denser human populations (Taylor, 2019). Since infection threats are more in urban areas, symptoms of depression, anxiety and stress may be more significant in individuals in urban areas (Chen et al., 2020). Individuals living in urban areas may also have a greater probability of accessing communication and information that may traumatize them due to access to a wide range of information sources.

Conclusions

In Nigeria, employees have increased depression, anxiety, and stress due to the COVID-19 pandemic necessitating reinforced mental health services among the employee's population. Increased depression, anxiety, and stress levels among the working population impede organizational outputs in different settings. There is a need for occupational health therapies and coaching across organizations in Nigeria. Living in urban areas, being employed by private organizations, and working in health organizations were predictors of increased stress, anxiety, and depression.

Practical and Social Implications

There is a need to fix the occupational safety framework in Nigeria, following adverse working conditions of the employees' population. The mental health professional can formulate policies through the Government to address employees' mental health in workplaces. There is a need for cognitive therapies to treat depression, anxiety, and stress among employees. In respect of the social context, organizations can establish social support frameworks for the employees and implement different interventions for the improved mental health of the workers. There is a need for a more robust network of relationships among workers.

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