Psychological correlates of stress among Nigerian high school adolescents during the third wave of COVID-19 Pandemic

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Abstract

Objective: The COVID-19 pandemic has significantly affected the mental health of adolescents. This study is aimed at determining the prevalence and psychological correlates of stress due to the COVID-19 pandemic among high school adolescents in Nigeria.

Methods: This is a cross-sectional descriptive online study involving 1008 Nigerian adolescents. Respondents completed study-specific sociodemographic questionnaire, Depression, Anxiety and Stress Scale– 21, Connor–Davidson Resilience Scale-10, Paediatric Quality of Life Enjoyment and Satisfaction, Insomnia Severity Index-7, Suicidal Behaviors Questionnaire-Revised, Drug Abuse Screening Test -10.

Results: The mean age of the respondents was 15.60 (SD 1.24) years. The prevalence of stress was 61.6%, while the prevalence of anxiety and depression was 57.4% and 50.8%, respectively. There were statistically significant positive correlations between stress and anxiety ($r_p = 0.669$, $P = <0.001$), depression ($r_p = 0.612$, $P = <0.001$), insomnia ($r_p = 0.355$, $P = <0.001$), suicidal tendencies ($r_p = 0.257$, $P = <0.001$), drug abuse ($r_p = 0.251$, $P = <0.001$) as well as between stress and age ($r_p = 0.129$, $P = <0.001$). There was a statistically significant negative correlation between stress and quality of life ($r_p = -0.375$, $P = <0.001$). The adolescents undergoing abnormal stress had higher odds of experiencing higher anxiety levels and depression.

Conclusion: Stress is associated with anxiety, depression, insomnia, substance abuse, suicidal behaviours, and reduced quality of life among Nigerian adolescents. Hence, there is a need to plan adolescent-centered mental health services during the COVID-19 pandemic.

Keywords: COVID-19, third wave, stress, Nigerian adolescents

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Corrélats psychologiques du stress chez les adolescents nigérians du secondaire pendant la troisième phase de la pandémie de covid-19

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Résumé

Objectif de l'étude: La pandémie de COVID-19 a considérablement affecté la santé mentale des adolescents. Cette étude vise à déterminer la prévalence et les corrélats psychologiques du stress dû à la pandémie de COVID-19 chez les adolescents du secondaire au Nigeria.

Matériels et méthode de l'étude: Il s'agit d'une étude transversale descriptive en ligne portant sur 1 008 adolescents nigérians. Les répondants ont rempli le questionnaire sociodémographique spécifique à l'étude, l'échelle de dépression, d'anxiété et de stress - 21, l'échelle de résilience Connor-Davidson-10, le plaisir et la satisfaction de la qualité de vie pédiatrique, l'indice de gravité de l'insomnie-7, le questionnaire sur les comportements suicidaires révisé, le test de dépistage de l'abus de drogues - dix.

Résultats de l'étude: L'âge moyen des répondants était de 15,60 (SD 1,24) ans. La prévalence du stress était de 61,6 %, tandis que la prévalence de l'anxiété et de la dépression était de 57,4 % et 50,8 %, respectivement. Il y avait des corrélations positives statistiquement significatives entre le stress et l'anxiété ($r_p = 0{,}669$, $P = < 0{,}001$), la dépression ($r_p = 0{,}612$, $P = < 0{,}001$), l'insomnie ($r_p = 0{,}355$, $P = < 0{,}001$), les tendances suicidaires ($r_p = 0{,}257$, $P = <0{,}001$), la toxicomanie ($r_p = 0{,}251$, $P = <0{,}001$) ainsi qu'entre stress et âge ($r_p = 0{,}129$, $P = <0{,}001$). Il y avait une corrélation négative statistiquement significative entre le stress et la qualité de vie ($r_p = {-0{,}375}$, $P = <0{,}001$). Les adolescents subissant un stress anormal avaient plus de chances de ressentir des niveaux d'anxiété et de dépression plus élevés.

Conclusion: Le stress est associé à l'anxiété, à la dépression, à l'insomnie, à la toxicomanie, aux comportements suicidaires et à une qualité de vie réduite chez les adolescents nigérians. Par conséquent, il est nécessaire de planifier des services de santé mentale centrés sur les adolescents pendant la pandémie de COVID-19.

Mots-clés : COVID-19, troisième vague, stress, adolescents nigérians

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INTRODUCTION

Globally, the COVID-19 pandemic has caused considerable morbidity and mortality (1). The pandemic has not only affected the adult population but has also significantly affected the mental health of adolescents (2). The consequent psychological stress caused by lock-downs, disruptions in academic activities and observation of COVID-19 protocols, which are rather unusual to these adolescents predispose them to a wide range of mental disorders (1).

According to studies, the prevalence of stress among adolescents during the COVID-19 pandemic ranges from 15.2% to 77% (2-4). The high level of stress from the COVID-19 pandemic is associated with depression, anxiety, sleep difficulty and suicidal behaviours among the adolescent population (4, 5). Furthermore, psychological stress due to the pandemic has significantly increased vulnerability to poor quality of life while high resilience reduces stress and improves functioning (6, 7). The COVID-19 pandemic has also increased adolescent psychoactive substance use to cope with abnormal stress, self-medicate, and enhance social functioning (8).

However, despite the harmful burden of the COVID-19 pandemic on the adolescent population, the focus remains on the adult population in Nigeria. The electronic search of extant literature revealed a dearth of studies on the mental health of Nigerian senior secondary school adolescents during the previous waves of the COVID-19 pandemic. Moreover, to the best of our knowledge, only a few studies have reported the psychological correlates of stress among Nigerian adolescents during the pandemic's previous waves. Therefore, this study aims to determine the prevalence and psychological correlates of stress due to the COVID-19 pandemic among high school adolescents in Nigeria. The findings of this study may perhaps raise awareness on the effects of the pandemic on the Nigerian adolescent population and therefore, provide the basis for planning adolescent-centered mental health services during the COVID-19 pandemic especially in low- and middle-income countries such as Nigeria.

MATERIALS AND METHODS

The study is a cross-sectional descriptive online survey among adolescents recruited via social media (Facebook, Twitter, WhatsApp etc.) from July to October 2021. The approval for the study was obtained from the Ministry of Health, Osogbo, Osun State, Nigeria. Permission was also obtained from a parent or guardian of each responding adolescent by ticking the parental consent box in the online questionnaire. The adolescents who completed the online questionnaires were automatically taken to have given consent to partake in this study by ticking the assent box. The senior secondary school adolescents that signified being older than 19 years and those whose parents or guardians refused to tick the consent box were excluded from the data.

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

This is a set of three self-reported scales designed to measure the negative emotional states of depression, anxiety and stress with seven items per scale (9). The depression scale assesses dysphoria, hopelessness, self-deprecation and lack of interest (9). The anxiety scale assesses autonomic arousal, skeletal muscle effect. The stress scale assesses relaxing difficulty, nervous arousal and agitation. It has been used in Nigeria (10). In our study, we scored and graded the severity of the scales according to the original developers of the instrument (9).

Connor–Davidson Resilience Scale-10 (CDRS-10)

This scale consists of 10 items and is structured as a 5-point Likert-type cumulative instrument (0 = never to 4 = almost always) (11). The respondents completed the scale based on how they admitted each item applied in the preceding month. A summation of the response to each scale's item yields a score that ranges from a minimum of 0 to a maximum of 40, which signifies the highest resilience level (11).

Paediatric Quality of Life Enjoyment and Satisfaction (PQ-LES-Q)

It is a 15-item measure to assess the quality of life and life satisfaction in children and adolescents (12). Each item can be rated from 1 (very poor) to 5 (very good). The measure has been found to have good internal consistency of 0.87. Higher scores (ranges 1–65) show a greater quality of life and life satisfaction (12).

Insomnia Severity Index-7 (ISI-7)

The ISI-7 is a self-reported questionnaire used to diagnose insomnia and quantify its severity (13). The total score ranges from 0 to 28. The severity of insomnia is based on the total score as - the absence of insomnia (0–7), mild

insomnia (8–14), moderate insomnia (15–21), and severe insomnia (22–28) (13).

Suicidal Behaviors Questionnaire-Revised (SBQ-R)

The SBQ-R consists of 4 items that assess suicidal behaviours (14). Item 1 taps into lifetime suicide creativity and attempt, while item 2 assesses the frequency of suicidal ideation over the preceding 12 months. Item 3 assesses the threat of suicide attempt, while item 4 evaluates the futuristic likelihood of subjectively reporting suicidal behaviours. The aggregate score on the SBQ-R ranges from 3 to 18, with higher scores reflecting a greater risk for suicidal behaviours (14).

Drug Abuse Screening Test -10 (DAST-10)

The DAST-10 is a 10-item self-reported brief measure that provides information on the abuse of non-medical and non-prescribed drugs. The 10-item DAST is an abridged version of the 28-item instrument (15). The higher the cumulative score on the DAST, the greater the respondent's likelihood of abusing one or more drugs. A score of 0 implies no drug abuse, a total score of 1 – 2 means a low level of drug abuse, 3 – 5 signifies a moderate level of drug abuse, 6 – 8 score is a substantial level of drug abuse. At the same time, 9 to 10 indicates a severe level of drug abuse (15).

Data analysis

All statistical analyses were performed with the Statistical Product and Service Solutions (SPSS) software, 21st version. Descriptive statistics such as the mean (standard deviation) and frequency (percentages) were utilized in depicting the sociodemographic variables and the scores on the study measures. The dependent variable was the stress scale of the DASS-21. Kolmogorov-Smirnov test was used to test for the normality of the data. The directions and strengths of the relationship between the DASS-21 stress scale and the other study measures were evaluated using Pearson's correlational analyses. Binary logistic regression was conducted to identify the variables significantly associated with abnormal stress as measured by the stress scale of the DASS-21. The level of statistical significance was set at a *P*-value of less than 0.05, and all tests were 2-tailed.

RESULTS

A total of 1049 respondents completed the 3-month online survey. Forty-one of them were excluded because they did not meet the inclusion criteria for the study. Therefore, only 1008 were available for data analysis. As shown in Table 1, females constituted 63.1% of the respondents, while the mean age of the respondents was 15.60 (SD 1.24) years. The mean scores for psychological distress on DASS were, 11.78 for stress (SD 3.13), 11.70 for anxiety (SD 3.31) and 11.28 for depression (SD 3.44) respectively. The prevalence of stress (mild to moderate) was 61.6%, while the prevalence rates of anxiety and depression were 57.4% and 50.8%, respectively.

Table 2 shows a statistically significantly higher mean score in age and on anxiety, depression, insomnia, suicidality, and drug abuse scales among those with abnormal stress than those with the normal stress level. There is also a statistically significantly lower mean score on the quality of life and satisfaction scale among respondents with abnormal stress than those with normal stress.

Table 3 shows that there were statistically significant positive correlations between stress subscale and other study measures; anxiety (r_p = 0.669, P = <0.001), depression (r_p = 0.612, P =<0.001), insomnia (r_p =0.355, P =<0.001), suicidality (r_p = 0.257, P =<0.001), drug abuse (r_p = 0.251, P =<0.001); as well as between stress and age (r_p = 0.129, P =<0.001). However, there was a statistically significant negative correlation between stress and quality of life (r_p = -0.375, P =<0.001).

Table 4 shows that the adolescents undergoing abnormal stress had higher odds of experiencing higher anxiety levels (OR 1.7) and depression (OR 1.3).

DISCUSSION

The third wave of the COVID-19 pandemic has impacted people's lives and well-being, particularly adolescents (16, 17). This present study examined psychological correlates of stress among adolescents during the third wave of the COVID-19 pandemic. In this study, about 62% of respondents reported mild to moderate stress levels during the COVID-19 pandemic in Nigeria compared to 54% among respondents from China (18) who reported mild to extremely severe stress levels. The mean scores for stress, anxiety and depression were 11.78 (SD 3.13), 11.70 (SD 3.31) and 11.28 (3.44), respectively. These levels were higher than what was found in adolescents in Iran who had mean scores of 6.8 (SD 5.11), 8.46 (SD 5.64) and 7.24 (SD 4.93) for

stress anxiety and depression, respectively, during the COVID-19 pandemic (17). This could be explained by the COVID-19 pandemic-induced significant social disruptions and lack of social connectedness which are alien to our culture. The COVID-19 pandemic has changed the world's order and brought unparalleled changes into lives, including those of adolescents (19). These changes may include loss of structures and routines, social isolation due to social distancing measures, family pressures due to spending an increased amount of time together, parental loss of income among others (19-21). These high rates may also reflect other social problems such as inadequate welfare, general economic instability and security issues (22).

The correlation results showed a positive relationship between stress, depression, anxiety, insomnia, suicidality, drug abuse and age of respondents with small to moderate effects. These findings indicate that an increase in one variable increases the other variable and vice-versa, which is consistent with recent studies among adolescents during the COVID-19 pandemic (17, 23). Adolescent-reported quality of life was negatively associated with stress, anxiety, depression, insomnia, suicidal tendencies, quality of life, drug abuse and age with small to moderate effects, which means that a reduction in quality of life resulted in an increase in the other variables and vice-versa. This is also consistent with findings from studies among adolescents during the COVID-19 pandemic (17, 23).

While the adolescent period can be a stressful developmental period due to the physical, social and cognitive changes taking place all at once (16), the COVID-19 pandemic and its associated restrictions in social interactions and connectedness, as well as other socio-economic problems can result in additional stress resulting in diverse psychological consequences.

One of the strengths of this study is that it sampled a large population of adolescents and found empirical evidence on the association of stress with anxiety, depression, insomnia, substance abuse and suicidal tendencies among Nigerian adolescents during the COVID-19 pandemic's third wave. The study's cross-sectional nature can be a limitation since our findings cannot be extended to explain causal mechanisms that would need to be investigated using prospective or experimental designs.

CONCLUSION

To the authors' knowledge, this is the first study of the psychosocial correlates of stress among Nigerian senior secondary school adolescents during the COVID-19 pandemic. Our findings indicate that abnormal stress is associated with increasing anxiety, depression, insomnia, substance abuse, suicidality and a reduced quality of life among these adolescents.

Conflict of interest: There was no conflict of interest.

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Table 1: Respondents' characteristics and mean score of study measures (n = 1008)

Variable	N (%) Mean ± SD [Range]
Gender	
Male	372 (36.9%)
Female	636 (63.1%)
Age	15.60 ± 1.24 [13 - 19]
13 -15 years (young adolescents)	443 (43.9%)
16 – 19 years (older adolescents)	565 (56.1%)
Stress subscale	11.78 ± 3.13 [7 - 21]
Anxiety subscale	11.70 ± 3.31 [7 - 25]
Depression subscale	11.28 ± 3.44 [7 - 23]
CDRISC – 10	21.64 ± 9.38 [0 - 40]
PQLES-	64.95 ± 8.25 [24 - 75]
Q-15	
ISI-7	7.17 ± 5.42 [0 - 25]
SBQ-R	4.56 ± 2.84 [3 - 18]
DAST-10	1.99 ± 1.77 [0 - 9]
Stress	
Normal	387 (38.4%)
Mild	599 (59.4%)
Moderate	22 (2.2%)
Severe	0 (0%)
Extremely severe	0 (0%)
Stress (Total)	621 (61.6%)
Anxiety	579 (57.4%)
Depression	512 (50.8%)

CDRISC-10 - Connor–Davidson Resilience Scale-10, PQLESQ - Paediatric Quality of Life Enjoyment and Satisfaction, ISI-7 - Insomnia Severity Index-7, SBQ-R - Suicidal Behaviors Questionnaire-Revised, DAST-10- Drug Abuse Screening Test -10

Table 2: Comparison of study measure mean scores of adolescents with and without abnormal stress (n = 1008)

Variable	Normal stress	Abnormal stress	t	df	*P*
Age	15.45 (1.22)	15.70 (1.25)	-3.04	1006	0.002
DASS-Anx	9.18 (1.92)	13.27 (3.02)	-23.87	1006	<0.001
DASS-Dep	9.01(2.16)	12.70 (3.33)	-19.43	1006	<0.001
CDRISC-10	21.28 (10.79)	21.86 (8.39)	-0.96	1006	0.336
PQLESQ-15	68.10 (6.84)	62.99 (8.45)	10.00	1006	<0.001
ISI-7	5.27 (5.31)	8.35 (5.14)	-9.12	1006	<0.001
SBQ-R	3.89 (1.94)	4.97 (3.20)	-5.96	1006	<0.001
DAST-10	1.50 (1.34)	2.29 (1.93)	-7.06	1006	<0.001

DASS-Anx - Depression, Anxiety and Stress Scale – 21- Anxiety subscale, DASS-Dep - Depression, Anxiety and Stress Scale – 21- Depression subscale, CDRISC-10 - Connor–Davidson Resilience Scale-10, PQLESQ - Paediatric Quality of Life Enjoyment and Satisfaction, ISI-7 - Insomnia Severity Index-7, SBQ-R - Suicidal Behaviors Questionnaire-Revised, DAST-10- Drug Abuse Screening Test -10

Table 3: Correlational analysis between DASS-Stress subscale and other study measures (n = 1008)

Variable	1	2	3	4	5	6	7	8
1.DASS-Stress	1							
2. DASS-Anx	0.669**	1						
3. DASS-Dep	0.612**	0.626**	1					
4. CDRISC-10	0.032	0.032	-0.075*	1				
5. PQLESQ	-0.375**	-0.367**	-0.409**	0.075*	1			
6. ISI-7	0.355**	0.336**	0.349**	-0.095*	-0.325**	1		
7. SBQ-R	0.257**	0.276**	0.237**	-0.014	-0.338**	0.211**	1	
8. DAST-10	0.251**	0.259**	0.268**	-0.150**	-0.148**	-0.283**	0.142**	1
9. Age	0.129**	0.151**	0.203**	-0.109	-0.019	0.104*	-0.027	0.163*

*$p<0.05$ (2-tailed) **$p<0.01$(2-tailed)

DASS-Stress - Depression, Anxiety and Stress Scale – 21- Stress subscale, DASS-Anx -Depression, Anxiety and Stress Scale – 21- Anxiety subscale, DASS-Dep - Depression, Anxiety and Stress Scale – 21- Depression subscale, CDRISC-10 - Connor–Davidson Resilience Scale-10, PQLESQ - Paediatric Quality of Life Enjoyment and Satisfaction, ISI-7 - Insomnia Severity Index-7, SBQ-R - Suicidal Behaviors Questionnaire-Revised, DAST-10- Drug Abuse Screening Test -10

Table 4: Binary logistic regression showing the variables that are independently associated with stress among high school adolescents (n = 1008)

Variable	B	SE	Wald	df	*P*	AOR
Constant	-6.948	1.202	33.388	1	<0.001	0.001
Gender (Male)	-0.054	0.185	0.085	1	0.770	0.947
DASS-Anx	0.506	0.048	111.092	1	<0.001	1.659
DASS-Dep	0.257	0.043	35.896	1	<0.001	1.294
CDRISC-10	0.017	0.010	3.264	1	0.071	1.017
PQLESQ-15	-0.024	0.014	2.985	1	0.084	0.976
ISI-7	0.022	0.018	1.466	1	0.226	1.022
SBQ-R	0.005	0.040	0.014	1	0.906	1.005
DAST-10	0.106	0.061	3.088	1	0.083	1.112
Age (young adolescents)	0.208	0.182	1.304	1	0.253	1.231

DASS-Anx - Depression, Anxiety and Stress Scale – 21- Anxiety subscale, DASS-Dep - Depression, Anxiety and Stress Scale – 21- Depression subscale, CDRISC-10 - Connor–Davidson Resilience Scale-10, PQLESQ - Paediatric Quality of Life Enjoyment and Satisfaction, ISI-7 - Insomnia Severity Index-7, SBQ-R - Suicidal Behaviors Questionnaire-Revised, DAST-10- Drug Abuse Screening Test -10