




ORIGINAL

Psychological stress of Covid-19 pandemic on radiography students in Nigeria: a single centre study

Estrés psicológico de la pandemia de Covid-19 en los estudiantes de radiografía de Nigeria: estudio de un solo centro

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ABSTRACT

Introduction: psychological stress triggers physical and emotional responses that can impact various bodily functions. This study aimed to assess the psychological stress experienced by radiography students at Nnamdi Azikiwe University during the COVID-19 pandemic and to identify their coping strategies.

Method: a cross-sectional survey was conducted using a questionnaire among 186 radiography students. The survey collected socio-demographic data, such as gender, age, and academic year, along with responses related to psychological distress. Descriptive and inferential statistical analyses were performed.

Results: among the 186 respondents, 96 (51,6 %) were female, and 90 (48,4 %) were male. The majority (62,4 %) was aged 20,24 years, and the largest group (38,7 %) was in their third year of study (300 Level). Over half (58,1 %) of the students lived on campus, and most (87,6 %) attended physical classes. A significant proportion (75,3 %) reported somatic stress, with common symptoms including headaches (25,3 %), physical fatigue (23,5 %), and back pain (12,4 %). Anxiety-related symptoms included sleep disturbances (36,6 %), anger (31,2 %), and anxiety (29,2 %). Depression affected 87,6 % of the respondents, with symptoms such as lack of motivation to study (34,9 %), difficulty concentrating (25,3 %), hopelessness (17,2 %), and suicidal thoughts (10,2 %). The main social factors contributing to psychological distress were difficulty in studying (36 %), financial problems (22 %), and challenges with learning modalities (18,8 %). Excessive worrying (52,7 %) was the most common psychological factor. The most prevalent impact of psychological distress was low motivation to work (29,6 %). Social media was the most frequently used coping strategy (18,3 %). There was no significant association between somatic stress and academic year/level ($p = 0,319$). However, a significant

association was found between anxiety and academic level/year ($p = 0,050$) and between academic level/year and depression ($p = 0,000$).

Conclusions: radiography students experienced significant psychological stress during the COVID-19 pandemic, primarily manifested as somatic stress, anxiety, and depression.

Keywords: Anxiety; Covid-19; Depression; Education.

RESUMEN

Introducción: el estrés psicológico desencadena respuestas físicas y emocionales que pueden afectar a diversas funciones corporales. El objetivo de este estudio era evaluar el estrés psicológico experimentado por los estudiantes de radiografía de la Universidad Nnamdi Azikiwe durante la pandemia de COVID-19 e identificar sus estrategias de afrontamiento.

Método: se realizó una encuesta transversal utilizando un cuestionario entre 186 estudiantes de radiografía. La encuesta recogió datos sociodemográficos, como sexo, edad y curso académico, junto con respuestas relacionadas con el malestar psicológico. Se realizaron análisis estadísticos descriptivos e inferenciales.

Resultados: de los 186 encuestados, 96 (51,6 %) eran mujeres y 90 (48,4 %) hombres. La mayoría (62,4 %) tenía entre 20 y 24 años, y el grupo más numeroso (38,7 %) cursaba el tercer año de estudios (nivel 300). Más de la mitad (58,1 %) de los estudiantes vivía en el campus, y la mayoría (87,6 %) asistía a clases físicas. Una proporción significativa (75,3 %) declaró estrés somático, con síntomas comunes como dolores de cabeza (25,3 %), fatiga física (23,5 %) y dolor de espalda (12,4 %). Los síntomas relacionados con la ansiedad incluían trastornos del sueño (36,6 %), ira (31,2 %) y ansiedad (29,2 %). La depresión afectaba al 87,6 % de los encuestados, con síntomas como falta de motivación para estudiar (34,9 %), dificultad para concentrarse (25,3 %), desesperanza (17,2 %) y pensamientos suicidas (10,2 %). Los principales factores sociales que contribuyeron al malestar psicológico fueron la dificultad para estudiar (36 %), los problemas económicos (22 %) y las dificultades con las modalidades de aprendizaje (18,8 %). La preocupación excesiva (52,7 %) fue el factor psicológico más frecuente. El impacto más frecuente de la angustia psicológica fue la baja motivación para trabajar (29,6 %). Las redes sociales fueron la estrategia de afrontamiento más utilizada (18,3 %). No hubo asociación significativa entre el estrés somático y el curso académico/nivel ($p = 0,319$). Sin embargo, se encontró una asociación significativa entre ansiedad y nivel académico/año ($p = 0,050$) y entre nivel académico/año y depresión ($p = 0,000$).

Conclusiones: los estudiantes de radiografía experimentaron un estrés psicológico significativo durante la pandemia COVID-19, manifestado principalmente como estrés somático, ansiedad y depresión.

Palabras clave: Ansiedad; Covid-19; Depresión; Educación.

INTRODUCTION

In late December 2019 a respiratory disease caused by a new coronavirus was reported in Hubei province in China.^(1,2) The disease defied geographical boundaries with the epidemic size doubling every 7,4 days⁽²⁾ and by April 3rd, 2020, over one million cases had been diagnosed in 184 territories, in six continents^(1,3) with 53 000 deaths globally^(1,4) The World Health Organization named this disease coronavirus disease 2019 (Abbreviated COVID-19) and declared it a pandemic on 11th March 2020 due to its fast dissemination.⁽⁵⁾ The emergence of COVID19 prompted consternation in many parts of the world including Nigeria.

In Nigeria, Covid-19 was first reported in Lagos and then in the capital Abuja. As at 27 April 2020, Nigeria had recorded 1273 cases across 32 states and the federal capital territory with 40 deaths.⁽¹⁾ Facing this dramatic challenge of COVID-19, the Government all over the world implemented extraordinary measures to limit the spread of the virus.⁽⁶⁾ The Nigerian government, like other global community, also adopted measures to contain the spread of the disease. In this critical situation everyone's life changed due to restriction of movement and social contacts. The impact of this emergency on Healthcare workers in particular was remarkable, culminating in increased stress with other variables like anxiety and depression. The Healthcare worker uninterruptedly continued to work during the pandemic, taking the risk to be infected by COVID-19⁽⁷⁾ and thereby putting them in the category of professionals to develop psychological stress.

Stress classically refers to "the bodily process that result from circumstances that places physical and psychological demands on an individual".⁽⁸⁾ Although, the stress responses to perceived threat evolves as an adaptive processes but prolonged stress responses can lead to tissue damage and disease.⁽⁸⁾ COVID-19 outbreak caused generalized fear to the public and induced fear-related behaviors and anxiety. However, as the world authorities seem to focus on the infectious aspect of the pandemic, a rise has been observed

in mental health disorders.⁽⁹⁾ Although impacts are felt across populations—and especially in socially-disadvantaged communities and individuals employed as essential workers—college students are among the most strongly affected by COVID-19 because of uncertainty regarding academic success, future careers, and social life during college, amongst other concerns. Even before the pandemic, students across the globe experienced increasing levels of anxiety, depressive moods, lack of self-esteem, psychosomatic problems, substance abuse, and suicidality.⁽¹⁰⁾ Therefore, students may need additional resources and services to deal with the physical and mental health repercussions of the disease. University administrators could best serve students if they better understood the impacts of COVID-19 and the risk factors of its psychological impacts. These impacts are of critical importance to warrant immediate mental health interventions focused on prevention and treatment. Psychiatric and counseling services have historically been underutilized by college students. Understanding what subpopulations may suffer from unique combinations of psychological impacts may facilitate targeted interventions and successful treatment and coping strategies for individuals at greatest risk.

A recent review highlights some of the documented psychological impacts of COVID-19 on college students. Many feel increased stress levels and anxiety and depressive symptoms as a result of changed delivery and uncertainty of university education, technological concerns of online courses, being far from home, social isolation, decreased family income, and future employment.⁽¹¹⁾ These impacts have been observed in universities across the world. Diverse student bodies may show different risk factors from more culturally-homogenous student bodies because of the diversity of value orientations and sources of media consumption. This study aims to evaluate the psychological stress of COVID - 19 pandemic on Radiography students in Nnamdi Azikwe University, Nigeria.

METHOD

A cross-sectional questionnaire-based survey was conducted among 186 students of radiography department in Nnewi Campus of Anambra State University, Nigeria from December 2021 to February, 2022. The respondents' consent to participate in this study was duly sought and obtained using written informed consent form. The information obtained from each respondent was treated with high level of confidentiality and used for the purpose of this study only. Only students who have duly registered in the department of radiography and were available in school during the period of this study were included in this study.

The sample size for this study was determined using Yaro Yamani formulae for a known population cited by Ukaji *et al.*⁽¹²⁾.

$n = N/1+N(e)2$, where n = sample size.

n = sample size, $N=[472]$ is the population of radiography student from year two to year five obtained from class registers., $N= 472$

$n=472/1+472(0,05)2$

$n=186$

A convenience sampling method was employed to select the 186 respondents for the study. Data were collected using a self-designed, semi-structured questionnaire containing both closed and open-ended questions aligned with the study's objectives. The questionnaire was divided into two sections: Section A gathered socio-demographic information such as age, gender, level of study, pocket money, and marital status, while Section B focused on the psychological distress experienced by the participants during the COVID-19 pandemic. The questionnaire was administered in a hardcopy format, and its validity was assessed using the Index of Item Objective Congruence (IOC) method, as utilized in previous studies.^(1,7,12,13,14) The content validity of the questionnaire was evaluated by calculating the IOC, with an IOC score greater than 0,6 considered indicating excellent content validity. All items of the questionnaire scored above 0,6 in this study, demonstrating strong content validity. The questionnaire also exhibited good internal consistency, with a Cronbach's alpha reliability coefficient of 0,84.

The questionnaire was administered to the respondents by direct issuance. The completed copy of the questionnaire was retrieved immediately after being filled out by the respondents. The data generated in this study were analysed using the Statistical Package for Social Sciences (SPSS) version 21.0 (SPSS Inc, ILL, USA, 2003). The data were analysed using descriptive statistical tools such as frequencies and percentages and presented in tables and inferential statistics such as Chi-square to evaluate the association between the level of studies and pattern of psychological distress of COVID-19 pandemic on Radiography students. The level of the statistical significance was set at p level is $< 0,05$.

RESULTS

Out of 186 respondents, large number 96 (51,6 %) were females when compared to their male counterparts of 90 (48,4 %). Greater percentages (62,4 %) of the respondents were within the age group of 20-24 years.

Table 1. Distribution of socio-demographics of radiography students		
Gender	Frequency (n)	Percentage (%)
Male	90	48,4
Female	96	51,6
Total	186	100,0
Age		
15-19years	23	12,4
20-24years	116	62,4
25-29years	41	22,0
30-34years	6	3,2
Total	186	100,0
Religion		
Muslim	23	12,4
Orthodox	65	34,9
Protestants	98	52,7
Total	186	100,0
Ethnicity		
Igbo	143	76,9
Yoruba	15	8,1
Hausa	28	15,1
Total	186	100,0
Marital status		
Single	136	73,1
Married	13	7,0
Divorced	1	0,5
In a relationship	36	19,4
Total	186	100,0
Residency		
within the school premises	108	58,1
Far away from the school premises	78	41,9
Total	186	100,0
Origin		
Rural Area	81	43,5
Urban area	105	56,5
Total	186	100,0
Monthly pocket money		
None	20	10,8
#500-3000	17	9,1
#3001-6000	20	10,8
#6001-9000	22	11,8
#9001-12,000	20	10,8
#12 001-15 000	37	19,9
#Above 15 000	50	26,9
Total	186	100,0
Educational year		
200 Level	29	15,6
300 Level	72	38,7
400 Level	49	26,3
500 Level	36	19,4
Total	186	100,0
Educational Learning Modality		
Online	23	12,4
Physical classes	163	87,6
Total	186	100,0

Out of 186 respondents, the majority (26,9 %) had above 15 000 naira as their monthly pocket money and the least 17 (9,1 %) had 500-300 naira as their pocket money. The highest percentage (38,7 %) of the respondents was in 300 Level of studies followed by 400 level (26,3 %) and the least (15,6 %) were in their 200 level of studies. More than half (58,1 %) of the respondents resided within the school premises and physical class was the highest (87,6 %) mode of learning (table 1).

Table 2. Distribution of patterns perceived psychological stress experienced by radiography students during the Covid-19 pandemic

Responses	Frequency (n)	Percentage (%)
Somatic stress	140	75,3
Yes	46	24,7
No	186	100
Somatic stress symptoms		
None	45	24,2
physical fatigue	44	23,7
Headache	47	25,3
Abdominal pain	4	2,2
Fever	11	5,9
eye problem	12	6,5
back pain	23	12,4
	186	100
Anxiety stress		
Yes	181	97,3
No	5	2,7
	186	100
Anxiety symptoms		
None	5	2,7
Being anxious	55	29,6
Being angry	58	31,2
Lack of sleep	68	36,6
	186	100
Depression		
Yes	163	87,6
No	23	12,4
	186	100
Depression symptoms		
None	23	12,4
Hopelessness	32	17,2
Lack of motivation to read	65	34,9
Lack of concentration	47	25,3
Suicidal ideations	19	10,2
Total	186	100,0

Table 2 shows that the majority (75,3 %) of the respondents had somatic stress with prevailing symptoms as headache (25,3 %), physical fatigue (23,5 %) and back pain (12,4 %). With those that had anxiety stress, they had the following symptoms such as lack of sleep (36,6 %), being angry and (31,2 %) and being anxious (29,2 %). Majority (87,6 %) of the respondents had depression (symptoms includes: lack of motivation to read (34,9 %), lack of concentration (25,3 %), Hopelessness (17,2 %) and suicidal ideation (10,2 %) (table 2). Table 3 shows that

difficulty in reading (36 %), financial problem (22 %) and difficulty in learning modality (18,8 %) are the common causative social factors to psychological stress. Too much thinking (52,7 %) is the most common psychological factors causing psychological distress followed by mismatch of expectations (29 %) and love related issues (18,3 %). The most common impact of psychological stress was low motivation to work 55 (29,6 %), followed by feeling sad and angry 44 (23,7 %), poor academic performance 35 (18,8 %) and the least were inter-personal problems 26 (14 %) and fear of more severe problems 26 (14 %) (table 4). The majority 34 (18,3 %) of students uses social media as their means of coping with the psychological distress, followed by listening to music 29 (15,6 %) and the least 8 (4,3 %) smokes (table 5). Table 6 shows that no statistically significant association between somatic stress and educational year/Level ($p = 0,319$). There was a statistically significant association between anxiety and educational level/year ($p = 0,050$) and depression ($p = 0,000$) respectively.

Table 3. Frequency and percentage distribution of factors causing psychological stress

Responses	Frequency (n)	Percentage (%)
Social factors		
Difficulty with reading	67	36,0
Difficulty with learning modality	35	18,8
Financial problem	41	22,0
Conflict with others	22	11,8
Work load	21	11,3
Total	186	100
Psychological factors		
Thinking too much	98	52,7
Love Related issues	34	18,3
Mismatch of expectation	54	29,0
Total	186	100,0

Table 4. Frequency and percentage distribution of psychological stress impact on radiography students

Impact psychological stress	Frequency (n)	Percentage (%)
Inter-personal problem	26	14,0
Poor academic performance	35	18,8
Feeling sad and angry	44	23,7
Low motivation to work	55	29,6
Fear of more severe problems	26	14,0
Total	186	100,0

Table 5. Frequency and percentage distribution of coping strategies to psychological stress among Radiography students during Covid-19-pandemic

Coping strategy	Frequency (n)	Percentage (%)
Attending to church	28	15,1
Discussing with friends	25	13,4
Listening to music	29	15,6
Watch Tv/Movies	25	13,4
Social Media	34	18,3
Exercise	24	12,9
Drinking Alcohol	13	7,0
Smoking	8	4,3
Total	186	100,0

Table 6. Chi-square showing association between educational level, somatic stress symptoms, anxiety symptoms and depression

		Educational Year				Total	p-Value
		200 Level	300 Level	400 Level	500 Level		
Somatic stress symptoms	None	11	20	10	4	45	0,319
	physical fatigue	8	15	12	9	44	
	Headache	5	18	14	10	47	
	Abdominal pain	1	2	1	0	4	
	Fever	1	4	2	4	11	
	eye problem	1	8	2	1	12	
	back pain	2	5	8	8	23	
Total		29	72	49	36	186	
Anxiety symptoms	None	3	1	0	1	5	0,050*
	Being anxious	7	21	16	11	55	
	Being angry	9	16	21	12	58	
	Lack of sleep	10	34	12	12	68	
Total		29	72	49	36	186	
Depression Symptoms	None	1	0	17	5	23	0,000*
	Hopelessness	4	13	8	7	32	
	Lack of motivation to read	12	35	11	7	65	
	Lack of concentration	10	18	8	11	47	
	Suicidal ideations	2	6	5	6	19	
Total		29	72	49	36	186	

DISCUSSION

The impact of the COVID-19 pandemic on the psychological health of university students is clear.⁽¹⁵⁾ This age group is particularly at risk of experiencing psychological stress during the crisis.⁽¹⁶⁾ Recent literature suggests that the pandemic has affected student's psychological well-being and that academic and relational changes were sources of stress.⁽¹⁷⁾ Across all academic levels, students report high rates of negative feelings, such as anxiety, stress, feeling overwhelmed, tiredness, and depression.⁽¹⁸⁾ Lockdowns have led to psychological problems among students, including frustration, stress, and depression⁽¹⁹⁾ especially among those without pre-existing mental health conditions, who have become increasingly socially isolated and have shown signs of declining mental health.⁽²⁰⁾ However, in this study, the overall psychological distress related to COVID-19 among radiography students of Nnamdi Azikiwe University College of Health Sciences Nnewi, Anambra state were measured using the experience of some forms of psychological problems (ie, anxiety, depression and stress disorders) and the findings are discussed thus:

The COVID-19 outbreak has caused psychological problems in the form of depression, anxiety and stress, which need provision of improved psychological interventions at the global, national, and regional and district levels. In this study, the most common psychological distress pattern experienced by radiography students was somatic stress with prevailing symptoms such as headache, physical fatigue and back pain. The majority of students' experienced anxiety with dominating symptoms such as lack of sleep, being angry and being anxious. Majority of the students had depression with symptoms which include but not limited to; lack of motivation to read, lack of concentration, hopelessness and suicidal ideation. The general prevalence of psychological distress is very high among radiography students. This is in variance with the studies by Woday et al.⁽²¹⁾ where the overall prevalence of psychological distress among students during covid-19 pandemic was lower. Other international studies done in Ethiopia (85,3 %)⁽²²⁾; University of Dhaka (43,4 %)⁽²³⁾ Jilin Province, China (40,4 %)⁽²⁴⁾ and in 194 cities in China (53,8 %)⁽²⁵⁾ equally reported of lower prevalence of psychological distress among students. The discrepancy might be suggestive of differences in the measurement of the outcome variable (ie, psychological problem) and also conducive environment/working or more organized system operating in such countries to help alleviate students stress related inconveniences.

The identified common causative social factors to psychological stress among radiographer students include but not limited to difficulty in reading, financial problem and difficulty in learning modality. Too much thinking is the most common psychological factors causing psychological distress followed by mismatch of expectations and love related issues. This is similar to the finding of the study conducted by Negash et al.⁽²⁶⁾ who stated that the next most common social causes were economic problem and interpersonal difficulties. This may be due to difficulty accessing banks due to activities restrictions; or poor monthly income as a result of poor economic activities during the pandemic, which culminated in students receiving lesser or no monthly income from parents.

Most of the radiography students perceived the impact of psychological distress in this descending trend low motivation to work, followed by feeling sad and angry, poor academic performance and inter-personal problem. This is in harmony with the result reported by Negash et al.⁽²⁶⁾ which stated their participants perceived their mental distress as severe and negatively affected their social interaction, feeling, education result, interaction with others.

There were multi-strategies adopted by most of the students to manage their psychological distress better, which includes from the use of social media, watching Tv/Movies, listening to music, attending to church , discussing with friends and exercise were other common coping strategy found among students. This is similar to the finding of a similar study by Negash et al.⁽²⁶⁾.

Test of association between the educational year and patterns of psychological distress revealed that students in 300 level were mostly affected by psychological distress with no significant association between somatic stress and educational year/level. This implies that despite the fact certain level of students were mostly affected by psychological distress during the pandemic, in the overall, the distress was found across all the levels of studies. This may be so because the pandemic occurs during the academic session in which students at various levels of studies were actively involved in one form of academic activities and the other.

There was statistically significant association between anxiety and educational level/year and depression as identified in the result of this study. This may be so because students at 300 level and 500 level were preparing for their professional examinations during the pandemic era, which also might have triggered their level of anxiety and depression when compared to those in other levels of studies. Also, those in 200 level who just started courses such as anatomy, physiology, biochemistry and radiography courses may be faced with some degree of anxiety and depression during the pandemic era, as most lectures were done virtually bring about the significant association of educational level with anxiety and depression during the Covid-19 pandemic. This contradicts the studies by⁽²⁷⁾ who reported that neither gender nor year of study was associated with psychological distress level. This finding is also at variance with to the study conducted in Germany.⁽²⁷⁾ Salma et al.⁽²⁷⁾ study was conducted before the Covid-19 pandemic; this might be the reason for the difference in association as this study is conducted during the covid-19 pandemi and isolation, restrictions from social and academic functions may have induced some level of stress on the students sampled in this study.

CONCLUSIONS

Students were affected psychologically during the covid-19 pandemic, which manifested in the form of somatic stress, anxiety and depression. Psychological distress were caused by some social factors such as financial problems, difficulty with learning modality; psychological factors such as thinking too much followed by mismatch of expectation and love related issues were among the common causes of psychological distress among student during the covid-19 pandemic which affected their academic performance and relationship with people. Most students' coped with their psychological distress using social media, watching Tv/Movies, listening to music, attending to church. Association between educational level and patterns of psychological distress was found to be significant with anxiety and depression topping the lists . To this end, the Higher Education institutions and Board of radiographer should develop effective strategies and interventions to address psychological problems among radiography students. Moreover, it is important to consider the educational enrolment type and the academic year of students during the interventions.

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