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An investigative study on the causes of depression and the coping strategies among clinical medical students in private universities in North Central Nigeria

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Abstract

Background Depression is among known mental health conditions and students in schools of medicine are not immune to it. In this investigative study, 211 clinical medical students of two private universities from North-Central Nigeria were examined on depression prevalence, the contributory factors and their coping strategies.

Methods The Patient Health Questionnaire 9 (PHQ-9), the Medical Student's Stressor Questionnaire (MSSQ) and identified coping strategies according to Coping Oriented to Problems Experienced Inventory (COPE) were instruments of data collection.

Results The results were obtained by both descriptive analysis and test of association between some categorical variables. The depression prevalence amongst the participants was 159 (75.4%). Females (124 (78.0%)) were more depressed than males (35 (22.0%)). Factors identified as contributing to depression were the heavy academic workload (124 (78.5%)), insufficient family time (93 (58.1%)) and financial constraints (54 (34.0%)). The most utilized method of coping with their stress was engaging on social media (133 (84.2%)), followed by talking with relatives or friends (99 (62.7%)) and use of recreational drugs (20 (12.8%)). The findings from this study have shown that more than three-quarters of the respondents suffered from varying degrees of depression from mild, 63 (29.9%), moderate, 53 (25.1%) to severe, 43 (20.4%).

Conclusions The heavy academic workload was a major source of depression. Colleges of Medicine should take proactive steps towards their students' mental health and academic workload should be well spaced to reduce the stress imposed by the frequency of examinations.

Keywords Depression, Medical student's stressor questionnaire, Patient health questionnaire, Coping mechanism, Stressors

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Introduction

Medical students face high rates of depression than students studying other courses. This is usually as a result of stress that is known to be associated with medical schools [1, 2]. A number of factors, including vast curriculum, multiple academic demands, frequent and challenging exams, etc. usually contribute to the stress medical students experience [3]. The mental and physical strain that an individual feels in reaction to pressure or a dangerous circumstance is known as stress (prolonged or excessive). This has been attributed to depression and mental health deterioration [3–5]. Medical students are pushed by stress during the medical school to acquire coping mechanism to deal with these circumstances. A person's cognitive and behavioural coping mechanism are described as ways to manage, reduce, or accept the demands of stressful situations [6]. In accordance with the Diagnostic and Statistical Manual of Mental Health Disorders, Fifth Edition, depression is described to be a time frame of fortnight during which an individual felt low, stopped participating in everyday activities, and displayed some symptoms such as, issues with consuming food, falling asleep, depleting energy level, decreased attentiveness and low self-esteem. The description does not include grieving following a period of sorrow [7]. It is a serious mental health condition which usually affect huge number of individuals globally. The rate of prevalence is 4.4% of global population [8]. Depression has a prevalence of 5.4% in Africa, where it is common in females (5.9%) than males (4.9%) [8]. According to estimates, about 3.1% of Nigeria's population has depression [9]. The World Health Organisation (WHO) identified disability to be linked to depression [7]. A comprehensive study in Europe discovered that medical students have depression (6 −65.5%) [10].

The clinical medical students (400 level to 600 level) of Cambridge University were discovered to have depression that varied from 2.2 to 10% [11]. It is now understood that as these medical students transition to clinical years, they become more susceptible to psychological disorders owing to some self-imposed demands, like setting excessively high academic achievements, having self-doubt, and associating identity with performance [11–15]. Various studies have also revealed other stressful events in medical school could trigger depression. They include; having limited free time, coming into contact with illness and death, harsh nature of many medical operations, finding it difficult to break bad news to patients' families, lack of sleep, peer pressure, fear of failing in medical school, desire to be perceived as a capable doctor, student abuse, etc [2, 4]. Depression within medical school has been linked to low self-esteem, poor performance in work, as well as social life, academic dishonesty, loss of empathy for patients, suicidal ideation, alcohol and substance abuse, etc [2, 10, 16]. One of the main contributors to the disease burden is mental health disorders. Globally, depression together with anxiety were among the top 25 major causes of disease burden for both sexes. A survey of multistage samples of household across the 36 states in Nigeria (above 17 years), showed life-time and 1-year Major Depressive Disorder (MDD) proportions of 3.1% and 1.1% [17, 18].

University students experience substantial mental strain due to the high demands they must meet in both their academic and familial lives. This mental strain can cause serious mental illness, which could substantially worsen over their programmes in the university. Approximately one-third of college students experience depression, making it a serious health issue in this segment of the population. According to epidemiological data, the frequency of depression rose by 18.4% between 2005 and 2015 [19]. Considering the belief that medical professionals ought to remain invulnerable, that is not the case, as mental health challenges are common [20]. Depression is brought on by a number of circumstances, including stress. Long-term stress can cause breakdown and mental health problems, which include depression, nerve collapse, cardiovascular disease, etc [21]. According to studies, medical students experience greater stress than students studying other courses hence, they exhibit more depressive symptoms [22]. Further, medical students also develop coping mechanisms to get them through these stressful conditions. These could be positive or negative. Problem-solving skills and efficient emotion management are linked to positive coping mechanisms while negative mechanisms are associated with negative appraisal, escape from negative situations and social isolation [6].

The study conducted in Bayero University showed that 15.1% reported having depression. Mild, moderate, and severe depression rates of incidence were 5.4%, 6.8%, and 2.9%, respectively. Family history serves as a major factor in the mental condition of students. Medical students with family history of depression have higher chances of depression than those without such family history [10]. A similar study carried out in a New York medical school showed that depression was more than five times greater in them than in controls of the same age [23]. The research conducted at National University of Singapore revealed a prevalence of 28%. The rate of depression decreases as year of study increases. First-year students had the greatest rate of 33.5% while year 5 was 20.5%. The year of study and academic achievement were linked to depression [24].

However, medical students have developed coping strategies over the years. A study focused on the primary medical and mental health treatment conducted at Yale University showed students had primary physicians, but few admitted going to the doctors when they

were ill (33%). Majority of the students were comfortable with seeking academic support [25]. A similar research in India showed that depressed medical students had access to mental healthcare. Some never made use of it because of choice, informal consultation, confidentiality worries and a desire for self-diagnoses [26]. The stigma attached to depression in medical school could hinder students from accepting their depressive state and seeking help, because they may be viewed as less intelligent than others [27]. A study conducted at University of Saskatchewan, which made use of brief COPE (Coping Oriented to Problems Experienced Inventory) discovered that students make use of mainly adaptive and not maladaptive coping strategies. Emotional support is an example of adaptive coping strategy while substance abuse, venting, blame and self-destruction are examples of maladaptive coping strategy [30]. There is scarcity of depression research on medical students in universities located in the North-Central Nigeria. Therefore, this research will establish a baseline for future studies on depression amongst medical students.

Methodology

Study objectives

The study objectives include:

1. To determine depression prevalence amongst clinical medical students from two private universities in North Central Nigeria;
2. To examine the depression coping strategies utilized by clinical students;
3. To examine variables that contribute to depression amongst the clinical students.

Study area

The study was conducted in two private universities (Nile University of Nigeria and Bingham University) in North-Central Nigeria. There are twenty-five (25) private tertiary institutions in North-Central Nigeria and only three (3) have established a Medicine and Surgery programme (MBBS). These include Nile University of Nigeria, Bingham University and Baze University. At the time of the study, only the Nile University of Nigeria and Bingham University had been accredited to commence their clinical component and both universities share similar academic curriculum. In their preclinical years, both universities offer the same courses: Anatomy, Physiology, Biochemistry and Community Medicine. In the beginning of their clinical years, 400 level university students of both universities offer Pathology, Pharmacology and begin hospital and community based rotations. In the clinical years (500 and 600 levels), they proceed to Obstetrics and Gynecology, Medicine and Surgery and Pediatrics. The medicine programme in Nigeria is a six-year programme with each year referred to as a level.

The preliminary year is the first (100 level), the preclinical years are the second and third (200 and 300 levels) while the clinical periods of training, which includes hospital and community training placements are the fourth, fifth and sixth years (400 to 600 level) [28]. The Medicine and Surgery (MBBS) programme in Nile University of Nigeria was established in 2016 and attained full accreditation in March/April 2021. The programme currently holds about 346 medical students of which 132 are clinical students [29]. Amongst the many programmes offered within Bingham University is the MBBS programme which currently has about 850 medical students out of which 483 are clinical students [30].

Study design and population

The study was a cross-sectional quantitative study. The research included consenting population of clinical students (400 level – 600 level) in Nile University of Nigeria and Bingham University, Abuja, Nigeria. The inclusion criterion was that the study participants must be consented clinical medical students (400–600 level) from Nile University of Nigeria and Bingham University. Students with previous history of diagnosed mental health condition were excluded.

The Leslie Fisher's formula for cross sectional descriptive research below was utilized to evaluate the size of the sample for the research [31]:

$$n = \frac{z^2 p(1-p)}{d^2},$$

as:

n → minimum size of sample;

z → standardized normal deviation;

p → prevalence of problem globally.

Using the hypothesis testing method, a previous study conducted revealed that about 15% of medical students suffer from depression [10].

d → desired level of precision = 5% (that is 0.05).

Hence, the sample size is calculated as:

$$n = \frac{1.96^2\,(0.33)\,(1-0.33)}{0.05^2}$$

$$n = 196.$$

To account for non-response in the study, the sample size, n was divided by 0.90 [10] to obtain the final sample used in the research. That is;

$$= \frac{196}{0.90} \quad = 218.$$

Data collection and analyses

A pretested self-administered questionnaire was utilized for the purpose of accurate and comprehensive analysis of the research objectives. The questionnaire contained 4 sections and had twenty-eight questions in total. The first section consisted of nine questions covering the respondents' socio-demographic data such as age, gender, university, school level, relationship status, ethnicity, religion, accommodation arrangements and the number of students in a room. The second section utilized a modified version of the PHQ-9, which contains 9 items to evaluate depression severity and presence in respondents. A 4-point rating was used to score the items on PHQ-9 (0 being not at all, 1 being a few days, 2 being more than half the days, and 3 being virtually every day). Higher degree of depression was indicated by higher scores, which can range from 0 to 27 on the overall scale [32]. This questionnaire was modified for brevity to a self-administered questionnaire of 7 items with the total now ranging from 0 to 21. Respondents were asked to calculate their scores at the end of this section and those with a score of 4 and above were asked to answer the remaining sections of the questionnaire. Respondents that scored 3 and below were asked to skip to the end of the questionnaire. The items used to assess the severity of depression were ranked on a scale as shown below:

0–3 = no depression, 4–7 = mildly depressed, 8–12 = moderately depressed, 13–16 = moderately severe and 17–21 = severely depressed.

The third section assessed coping strategies to depression using dichotomous questions. This section had eight questions that were classified using the coping styles according to Coping Oriented to Problems Experienced Inventory (COPE). The coping is divided into three, which focused on emotion, avoidant and problem. The fourth section contained the medical student's stressor questionnaire (MSSQ), which were structured questions directed towards assessing the factors that contribute to depressive symptoms of clinical medical students [33].

A Google form was utilized for the collection of the data for the study. The questionnaire was pretested among a small group of individuals (10–20) from Nile university of Nigeria, but were later not included in the main study. This aided in the identification of unclear issues as well as ensuring that the content of the questionnaire was universally understood by the participants. All participants properly filled out a separate consent section of the online questionnaire to indicate approval. The questionnaire required respondents to fill in their email addresses before taking part in the survey. This was to ensure that a respondent could not respond more than once. Email addresses of respondents were not traced back to their responses to maintain anonymity. The version 22 of SPSS software (IBM Corp.) was utilized for the analyses. The data's baseline information were described by descriptive analysis. Likewise, association between categorical variables was evaluated by Chi-square test, at 5% significant level.

Ethical issue

A contact information to seek help was available on the questionnaire for participants whose scores showed that they were mentally depressed.

Limitation of the study

The North Central Nigeria consists of six states (Benue, Kogi, Kwara, Nasarawa, Niger, and Plateau) as well as the Federal Capital Territory (FCT). Out of all the private universities in these states, the only two universities offering medicine (accredited to commence their clinical component) were considered in this study. As a result of this, the outcomes of this research cannot be used to generalize for all the private universities in North Central Nigeria.

Results

Descriptive analyses

The Table 1 above displays the sociodemographic details of study respondents. Age group (21–25 years) had the highest response of 142 (67.3%). The average age of study respondents was 22.2 years (standard deviation = 5.2). Female respondents were 51.4% higher than the male respondents. The highest number of respondents came from 400 level (Table 2).

About a third (68 (32.2%)) of the respondents had diminished ability to think or concentrate.

Only 139 (75%) of the respondents had varying degrees of depression in Table 3 and 4.

Depression was more prevalent in females than males. There was also more severity seen amongst females with 12.6% of them falling under severe depression as opposed to 3.9% of males. Those in 400 level had the highest percentage with severe depression (11.1%), while those in 600 level had the least (5.1%). Depression was more common in those who were single than those who were in a relationship or married. Of those who were single, 11.0% of them had severe depression while there were no severe depression amongst those who were married. Depression was more prevalent than usual amongst those on campus as opposed to those off campus (Table 5).

The prevalence of depression reduced as the academic year increased; 400level (87.7%), 500 level (76.0%) and 600 level (57.6%). The least depressed participants were in 600 level (57.6%). Those whose relationship status was single had the highest percentage of depression (76.3%). There was a higher percentage of depression amongst those on campus (77.1%) as opposed than those off campus (70.7%).

Table 1 Socio-demographic characteristics of respondents

Characteristics	Frequency (211)	Percentage	Non-response (NR)
Age at last birthday (years)			
16–20	51	24.2	NR = 0
21–25	142	67.3	
26–30	18	8.5	
31–35	0	0	
36–40	0	0	
> 40	0	0	
Total	211	100	
Mean(Standard Deviation)	22.2(± 5.2)		
Gender			
Male	51	24.3	NR = 1
Female	159	75.7	
Total	210	100	
Educational Level			
400 level	81	38.4	NR = 0
500 level	71	33.6	
600 level	59	28.0	
Total	211	100	
University			
Nile University of Nigeria	108	51.2	NR = 0
Bingham University	103	48.8	
Total	211	100	
Tribe			
Hausa	50	24.2	NR = 4
Idoma	8	3.9	
Igala	9	4.3	
Igbo	29	14.0	
Fulani	10	4.8	
Yoruba	33	15.9	
Others	68	32.9	
Total	207	100	
Relationship Status			
Single	156	74.3	NR = 1
In a relationship with boyfriend/girlfriend	48	22.8	
Married	6	2.9	
Total	210	100	
Religion			
Christianity	138	65.4	NR = 0
Islam	73	34.6	
Total	211	100	
Accommodation			
On campus	153	72.5	NR = 0
Off campus	58	27.5	
Total	211	100	
On campus, number of students in a room			
One	3	2.0	NR = 0
Two	73	47.7	
Three	30	19.6	
More than three	47	30.7	
Total	153	100	

Table 6 shows the association between school levels and the different scales of depression. There was statistical significance between school levels and, mild and moderate depression (Chi-square value = 6.095, p-value = 0.047) at 5% significance level but no statistical significance between school levels and, moderately severe and severe depression (Chi-square value = 2.372, $p = 0.305$) at 5% significance level.

Table 7 shows the identified stressors experienced by students. "Heavy academic workload/getting poor marks/high frequency of examinations" were the most prevalent stressors as the majority of respondents either strongly agreed (49.4%) or agreed (29.1%). This was followed by

Table 2 Patient health questionnaire (PHQ)

Variables	Frequency (*n* = 211)	Percentage	Non-Response (NR)
Little Interest in Doing Things			
Not at all	61	28.9	NR = 0
Less or equal to seven days	93	44.1	
More than seven days	31	14.7	
Nearly every day for two weeks	26	12.3	
Total	211	100	
Feeling Down, Depressed or Hopeless			
Not at all	76	36.0	NR = 0
Less or equal to seven days	84	39.8	
More than seven days	21	10.0	
Nearly every day for two weeks	30	14.2	
Total	211	100	
Trouble Falling Asleep, Staying Asleep or Sleeping Too Much			
Not at all	72	34.1	NR = 0
Less or equal to seven days	59	28.0	
More than seven days	32	15.2	
Nearly every day for two weeks	48	22.7	
Total	211	100	
Feeling Tired or Having Little Energy			
Not at all	40	19.0	NR = 1
Less or equal to seven days	89	42.4	
More than seven days	38	18.1	
Nearly every day for two weeks	43	20.5	
Total	210	100	
Poor Appetite or Overeating			
Not at all	80	38.1	NR = 1
Less or equal to seven days	69	32.9	
More than seven days	26	12.4	
Nearly every day for two weeks	35	16.7	
Total	210	100	
Feeling Bad About Yourself or That You Are a Failure or Have Let Yourself or Your Loved Ones Down			
Not at all	98	46.7	NR = 1
Less or equal to seven days	60	28.6	
More than seven days	19	9.0	
Nearly every day for two weeks	33	15.7	
Total	210	100	
Diminished Ability to Think or Concentrate			
Not at all	79	37.4	NR = 0
Less or equal to seven days	68	32.2	
More than seven days	37	17.5	
Nearly every day for two weeks	27	12.8	
Total	211	100	

"lack of time for family and friends/relationship problems with partners", as 32.1% strongly agreed and 26.4% agreed (Table 8).

Respondents in the survey used some coping mechanisms to cope with medical school's rigour. The most utilized was the social media (84.2%). These include Instagram, Snapchat, TikTok, X (formerly known as Twitter) and Whatsapp, etc. This was followed by the use of streaming platforms (78.5%) such as, Youtube, Netflix, Spotify, etc. Almost two-third of the respondents admitted to talking/discussing with relatives, friends or medical personnel. Approximately 13% admitted to the use of recreational drugs (e.g. alcohol, cannabis, tobacco, caffeine, etc.). The least utilized was the use of antidepressants under doctor's prescription (2.5%).

Table 3 Distribution of respondents' patient health questionnaire scores

	Scale of depression	Frequency	Percentage
No depression	0–3	52	24.6
Mild	4–7	63	29.9
Moderate	8–12	53	25.1
Moderately severe	13–16	21	10.0
Severe	17–21	22	10.4
	Total	211	100

Discussion

The research revealed both institutions' clinical medical students had significant rate of depression (75.4%). Approximately 30.0% out of this percentage had mild depression, 25.1% had moderate depression, 10.0% had moderately severe and 10.4% had severe depression. The observed prevalence in the research is greater than other similar studies conducted in Nigeria. The observed prevalence in Ebonyi State University was 17.4% [28], Bayero University was 15.1% [10], and in a study carried out in both Ekiti State University and Afe Babalola University was 25% [34]. This gross disparity could be because the research only focused on students in their clinical components, that is, 400 level to 600 level while these other studies focused on all students from 100 level to 600 level. Another reason could be the study environments; as many of the studies conducted were amongst students in Federal universities who are unfortunately, casualties of unionized protests. While this is counted as a loss, it could also be perceived as a stress relieving period or a break from excessive workload. This is far from the case of students in private universities who are exposed to uninterrupted periods of stress and excessive workload. Some other studies conducted outside Nigeria recorded these proportions of depression among medical students: Egypt 60.8% [35], Cameroun (65.2%) [36], Brazil (34.6%) [37], Pakistan (75.5%) [38], Saudi Arabia (83.4%) [39], India (44.4%) [40]. This variation in prevalence may be due to difficult teaching methodologies, difference in curriculum, geographical locations and educational components. The various methods and procedures used for depression screening may be the cause of the slight discrepancies in prevalence.

Table 4 Distribution of respondents' PHQ scores according to socio-demographic variables

Variables	Scales of depression *n*(%)					
Socio-demographic characteristics	**0–3 (None)**	**4–7 (Mild)**	**8–12 (Moderate)**	**13–16 (Moderately severe)**	**17–21 (Severe)**	**Total**
Gender						
Female	35(22.0)	45(28.3)	43(27.0)	16(10.1)	20(12.6)	159(75.7)
Male	16(31.4)	18(35.3)	10(19.6)	5(9.8)	2(3.9)	51(24.3)
Total	51(24.3)	63(30.0)	53(25.2)	21(10.0)	22(10.5)	210(100)
School Level						
400	10(12.3)	21(25.9)	28(34.6)	13(16.1)	9(11.1)	81(38.4)
500	17(24.0)	27(38.0)	12(16.9)	5(7.0)	10(14.1)	71(33.6)
600	25(42.4)	15(25.4)	13(22.0)	3(5.1)	3(5.1)	59(28.0)
Total	52(24.6)	63(29.9)	53(25.1)	21(10)	22(10.4)	211(100)
Relationship Status						
Single	37(23.7)	47(30.1)	42(26.9)	13(8.3)	17(11.0)	156(74.3)
In a relationship	13(27.1)	13(27.1)	10(20.8)	7(14.6)	5(10.4)	48(22.9)
Married	2(33.3)	2(33.3)	1(16.7)	1(16.7)	0(0.0)	6(2.8)
Total	52(24.8)	62(29.5)	53(25.2)	21(10.0)	22(10.5)	210(100)
Accommodation Status						
On Campus	35(22.9)	49(32.0)	41(26.8)	15(9.8)	13(8.5)	153(72.5)
Off Campus	17(29.3)	14(24.1)	12(20.7)	6(10.4)	9(15.5)	58(27.5)
Total	52(24.6)	63(29.9)	53(25.1)	21(10.0)	22(10.4)	211(100)

Table 5 Presence of depression against socio-demographic characteristics

Socio-demographic characteristics	Depression *n*(%)		
	Absent (0–3) N1 = 52	**Present (4–21) N2 = 159**	**Total N3 = N1 + N2 = 211**
Gender			
Female	35(22.0)	124(78.0)	159(75.7)
Male	16(31.4)	35(68.6)	51(24.3)
Total	51(24.3)	159(75.7)	210(100)
School Level			
400	10(12.3)	71(87.7)	81(38.4)
500	17(24.0)	54(76.0)	71(33.6)
600	25(42.4)	34(57.6)	59(28.0)
Total	52(24.6)	159(75.4)	211(100)
Relationship Status			
Single	37(23.7)	119(76.3)	156(74.3)
In a relationship with	13(27.1)	35(72.9)	48(22.9)
boyfriend/girlfriend	2(33.3)	4(66.7)	6(2.8)
Married	52(24.8)	158(75.2)	210(100)
Total			
Accommodation			
On Campus	35(22.9)	118(77.1)	153(72.5)
Off Campus	17(29.3)	41(70.7)	58(27.5)
Total	52(24.6)	159(75.4)	211(100)

Females showed more depressive symptoms than the males. This supports the research findings done in Bayero University [10], Al Azhar University Egypt [41] and from a systematic review research [42]. This may be due to underreporting in males, owing to the culture amongst males not showing vulnerability. However, other research has found that males have greater chances of experiencing depression than females [43, 44]. Although previous research did not detect a significant link between gender and depression [45, 46]. None of the married students had severe depression. This could be because of the comfort and support they receive from their partners.

The percentage of respondents with depression was highest in 400 level, followed by 500 level while the least proportion was in 600 level. These results from 400 level could be due to 400 level being the period where students transition from preclinical studies to clinical studies and are exposed to hospital and community-based training. The students in their final year (600 level) had the least depression prevalence. It could be due to the anticipation of their graduation and could also be that they have learnt to cope positively with the stress of medical school. This supports the research conducted in Brazil, America and the United Kingdom [47]. The study further revealed that people who stayed on campus had higher percentage of depression compared to those off campus. This could be because they were far from their families. Although social media could help in communication with families but internet could be challenging. However, those that are off campus have access to their families and friends, and they also enjoy the comfort of their homes.

Coping Oriented to Problems Experienced Inventory (COPE) divides coping into three, with focus on emotion, avoidant and problem. In this study, emotion-focused coping included talking and discussing with family/friends/medical personnel, usage of social media,

Table 6 Association between school levels and scales of depression

Scales of depression	School levels (400 level – 600 level)					
	400 *n*(%)	500 *n*(%)	600 *n*(%)	Total number (%)	Chi square	*P* value
Mild	21(33.3)	27(42.9)	15(23.8)	63(39.6)	6.095	0.047
Moderate	28(52.8)	12(22.6)	13(24.5)	53(33.4)		
Moderately severe	13(61.9)	5(23.8)	3(14.3)	21(13.2)	2.372	0.305
Severe	9(40.9)	10(45.5)	3(13.6)	22(13.8)		
	71(44.6)	54(34.0)	34(21.4)	159(100)		

Table 7 Identified stressors among medical students using likert scale

Variables	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Heavy academic workload/getting poor marks/high frequency of examination	78(49.4)	46(29.1)	23(14.6)	7(4.4)	4(2.5)
Lack of time for family and friends/relationship problems with partners	51(32.1)	42(26.4)	35(21.7)	19(11.9)	13(8.2)
Financial constraints e.g. self sponsored	26(16.4)	28(17.6)	42(26.4)	39(24.5)	24(15.1)

Table 8 Coping strategies utilized by respondents

Variables	Frequency(%) *n* = 159			Non-response
	Yes	No	Total	
Talking/discussing with others e.g. relatives, friends/medical personnels	99(62.7)	59(37.3)	158	1
Going out with friends	57(36.1)	101(63.9)	158	1
Use of streaming platforms e.g. Youtube, Netflix, Spotify	124(78.5)	34(21.5)	158	1
Use of antidepressants under doctor's prescription	4(2.5)	153(97.5)	157	2
Use of recreational drugs e.g. alcohol, cannabis, tobacco, caffeine	20(12.8)	136(87.2)	156	3
Gastronomical relief e.g. overeating/excessive ordering of food	60(37.7)	99(62.3)	159	0
Sleeping excessively	92(58.2)	66(41.8)	158	1
Use of social media e.g. Instagram, Snapchat, TikTok, X (Twitter), WhatsApp	133(84.2)	25(15.8)	158	1

such as X (formerly known as Twitter), Instagram, Snapchat, Whatsapp, use of streaming platforms such as YouTube, Netflix, Animekiss, Spotify, while avoidant coping included self-distraction e.g. going out with friends, use of recreational drugs such as alcohol, cannabis, tobacco, gastronomical relief e.g. excessive eating, excessive sleeping, etc. While comment cannot be made deeply about students managing stress, the results from the research revealed clinical medical students utilized healthy coping strategies and not the dysfunctional ones. It can be inferred that these clinical medical students utilized more adaptive than maladaptive coping strategies. A perfect illustration is a study where medical students utilized ranting, was favourably correlated with several adaptive coping mechanisms, as opposed to the maladaptive ones that have often been linked to self-pity, drug use, etc [48, 49]. When a stressor is seen to be overpowering beyond one's control, the avoidant/emotional-focused coping technique may prove to be particularly helpful. Therefore, it is possible to support the hypothesis that certain coping mechanisms that are emotion-focused may be less adaptive depending on the circumstance [50]. This study revealed that an approximate proportion of 80% of the study participants agreed that heavy academic workload/poor marks/ high frequency of examinations were stressors responsible for depressive symptoms they experienced. A further 58.5% either strongly agreed or agreed that lack of time for family and friends/relationship problems with partners are also stressors responsible for their depressive symptoms while 26.4% were neutral towards financial constraints as a contributing stressor to depressive symptoms they experience. Heavy academic workload/poor marks/high frequency of examination was noted as a significant stressor and this is fairly consistent with other studies done [51, 52].

Conclusion

This study's findings have revealed the depression prevalence amongst medical students from private universities in North Central Nigeria. The prevalence is high, as about three-quarters of the participating students had varying degrees of depression.

The students admitted to utilizing more of adaptive coping strategies mainly; discussing with family, friends and medical personnel, use of streaming platforms such as Netflix, Spotify, YouTube and use of social media platforms, rather than use of recreational drugs such as alcohol, cannabis, etc.

They attributed their depressive symptoms to the heavy academic workload, poor marks, high frequency of examinations, lack of time for family, friends and relationship problems with partners, and financial constraints.

Recommendations

Based on the research's findings, the following recommendations are provided:

1. Medical colleges should provide mental health and counselling interventions for students because of the significant rate of depression that we observed in our research.
2. Universities especially private universities that do not have interruption in their academic calendars should implement flexible schedule for students to address personal and family needs.
3. Universities should provide access to faculty mentors and advisors to assist with time management and work-life balance.
4. The universities should provide communication rooms with functioning devices and uninterrupted network to allow on-campus students communicate adequately with their loved ones.
5. Medical colleges should encourage student associations and health clubs to provide social events such as game night, movie night and other social activities. These will promote bonding and a sense of belonging amongst students, especially those who stay on campus.
6. Universities should have a welfare account to support students who may suffer sudden financial challenges.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12888-024-06197-x.

Supplementary Material 1

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Author contributions
All authors contributed to the research. TTO and EWN contributed to the conception of the work. TTO, POK and EWN designed the work, analyzed the data and interpreted the results. TTO and POK developed the manuscript and all authors approved the final version of the manuscript.

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Data availability
Data set generated from the study is provided as supplementary information file.

Declarations

Ethics approval and consent to participate
The study obtained ethical approval from Health Research Ethics Committee of Federal Capital Territory (Nigeria) with Approval Number: FHREC/2022/01/139/22-07-22. The research was in accordance with the Standard Operating Procedures for Health Research Ethics Committees, Federal Ministry of Health, Nigeria. The consents of participants were obtained before participation in the study.

Consent for publication
Not applicable.

Competing interests
The authors declare no competing interests.

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