Original Research Article

Perceived Stress and Coping Strategies among Medical Students in a Tertiary Institution in Southwest Nigeria

Abstract:

Background: Stress in medical school has become a common phenomenon and studies have shown that students tend to adopt dubious strategies to cope and survive the higher general demands during medical training. This study aimed to determine the level of perceived stress and coping strategies among medical students in Nigeria.

Method: The study was a descriptive design carried out among two hundred and eight medical students of the Ladoke Akintola University of Technology. The Cohen perceived stress scale (PSS) and Brief cope scale were instruments adapted for the study. Data obtained were analyzed using SPSS version 21.0. Descriptive and analytical statistics were presented as frequencies, percentages, means, and standard deviations. The Chi-square test determined associations and significant associations at $P < 0.05$.

Results: 69.6% of the respondent has a low perceived stress level and 30.4% reported a high level of perceived stress. The study showed a statistically significant relationship between monthly income and perceived stress (p-value = 0.046). Religion (3.01±0.93), Positive reframing (2.89±0.81), self-distraction (2.82±0.81), acceptance (2.81±0.86) and planning (2.60±0.86) among others, were the common coping strategies observed.

Conclusion: This study demonstrated a high level of perceived stress among medical students and especially in the 2nd and 4th year of their medical training, more among female students, and a significant association was found between stress and monthly allowances.

Keywords: perceived stress, coping strategies, medical students, Nigeria

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Introduction

The study of medicine is a life-long engagement and without limitations. It is a path that never ends and this fact place medical students under heavy stress.(1) Stress among medical students has become a common phenomenon for several reasons. Students are faced with demanding academic standards, fear of examinations, high parental expectations, peer pressure, lack of leisure time, financial problems and relationship disharmony are some of the many known factors contributing to the development of stress in undergraduate medical students.(2)

The Transactional Theory of Stress and Coping (TTSC),(3) defined stress as to the result of interactions between individuals and their immediate surroundings or environments. Responses to a stressor are determined by perceptions of the respective event.(4) According to TTSC, there are three levels of stress appraisal: 1. primary, 2. secondary, and 3. re-appraisals. Primary appraisals are of whether a stressor is threatening. Secondary appraisals entail an assessment of the resources that are available to cope with a stressor. Re-appraisal involves continuous appraisals of a specific stressor and available resources. When faced with a stressful event, an individual will adopt either problem- or emotion-focused coping strategies, depending on their secondary appraisals of a stressor.(3) Individuals use problem- and emotion-focused coping strategies when the resources that they require to cope with a stressor are perceived to be sufficient and insufficient, respectively.(3)

It was noted that when individuals are aware of the stress coping strategies and are able to re-appraise, they can adjust the coping strategies according to their current reality, adopting those that best fits their particular situation.(5) However, in the case of negative adaptation caused by the use of negative coping strategies, individuals may not be able to adapt to or re-evaluate the situation in order to modify the measures. Consequently, an intense feeling of withdrawal may occur, manifested in feelings of apathy and demotivation in academic activities.(6)

Medical students, however, are adopting various coping techniques to survive this apparent norm which in one way or another could be detrimental to their general well-being including academic performance and future productivity. Lots have changed over time regarding the modalities of medical school training but has it really done much to relieve stress? Or the modern-day broad knowledge in medicine had already added to loads of knowledge needed to be acquired by medical students thereby contributing to the medical school stress.

This study assessed the level of perceived stress and the various coping strategies among medical students as an insight into the effect of stress on academic performance. These will also help both the student and stakeholders to adopt healthy strategies in the coping and or proper management of stress among medical students.

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Methodology

Study area

The study was conducted at the Ladoke Akintola University of Technology (LAUTECH) Ogbomoso Oyo State Nigeria. The institution has over twenty-five thousand undergraduates, with about four hundred medical students in both pre-clinical and clinical years. The main university campus, College of Health Sciences and Teaching Hospital are located in Ogbomoso town on Latitude 8^{o} 08' 00" East and Longitude of 4o 16' 00" North of the Equator, within the savannah region and a gateway to the Northern part of Nigeria from the West. About 57 kilometers South West of Ilorin (the Capital of Kwara State) 53 Kilometres North – East of Oyo, 58 Kilometers North – West of Osogbo Osun State and 104 Kilometers North – East of Ibadan (Capital of Oyo State).(7)

Study Design

The study adopted a descriptive cross-sectional design.

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Study population

The study was done among medical students between 200-600 levels of the Ladoke Akintola University of Technology Ogbomoso. (Study Population : Number?) Sampling must be given in details (Eg XXX (%) Students from First level YYY(%) were from second…..etc) How this sample was captured? Methods? at random or not? This sampling was-cluster? Or Multilevel or Hierarchical ?This details of sampling must be clear for everybody understand .

Study Instruments

A self‑administered questionnaire with consent was used to capture socio-demographic variables such as age, gender, marital status, level, religion, as well as source of funding for the medical school.

Cohen Perceived Stress Scale

The Cohen perceived stress scale (PSS) was used to measure the degrees to which life events are appraised as stressful.22 It is one of the widely used validated psychological tools with ten variables on a five‑point Likert scale ranging from 0 (never) to 4 (very often) including how often they have felt or thought a certain way within the past month. Scores range from 0 to 40 with higher scores indicative of higher stress. Scores ≥20 are considered a high level of perceived stress.22

Brief COPE scale

Brief COPE consists of 28 items, each scale is rated on a 4-point Likert scale with 14 dimensions, 2 items for each dimension. Each dimension reflects the use of 14 specific coping strategies, including: 1. self-distraction, 2. active coping, 3. denial, 4. substance use, 5. use of emotional support, 6. use of instrumental support, 7. behavioral disengagement, 8. venting, 9. Positive reframing, 10. planning, 11. humor, 12. acceptance, 13. religion, and 14. self-blame. The rating is, '1 = I haven't been doing this at all', '2 = I've been doing this a little bit', '3 = I've been doing this a medium amount', and '4 = I've been doing this a lot'. A higher score indicates greater coping by the respondents.(9)

Study Procedure

The total number of students in each level was obtained through each class representative. Self-administered questionnaires were distributed to all students separately according to their year of study. The distribution was following a brief enlightenment on the details and benefit of the research work. Introduction and explanation on the aim of this study followed with instructions for the proper process of filling. The questionnaires which were filled individually with the consent form on the front page were collected and collated. The completion of the questionnaires was voluntary and anonymous.

Data analysis

The data obtained via questionnaires were computed and analyzed using Statistical Package for Social Sciences SPSS version 21.0. Descriptive and analytical statistics were presented as frequencies, percentages, means, and standard deviations. The Chi - square test determined associations and significant associations at $P < 0.05$.

Confidentiality of data

All information gathered was treated and kept with the utmost confidentiality.

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Result

The total number of respondents involved in the study is 208. The male to female ratio is 0.9 and most of the respondents are in the 20-25years age bracket (53.4%), 40.1% are less than 20years and 6.3% are above 25year. The majority are Christians (71.4%), single (94.7%) and of Yoruba ethnicity (96.2%). Most of our respondents are in 200L (33.7%), 25.5% are in 400L, 20.2% are in 500LThe majority are funded by their parent (92.8%), 4.8% are self-funded while 2.4% are on scholarship. 48.2% of respondents earns #10,000 to #20,000, 23.1% earn below #10,000, 21.6% earn between #20,000 to #50,000 while 7.0% earns more than #50,000. 87.3% has not had any previous tertiary qualification and 88.5% are from monogamous setting. (table I)

Table I: Sociodemographic Characteristics of respondents.

Variables	Frequency	Percentage (%)
Sex		
Male	99	47.6
Female	109	52.4
Age		
< 20 Years(delete)	83	40.1
20 – 25 Years(delete)	111	53.4
> 25 Years(delete)	13	6.3
Religion		
Christianity	147	71.4
Islam	51	24.8
Traditional	6	2.9
Others	2	1.0
Marital Status		
Single	197	94.7
Married	11	5.3
Ethnic		
Yoruba	200	96.2
Igbo	6	2.9
Hausa	2	1.0
Level		
200L	70	33.7
300L	35	16.8
400L	53	25.5
500L	42	20.2
600L	8	3.8
Source of Funding		
Self	10	4.8
Parent	193	92.8
Scholarship	5	2.4

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Monthly Income		
< 10k	46	23.1
10k – 20k	96	48.2
20k – 50k	43	21.6
> 50k	14	7.0
No of Year spent in Medical School		
< 3 Years	71	34.3
3 – 5 Years	99	47.8
> 5 Years	37	17.9
Had Previous Tertiary Qualification		
Yes	26	12.7
No	179	87.3
Family Setup		
Monogamous	184	88.5
Polygamous	24	11.5
Family History of Subs Abuse		
Sibling	3	1.4
Extended Family	7	3.4
Don't know	17	8.2
None	181	87.0

Using the perceived stress scale, 69.6% of the respondent has a low perceived stress level and 30.4% has high level of perceived stress. Using a P-value of 0.05, the study showed a statistically significant relationship between monthly income and perceived stress as earning between N20000 - N50000 is associated with high perceived stress. Being a female, aged between 20-25years, being of Igbo ethnicity, being funded by a parent, being from a monogamous family and not having a previous tertiary qualification are associated with higher perceived stress levels however all these are not statistically significant.

Table II: Perceived Stress scale among Medical Students.

Variables	Frequency	Percentage
Low perceived Stress	144	69.6
High perceived Stress	63	30.4
Mean (SD)	18.16 ± 0.39	

Table III: Relationship between Perceived Stress and Sociodemographic Characteristics

Variables	Low Stress (%)	High Stress (%)	p-value
Sex			0.073

Male	73 (74.5)	25 (25.5)	
Female	71 (65.1)	38 (34.9)	
Age			0.422
< 20 Years	60 (73.2)	22 (26.8)	
20 – 25 Years	73 (65.8)	38 (34.2)	
> 25 Years	60 (73.2)	22 (26.8)	
Religion			0.385
Christianity	102 (69.9)	44 (30.1)	
Islam	36 (70.6)	15 (29.4)	
Traditional	4 (66.7)	2 (33.3)	
Others	1 (50)	1 (50)	
Marital Status			0.408
Single	136 (69.4)	60 (30.6)	
Married	8 (72.7)	3 (27.3)	
Ethnic			0.287
Yoruba	139 (69.8)	60 (30.2)	
Igbo	4 (66.7)	2 (33.3)	
Hausa	1 (50)	1 (50)	
Level			0.092
200L	45 (65.2)	24 (34.8)	
300L	24 (68.6)	11 (31.4)	
400L	36 (67.9)	17 (32.1)	
500L	33 (78.6)	9 (21.4)	
600L	6 (75)	2 (25)	
Source of Funding			0.385
Self	8 (80)	2 (20)	
Parent	132 (68.8)	60 (31.3)	
Scholarship	4 (80)	1 (20)	
Monthly Income			0.046*
< 10k	34 (73.9)	12 (26.1)	
10k – 20k	71 (74.7)	24 (25.3)	
20k – 50k	22 (51.2)	21 (48.8)	
> 50k	10 (71.4)	4 (28.6)	
No of Year spent in Medical School			0.138
< 3 Years	47 (67.1)	23 (32.9)	
3 – 5 Years	68 (68.7)	31 (31.3)	
> 5 Years	29 (78.4)	8 (21.6)	
Had Previous Tertiary Qualification			0.341

Comment [f14]: Age (Years)

Yes	19 (73.1)	7 (26.9)	
No	123 (69.1)	55 (30.9)	
Family Setup			0.270
Monogamous	126 (68.9)	57 (31.1)	
Polygamous	18 (75)	6 (25)	

*P-value of 0.05

From the Brief COPE scale, The Avoidant coping mechanism category has a mean of 1.78±0.38 (p value= 0.697) Problem focused category mechanism category is 2.64±0.67 (p value= 0.723) Emotion-focused coping mechanism category is 2.36±0.58 (p value= 0.272).

Table IV: Brief COPE Scores among Medical Students

Variables	Overall	p-value
PSS	18.16 ± 5.57	0.04
Brief COPE sub		
Active Coping	2.64 ± 0.73	0.652
Use of Informational Support	2.47 ± 0.91	0.917
Positive reframing	2.89 ± 0.81	0.454
Planning	2.60 ± 0.86	0.522
Emotional support	2.43 ± 0.86	0.932
Venting	2.05 ± 0.81	0.026
Humor	2.27 ± 0.99	0.682
Acceptance	2.81 ± 0.86	0.850
Religion	3.01 ± 0.93	0.960
Self-blame	1.67 ± 0.80	0.016
Self-Distraction	2.82 ± 0.81	0.239
Denial	1.47 ± 0.65	0.816
Substance use	1.16 ± 0.46	0.450
Behavioral Disengagement	1.69 ± 0.74	0.901
Brief cope by category		
Avoidant	1.78 ± 0.38	0.697
Problem-Focused	2.64 ± 0.67	0.723
Emotion Focused	2.36 ± 0.58	0.272

Discussion

The total number of respondents involved in the study was 208. This poor response was due to the fact that there was industrial action by the academic staff union across tertiary institutions in Nigeria during which period the majority of those who would have participated in the study were off the campus. The male-to-female ratio was 0.9 and most of the respondents were in the 20-25years age bracket (53.4%), 40.1% are less than 20 years and 6.3% are above 25 years.

This study shows that 69.6% of the respondent has a low perceived stress level and 30.4% reported a high level of perceived stress. Globally, studies have shown that reported levels of stress among medical students range anywhere from 25% to 75%.(10) United States, Malaysia and Saudi Arabia have reported stress levels of 26.0%, 29.6% and 57.0% respectively which were related to the academic environment. (11)Ratana and colleagues,(12) in Thailand, recorded a high prevalence of 61.4% among Thai medical students, while Supe et al(12) documented a prevalence of 73% among medical students in Mumbai. Mostafa et al(13), in Mansoura Egypt noted a high prevalence of 94.5%. Similarly, Ragaa et al.(14) also observed a prevalence of 71.5% among clinical medical students in Saudi Arabia. Similarly, a study at Bayero University, Kano Nigeria shows the prevalence of stress to be 59.8%(15) among medical students. The relatively high level of stress may be related to common stressors in medical schools such as heavy academic workload, intense pace of training, lack of leisure time, frequent formative assessment (ward rounds and clinics), few holiday periods, financial difficulties, time pressure and uncertainty of the academic calendar among others.(16)

This study showed a high level of perceived stress among female medical students compared to their male colleagues. This was in tune with a similar study by Satpathy et al.(17) This finding may be attributed to the fact that females in general are more susceptible to various levels of stress ranging from religion to relationship ado. In another study by Rani *et al*., it was found that females perceived more stress in a competitive environment and had greater conflicts.(18) However contrary to our reports, other findings around the world reported a high level of stress among male students compared to females.(19,20)

Moreso, from our study, students in their second and fourth years showed high levels of perceived stress. This finding could be due to the fact that the second year starts the journey of preclinical training and the fourth year the beginning of clinical years. These entry and transition years come with lots of challenges as students in the second year are just been introduced to core basic medical subjects like anatomy, physiology and biochemistry after just completing basic science subjects in their first year as medical students which of course they're well acquainted with from secondary school level. Also, the fourth year posed several challenges in that, student transit from basic medical to clinical courses (pathology and pharmacology) and introduction to other clinical areas like pediatrics, internal medicine, etc coupled with the clinical posting experiences, long hours of standing during ward rounds, clinics, call duties and surgical exposures. In contrast, in Saudi Arabia(19) students of the 3rd and 6th years showed higher percentages of perceived stress and similar results were found in an Indian study.(21) These disparities could be due to different structures in medical schools and the nature of the learning environment.

However, a statistically significant relationship was found between monthly allowances and perceived stress as earnings between NGN20,000 - NGN50,000 (about 25 - 60USD) are associated with high perceived stress. It has been reported that financial and social problems among others, could be stressful factors for medical students.(19) The medical training isn't just academically draining but financially demanding likewise. Having to worry about financial inadequacy could be stressful and this could negatively impact learning ability.

Coping strategies refer to specific efforts, both behavioral and psychological, that people employ to master, reduce, tolerate, or minimize stress due to undesired events. Effective and appropriate coping strategies may minimize the impact of encountered stressful situations on one's well-being.(22) Our findings observed that religion, positive reframing, self-distraction and acceptance were the prevailing coping strategies among medical students. And by category, the Problem focused mechanism category 2.64±0.67 (p value= 0.723) was the most utilized coping mechanism in this study, closely followed by the Emotion-focused coping mechanism category 2.36±0.58 (p value= 0.272) and the Avoidant coping mechanism category 1.78±0.38 (p value= 0.697). The use of instrumental support, behavioral disengagement, acceptance, religion, self-blame, and emotional support were common coping strategies that have been reported in other studies as very adaptive, and hasten the recovery from distress.(22–25) However, our findings were not in resonance with studies conducted in the United Kingdom and among Jordanian medical students, where the use of alcohol, tobacco, and drugs as common coping strategies was reported.(26–28)

Conclusion

Summarily, this study demonstrated a high level of perceived stress among medical students and especially in the 2nd and 4th year of their medical training, more among females, and a significant association between stress and monthly allowances. The problem-focused coping mechanism category was mostly utilized as a coping strategy. A high prevalence of stress among medical students is a reason to worry as it may influence their behavior, hamper their learning, and affect patient care after their graduation.(29) The students should be taught various stress management techniques to improve their ability to cope with the demanding professional course. The stress load of students can be taken care of by motivating them to participate in extracurricular activities which the tightly packed medical school curriculum doesn't give much room for. Planning must be done to address the stress levels as with increasing years, the workload and level of toughness of medical courses also increase.

Reference

Comment [f15]: References

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