Research Article

Perceived Stress and Coping Mechanism Among Medical Students of University of Ibadan, Nigeria

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Abstract

Background: The stressful environment during medical students' life in medical institutions often negatively affects their academic performance, physical health and psychological well-being as compared to students of other academic streams. This study investigated the perceived stress and coping mechanism among medical students of University of Ibadan.

Method: The study employed a descriptive cross-sectional design using a sample of 406 respondents and semi-structured self-administered questionnaire to elicit information from respondents. A three-staged sampling method was used to select the study population among University of Ibadan medical students. Data was analysed using descriptive statistics tools and the Pearson chi-square at 0.05 level of significance.

Results: The mean age of respondents was 20.9 ± 3.1 years, and 63.2% were males. Majority (85.7%) were Christians and about two-third (67.2%) were in clinical stage. The study showed the types of stress among the student. These include acute (94.0%) and episodic (87.7%). Academic stressor (96.7%) was reported as the most common type of stressor among medical students. Data revealed that the factors contributing to stress were academic (86.0%), financial (65.4%), health related (58.6%) and social factor (29.6%). The study indicated that there was a significant relationship between medical student's stage (preclinical and clinical) and ever stress as a medical student.

Conclusion: It has been perceived that stress was common among medical students due to academic workload and different coping mechanisms were stated on how stress could be relieved; time management and self-understanding of learning style are therefore recommended to minimize the effects of stress among medical students.

Keywords: Stress; Preclinical; Clinical and Coping Mechanism

Introduction

Medical education has been reported throughout the world as one of the most stressful academic curricula, which negatively affects the physical and mental health of medical students. Fear of examinations, high parental expectation, peer pressure, lack of leisure time, financial problems, relationship disharmony, and aspirations of higher studies are some of the many factors known to contribute to the development of stress in undergraduate medical students [1]. Study of medicine is life-long and boundless. It has been described as a path that never ends and places the student under heavy stress and burnout [2]. A negative effect is exerted on the psychological health of the medical students as medical school is the place where for the first time they come into contact with serious illnesses and death [3].

Globally, studies have shown reported levels of stress among medical students range anywhere from 25% to 75% [4]. A study conducted on medical students in the United states, Malaysia and Saudi Arabia have reported stress levels of 26.0%, 29.6% and 57.0% respectively and were related to their academic environment [5]. Similarly, a study also carried out in Nigeria among medical students in Bayero University, Kano shows that prevalence of high stress to be 59.8% [6]. There must be proper recognition of stress for an individual to be able to manage stress effectively. Students are faced with demanding academic standards, deadlines, career aspirations, and the need to compete for residency positions. The sources of stressors in medical students can be grouped into 3 general categories: academic stressor, financial stressor and social/personal stressor [7]. High levels of stress may have a negative effect on both cognitive functioning and comprehension of medical students [8]. Stress has been found to be associated with psychiatric illnesses like anxiety and depression, interpersonal conflict, sleep problems on one hand and lifestyle changes on the other. There is an increasing concern about stress during undergraduate medical

training. Lately stress during medical training is increasingly being reported in published literature (Dahlin, Joneborg and Runeson 2005). Stress and its psychological manifestations are currently a major source of concern. Medical education poses challenging and potentially threatening demands for students throughout the world goals [1].

Coping mechanism is any technique developed to help someone cope with or lessen the physical and emotional effects of everyday life pressure. Coping mechanism has also been found that students with engagement strategy of coping are able to modify situations, resulting in a more adaptive outcome, and also have reported fewer symptoms of depression [9]. It was noted that when individuals are aware of the strategies they are using and are able to evaluate the context they are facing, they can adjust the coping strategy according to the reality they are experiencing, seeking the strategy that best fits their particular situation [10]. 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 being used to confront the situation. As a result, an intense feeling of withdrawal may occur, manifested in feelings of apathy and lack of motivation to engage in academic activities [11]. This study investigates the perceived stress and coping mechanism among medical students so as to enable them adopt the different mechanisms that works for each individual and also coping mechanisms that can be rendered by the school management which will help the student in relieving and coping with their stress management.

Methods

Study design

The study adopted a descriptive cross-sectional design that assessed the perceived stress and coping mechanism among medical students of University of Ibadan using a quantitative method of data collection.

Setting and study population

The study was carried out at the University of Ibadan with longitude 7.4443°N and 3.8995°E, located five miles from the centre of the major city of Ibadan Western Nigeria situated in Ibadan North Local Government Area (IBNLGA) of Oyo State, which is one of the five (5) LGA in Ibadan metropolis, with an estimated size of 27,249 square kilometres. There are 12 geo-political wards in IBN-LGA. The population size is 432,900 (National Bureau of Statistics 2016) and the people are mainly of the Yoruba tribe. Other ethnic groups in Nigeria are well represented but constitute the minority. University of Ibadan is owned by the Federal Government. The study population consist of male and female medical students of University of Ibadan.

Sampling procedure

A-three stage sampling method was used to select the sampling population among University of Ibadan medical students by selecting five levels out of the two categories of stage, a proportional sampling was used to select the total number of respondent from the categories so as to determine the respondent that will participate from each level of study. Simple random sampling was used to select the participants in the study sampling. A total of 406 medical students who met the inclusion criteria were interviewed for the study.

Sample size

Sample size was calculated by applying a formula for estimating a single population proportion using Leslie Kesh formula ($n = z^2pq/d^2$). The prevalence (p = 59.8%) was gotten from a previous study conducted in Bayero University, Nigeria. After using correction formula with confidence level at 95%, and adding 10% non-response rate the sample size was 406.

Data collection method

Quantitative method of data collection was used for the collection of data using a close-ended questionnaire that was developed from pieces of literature review. The data collectors and supervisor were trained and oriented for one day on the questionnaires and how to orient the respondents. Informed consent was obtained from the respondents after the objectives of the study have been carefully explained to them in a language (English) they understood, participants were asked to append their signature on the consent forms. Confidentiality was assured as no means of identification was included in the questionnaire. The collected data was kept in a secured place.

Validity and reliability of instrument

To ensure validity of the instrument, all the items under each section of the questionnaire measure the sections. A draft of the questionnaire was given to my supervisor and other colleagues for review after which it was pre-tested in another similar University using 10% of the sample size, necessary comments and feedbacks were incorporated, and the instrument used for this study showed an acceptable reliability cronbach's alpha value ($\alpha > 0.7$).

Statistical data analysis

The data were analyzed using SPSS (Statistical package for Social Sciences) version 21. Descriptive statistics (frequency and percentage) were given for each statement developed in the instrument. Mean and Standard Deviation was used to get the age of respondents. Data were normally distributed, results were summarized and presented in tables and charts. Chi-square was used to test the relationship between dependent and independent variables where P < 0.05.

Ethical approval

Ethics approval was obtained from University of Ibadan/University College Hospital (UI/UCH) ethics committee. Verbal consent was also obtained from each participant during data collection. They were told that participation was voluntarily and confidentiality and anonymity ensured throughout the execution of the study as participants were not required to disclose personal information on the questionnaire.

Results and Discussion

Some socio-demographic characteristics

Respondents' age ranged from 15 to 45 years and more than half (59.6%) are within the age categories of 21-30 years with a mean age of 20.9±3.1 years. More than half of the respondents (63.2%) indicating a high proportion of male to female respondents. Majority was Christians 342 (85.7%) and most was single (97.7%). Most of the respondents (75.2%) were Yoruba by tribe. More than half of the respondents (67.2%) are from clinical stage while (32.8%) are from preclinical stage (Table 1).

Demographic variables	Frequency	Percent (%)
Sex		
Male	252	63.2
Female	147	36.8
Religion		
Christianity	342	85.7
Islam	36	14.0
Traditional	1	0.3
Marital status		
Single	390	97.7
Married	7	1.8
Divorced	1	0.3
Cohabiting	1	0.3
Ethnicity		
Yoruba	300	75.2
Igbo	74	18.5
Edo	11	2.8
Hausa	3	0.8
Age		
15-20	158	39.6
21-30	238	59.6
31-40	2	0.5
41-45	1	0.3
Stage		
Clinical	268	67.2
Preclinical	131	32.8

Table 1: Demographic characteristics of study participants.

Prevalence of stress

The prevalence of stress was high among the respondent. Majority of the respondent (94.2%) have been stressed as a medical student before. Of the 94.2%, (46.6%) get stressed daily, (29.5%) get stressed randomly, (11.6%) get stressed weekly, (5.5%) get stressed during exam period, (4.5%) get stressed hourly while (2.4%) get stressed monthly. Also the last time participants were stressed was asked. Thirty nine percent, said they were stressed today, (31.0%) were stressed a day ago, (11.7%) were stressed a week ago, (10.1%) were stressed 3 days ago, and (8.0) were stressed 2 months ago (Table 2).

	Frequency	Percent (%)
Frequency		
Daily	47	46.6
Randomly	29	29.5
Weekly	11	11.6
Exam period	6	5.5
Hourly	5	4.5
Monthly	2	2.4
When last stressed	39	39.3
Day of interview	31	31.0
1 day ago	12	11.7
1 week ago	10	10.1
3days ago	8	8.0
2 months ago		

Table 2: Frequency of stress of participants.

Causes of stress

Academic workload was the major cause of stress (73.7%), followed by School environment (22.1%) and the least was Ward round (21.1%). Actions taken when participants get stressed was also indicated: forty six per cent get enough sleep, (16.8%) watched movie, (3.8%) took their bath, (14.3%) prayed, (27.1%) took some time off, (15.8%) ate, while (15.5%) did nothing. Majority of the respondents (97.5%) indicated that stress can affect health (Table 3).

Causes of last stress	Frequency	Percent (%)
Academic workload	294	73.7
School environment	88	22.1
Ward round	84	21.1
Action taken when stressed		
Get enough sleep	183	45.9
Take some time off	108	27.1
Watch movie	67	16.8
Eat	63	15.8
Did nothing	62	15.5
Bath	57	14.3
Pray	15	3.8

Table 3: Causes of stress among participants.

Multiple responses included.

Perception on stress

Participant's responses on their perception on each statement about stress are stated as follow. (48.9%) said they do not feel tired for no good reason when they are stressed, (78.2%) said nothing can calm them when they are nervous when stressed, (50.9%) said they feel restless when they are stressed, (75.9%) said stress cause depression, (79.4%) said stress lead to sadness, (84.0%) said multiple assessment at the same time lead to stress, (89.5%) said lack of time to study adequately cause stress, (67.2%) said high parental expectation cause stress, (78.9%) said family problem cause stress, (63.7%) said waking up early to go for class cause stress, (56.1%) said competitiveness among students lead to stress, (64.7%) said large amount of extracurricular activities carried out by students lead to stress, (78.7%) said catching up with missed classes could lead to stress, (56.1%) said feeling of guilt because of giving more priority to personal life than studies causes stress, (78.4%) said difficulty in memorizing the content presented in class could lead to stress, (43.1%) said been married during medical school cause stress, (47.6%) said having kids during medical school cause stress (Table 4).

Statements	Agreed (%)	Undecided (%)	Disagreed (%)
I feel tired for no good reason	130 (32.6)	74 (18.5)	195 (48.9)
Nothing can calm me when I'm nervous	18 (4.5)	69 (17.3)	312 (78.2)
I feel restless when I'm stressed	203 (50.9)	76 (19.0)	120 (30.1)
Stress causes depression	303 (75.9)	64 (16.0)	32 (8.0)
Stress can lead to sadness	317 (79.4)	56 (14.0)	26 (6.5)
Multiple assessment at the same time lead to stress	335 (84.0)	51 (12.8)	13 (3.3)
Lack of time to study adequately causes stress	357 (89.5)	31 (7.8)	11 (2.8)
High parental expectation causes stress	268 (67.2)	88 (22.1)	43 (10.8)
Family problems causes stress	315 (78.9)	50 (12.5)	34 (8.5)
Waking up early to go for class causes stress	254 (63.7)	89 (22.3)	56 (14.0)
Competitiveness among students lead to stress	224 (56.1)	100 (25.1)	75 (18.8)
The large amount of extracurricular activities carried out by students leads to stress	258 (64.7)	72 (18.0)	69 (17.3)
Catching up with missed classes could lead to stress	314 (78.7)	54 (13.5)	31 (7.8)
Feelings of guilt because of giving more priority to personal life than to studies	224 (56.1)	121 (30.3)	54 (13.5)
Difficulty in memorizing the content presented	313 (78.4)	63 (15.8)	23 (5.8)
Been married during medical school causes stress	172 (43.1)	193 (48.4)	34 (8.5)
Having kids during medical school causes stress	190 (47.6)	180 (45.1)	29 (7.3)

Table 4: Students' response to their perception on stress scale.

Coping mechanism

Ninety-three per cent of the participants indicate that stress can be minimized by the school management. Ways to minimize stress by school management include: creating good environment (90.5%), student friendly time table (90.5%) and good hostel condition (91.0%). Ninety seven percent of the respondents also indicate that stress can be minimized by the student. Ways of minimizing stress by student include: self-encouragement (95.0%), understanding one's learning styles (94.7%) and engaging in recreational activities (92.0%) (Table 5).

Hypothesis testing

The result presents the association between socio-demographic characteristics and factors contributing to stress. Statistical association was checked and there was no relationship between the two. Also statistical association was checked between stage and ever stressed before as a medical student, the stages were categorized into two (pre-clinical and clinical). Statistical association between ever stressed as medical student and stage were significantly associated at (X^2 =27.422, df=1, p-value < 0.05). These indicated that stress was high among those in clinical stage (67.2%) than those in preclinical stage (32.8%). Hence the null hypothesis was therefore rejected. There is a significant relationship between stage and ever stressed before as a medical student (Table 6).

Ways of minimizing stress by student	Frequency	Percent (%)
Getting enough sleep	375	94.0
Engage in regular exercise	351	88.0
Understanding your learning styles	378	94.7
Developing a healthy mind	377	94.5
Watching movies	320	80.2
Engage in recreational activities	367	92.0
Listening to music	343	86.0
Spending time with family and friends	366	91.7
Self encouragement	379	95.0
Counselling	365	91.5
Praying	362	90.7

Table 5: Ways of minimizing stress by student.

Multiple responses included.

Factors	Socio-demography	Frequency	Percentage (%)	X^2	P-value
Academic	**Sex:**				
	Male	252	63.2	5.348	0.069
	Female	147	36.8		
	Total	399	100		
	Religion:				
	Christian	342	85.7	0.429	0.980
	Islam	56	14.0		
	Traditional	1	0.3		
	Total	399	100		
Financial	**Sex:**				
	Male	252	63.2	0.163	0.922
	Female	147	36.8		
	Total	399	100		
Health-related	**Stage:**				
	Preclinical	131	32.8	0.351	0.839
	Clinical	268	67.2		
	Total	399	100		
Ever stressed as MS	**Stage:**				
	Preclinical	131	32.8		
	Clinical	268	67.2	27.422	0.000*
	Total	399	100		

Table 6: Chi-Square Tests of Respondents' Socio-demographic Characteristics and Factors contributing to stress.

The results showed that stress prevalence was high among medical student of University of Ibadan. This is similar to study carried out by Bugaj [12], and also from other reviewed literatures. Students need to know the prevention strategies for coping with stressful situations. This study suggests that universities and colleges should aim to reduce stressors and to provide psychosocial and academic support systems to alleviate students' stress. Early detection can play a very important role in this regard. Academic factor (86%) was reported as the highest factor contributing to stress among medical students. This can be attributed to exam tension, unequal duration for first and second year as first year is reduced to one year with lot to study, time shortage for studies, last

minute exam preparation due to the on-going weekly tests, vast subjects to read, ward round and lack of time for recreation. This is similar to a finding by Satheesh, Renuka, Prithviraj and Siva [13]. University administrations are to be concerned with the increasing high level of stress among medical students and strategies to lessen the levels of stress are to be adopted. The findings in this study also gathered that stress can be minimized by both the school management and the students. According to Sadik, Eman, Al-Kamil and Mansour [14], coping with stress means using thoughts and actions to deal with stressful situations and lower our stress levels. Different ways were being indicated by the respondents on how stress can be minimized. In contrast with Elzubeir and Magzoub [15] findings, the incidence of stress and stress-related illnesses such as anxiety and depression among students and trainees internationally is increasingly reported in literatures. Respondents have indicated their perceptions towards stress on a seventeen likert scale of questions. Medical students indicated some perceived illness that could be caused by stress: depression, sadness, anxiety, restlessness, nervous and many others. It was indicated that large amount of extracurricular activities carried out by students leads to stress and also difficulty in memorizing what they are been taught in class could lead to stress [16].

Conclusion and Recommendations

The findings of this study from the data generated have shown that almost all the respondents during medical school were stressed. The prevalence of stress was higher among those in clinical stage. It could be inferred that adopting coping mechanisms both by the school management and the students could help them minimize stress. Also it was found out that acute stress was a major type of stress common among medical students because it is a stress caused by daily demand and pressure which medical students can't avoid because it is part of their daily activities. Some of the stressors common among medical students were also indicated and it shows that academic stressor is a major stressor common among them, because medical students are faced with demanding academic standards, deadlines, career aspirations, and the need to compete for residency positions. Furthermore monthly allowance of parent has an important role to play with financial stressor of the respondents. Financial stressor was also one of the stressor common among medical students because respondent derive their financial needs from family and when parents monthly allowance is not enough to provide for respondents needs, he/she would not be able to meet up with the needs in medical school. There is the need for school management to devise measures to identify stress among medical students as an ongoing activity and develop strategies to deal with it at the individual level during medical education. Also, taking note of high dropout rate of two to three students

every year due to psychological illnesses and increasing number of coping up problems brought to the notice of the faculty and educating them on adopting different coping mechanisms that works for them because not all the coping mechanisms works for everybody. Medical students need to be educated about the causes of stress, self and time management strategies and available services through public enlightenment programmes.

Competing Interests

None.

Author's contributions

The author conceived the study and participated in research design, data collection, data analysis and interpretation of the result. The co-author supervised the research work from the initial stage till the final stage of the research.

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Limitation of the study

It is a quantitative study that involves only questionnaire, only one medical school was considered for the study so our result cannot be generalized.

Bibliography

1. Saeed AA., *et al.* "Perceived stress and associated factors among medical students". *Journal of Family and Community Medicine* 23.3 (2016): 166-171.

2. Fares J., *et al.* "Extracurricular activities associated with stress and burnout in preclinical medical students". *Journal of Epidemiology and Global Health* 6.3 (2016): 177-185.

3. Vitaliano PP., *et al.* "Medical school pressures and their relationship to anxiety". *Journal of Nervous and Mental Disease* 172.12 (1984): 730-736.

4. Oku AO., *et al.* "Prevalence of stress, stressors and coping strategies among medical students in a Nigerian medical school". *African Journal of Medical and Health Sciences* 14 (2015): 29-34.

5. Hamza Mohammed Abdulghani. "Stress and Depression among medical students". *Pakistan Journal of Medical Sciences* 24.1 (2008): 12-17.

6. Asani MO., *et al.* "Prevalence of perceived stress among clinical students of Bayero University Medical School". *Nigerian Journal of Basic and Clinical Sciences* 13.1 (2016): 55-58.

7. Badr H and Hamoda H. "Stressors and coping strategies of medical students. Gender differences". *Saudi Medical Journal* 26.5 (2005): 890-892.

8. Ragaa El-Masryl., *et al.* "Perceived Stress and Burnout among Medical Students during the Clinical Period of Their Education". *Ibnosina Journal of Medicine and Biomedical Sciences* 5.4 (2013):179-188.

9. Samira S., *et al.* "Sources of Stress and Coping Strategies among Undergraduate Medical Students Enrolled in a Problem-Based Learning Curriculum". *Journal of Biomedical Education* 575139 (2015): 8.

10. Kristensen CH., *et al.* "Coping strategies and stress symptoms in adolescence". *Estudos de Psicologia (Campinas)* 27.1 (2010): 21-30.

11. Shaban IA., *et al.* "Undergraduate nursing students' stress sources and coping behaviours during their initial period of clinical training: a Jordanian perspective". *Nurse Education in Practice* 12.4 (2012): 204-209.

12. Bugaj TJ., *et al.* "Psychosocial burden in medical students and specific prevention strategies". *Mental Health and Prevention* 4.1 (2016): 24-30.

13. Satheesh BC., *et al.* International Journal of Science and Research (IJSR) (2013): 2319-7064.

14. Sadik Sharif., *et al.* "Stress and coping strategies among medical students in Basrah". *MJBU* 25.2 (2007).

15. Elzubeir MA., *et al.* "Stress and coping strategies among Arab medical students: towards a research agenda". *Education for Health (Abingdon)* 23.1 (2010): 355.

16. Abdulghani HM., *et al.* "Stress and its effects on medical students: a cross-sectional study at a college of medicine in Saudi Arabia". *Journal of Health, Population and Nutrition* 29.5 (2011): 516-522.