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Stress and Coping Strategies among Undergraduate Nursing and Medical Students at American International Medical University, St Lucia

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ABSTRACT

Medical education can be highly stressful and could affect student performance and well-being. The present study was conducted to study stress and coping strategies among undergraduate medical and nursing students at a university in Saint Lucia. The study was conducted during July 2018 using the medical student stressor questionnaire (MSSQ) and the brief cope. The study was conducted using an online questionnaire. Gender, course of study, semester, nationality and age were noted. The stressors were grouped into six categories. Mean scores of individual statements and of the six categories were calculated. Fourteen dimensions of coping strategies were noted. These were grouped into problem focused, active emotional and avoidant coping. Mean scores were calculated. Scores were compared among different subgroups of respondents. Eighty-two students of the 161 students (50.93%) participated. Majority was medical students and Indian nationals. Most stressors caused only mild to moderate stress. Academic related stressors had the highest score (2.39) while drive and desire related stressors had the score of 0.94. Differences were noted among certain subgroups. Commonly used coping strategies were active coping, positive reframing, planning and acceptance. The use of some coping strategies varied among different respondents. The mean scores for problem focused, active emotional, and avoidant coping were 21.42, 24.08 and 18.90, respectively. Information was obtained about stress and coping strategies. There were similarities and differences compared to the study conducted in Aruba. Longitudinal studies and studies in other offshore Caribbean medical schools are required.

Keywords: *Coping strategies, Nursing students, Medical students, MSSQ, Stress, Saint Lucia*

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INTRODUCTION

Medical education is widely regarded as being highly stressful (1, 2). Stress has been defined as the body's non-specific response

to demands made up on it or to disturbing events in the environment (3). Studies have demonstrated a high level of stress among medical students especially during the first year of the course as they are adapting to a new environment (4–6).

Stress can affect student learning and well-being. An optimal level of stress could enhance learning and achievement while excessive stress could affect academic achievement and result in mental and physical health problems (7). In a study in Brazil, stressors identified by students during a focus group discussion included lack of time, excessive class content, assessments, overload of extracurricular activities, competition among students and family problems (8). Stress has also been widely reported among nursing students (9, 10).

The medical student stressor questionnaire (MSSQ) was developed to identify the stressors among medical students and the intensity of stress caused by these stressors (11). The instrument has been validated among different groups of students and is regarded as a valid instrument to study stress among medical students (1, 12, 13). The instrument was used in the present study after obtaining permission from the authors.

Effective and appropriate coping strategies can reduce the stress level and the impact of stress on students' health (14). Brief Coping Orientation to Problems Experienced (COPE) has been widely used to study coping strategies among students. In a medical school in Nepal, students commonly used active coping strategies while alcohol and drugs were least used as a coping strategy (2). In Malaysia, the commonly used coping strategies were religion, active coping, positive reinterpretation, acceptance and planning (12).

American International Medical University is a university in Saint Lucia offering undergraduate courses in Medicine and Nursing. Medical students do their basic sciences in Saint Lucia and then complete their clinical rotations in the United States and/or the Caribbean. Nursing students do their clinical rotations in Saint Lucia. The school has three student intakes in January, May and September. Each semester of

study is of 15 weeks duration. Sources of stress and coping strategies have not been previously studied at the institution. Hence, the present study was carried out among undergraduate medical and nursing students to study sources of stress and coping strategies. Possible differences in sources of stress and coping strategies among different subgroups of respondents were also studied.

METHODS

The present study was carried out during the month of July 2018 among medical and nursing students at the institution. Students were informed about the study both through face-to-face contact and e-mail, and were invited to participate. Proprietary software was used to obtain the online responses. A link was sent to the student's e-mail address. Students first read through the written informed consent and if they were agreeable to participate they clicked the agree button which led them to the online survey. If students had any questions they could e-mail the investigators at the e-mail address provided or could discuss their concerns in person. The study was approved by the Institutional Review Board of the institution vide notification number AIMU/IRB/2018/02.

Gender, course of study, semester of study, nationality and age were the demographic information collected. Semester of study was grouped into three categories: Basic Science Semesters I and II, Basic Science Semesters III, IV and V, and Clinical Semesters while the age was grouped into two categories: age less than or equal to 21 years and age greater than 21 years. The MSSQ was used to study factors causing stress among the respondents after obtaining written permission from the developer, Dr Yusoff. The short version of the questionnaire with 20 statements was used. For the different listed items, respondents were asked to select a response from 0 to 4 with 0 meaning the factor caused no stress at all and 4 meaning the factor caused severe stress.

The factors were grouped into six categories. These were academic related stressors (ARS), interpersonal and intrapersonal related stressors (IRS), teaching and learning related stressors (TLRS), social related stressors (SRS), drive and desire related stressors (DRS), and group activities related stressors (GARS). The mean scores of individual statements and of the six categories of stressors were calculated. The mean scores were compared among different groups of respondents using appropriate statistical tests ($p < 0.05$). Cronbach's alpha was calculated as a measure of internal consistency of the MSSQ.

Brief COPE instrument developed by the Department of Psychology at the University of Miami (15) was used to study the coping strategies of the respondents. Respondents were asked to score a set of 28 statements using the scale with values from 1 to 4 with 1 = I haven't been doing this at all, and 4 = I've been doing this a lot. The coping was grouped into 14 dimensions with two statements in each. These dimensions or strategies were self-distraction, active coping, denial, substance use, use of emotional support, use of instrumental support, behavioural disengagement, venting, positive reframing, planning, humor, acceptance, religion and self-blame. The mean scores of each of these strategies was calculated and compared among different subgroups of respondents using appropriate statistical tests ($p < 0.05$). The various coping strategies have been previously grouped together into three main ones which are problem-focused, active emotional and avoidant emotional coping (16). Problem-focused coping includes active coping, planning, instrumental support, and religion while active emotional coping includes venting, positive reframing, humor, acceptance and emotional support. Avoidant emotional coping consist of self-distraction, denial, behavioural disengagement, self-blame and substance use.

RESULTS

A total of 82 of the 161 (50.93%) medical and nursing students enrolled at the institution participated in the study. Table 1 shows the demographic characteristics of the respondents. Forty-three respondents were female (52.4%). Seventy respondents (85.4%) were medical students; Indians were the dominant nationality accounting for 53.7% of respondents while Nigerians accounted for 25.6%. Majority of the respondents (74.4%) were greater than 21 years of age.

Table 1: Demographic characteristics of the respondents

Characteristic	Number (percentage)
Gender	
Male	39 (47.6)
Female	43 (52.4)
Course	
Medicine	70 (85.4)
Nursing	11 (13.4)
Nationality	
Saint Lucian	11 (13.4)
Indian	44 (53.7)
Nigerian	21 (25.6)
Others	6 (7.3)
Age	
Less than or equal to 21 years	21(25.6)
Above 21 years	61 (74.4)

Table 2 shows the mean scores of different statements in the MSSQ. The values for most of the statements were between 1 and 2 indicating that the factors were causing mild to moderate stress among the respondents. The two factors causing the greatest amount of stress were the lack of time to review learned content and the large amount of content to be learnt. Table 3 mentions the mean scores in different stressor related components. Academic related stressors (ARS) had the highest

mean score of 2.39 while drive and desire related stressors (DRS) had the lowest score of 0.94. The Cronbach's alpha value for the MSSQ was 0.904 indicating a high internal consistency.

Table 2: Mean scores for different statements in the medical student stressor questionnaire (MSSQ)

Statement	Mean score
Tests and examinations	2.08
Falling behind in reading schedule	2.34
Large amount of content to be learnt	2.51
Lack of time to review what has been learnt	2.56
Heavy workload	2.45
Participation in class presentations	1.06
Need to do well (imposed by others)	1.78
Feeling of incompetence	1.85
Unable to answer questions from patients	1.11
Talking to patients about personal problems	0.82
Facing illness or death of the patients	1.28
Verbal or physical abuse by other student(s)	0.95
Verbal or physical abuse by teacher(s)	1.27
Verbal or physical abuse by personnel(s)	1.22
Conflict with teacher(s)	1.38
Unwillingness to study medicine	1.05
Parental wish for you to study medicine	0.82
Not enough feedback from teacher(s)	1.47
Uncertainty of what is expected of me	1.77
Lack of recognition for work done	1.74

Table 3: Scores in different component of the MSSQ

Stressor	Mean score
Academic related stressors	2.39
Interpersonal and intrapersonal related stressors	1.20
Teaching and learning related stressors	1.66
Social related stressors	1.07
Drive and desire related stressors	0.94
Group activities related stressors	1.56

Table 4 shows the mean score of various coping strategies used by the respondents. Among the most commonly used coping strategies were active coping, positive reframing, planning, and acceptance. Table 5 shows stressor domains and coping strategies, the use of which was significantly different among different subgroups of respondents. ARS and GARS were higher among female respondents. Nursing students showed a higher level of ARS, TRS, DRS and GARS. GARS score was highest among students of Semesters II, IV and V of the basic sciences and lowest among students of the clinical semesters. Emotional support was more commonly used by females and by students in the third, fourth and fifth semesters of the basic sciences. Denial was more widely used by nursing students. The mean score for problem-focused coping was 21.42 (maximum possible score 32), for active emotional coping the mean score was 24.08 (maximum possible score 40), and for avoidant emotional coping the score was 18.90 (maximum possible score 40).

Table 4: Various coping strategies used by the respondents

Strategy	Mean score
Self-distraction	5.24
Active coping	5.72
Denial	3.40
Substance use	2.43
Use of emotional support	4.66
Use of instrumental support	4.75
Behavioural disengagement	3.45
Venting	4.17
Positive reframing	5.72
Planning	5.73
Humour	3.96
Acceptance	5.57
Religion	5.24
Self-blame	4.38

Table 5: Stressor domains and coping strategies, the use of which was significantly different among different groups of respondents

Stressor domain/Coping strategy	Group of respondents	Mean scores	p value
Academic related stressors	Male	1.92	<0.001
	Female	2.81	
Group activity related stressors	Male	1.24	0.002
	Female	1.86	
Academic related stressors	Medical	2.30	0.027
	Nursing	2.89	
Teaching and learning related stressors	Medical	1.54	0.005
	Nursing	2.48	
Drive and desire related stressors	Medical	0.81	0.008
	Nursing	1.77	
Group activity related stressors	Medical	1.46	0.013
	Nursing	2.21	
	Semesters I & II	1.67	
	Semesters III, IV & V	1.77	
Use of emotional support	Clinical	1.19	0.028
	Male	3.92	
	Female	5.35	
	Semesters I & II	4.33	
Denial	Semesters III, IV & V	4.71	<0.001
	Clinical	4.65	
	Medical	3.20	
	Nursing	4.82	0.004

DISCUSSION

The present study was conducted among undergraduate medical and nursing students at a private university in Saint Lucia. Around 51% of the total students participated in the study. There was a slight female preponderance. Majority of the students were studying medicine, and Indians and Nigerians were the dominant nationalities. Most respondents were above 21 years of age. Students suffered from mild to moderate levels of stress in the study. ARS had the highest score of 2.39. Active coping, positive reframing, planning and acceptance were the most widely used coping strategies. The levels of different categories of stress and coping strategies were different among certain subgroup of respondents.

The MSSQ has been shown to be a valid and reliable instrument in a number of studies (11–13, 17). The response rate to our survey was lower than that reported in previous studies (1, 2, 12). The response rate in the present study was around 51% and the survey was administered online. Students were periodically reminded to complete the survey and a total of three reminders were sent to each cohort of students. Online surveys have shown lower response rates than their paper and pencil counterparts in previous studies (18, 19).

A previous study in a medical school in Malaysia had identified academic stressors as the most common source of stress (12). In the present study ARS had a mean score of 2.39 which is similar to that reported in Malaysia. A study in India examined sources and levels of stress among second year

medical students using the MSSQ (14). The ARS scores were comparable while the other scores were lower in the present study. The reasons for the lower scores could be good support systems, availability of food similar to what they would be having at home and good interpersonal relations.

In a study in Malaysia stress scores were higher among male students (20). However, the Indian study showed that female students experienced higher levels of stress (14). In a medical school in Aruba, Dutch Caribbean the most common sources of stress was related to academics, group and social activities (21). The stress levels were higher among female medical students. The Cronbach's alpha value was 0.915 in that study, which is comparable to that reported in the present study. In the study conducted at Aruba, stress levels were higher among fourth and fifth semester basic science students. In the present study, GARS was higher among students in the third, fourth, and fifth semesters. The American International Medical University follows a traditional discipline-based basic science curriculum with a heavy reliance on didactic lectures. Group activities are not common and are mainly used during the fourth and fifth semesters. This may account for the higher stress levels related to this group of stressors. The same questionnaire was used to measure stress among nursing students. In most categories, nursing students showed higher stress levels. Possible reasons could be while most of statements appear to be relevant for nursing students, we did not come across studies using the MSSQ in the literature. The number of nursing students was low, which could have affected the results.

Active coping, self-distraction, positive reframing, and acceptance were widely used by the respondents. Religion was also used often. The scores in these coping strategies were lower than that noted in a Malaysian study (12) where religion, active coping, positive reinterpretation, and acceptance were the most widely used coping methods.

In Aruba, the commonly used coping strategies were planning, active coping, positive reframing and acceptance (21). The scores for problem-focused coping, active emotional coping, and avoidance coping were lower in Aruba compared to the present study. In Aruba, there was no difference in the use of different coping strategies among different subgroups of respondents. This is in contrast to the present study where emotional support was used more by females and students in the higher semesters. Denial was more commonly used as a coping strategy by nursing students. A previous study among nursing students noted that low levels of stress caused nursing students to use active coping strategies while high stress levels increased the use of passive coping methods (9). The effects of dissection room experiences and related coping strategies were studied among Hungarian medical students (22). Cognitive coping was widely used and the use of emotional coping strategies was higher among women. Coping style was also associated with resilience among medical students (23). Greater use of approach oriented coping strategies was associated with a significantly reduced risk of burnout compared to avoidant coping methods. In Nepal active coping strategies were commonly used and drugs were used least commonly for coping (2). The common strategies used were positive reframing, planning, acceptance, and active coping. A recent study examined the relationship between the coping strategies used during medical school and the style of success in their medical career (24). The authors concluded that students who take action and deal directly with a problem have a low incidence of burnout, earn the highest income and have the highest quality of life. However, they would also be least satisfied with their career and have the least level of competence.

The strength of the study was the use of previously validated instruments to measure sources of stress and coping strategies among students. The instruments were

however, not pilot tested among the current cohort of respondents. The MSSQ was used to measure sources of stress among nursing students in the present study. The participation rate was low.

CONCLUSION

The present study provided information about stress and coping strategies among students at an offshore Caribbean medical school. There were similarities and differences compared to the study conducted at a medical school in Aruba. Longitudinal studies to provide information about the sources of stress and coping strategies as student's progress through the course are required. Similar studies are required in other offshore Caribbean medical schools.

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REFERENCES

1. Yusoff MSB, Rahim AFA, Yaacob MJ. Prevalence and sources of stress among Universiti Sains Malaysia medical students. *Malays J Med Sci.* 2010;17:30–7.
2. Sreeramareddy CT, Shankar PR, Binu VS, Mukhopadhyay C, Ray B, Menezes RB. Psychological morbidity, sources of stress and coping strategies among undergraduate medical students of Nepal. *BMC Med Educ.* 2007;7:26. <https://doi.org/10.1186/1472-6920-7-26>
3. Rosenham DL, Seligman ME. *Abnormal Psychology.* 2nd ed. New York: Norton; 1989.
4. Saipanish R. Stress among medical students in a Thai medical school. *Med Teach.* 2003;25:502–6. <https://doi.org/10.1080/0142159031000136716>
5. Zaid ZA, Chan SC, Ho JJ. Emotional disorders among medical students in a Malaysian private medical school. *Singapore Med J.* 2007;48:895–9.
6. Aktekin M, Karaman T, Senol YY, Erdem S, Erengin H, Akaydin M. Anxiety, depression and stressful life events among medical students: a prospective study in Antalya, Turkey. *Med Educ.* 2001;35:12–7. <https://doi.org/10.1111/j.1365-2923.2001.00726.x>
7. Niemi PM, Vainiomaki PT. Medical Students' academic distress, coping and achievement strategies during the pre-clinical years. *Teach Learn Med.* 1999;11:125–34. <https://doi.org/10.1207/S15328015TL110302>
8. Pereira MA, Barbosa MA. Teaching strategies for coping with stress – the perceptions of medical students. *BMC Med Educ.* 2013;13:50. <https://doi.org/10.1186/1472-6920-13-50>
9. Yildiz FU, Ozbas A, Cavdar I, Yildizeli TS, Onler E. Assessment of nursing students' stress levels and coping strategies in operating room practice. *Nurse Educ Pract.* 2015;15:192–5. <https://doi.org/10.1016/j.nepr.2014.11.008>
10. Turner K, McCarthy VL. Stress and anxiety among nursing students: a review of intervention strategies in literature between 2009 and 2015. *Nurse Educ Pract.* 2017;22:21–9. <https://doi.org/10.1016/j.nepr.2016.11.002>
11. Yusoff MSB, Rahim AFA. *The medical student stressor questionnaire (MSSQ) manual.* 1st ed. Kelantan, Malaysia: KKMed Publications; February 2010.

12. Yusoff MSB, Yee LY, Wei LH, Siong TC, Meng LH, Bin LX, Rahim AFA. A study of stress, stressors and coping strategies among Malaysian medical students. *International Journal of Students' Research*. 2011;1(2):45–50. <https://doi.org/10.5549/IJSR.1.2.45-50>
13. Yusoff MSB. A multicenter study on validity of the medical student stressor questionnaire (MSSQ). *International Medical Journal*. 2011;18:14–8.
14. Manjunath SM, Raju NG, Singh J, Kumar RM. A cross-sectional study on the sources and levels of stress among second year undergraduate medical students. *National Journal of Medical Research*. 2014;4:314–7.
15. Carver S. Brief COPE. 2007 [cited 12 November 2018]. Available from: <http://www.psy.miami.edu/faculty/ccarver/sclBrCOPE.html>
16. Park CL, Adler NE. Coping styles as a predictor of health and well-being across the first year of medical school. *Health Psychol*. 2003;22:627–31. <https://doi.org/10.1037/0278-6133.22.6.627>
17. Yusoff MSB, Rahim AFA, Yaacob MJ. The development and validity of the medical students stressor questionnaire (MSSQ). *ASEAN Journal of Psychiatry*. 2010;11:13–24.
18. Dommeyer CJ, Baum P, Hanna RW, Chapman KS. Gathering faculty teaching evaluations by in-class and online surveys: their effects on response rates and evaluations. *Assess Eval Higher Educ*. 2004;29:611–23. <https://doi.org/10.1080/02602930410001689171>
19. Kongsved SM, Basnov M, Holm-Christensen K, Hjollund NH. Response rate and completeness of questionnaires: a randomized study of internet versus paper-and-pencil versions. *J Med Internet Res*. 2007;9:e25. <https://doi.org/10.2196/jmir.9.3.e25>
20. Johari AB, Noor Hassim I. Stress and coping strategies among medical students in National University of Malaysia, Malaysia University of Sabah and Universiti Kuala Lumpur Royal College of Medicine Perak. *Journal of Community Health*. 2009;15:107–15.
21. Shankar PR, Balasubramaniam R, Ramireddy R, Diamante P, Barton B, Dwivedi NR. Stress and coping strategies among premedical and basic science undergraduate medical students in a Caribbean medical school. *Education in Medicine Journal*. 2014;6(4):e48–e56. <https://doi.org/10.5959/eimj.v6i4.287>
22. Sándor I, Birkás E, Gyórfy Z. The effects of dissection-room experiences and related coping strategies among Hungarian medical students. *BMC Med Educ*. 2015;15:73. <https://doi.org/10.1186/s12909-015-0355-9>
23. Thompson G, McBride RB, Hosford CC, Halaas G. Resilience among medical students: the role of coping style and social support. *Teach Learn Med*. 2016;28:174–82. <https://doi.org/10.1080/10401334.2016.1146611>
24. Tartas M, Walkiewicz M, Budziński W, Majkovicz M, Wójcikiewicz K, Zdun-Ryżewska A. The coping strategies during medical education predict style of success in medical career: a 10-year longitudinal study. *BMC Med Educ*. 2016;16:186. <https://doi.org/10.1186/s12909-016-0706-1>