Stressors Among Medical Undergraduates During COVID 19 Era by Using Medical Students' Stressor Questionnaire (MSSQ-40) Scale

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ABSTRACT

Introduction: It is known that medical college environments in India are extremely stressful for students. At present, the COVID-19 pandemic and its consequences are making students more stressed than ever. This study aimed to determine levels of stress in students during 2021

Methodology: A web-based cross-sectional study was conducted on first and second year MBBS students of a medical college in Gujarat, India using the Medical Students' Stressor Questionnaire (MSSQ-40). The data was entered and analyzed using MS Excel 2019 and significance was determined using the Mann Whitney U Test.

Result: All students enrolled in the study scored between 1 and 2 in all six domains of the MSSQ, suggestive of a moderate degree of stress. The second-year students' scores were significantly higher than those of the first-year students across all domains. Academic-related stress (ARS) received the highest score followed by intrapersonal and interpersonal-related stressors (IRS) and group activities-related stressors (GARS).

Conclusion: Second-year students were more stressed in all domains compared to first-year students. We recommend reducing the number of exams; moving from a marking to a grading system of assessment to ease competition; introducing more ordered time tabling and providing better training for group activities.

Key words: Stressful, Students, ARS, IRS, GARS

INTRODUCTION

Stress is defined as the body's nonspecific response or reaction to demands made on it, or to disturbing events in the environment.[1,2] Personal and environmental events that cause stress are known as stressors.[3,4] Among all academic courses, medical education is considered to be one of the most stressful,[5,6] affecting the physical and mental health of medical students.[5-8] Many factors contribute to creating a stressful environment for medical students, including examination fear, high parental expectations, peer pressure, lack of leisure time, financial challenges, relationship disharmony, and high aspirations.[5]

High levels of suicide attempt by students have been observed in non-western countries, which ranges from 1.8–53.6%.[6-9] and medical colleges have been identified as particularly the most stressful environments among all study institutes of India. Stress that inhibits and suppresses learning is known as unfavourable stress. Such stress hampers students' academic performance,[7] in contrast to positive stress, or eustress, which motivates and energizes the student. Thus, early identification of students who are exhibiting signs and symptoms of unfavourable stress is important to enabling interventions before the stress leads to more serious consequences.[8]

Various studies have been carried out to investigate stressors among medical students across the world.[1,5,6,12–16] These studies show great variations in the prevalence of stress in students, from 37.3–97%. The differences have been attributed to demographic variation in the samples; students in different studies being in different academic years; varying case definitions, and a lack of uniformity in measuring tools.[10]To enhance uniformity, Muhamad et al (2011)characterized six principal domains of stressors: academic-related stressors (ARS); intra- and interpersonal related stressors (IRS); teaching and learning related stressors (TLRS); social-related stressors (SRS); drive and desire related stressors (DDRS); and group activity related stressors (GARS), and created the Medical Students' Stressor Questionnaire (MSSQ-40)[11] to record these. The instrument has been validated in a number of countries including Malaysia,[12]the Netherlands,[13]Romania,[14] Nepal[15] and India.[1,] The present study was done at the time when the consequences of the COVID-19 pandemic were affecting everyone's day-to-day lives. This may affect the stress levels of medical students. This study was planned to quantify this level of stress using the MSSQ-40.

METHODS AND MATERIALS

The present study was a cross-sectional web-based survey to be conducted on first and second year MBBS students enrolled at a medical college of Gujarat state in India. As per the National Medical Commission guideline, a new skilled-based curriculum was implemented from 2019. So, students who got admission before 2019 were excluded from the study and only students from the 2019 batch (second year at present) and 2020 batch (first year) were included. There were 150 students in each intake, 300 students in total. 12 students from the 2019 intake and 7 students from the 2020 intake did not give consent to participate and so were excluded from the study, giving a final sample size of 281.

The study tool used was the MSSQ-40. This consisted of 40 items which addressed six stress domains as below:

Academic related stressors (ARS): including items such as 'tests/examinations', 'getting poor marks in examinations', 'a large amount of content to be learned', and 'having difficulty understanding the content'.

Intrapersonal and interpersonal related stressors (IRS): with items such as 'conflicts with other students', 'verbal or physical abuse by teachers', and 'conflict with personnel';

Teaching and learning related stressors (TLRS): with items such as 'lack of guidance from the teacher', 'uncertainty of what is expected of me', and 'lack of recognition for work done';

Social related stressors (SRS): with items such as 'facing illness or death of patients', 'talking to patients about personal problems', and 'being unable to answer questions.

Drive and desire related stressors (DDRS): with items such as 'unwillingness to study medicine', 'parental wish for you to study medicine', and 'family responsibilities.

Group activities related stressors (GARS): with items such as 'participation in class discussion', 'need to do well (imposed by others)', and 'feeling of incompetence'.

Participants responded to each item using a five-point Likert scale (0–4) reflecting an increasing level of severity in stress from no stress (0) to severe stress (4). All items encompassing the six stressor domains were collated to measure the overall stress experienced by the medical students. The mean score was taken as the indicator of overall stress. Mean item scores for individual students were calculated and graded into categories of no stress (0), mild stress (0.01–1), moderate stress (1.01–2), high stress (2.01–3), and severe stress (3.01–4). As per the guideline of the tool, Mild stress was considered unlikely to have a significant impact on the student. Moderate stress signifies a level of stress that was reasonable to assume the student would cope with. Severe and high stress indicated reasonably significant emotional disturbances with (severe) and without (high) impact on daily activities respectively.[11]

A google form (questionnaire)was created in English, using the study tool, and sent to participants. The questionnaire was self-explanatory and self-administered. The participants were also provided with the contact details of the researcher so that they can contact the researchers in case of any query related to the questionary.

Data was entered and analyzed using MS Excel 2019. The mean score of all stressors was presented with 95% confidence intervals and the significance of difference for various stressors between 1st and 2nd-year students was calculated by Mann-Whitney U Test. A p-value of less than or equal to 0.05 was considered to be statistically significant

RESULTS

As shown in Table 1, 138first-year students and 143second-year students consented to be included in the study. Out of total 281 participants, 55 % were males & remaining were females.

Table 1: Number of medical students

Year	Male	Female	Total
1st	70	68	138
2nd	84	59	143
Total	154	127	281

Table 2: Mean value of stressor with 95% Confidence limit and Mann- Whitney U test between 1st and 2nd year student's stress

Stressor (Domain)	Mean value of stressor with 95% CI (Mean ± 2SD)			Mann Witney U test (P) between 1st and 2nd yr
	First-year	Second-year	combined	
Academic related stressors (ARS)	1.3234 ±0.0776	2.3109 ±0.0723	2.0032 ±0.0625	<0.00003
Intrapersonal and interpersonal related stressors (IRS)	1.1321 ±0.07091	2.0987 ±0.0967	1.7438 ±0.0692	0.00216
Teaching and learning related stressors (TLRS)	1.1135 ±0.07631	1.976 ±0.0984	1.7109 ±0.0865	0.00209
Social related stressors (SRS)	1.1423 ±0.1281	1.915 ±0.342	1.7656 ±0.2112	0.00221
Drive and desire related stressors (DDRS)	1.0289 ±0.0701	1.867 ±0.1978	1.6097 ±0.3018	<0.0001
Group activities related stressors (GARS)	1.1436 ±0.0438	2.0503 ±0.124	1.8193 ±0.0879	0.02954

Table 3: Factors with the highest score in every stressor

Stressor	Factors with the highest score	Mean Score
Academic related stressors (ARS)	Large amounts of content to be learned	2.30
	frequent examinations	2.23
Intrapersonal and interpersonal related stressors (IRS)	Conflicts with other students	2.07
	Conflicts with teachers	1.76
Teaching and learning related stressors (TLRS)	Lack of guidance from the teacher(s)	1.93
	Uncertainty of what is expected from him/her	1.83
Social related stressors (SRS)	Frequent interruption of my work by others	1.82
	Lack of time for family and friends	1.77
Drive and desire related stressors (DDRS)	Parental wish for you to study medicine	1.71
Group activities related stressors (GARS)	Feeling of incompetence	2.01
	Need to do well (imposed by others)	1.97

Table 2 shows that the highest score was obtained for the academic-related stressor (ARS) – this score was more than 2, suggesting a high level of stress. All other stressor values were between 1–2, which indicates a moderate level of stress. On comparing the stressor values between the first year and second-year students, the values were significantly higher (Mann Whitney U test, p<0.05) for second-year students in all stressors.

Table 3 shows the factors that scored highest in each domain. The stressors that had the highest values were ARS, IRS and GARS: and within those, the specific stressors were: a large amount of content to be learned; frequent examinations; conflicts with other students and teachers; lack of guidance from the teacher(s); feelings of incompetence; and a need to do well imposed by others

DISCUSSION

The present study highlights the academic related stressor (ARS) as the main culprit among all the stressors for medical students. This result is similar to that found in other studies conducted in pre-COVID-19 era such as those by Gupta et al (2015),[3] Siraj et al (2013),[7] Supe et al (1998),[17] Ghosal et al (2018)[18] and Eva et al (2015).[19]Factors such as poor marks in examinations, the need to do well in examinations, large amounts of content to be learned, not understanding what to learn first, poor timetabling and unskilled teachers have been identified as being among the causes of this stress

Academic stress was found to be significantly higher in second year medical students compared with those in the first year. Similar studies by other authors including Ghosal et al (2018),[18]Kumarswamy et al (1989),[20]Sathidevi et al (2017)[21] and Patil et al (2016)[22] show a similar result. Starting clinical postings, learning second and third year subjects simultaneously and the frequent number of examinations (at end of every clinical posting) are amongst the causes suggested in this study as well as above mentioned studies.[18,20-22]

After ARS, IRS was the second highest scoring stressor, with GARS third. These scores are moderate in first year students but significantly higher among second year students. The main reason for this is that students start their clinical postings at this time, which requires good communication skills to deal with patients, group activities and group learning to avoid conflicts with others. A similar result was found by Panchu et al (2017)[23] but in contrast, Ghosal et al (2018)[18] did not find second year medical students to be more highly stressed than first years.

Although the present study was done in immediate post-COVID times, the study participants recorded similar stress patterns as those recorded in earlier studies done before COVID -19 pandemic.[18–23]This suggests that COVID-19 did not significantly affect the stress levels of first- and second-year medical students but that medical training is inherently stressful. It should be noted, however, that the students enrolled in this study were not actively involved in management of COVID patients otherwise the scores may have been different.

CONCLUSION

ARS was the most important of all the domains of stress for medical students. Second year students had significantly higher stress than first year stu-

dents. And Covid 19 pandemic did not increase the stress levels of the first- & second-year students.

RECOMMENDATIONS

We recommend reducing the number of examinations and introducing grading instead of marks at the end of clinical examinations to avoid unnecessary comparisons.

Since the medical curriculum is very lengthy, we recommend creating a precise monthly teaching timetable and dividing content into most important, good to know, and nice to know.

To reduce IRS and GARS, training related to communication skills should be introduced.

REFERENCES

1. Rosenhan, D. L., & Seligman, M. E. Abnormal psychology (2nd ed.). New York: Norton, 1989.

2. Selye, H. Stress without distress. New York: Harper & Row, 1974.

3. Lazarus, R. S. (1990). Theory-based stress measurement. *Psychological Inquiry, 1*(1), 3–13. https://doi.org/10.1207/s15327965pli0101_1

4. Lazarus, R. S., & Folkman, S. Stress, appraisal, and coping. New York: Springer, 1984.

5. Gupta S, Choudhury S, Das M, Mondol A, Pradhan R; Factors Causing Stress Among Students of a Medical College in Kolkata, India. Educ Heal., 2015; 28(1):92–5.https://doi.org/10.4103/1357-6283.161924

6. Kishor Surwase et al., A cross-sectional study of stress among Medical Students in Government MedicalCollege, Nagpur Sch. J. App. Med. Sci., Sep 2016; 4(9A):3229-3232. https://doi.org/10.21276/sjams.2016.4.9.9

7. Siraj HH, Salam A, Roslan R, Hasan NA, Jin TH, Othman MN; Stress and its association with the academic performance of undergraduate fourth year medical students at UniversitiKebangsaan Malaysia. Int Med J Malaysia, 2014; 13(1):19–24.https://doi.org/10.31436/imjm.v13i1.488

8. Shim et al. Measuring stress in medical education: validation of the Korean version of the higher education stress inventory with medical students, BMC Medical Education (2016) 16:302 :https://doi.org/10.1186/s12909-016-0824-9

9. Coentre R, Góis C. Suicidal ideation in medical students: recent insights. Adv Med Educ Pract. 2018 Nov 29;9:873 880. https://doi.org/10.2147/AMEP.S162626.

10. Brahmbhatt KR, Nadeera VP, Prasanna KS, Jayram S. Perceived sources of stress among medical undergraduate in a private Medical College in Mangalore, India. Int J Biomed Adv Res 2013;4:133-5.https://doi.org/10.7439/ijbar.v4i2.299

11. Yusoff, Muhamad Saiful Bahri& Fuad, Ahmad. (2010). The Medical Student Stressor Questionnaire (MSSQ) Manual. Available at: https://pdfcoffee.com/the-medical-student-stressor-questionnaire-mssq-manual-pdf-free.html

12. Yusoff MSB, Yee L, Wei L, Meng L, Bin L, Siong T, et al. A study on stress, stressors and coping strategies among Malaysian medical students. Int J Stud Res 2011; 1(No 2). Taking Research Forward; 45-50. 2011;1.https://doi.org/10.5549/IJSR.1.2.45-50

13. Yee L, Yusoff MSB. Prevalence and sources of stress among medical students in UniversitiSains Malaysia and Universiteit Maastricht. Educ Med J 2013;5. https://doi.org/10.5959/eimj.v5i4.190

14. Bob MPC, Pirlog R, Buzoianu A. Personality factors associated with academic stress in first year medical students. Human Veterin Med Int J Bioflux Soc 2014; 6(1): 40e44. Available at: https://www.academia.edu/24370759/ Personality_factors_associated_with_academic_stress_in_first_year_medical_students

15. Upadhayay NKR, Paudel BH. Stressors and cognitive functions in medical and dental students. J Res Med Educ Ethic 2014; 4(2): DOI:10.5958/2231-6728.2014.00891.9

16. Yusoff MSB, Rahim AFA, Yaacob MJ. The development and validity of the Medical Student Stressor Questionnaire (MSSQ). ASEAN J Psychiatry 2010; 11(1): Available at:https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.385.3988&rep=rep1&type=pdf

17. Supe AN. A study of stress in medical students at Seth GS Medical College. Postgrad Med J 1998; 44:1.Available at: https://www.jpgmonline.com/text.asp?1998/44/1/1/389

18. Ghosal, K., Behera, A., Study on prevalence of stress in medical students, J Res Med Dent Sci, 2018, 6(5):182-186: Available at:https://www.jrmds.in/articles/study-on-prevalence-of-stress-in-medical-students.pdf

19. Eva EO, Islam MZ, Mosaddek AS, et al. Prevalence of stress among medical students: A comparative study between public and private medical schools in Bangladesh. BMC Res 2015; 8:327: https://doi.org/10.1186/s13104-015-1295-5

20. Kumaraswamy, N., &Ebigbo, P. O. (1989). Stress among second year medical students: A comparative study. *Indian Journal of Clinical Psychology, 16*(1), 21–23.https://doi.org/10.4103/jmhhb.jmhhb_20_17

21. Sathidevi V.K. Prevalence of stress among final year MBBS students in Kerala. International Journal of Contemporary Medical Research 2017;4(10):2157-2160. Available at: https://www.ijcmr.com/volume-4-issue-10.html

22. Patil SK, Patkar US, Patkar KU. Comparison of levels of stress in different years of M.B.B.S. students in a medical college-An observational study. IJCMR 2016; 3:1655-7. Available at: https://www.ijcmr.com/volume-3-issue-6.html

23. Panchu P, Bahuleyan B, Vijayan V. An analysis of the factors leading to stress in Indian medical students. Int J Clin Exp Physiology 2017; 4:48: https://doi.org/10.4103/ijcep.ijcep_58_16