Validation of Medical Students Stressor Scale

Sathidevi V K

Department of Anatomy, Government Medical College, Thrissur, Kerala. *

ABSTRACT

Published on 28th June 2012

Objective: To validate Medical Students Stressor Scale among first year MBBS students of Government Medical Colleges in Kerala, India. This was a continuation phase of the study namely Development of the same instrument by the same author published earlier. This Cross-Sectional study was done in all five Government Medical Colleges of Kerala.

Results: The 27-item screening instrument named as Medical Students Stressor Scale (MSSS) which was developed and published in the public domain was validated for the purpose of making the instrument universally acceptable for the scientific population. Confirmatory Factor Analysis yielded 8 factors with Eigen values more than one. The factors were explaining 52% of the total variance. This confirmed the Construct Validity of the instrument.

Conclusion: The Medical Students Stressor Scale is a validated instrument to measure the stressors of first year medical students.

Keywords: Stressor, Scale, Reliability, Construct Validity, Convergent Validity, Factor Analysis.

*See End Note for complete author details

INTRODUCTION

Stress is a state involving demand on physical or mental energy which may disturb the normal physical or mental health of an individual. This state among first year medical student population was studied earlier by developing an instrument to identify and measure stressors specific to them.[1]

The evidence of psychological distress in medical students spans more than thirty years, yet the authors of a systematic review were unable to make firm conclusions regarding its causes or consequences.[2] In addition to coping with stressors of everyday life, medical students must deal with stressors specific to medical school like information and input overload, financial problems, lack of leisure time, pressures of work, work relationships and career choices.[3] There is evidence that mental distress during medical school predicts later problems in physicians, which in addition to the personal suffering of the individual doctor might negatively affect patient care.[4,5]

Stress has been measured in three aspects: stressors, stress responses and individual characteristics (personal resources, behavior patterns and coping styles). These varying aspects of stress measures are important in planning treatments and evaluating the effects of treatments.[6] This work originated from the concern about the non-availability of a valid and reliable instrument for assessment of stressors among first year MBBS students. The objective of the study was to validate the already developed instrument to measure stressors among first year MBBS students of Government Medical Colleges in Kerala.

METHODOLOGY

This is phase two continuation study by the researcher in order to validate the instrument in a large population of first year medical students under the Government sector. This cross sectional study was conducted in first year MBBS students admitted in September 2008 of all the five Government Medical Colleges in Kerala. The sample size was the total admission number of the year 850. We obtained informed written consent and clearance from Institutional Review Board for the conduct of study. Data collection Tools used were Perceived Stress Scale (PSS-10) – ten items with scores 0 to 40, higher the score higher the stress.[7] Medical Students Stressor Scale with 27 items – with scores 0-108.[1] Medical Students Stressor Scale was administered along with Perceived Stress scale to all the 850 first year MBBS students. 783 participated in the study. The response rate was 92%. Data were entered in excel worksheets and analyzed using SPSS version 11. Internal Consistency Reliability was estimated by Cronbach's Alpha. Confirmatory Factor analysis was performed to confirm the construct validity of the instrument.

Corresponding Author:
Dr. Sathidevi V K, Associate Professor, Department of Anatomy, Government Medical College, Thrissur, Kerala.
Email: sathidevivk@gmail.com

Table 1. Confirmatory Factor Analysis Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 13 iterations.

Items	1	2	3	4	5	6	7	8
Vast syllabus	0.712							
Tough topics	0.728							
Topic fast	0.559							
One year	0.564							
Difficulty	0.441							
Load exam	0.422							
Lack time management		0.629						
Problem memorizing		0.579						
Procrastination		0.581						
Responsible		0.496						
First Failure		0.541						
Fear additional		0.488						
Overlapping			0.466					
Record			0.756					
Late mark			0.714					
Tired feel			0.502					
No appropr mark				0.797				
Not expected				0.815				
Other text					0.735			
Three hour					0.797			
First day						0.719		
Cunningham's						0.490		
Dn table						0.641		
Self study							0.544	
Repeated learning							0.654	
Seminar								0.545
Ragging								0.580

RESULTS & DISCUSSION

The Internal Consistency Reliability was estimated after a single administration of the 27 items scale. The Cronbach's Alpha was estimated to know how well the items that reflect the same construct were correlated with each other. Cronbach's Alpha is mathematically equivalent to the average of all possible Split Half Reliability estimates. The Cronbach's Alpha in this Phase 2 study was computed as 0.78 (95% CI 0.76-0.81) and is acceptable. Varimax rotation was done to make the factor loading matrix more understandable and meaningful. Factor Rotation maximizes the variance explained by each factor. Factor loading gave correlation of each item with each factor. Factor loadings less than 0.35 were discarded.[8] Confirmatory Factor Analysis yielded 8 factors explaining 52% variability (KMO – 0.79), even though the Exploratory Factor Analysis explained 60% of variability. It determined the inter-correlations among the variables and computed how much each variable contributes to each factor and the total measurement instrument. The confirmatory Factor Analysis buttressed the notion that it is a valid research tool in determining 1st year medical students stressors. All of these supported the constructed validity of the instrument. Analyzing data using Factor Analysis provided a more comprehensive analysis of the validity of the instrument.

Distribution of stressor scores as per the study: There were 4.3% of the students with no stressor experience, 60.1% with mild to moderate stressor experience and 35.6% with severe stressor experience as compared to the phase 1 study where they were 8.7%, 80% and 11.3% respectively. The Perceived Stress among these students were 68.7% as compared to 59.3% in Phase 1, Development of the instrument.

The present study supports the views of researchers that most of the stressors were academic related.[9,10,11] Dyrbye[12] suggested that stress is related to personal factors as well as curricular factors. As per our study, there are both academic and personal factors. A survey of ten United States Medical Schools identified the following stressors:- student mistreatment, someone taking credit of one's work, being threatened with unfair grades, threatened with physical harm, sexual harassment and pervasive negative comments about entering a career in medicine.[13] The most common stressors identified in a study among medical students of Nepal were academic and psychosocial factors.[14] The most important and severe stressors were staying in hostel, high parental expectations, vastness of syllabus, tests/ exams, lack of time and lack of facilities for environment. Various studies showed that the first year of medical course is highly stressful.[15-21] Confirmatory Factor Analysis yielded Important stressors experienced by the students as the following:

- Vast syllabus
- Tough topics
- Covering topics very fast
- Difficulty in covering portions daily
- Increased workload towards examination
- 1year portions are covered in 9-10months

Table 2. Confirmatory Factor Analysis Eigen Values

Factors	Eigen Value	% of Variance	Cumulative%
1	4.49	16.62	16.62
2	1.84	6.80	23.42
3	1.68	6.24	29.42
4	1.38	5.13	34.78
5	1.32	4.88	39.66
6	1.14	4.21	43.87
7	1.09	4.06	47.93
8	1.06	3.92	51.84

Table 3. Distribution of stressors and scoring pattern of the MSSS

Score	Stressor Experience	Distribution-Phase-1	Distribution-Phase-2
<54	No Stressor	8.7%	4.3%
55-81	Mild to Moderate	80%	60%
82-108	Severe Experience	11.3%	35.6%

- Lack of time management skills
- Problems in memorizing topics
- Procrastination
- Failure in 1st sessional examination

RECOMMENDATIONS

The study recommends to do comparative cross-sectional studies with Private Medical College students and other higher education students like Engineering, Law, Arts, Nursing, Dental, etc. This will give ideas regarding how exactly each student populations stress and stressors differ. This will help to replicate and extend our findings.

Prospective (cohort) studies will give exact cause-effect relationships and temporality by following the first MBBS students till the completion of MBBS course.

The powerful curriculum has great influence on the academic performance of students. The reduction of course duration without reducing much syllabus is really stressful. So it will be wise at least to cover the whole portions by taking the 12 months exclusively for teaching. Presently the portions are finished in 9 to 10 months period. This will provide the students enough time to go through the portions daily, so that they won't feel overload towards examination.

Seminar and short exams should not be overlapped by different departments to reduce stress if there is sufficient inter-departmental communication. Giving appropriate marks especially for the first sessional examination will enhance the students self- esteem and prevent their unnecessary stress. It will be good to assign seminar topics to concerned students priory and avoid 'late' marking in records to alleviate their stress.

As even faculty agrees that Cunningham's Manual is difficult to follow, it will be beneficial if the students are allowed to read other concerned topic standard text book inside the dissection hall. After the implementation of the new curriculum, students have 3 hour dissection, which can be effectively and efficiently utilized by the students if allowed to use other text at least in the second half of the dissection. They must be given a short break during this continuous 3 hours dissection for refreshments.

Qualitative studies suggest that the situation in ladies hostel is pathetic. 35-40 girls are studded in the dormitory. They do not have separate cot, bed, table, chair, shelf etc. They used to draw records and prepare charts by keeping on the bed because of these inadequate facilities. The mixing up of first MBBS students with relatively less important and less tedious para-medical course students detrimentally affect their studies. So hostel facilities must be improved, it will be better to build separate new hostels at least for Ladies.

Shortage of teaching faculty is the other important problem to be addressed. This leads to reduction in attention to individual students. Sufficient teaching aids like properly functioning Over Head Projector, LCD, Mike system, computers, internet facility etc. should be provided. Faculty can control most of the stressors. Effective teaching and enhancement of teacher student relationship will definitely reduce the students' stress. More interactions between teachers and students will bring insight into better understanding of the possible underlying issues. The key message for faculty is to clearly relate the value and relevance of class content and assignments for developing the cognitive understanding and skills required of the professional practice.

The teaching strategies that are being used need to be explained very carefully to students, and they need to know how each specific strategy is intended to support the desired learning outcomes, both generic and specific, in their course. Similarly Course Designers need to be aware of the various ways in which learning outcomes can be promoted and to understand when students can reasonably substitute the opportunities available without compromising performance and importantly, when they cannot.

Continuous parental, family and teacher support is a dare necessity for these students especially during their first year.

Policy level implications

The findings are alarming. Ongoing counseling or in-built system supporting the stressed students is necessary. The screening Stressor Scale may be used in the first year period, to assess the levels of stressors experienced by the students. Yearly use of the instrument can assess the improvement after the implementation appropriate interventions.

Students getting high stressor scores can be followed up for the impact on their general health. Early detection of mental distress will reduce future complications due to timely intervention. This will support at risk students during their studies.

Fill all vacancies of staff immediately forthwith. Regular curriculum committee meetings for reconsidering the syllabus are needed. Opinions regarding the revision of syllabus may be sought from various sources including under graduate students, post graduate students, teachers, private practitioners and those doctors working abroad. Teachers should provide facilities to attend knowledge update programs like National, Inter National Conferences, Continuing Medical Education programs, Institute of Management in Government workshops, National Teacher's Training Programs etc. Ragging must be prevented by appropriate measures.

Counseling facilities may be provided for the students and teachers at 2 or 3 months interval and just before sessional & university examinations. A team with psychiatrist, psychologist, sociologist, pre- clinical faculty and student-representative may be constituted.

Regular Teacher's Training Programs must be conducted without fail. Changing the pattern of teaching from the traditional teacher-centered to student-centered teaching is needed. Stress Management and Time Management Workshops should be made for both students and teachers.

Orientation, vertical and horizontal classes must be conducted regularly. Students may be permitted to visit clinics at least monthly once to have orientation regarding the application of these basic sciences in clinics to develop more interest and proper understanding of the subjects. They must be encouraged towards research activities also. Parents– teachers should have good communication. Institution efforts should include mentoring programs and formal training in biomedical ethics to teachers and institutionally supporting volunteer services like Parents Teacher Association.

Provision of adequate recreational and refreshment facilities like venting machine, good canteen etc. inside the campus is also a must. Students must be asked to properly make use of the presently existing tutorial system for their betterment.

CONCLUSION

The proportion of students with different levels of stressor experience and the important stressors can be identified by this instrument. As the stressors can lead to stress responses in the form of adverse health consequences, a screening instrument of this type has more relevance in this setting. This will enable the administrators in executing appropriate intervention strategies at the academic level to reduce the magnitude of stress.

END NOTE

Author Information

Dr. Sathidevi V K,
Associate Professor, Department of Anatomy,
Government Medical College, Thrissur,
Kerala. Email: sathidevivk@gmail.com

Conflict of Interest: None declared

Acknowledgment

Dr. Ramdas Pisharody. MD, DM, M Med Sc, Principal, Professor of Nephrology & Clinical Epidemiology, Govt Medical College, Thiruvananthapuram, Kerala, India.

Cite this article as: Sathidevi V K. Validation of Medical Students Stressor Scale. Kerala Medical Journal. 2012 Jun 28;5(2):38-42

REFERENCES

1. Sathidevi.V.K. Development of Medical Students Stressor Questionnaire. Kerala Medical Journal 2009;9(2):59-67
2. Dyrbye LN, Thomas MR, Huntington JL, Lawson KL, Novotny PJ, Sloan JA, et al. Personal life events and medical student burnout: a multicenter study. Acad Med. 2006 Apr;81(4):374–84.
3. Yiu V. Supporting the well-being of medical students. CMAJ. 2005 Mar 29;172(7):889–90.
4. Firth J. Levels and sources of stress in medical students. Br Med J (Clin Res Ed). 1986 May 3;292(6529):1177–80.
5. Firth-Cozens J. Stress in medical undergraduates and house officers. Br J Hosp Med. 1989 Feb;41(2):161–4.
6. Cotton DHG. Stress management – an integrated approach to therapy. *New York: Brunner/Mazel*;1990
7. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav. 1983 Dec;24(4):385–96.

8. David Streiner and Geoffrey Norman Health Measurement Scales: A Practical Guide to Their Development and Use. *Oxford University Press,* 1989
9. Coburn D, Jovaisas AV. Perceived sources of stress among first-year medical students. J Med Educ. 1975 Jun;50(6):589–95.
10. Supe AN. A study of stress in medical students at Seth G.S. Medical College. J Postgrad Med. 1998 Mar;44(1):1–6.
11. Shariati M, Yunesian M, Vash JH. Mental health of medical students: a cross-sectional study in Tehran. Psychol Rep. 2007 Apr;100(2):346–54.
12. Dyrbye LN, Thomas MR, Shanafelt TD. Medical student distress: causes, consequences, and proposed solutions. Mayo Clin Proc. 2005 Dec;80(12):1613–22.
13. Baldwin DC, Daugherty SR, Eckenfels EJ. Student perceptions of mistreatment and harassment during medical school. A survey of ten United States schools. West J Med. 1991 Aug;155(2):140–5.
14. Sreeramareddy CT, Shankar PR, Binu VS, Mukhopadhyay C, Ray B, Menezes RG. Psychological morbidity, sources of stress and coping strategies among undergraduate medical students of Nepal. BMC Med Educ. 2007;7:26.
15. Ko SM, Kua EH, Fones CS. Stress and the undergraduates. Singapore Med J. 1999 Oct;40(10):627–30.
16. Alem A, Araya M, Melaku Z, Wendimagegn D, Abdulahi A. Mental distress in medical students of Addis Ababa University. Ethiop Med J. 2005 Jul;43(3):159–66.
17. Saipanish R. Stress among medical students in a Thai medical school. Med Teach. 2003 Sep;25(5):502–6.
18. Benítez C, Quintero J, Torres R. [Prevalence of risk for mental disorders among undergraduate medical students at the Medical School of the Catholic University of Chile]. Rev Med Chil. 2001 Feb;129(2):173–8.
19. Miller PM. The first year at medical school: some findings and student perceptions. Med Educ. 1994 Jan;28(1):5–7.
20. Miller GD, Miller EC, Peck OC. Medical student needs assessment and student affairs programming. J Med Educ. 1981 Jun;56(6):518–20.
21. Sherina MS, Rampal L, Kaneson N. Psychological stress among undergraduate medical students. Med J Malaysia. 2004 Jun;59(2):207–11.