ORIGINAL ARTICLE

Study of stress prevalence and its effect on mental health and academic performance based on gender and residence among the first year Indian medical undergraduate students

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ABSTRACT

Background: Stress among medical undergraduates is of growing concern and has been found at increased risk of psychological distress and mental disorders worldwide. However, such studies are missing in Indian medical college setup. **Materials and Methods:** A total of ninety-nine 1st year undergraduate students participated in this cross-sectional study and filled the validated General Health Questionnaire (GHQ)-12. **Results:** Among the 1st year medical students, mild-to-moderate stress was observed to be of higher prevalence. Based on gender, there was no difference but stress prevalence was higher in the home group than hostel group students. Male and home group of students had higher mean GHQ-12 score compared to female and hostel group of students but not significant statistically. Positive correlation of GHQ-12 score with academic performance was observed for male and hostel group, whereas negative correlation was observed for female and home group of students. **Conclusions:** Thus, minimal stress is needed for learning process. However, excessive stress has undesirable impact. Hostel life brings in discipline; hence, students residing in hostel are more focused, independent, and do better. To promote mental health and learning in medical students and to produce stress free, holistic and confident future practitioners, awareness of negative events and psychological distress through early phase screening, and stress management training in medical school are necessary.

KEY WORDS: Medical undergraduates, psychological distress, questionnaires, stress.

Introduction

Stress in medical students has become a focus of concern across the globe.[1,2] Besides day-to-day stress, medical students have to endure stress related to medical education.[3] Stress is body's reaction to demands or challenges made on it or to disturbing events in the environment.[4] Stress may be perceived as positive eustress or as negative distress. Distress occurs when a demand exceeds individual's capability to cope.[5] When mental pressure becomes severe, it starts affecting the mood, behavior, sleeping, and eating habits of the person hence not just affecting the physical health but mental incapacitance as well.[6,7]

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Conditions such as anxiety, depression, and emotional disorders have been documented vastly among medical students by many researchers worldwide[8] and have been allied to use of addictive drugs.[9] Increased evidence of dropout[10] and suicidal attempts[11] are observed among medical students. Chronic exposure to stressful conditions leads to memory loss, deterioration of academic performance, poor relationship with peers and family members, and overall dissatisfaction with life.[12]

Studies reveal that medical students mental health is similar to their non-medical peers at the start of the course[7] and worsens with advancement of the course.[1,8,13] The 1st year of the course marks the stage of transition for medical students and is observed to be highly stressful phase in most of the studies.[1,13] However, some researchers have reported higher stress as the course advances mostly in the final year students.[2]

With early stress assessment and effective training, future psychological ailments in medical students

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can be avoided.[14] Due to lacunae of literature in respect to such studies in an Indian urban medical college setup, the present study objectives are to estimate the stress prevalence in different study groups considering the differences of gender and residence at home or hostel and its effect on the mental health and academic accomplishment among the 1st year medical students.

Materials and Methods

After getting Institutional Ethics Committee permission, this cross-sectional study was conducted during the period of 1 year from September 2017 to August 2018 on the 1st year medical college students in India. The first MBBS students consenting to participate in study were included in the study. Students having psychiatric history or reporting any previous drug abuse, and use of antipsychotic drugs were excluded from the present study. Fifty male and 49 female students of the total batch of 99 students got enrolled in the study willingly.

To evaluate stress prevalence and its effect on mental health, validated General Health Questionnaire (GHQ-12) was used. It is an extensively used tool, consisting of six positive and six negative items to screen emotional disorders and evaluate stress levels. Four graded responses used for six positive items were more, same, less, and much less than usual and for six negative items, responses were not at all, no more, more, and much more than usual.

The study was conducted during mid-course, 1 month before terminal examination to avoid examination stress. Students assembled in lecture hall, were explained about the study objectives with assurance of confidentiality. Students were instructed to choose from given four responses to rate each item based on their experiences in the past few weeks.

Modified binary method was used for scoring GHQ-12. Score 0 was given to the least responsive answers and score 1 was given to the most responsive answers. Thus based on the four responses, for positive items score of 0,0,1,1 and for negative items score of 0,1,1,1 was considered.[15] The CGHQ-12 scoring had minimum score of 0 and the maximum score of 12. GHQ-12 score with cutoff point at 4 had high sensitivity and specificity.[16] Therefore, participants with GHQ-12 score of 4 and more were considered to have significant stress in this study. Grading of stress was done: Mild stress with score between 4 and 6, moderate stress with score between 7 and 9, and severe stress with score between 10 and 12.

Internal assessment examination marks held around 1 month later which was used to study the impact of stress on students' academic performance after taking consent.

Statistical analysis

With the help of GHQ-12 score, distribution of stress levels in different study groups was calculated. Data analysis was done using SPSS software version 19 by applying Chi-square test and Pearson's correlation to obtain statistical significance of difference.

Results

Table 1 depicts higher stress prevalence among the 1st year medical students. Out of total 99 students, 57 students mean GHQ-12 score was 4 and above signifying higher prevalence of psychological distress and its negative effect on mental health of the students.

Considering gender differences, the mean GHQ-12 score was observed to be high in male students (6.12 ± 1.41) compared to female students (4.29 ± 2.12). However, on comparing stress prevalence, there was no statistically significant difference in stress prevalence between male (58%) and female (57.1%) students.

Considering differences on the basis of residence at home or hostel, mean GHQ-12 score was observed to be higher for home group students (4.76 ± 0.71) compared to hostel group (3.66 ± 2.12) of students. However, stress prevalence was higher in the home group students (65.5%) compared to hostel group (47.7%) students but not statistically significant.

Among all the 12 items assessed by GHQ-12, as shown in Table 2, higher mean score was observed for mainly two negative items – sleep loss over worry and feeling of constant strain indicating high prevalence of psychological distress among the 1st year medical students.

As shown in Table 3, mild degree of positive correlation of stress with academic performance was observed for total group but not significant statistically. There was also positive correlation observed for male group significant statistically at 0.10 level and for hostel group with high statistical

Table 1: Stress prevalence as per GHQ-12 score in different study groups as per gender (male students, *n*=50 and female students, *n*=49) and as per residence (residing at home, *n*=55 or residing at hostel, *n*=44)

Study groups	Level of stress (GHQ-12 score) (%)					Chi-square test	*P*-value	Significant at 5% level
	n	No stress (score: 0–3)	Mild stress (score: 4–6)	Moderate stress (score: 7–9)	Severe stress (score: 10–12)			
Male	50	22 (44)	19 (38)	7 (14)	2 (4)	0.669	0.881	No
Female	49	20 (40.8)	19 (38.8)	9 (18.4)	1 (2)			
Home	55	19 (34.6)	23 (41.8)	11 (20)	2 (3.6)	3.469	0.325	No
Hostel	44	23 (52.3)	15 (34.1)	5 (11.4)	1 (2.2)			

GHQ: General Health Questionnaire

Table 2: GHQ-12 items score by mean degree of stress perceived by the students

GHQ-12 items	Mean	Standard deviation
Negative items		
1. Lost much sleep over worry?	1.56	0.50
2. Felt constantly under strain?	1.26	0.43
3. Feeling unhappy and depressed?	1.02	0.50
4. Felt you could not overcome your difficulties?	1.01	0.50
5. Losing confidence in yourself?	1.00	0.50
6. Thinking of yourself as a worthless person?	0.72	0.42
Positive items		
7. Felt capable of making decisions about things?	0.71	0.41
8. Feeling reasonably happy, all things considered?	0.61	0.32
9. You enjoy your normal day-to-day activities?	0.30	0.46
10. Been able to concentrate on what you are doing?	0.25	0.44
11. Able to face up to your problems?	0.21	0.41
12. Felt that you are playing an useful part in things	0.17	0.37

GHQ: General Health Questionnaire

significance at 0.01 level. For both female and home residence group of students, negative correlation was observed though not significant statistically.

Discussion

The present study shows that 57 students out of 99 had mean GHQ-12 score above cutoff point 4 indicating significant psychological distress. This finding is consistent with studies in other countries which show the 1st year students as highly susceptible for stress[1,2,13] compared to subsequent years students with minimized level of stress.[17] It is observed that with advancement of the course, students develop copying skills to manage stress better compared to students in the early phase of training.[18]

Most of the studies show academic factors among all the stressors to mainly contribute to stress in medical students.[1,2,13] As academic examinations are found to be the major stressors, emphasis on reduction of academic stress factors and having assessment friendly to psychological health of the students is necessary.[19]

Considering gender differences, there was no significant difference of stress prevalence. Significant difference between male and female students has been observed by other researchers.[2,13] However, no difference between male and female students is also documented by others.[20,21]

In the present study, stress levels were more in students residing at home than students residing at hostel. Higher susceptibility to develop psychological stress and anxiety by medical students living with families was also reported by other study.[22] However, this finding is in contrary to other study which reported higher amount of depression and anxiety in medical students living in dormitory compared to students living with families.[23]

One of the studies reveals that students staying at hostel learn to live independently without any parental guidance and support. Hostel life tends to make students more punctual, social, realistic, and disciplined. Students learn to solve their own problems, thus making them sharper and more confident.[24]

Table 3: Correlation of stress (General Health Questionnaire score) with academic performance of students in different groups

Study groups	*n*	Pearson correlation (r)	*P*-value	Significance
Total	99	0.1415	0.162	No
Male	50	0.259	0.069*	Yes
Female	49	−0.016	0.913	No
Home	55	−0.126	0.344	No
Hostel	44	0.747	<0.0001**	Yes

Correlation is significant at the *0.10 level, **0.01 level (two tailed)

Among all the 12 items assessed by GHQ-12, higher mean score was for two negative items – loss of sleep over worry and feeling of constant strain indicating high prevalence of psychological distress symptoms among the 1st year medical students. The study in Malaysia has also reported similar finding of sleep loss linked to stress.[25]

There was mild degree of positive correlation observed between stress and academic performance of the students but not statistically significant. Another study with similar finding states that moderate stress is desirable for attaining good academic performance by the students.[26] However, other studies report negative correlation between stress and academic achievement.[27,28]

Mean GHQ-12 score and academic performance were higher in male group and home group compared to female and hostel group of students, respectively. Positive correlation was observed for male group ($P < 0.10$) and for hostel group of students with high statistical significance ($P < 0.01$). Negative correlation was observed for female and hostel group of students though not statistically significant. One of the researchers states that stress is essential for the process of learning.[29] Another study claims that students with high resources are able to manage stress due to academic factors better.[30] Thus, some amount of stress is necessary and helps to develop healthy competition essence among students. However, undue severe stress is likely to have an undesirable health effect on the students.[31]

High prevalence of psychological distress in students in spite of regular academic counseling and mentoring sessions done by teachers in the current setup put emphasis on screening of students for negative events in early phase of medical school life. Implementation of new competency-based curriculum and inclusion of foundation course, stress and time management, and communication skills training for future undergraduate medical students are need for the hour.[32]

Conclusions

Mild to moderate stress showed positive correlation with the academic performance of 1st year medical students in this study. However undue stress had adverse effects on mental health of the students. Hence awareness and incorporation of effective stress management interventions in holistic medical education curriculum are a necessity.

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References

1. Miller PM, Surtees PG. Psychological symptoms and their course in first-year medical students as assessed by the interval general health questionnaire (I-GHQ). Br J Psychiatry 1991;159:199-207.
2. Saipanish R. Stress among medical students in a Thai medical school. Med Teach 2003;25:502-6.
3. Yiu V. Supporting the well-being of medical students. CMAJ 2005;172:889-90.
4. Selye H. Stress without Disress. New York: Harper & Row; 1974.
5. Fevre ML, Kolt GS, Matheny J. Eustress, distress and their interpretation in primary and secondary occupational stress management interventions: Which way first? J Manag Psychol 2006;21:547-65.
6. Khan MS, Mahmood S, Badshah A, Ali SU, Jamal Y. Prevalence of depression, anxiety and their associated factors among medical students in Karachi, Pakistan. J Pak Med Assoc 2006;56:583-6.
7. Rosal MC, Ockene IS, Ockene JK, Barrett SV, Ma Y, Hebert JR. A longitudinal study of students' depression at one medical school. Acad Med 1997;72:542-6.
8. Ko SM, Kua EH, Fones CS. Stress and the undergraduates. Singapore Med J 1999;40:627-30.

9. Yousafzai AW, Ahmer S, Syed E, Bhutto N, Iqbal S, Siddiqi MN, *et al*. Well-being of medical students and their awareness on substance misuse: A cross-sectional survey in Pakistan. Ann Gen Psychiatry 2009;8:8.
10. O'Regan P. Students under pressure. World Ir Nurs 2005;13:16-8.
11. Dahlin ME, Runeson B. Burnout and psychiatric morbidity among medical students entering clinical training: A three year prospective questionnaire and interview-based study. BMC Med Educ 2007;7:6.
12. Graham JE, Christian LM, Kiecolt-Glaser JK. Stress, age, and immune function: Toward a lifespan approach. J Behav Med 2006;29:389-400.
13. Guthrie E, Black D, Bagalkote H, Shaw C, Campbell M, Creed F. Psychological stress and burnout in medical students: A five-year prospective longitudinal study. J R Soc Med 1998;91:237-43.
14. Abdulghani HM, AlKanhal AA, Mahmoud ES, Ponnamperuma GG, Alfaris EA. Stress and its effects on medical students: A cross-sectional study at a college of medicine in Saudi Arabia. J Health Popul Nutr 2011;29:516-22.
15. Goodchild ME, Duncan-Jones P. Chronicity and the general health questionnaire. Br J Psychiatry 1985;146:55-61.
16. Goldberg DP, Gater R, Sartorius N, Ustun TB, Piccinelli M, Gureje O, *et al*. The validity of two versions of the GHQ in the WHO study of mental illness in general health care. Psychol Med 1997;27:191-7.
17. Melaku L, Mossie A, Negash A. Stress among medical students and its association with substance use and academic performance. J Biomed Educ 2015;2015:149509.
18. Rosiek A, Rosiek-Kryszewska A, Leksowski L, Leksowski K. Chronic stress and suicidal thinking among medical students. Int J Environ Res Public Health 2016;13:212.
19. Shah M, Hasan S, Malik S, Sreeramareddy CT. Perceived stress, sources and severity of stress among medical undergraduates in a Pakistani medical school. BMC Med Educ 2010;10:2.
20. Sreeramareddy CT, Shankar PR, Binu VS, Mukhopadhyay C, Ray B, Menezes RG. Psychological morbidity, sources of stress and copying strategies among undergraduate medical students of Nepal. BMC Med Educ 2007;7:26.
21. Zaid ZA, Chan SC, Ho JJ. Emotional disorder among medical students in a Malaysian private medical school. Singapore Med J 2007;48:895-9.
22. Liaqat H, Choudry UK, Altaf A, Sauleh JM, Rahman SA, Choudry AK, *et al*. Deranged mental homeostasis in medical students: Evaluation of depression anxiety and stress among home and hostel students. Acta Psychopathol 2017;3:1.
23. Rab F, Mamdou R, Nasir S. Rates of depression and anxiety among female medical students in Pakistan. East Mediterr Health J 2008;14:26-33.
24. Iftikhar A, Ajmal A. A qualitative study investigating the impact of hostel life. Int J Emerg Ment Health Hum Res 2015;17:511-5.
25. Redhwan AA, Sami AR, Karim AJ, Chan R, Zaleha MI. Stress and coping strategies among management and science university students: A qualitative study. Int Med J Malaysia 2009;8:11-6.
26. Rafidah K, Azizah A, Norzaidi MD, Chong SC, Salwani MI, Noraini I. Stress and academic performance: Empirical evidence from university students. Acad Educ Leadersh J 2009;13:37-51.
27. Sanders AE, Lushington K. Effect of perceived stress on student performance in dental school. J Dent Educ 2002;66:75-81.
28. Elias H, Ping WS, Abdullah MC. Stress and academic achievement among undergraduate students in Universiti Putra Malaysia. Procedia Soc Behav Sci 2011;29:646-55.
29. Linn BS, Zeppa R. Stress in junior medical students: Relationship to personality and performance. J Med Educ 1984;59:7-12.
30. Akgun S, Ciarrochi J. Learned resourcefulness moderates the relationship between academic stress and academic performance. Int J Exp Educ Psychol 2003;23:287-94.
31. Rosenthal JM, Okie S. White coat, mood indigo-depression in medical school. N Engl J Med 2005;353:1085-8.
32. Kumar S. Implementation of new curriculum in UG (MBBS): A dream project of medical education technology. Int J Med Sci Educ 2019;6:8-12.

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