

Perceived sources of stress among students of medical, dental and allied sciences, Bhopal city, India

Sudhanshu Saxena

ABSTRACT

Purpose of this study was to identify the perceived sources of stress among undergraduate students of medical, dental, and allied sciences, Bhopal city, India. A cross sectional study was conducted on a sample of 3473 students. Modified version of dental environment stress questionnaire was used to collect data. Anova, student t-test, chi-square test, and spearman's correlation coefficient were used for data analysis. Higher stress levels were reported by medical students. Students of medical, dental, and allied sciences are at the risk for harmful consequences of stress, which may be explained by an underlying towards perfectionism with other pressures.

Key words: Medical, dental and allied sciences, stress; dental environment stress questionnaire.

INTRODUCTION

According to Mechanic, "stress is a discrepancy between the demand impinging on a person, whether these demands be external or internal and the individuals potential responses to these demands".¹

Health care profession is considered a stressful occupation.² Stress in this profession is not just confined to the practice, but is experienced by students within the same academic environment. Studies suggest that high level of stress and psychological morbidity occur in health care professional students.³

Major function of colleges is to socialize their students into professional group.¹ But this process can be a highly discomforting experience.⁴ sources of stress are multi-

dimensional in health care professional education,⁵ including academic and social issues, time concern, classroom interaction, economic issues,^{5,6} information input overload, inadequate feedback regarding performance,⁷ heavy concentration on manual skill,⁶ pervasive negative comments and sexual harassment, and dealing with death and suffering.⁷

Authors of many studies do not advocate a stress free environment which is neither possible nor desirable. Indeed a modicum of stress is required for learning,^{5,7} however too much stress is likely to detract from learning⁵ and may also influence students performance, decision making, caring capabilities.⁸

The fatal outcome of stress experienced by these students has been reported on a range of health indicators.⁹ somatic effects such as fatigue, tension, dizziness, insomnia, tachycardia, and gastrointestinal symptoms have been widely reported,^{4,9} as mood disturbances including irritability, cynicism, and anxiety.⁹ students of this profession show higher level of depression,^{4,9,10} obsessive-compulsive disorders, and interpersonal sensitivity than age matched norms.⁹ as a

Author's Affiliation: *Senior lecturer, Department of Public Health Dentistry, People's College of Dental Sciences and Research Centre, Bhanpur, Bhopal, Madhya Pradesh, India.

Reprint's requests: *Dr. Sudhanshu saxena, Senior lecturer, Department of public health dentistry, People's College of Dental Sciences and Research Centre, Bhanpur, Bhopal, Madhya Pradesh, India

E-mail; dr.sudhanshusaxena@gmail.com

consequence these students may sometime develop maladaptive response such as substance abuse.¹¹ further there is a evidence that high level of stress impairs immune functions, specially students undergoing examinations showed delayed wound healing.⁹

Since stress among students of medical, dental, and allied sciences is associated with cognitive impairment and is detrimental to health, this study was conducted to identify the perceived sources of stress among undergraduate students of medical, dental, and allied sciences, Bhopal city, India. Also, to investigate the specific stressors as related to particular health profession, year of study, gender, and career choice of student.

MATERIALS AND METHODS

Present study was carried out among undergraduate students in two medical, two dental, one ayurvedic, two pharmacy, four nursing colleges of Bhopal city, Madhya Pradesh, India.

Data collection was undertaken from 1st December 2009 to 31st March 2010. Students were invited during class time to complete the modified version of dental environment stress questionnaire (DESQ).^{6,12,13} DESQ was modified to identify and quantify stressors specific to students of medical and allied sciences with slight changes in respect to their profession. To make DESQ applicable to indian background a pilot study was conducted among ten students from each year in all the above mentioned colleges.

Information on gender, age, and year of study were obtained from items in the questionnaire. In addition, students were asked whether selecting their course was by own choice or were forced by parents and other family members or there was no other option. Students were also asked about their "first career choice".

The questionnaire contains thirty nine stress related questions. Students were instructed to rate their responses to these stressors using a four point likert-type scale with 1= "not

stressful", 2= "slightly stressful", 3= "moderately stressful", 4= "highly stressful" as well as fifth possible response of "not applicable". Questions pertaining to clinical training were not administered to non-clinical students. For clarity in presentation, these questions were also grouped into five "stressor domains", living conditions (1-5), personal factors (6-17), educational environment (18-23), academic work (24-29), and clinical factors (30-39).

Participation in this study was voluntary. Informed consent was obtained from participants. Study protocol was approved by the ethical committee of the institution.

All data analysis was done by using spss version 17. Anova followed by tukey post hoc comparisons, student t-test, chi-square test, and spearman's correlation co-efficient were used to compare and assess the relation among different groups. P values <0.05 were considered statistically significant.

RESULTS

Of the total 3473 questionnaires, respondents were 3023, participation rate was 87.04%. Among these 3023 respondents, 1212 were medical, 671 were dental, 805 were nursing, 93 were ayurvedic, and 242 respondents were from pharmacy college. Further 1545 (51.11%) were males and 1478 (48.89%) were females, 2405 (79.56%) joined the profession by interest, 327 (10.81%) were forced by parents and other family members, and for 249 (8.23%) there was no other option.

Age of the study population ranged from 18 to 26 years. There was no significant difference in gender distribution among participants from each professional group & gender distribution and career choice decision.

Year wise comparison among each professional group showed some generalized results like, living conditions were more stressful for first year students. Inadequate time for relaxation was more stressful for final year students. Stress due to academic work was found to be high in the first year, then decreased in second/third year and again

increased in final year. Uncertainty about career was more among final year undergraduate students. Examinations were one of the higher ranked stressor for each year. Stress related to clinical factors was more among the students who enter clinical postings for the first time (second year undergraduate students of medical, ayurvedic, and nursing,

& third year undergraduate students of dental colleges), and for final year students, "shortage of allotted clinical time" was more stressful.

Females showed more stress compare to their counterpart. Stress was less among those who joined profession by interest. There was statistically significant negative correlation between age and stress.

Table I: Response of students for "First career choice".

		FIRST CAREER CHOICE						
		Medical	Dental	Ayurvedic	Homeopathy	Nursing	Pharmacy	Other
Present career	Medical	1109 (96.30%)	0	0	0	0	0	103 (8.50%)
	Dental	274 (40.83%)	356 (51.05%)	0	0	0	0	41 (6.12%)
	Ayurvedic	3 (3.22%)	2 (2.15%)	3 (3.22%)	0	80 (86.02%)	0	5 (5.37%)
	Nursing	148 (18.38%)	90 (11.18%)	36 (1.98%)	7 (0.87%)	626 (77.76%)	7 (0.87%)	82 (10.19%)
	Pharmacy	31 (12.88%)	9 (3.72%)	3 (1.24%)	0	3 (1.24%)	182 (77.21%)	14 (5.79%)

*Engineering, BBA/MBA, CA, IAS/M.P.AS

DISCUSSION

Stress in the present study refers to the reported perceptions of students about stressful events in their academic and personal life. Results of the present study show that medical and dental students have higher levels of stress compare to the students of ayurvedic, nursing, and pharmacy streams. Results are similar to a study conducted among the students of medicine, dentistry, physiotherapy & nursing at the university of Ibadan, which showed that medical & dental students had significantly higher stress scores compare to physiotherapy & nursing students,¹⁴ but in contrast with the studies conducted by Heins et al⁵ and Beck et al who reported higher levels of stress among nursing students than students in other health related disciplines.¹⁵

Female students in this study perceived more stress than males. This finding was similar to many previous studies^{1,6,9,12,16} but in contrast with study conducted by Steward et al,¹⁰ Acharya,¹³ and Moffat et al.¹⁷ our result may reflect the Lloyd and Musser finding that

female may feel inadequate due to minority status, lack of role models, and internalizing criticism.¹⁶ rather, an alternative explanation is that in addition to differing patterns of psychological morbidity, males are simply less expressive of their concerns. Recent research has tended to confirm the social construct of masculinity that men are less expressive of stress and are thus more vulnerable to health risks.⁹

There was a significant difference for stress level between the students who joined profession by interest and other two groups. This showed that who chose by interest were better equipped to deal with stress than other two groups. Higher stress among other two groups may be due to the fact that those students had either a low opinion about that particular profession or its future scope, which in turn could have made them have a pessimistic outlook. This result was consistent with previous studies, where, it was shown that stress for those whose first choice was dentistry, was the lowest when compared to the other two groups.^{6,13}

Table II: Mean scores of perceived sources of stress among professional groups

Sl. No	STRESSOR	MEAN SCORE					SIG DIFF
		(SD)					
		Medical (1)	Dental (2)	Ayurvedic (3)	Nursing (4)	Pharmacy (5)	
1	Moving away from home	2.11 (1.04)	2.04 (0.99)	1.99 (1.01)	2.46 (1.06)	1.72 (0.82)	S 4>3, 2, 5, 1, 3, 2, 1>7
2	Accommodation not appropriate for studying	1.99 (0.90)	2.42 (1.14)	1.89 (0.93)	2.21 (1.00)	1.97 (0.66)	S 4>3, 5, 1, 2>3, 5, 1
3	Lack of home atmosphere	2.13 (1.04)	2.45 (1.07)	2.09 (1.00)	2.69 (1.13)	1.71 (1.85)	S 4>3, 5, 1, 3, 2, 1>5
4	Staying with room mate(s)	1.73 (0.88)	1.65 (0.93)	1.74 (0.92)	1.55 (0.85)	1.97 (0.69)	S 3>4, 5>4, 3, 2, 1 1>4
5	Other problems with accommodation	1.93 (0.92)	2.05 (1.09)	1.98 (0.96)	2.12 (1.07)	2.22 (0.77)	S 4>1, 5>3, 1
6	Difficulty in making friends	1.43 (0.78)	1.63 (0.93)	1.54 (0.86)	1.59 (0.93)	1.62 (0.83)	S 4, 5>1
7	Financial problems	2.06 (1.04)	2.41 (1.17)	1.84 (0.97)	2.33 (1.16)	1.92 (0.81)	S 4, 2>3, 5, 1, 1>5
8	Relationship with opposite sex	1.69 (0.92)	1.82 (1.96)	1.80 (1.00)	1.68 (1.01)	2.04 (0.74)	S 5>4, 3, 1
9	Personal physical health	1.74 (0.93)	2.01 (1.07)	1.72 (0.87)	1.74 (1.00)	1.46 (0.69)	S 4, 3>5, 2, 1>5
10	Necessity to postpone marriage	1.03 (1.00)	1.25 (1.37)	1.57 (0.84)	1.74 (1.08)	1.48 (0.71)	S 4>5, 2>4, 3, 5
11	Necessity to postpone children	0.96 (0.98)	0.94 (0.67)	0.65 (0.92)	0.92 (1.15)	0.59 (0.74)	S 1, 4>5
12	Social demands	2.45 (1.01)	2.32 (1.13)	2.10 (1.00)	2.19 (1.10)	2.27 (0.77)	S 8>1, 3, 7
13	Conflict with spouse	0.98	0.14	0.92	0.13	0.56	S

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14	Inadequate time for relaxation	2.92 (1.00)	2.30 (1.11)	2.49 (1.04)	2.45 (1.14)	2.83 (0.91)	S 5>2,3,4. 1>2,3,4
15	Having reduced holidays	3.15 (0.97)	2.58 (1.26)	2.78 (1.13)	2.87 (1.20)	2.69 (1.01)	S 4>5. 1>2,3,4,5
16	Fear of going out if do something wrong	1.90 (0.96)	2.79 (1.13)	2.09 (1.03)	2.49 (1.13)	1.79 (0.71)	S 4>1,3,5. 3>5. 2>1,3,5
17	Dependencies (alcohol, smoking...etc.)	1.87 (0.94)	2.38 (1.36)	1.89 (1.00)	2.01 (1.17)	1.62 (0.66)	S 4,3>5. 2>1,3,5. 1>5
18	Expectation versus reality of dental college	2.50 (1.11)	2.54 (1.10)	2.41 (1.07)	2.32 (1.11)	2.14 (0.98)	S 3,4>5. 2>5. 1>4,5
19	Approachability of the staff	2.25 (1.06)	2.05 (1.15)	2.34 (1.08)	2.06 (1.07)	2.01 (0.94)	S 1,3>4,5.
20	Criticism about work	2.47 (0.99)	2.16 (1.13)	2.38 (1.05)	2.27 (1.08)	2.00 (0.80)	S 3,4>5
21	Rules/Regulation of the college	2.70 (1.02)	2.27 (1.13)	2.33 (1.14)	2.37 (1.18)	2.15 (0.81)	S 4>5. 1>2,3,4,5
22	Discrimination by religion...etc.	1.98 (1.10)	1.88 (1.16)	1.88 (1.00)	1.85 (1.05)	1.38 (0.73)	S 4>5. 1,2,3>5
23	Lack of input in decision making process	2.25 (0.97)	2.12 (0.04)	2.18 (0.96)	2.22 (1.04)	2.41 (0.87)	S 5>1,2,3
24	Amount of assigned coursework	2.83 (1.04)	2.12 (1.01)	2.37 (1.03)	2.33 (1.09)	2.50 (0.90)	S 5>2. 1>2,3,4,5
25	Difficulty of coursework	2.62 (0.99)	2.28 (1.02)	2.23 (1.02)	2.34 (1.08)	1.90 (0.84)	S 4>5. 2,3>5. 1>2,3,4,5
26	Fear of being unable to catch up if falling behind	2.62 (1.08)	2.48 (1.15)	2.27 (1.05)	2.26 (1.05)	2.13 (0.77)	S 4>5. 2>5. 1>3,4,5

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27	Competition for grades	2.44 (1.13)	2.60 (1.92)	2.46 (0.99)	2.26 (1.11)	2.15 (0.73)	S 3>5, 3>5, 1,2>4,5
28	Uncertainty about career	2.42 (1.11)	2.37 (1.19)	2.36 (1.08)	2.20 (1.13)	2.28 (0.98)	S 1>4,5
29	Examinations	3.24 (0.96)	2.92 (1.33)	3.44 (0.86)	2.67 (1.15)	3.41 (0.80)	S 3,5>1,2,4, 1>2,4
30	Concerns about manual dexterity	1.97 (1.01)	2.06 (0.88)	2.15 (0.98)	1.84 (0.88)	NA	S 3>4,1
31	Transition from pre clinical to clinical year	2.11 (1.08)	2.39 (0.97)	2.19 (0.92)	2.13 (0.92)	NA	NS
32	Learning precision & manual skills	2.00 (0.97)	1.85 (0.99)	1.92 (0.83)	2.03 (0.92)	NA	NS
33	Completing clinical requirements	2.37 (1.07)	2.12 (0.08)	2.79 (0.81)	2.11 (1.01)	NA	S, 3>1,2,4, 1>4
34	Difficulty in managing difficult cases	2.30 (1.05)	2.25 (0.95)	2.36 (0.91)	2.41 (0.95)	NA	NS
35	Differences in opinion between staff concerning treatments	2.55 (0.99)	2.33 (1.07)	2.39 (1.06)	2.12 (0.98)	NA	S 3>4, 1>3
36	Shortage of allotted clinical time	2.64 (1.05)	2.52 (1.07)	3.00 (1.06)	2.14 (0.98)	NA	S 1,2,3>4
37	Non cooperative patient	2.71 (1.00)	2.05 (0.99)	2.51 (0.66)	2.16 (1.06)	NA	S 3>2,4, 1>2,3,4
38	Lack of confidence in decision making	2.15 (0.99)	2.33 (0.96)	2.58 (0.66)	2.26 (1.04)	NA	S 3>4,1
39	Dealing with Death/terminally ill patient	3.00 (1.82)	NA	2.63 (1.17)	2.61 (1.12)	NA	S 1>4,3

S = Significant difference, NS = Not significant, NA = Not applicable

Table III: Domains and mean scores according to different professional groups

Sl No.	DOMAIN	MEAN SCORE (SD)					SIG. DIFF.
		Medical (1)	Dental (2)	Ayurvedic (3)	Nursing (4)	Pharmacy (5)	
1	Living conditions	1.99 (0.65)	2.09 (0.67)	1.94 (0.63)	2.20 (0.57)	1.92 (0.47)	S 4>1,3,5. 2>5
2	Personal factors	2.16 (0.51)	2.19 (0.61)	2.03 (0.52)	2.15 (0.50)	1.99 (0.37)	S 4>3,5. 2>3,5. 1>5
3	Educational environment	2.37 (0.70)	2.16 (0.73)	2.27 (0.71)	2.19 (0.63)	2.03 (0.51)	S 4,3>5. 1>2,3,4
4	Academic work	2.70 (0.71)	2.45 (0.75)	2.53 (0.67)	2.35 (0.63)	2.39 (0.40)	S 3>4,5. 1>2,3,4,5
5	Clinical work	2.19 (0.61)	2.38 (0.61)	2.18 (0.34)	2.18 (0.51)	NA	NS

Table IV: Top three stressors for each professional group

PROFESSION	STRESSOR
Medical	1. Examinations 2. Having reduced holidays 3. Dealing with death or terminally ill patient
Dental	1. Examinations 2. Fear of going out if do something wrong 3. Competition for grades
Ayurvedic	1. Examinations 2. Shortage of allotted clinical time 3. Completing clinical requirements (physical exam. of patient, talking with patients especially psychiatric patients...etc.)
Nursing	1. Having reduced holidays 2. Lack of home atmosphere 3. Examinations
Pharmacy	1. Examinations 2. Inadequate time for relaxation 3. Having reduced holidays

The present study shows that living conditions are more stressful for first year students, which may be due to their interaction with new environment that is different in so many aspects from their home. This is in disagreement with study conducted by Naidu et al.¹²

The "inadequate time for relaxation", which is essential for stress management, is the natural byproduct. It is one of the higher rank

stressors in present study as well as many previous ones.^{5,7,14,18}

Relationship between faculty and students has been consistently cited in literatures as a source of stress.^{9,16}

Stress due to academic work was found to be high in the first year, then decreased in second/third year and again increased in final year. This may be due to the sudden change in curriculum and subjects which the new students find difficult to cope with

initially. The increase in stress at final year is due to a lot of clinical work which leaves less time for academics.¹³

Examinations consistently reported as the highest ranking stressors both in current sample and internationally.^{2,5,9,12,13,19,20} Heins et al reported that "examination too infrequently" resulted in more stress than did the "examination too frequently".⁵

Uncertainty about career was more among the final year students, as they are near to complete their graduation. This was in agreement with previous studies conducted by Lamis⁶ and Acharya.¹³

Stress related to clinical factors was more among the students who enter clinical postings for the first time as they are at the stage of adjusting to the clinical course. These findings were in disagreement with the study conducted by Acharya.¹³ at the same time final year students who might be more focused on completing their clinical requirements, found shortage of allotted clinical time and experience higher stress than others. This result was same as reported by Naidu et al.¹² results of previous studies show that dealing with psychiatric patients²¹ & with death or terminally ill patients²² are very stressful for the students.

Our study shows there is decrease in stress as age increases. This may be due to the fact that, as age increases persons ability to cope up with stress increases.²³

CONCLUSION

Considering the evidence and findings of the present study, medical and dental students reported higher stress levels and pharmacy being the least than other student groups. We suggest that this may be explained by an underlying towards perfectionism along with managing the patients. Hence, stress among medical students is even more compared to that of dental students as they deal with life and death of patients. At the same time level of stress is low among pharmacy students as they never come across with patients.

RECOMMENDATIONS

Results of this study suggest that it is incumbent on educators and administrators to implement effective student support services, such as academic advising, counseling, and stress management courses irrespective of their professions. Interaction between students and staff with a student friendly approach should be encouraged. Also, parents should be counseled during their children's pre-university period about the ill effects of pressuring them to join an educational program against their wishes.

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