

Original Article

PERCEIVED SOURCES OF STRESS AMONG BIOALLIED SCIENCE STUDENTS OF SOUTH INDIA

MYTHRI H., SUDHANSHU SAXENA, ANANDA S. R., CHANDU G. N.

¹Department of Public Health Dentistry, Sri Siddhartha Dental College, Tumkur 572101. India, ²Department of Preventive & Community Dentistry, Hitkarini dental college, Jabalpur. India, Department of Community Dentistry, Coorg institute of dental sciences, India. Email; dr.sudhanshusaxena@gmail.com

Received: 05 Jul 2014 Revised and Accepted: 06 Aug 2014

ABSTRACT

Health care profession is considered a stressful occupation. Stress in these professions is not just confined to their practice, but is experienced by students within the same academic environment. Stress among students of bioallied sciences (Dental, Nursing, Pharmacy & Ayurvedic) is associated with cognitive impairment and is detrimental to health.

Objective: To know the sources of stress among bioallied science students.

Methods: A cross sectional study design using a modified version of Dental Environment Stress questionnaire (DESQ) was used to assess the stress among Dental, Pharmacy, Ayurvedic and Nursing students.

Results: Dental students showed higher stress domains, followed by Nursing, Pharmacy students being the least.

Conclusion: The findings of this study do not support that student of dental, & allied sciences experience high stress levels overall but, they have important issues and stress level vary according to that for each profession.

Keywords: Bioallied students, Stress, Career choice, Domains.

INTRODUCTION

According to Mechanic, "Stress is a discrepancy between the demand impinging on a person, whether these demands are external or internal and the individual's potential responses to these demands". [1] It may be defined as "a lack of congruence between important aspects of the person and her perceived environment". [2]

Health care profession (medical, dental & allied sciences like nursing, ayurvedic & pharmacy) is considered a stressful occupation. [3] Stress in these professions is not just confined to their 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. [4] Major function of colleges is to socialize their students into professional group. [1] But this process can be a highly discomforting experience. Sources of stress are multi dimensional in health care professional education[5], including academic and social issues, time concern, classroom interaction, economic issues[5], information, input overload, inadequate feedback regarding performance, heavy concentration on manual skill, pervasive negative comments and sexual harassment and dealing with death and suffering. [6] Too much stress is likely to detract from learning [5] and may also influence student's performance, decision making, and caring capabilities. The fatal outcome of stress experienced by these students has been reported on a range of health indicators. [7] Somatic effects such as fatigue, tension, dizziness, insomnia, tachycardia, and gastrointestinal symptoms have been widely reported [8], as mood disturbances including irritability, cynicism [7], and anxiety. Students of this profession show higher level of depression [8], obsessive-compulsive disorders, and interpersonal sensitivity than age matched norms. [7] Stress among students of allied sciences is associated with cognitive impairment and is detrimental to health.

Aim

To identify the perceived sources of stress among students of bio allied sciences

Objective

To investigate the specific stressors as related to particular health profession and career choice of student.

MATERIALS AND METHODS

The study was carried out in bioallied science (one dental, one ayurvedic, one pharmacy, four nursing) colleges who permitted to conduct the study in Davangere, affiliated with the Rajiv Gandhi University of Health Sciences, Bangalore, Karnataka state, India.

The under graduate course in ayurvedic is of four and half years, and in dentistry is of four years duration. After that there is one year rotatory internship programme. Where as in pharmacy it is of four years and nursing is of three years course. In all the streams, post graduate course is of three years.

All subjects who were present on the day of the study were enrolled i.e.,830 from dental, 935 from nursing, 196 from ayurvedic & 330 from pharmacy colleges were included in the study making total sample size of 2261. The participants were asked to give the informed consent which was approved by local Ethics Committee on Human Research. Students were invited during class time to complete the modified version of Dental Environment Stress questionnaire (DESQ)[6,7,8,9]. DESQ was initially used to assess the stress levels among dental students. It contains thirty eight stress related questions. Students were instructed to rate their responses to these stressors using a five point Likert-type scale. 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 (30-38).

A pilot study was conducted among ten students from each year in all the colleges, and these students were not included in the main study. DESQ was modified according to other professions like questions pertaining to clinical training were not administered to non-clinical students & the internal consistency of the questionnaire was tested using Cronbach's Alpha.(0.78)

Participation in this study was voluntary, and all participants remained anonymous. Information on gender, age, and year of study were obtained. 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".

All data analysis was done by using SPSS. 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 2261 participants, 1811 responded to the questionnaire & overall participation rate was 80.1%. Among 1811, 671 were Dental, 805 were Nursing, 93 were Ayurvedic, and 242 respondents were from Pharmacy college, 1510 (83.43%) were undergraduates aged between 18-26years and 301 (16.57%) were post graduate students aged between 23-30years.

Table 1 shows 978 (54%) were males and 833 (46%) were females, 1123 (62%) joined the profession by interest, 436 (24.1%) were forced by parents and other family members, and 252 (13.9%) for no other option. 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 undergraduate 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 year and again increased in final year.

Table 1: Response of students for "first career choice"

Students	Courses						
	Medical	Dental	Ayurvedic	Homeopathy	Nursing	Pharmacy	Other*
Dental	274 (40.8%)	356 (53.0%)	0	0	0	0	41 (6.12%)
Ayurvedic	3 (3.22%)	2 (2.15%)	3 (3.22%)	0	80 (86.0%)	0	5 (5.37%)
Nursing	148 (18.4%)	90 (11.2%)	16 (1.98%)	7 (0.87%)	626 (77.8%)	7 (0.87%)	82 (10.2%)
Pharmacy	31 (12.8%)	9 (3.72%)	3 (1.24%)	0	3 (1.24%)	182 (77.21%)	14 (5.79%)

*Engineering, BBA/MBA, CA, IAS/KAS

Table 2: Domains and mean scores according to different professional groups

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

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

Table 3: Top five stressors for each professional group

Profession	Stressor
Dental	1. Examinations
	2. Fear of going out if do something wrong
	3. Competition for grades
	4. Having reduced holidays
	5. Expectation versus reality of dental college
Ayurvedic	1. Examinations
	2. Shortage of allotted clinical time
	3. Completing clinical requirements (physical exam. of patient, talking with patients especially psychiatric patients...etc.)
	4. Having reduced holidays
	5. Lack of confidence in own clinical decision making
Nursing	1. Having reduced holidays
	2. Lack of home atmosphere
	3. Examinations
	4. Dealing with death or terminally ill patient
	5. Fear of going out if do something wrong
Pharmacy	1. Examinations
	2. Inadequate time for relaxation
	3. Having reduced holidays
	4. Amount of assigned coursework
	5. Lack of input in decision making process in the college

Table 4: Correlation of perceived sources of stress with career choice

S. No	Stressor	Career choice mean score (SD)			Sig dif	Correlation	Sig
		1	2	3			
1	Moving away from home	2.02 (1.00)	2.06 (1.00)	2.09 (1.04)	NS	-0.26	S
2	Accommodation is not appropriate environment for studying	2.0 (0.83)	2.22 (0.92)	2.21 (0.98)	S	-0.04	S
3	Lack of home atmosphere	2.08 (1.07)	2.19 (1.03)	2.16 (1.09)	NS	-0.27	S
4	Staying with flat mate(s)/room mate(s)	1.76 (0.79)	1.97 (0.87)	1.78 (0.95)	S	-0.07	S
5	Other problems with accommodation like lack of recreation	2.12 (0.88)	2.12 (1.03)	1.99 (1.02)	NS	-0.21	S
6	Difficulty in making friends	1.56 (0.85)	1.63 (0.86)	1.56 (0.88)	NS	-0.10	S
7	Financial problems (fees, clothes, food...etc.)	2.00 (0.97)	2.37 (0.99)	2.20 (1.13)	S	0.04	S
8	Relationship with opposite sex	1.84 (0.85)	2.10 (1.03)	1.84 (1.00)	S	-0.05	S
9	Personal physical health (chronic disease...etc.)	1.56 (0.83)	1.88 (0.94)	1.85 (1.00)	S	-0.008	NS
10	Necessity to postpone marriage	1.55 (0.84)	1.09 (0.97)	2.07 (1.05)	S	0.27	S
11	Necessity to postpone children	1.70 (0.94)	1.92 (1.06)	2.17 (1.16)	S	0.09	S
12	Social demands (family & society expectations)	2.22 (0.93)	2.50 (0.96)	2.99 (1.03)	S	0.10	S
13	Conflict with spouse/mate over career development	1.83 (0.95)	1.99 (1.00)	2.21 (1.12)	S	-0.10	S
14	Inadequate time for relaxation	2.66 (1.03)	2.87 (1.00)	2.90 (1.02)	S	0.09	S
15	Having reduced holidays	2.75 (1.10)	3.16 (0.93)	3.18 (0.93)	S	-0.06	S
16	Fear of going out if do something wrong	2.01 (0.96)	2.23 (0.99)	2.13 (1.06)	S	-0.23	S
17	Dependencies(alcohol, smoking, drugs...etc.)	1.70 (0.87)	2.08 (0.93)	1.98 (0.99)	S	-0.022	NS
18	Expectation versus reality of dental college	2.24 (1.04)	2.50 (1.09)	2.56 (1.14)	S	-0.17	S
19	Communication & approachability of the staff	2.07 (1.01)	2.21 (1.02)	2.28 (1.07)	S	-0.06	S
20	Receiving criticism about academic or clinical work	2.12 (0.94)	2.57 (0.95)	2.54 (1.01)	S	-0.00	NS
21	Rules & regulation of the college	2.25 (1.00)	2.71 (0.99)	2.78 (1.04)	S	-0.004	NS
22	Discrimination by gender, religion, social class, colour	1.67 (0.97)	1.76 (0.99)	1.25 (1.09)	S	-0.010	NS
23	Lack of input in decision making process in the college	2.30 (0.94)	2.31 (0.98)	2.31 (1.04)	NS	0.09	S
24	Amount of assigned coursework	2.43 (0.98)	2.70 (1.13)	2.89 (1.03)	S	0.61	S
25	Difficulty of coursework	2.11 (0.96)	2.63 (1.08)	2.63 (1.00)	S	-0.022	NS
26	Fear of being unable to catch up if falling behind	2.20 (0.93)	2.61 (1.00)	2.69 (1.10)	S	0.77	S
27	Competition for grades	2.24 (0.94)	2.32 (1.04)	2.53 (1.18)	S	-0.12	S
28	Uncertainty about career (employment, PG course, etc.)	2.23 (1.03)	2.59 (1.12)	2.55 (1.18)	S	0.05	S
29	Examinations	3.15 (1.00)	3.35 (0.92)	3.22 (1.02)	S	0.05	S
30	Concerns about manual dexterity	2.05 (0.97)	1.98 (0.95)	1.97 (1.01)	NS	-0.23	S
31	Transition from pre clinical to clinical year	2.16 (0.94)	2.23 (1.04)	2.16 (1.08)	NS	-0.204	S
32	Learning precision & manual skills	1.94 (0.86)	2.02 (0.95)	2.09 (1.05)	NS	-0.26	S
33	Completing clinical requirements	2.54 (0.95)	2.22 (1.04)	2.41 (1.12)	S	-0.131	S
34	Difficulty in managing difficult cases	2.38 (0.91)	2.21 (1.11)	2.28 (1.14)	S	-0.24	S
35	Differences in opinion between the clinical staff concerning treatments	2.31 (1.03)	2.58 (1.00)	2.55 (1.05)	S	-0.07	S
36	Shortage of allotted clinical time	2.70 (1.02)	2.51 (1.06)	2.69 (1.12)	S	-0.02	NS
37	Lack of co-operation by patient	2.41 (0.85)	2.63 (0.97)	2.71 (1.00)	S	0.13	S
38	Lack of confidence in own clinical decision making	2.38 (0.86)	2.56 (0.93)	2.21 (0.99)	S	-0.11	S
39	Dealing with death or terminally ill patient	2.87 (0.96)	2.85 (0.98)	2.73 (1.14)	NS	-0.110	S
	Overall Mean	2.14 (0.56)	2.35 (0.59)	2.37 (0.69)	S	-0.101	S

S = Significant difference, NS = Not significant

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 and for final year students, "shortage of allotted clinical time" was more stressful. Table 2 shows Stressor domains and mean scores according to different professional groups. Difference was significant for "Living conditions", "Personal factors" "Educational environment" and for "Academic work". Table 3 shows Top five stressors for different professional groups. Examinations were on the top for Dental, Ayurvedic and Pharmacy students where as for nursing students it was "having reduced holidays".

DISCUSSION

Stress is not an entity which can be measured directly and so in the present study, it is assessed by perceptions of students about stressful events in their academic and personal life.

Present study showed that dental students have higher levels of stress compare to the students of ayurvedic, nursing, and pharmacy streams. Results were 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 [9], but in contrast with the studies conducted by Heins M et al [5] and Beck DL et al [10], who reported higher levels of stress among nursing students than students in other health related disciplines. [10] The present study do not support that dental & allied students experience high stress levels overall but highlights that they have important specific issues and stress level will vary according to that.

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. [11]

The present study shows that living conditions are more stressful for first year undergraduate 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 Rahul S. Naidu et al. [12] Stress due to financial concern was low among the undergraduates as compared to postgraduates. This can be due to the fact that many parents finance their children's education at undergraduate level [13], but postgraduates are at the age that social demands pressurize them to earn. Financial issues affect the life in other ways also, like marriage and children. In a study conducted by Moore J et al [14], 42% of the participants (house officers) stated that their student loan debt had influenced their decision whether to have children or not.

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. [5,9] Relationship between faculty and students has been consistently cited in literatures as a source of stress. [7,15]

Studies have shown high rate of sexual harassment & pervasive negative comments, especially for female candidate in medical profession. Residents and attending physicians were cited most frequently as source of this mistreatment. In a study one fourth of the participants reported that they would have chosen a different profession, if they had known in advance about the extent of mistreatment they would experience.

Stress due to academic work was found to be high in the first year, then decreased in second 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. This result was similar with the study conducted by S Acharya et al. [13]

Examinations consistently reported as the highest ranking stressors both in current sample and internationally. [2,5,7] Heins et al [5] reported that "examination too infrequently" resulted in more stress than did the "examination too frequently". In a study conducted by Steward SM et al [16], results showed that academically less successful students reported somewhat higher levels of stress.

Uncertainty about career was more among undergraduates than postgraduates, as postgraduates feel that after post graduation career is more secure. Among the undergraduates this uncertainty is more among the final year students, as they are near to complete their graduation. This was in agreement with previous studies conducted by R D. Lamis [11] and S Acharya et al. [13]

Stress related to clinical factors was more among the students who enter clinical postings for the first time (2nd/3rd year) as they are at the stage of adjusting to the clinical course. These findings were in agreement with previous studies [17,18], but in disagreement with the study conducted by S Acharya et al. [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 R S. Naidu et al [12,19]. Results of previous studies show that dealing with psychiatric patients [5] & with death or terminally ill patients [5] are very stressful for the students.

Our study shows there is decrease in stress as age increases. This may be due to the facts that, as age increases person's ability to cope up with stress increase.

CONCLUSION

Considering the evidence and findings of the present study dental students reported higher stress levels followed by nursing & ayurvedic. Pharmacy being the least compared to other groups may be explained by an underlying towards perfectionism along with managing patients in others.

Typically students who join college as high achievers will have an expectation of excellence. Once immersed in such environment where academic excellence is the norm, their competitive perfectionism will emerge. [18,19] Clinical determinants of success may add further to this performance pressure. Thus dental and nursing students especially in clinical years compared to others, may be culturally or socially predisposed to forming unrealistic expectation of their performance leading to stress.

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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