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A comparative study of stress among medical and dental students

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ABSTRACT

Background: Many researches in the past have proved that medical students experience elevated level of stress throughout their medical school life. **Aims and Objective:** The aim of the study is to study the prevalence and degree of stress among medical and dental students, find out the various stressors among them and the association of stress with various sociodemographic variables. **Materials and Methods:** A cross-sectional study was conducted among 159 medical and dental students of first and second year in Kist medical college and hospital. 81 medical and 78 dental students participated in the study. General Health Questionnaire (GHQ-12) and Medical students stress Questionnaire (MSSQ-40) was used. Statistical analysis was done by using SPSS version 25. Chisquare test was done to find the association of stress with various factors and to compare the degree of stress between medical and dental students. **Results:** Among 159 medical and dental students, 109 students (68.6%) were found to have stress. 48 out of 81 (59.3%) were medical students and 61out of 78 (78.2%) were dental students. Moderate stress was observed in 50/81(61.7%) medical students and 38/78 (48.7%) dental students. Similarly, high stress was observed in 10/81(12.3%) medical students and 11/78 (14.1%) dental students. Difference in the degree of stress between dental and medical students was not statistically significant (p value >.05). Academic related stress was the major source of stress in both medical and dental students. Gender, accommodation and motivation for study were found to be significantly associated with stress. **Conclusions:** The first two years of medical and dental students is stressful with academic related stress being the most prevalent stressor. Prevalence of stress was found to be more in dental students and the difference in the degree of stress between medical and dental students was not statistically significant.

Key words: Medical Education; Dental Education; Stress; Stressors

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INTRODUCTION

Stress is a result of certain external physical or mental factors that affect an individual's physical and psychological well-being.[1]

Various professions have their own level of stress. It has been proved through various researches that medical students experience elevated stress levels throughout their medical school life.[2] Causes may vary from their interpersonal problems to their course overload to their uncertainties of future career prospects.[3] Excessive stress can lead to psychological problems like depression and anxiety.[4] Previous studies have shown presence of high levels of stress leading to serious stress-related disorders like depression in undergraduate students of medical schools.[5] It is not just the undergraduate period but the stress might continue during the internship, postgraduate period and during the whole life as a physician.[6] If the students who are susceptible to stress are identified in the early phase of medical education and essential support is provided, it can lessen the negative consequences of stress in future.[7]

Only few studies have been conducted in Nepal to study the prevalence and degree of stress among medical and dental students.[8,9] So this study is focused on prevalence and degree of stress among dental and medical students.

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It also aims to find out the potential stressors in these two groups and association of stress with various factors.

MATERIALS AND METHODS

Data was collected among first year and second year medical and dental students (N=159) by using self-administered questionnaire after getting clearance from institutional ethical committee. The sample size was calculated by using a formula for known population with 95% confidence interval and 5% margin of error. The known population in our study was first and second year medical and dental students. The study enrolled 159 students out of which 81 were medical and 78 were dental students. General Health Questionnaire with 12 items (GHQ-12)[10] and Medical Students Stress Questionnaire with 40 items (MSSQ-40)[11] were used. Students were selected by simple random sampling and verbal consent was taken from students before administering questionnaire. The students were told about the objective of the study and were well instructed for completing the questionnaire within 20 minutes. They were asked to respond genuinely and were assured of confidentiality and anonymity as well. Demographic information was noted which consisted of age, address, gender, accommodation, academic performance in recent exam, motivation for studying medicine and dentistry etc.

General Health questionnaire (GHQ-12) is a tool developed in 1970 by Sir David Goldberg and Paul Williams which helps in screening psychiatric problems such as stress. The items in the questionnaire represent 12 manifestations of stress and students were asked to rate presence of each of these manifestations in themselves during the past six months. The study participant's responds were noted by choosing one from four typical responses: "not at all", "no more than usual", "rather more than usual", and "much more than usual". A binary scoring method (0-0-1-1) is used to evaluate responses. Total scores of 4 and above were considered to be positive for stress.[10]

The MSSQ-40 is a rating instrument developed in a medical school in Malaysia and validated to measure stress and its sources within students. It consists of 40 items collectively addressing six domains of stressors.[11]

1. Academic-related stressors, with items 'Tests/ examinations', 'Getting poor marks', 'Large amount of content to be learnt', and 'Having difficulty understanding the content'.
2. Intrapersonal and interpersonal-related stressors: with items like 'Conflict with other students', 'Verbal or physical abuse by teachers', and 'Conflict with personnel'.
3. Teaching and learning related stressors, with items like 'Lack of guidance from the teacher'. 'Uncertainty of what is expected of me', and 'Lack of recognition for work done'.
4. Social related stressors.
5. Drive and desire related stressors which consist of items like unwillingness to study medicine, family responsibilities etc.

The MSSQ is scored by assigning a value of 0-4 for each of the respective responses; A response of 'causing no stress at all would be scored as 0 and causing severe stresses would be scored as 4. Mean score of 0.01 to 1.00 - indicate mild stress, 1.01 to 2.00- moderate stress, 2.01 to 3.00- high stress and 3.01 to 4.00- severe stress. Mild stress means very little stress or insignificant stress, moderate stress signifies reasonable stress and severe and high stress signifies emotional disturbance with or without compromising daily activities.

Statistical analysis

The collected data was entered and analyzed using SPSS version 25.0 software. Chi square test was done to find the association of stress with different variables and to compare the degree of stress between medical and dental students. P value >.05 was considered to be significant.

RESULTS

Among 159 medical and dental students, 109 students (68.6%) were found to have stress according to cut off point of General Health questionnaire (GHQ) as shown in Table 1. Among these 48 (59.3%) were MBBS students and 61(78.2%) were BDS students. Similarly, among 159 students, 64 were males and 95 were females. 75.8% of females and 57.8% of males were found to be under stress. 55.3% of students were under moderate stress as shown in Table 2. Only 13.2% of total students were found to have high stress and not much difference (p value >.05) was seen in degree of stress among males and females as shown in Table 2. Though a greater number of dental students was found to be under stress, moderate stress was found to be more in medical students. It was observed among 61.7% of medical students while it was only 48.7% among dental students but it was not statistically significant (p value >.05). Surprisingly in both medical and dental students, students in their second year reported to have more stress (MBBS 81.6% and BDS 83.3%). Nobody was found to be under severe stress in both medical and dental students on MSSQ stress level.

According to MSSQ, among six stressors domain, academic related stress was the major source of stress in both medical and dental students as all medical and dental students have some degree of academic stress (Table 3 and Table 4). But 81.1% (129/159) of the

Table 1: Sociodemographic variables and distribution of stress

Sociodemographic variables		Total		Presence of Stress			
		N	%	Yes		No	
				N	%	N	%
Gender	Male	64	40.3	37	57.8	27	42.2
	Female	95	59.7	72	75.8	23	24.2
Stream	MBBS	81	50.9	48	59.3	33	40.7
	BDS	78	49.1	61	78.2	17	21.8
Year	MBBS 1st	43	27.04	17	39.5	26	60.5
	MBBS 2nd	38	23.89	31	81.6	7	18.4
	BDS 1st	36	22.64	26	72.2	10	27.8
	BDS 2nd	42	26.41	35	83.3	7	16.7
Accommodation	Hostel& Rented homes	81	50.9	45	55.5	36	44.5
	Parents' house	78	49.05	64	82	14	17.9

Table 2: Severity of stress based on MSSQ

	Total	Male	Female	Male & Female	MBBS	BDS	MBBS& BDS
	(N=159)	(N=64)	(N=95)	p value	(N=81)	(N=78)	p value
Mild stress	50 (31.4)	21 (42)	29 (58)	0.90	21 (25.9)	29 (37.2)	0.09
Moderate stress	88 (55.3)	36 (56.3)	52 (54.7)	0.85	50 (61.7)	38 (48.7)	0.17
High stress	21 (13.2)	7 (10.9)	14 (14.7)	0.40	10 (12.3)	11 (14.1)	0.74

Table 3: Different stressors domain as a source of stress and severity of stress among medical students based on MSSQ (n=81)

Stressors Domain	Severity of stress			
	Mild	Moderate	High	Severe
	N (%)	N (%)	N (%)	N (%)
Academic related stressors (ARS)	17 (21)	42 (51.9)	21 (25.9)	1 (1.2)
Group activities related stress (GARS)	35 (43.2)	33 (40.7)	12 (14.8)	1(1.2)
Social related stressors (SRS)	38 (46.9)	39 (48.1)	3 (3.7)	1 (1.2)
Interpersonal related stressors (IRS)	52 (64.2)	21 (25.9)	6 (7.4)	2 (2.5)
Desire and drive related stressors (DRS)	50 (61.7)	26 (32.1)	5 (6.2)	0
Teaching and learning relatedstressors (TLRS)	36 (44.4)	28 (34.6)	16 (19.8)	1 (1.2)

Table 4: Different stressors domain as a source of stress and severity of stress among dental students based on MSSQ (n=78)

Stressors Domain	Severity of stress			
	Mild	Moderate	High	Severe
	N (%)	N (%)	N (%)	N (%)
Academic related stressors (ARS)	13 (16.7)	35 (44.9)	25(32.1)	5 (6.4)
Group activities related stress (GARS)	32 (41)	34 (43.6)	11(14.1)	1 (1.3)
Interpersonal related stressors (IRS)	51 (65.4)	18 (23.1)	9 (11.5)	0
Desire and drive related stressors (DRS)	59 (75.6)	15 (19.2)	3 (3.8)	1 (1.3)
Teaching and learning related stressors (TLRS)	35 (44.9)	25 (32.1)	13(16.7)	2 (2.6)
Social related stressor	39 (50)	23(29.48)	8 (10.3)	1 (1.3)

students were found to be having major academic related stress which includes moderate, high and severe stress. Among medical students, 51.9% (42/81) had moderate stress, 25.9% (21/81) had high stress and only 1.2% (1/81) had severe academic related stress. Similarly, in dental students 35/78 (44.9%) had moderate academic stress, 25/78 (32.1%) had high academic stress and 5/78 (6.4%) had severe academic stress. In both medical and dental students, group activities related stress (GARS) was found to be second source of stress including moderate, high and severe stress (56.7% and 58.9% respectively) followed by teaching and learning related stress (TLRS) as depicted in table 3 and table 4. So the major source of stress was almost similar in both MBBS and BDS students with slight variance.

Significant association was found between stress and gender as more percentage of females were found to be under stress than males (p value=.01) as depicted in Table 5. In our study, students who were living at parents' home were found to be more stressed than students living in hostel (p value=.003). Most of the students 115/159 (72.3%) were found to be self-motivated to learn medicine and dentistry rather than under parents' pressure. 72/115 (62.6%) of those were found to be under stress whereas 86.9 % of those who came under parents' pressure were found to be stressed (p value=0.03).

So, there was significant association between stress and motivation for studying medicine or dentistry. We tried to find if students do any sort of substance abuse

Table 5: Association of stress with various factors

Sociodemographic variables		Total	Stress		
		N	N	%	p value
Gender	Male	64	37	57.8	0.01
	Female	95	72	75.8	
Accommodation	Hostel	71	40	56.3	0.003
	Parents' or guardians home	88	69	78.4	
Motivation	Self	115	72	62.6	0.03
	Parents' pressure	23	20	86.9	
	Confused	21	17	80.95	

(smoking, alcohol, tobacco chewing etc.) to relieve stress. Only 25 students under stress were found to be using these substances but most of them reported to use occasionally.

DISCUSSION

Medical profession is one of the most stressful professions and the stress begins from the day a student enters the medical or dental college. Extreme burden of academics, examination fear, peer pressure, high parental expectations are some of the factors contributing stress which can ultimately impact a student's physical and mental health.

The overall prevalence of stress among first year and second year students was 68.6% according to cutoff point of general health questionnaire (GHQ-12) which was similar to study done by Spanish in Thailand (61.4%), Manandhar SA et al (65%),[12-13] and study done in Saudi Arabia(63.7%) but higher than study done by Kharel Sushil et al (39%) and a combined study done in KUSMS Dhulikhel and Manipal college(27%).[6,8,14] The possible reasons for variability in stress prevalence could be due to difference curriculum, teaching facilities, experience of the instructors, the level of care given to the students and lack of academic counseling. Moreover, the differences in various studies could be also due to difference in their diagnostic tool. Among them, the prevalence of stress was more in BDS (78.2%) than MBBS students (59.3%). This was quite similar to the study done by Manandhar SA et al where prevalence of stress was more in BDS students (68.62%) than MBBS students (63.15%) but different than the study done by Kharel Sushil et al where medical students were found to be more under stress (41%) than dental students (35%). The high prevalence of stress among dental students may be due to high amount of practical assignments they have to complete along with academic pressure.

Similarly, higher percentage of females were found to be under stress (75.8%) than their male counterparts (57.8%) which was quite similar with study done by Kharel Sushil et al, Hamza et al and Eva et al where prevalence of stress was more in females than males unlike the study done in the university of Ethiopia by Leta Malaku et al where not much gender difference was seen among prevalence of stress (52.9% males and 50.6% females).[15]

In our study the prevalence of stress in students was more in second year than in first year students which was quite opposite to many studies.[8,9,12] The increase in stress among dental students could be due to increased burden of the practical assignments they have to complete in time and strict faculties. In medical students it could be due to seriousness and sincerity of second year students towards their studies than first year medical students.

Among the various stressors academic stressors were the major source of stress in both medical and dental students (81.1%) followed by group activities related stressors (GARS) and teaching and learning related stressors (TLRS) which is consistent with the study done by Patel SP et al,[10] Manandhar SA.[13] Our study results are further supported by the study done by Kholoud which shows academic overload, frequent examinations, depth and vastness of the syllabus to be completed within limited time were the major contributors of stress among the students.[16] This results show that the medical college should be equally concerned towards dental students as well, as medical students gain more attention in every medical school. But dental students are equally under academic pressure as medical students, in fact even more as shown by our studies.

The excessive amount of stress predisposes students to have difficulties in solving problems and reduced concentration and finally develop depression leading to substance abuse by the students as a means of coping strategies.[14] In our study, 18.8% students reported occasional use of smoking, alcohol etc. Among them, 15.7% had presence of stress. Thus, there was significant association of stress with use of smoking, alcohol etc (p value =.05). This was quite low than the studies done by Leta Malaku et al where 62.77% (9% smoking and 35% alcohol) of the students reported to use smoking, alcohol and tobacco chewing which was quite high than our students.[15] Smoking falsely creates feelings of relief but in fact it does not alleviate stress. The level of stress increases as they develop regular patterns of smoking.[17] Similarly alcohol also produces false feelings of relief from stress but it actually stimulates production of stress hormones. In the previous studies done by Britton in 2004 and Braddy & Sonne in 1999 shows positive relation between stress and alcohol use.[18,19]

Many students study medicine just to fulfill their parents wish and some study to continue the legacy of their doctor parents suppressing their own desires. This becomes one of the stressors during their medical studies (drive and desire related stressors). In our studies, though many students were found to be self-motivated to study medicine and dentistry (72.3%), 87% of those who came under parents' pressure were found to be stressed (p value=.03). It is often seen that accommodation and food becomes one of the sources of stress for the newcomers who stay in hostel.[20] But in our studies, students living at parents' home were found to be more stressed than those living at hostel and rented house which was highly significant (p value=.003). This can be due to difficulties in studying alone at home as discussion is required to understand the subject matter better and quicker and the loss of time in coming and returning back to home from college.

Thus, the undergraduate course especially the first two years in medical science is stressful due to vast syllabus to be completed within limited time, frequent examinations, uncertainty of passing or failing the exam in many and inability to adjust in the new academic environment which is quite competitive. Changes in the teaching and evaluation system are the utmost requirement to reduce the stress and improve the learning process in medical students' life.

CONCLUSION

Stress though a well-studied entity in medical students, it needs to be further explored with further research. The first two years of medical and dental students are stressful with academic related stressor being the most prevalent stressor. The prevalence of stress was found to be more in dental students but the degree of stress was not statistically different in medical and dental students. Academic related stress was found to be the most important stressor in both medical and dental students. Gender, accommodation, motivation for study etc. was significantly associated with stress. Academic counseling and stress reducing interventions are recommended.

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