

Determinants of Stress and Psychological Well-Being in Medical Undergraduate Students: A Cross Sectional Study

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Abstract

Background: Medical education in India is very stressful. Psychological well-being of medical undergraduate students may help them to deal with this stress.

Aims and Objectives: To estimate prevalence of stressors and psychological well-being among medical undergraduate students.

To determine the association between various socio-demographic characteristics and socio-economic status with stress and psychological well-being.

Material and Methods: The cross-sectional study was conducted among medical undergraduate students of Government medical College. A Google form with participants information sheet, socio-demographic information, modified Kuppuswamy's socio-economic status scale, Medical Students Stressor Questionnaire (MSSQ) with 40 items, and 18 item version of Ryff's psychological well-being scale were sent to all 500 students. Descriptive statistics was used to describe socio-demographic characteristics, stressors and psychological well-being. Bivariate correlation analysis was used to assess determine association between socio-demographic characteristics, stressors, stress and psychological well-being.

Results: The overall response rate was 60.6% (303 out of 500 students). Mean age of undergraduate medical students was 20.74±1.796. 50.2% of students were males, and 47.9% were females. 83.5% of students were Hindu. 47.5% of students were from upper middle socio-economic status. Mild, moderate, severe and very severe stress was found in 32.0%, 39.6%, 23.4% and 5.0% of the students respectively. High psychological well-being was found in 97.4% of the students.

Significant correlation of stress in medical undergraduate students was found with socio-economic status, residence, father and mother relationship, relation with parents, dealing with daily stress, exercise time, internet time, memory and attention problems and sleep difficulties. Psychological well-being is significantly associated with intra and inter personal stressors, group activities and social related stressors but not with academic and teaching learning related stressors.

Conclusions: Medical undergraduate students need social, intra and inter personal relationships skills training. Workshops and group activities need to be conducted on the large scale at college and community levels. Special arrangements need to be done for students from rural areas, with disturbed family relations and lower socio-economic status.

Keywords: Medical Students, Psychological Wellbeing, Stress, Stressor.

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Introduction

Stress is physiological, psychological and physical response of brain and body when perceived demands are greater than adaptive abilities of medical student [1]. Academic stress is related to teaching and learning environment and skills related to learning and understanding [2]. Academic stressors are greater cause of stress in medical students. Emotional stressors are also significant cause of stress especially in first MBBS students [1].

Traditional belief that stressful experience is necessary for future psychological well-being of student is no longer true. Experiences of various stressors are the major cause for stress in medical students [3]. Majority of medical undergraduate students face one or more stressors during their medical education. Everyone expects medical student to be better in ability to manage their stress and psychological well-being [2]. During medical education the prevalence of stress and stress related

disorders are increasingly reported all over the world [4]. Students can handle mild to moderate stress to some extent, but at higher levels of stress their physical and psychological wellbeing is badly affected [5]. Stress interferes with their learning, academic performance, desire, motivation and intra and interpersonal relationships which again act as stressors. This leads to vicious cycle of stressors, stress, further stressors and persistent stress among medical students [6]. Persistent stress has many adverse effects on memory, attention, concentration, sleep cycle and psychological well-being of medical students [7]. High psychological well-being among medical student helps them deal effectively with day today stressors and stress related disorders [8]. There are very few studies about stressors and psychological well-being of medical undergraduate students in India. This study was conducted to know various socio-demographic determinants of stressors, stress and psychological well-being in medical undergraduate students.

Materials and Methods

A cross-sectional study was conducted among medical undergraduate students in a government medical college. Permission of institutional ethics committee was taken. All Bachelor of Medicine and Bachelor of Surgery (MBBS) students from first year to fourth year (total 500 students) were included in the study. Online google survey form with participant information sheet, informed consent form, socio-demographic characteristics, modified Kuppuswamy's scale of socio-economic status (SES), The Medical Student Stressor Questionnaire (MSSQ) and Ryff's psychological well-being scale were filled by medical undergraduate students.

Socioeconomic status (SES) of the student's family was evaluated with modified Kuppuswamy's socio-economic status scale 2022. The total score was addition of three sub-scales i.e., occupation of the head of family, education of head and monthly income of family. Socio-economic status (SES) class was classified as Upper (26-29), Upper Middle (16-25), Lower Middle (11-15), Upper Lower (5-10) and Lower (<5).

The Medical Student Stressor Questionnaire (MSSQ) developed by Yusof and Rahim was used to identify the stressors and to measure the intensity of stress. There were 40 statements which were rated as follows: Causing no stress at all (0), causing mild stress (1), causing moderate stress (2), causing high stress (3) and causing severe stress (4). Following six domains of stress were measured by the MSSQ: 1) Academic related stressors 2) Intrapersonal and interpersonal related stressors 3) Teaching and learning-related stressors 4) Social related stressors 5) Drive and desire related stressors. 6) Group activities related stressors.

Final score of domains was calculated by total raw score divided by number of items in that domain. Mild score (0.00-1.00) indicated mild stress or minor difficulty to student. Moderate score (1.01 – 2.00) indicated moderate stress but student could manage it well. High score (2.01 – 3.00) indicated severe stress meaning emotions and behavior were disturbed and daily activities were mildly compromised. Severe score (3.01 – 4.00) indicated very severe stress that disturbed emotions and daily activities of students badly.

Psychological well-being was assessed with a modified 18-item version of Ryff's Scales of Psychological Well Being. The scale included 6 aspects of well-being: self-acceptance, autonomy, environmental mastery, purpose in life, positive relations with others, and personal growth. Response format used was 1 = strongly agree; 2 = somewhat agree; 3 = a little agree; 4 = neither agree or disagree; 5 = a little disagree; 6 = somewhat disagree; 7 = strongly disagree. The questions 1, 2, 3, 8, 9, 11, 12, 13, 17 and 18 were reverse scored. Reverse scoring formula used was: (Number of scale points+1) - (Respondents answer). Score above fifty percentile was considered high psychological well-being.

Data entry was made in google forms and google spreadsheet. Data was then downloaded in excel sheet and coded and analysis was done using SPSS software version 29.0. Descriptive statistics were used to describe socio-demographic characteristics, socio-economic status, stressors and psychological well-being. Socio-demographic characteristics and stressors were expressed in percentages.

The mean score of age was calculated. Pearson's correlation, cross tabulations and bivariate correlation analysis were used to determine correlation between socio-demographic characteristics, socio-economic status, stressors, stress and psychological well-being. 95% confidence intervals were calculated. A $P < 0.05$ was considered as statistically significant.

Results

The overall response rate was 60.6% (303 participated in study out of 500 students). Mean age of undergraduate medical students was 20.74 ± 1.796 . We found that 50.2% of students were males, 47.9% were females and 2% preferred not to say anything about their gender. Majority of the students (83.5%) were from Hindu religion. Nearly one-third (32%) came from metro cities while only one-fifth (18.8%) were from rural villages and only 0.7% were from remote rural padas. We found that 70.3% students had nuclear family and only 2.6% had a single parent family. Majority of the students (86.1%) had father as head of family.

Table1: Socioeconomic Status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Upper	69	22.8	22.8	22.8
	Upper Middle	144	47.5	47.5	70.3
	Lower Middle	50	16.5	16.5	86.8
	Upper Lower	38	12.5	12.5	99.3
	Lower	2	.7	.7	100.0
	Total	303	100.0	100.0	

We found that 82.7% parents of medical students had nice relationship among themselves. About 68% students had loving and nurturing relationship and 26.1% had safe and protected relationship with their parents. We found that only 2.7% students had unaffectionate relationship with their parents while 2.6% students had overcontrolling parents. We found that only 9.9% students MBBS admission decision was taken by their parents. More than half of students (55.4%) felt that they were nice in dealing with day today stressors while only 17.5% of the students felt that they were bad in that task. We found that 80.5% of the students did some form of regular exercise. Gym (33.3%) and

yoga (28.4%) were the most common exercises done by students. I-pad (44.2%) and laptop (45.2%) were most common electronic devices used by students for online studies. We found that only 15.2% medical student's had internet use time more than 4 hours in a day. More than half of the students reported their memory (60.7%) and attention and concentration (52.1%) as nice. We found that 63% of students had some form of difficulty in sleep i.e., onset of sleep (14.2%), continuation of sleep (6.3%), early awakening from sleep (7.9%), not feeling fresh after sleep (14.2%) and daytime drowsiness (20.5%).

Table 2: Sleep problem

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Onset of sleep	43	14.2	14.2	14.2
	Continuation of sleep	19	6.3	6.3	20.5
	Early awakening from sleep	24	7.9	7.9	28.4
	Not feeling fresh after sleep	43	14.2	14.2	42.6
	Daytime drowsiness	62	20.5	20.5	63.0
	No any problem	112	37.0	37.0	100.0
	Total	303	100.0	100.0	

We found that 22.8%, 47.5%, 16.5%, 2.5% and 0.7% students were from upper, upper middle, lower middle, upper lower and lower socio-economic status respectively. Mild, moderate, severe and very severe stress was found in 32.0%, 39.6%, 23.4% and 5.0% students respectively. We found high psychological well-being in 97.4% of the medical students.

Table 3: Medical Student Overall stress

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Mild stress	97	32.0	32.0	32.0
	Moderate stress	120	39.6	39.6	71.6
	Severe stress	71	23.4	23.4	95.0
	Very severe stress	15	5.0	5.0	100.0
	Total	303	100.0	100.0	

Table 4: Psychological wellbeing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low Psychological wellbeing	8	2.6	2.6	2.6
	High Psychological wellbeing	295	97.4	97.4	100.0
	Total	303	100.0	100.0	

We found no significant correlation between the MBBS year, age, religion and the gender of undergraduate medical student with the stress. Socio-economic status of the student's family, residence of student's family, relationship between father and mother of the student, student's relationship with parents and student's ability to deal

with daily stressors had significant correlation with stress. Exercise time, Internet time and online class time of medical student had significant correlation with stress. Subjective feelings of students about their attention and concentration ability, memory problems and sleep difficulty also had significant correlation with stress.

Table5: Correlation of Socioeconomic status and Medical student overall stress

		Socioeconomic Status	Medical Student Overall stress
Socioeconomic Status	Pearson Correlation	1	-0.203**
	Sig. (2-tailed)		<0.001
	N	303	303
Medical Student Overall stress	Pearson Correlation	-0.203**	1
	Sig. (2-tailed)	<0.001	
	N	303	303

** . Correlation is significant at the 0.01 level (2-tailed).

Table 6: Correlation of Dealing daily stress and Medical student overall stress

		Dealing daily stress	Medical Student Overall stress
Dealing daily stress	Pearson Correlation	1	0.311**
	Sig. (2-tailed)		<0.001
	N	303	303
Medical Student Overall stress	Pearson Correlation	0.311**	1
	Sig. (2-tailed)	<0.001	
	N	303	303

** . Correlation is significant at the 0.01 level (2-tailed).

Table 7: Correlation of Attention concentration and Medical student overall stress

		Attention concentration	Medical Student Overall stress
Attention concentration	Pearson Correlation	1	0.249**
	Sig. (2-tailed)		<0.001
	N	303	303
Medical Student Overall stress	Pearson Correlation	0.249**	1
	Sig. (2-tailed)	<0.001	
	N	303	303

** . Correlation is significant at the 0.01 level (2-tailed).

Table 8: Correlation of Psychological wellbeing and Intra and interpersonal stressor

		psychological wellbeing	Intrapersonal and interpersonal stressor
psychological wellbeing	Pearson Correlation	1	-0.126*
	Sig. (2-tailed)		0.028
	N	303	303
Intrapersonal and interpersonal stressor	Pearson Correlation	-0.126*	1
	Sig. (2-tailed)	0.028	
	N	303	303

*. Correlation is significant at the 0.05 level (2-tailed).

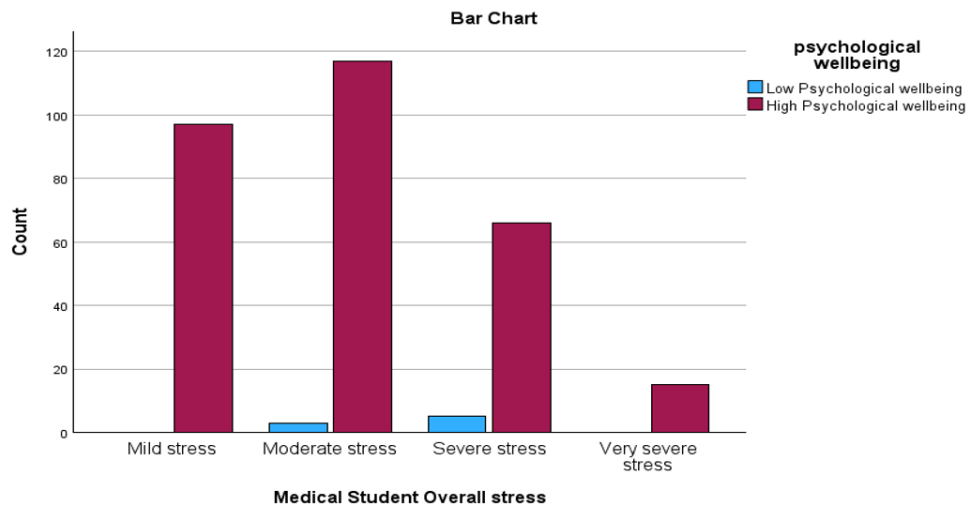
Table 9: Correlation of Psychological wellbeing and Group activities related stress

		psychological wellbeing	Group activities related stress
psychological wellbeing	Pearson Correlation	1	-0.162**
	Sig. (2-tailed)		0.005
	N	303	303
Group activities related stress	Pearson Correlation	-0.162**	1
	Sig. (2-tailed)	0.005	
	N	303	303

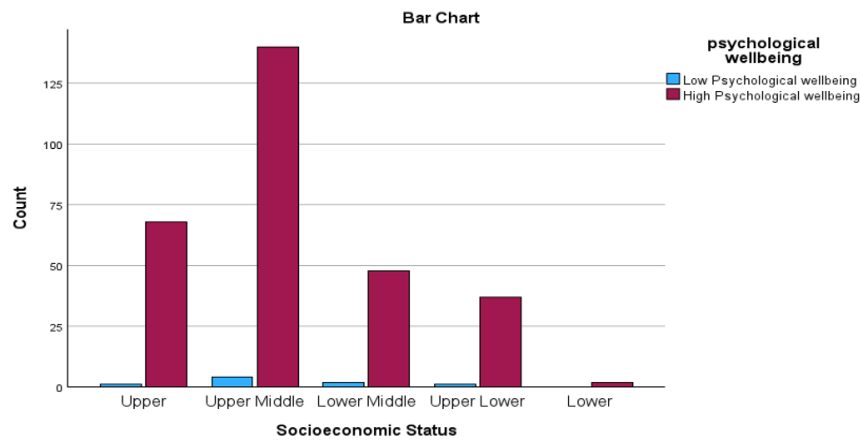
** . Correlation is significant at the 0.01 level (2-tailed).

Family type, ability to deal with daily stressors and internet use time had significant correlation with psychological well-being of medical undergraduate students. Significant correlation was found between intra and interpersonal stressors, social related stressors and group activities related stressors with

psychological well-being of medical undergraduate students. There is no significant correlation of psychological well-being of students with academic related stressors, teaching and learning related stressors and drive and desire related stressors.



Graph 1: Bar chart showing Psychological wellbeing vs. Medical student overall stress.



Graph 2: Bar chart showing psychological wellbeing vs. Socioeconomic status among medical students.

Discussion

Mild, moderate, severe and very severe stress was found in 32.0%, 39.6%, 23.4% and 5.0% students respectively. Previous studies of medical students found the prevalence of stress 61.4% and that of severe stress 2.4% [1]. Studies done in Mumbai found that 73% students had stress [3]. Studies in Kolkata showed that prevalence of stress among medical students was 91.1% and 94.9% of them were stressed due to academic stressors [10]. Other studies in India showed that 53% medical undergraduate students had significant stress [7]. Studies in Saudi medical students showed 53% prevalence of stress [11]. Studies in Thai medical students showed that 61.4% of students had some degree of stress and 2.4% had high level of stress [4].

We found that only 13.2% medical students were from lower socio-economic status. Socio-economic status of family had significant correlation with stress but not with the psychological well-being of medical student. This could be because students with

lower socio-economic status had to deal with variety of stressors. The psychological well-being of students was high because they had learned to deal with day today stressors. They were also advised and taught to be happy amongst stress of life since their childhood. Stressful experience was thought to be necessary for psychological well-being of medical student [9]. But some previous studies also showed that stressful experiences were major cause for stress [9]. In our study psychological well-being was not found to be a good indicator of stress among medical students. So, to know about mental health of the medical student; the stressors and stress need to be explored and dealt with instead of psychological well-being.

We found that the MBBS year, age, religion and the gender of student were not significantly associated with the stress. Studies in private medical college in India showed that higher age group and MBBS year were important determinants of stress [2]. Previous studies showed that first year medical students and female gender students experience more stress [12].

We found that medical students stress had no significant correlation with academic and teaching learning related stressors and drive and desire related stressors. This could be because of recent technological development with online platform to study, attend lectures and review notes of difficult topics. Their stress was not significantly associated with their desire, drive and motivation related stressors also. Their stress had significant correlation with intra and interpersonal relationships and social and group related activities. This could be due to increased use of virtual relationships and interactions on social media and reduction in face-to-face interactions among medical students. Previous studies showed that academic factors were perceived as the most common cause of stress [3]. Emotional factors were found significantly more in first year medical students as compared to second, third-, and fourth-year medical students [3].

We found that 97.4% of the medical students had high psychological well-being and only 2.6% had low psychological well-being. Ability to deal with day today stressors and stressful experiences had significant correlation with the stress and the psychological well-being of the student. Previous studies in Nepal found that overall psychological well-being in medical students was 80.9% [6]. Studies done in South India showed that 20.5% medical students had low psychological well-being [8]. 80.5% of the students did some form of regular exercise which could be possible reason for high rates of psychological well-being. About 17.5% of the students on subjective questioning felt that they were bad in dealing with day today stress.

Conclusions

Stressors and stress were a major mental health problem among more than half of the medical students. Psychological well-being among medical students was not a good indicator of stressors and stress. There is an urgent need to address this important mental health problem among medical students. There is a need of one-to-one interaction with medical student to find out exact stressors and stress problem and not just a talk about overall psychological well-being.

Medical undergraduate students need social skills training, intra and inter personal relationships skills training. Workshops and group activities for such training need to be conducted at college, university and community levels. Special attention and care need to be given to students from rural areas, disturbed family background, sleep problems, lower socio-economic status and those not participating in any social, group and cultural activities.

More and more sports, cultural and leisure time activities need to be arranged at the level of college and university. Better opportunities of face-to-face

interaction with faculty, mentors and counselors need to be provided to the students at college level. Proper guidance, counseling, support, education and training services for students of all MBBS years and their parents need to be arranged at the level of college. Timely and confidential referral of needy medical student for a detailed psychiatric evaluation and treatment need to be arranged at the level of college.

Avoid any additional motivational lecture, scolding and philosophical advice to students suffering from stress. Relaxation, yoga and meditation training sessions need to be arranged at college level. A calm and well-ventilated place where they can practice these skills daily, need to be provided at college campus. Stress reduction training, yoga sessions, pranayama training, personality development training and relationships skills training services at college campus could do a lot to reduce stress in medical students.

Limitations

This cross-sectional study was conducted in only one medical college and so lacks generalization of results. Personality factors and individual attitude factors which influence stress and psychological well-being were not included in this study. Information had been collected by a self-administered online survey method; hence information bias cannot be ruled out. Participation of examination going third and fourth MBBS year medical students was less.

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