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ORIGINAL RESEARCH

Comparative Study of Prevalence of Academic Burnout Among Undergraduate Medical Students in Longitudinal Curriculum of Medical College

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ABSTRACT

Background: Medical education is long and stressful due to academic demands, frequent exams, excessive work load, chronic exposure to human suffering and death and vast extensive syllabus and increased psychological pressure due to multiple reasons, all of which can cause burnout. **Aim:** The aim of the study is to estimate the prevalence of academic burnout among undergraduate medical students of Rama Medical College, Kanpur and its correlation with year of medical education. **Methods:** A cross-sectional study was conducted by providing self-administered questionnaire containing socio-demographic datasheet and Burnout Self-Test Maslach Burnout Inventory. Descriptive statistics were used to analyse participants' sociodemographic characteristics and prevalence of academic burnout using SPSS. The association of academic burnout with academic year was determined using the Pearson correlation coefficient. The data were also analysed using ANOVA. **Results:** Burnout among medical students was based on three dimensions: emotional exhaustion, depersonalization and decreased personal accomplishment. The results indicated that while most students maintained low levels of burnout in terms of depersonalization and personal accomplishment, i.e., 77.3% and 75.3% respectively, a notable percentage faced moderate (30.8%) to high (14.0%) levels of emotional exhaustion. As the academic year progressed, low-level burnout decreased, while moderate and high-level burnout increased significantly, with the fourth year having the highest rates of moderate and high-level burnout. **Conclusion:** High prevalence of burnout was found among undergraduate medical students. All the domains of burnout showed a clear progression as the academic year progressed.

Key words: Burnout, Academic Burnout, Burnout Self-Test Maslach Burnout Inventory

INTRODUCTION

University life during medical training entails full-time commitment and responsibility of undergraduates regarding academic tasks and care provided to patients and their companions. They are exposed to excessive workload, work-life balance, relationships, academic pressure, the need to be seen as a competent clinician, sleep deprivation, peer competition, fear of failure in medical school, death and suffering of patient, student abuse, financial burden, etc.[1] In addition to these, they also face personal life events, which are beyond the control of medical school authority like illness, marriage, the birth of a child, and death of family members. Due to the aforementioned stressful events, the mental health of medical students declines as they progress further in their medical training.[2] The decline starts right from their first year. These stressors result in their poor academic performance, academic dishonesty, cynicism, substance abuse, and serious mental illnesses like depression, anxiety, and burnout. The poor health-related quality of life among medical

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students is contributed mainly by the mental component.[3] These aspects, and many other can lead to increased stress levels and burnout that negatively impact the physical, mental, and emotional health of students, compromising their academic performance.[4]

Burnout is a state of emotional exhaustion that results from chronic stress, such as heavy homework, stress, time limit, and the lack of resources needed to perform the assigned tasks. Maslach et al (1996) defined burnout as a psychological syndrome of emotional exhaustion, depersonalization, and reduced personal accomplishment induced by repeated exposure to workplace stressors.[5] Emotional exhaustion is the feeling of extreme fatigue with draining of emotional resources due to repeated exposure to workplace stressors. Depersonalization is the distant attitude towards the job in which the person attempts to keep a distance between oneself and the clients. Reduced personal efficacy implies a feeling of being ineffective in the work accompanied by the feeling of low self-esteem.

Kristen et al (2005) grouped burnout as personal burnout, work-related burnout, and client-related burnout. Personal burnout refers to the degree of physical and psychological fatigue experienced by the person regardless of his/her work. Work-related burnout refers to the degree of physical and psychological fatigue perceived by the person as related to his/her work. Client-related burnout refers to the fatigue-related to interaction with clients.[6]

David et al (2010) defines academic burnout in students as feeling tired of doing homework and studying, having a pessimistic attitude towards education and curriculum, and feeling of academic inadequacy.[7] It is a negative response to acute and severe stress, where people often feel emotionally and physically tired due to high demands beyond their ability.

Evans et al (2018) defined medical career burnout as emotional fatigue syndrome and a sense of inefficiency in the medical profession.[8] It can be considered as a precursor to other mental disorders such as depression. In physicians, burnout reduces the quality of life leading to a higher risk of mental disorders.[9] 20% of medical students have a background of academic depression compared to 8.6% prevalence of burnout in the general population.[10] Burnout can also effect work-life balance and ultimately affect patient care.

Burnout is found to be prevalent among medical students even prior to the initiation of the clinical years of medical training. They tend to experience student burnout at some point during graduation and later as physicians. The personal, psychological, and financial consequences of burnout and dropout in medical students have shown to be relevant, such as the emotional suffering and health problems, and the waste of time, resources and money.[11] Therefore, it is critical to determine the prevalence of burnout among medical students. This is especially pertinent as evidences had shown that burnout can lead to multitude of problems. Burnout is associated with general distress, poor educational performance, college dropout, suicidal ideation and substance use, mainly during medical school. If burnout is not detected and tackled at early stages, it forms a vicious cycle and progresses over the years which can lead to anxiety and depression.[12]

A literature review was done surveying research studies from PubMed and ScienceDirect. Research suggests, undergraduate medical students showing varying level of burnout. Various studies have been done worldwide, and some of them are summarised below.

In 2017 a cross-sectional study was conducted on 249 medical students at King Saud bin Abdulaziz University for Health Sciences, to assess the level of burnout and the influence of extracurricular activities on burnout. The results showed that the level of high burnout was 67.1%. The study also revealed that high levels of cynicism (62.3%), high levels of emotional exhaustion (58.6%), and low levels of academic efficiency (60.2%). Most of the students (73.5%) participated in extracurricular activities, and 45% students were organizers of extracurricular activities. No significant association was found between burnout levels and the frequency of involvement in extracurricular activities.[13]

Another cross-sectional study was carried out on 265 students in their first four years of undergraduate medical study at the Barretos School of Health Sciences, Dr. Paulo Prata evaluated the prevalence and possible factors associated with the development of burnout among medical students. The results showed that 70.6% of students presented high levels of emotional exhaustion, 52.8% had high cynicism, and 48.7% had low academic efficiency. The two-dimensional criteria (high emotional exhaustion and high cynicism) indicated that 44.9% of students experienced burnout. Based on the three-dimensional criteria, 26.4% of students presented with burnout.[14]

A cross-sectional study on 230 clinical medical students was done to investigate occupational burnout among medical students at the clinical level and its relationship with professional ethics. Results showed that the mean score of burnout was 61.37±20.44 (moderate). In this study, 54.3% of the students had low, 35.2% had mild, and 10.4% had high job burnout. There was no significant relationship between the increase in academic years and burnout.[15]

Another cross-sectional study carried out in 383 medical students. A questionnaire was developed to evaluate the relationship between physical activity and burnout in medical students. The results showed that 44.8% of students had high levels of emotional exhaustion, 25.6% had high levels of cynicism, and 51.2% had low levels of academic efficiency. Female students reported significantly higher levels of emotional exhaustion (p=0.02) than males.[16]

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In 2019, a cross-sectional study was conducted among 129 first to fourth-year medical students at two large Canadian universities, the demographic and behavioral predictors of mental health and burnout in medical students were investigated. The results showed that the prevalence of burnout in students was 20.9%. Female medical students reported higher levels of burnout than male students. Also, the third year of medical school significantly predicted lower mental health and higher burnout scores.[17]

After reviewing the prior studies certain limitations were found. Either the sample size was small or overall prevalence was observed. The present study is an attempt to find the prevalence of academic burnout and its correlation with the year of education.

METHODS

This is a cross sectional study conducted in undergraduate medical students of Rama Medical College, Hospital & Research Centre, Kanpur. All medical undergraduates who gave consent for the study, i.e., 136 out of 150 in first year, 133 out of 150 in second year, 96 out of 100 in third year and 93 out of 100 in fourth year were enrolled. Information about socio-demographic variables was collected after taking informed consent. The detail about academic burnout was extracted using Burnout Self- Test Maslach Burnout Inventory. Prior to the conduction of the study, ethical clearance was taken from Institutional Review Committee Rama Medical College Hospital & Research Centre, Kanpur.

A semi-structured proforma especially designed to collect the socio-demographic variables like age, gender, religion, year of study, living condition, financial status, suffered from major life event (death of close one, road traffic accident, breakup and hospitalization within last 3 months).

The Burnout Self- Test Maslach Burnout Inventory [5] is used to determine the risk of burnout, it has a total of 22 items including three components: Section A: Emotional exhaustion (7 items), Section B: Depersonalization (7 items) and Section C: Lack of personal accomplishment (8 items). All statements are graded on a seven-point Likert scaling from 0 to 6 ranging from never, a few times per year, once a month, a few times per month, once a week, a few times per week and everyday respectively. A high score in first two sections (exhaustion and depersonalization) and a low score in the last section (lack of personal accomplishment) may indicate burnout. The scores are interpreted as follows:

Section A: ≤ 17: Low-level Burnout; 18-29: Moderate Burnout and ≥30: High-level Burnout

Section B: ≤5: Low-level Burnout; 6-11: Moderate Burnout and ≥12: High-level Burnout

Section C: ≤33: High-level Burnout; 34-39: Moderate Burnout and ≥40: Low-level Burnout

Sociodemographic and individual characteristics were presented as numbers and percentages. The data were analysed using IBM SPSS (Statistical Package for Social Science), version 20.0 software. Descriptive statistics were used to analyse participants' sociodemographic characteristics and prevalence of academic burnout. The association of academic burnout with year of education was determined using the Pearson correlation coefficient. P-values <0.05 were considered statistically significant. The data were also analysed using one-way analysis of variance (ANOVA) followed by Tukey's honestly multiple comparison tests.

RESULTS

The study included 458 medical students, of whom 46.1% (211) were male and 53.9% (247) were female. The majority of the students were Hindu, accounting for 68.6% (314), followed by Muslims at 16.6% (76), Sikhs at 10.0% (46), and other religions at 4.8% (22). Distribution across the years of medical education showed that 1st and 2nd-year students were the largest groups, comprising 29.7% (136) and 29.0% (133) respectively, while 3rd and 4th-year students made up 21.0% (96) and 20.3% (93) respectively. Most students came from nuclear families, 66.8% (306), compared to 33.2% (152) from joint families. The frequency distribution of major life events, chronic illnesses, family history, history of medical and psychiatric illness is presented in Table-1.

Table 1: Distribution of demographic profile of studied medical students

Variables	Category	Number of Students	Percentage %
Gender	Male	211	46.1
	Female	247	53.9
Religion	Hindu	314	68.6
	Muslim	76	16.6
	Sikh	46	10.0
	Other	22	4.8
Year of Medical Education	1st year	136	29.7
	2nd year	133	29.0
	3rd year	96	21.0
	4th year	93	20.3
Family type	Nuclear	306	66.8
	Joint	152	33.2

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Any major life event	Yes	69	15.1
	No	389	84.9
Any chronic illness	Yes	38	8.3
	No	420	91.7
History of any medical illness	Yes	22	4.8
	No	436	95.2
History of any psychiatric illness	Yes	93	20.3
	No	365	79.7
Family history of psychiatric or medical illness	Yes	67	14.6
	No	391	85.4

The sociodemographic variables were compared among medical students of different academic years, as shown in Table-2 revealing several significant trends.

Table 2: Comparison of studied medical students based on demographic variables

Variables	Category	1st year (n=136)	2nd year (n=133)	3rd year (n=96)	4th year (n=93)	p-value
Gender	Male	55 (40.4)	53 (39.8)	58 (60.4)	45 (48.4)	**0.008***
	Female	81 (59.6)	80 (60.2)	38 (39.6)	48 (51.6)	
Religion	Hindu	90 (66.2)	93 (69.9)	62 (64.6)	69 (74.2)	**0.004***
	Muslim	19 (14.0)	27 (20.3)	15 (15.6)	15 (16.1)	
	Sikh	14 (10.3)	13 (9.8)	10 (10.4)	9 (9.7)	
	Other	13 (9.6)	0 (0.0)	9 (9.4)	0 (0.0)	
Family type	Nuclear	95 (69.9)	80 (60.2)	67 (69.8)	64 (68.8)	0.286
	Joint	41 (30.1)	53 (39.8)	29 (30.2)	29 (31.2)	
Any major life event	Yes	14 (10.3)	26 (19.5)	10 (10.4)	19 (20.4)	**0.042***
	No	122 (89.7)	107 (80.5)	86 (89.6)	74 (79.6)	
Any chronic illness	Yes	14 (10.3)	14 (10.5)	0 (0.0)	10 (10.8)	**0.012***
	No	122 (89.7)	119 (89.5)	96 (100.0)	83 (89.2)	
History of any medical illness	Yes	0 (0.0)	13 (9.8)	9 (9.4)	0 (0.0)	**<0.001***
	No	136 (100.0)	120 (90.2)	87 (90.6)	93 (100.0)	
History of any psychiatric illness	Yes	13 (9.6)	25 (18.8)	28 (29.2)	27 (29.0)	**<0.001***
	No	123 (90.4)	108 (81.2)	68 (70.8)	66 (71.0)	
Family history of psychiatric or medical illness	Yes	26 (19.1)	14 (10.5)	9 (9.4)	18 (19.4)	0.051
	No	110 (80.9)	119 (89.5)	87 (90.6)	75 80.6)	

Burnout among medical students was based on three dimensions: Emotional Exhaustion, Depersonalization, and Decreased Personal Accomplishment as shown in Table-3. In terms of emotional exhaustion, 253 (55.2%) of students experienced low-level Burnout, 141 (30.8%) moderate Burnout, and 64 (14.0%) high-level Burnout. Depersonalization domain showed that the vast majority, 354 (77.3%) had low-level Burnout, while 85 (18.6%) had moderate Burnout, and 19 (4.1%) experienced high-level Burnout. Regarding Decreased Personal Accomplishment, 345 (75.3%) of students had low-level Burnout,104 (22.7%) had moderate Burnout, and only 9 (2.0%) had high-level Burnout. These results indicated that while most students maintained low levels of burnout in terms of depersonalization and personal accomplishment, a notable percentage faced moderate to high levels of emotional exhaustion.

Table 3: Distribution of studied medical students based on Burnout Self-Test Maslach Burnout Inventory

Burnout Self-Test Maslach Burnout Inventory		Number of Students	Percentage %
Emotional exhaustion	Low-level Burnout	253	55.2
	Moderate Burnout	141	30.8
	High-level Burnout	64	14.0
Depersonalization	Low-level Burnout	354	77.3
	Moderate Burnout	85	18.6
	High-level Burnout	19	4.1
Personal accomplishment	Low-level Burnout	345	75.3
	Moderate Burnout	104	22.7
	High-level Burnout	9	2.0

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The level of Burnout was compared among medical students across different academic years as shown in Table-4, highlighting significant trends. Emotional exhaustion showed a clear progression, with low-level burnout decreasing from 95 (69.9%) in the first year to 29 (31.2%) in the fourth year, while moderate and high-level Burnout increased significantly, with the fourth year having the highest rates of moderate 45 (48.4%) and high-level 19 (20.4%) Burnout, with a significant p-value of <0.001. For depersonalization, low-level Burnout decreased from 90.4% in the first year to 61.3% in the fourth year, while moderate Burnout increased notably to 38.7% in the fourth year, and high-level Burnout was present in the third year only (19.8%), leading to a p-value of <0.001. Regarding decreased personal accomplishment, low-level Burnout decreased from 123 (90.4%) in the first year to 56 (60.2%) in the fourth year, with a corresponding increase in moderate Burnout, which peaked at 37 (38.5%) in the third year, and a small percentage 9 (9.7%) of fourth-year students experiencing high-level Burnout, with a significant difference (p-value <0.001). These findings indicated a significant increase in Burnout levels, particularly emotional exhaustion and depersonalization.

Table 4: Comparison of studied medical students based on Burnout Self-Test Maslach Burnout Inventory

Burnout Self-Test Maslach Burnout Inventory		1st year (n=136)	2nd year (n=133)	3rd year (n=96)	4th year (n=93)	p-value
Emotional exhaustion	Low-level Burnout	95 (69.9)	80 (60.2)	49 (51.0)	29 (31.2)	**<0.001***
	Moderate Burnout	41 (30.1)	27 (20.3)	28 (29.2)	45 (48.4)	
	High-level Burnout	0 (0.0)	26 (19.5)	19 (19.8)	19 (20.4)	
Depersonalization	Low-level Burnout	123 (90.4)	107 (80.5)	67 (69.8)	57 (61.3)	**<0.001***
	Moderate Burnout	13 (9.6)	26 (19.5)	10 (10.4)	36 (38.7)	
	High-level Burnout	0 (0.0)	0 (0.0)	19 (19.8)	0 (0.0)	
Personal accomplishment	Low-level Burnout	123 (90.4)	107 (80.5)	59 (61.5)	56 (60.2)	**<0.001***
	Moderate Burnout	13 (9.6)	26 (19.5)	37 (38.5)	28 (30.1)	
	High-level Burnout	0 (0.0)	0 (0.0)	0 (0.0)	9 (9.7)	

Significant correlation between the year of medical education and various measures of Burnout, among undergraduate medical students is shown in Table-5. The Maslach Burnout Inventory revealed significant positive correlations, indicating increased burnout over time, with emotional exhaustion (r=0.288, p<0.001), depersonalization (r=0.254, p<0.001), and decreased personal accomplishment (r=0.315, p<0.001). These results highlighted the increasing psychological burden and deteriorating quality of life experienced by medical students as they progressed through their education.

Table 5: Correlation of the year of medical education with Burnout

Variables		Year of Medical Education	
		Pearson correlation (r)	P value
Burnout Self-Test Maslach Burnout Inventory	Emotional exhaustion	0.288	**<0.001***
	Depersonalization	0.254	**<0.001***
	Personal accomplishment	0.315	**<0.001***

DISCUSSION

The purpose of the study was to know the prevalence of academic burnout and to determine its correlation with the year of medical education among undergraduate medical students. The study also compared the prevalences as the academic year progresses from 1st year through 4th year. The prevalence of academic burnout increased as the year of education progressed. We found an association between year of education and the academic year.

The results on prevalence of burnout indicated that while most students maintained low level of burnout in terms of depersonalization and personal accomplishment, i.e., 77.3% and 75.3% respectively, a notable percentage faced moderate (30.8%) to high (14.0%) levels of emotional exhaustion. More burnout due to emotional exhaustion can stem from exposure to human suffering, heavy workload, less spare time for leisure activities and personal life and limited support systems. Dyrbye LN et al[18] reported that burnout begins somewhere during the period of medical graduation, increases in residency, and remains at high levels during early periods of being a faculty and then starts showing declining trends with increasing age. Erschens R et al[19] reported that the medical students show higher burnout rates than general population which might be due to the fact that medical training is stressful. This occupational stress often results in reduction in academic performance and adversely impacts professional qualities.

Emotional exhaustion, depersonalization and personal accomplishment showed a clear progression with moderate and high-level burnout increasing significantly as the medical education progresses. In accordance with our study is a study conducted by Kilic R et al[20] who observed that depersonalization

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increased as the academic years progressed and emotional exhaustion was the highest in the final year. The present study is based on the interpretation of self -administered questionnaires which may have affected the accuracy of data. There is possibility of intentionally inaccurate responses from the responders also known as social desirability bias. Another limitation could be the lack of information regarding place of stay, food, financial aspects that could have contributed toward stress/psychological well-being. Being unable to keep track of class tests during the assessment period is a limitation. Furthermore, the sample consists of students from a single private medical college, so the results cannot be considered as being representative of all undergraduate students. The correlations between levels of depression, anxiety and stress in students attending government medical college was not done. Confounding effects may also be due to particular characteristics of students who choose to study at a private institution, were forced to study by their parents, relatively lower effort / diligence given to their studies, lower bars as to medical entrance as well as lower peer pressures and standards, strong strength of financial backgrounds were not taken into account.

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