Original Article

Burnout and its Predictors among Undergraduate Medical Students: A Cross-sectional Study in Selected Medical Colleges in Bangladesh

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Abstract

Background: Prolong exposure or response to emotional and interpersonal stressor at the work place may result in burnout. Likewise, due to intense and demanding circumstances in the course of the curriculum of academic studies, medical students are vulnerable to develop burnout.

Objective: To assess the rate of burnout and its predictors among the undergraduate medical students in selected medical colleges in Bangladesh.

Methods: It was a cross-sectional study conducted from July 2023 to June 2024 with inclusion of conveniently selected 400 undergraduate medical students from three public and three private medical college in Bangladesh. Data were collected through face-to-face interview using a pre-tested semi-structured questionnaire.

Results: The study revealed that studying in fifth year (OR 2.030, 95% CI=1.121-3.676), staying in mess (OR 10.690, 95% CI= 1.330-85.911), and with parent (OR 2.353, 95% CI=1.179-4.696), having inadequate (OR 1.936, 95% CI= 1.016-3.690), & no recreational facilities (OR 5.602, 95% CI= 2.005-15.654), no participation in games and sports (OR 1.746, 95% CI= 1.026-2.971), presence of no student welfare service (OR 1.625, 95% CI= 0.978-2.698), having disturbed sleep pattern (OR 2.401, 95% CI= 1.199- 4.807), use of internet for >6 hours/day (OR 2.589, 95% CI= 1.161-5.772) were important risk factors for the development of burn out in emotional exhaustion domain. In cynicism domain, respondents staying with parent (OR 2.584, 95% CI=1.266- 5.276), inadequate recreational facility (OR 1.820, 95% CI= 0.977-3.390), no recreational facilities (OR 3.391, 95% CI= 1.242-9.255), use of internet for >6 hours/day (OR 2.694, 95% CI= 1.234-5.881) were important risk factors.

Conclusion: The high prevalence of burnout suggests a pressing need for interventions targeted at these specific areas to enhance the well-being and academic performance of medical students.

Keywords: Burnout, Emotional exhaustion, Cynicism, Academic accomplishment, Medical students.

Introduction

Medical education is a long as well as emotionally taxing journey. Medicine is a never-ending path and a highly demanding career that appears to leave many medical students at the risk of high stress and burnout.[1] Expectation to learn, memorize and regurgitate large amounts of information within a short period of time, dealing with an overload of classes, vast patient diseases, and conflicting relationships with staff members could be recognized as the causes of stressful life among medical students. Furthermore, specific milestones, such as the beginning of the clinical phase, graduation, internship, residency training etc is generally considered to be more stressful transitions in medical education. Burnout is defined as a response to chronic emotional and interpersonal stressors in the workplace.[2] Burnout Syndrome comprises with three dimensions: Emotional exhaustion (EE) is the feeling of complete emotional and physical drained out due to extreme overwork, whereas negative, cynical, or excessively detached responses to other people at work is called Depersonalization (DP). On the other hand, feelings of decline in one's competence and productivity and to a lowered sense of efficacy refers to low personal accomplishment (PA).[3] In the recent past, several studies have been conducted in various parts of the globe to pinpoint the factors that lead to burnout. Among those studies, it was revealed that year of study, physical activity, and smoking status significantly predicted the emotional exhaustion component of the burnout inventory whilst gender, year of study, and institution significantly predicted depersonalization. Alcohol binge score, year of study, gender and physical activity significantly predicted personal accomplishment. Another study revealed that depressive symptoms and financial concerns in the first year displayed high association with burnout in later years. Higher prevalence of burnout revealed among those who did not have confidence in their clinical skills, those who felt uncomfortable with course activities, and those who did not see the coursework as a source of pleasure by another study.

Research has shown that various physical and psychological consequences are the results of burnout in many individuals. Persistent fatigue, headaches and aggravation of underlying chronic illnesses may result from physical consequences whereas sleep disorder, anxiety disorders, depression, drug abuse, suicidal thoughts, dropping out, decreased empathy, low

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motivation for learning, and poor academic performance is from psychological point of view.[4] Various individual factors like poor decision making, hostility to patients, medical errors, poor relationships with colleagues, depression, anxiety and fatigue, sleep disturbances, alcoholism, drug misuse, and suicidal ideation may also associate with the development of burnout.[3] As a result, quality of life of medical students is affected by the burnout very negatively and ultimately affect the personal and professional lives of individuals. The physical, social, and mental implications of burnout syndrome on the well-being of individuals make it a public health problem.[5] Based on a previous study, due to burnout about, 11% of medical students seriously consider dropping out of medical school each year.[6] A large study conducted at USA revealed that 49.6% of medical students suffered from burnout with 11.2% had suicidal thoughts.[7] Therefore, in order to take appropriate action, it is important to detect this detrimental problem earlier. With this backdrop, we aimed to assess the rate of burnout and its predictors among the undergraduate medical students in selected medical colleges in Bangladesh.

Material and Methods

This cross-sectional study was conducted from July 2023 to June 2024 at three public and three private medical college of Bangladesh. Conveniently selected 400 undergraduate medical students of 2nd to 5th year were recruited to assess the rate and risk of development of burnout in terms of emotional exhaustion, cynicism and academic accomplishment domain of Maslach Burnout Inventory– Student Survey (MBI-SS) scale. Pretested questionnaire was used to collect the data from the students through face-to-face interview. The ethical committee of Armed Forces Medical Institute granted the ethical clearance with the number 3606/T. Structured questionnaire was used as the study instrument which comprised of demographic, administrative and aacademic attributes, including gender, age, year of study, monthly family income, place of accommodation, residence, among others. Respondent's burnout in terms emotional exhaustion, cynicism and academic accomplishment were assessed using 15 itemed validated version of MBI-SS scale. The scale consists of 15 questions which elicit emotional exhaustion (EE), cynicism (CY) and lack of academic accomplishment (AA) dimension of student burnout. Seven-point frequency rating scale were used ranging from 0: Never to 6: Always for all the items resulting with a possible total score range from 0 to 30 for the emotional exhaustion scale, 0 to 24 for the cynicism scale and 0 to 36 for the personal accomplishment scale. Cut-off score >14, >6 and <23 was used for considering burnout in EE, CY and AA respectively.[2] Two-dimensional construct with scores of 15 or higher on the emotional exhaustion scale and 7 or higher on the cynicism scale were used to measure the overall burnout.[8] Cronbach's alpha coefficient found 0.666 with 0.865, 0.832, 0.769 for emotional exhaustion, cynicism and academic accomplishment respectively. Statistical Package for Social Sciences (SPSS) v23 was used for data processing and analyses. For descriptive statistics, frequencies, percentage, mean and standard deviation (SD) were used. Logistic regressions were applied for testing the correlations between the burnout groups (EE, CY and AA) and demographic variables, provided as Odds Ratio (ORs) and 95% confidence interval (CI). A two-tailed p<.05 was considered statistically significant.

Results

Majority (53.3%) of the respondents were in the age group of <22 years with 22.25 years (±1.37) years as average age, 60.5% were female and 94.5% were Islam in religion. Highest (26.0%) were from second year students and 95.7% were unmarried. Thirty-eight percent respondents had monthly family income in the 50001 to 100000 Taka. More than two-third (88.3%) belonged to nuclear family and 85.0% stayed at the hostel/dormitory, 75.8% of them were urban dwellers, 85.3% have no history of mental illness and 98.3% were non-smokers (Table-I).

Maximum students (78.6%) opined that their class room's sitting arrangement was adequate, spacious and comfortable. According to 313 (78.3%) respondents, the lighting and ventilation of the class room was adequate, well-ventilated and comfortable. In regards to the curricular activities, highest (37.3%) students opined that it was comfortable whereas nearly equal (36.5%) opined it was exhaustive. Table-II shows that more than one third (38.5%) students were in favor of inadequate recreational facilities whereas another third (33.8%) opined that it was adequate. More than half i.e., (56.0%) expressed that both indoor and outdoor games facilities were available whereas only indoor games were available according to 19.8% students. More than half (53.3%) opined that catering service was available in their medical college. Nearly two-third (64.0%) students stated that there was no student welfare service in their medical colleges. On the other hand, 53.8% students used to participate in recreational activities. About two-third i.e. 62.5% students were not used to participate in any games and sports, 24% had disturbed sleep patterns and 13.3% respondents use internet for >6 hours in a day. Ninety-five percent were regular student and 87.5% student's father paid their tuition fee (Table-II). Among the 400 students, 50.3% had overall burnout with 58.0%, 63.2% and 42.7% were above the cutoff point for burnout in emotional exhaustion, cynicism and academic accomplishment domain of MBI-SS scale respectively (Table-III).

To elicit the factors responsible for the development of burnout in emotional exhaustion domain, we conducted the logistic regression analysis and found that, odds for burnout symptoms were 2.03 (95% CI; 1.12-3.67) times significantly higher for fifth year students compared to second, third- and fourth-year students. It was also revealed that students staying in mess (OR 10.69; 95% CI 1.33-85.91) and with parent (OR 2.35; 95% CI 1.17-4.69), having inadequate (OR 1.93; 95% CI 1.01-3.69) and no recreational facilities (OR 5.60; 95% CI 2.00-15.65) were significantly vulnerable for the development of burnout.

In addition, not participating any games and sports (OR 1.74; 95% CI 1.02-2.97), presence of no student welfare service (OR 1.62; 95% CI 0.97-2.69), having disturbed sleep pattern (OR 2.40; 95% CI 1.19-4.80) and use of internet for >6 hours/day (OR 2.58; 95% CI 1.16-5.77) were also found important risk factor for the development of burnoutOn the other hand, too relaxing and comfortable curricular activities and having only indoor games facilities were found protective for the development of burnout in emotional exhaustion domain (Table-IV).

Table-I: Distribution of respondents by socio-demographic characteristics (n=400)

Attributes	Frequency (%)
Age group in years	
≤22	213 (53.3)
≥23	187 (46.8)
Mean (SD)	22.25 (±1.37)
Minimum – maximum	19 – 27
Sex	
Male	158 (39.5)
Female	242 (60.5)
Year of study	
Second year	104 (26.0)
Third year	91 (22.8)
Fourth year	102 (25.5)
Fifth year	103 (25.8)
Religion	
Islam	378 (94.5)
Hindu	22 (5.5)
Marital status	
Married	17 (4.3)
Unmarried	383 (95.7)
Monthly family income in taka	
<40000	99 (24.8)
40001-50000	98 (24.5)
50001-100000	152 (38.0)
>100001	51 (12.8)

Attributes	Frequency (%)
Family type	
Nuclear	353 (88.3)
Joint	47 (11.8)
Living accommodation	
College hostel/dormitory	340 (85.0)
Mess	12 (3.0)
With parents	48 (12.0)
Place of residence	
Urban	303 (75.8)
Sub-urban	62 (15.5)
Village/rural	35 (8.8)
History of mental illness	
Yes	28 (7.0)
No	341 (85.3)
No comments	31 (7.8)
Smoking habit	
Yes	5 (1.3)
No	393 (98.3)
Ex-smoker	2 (0.05)
Habit of drinking alcohol	
Yes	04 (1.0)
No	396 (99.0)
Habit of taking drugs	
Yes	02 (0.5)
No	398 (99.5)

Table-II: Distribution of the respondents in regards to the academic and administrative environment of the

Attributes	Frequency (%)
Sitting Arrangement	
Adequate and specious	175 (43.8)
Comfortable	139 (34.8)
Somehow comfortable	8 (2.0)
Congested and suffocating	78 (19.5)
Lighting and ventilation	
Adequate, well ventilated	180 (45.0)
Comfortable	133 (33.3)
No Comment	9 (2.3)
Inadequate, ill ventilated	78 (19.5)
Curricular activities in the college	
It's too exhaustive	146 (36.5)
It's comfortable	149 (37.3)
It's too relaxing	17 (4.3)
No comment	88 (22.0)
Recreational facilities	
Adequate	135 (33.8)
Inadequate	154 (38.5)
No recreational facility	64 (16.0)
No comment	47 (11.8)
Both indoor and outdoor games available	224 (56.0)
Only indoor games	79 (19.8)
Only outdoor games	15 (3.8)
No comment	82 (20.5)
Provision of catering service	
Yes	213 (53.3)
No	187 (46.8)
Presence of student welfare service	
Yes	144 (36.0)
No	256 (64.0)

Attributes	Frequency (%)
Participation in recreational activities	
Yes	215 (53.8)
No	185 (46.2)
Participation in games and sports	
Yes	150 (37.5)
No	250 (62.5)
State of sleep pattern	
Used to go to bed early	103 (25.8)
Used to go to bed lately	199 (49.8)
Disturbed sleep pattern	98 (24.5)
Time of internet use (in hours)	
1-3 hours	207 (51.8)
3-6 hours	140 (35.0)
>6 hours	53 (13.3)
Status of relationship	
Yes	88 (20.0)
No	299 (74.8)
Previous	21 (5.3)
Status of studentship	
Regular student	381 (95.3)
Irregular student	**7** (1.8)
Have some dropout previously	4 (1.0)
No comments	8 (2.0)
Tuition fees paid by	
Father	350 (87.5)
Mother	21 (5.3)
Legal guardians	09 (2.3)
Self	20 (5.0)
Failed to pay tuition fees	
Yes	34 (8.5)
No	356 (89.0)
No comments	10 (2.5)

Table-III: Rate of burnout among the undergraduate medical students (n=400)

Domain	Frequency (%)	Cronbach's Alpha
Overall burnout		
No burnout	199 (49.7)	0.666
Having burnout	201 (50.3)	
Emotional exhaustion		
No burnout	168 (42.0)	0.865
Having burnout	232 (58.0)	
Cynicism		
No burnout	147 (36.8)	0.832
Having burnout	253 (63.2)	
Academic accomplishment		
No burnout	229 (57.3)	0.769
Having burnout	171 (42.7)	

Table-IV: Association of burnout (emotional exhaustion) with various attributes of the respondents (n=400)

Attributes	B	S.E.	p value	OR	95% C.I. for OR	
					Lower	Upper
Year of study						
Second year*						
Third year	0.081	0.306	0.791	1.084	.595	1.976
Fourth year	-0.161	0.299	0.591	.851	.474	1.531
Fifth year	0.708	0.303	**0.019**	2.030	1.121	3.676
Accommodation						
Hostel*						
Mess	2.369	1.063	**0.026**	10.690	1.330	85.911
With parents	0.856	0.352	**0.015**	2.353	1.179	4.696
State of curricular activities						
It is too exhaustive*						
It is too relaxing	-1.443	0.626	**0.021**	0.236	0.069	0.806
Comfortable	-1.178	0.291	**0.000**	0.308	0.174	0.544
No comments	-0.608	0.331	0.067	0.545	0.285	1.042
State of recreational facilities						
Adequate*						
Inadequate	0.661	0.329	**0.045**	1.936	1.016	3.690
No recreational facility	1.723	0.524	**0.001**	5.602	2.005	15.654
No comments	0.972	0.440	**0.027**	2.644	1.117	6.259
State of indoor and outdoor games						
Both available*						
Only indoor	-0.719	0.369	**0.050**	0.487	0.236	1.004
Only outdoor	-1.342	0.734	0.068	0.261	0.062	1.102
No comments	-0.534	0.378	0.158	0.586	0.279	1.231
Regular participation of games and sports						
Yes*						
No	0.557	0.271	**0.040**	1.746	1.026	2.971
Presence of student welfare service						
Yes*						
No	0.485	0.259	**0.050**	1.625	0.978	2.698
State of sleep pattern						
Used to go to bed early*						
Used to go to bed lately	0.162	0.285	0.570	1.176	0.672	2.057
Disturbed sleep pattern	0.876	0.354	**.013**	2.401	1.199	4.807
Time of internet use in hours						
1-3*						
3-6	0.485	0.268	.071	1.624	0.960	2.745
>6	0.951	0.409	**0.020**	2.589	1.161	5.772

To elicit the factors responsible for the development of burnout in cynicism domain, we conducted the logistic regression analysis and found that, respondents staying with parent (OR 2.584; 95% CI 1.266-5.276), having inadequate (OR 1.820; 95% CI 0.977-3.390) and no recreational facility (OR 3.391; 95% CI 1.242-9.255), use of internet for >6 hours/day (OR 2.694; 95% CI 1.234-5.881) were important risk factors for the development of burnout. On the other hand, staying at the rural area and comfortable curricular activities were found protective for the development of burnout in cynicism domain (Table-V).

Table-V: Association of burnout (cynicism) with various attributes of the respondents (n=400)

Attributes	B	S.E.	p value	OR	95% C.I. for OR	
					Lower	Upper
Accommodation						
Hostel*						
Mess	1.386	0.786	0.078	3.997	0.856	18.661
With parents	0.949	0.364	**0.009**	2.584	1.266	5.276
Place of residence						
Urban*						
Sub-urban	0.184	0.292	0.529	1.202	0.678	2.132
Village/rural	-0.697	0.369	**0.050**	0.498	0.241	1.027
State of lighting and ventilation						
Adequate, well ventilated						
Inadequate, ill ventilated	0.275	0.402	0.494	1.317	0.599	2.894
Comfortable	0.110	0.275	0.689	1.116	0.651	1.915
No comments	2.213	1.148	**0.050**	9.143	0.964	86.683
State of curricular activities						
It is too exhaustive*						
It is too relaxing	0.210	0.624	0.736	1.234	0.363	4.191
Comfortable	-0.924	0.280	**0.001**	0.397	0.229	0.687
No comments	-0.445	0.325	0.171	0.641	0.339	1.211
State of recreational facility						
Adequate*						
Inadequate	0.599	0.317	**0.050**	1.820	0.977	3.390
No recreational facility	1.221	0.512	**0.017**	3.391	1.242	9.255
No comments	0.689	0.428	0.107	1.991	0.861	4.603
Time of internet use (in hours)						
1-3*						
3-6	0.312	0.259	0.227	1.366	0.823	2.268
>6	0.991	0.398	**0.013**	2.694	1.234	5.881

To elicit the factors responsible for the development of burnout in academic accomplishment domain, we conducted the logistic regression analysis and found that, respondents having monthly income >100001 taka (OR 2.017; 95% CI 0.999-4.070) and comfortable curricular activities (OR 4.219; 95% CI 1.214-14.665) were important risk factors for the development of burnout in academic accomplishment domain. On the other hand, staying at the rural/village area and used to go to sleep lately were found protective (Table-VI).

Table-VI: Association of burnout (academic accomplishment) with various attributes of the respondents (n=400)

Attributes	B	S.E.	p value	OR	95% C.I. for OR	
					Lower	Upper
Monthly family income						
<40000*						
40001-50000	-0.138	0.296	0.641	0.871	0.488	1.556
50001-100000	-0.077	0.268	0.775	0.926	0.548	1.567
>100001	0.702	0.358	**0.050**	2.017	0.999	4.070
Place of residence						
Urban*						
Sub-urban	-0.260	0.289	0.368	0.771	0.438	1.358
Village/rural	-0.813	0.410	**0.048**	0.444	0.198	0.992
State of curricular activities						
It is too exhaustive*						
It is too relaxing	0.307	0.315	0.329	1.360	0.734	2.519
Comfortable	1.440	0.636	**0.024**	4.219	1.214	14.665
No comments	0.102	0.326	0.755	1.107	0.585	2.096
State of sleep pattern						
Used to go to bed early*						
Used to go to bed lately	-0.822	0.284	**0.004**	0.440	0.252	0.768
Disturbed sleep pattern	-0.196	0.330	0.553	0.822	0.430	1.571
Status of studentship						
Regular student*						
Irregular student	21.602	14101.975	0.999	2.4076	0.000	.
Have some dropout	1.586	1.261	0.209	4.883	0.413	57.789
No comments	2.679	1.106	**0.015**	14.570	1.666	127.423

Discussion

In Bangladesh there are as many 110 public and private medical colleges and every year more than 1500 students got themselves admitted in those colleges. During student life they had to complete five years for their graduation which is followed by mandatory one year internship training. Due to prolong duration of the curriculum and intense study pressure, medical students are prone to develop burnout. As such, good mental health and absence of burnout are necessary for the development and maintenance of medical student. The study was conducted in three public and three private medical colleges of Bangladesh, as a result the sociodemographic characteristics were almost similar to the existing rules and regulations of Bangladesh medical and dental councils but in many cases, it is different with the national average. In this study, the academic and administrative attributes were elicited by using variables like sitting arrangement, lighting and ventilation in the class room, curricular activities of the college etc. Majority of the respondents were satisfied about the academic and administrative arrangement of the college. Our findings regarding academic and administrative arrangement were similar to the study conducted by Santen et al[9] but dissimilar to the study findings conducted by Haile et al.[10] Our finding on participation of recreational activities and games-sports by the students revealed similar to the study conducted by Albalawi et al[11] but dissimilar to the study findings of Shadid et al[12] and Fares et al.[1] At the same time, satisfaction with the curricular activities by the students revealed in our study was consistent with the study conducted by de Oliva Costa et al.[2] In regards to the state of sleep pattern among the respondents, our finding was almost similar to the study findings conducted in Hong Kong by Lee et al[13], Pagnin et al[14] and Mazurkiewicz et al.[15]

We revealed that the overall burnout among the respondents were 50.3%. A good number of researches have been carried out on burnout among the medical students in various parts of the globe. Accordingly, similar/almost similar overall burnout among the medical students revealed by several studies e.g. in Israel by Gilbey et al[8] (overall burnout 50.6%), in Austria by Thun-Hohenstein et al[16] (overall burnout 47.8%), Li et al[17] (overall burnout 45.9%), in Uganda by Kajjimu et al[18] (overall burnout 54.5%), in Saudi Arabia by Albalawi et al[11] (overall burnout 51.4%), in China by Yu et al[19] (overall burnout 47.3%), in China by Yang et al[20] (overall burnout 41.09%) and in China by Ma et al[21] (overall burnout 42.19%). On the other hand, many studies conducted in the world which revealed dissimilar overall burnout rate e.g. in Malaysia by Thew et al[22] (overall burnout 10.1%), in Iraq by Yahya et al[23] (overall burnout 38.2%), in USA by Obregon et al[24] (overall burnout 39.2%), in Hong Kong by Lee et al[13] (overall burnout 27.9%), in Cyprus by Nteveros, et al[25] (overall burnout 18.1%5), in Saudi Arabia by Altannir et al[26] (overall burnout 13.4%), in Oman by Al-Alawi et al[27] (overall burnout 7.4%), in England by Farrell et al[28] (overall burnout 85%) in China by Tang et al[29] (overall burnout 21.77%), in Saudi Arabia by Aboalshamat et al[30] (overall burnout 67.9%), in Lebanon by Fares et al[1] (overall burnout 75.2%) and in Pakistan by Muzafar et al[4] (overall burnout 30.6%). Use of different instruments for measuring the burnout, define burnout differently, selection of the study sample or regional variation may be responsible for this dissimilarity. High score in emotional exhaustion (more than the cut-off point >14), high score in cynicism (more than the cut-off point >6) and a low score in academic accomplishment (less than the cut-off point <23) is considered as burnout individually. As such when each dimension of burnout was assessed separately, medical students from different medical colleges in our study had high emotional exhaustion (58.0%) and cynicism (63.2%), but low academic accomplishment (42.7%). Similar findings were described by de Oliva Costa et al[2] which reported high rates of cynicism and emotional exhaustion, while lower rates in professional efficacy. This implies that in medical students, a high degree of professional effectiveness can compensate for the stress of academic life. However, our findings differ from the findings of Altannir et al[5] and Rasheed et al[31] which is may be due to different instruments and different cutoff points used to calculate burnout. Several other studies conducted in various parts of the globe revealed the similar findings e.g., in Israel by Gilbey et al[8] (EE 70.4%, CY 57.1%), in Malaysia by Thew et al[22] (high in EE and CY, low in AA), in Uganda by Kajjimu et al[8]] (EE 93.1%, CY 97.2%, AA 62.1%), in Iraq by Yahya et al[23] (EE 85.6%, CY 77.8%, AA 32.5%), in Saudi Arabia by Shadid et al[12] (EE 77.8%, CY 65.7% AA 45.5%), in Hong Kong by Lee et al[13] (EE 49.3%, CY 53.8% AA 71.1%), in China by Gan et al[32] (EE 24.8%, CY 6.21%, AA 33.99%), also in Saudi Arabia by Albalawi et al[11] (EE 66.7%, CY 78.4% AA 91.9%), in Brazil by Brazil by Pagnin et al[14] (EE 64.2%, Cy 19.2%, AA 43.5%). On the other hand, few researches revealed dissimilar findings in this regard e.g. in Saudi Arabia by AlShahrani et al[33] (EE 32.3%, CY 33.7%, AA 54.3%), in Saudi Arabia by Alkhmees et al[34] (EE 40.7%, CY 23.9%, AA 29.8%) and again in Saudi Arabia by Altannir et al[26] (EE 17.4%, CY 56.9% AA 64.9%). The cause of dissimilarity may be either due to use of different instruments for measuring the burnout, define burnout differently, selection of the study sample or regional variation.

We conducted bivariate logistic regression analysis to examine the association between various significant sociodemographic factors from the chi-square analysis with different domains of MBI-SS which revealed that in emotional exhaustion domain respondents studying in fifth year (OR 2.030, 95% CI=1.121-3.676), students staying in mess (OR 10.690, 95% CI=1.330-85.911), and with parent (OR 2.353, 95% CI=1.179-4.696), having inadequate (OR 1.936, 95% CI= 1.016-3.690), & no recreational facilities (OR 5.602, 95% CI= 2.005-15.654), no participation of games and sports (OR 1.746, 95% CI= 1.026-2.971), presence of no student welfare service (OR 1.625, 95% CI= 0.978-2.698), having disturbed sleep pattern (OR 2.401, 95% CI=1.199-4.807), use of internet for >6 hours/day (OR 2.589, 95% CI=1.161-5.772) were important risk factors for the development of burn out. In cynicism domain, respondents staying with parent (OR 2.584, 95% CI=1.266- 5.276), inadequate recreational facility

(OR 1.820, 95% CI=0.977-3.390), no recreational facilities (OR 3.391 , 95% CI=1.242-9.255), use of internet for >6 hours/day (OR 2.694, 95% CI= 1.234-5.881) were important risk factors for the development of burnout. In academic accomplishment domain, respondents having monthly income >100001 taka (OR 2.017, 95% CI=0.999- 4.070), comfortable curricular activities (OR 4.219, 95% CI= 1.214-14.665) and having no comments in regards to the state of studentship (OR 14.570, 95% CI=1.666-127.423) in the medical college were important risk factors for the development of burn out. Several studies conducted around the globe to find out the factors responsible for the development of burnout among the undergraduate medical students and revealed that female gender, age under 25 years, advanced year of study, studying at a specific medical college, not being parent[8], sleep quality and exercise level[13], do not having confidence on self-clinical skills and feeling uncomfortable with academic environment[2], male gender, third year students, having a lower CGPA[35], presence of smart phone addiction, course choice not based on personal interest or due to family pressure[22], being out-off phase in the curriculum, the effectiveness of wellness initiatives[24] were important risk factors for burnout. Again, other factors e.g. female gender, family history of mental illness[23], age, gender, doctor parents, no help or no supportive resources, lack of time off, lack of belief in what you do, fear of big consequences of failure, family responsibilities and uncertain future[4], female gender[5], increasing year of study, poor sleep quality, alcohol consumption[25], female gender, first year student, various extra-curricular activities[1], age, year of study, gender, year of study, low-income family, marital status, type of college[30] were found as important risk factors for burnout. In regards to our study many of the variables revealed similarity to the above findings and few were dissimilar which may be either due to the selection of sample, use of different research instrument, time of data collection, study design or regional variation.

This study had several limitations which need to be considered. First, the cross-sectional nature of this study does not permit to determine the causal relationship. Second, to collect data by using face-to-face interview, the questions asked to elicit burnout from the respondents relating to a period of weeks prior to participation. Such questionnaires carry a risk of recall bias. Third, although our response rate was excellent but the absolute sample size is relatively small. Forth, there may be a possibility of lack of generalizability. Although we took six public and private medical colleges for the study place but it is too small in regards to the number of medical colleges in Bangladesh (around 106, out of which 36 are public and 70 are private).

Conclusion

The findings of this research highlighted several critical risk factors associated with burnout among undergraduate medical students. The study revealed that final-year students, students staying with parents or in mess accommodations, inadequate or non-existent recreational facilities, lack of participation in games and sports, disturbed sleep patterns and excessive internet use (more than 6 hours daily) were significant contributors to emotional exhaustion. Additionally, living with parents, inadequate recreational facilities, and excessive internet use were linked to heightened cynicism. For academic accomplishment, third-year students and those with late bedtime habits were identified as key risk factors. These results indicate the multifaceted nature of burnout, influenced by a combination of academic, social, and personal factors. The high prevalence of burnout, particularly in the emotional exhaustion and cynicism domains, suggests a pressing need for interventions targeted at these specific areas to enhance the well-being and academic performance of medical students.

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