

## Original Article

### Academic stress and its Psychological impact on Undergraduate Medical Students during COVID-19 pandemic in Bangladesh

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## Abstract

**Background:** COVID-19 is an emerging disease has a wide range of effects on all spheres of life, students' academic performance and psychological health in particular. **Objective:** To assess the academic stress and its psychological impact on undergraduate medical students during COVID-19 pandemic. **Materials and Methods:** A descriptive cross-sectional study was conducted among 311 under-graduate medical students of purposively selected five private medical colleges in Dhaka, Shariatpur and Kishoreganj districts from August to December 2021. Perceived Stress (PS) was measured with the Perceived Stress Scale (PSS-10), data were collected using pretested mailed questionnaire. **Results:** Mean age of the respondents was  $21.22 \pm 1.18$  years; 181(58.20%) of the participants were females, 265(85.2%) were Muslim. About three-fourths 221(71.06%) had no inclination to online learning, 203(65.27%) had limited or restricted online network status; 160(51.45%) felt stress due to frequent examinations. More than one-third 106(34.08%) never experienced peer competition. Two-thirds 208(66.88%) of the respondents had moderate, 64(20.6%) low level and 39(12.5%) had high level of Perceived Stress Score (PSS) with mean PS score of  $18.43 \pm 7.35$ . The mean PS score was low in the age group of 25 to 29 years which is statistically significant ( $p < 0.05$ ), PS score was significant for attending year ( $p < 0.05$ ). Two-fifths 130(41.80%) male students had higher mean perceived stress score than their female counterparts which is insignificant statistical ( $p > 0.05$ ). **Conclusion:** The participants were incompetent to handle personal problems; incapable to control irritability and stress; fail to cope with the assigned tasks; get nervous, feel anger and get agitated for facing unexpected events.

**Key words:** Academic stress, Psychological impact, Impact of COVID-19, Perceived stress Score

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## Introduction

The COVID-19 pandemic is a threat to global health.<sup>1</sup> The World Health Organization (WHO) has declared the COVID-19 outbreak as a public health emergency of global concern.<sup>2</sup> The COVID-19 epidemic has spread globally with a substantial influence on social systems, governments as well as on public health.<sup>3</sup> Globally, over 2800000 confirmed cases were reported as of 26 April 2020, and 192971 people died as a result.<sup>4</sup> In addition, not only the rapidly rising numbers of confirmed cases and deaths, but also having a psychological impact on COVID-19-exposed persons.<sup>5</sup> Psychological impact of the pandemic was on those who were remain unaffected by the pandemic as well.<sup>6,7</sup> Individuals may experience a wide range of psychological symptoms including stress, depression, sadness, panic and anxiety during outbreak

of COVID-19 because of lack of knowledge about COVID-19 and its highly infectious nature.<sup>8-10</sup>

Around the globe, the pandemic has led to the closure of schools in over 150 countries affecting the education of nearly one billion children.<sup>11</sup> WHO indicated that almost ninety percent of the world's students, more than 1500000000 children and young people, have been affected by nationwide school closure.<sup>12</sup> The COVID-19 pandemic is particularly concerning for students because the college years are a peak period for psychological symptom onset.<sup>13</sup> Students' psychological problems are likely to worsen because of the high prevalence of COVID-19, home quarantine restrictions, a lack of masks during the early stages of the pandemic, and delays in

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opening schools, colleges, and universities. Public health crises have a major negative impact on students' mental health,<sup>14</sup> and students were susceptible to these public health emergencies and showed higher level of perceived stress (PS)<sup>15</sup> which may be defined as a condition or feeling experienced when a person perceives that the demands exceed the personal and coping resources the individual can mobilize.<sup>16</sup>

The COVID-19 has a wide range of consequences on all peoples including medical students. They are worried about their future, which has a significant psychological impact on them.<sup>14</sup> The psychological effect and academic impact are frequently ignored during crisis and pandemic management. Every students' psychological stability has a significant impact on their academic performance.<sup>17</sup> It has been proven that the pandemic has a major impact on students from both the home nation and the host country's academic performance. Students are also facing a lots of problem for communication with the institution and the teachers.<sup>18</sup> The COVID-19 pandemic represents not only threatening health but also it may indirectly increase students' PS through the negative effects on learning behavior, attitude and online education.<sup>19</sup> An intense shift to online learning during the outbreak may lead to increased PS because of increased on-screen time.<sup>20</sup> A study conducted in Saudi Arabia revealed long-term COVID-19 quarantine may cause 56.2% of all medical students to decrease the time they spend studying.<sup>21</sup> Medical students with a higher level of severe stress were reported because they were struggling with time management of online learning rather than offline classes.<sup>22</sup> The obstacle of online learning education such as the absence of practice and inadequate online learning material, contribute to students' stressed emotions.<sup>23</sup> It is worth noting that both developed and developing countries faced an enormous challenge, due to the unprecedented circumstances of COVID-19, and conversion from lectures or tutorials to online learning.<sup>24</sup> Medical students (29.8%) from Japan reported concerns about the shift toward online education as they thought online education could have been ineffective compared with in-person learning.<sup>25</sup> Besides, national surveys in 2020 reveal a high prevalence of psychological distress with 35% in the People's Republic of China, 61% in Iran, and 45% in the United States. Canada's central statistical office reported 20% of the Canadian population aged 15 to 49 years, and has increased their alcohol consumption. Nearly 55% of Americans reported their lives to be more stressful in May 2020 compared to January 2020.<sup>26</sup>

First case of COVID-19 was confirmed in Bangladesh 8 March 2020.<sup>29</sup> Being a country of limited resources in the healthcare setting, the authorities imposed a countrywide lockdown for the containment of the infection.<sup>27,28</sup> During the COVID-19 pandemic, however, students' psychological health becomes a concern of interest as all the educational institutions were closed down, and their social circle, communication, and interaction processes

were also changed.<sup>29</sup> Also, online schooling, the newly introduced method of teaching can be unfavorable for a higher number of students as of difficulties related to understanding materials, technical issues, lack of interest in attending classes, limited access to online schooling materials, and so forth.<sup>30,31</sup> Evidently, the severity of lack of willingness in online schooling led to suicide occurrences in Bangladesh. That is, an undergraduate student refused to partake online examination that turned into conflicts within their family, as a result, the mother and son's suicide pact occurred.<sup>32</sup> Thus, it is apparent that some of students are encountering the pandemic-related obstacles like social and economic disruptions, uncertainty about their future careers, loneliness and fear of losing loved ones etc.<sup>33,34</sup> The study was intended to assess the academic stress and its psychological impact on undergraduate medical students during COVID-19 pandemic.

### Materials and Methods

A descriptive cross-sectional study was carried out among purposively selected 311 undergraduate medical students, based on inclusion and exclusion criteria, of different phases at purposively selected five private medical colleges namely Popular Medical College, ZH Sikder Women's Medical College, and Ashiyan Medical College, Dhaka, Monowara Sikder Medical College, Shariatpur and Zahurul Islam Medical College, Bajitpur, Kishoreganj for the period ranging from August to December 2021. Data were collected by using pretested mailed questionnaire after having informed verbal consent. Collected data were checked for completeness, accuracy and consistency. Data confidentiality was maintained strictly, whereas anonymity was followed for data presentation and analysis. Perceived Stress (PS) was measured with the Perceived Stress Scale (PSS- 10) which was developed by Sheldon Cohen *et al.*, in 1983.<sup>35</sup> PSS likert scale was categorized as never, almost never, sometimes, fairly often and very often with a score of zero to four. Thus self-reported questionnaire was assessed PS over the past month with the total score (0 to 40) was computed by reversing positive items' scores and summing up the scores of all the items. A higher score indicates a greater perception of stress. The total PS score was categorized as low (0~13 points), moderate (14~26 points), and high (27~40 points).<sup>36</sup> All other ethical issues including approval of the study were taken into consideration. Collected data were edited, coded, processed and finalized with omission and addition for inconsistency. Finalized data were used for processing by using statistical package for Social Sciences (SPSS) version 26.0. Descriptive statistics were presented as frequency, percentage, mean and standard deviation, as well as in figures based on data nature. Independent sample *t*-test and one-way ANOVA test were used to examine the mean differences in PS in relation to demographic variables.

## Results

An overwhelming number 291(93.6%) of respondents were in the age group 20 to 24 years with a mean age of  $21.22 \pm 1.18$  years. Nearly three-fifths 181(58.20%) of the participants were females, while the religion of over four-fifths 265(85.2%) of the students was Islam. Mean family size was  $5.07 \pm 2.13$ . Maximum 161(51.78%) participants had total monthly family income ranges 10000 to 50000 BDT with mean monthly family income of  $Tk.69516.08 \pm Tk.40302.58$ . As many as 288(92.60%) students were single. Nearly half 144(46.30%) of the participants were attending in third year MBBS class. More than half 167(53.69%) of the students had completed three online courses. Over two-fifths 137(44.05%) of the students had taken five hours class daily. More than two-thirds 215(69.13%) of the students did not have the experience of participating in online classes. Nearly three-fourths 221(71.06%) of the students had no inclination to online learning, while 203(65.27%) had limited online network status. Most of the students 160(51.45%) felt stressed due to frequent examination. Nearly three-fifths 179(57.56%) of the students were never dissatisfied with class lectures. The vastness of academic curriculum was considered by the majority 85(27.33%) of the students, whereas more than two-fifths 137(44.05%) of the students never thought of availability of inadequate learning materials. two-thirds 202(64.95%) of the students did not have experience to have a specific guidance from the faculties. The majority 106(34.08%) of the students had never encountered peer competition. Moreover, 144(46.30%) students never faced difficulties in reading text books. Less than two-fifths 118(37.94%) of the students claimed that their parents had high expectations from them. Furthermore, less than two-

fifths 112 (36.01%) of the students were constantly concerned about their future professional life, while 101(32.47%) students were anxious about inadequate scope for recreation. Nearly three-fourths 226(72.67%) of the students had no difficulties in adjusting with their families, whereas nearly half 154(49.52%) of the students indicated that their accommodations were not away from home, majority 110(35.37%) reported feeling lonely occasionally, more than half 168(54.02%) of the students had never encountered financial difficulty, 162(52.09%) felt that they were not unable to socialize with the peers. At least 118(37.94%) respondents sometimes encountered difficulties in sleeping. Majority 125(40.19%) of the students reported that they had never been an illness that affected their class and examination performances. In addition, 213(68.49%) students claimed to had never experienced health-related family problems. An overwhelming majority 273(87.78%) students did not have any physical disabilities.

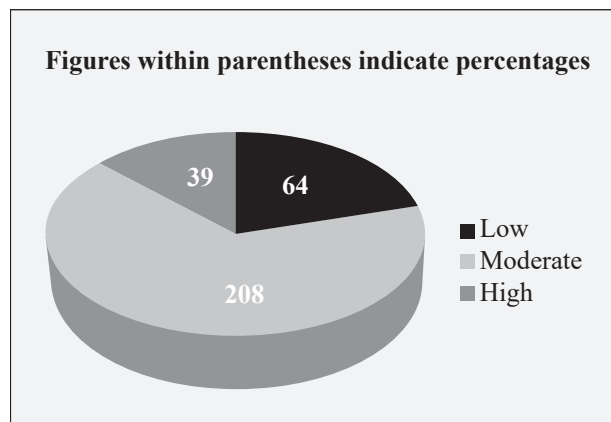
Of 311, all the participants perceived any form of stress with different levels of frequency in their education. As many as 273(87.78%) were competent to handle their personal problems, while 271(87.12%) students felt nervous, 265(85.21%) students experienced that issues were not going their way, 264(84.88%) students were unable to control their irritability, 246(79.09%) students could not cope with all the activities they had to perform, 242(77.81%) students were angered as the stress was beyond their control, 227(22.99%) students got upset by the unexpected events, 218(70.09%) students each was unable to control the important issues and failed to overcome the difficulties in their lives and 209(67.20%) were unable to control the situation (Table No. 1).

**Table No.1: Responses to the PSS within the last month prior to data collection**

Elements Perceived Stress Scale	Never	Almost never	Sometimes	Fairly often	Very often
Frequency of getting upset due to unexpected happening	84(27.00)	43(13.83)	81(26.05)	63(20.26)	40(12.86)
Frequency of failing to control the important issues in life	93(29.90)	38(12.21)	91(29.25)	46(14.79)	43(13.85)
Frequency of getting nervous and stressed	40(12.86)	29(9.32)	117(37.62)	66(21.22)	59(18.98)
Frequency of feeling confident to handle personal problems	38(12.22)	21(6.75)	129(41.49)	68(21.86)	55(17.68)
Frequency of issues not going right	46(14.79)	40(12.86)	138(44.37)	61(19.62)	26(8.36)
Frequency of failing to cope with all the activities	65(20.91)	51(16.40)	119(38.26)	47(15.11)	29(9.32)
Frequency for enabling to control irritation	47(15.11)	43(13.83)	103(33.12)	70(22.51)	48(15.43)
Frequency of feeling on the top of things	102(32.80)	53(17.04)	108(34.73)	37(11.90)	11(3.53)
Frequency of getting anger as the things are beyond control	69(22.19)	42(13.50)	119(38.26)	39(12.54)	42(13.51)
Frequency of facing difficulties for failing to overcome the piling up	93(29.90)	51(16.40)	99(31.83)	42(13.50)	26(8.36)

PS Score was computed by reversing scores of positive items, and summing up scores of all the items. Maximum score was 37 and minimum score was zero with a range of 37 with a mean stress score of  $18.43 \pm 7.35$ . Level of stress

was moderate in 208(66.88%) students, while it was low in 64(20.6%) students and was high 39(12.5%) students (Fig.No.1).



**Fig.-1: Pic diagram showing PS status**

More than two-fifths 130(41.80%) male students had higher mean stress score than their female counterparts

**Table No.2: Socio-demographic variables and its association with perceived stress score**

Variables	Category	Frequency (%)	Mean	SD	Test Statistics	P value
<b>Gender</b>	Male	130(41.80)	18.54	6.904	0.212	0.832
	Female	181(58.20)	18.36	7.670		
<b>Age in Years</b>	15-19	18(5.79)	20.06	7.141	4.39	0.013
	20-24	291(93.57)	18.43	7.289		
	25-29	2(0.64)	4.00	0.00		
<b>Attending year</b>	First year	84(27.01)	19.38	8.694	2.66	0.048
	Second year	53(17.04)	19.60	5.705		
	Third year	144(46.30)	17.18	7.041		
	Fourth year	30(9.65)	19.73	6.591		
<b>Online learning experience</b>	Yes	96(30.87)	19.76	7.291	2.139	0.33
	No	215(69.13)	17.84	7.314		
<b>Inclination to online learning</b>	Yes	90(28.94)	18.99	7.422	0.849	0.396
	No	221(71.06)	18.21	7.323		
<b>Online Network condition</b>	Limited	203(65.27)	17.92	7.231	- 1.693	0.092
	Unlimited	108(34.73)	19.40	7.503		

**Discussion**

The perceived stress was encountered by a substantial number of respondents. As many as 227(72.99%) respondents got upset by the happening of an unexpected event. Of them, 103(45.37%) were upset often, fairly and very often. While 265(85.21%) respondents realized that things were not going in their way with 87(32.83%) students encountered it fairly and very often. A cross sectional study carried out carried out by Deemah *et al.* (2020)<sup>37</sup> with 367 students in KSA, revealed that 41.15% got upset often, fairly and very often, and 33.79% felt things were not going in their way. These are more or less consistent with the present study findings. As many as 47(15.11%) students failed to control irritation, while of 264, one hundred and eighteen (44.70%) students were able to control irritation fairly and very often. Study carried out by Deemah *et al.*, (2020) in KSA<sup>37</sup> revealed that 35.53% students were fairly and very often able to control irritation which is more or less similar with present study findings. Of the rest, 89(40.83%) were able to control important

with an insignificant statistical difference ( $p>0.05$ ). The mean stress score was low in the age group of 25 to 29 years with a statistically significant difference ( $p<0.05$ ). As many as 30(9.6%) respondents who were attending in third phase or fourth year had higher mean PS score than the respondents attending in other years or phases with a statistically significant difference ( $p<0.05$ ). Nearly one third 96(30.87%) students who had prior online learning experience had higher mean PS score. However, the difference was statistically insignificant ( $p>0.05$ ). As many as 90(28.99%) students had previous inclination to online learning with a statistically insignificant difference ( $p>0.05$ ). More than one third 108(34.73%) students who had unlimited internet network had higher mean PS score than those had limited network condition with a statistically insignificant difference ( $p>0.05$ ) (Table No. 2).

issues in their lives fairly and very often. Study carried out by Deemah *et al.*, in 2020 in KSA<sup>37</sup> observed that 51.16% students were able to control the important issues in their lives which is inconsistent with present study findings. As many as 273(87.78%) students were confident to handle their personal problems. Of them, 123(45.05%) were confident to handle their personal problems fairly and very often. Study carried out by Deemah *et al.* (2020) in KSA<sup>37</sup> showed 53.71% students were not confident in their ability to handle their personal problems which is not line with the present study findings that might be attributed to small sample size and purposive sampling technique used for the present study. At least 65(20.90%) students failed to cope with all the activities they had to carry out. Of 246, seventy-six (30.90%) students coped with all the issues they had to perform fairly and very often. This is vindicated by the findings of the study carried out by Radwan *et al.*, in 2021 in Palestine for assessing perceived stress in distant learning among 385 school students.<sup>38</sup> More than two-thirds 209(67.20%) students felt that they were on the top

of things. Of them, 48(22.97%) students fairly and very often felt that they were on the top of things. This does not substantiated by findings of the studies carried out by Deemah *et al.*, (2020) in KSA<sup>37</sup> that might be ascribed to the purposive sampling technique followed for selection of sample and small sample size of the current study. An overwhelming number 271(87.14%) of students got nervous and felt stress. Of them, 125(46.13%) students got nervous and felt stress fairly and very often. Similar results were observed in other studies, which evaluated the mental health of university students during COVID-19 in China<sup>14</sup> conducted by Cao *et al.* (2020) and in Spain carried out by Odriozola-Gonzalez *et al.* (2020).<sup>39</sup> More than three-fourths 242(77.81%) of the students got anger as things went beyond their control. Of them, 81(33.47%) students fairly and very often angered as circumstances were beyond their control. This is corroborated by the findings of the study carried out by Radwan *et al.*, in 2021 in Palestine for assessing perceived stress in distant learning among school students.<sup>38</sup> Of 218(70.10%) students encountered difficulties as they failed to overcome the piling up. Of them, 68(31.19%) students encountered difficulties fairly and very often as they were unable to overcome the piled up. Similar results were recently found in studies conducted for evaluation of the mental health of university students during COVID-19 pandemic in China<sup>14</sup> and Spain.<sup>39</sup> This is inconsistent as well with the findings of the studies carried out by Deemah *et al.*, (2020) in KSA.<sup>37</sup>

## Conclusion

Every participants in the current study perceived any form of stress with varied frequency in their academic activities. They are incapable to control irritability, stress, encountered situation and other vital issues; get nervous; fail to cope with the assigned tasks and to overcome the difficulties they encountered; get anger and upset for facing unexpected events; incompetent to handle their personal problems and experience unfavourable issue. In quite a good number of students, level of stress ranges from mild to moderate in nature. Males are more prone to stress in age group less than twenty-five years, students attending classes in third phase, previous experience of attending online classes and students having unlimited internet network.

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