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Chronic strains, self-efficacy, and mental health: a cross-sectional study among university students in Bangladesh

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ABSTRACT

Chronic strains, arise from daily activities, can affect mental healthcare of individuals across various professions, including students. However, how chronic strains affect mental health of students is poorly understood so far for students. We aim to identify the most prevalent chronic strains and examine the effects of chronic strains on mental health conditions adjusted for socio-demographic variables. A total of 393 students were included in the study. They were interviewed through a structured questionnaire between April 6 and May 28, 2023. The outcome variable considered were mental health measured through 14-item questions. The prime explanatory variable was chronic strains. Multivariable linear regressions were used to the relationships of chronic strains, self-efficacy, and socio-demographic characteristics with mental health conditions. We found that 16.7% of participants reported low levels of chronic strains, 66.4% reported moderate levels and 18.3% reported high levels. 'Tension for future career' emerged as the most significant source of stress that led chronic strains. Chronic strains and self-efficacy were found to be significant determinants of different mental health conditions. These findings suggest that institutions should focus on improving students' psychological well-being to mitigate the impact of chronic strains.

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1. INTRODUCTION

Mental health is identified as the capability to realize one's abilities, cope with normal life pressures, work productively, and is essential for an individual's well-being [1], [2]. Globally, in 2019, almost 970 million people resided with a mental health problem, among them, 301 million and 280 million suffered from anxiety and depression respectively. Comparison between 2019 and 2020, nearly 26% and 28% problems rose in terms of anxiety and depression respectively within one year [3]. Within 100 higher educational institutions, a survey was conducted by student voice among 2,000 students and revealed that 22% of the respondents reported poor mental health and almost 75% of the respondents suffered from depression or anxiety at college [4]. These empirical data established mental health problems as major concerning issues for today's world.

Stress is a primary factor in mental illness and has been termed the epidemic of the 21st century by the World Health Organization (WHO) [5]. Majority of the students reported stress as major concerning issues in their study period. Several empirical studies, conducted throughout different countries among college or university students, found that 84.4% of the respondents reported stress [6], 17.5% of respondents reported severe stress [7], 6.9% reported extremely severe stress [8], 5% for severe stress [9], 80.3% suffered

from moderate to high stress [10], 21.7% of the students reported extremely severe stress [6], and 5.1% [11] of the respondents experienced extremely severe stress.

Among students, chronic strains, or long-term problems encountered daily, are significant stressors [12]. Students often endure stress in academic, role, and goal-oriented domains. A study among Malaysian medical students found top stressors included exams, large learning material, poor marks, limited review time, performance pressure, heavy workload, and difficulty understanding material [13]. Alternatively, a study in India reported stress among students were primarily linked with family and teacher expectations, competition, workload, social gatherings, conflicts, loneliness, cultural adjustments, relationship issues, self-assurance, financial support, and budgeting [14]. In Namibia, stressors among university students included high expectations, heavy syllabus, many assignments and tests, numerous classes, limited resources, being away from home, lack of family support, relationship issues, bullying, and financial problems [15]. In Bangladesh, major stressors for university students included worry about the future (86%) and exam tension (70.5%), along with new people, group work, relationship troubles, low grades, financial crisis, lack of computer knowledge, misunderstanding lectures, weight issues, and parental conflict [16].

Stressful situations increase vulnerability to mental illness. Research shows that crises like job loss and cultural adjustment raise mortality risk [17]. In Thai students, stress overload led to psychological problems such as anxiety and panic attacks [18]. Evidence showed that stress and depression as well as anxiety have positive association [19], [20].

The condition of mental health is varied by socio-demographic factors such as age, gender, residence, year of study, faculty enrollment, self-efficacy, and income. Mamun *et al.* [21] conducted a study at Jahangirnagar University, Bangladesh, and found that lower class students were more prone to affect depression than others. The findings of another study, conducted in India, also showed that female students and 1st as well as 2nd year students were more likely to show depressive symptoms [22]. Self-efficacy, or one's ability to cope with daily hassles, mediates stress's impact on mental health [23]. In Pakistan, low self-efficacy was linked to higher depression and anxiety [24]. Gull [25] conducted a study among 100 students of Aligarh Muslim University who attached with jobs and revealed inverse association between self-efficacy and anxiety (r = -.053) as well as self-efficacy and depression (r = -.008). Another study, conducted in York University, Canada, discovered that self-efficacy and state anxiety negatively correlated (r = -.42) [26]. Xie *et al.* [27] conducted a study among Chinese oncology nurses and also discovered that self-efficacy is negatively associated with depression (r = -0.252).

Several leading public and private universities of Bangladesh have counseling section that gives essential mental health support to the students. Despite counseling support, the prevalence rate of suicidal thought among students due to the stress is increasing alarmingly. Several studies calculated the rate of suicidal ideation and revealed that 13.4% [28], 13.8% [29], and 14.7% [30] of the study participants reported suicidal ideation in last one year which depicted the limitations of the counseling that given by the university authority. Therefore, recent empirical study should be conducted to identify the role of chronic strains, self-efficacy on mental health.

To our knowledge, no studies have examined chronic strains' impact on mental health among university students in Bangladesh although they are perceived vulnerable because of academic pressure, family, environmental, and career related issues. We therefore conducted this study to identify primary chronic strains among Dhaka University students and examine their impact on mental health adjusted for potential confounders. The findings of the current study should be helpful to comprehend the role of chronic strains on mental health and provide comprehensive ideas about other associated factors of mental health.

2. METHOD

2.1. Study settings and design

We conducted a cross-sectional study from April 6 to May 28, 2023, at the University of Dhaka, Bangladesh. The university was chosen due to its position as the largest and oldest institution in Bangladesh, attracting students from diverse socio-demographic backgrounds across the country. Situated in the heart of Dhaka, the capital city, the university boasts 13 faculties, 83 departments, 12 institutes, 20 residential halls, 3 hostels, and over 56 research centers, catering to a student body of more than 37,000 students (including approximately 20,773 males and 12,028 females). The quantitative cross-sectional design was employed in the current study due to understand the sources of stress objectively and to prove the association statistically.

2.2. Sampling

The survey targeted both masters and honors level students, ensuring a representative sample by weighting participation according to the relative sizes of institutions and faculties. The required sample size was determined using the Cochran's sample selection formula, as in (1).

$$n_0 = Z^2pq/e^2 = (1.96)^2 \times (.5) \times (.5)/(.05)^2 = 385 \quad (1)$$

Where:
n_0 = The desired sample size;
p = Population estimate (.5 was maximum variability);
q = 1-p;
Z = The standard normal deviate (usually set at 1.96 which corresponded to the 95% confidence level); and
E = The margin of error (a level of 95% was chosen).
We then adjusted the estimated sample size for the finite population using (2).

$$n = n_0/1 + \{(n_0 - 1)/N\} = 385/1 + \{(385 - 1)/37000\} = 381 \quad (2)$$

Where:
n = Sample size;
N = Population size (based on the University of Dhaka's official website, exceeding 37,000 regular students); and
n_0 = Previously calculated sample size (385).

This resulted in a final target sample size of 381 students. To account for a potential 20% non-response rate observed in previous Bangladeshi studies, we adjusted our target sample size from 381 to 457 participants. We then randomly invited 457 students from the university to participate in the survey. Data collection was conducted through face-to-face interviews using a pre-developed and pre-tested questionnaire.

2.3. Study participants

Out of the 457 students invited to participate, 393 completed the survey. The resulted in a commendable response rate of 86%. This number exceeded the minimum sample size requirement of 381, providing a statistically robust sample for our analysis.

2.4. Outcome variables

We assessed key mental health outcomes employed the General Health Questionnaire (GHQ-28) for this purpose. This questionnaire comprises a total 28 items, of them first 14 items were used for measuring mental health conditions as per previous studies as shown in Table 1. Data for each item was collected through a 4 point Likert scale, where higher scores indicate greater severity of symptoms. The score ranged from 0 to 42 whereas lowest score indicated a better mental health and highest score indicate a poorer mental health.

2.5. Explanatory variables

The primary independent variable of interest was chronic strains. We measured chronic strains by analyzing respondents' answers on a set of 19 questionnaires as presented in Table 2 with response options was 5 points Likert (0-4) scale. As such the value of the responses was found varied between 0 and 76. Based on previous literature, the generated score was categorized into three levels: lower strain (0-25), moderate strain (26-50), and higher strain (51-76) [31], [32]. Higher scores indicate greater levels of chronic strain, while lower scores represent less strain. The variable 'chronic strains' transforms into a dummy variable with 2 categories such as lower strains and higher strains due to perform multivariable linear regression.

We also considered self-efficacy as an independent variable where generalized self-efficacy scale [33] was used. The instrument consists of 10 items. Higher score indicates more self-efficacy, and lower score indicates less self-efficacy. Based on scores, self-efficacy was categorized into three groups including low (0-13), moderate (14-26), and high (27-40). Cronbach's alpha value (0.826) supports the validity and reliability of the scale. The variable 'self-efficacy' also transforms into a dummy variable with 2 categories such as poor self-efficacy and good self-efficacy because of performing multivariable linear regression.

We also considered several socio-demographic variables, including respondent's age, gender, family's monthly income, year of study, place of residence, and faculty of study as explanatory variables. For the purpose of data analysis, we presented these explanatory variables including age (18-20/ 21-23/24-26), gender (Female/Male), family's monthly income (Less than TK. 3,000/ Tk. 3,000-Less than TK. 60,000/ TK. 60,000-Less than TK. 90,000/ More than TK. 90,000), year of study ($1^{st}/2^{nd}/3^{rd}/4^{th}$/Masters), place of residence (At parents/In rented accommodation/On campus), and faculty of study (Social sciences/Business studies/Science/Arts/Law/Engineering and technology/Biological sciences/Earth and environmental sciences/Institute of social welfare/Institute of education and research) with different categories. These variables were selected by reviewing the existing literature [7], [21], [22].

2.6. Data analysis

Descriptive statistics, more specifically frequency, percentage, mean, and standard deviation, were used to characterize the respondents' demographics, primary chronic strains, as well as self-efficacy. Then, multivariable linear regressions were used to discover the relationships of mental health conditions with self-

efficacy and chronic strain adjusted for socio-demographic variables. All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 25.

Table 1. Socio-demographic characteristics of the study participants in University of Dhaka, Bangladesh, 2023 (n = 393)

Variables	Categories	Frequency (N)	Percentage (%)
Age	18-20	53	13.5
(Mean: 22.30, Std. Deviation:	21-23	259	65.9
1.466, Min: 18, Max: 26)	24-26	81	20.6
Gender	Female	113	28.8
	Male	280	71.2
Family's monthly income	Less than TK. 3,000	229	58.3
(Mean: 35884.73, Std. Deviation:	TK. 3,000- Less than TK. 60,000	115	29.5
83663.378, Min: 3000, Max:	TK. 60,000- Less than TK. 90,000	27	6.9
1500000)	More than 90,000	22	5.6
Year of study	1st year	76	19.3
	2nd year	54	13.7
	3rd year	98	24.9
	4th year	95	24.2
	Masters	70	17.8
Faculty enrolment	Social Sciences	85	21.6
	Business Studies	66	16.8
	Science	46	11.7
	Arts	97	24.7
	Law	27	6.9
	Engineering And Technology	10	2.5
	Biological Sciences	9	2.3
	Earth and Environmental Sciences	11	2.8
	Institute of Social Welfare	14	3.6
	Institute of Education and Research	28	7.1
Place of residence	At parents	69	17.6
	In rented accommodation	41	10.4
	On campus	283	72

Table 2. The severity of chronic strains by mean scores with descending orders of the study participants in University of Dhaka, Bangladesh, 2023 (n = 393)

Ranking of severity	Chronic strains	Mean scores	Standard deviation
1	Tension for future career	2.90	1.211
2	Poor time management	2.57	1.183
3	Poor facilities from university authority	2.41	1.273
4	Vast syllabus	2.35	1.269
5	Inadequate facilities of canteen or mess	2.27	1.312
6	Inability to balance study	2.26	1.284
7	Lack of organized schedule of classes	2.21	1.278
8	Too many classes	2.16	1.184
9	Absence of calm and quiet environment	2.16	1.253
10	Using social media	2.12	1.338
11	Expectation from self and others	2.09	1.316
12	Competition with others students	2.06	1.332
13	Poor satisfaction with classroom performance	1.97	1.214
14	Lots of group work	1.81	1.341
15	Dealing with administrative work	1.74	1.351
16	Security issues in the campus	1.67	1.277
17	Lots of practical work	1.62	1.139
18	Journey to campus	1.28	1.280
19	Working with new people	1.20	1.168

3. RESULTS AND DISCUSSION

3.1. Results of the study

3.1.1. Socio-demographic characteristics of the study participants

Table 1 demonstrates the socio-demographic characteristics of the respondents. A total of 393 participants were included in this survey, with their ages ranged from 18-26 years. Males comprised 71.25% (n = 280) of the sample. The arts faculty had the highest percentage of respondents (24.86%), followed by the social sciences (21.63%), business administration (16.79%), and science (11.70%) faculties. Regarding residence, 72.01% of respondents lived on campus, in various halls, while 27.99% resided off-campus. Among the off-campus residents, 17.6% lived with their parents and 10.4% in rented house as shown in Table 1.

3.1.2. Different sources of chronic strains

Of the total 19 chronic strains related to roles and goals were considered, the top five stressors were tension for future career (2.90), poor time management (2.57), poor facilities from university authority (2.41), vast syllabus (2.35), and inadequate facilities of canteen or mess (2.27) as presented in Table 2. The least severe chronic strain was working with new people (1.20) as shown in Table 2. Once we classified them as per level, 60 (15.3%) respondents were classified as having low levels of chronic strains followed by 72 (18.3%) respondents reported having high level of chronic strains, and 261 (66.4%) respondents reported having moderate levels of chronic strains as presented in Table 3.

3.1.3. Self-efficacy: capability to accomplish a task

The findings of the current study revealed that most of the students (60.8%) reported high levels of self-efficacy, whilst approximately 4 out of 10 students (38.7%) reported moderate levels of self-efficacy. On the other hand, only 0.5% (n = 2) of respondents reported low self-efficacy as shown in Table 4. The findings indicated that almost all of the participants (99.5%) reported moderate and high self-efficacy which generated low and moderate chronic strains among the study participants.

Table 3. The level of chronic strains among the study participants in University of Dhaka, Bangladesh, 2023 (n = 393)

Level of chronic strains	Frequency	Percentage
Low chronic strains	60	15.3
Moderate chronic strains	261	66.4
High chronic strains	72	18.3
Total	393	100

Table 4. Level of Self-efficacy among the study participants in University of Dhaka, Bangladesh, 2023 (n = 393)

Level of self-efficacy	Frequency	Percentage
Low self-efficacy	2	0.5
Moderate self-efficacy	152	38.7
High self-efficacy	239	60.8
Total	393	100

3.1.4. Association between socio-demographic variables, chronic strains as well as self-efficacy and mental health conditions

Multivariable linear regression analysis was used to identify factors associated with mental health conditions as presented in Table 5. Among these variables, chronic strains, self-efficacy, gender, income, and place of residence were found significantly associated with mental health conditions. We found that students with higher levels of chronic strains were 3.95 times more likely to perceive themselves as having mental health problems (95% CI = 2.24, 5.67; $p<0.001$) compared to those with lower levels of chronic strains. Conversely, students with high self-efficacy were 6.15 times less having mental health problems (95% CI = -9.71, -2.60; $p<0.001$). Male students were 3.41 times less mental health problems than female students (95% CI = -5.39, -1.43; $p<0.001$). Residential students were 3.53 times less to having poor mental health condition than non-residential students (95% CI = -5.54, -1.52; $p<0.001$). Additionally, students from families with a monthly income of 30,000 to less than 60,000 taka were 3.13 times less affected by mental health problems (95% CI = -5.17, -1.09; $p<0.003$) compared to those from families with a monthly income of 3,000 to less than 30,000 taka.

3.2. Discussion of the results

The aim of this study was to explore the effects of chronic strains, self-efficacy, and socio-demographic factors on mental health. Additionally, the current study sought to identify the sources of chronic strains and the level of chronic strains, as well as self-efficacy. We found "tension for future careers" to be the highest potential source of chronic strain, consistent with previous studies conducted at the University of Asia Pacific and Jahangirnagar University in Bangladesh [16], [34]. In contrast, studies from Cyprus Health and Social Sciences University, Turkey [35], University College of Science and Technology, University of Calcutta [36] and four Malaysian public universities [34] identified tests or examinations as the primary stressors.

The findings of the study indicate that although tension for future career is top chronic strain for Bangladeshi students, this is not deemed as a top source in abroad. This difference can be attributed to

several factors specific to Bangladesh. The higher unemployment rate in Bangladesh creates significant anxiety among students about their future careers. Bangladesh Institute of Development Studies found in its survey that among National University graduates, 66% remains unemployed [37]. With limited job opportunities in both the public and private sectors, students face intense competition for available positions. This scarcity of employment options makes the prospect of securing a stable job uncertain, leading to heightened stress about the future. Additionally, the socioeconomic context in Bangladesh places immense pressure on students to achieve financial stability and support their families, further amplifying concerns about future employment. Ela *et al.* [38] found that parents of lower socio-economic families expected that students will give support their families after completing their studies.

Table 5. Association of mental health conditions with chronic strains and self-efficacy adjusted for socio-demographic factors, Bangladesh, 2023 (n = 393)

Variables		Coefficient	Std. Err.	T	p>|t|	[95% conf. interval]
Chronic strains	Low chronic strain			1.00		
	High chronic strain	3.95	.87	4.53	0.000	2.24,5.67
Self-efficacy	Poor self-efficacy			1.00		
	Good self-efficacy	-6.15	1.81	-3.40	0.001	-9.71,-2.60
Age	18-20			1.00		
	21-23	2.28	1.7	1.34	0.180	-1.06,5.63
	24-26	2.64	2.29	1.15	0.249	-1.86,7.15
Gender	Female			1.00		
	Male	-3.41	1.01	-3.38	0.001	-5.39,-1.43
Family's monthly income	3,000-less than 30,000			1.00		
	30,000-less than 60,000	-3.13	1.04	-3.02	0.003	-5.17,-1.09
	60,000-less than 90,000	-.22	1.79	-0.12	0.902	-3.74,3.30
	More than 90,000	.61	1.96	0.31	0.754	-3.24,4.47
Year of study	1st year			1.00		
	2nd year	-.39	1.70	-0.23	0.817	-3.73,2.94
	3rd year	-1.53	1.68	-0.91	0.362	-4.84,1.77
	4th year	-2.06	1.72	-1.19	0.233	-5.44,1.33
	Master	-.85	2.20	-0.39	0.70	-5.18,3.48
Faculty enrolment	Social science			1.00		
	Business administration	-2.78	1.47	-1.89	0.059	-5.66,.11
	Science	.42	1.62	0.26	0.794	-2.77,3.61
	Arts	-.63	1.31	-0.48	0.630	-3.20,1.94
	Others	-.77	1.37	-0.56	0.574	-3.46,1.92
Place of residence	Non-residential			1.00		
	Residential	-3.53	1.02	-3.45	0.001	-5.54,-1.52

We also found a higher level of chronic strains among 18.3% of the total students followed by 16.7% reported low level of chronic strains and 66.4% reported moderate level of chronic strains. The findings were supported by [7], [20]. In contrast, several studies discovered that only 5% of the respondents reported severe or extremely severe stress [9], [11]. The findings urge need for university focus to ensure better health of the students through arranging more effective counseling session by reputed psychologists.

We found that higher chronic strains and lower self-efficacy were significantly correlated with poorer mental health, consistent with previous studies worldwide [18], [24], [39], [40]. Chronic strains can lead to sustained psychological pressure, making individuals more vulnerable to psychological problems. This extensive exposure to strains can decrease cognitive resources, leading to anxiety, depression, and other mental health problems. Moreover, lower self-efficacy, or a reduced belief in one's capability to cope with stress and challenges, exacerbates the negative impact of chronic strains. Individuals with low self-efficacy may feel less capable of managing their stressors, which can lead to a sense of helplessness and heightened emotional distress. This relationship between chronic strains, self-efficacy, and mental health underscores the importance of both external stressors and internal coping mechanisms in determining mental health outcomes. These linkages highlight that interventions aimed at reducing chronic strains and enhancing self-efficacy could be effective in improving mental health.

The study also found that socio-demographic variables such as gender, place of residence, and family income were significantly associated with the mental health conditions of students. These results align with previous studies in Bangladesh and India [7], [21], [22]. In the context of Bangladesh these socio-demographic variables play an essential role in shaping psychological problems. Gender differences in mental health may be influenced by cultural expectations and societal roles, with female students often facing additional pressures related to family responsibilities and social norms. Place of residence also impacts

mental health, as students from rural areas may experience additional stress due to the challenges of adapting to urban environments and academic demands. Family income is a significant determinant, as students from lower-income families may face financial pressures that add to their academic and personal stress. In Bangladesh, limited access to mental health resources and support systems exacerbates the impact of these socio-demographic variables.

This study has several strengths and a few limitations. The major strength lies in the rigorous data collection process, which followed proper sampling methods. An adequate number of data points were collected and analyzed using comprehensive statistical techniques. Consequently, the findings of this study can be used to inform policies and programs. However, the study has some limitations. The major limitation is that the data were collected through a cross-sectional survey, which means the findings are correlational rather than causal. Additionally, the data were collected from only one university in Bangladesh, limiting the generalizability of the findings. The self-reported data analyzed in this study also introduce the possibility of recall bias. Furthermore, we could not consider many important factors affecting mental health, including environmental factors, due to the lack of relevant variables in the survey. Despite these limitations, the study highlights the poor mental health conditions of university students in Bangladesh, necessitating attention from both university authorities and the government. The university authority may arrange more sessions about mental health in residential halls and each department. Similarly, the government may give more financial and logistic supports to the university authority to arrange such programs.

4. CONCLUSION

The current study found that 'tension for future career' is the top chronic strain, and majority of the participants reported moderate chronic strains (66.4%) as well as high self-efficacy (60.8%). The study also found that high chronic strains and poor self-efficacy adversely affect the mental health of university students in Bangladesh. This indicates a pathway linking stressors, self-efficacy, and mental health issues.

It is important for university authorities to focus on improving the mental health of students. Additionally, the findings highlight the need for increased attention to organizing more effective counseling sessions for students and the provision of adequate social support to prevent additional difficulties during their crucial academic period. Since this study covers only one public university, in the future, this study can be conducted in broader context including more public as well as private universities.

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AUTHOR CONTRIBUTIONS STATEMENT

This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration. Rashed Hossain and Rasheda Irshad Nasir were equally contributed to the conceptualization, methodology, validation, investigation, writing-review and editing, as well as project administration. In addition to, software, formal analysis, resources, data curation, writing-original draft, and visualization were done by Rashed Hossain. Besides, Rasheda Irshad Nasir supervised this study.

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Rasheda Irshad Nasir	✓	✓		✓		✓				✓		✓	✓	

C : **C**onceptualization
M : **M**ethodology
So : **So**ftware
Va : **Va**lidation
Fo : **Fo**rmal analysis
I : **I**nvestigation
R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

CONFLICT OF INTEREST STATEMENT

The authors stated no potential conflicts of interest.

DATA AVAILABILITY

The derived data supporting the results of this study are available from the corresponding author, [RH], on request.

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