

UNRAVELLING THE MENTAL HEALTH LANDSCAPE: EXPLORING DEPRESSION AND ASSOCIATED FACTORS AMONG UNIVERSITY STUDENTS IN BANGLADESH

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Abstract

Introduction: The prevalence of depression and its correlates in Bangladeshi rural university students have been rarely investigated. We draw a literature review, a cross-sectional study and analysis of the rural students' depression natures and mechanisms that influence their academic performance and health and well-being. **Methods:** A cross-sectional research was conducted during the period august 2019 to January 2020 in a university. We employed Beck Depression Inventory scale to collect data from 200 undergraduate and graduate students. Data were analysed using chi-square association test and ordinal logistic regression. **Results:** We discovered that mild to severe depression affected 60% of rural students [mild (16%), borderline (10%), moderate (12%), severe (11.5%), and extreme (10.5%)]. Family expectations, smoking, bad academic achievement, inability to enroll in a particular program, and inadequate household finances were significant risk factors for depression. When it comes to depression, male students scored noticeably higher than female pupils. The decreased depression was linked to both strong household economics and intellectual achievement. **Conclusions:** The intricate interactions among the risk factors influence the character and processes of depression in rural students. Programs

for psycho-social support, such as behavioral and psychiatric therapy or mentorship, are crucial for enhancing the health and wellness of these students.

Keywords: Depression, Beck Depression Inventory, Psycho-social assistance programs, Cross-sectional Study, University students, Bangladesh.

1. INTRODUCTION

Depression is one of the impulsive issues and its main factors are the worthlessness. Depression affects the capacity of a student to conduct daily life activities. Depression levels can vary from mild to severe depending on the degree and severity of functional impairment and (or) the effect of symptoms on disability [1]. National Institute of Mental Health suggested that a student first realize the symptoms of depression in their university life. Most of the literature agreed that depressed students feel sad and get poor academic performance [2-7]. The cultural beliefs surrounding mental health was the most substantial perceived barrier to engaging in mental health services and students at the college face unprecedented levels of distress affecting their mental health [8,9].

A student faces a variety of new challenges upon entering a university, including adopting new lifestyles, being exposed to diverse cultures, making friends and also deals with a unique amount of depression. According to a number of studies, college students frequently experience personal discomfort, which negatively impacts the academic program [10,11]. The rate of depression also varies according to the student's residential status [12]. In a study Minh et al. found that the prevalence of depression was higher among international students than domestic students [13]. Students attempt to suicide due to severe depression [14-16].

Aisha found that the majority of the students (58.2%) had depression [17] but Aude found that 40.4 percent students had depression [18]. A relatively small percentage (16.5%) of depression rate among college students was found by Kaur [19]. Abdul and Tejaswini showed that student's depression level varies according to their subject but not vary according to their gender [20]. In a similar type of study Han shows that medical students had a higher depression rate than engineering students' [21].

The depression level also varies according to their academic progress such as prevalence of stress was higher in first year students than second year students [22]. The mental illness of a student will rise during education and have a negative impact on cognitive functioning and learning [23]. Several researchers determine different factors behind depression level. Faizah shows that financial background of a student was negatively related to their academic performance but gender has no significant relation [24]. In contrast Kuehner shows that women are more mentally depressed than as men [25].

Sarah revealed that depression severity was found to increase significantly with the student's age [26]. Depressed people display a negative explanatory style compared with non-depressive people. Stressed induced negative emotions can affect health in various ways [27].

Purpose of the Study

Many studies identify different factors of depression all over the world but a very few study was conducted to identify the depression level of public university students in Bangladesh. The study try to determine the factors associated with depression level of students in university levels using Beck Depression Inventory (BDI) Scale.

2. METHODS AND MATERIALS

Research design

A structured questionnaire was used in a cross-sectional study to gather data from 200 randomly selected pupils.

Study setting and data collection

The study team, which included academics with extensive experience conducting in-person interviews from August 2019 to January 2020, created the questionnaire. If a student met the following requirements to be included in the survey, they were: (i) Mawlana Bhashani Science and Technology University (MBSTU) students; or (ii) they agreed to participate in an interview and provide their opinions. A pilot survey was first carried out in order to finalize the questionnaire. A research assistant conducted the in-person interview as part of the study team. Following the acquisition of informed consent, data was gathered using a standardized questionnaire and recorded.

Outcome measures

The Beck Depression Inventory (BDI) questionnaire was used to gauge the degree of depression. The 21-item Beck Depression Inventory (BDI) is a self-report rating tool used to assess depressive symptoms and typical attitudes.²⁸ Likert scale responses were used to measure each of the 21 questions, and the responses ranged from 0 (for example, "I am not more irritable than usual") to 3 (for example, "I am irritable all the time"). The aggregate scores ranged from 0 (no depressive symptoms) to 63 (severe depressed symptoms). The following cut-off scores are used to classify students with major depressive disorder according to their level of depression: normal, 0–10; mildly depressed, 11–16; borderline, 17–20; moderately depressed, 21–30; severely depressed, 31–40; and extremely sad, 40+ [28].

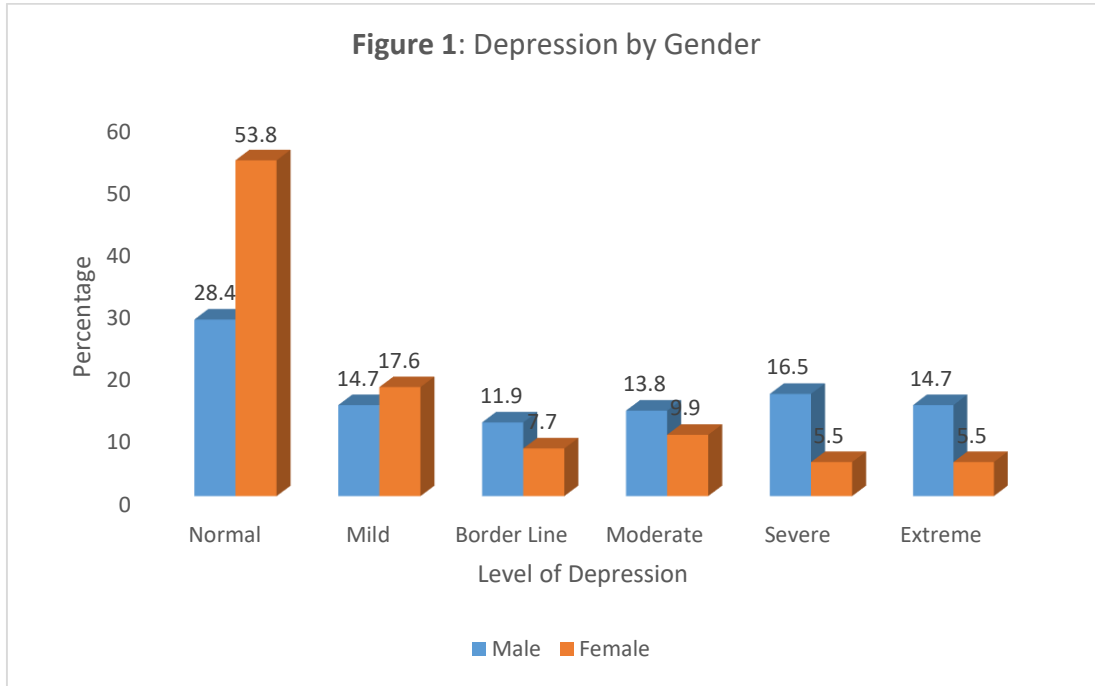
Data analysis

To identify the relationship between dependent variable and independent variable bivariate analysis techniques was used. When the dependent variable is in ordinal scale and more than one category is used, ordinal logistic regression is applicable. Since the dependent variable (Level of Depression) measured in ordinal scale of measurement, ordinal logistic regression was used. The entire analysis was performed using the Statistical Package for Social Sciences (SPSS), version 23.

3. RESULTS

Differentials of depression

Figure 1 shows depression by gender. The significant difference of depression scores among university students by some selected covariates were examined through Student's t-test.



Here we tested the depression difference according to respondent's gender, Job pressure from family, residential status and place of residence [Table 1]. We found that the depression was significantly (P -value < 0.001) higher for male students, students from rural areas, students who have job pressure from family and stay in university hall.

Table 1: Test of significance of the depression difference among university students.

Variables	Category	Depression	
		Mean(SD)	P-value
Job Pressure from Family	Yes	24.29 (13.58)	<0.001
	No	11.61 (10.43)	
Residential Status	Residential Students	18.62 (14.63)	<0.001
	Non-Residential Students	15.05 (10.66)	
Gender	Male	21.05 (14.39)	<0.001
	Female	13.11 (11.03)	
Place of Residence	Rural	19.77 (14.46)	<0.001
	Urban	12.48 (09.68)	

Prevalence of depression

Table 2 shows that more than fifty percent (54.5%) respondents are male. Among the respondents over three quarter respondents are non-smoker and only below one fourth respondents are smoker.

About half of the respondents faced job pressure from their family and admitted their favorite subjects. About two third of the respondents come from lower middle class family. Only about four of ten students are satisfied their results as it are good. Among the respondents only one quarter students are completed their graduate level of studies. Since the dependent variable is level of depression to test the significance of the covariates both chi-square test and spearman rank correlation test were used depend on covariates types and the P-value shows that all the covariate had significant effect on depression level of the student. Table 2 also shows that more than two third (71.6%) male student have depression where as in case of female students this percentage is less than fifty percent (46.2%).

This may be happen due to the fact that in Bangladesh male are the responsible people to take the family responsibility. The Table 2 also shows that the students who have pressure to get a job from their family face more depression (83.7%) than the students who didn't have any job pressure from their family (39.8%). Student always thinking about his career, if he/she studied on his/her favorite subject then he/she felt relaxed about his future otherwise, he/she felt frustrated. So depression was related with admission of the subject. About eight in ten students (79.8%) have any kind of depression who didn't admit their favorite's subjects whereas only four in ten (43.3%) face any kind of depression who admitted their favorite's subjects.

Smoking behavior was also significant for mental depression. Generally, when a person became depressed then he/she started smoking. About 82.6 percent smokers have depression whereas only 53.2 percent non-smoker has depression. Researchers thought who belongs to reach family had less chance to became depressed but who belongs to poor family he had lot of pressure from family.

The study also found the same situation. Student's academic performance was closely related to the depression level because student's mental health was needed to be strong to achieve desired result in the examination. Students with good academic performance had less (44.2%) depressed than students with bad health conditions (74.6%). Researcher also observed that graduate students were more (68.0%) depressed than other students because they have more pressure from family to earn (Table 2).

Table 2: Assessing the association between selected covariates and level of depression using Spearman rank correlation (SRC) and Chi-square (χ^2) tests.

Variables	Level of depression (In Percentage)						Total	P-value
	normal	mild	borderline	moderate	severe	extreme		
Gender*								
Male	28.4	14.7	11.9	13.8	16.5	14.7	54.5	0.000 ^a
Female	53.8	17.6	7.7	9.9	5.5	5.5	45.5	
Job pressure from family*								
Yes	16.3	14.1	14.1	18.5	19.6	17.4	46.0	0.000 ^a
No	60.2	17.6	6.6	6.6	4.5	4.5	54.0	
Admitted favourite subject*								
Yes	57.7	14.4	5.7	9.6	7.7	4.9	52.0	0.000 ^a
No	20.2	17.9	14.7	14.7	15.7	16.8	48.0	
Smoking habit*								
Smoker	17.4	17.4	10.9	15.2	15.2	23.9	23.0	0.000 ^a
Non-smoker	46.8	15.6	9.7	11.1	10.3	6.5	77.0	
Family condition*								
Lower class	18.5	9.3	14.8	16.6	20.4	20.4	27.0	0.000 ^b
Middle class	41.4	21.4	8.7	11.4	10.0	7.1	35.0	
Higher class	53.9	15.8	7.9	9.2	6.6	6.6	38.0	
Academic performance*								
Bad	25.4	10.2	11.9	18.7	16.9	16.9	29.5	0.000 ^b
Medium	34.4	21.9	10.9	10.9	12.5	9.4	32.0	
Good	55.8	15.6	7.8	7.8	6.5	6.5	38.5	
Education year*								
1 st & 2 nd year	48.1	17.7	10.1	10.1	7.6	6.4	39.5	0.000 ^b
3 rd & 4 th year	36.6	15.5	9.6	14.1	16.9	7.3	35.5	
Graduate	32.0	14.0	10.0	12.0	10.0	22.0	25.0	

a. Chi-square Test b. Spearman Rank correlation Test * indicate Significant

Table 3 indicated that the odds of being in a higher level of depression were 1.883 times higher for male students as compared to female students. Table 3 also showed that the odds ratio of being in a higher level of depression was 0.518 times lower for 1st & 2nd year students as compared to graduate students. The odds ratio of being in a higher level of depression was 2.346 times higher for those students who are from lower income family as compared to higher income family.

The Table 3 also showed that the odds ratio of being in a higher level of depression was 1.062 times higher for bad academic performed students as compared to good academic performed students and also the odds ratio of being in a higher level of depression was 0.517 times lower for medium academic performed students as compared to good academic performed students.

The odds ratio of being in a higher level of depression was 0.495 times lower for students who admitted on his favorite subject as compared to students who did not admitted on his favorite subject and finally the odds ratio of being in a higher level of

depression was 2.971 times higher for students who had job pressure from family as compared to those students who had no job pressure from family (Table 3).

Table 3: Odds ratio of risk factors associated with Depression

Parameters	β	S.E	Wald	P-value	Exp(β)	95% C.I for Exp(β)	
						Lower	Upper
Gender							
Male	0.633	0.418	2.293	0.130	1.883	0.830	4.271
Female							
Education year							
1 st & 2 nd year	-0.731	0.430	2.894	0.089	0.482	0.208	1.117
3 rd & 4 th year	-0.402	0.426	0.888	0.346	0.669	0.291	1.543
Graduate & Post graduate							
Family Condition							
Lower class	0.852	0.431	3.008	0.083	2.346	0.895	6.146
Middle class	-0.268	0.462	0.337	0.562	0.764	0.309	1.891
Higher class							
Academic Performance							
Bad	0.060	0.469	0.017	0.897	1.062	0.424	2.663
Medium	-0.727	0.478	2.313	0.128	0.483	0.189	1.233
Good							
Job pressure							
Yes	1.083	0.374	8.467	0.004	2.971	1.427	6.187
No							
Admitted favorite subject							
Yes	-0.684	0.371	3.399	0.065	0.505	0.244	1.044
No							
Smoking Status							
Smoker	0.436	0.387	1.271	0.260	1.547	0.725	3.301
Non Smoker							
The reference category is: Extreme.							

4. DISCUSSION

This study indicated that 60.0 percent students had symptoms suggestive of depression. Among the depressed students mild, moderate, severe and extreme depression was found in 16.0%, 12.0%, 11.5% and 10.5% respectively. While Hossain found that about 40.8% students had symptoms suggestive of depression. Among the depressed mild depression was found in 79.0% and moderate depression was found in 21% students, but no case of severe and extreme depression was found [29].

In another study Nazma has been revealed that only 1.0% of the students were free from any sorts of psychological distress, 34.6% had mild distress, 39.8% moderate and 24.9% was suffering from severe distress [30]. Tapas and Santosh found that 16.88% students have minimal depression, 35.62% have mild depression, 41.25% suffered from moderate depression and 6.25% were affected by severe depression [31].

The study revealed that 55.8%, 34.4% and 25.4% students with good, medium and bad academic performance respectively who had no depression. Only 6.5% students have good academic performance with extreme depression level. While Shumalia found that 7.28% and 3.0% students with low level depression showed medium and good academic performance respectively [4].

He also found that 52.57% students with moderate depression showed medium academic performance, 21.71% students with medium level of depression showed high academic performance and 9.57% students with high depression showed medium academic performance [4]. The study found that depression was significantly higher in graduate students than others students while Hossain and Khan found that Depression was significantly higher in 1st & 2nd year students [29,32] but based on a study on medical students Supe (1998) showed stress was more in 3rd year students than 1st year students [33].

This study explored that 71.6% male and 46.2% female students were mild to extreme depressed which is approximately similar to a study conducted by Nazma and found that a significantly higher proportion of male respondents 73% had moderate to severe mental stress as compared to the female respondents 56% [30]. Wafaa & Safaa showed that higher depression score was associated with increasing age, low socio economic standard [34], while this study showed higher depression score was associated with gender, education year, family condition, academic performance, job pressure from family and admitted favorite subject.

5. CONCLUSIONS

The purpose of this study was to assess the factors affecting the depression level of the students at higher education and to suggest possible solutions that may help to mitigate depression level of students. The study found some factors which have significant effect on students' depression level of Mawlana Bhashani Science and Technology University. These factors were Gender, job pressure from family, admitted favorite subject, Family condition, Education year, academic performance, smoking habit which enhances further the anxiety and depression level among the students.

The study also found that there were less possibility to have high level depression whose academic performance was good as well as study showed that graduate students were more depressed than 1st & 2nd year students. Researcher also found, higher income family's students remain more relaxed than lower income family's students. The result also indicated that there was significance difference between smoker and non-smoker students.

Students' advisors or authority should be provided a trainer who will train students about stress management. The teachers need to be cautious for the overly depressed students. Because they can observe student's behaviour in the classroom and access that their academic performance is suffering by depression.

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Author contributions

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References

- 1) Depression in adults. (2009). NICE Clinical Guideline.
- 2) NIMH. (2012). National Institute of Mental Health. Revised 2012. *NIMH Publication* No.11-4266.
- 3) Field T, Diego M and Sanders C (2001). "Adolescent risk factors and depression". *Adolescence*, 36 (143):491-498.
- 4) Shumalia Khurshid, Qaisara Parveen, M. Imran Yousuf & Abid Ghafoor. (2015). Effects of depression on students' academic performance. *Pakistan association of anthropology, Islamabad, Pakistan. Sci. int. (Lahore)*, 27(2), 1619-1624.
- 5) Virginia M. Deroma, John B. Leach, J. Patrick Leverett. (2009). The relationship between depression and college academic performance. *College student journal* Vol.43, NO, 2.
- 6) Lindsey B. J., Fabiano P., & Stark C. (2009). The prevalence and correlates of depression among college students. *College Student Journal*, 43(4), 999–1014.
- 7) Eisenberg, D., Gollust, S. E., Golberstein, E., & Hefner, J. L. (2007). Prevalence and Correlates of Depression, Anxiety, and Suicidality among University Students. *American Journal Orthopsychiatry*; 77(4): 534–42.
- 8) Kruk J, Aboul-Enein BH, Bernstein J, Gronostaj M. Psychological Stress and Cellular Aging in Cancer: A Meta-Analysis. *Oxid Med Cell Longev*. 2019 Nov 13; 2019:1270397. doi: 10.1155/2019/1270397. PMID: 31814865; PMCID: PMC6877941.
- 9) Mortier P, Cuijpers P, Kiekens G, Auerbach RP, Demyttenaere K, Green JG, Kessler RC, Nock MK, Bruffaerts R. The prevalence of suicidal thoughts and behaviours among college students: a meta-analysis. *Psychol Med*. 2018 Mar; 48(4):554-565. doi: 10.1017/S0033291717002215. Epub 2017 Aug 14. PMID: 28805169.
- 10) Dahlin M, Joneborg N, Runeson B (2005). Stress and depression among medical students:A cross sectional study. *Med Edu*; 39(6).594-604.
- 11) Noel L. Shadowen, Ariel A. Williamson, Nancy G. Guerra, Ravichandran Ammigan and Mattlew L Drexler. (2019). Prevalence and correlates of depressive symptoms among international students: implications for university support offices. *Journal of international students*. Vol: 9, Issue: 1, page: 129-148.

- 12) Arusha AR, Biswas RK. Prevalence of stress, anxiety and depression due to examination in Bangladeshi youths: A pilot study. *Child Youth Serv Rev.* 2020 Sep; 116:105254. doi: 10.1016/j.childyouth.2020.105254. Epub 2020 Jul 18. PMID: 32834273; PMCID: PMC7367775.
- 13) Minh Hoang Nguyen, Tam Tri Le & Serik Meirmanov. (2019). Depression, acculturative Stress and social connectedness among international university students in Japan: A statistical investigation. *Sustainability.* Doi: 10.3390/su11030878.
- 14) Jasso-Medrano, J.L, Lopez-Rosales, F. (2018). Measuring the relationship between Social media use and addictive behavior and depression and suicide ideation among university students. *Comput.Hum.Behav.* 183-191.
- 15) World Health Organization. (2017). Depression and other common mental disorders: Global Health Estimates.
- 16) McCarthy, J., Downes, E. J., & Sherman, C. A. (2008). Looking back at adolescent depression. A qualitative study. *Journal of Mental Health Counseling*, 30(1), 49-68.
- 17) Aisha Dabana, Abdul Razaq & A Gobir. (2018). Depression among students of a Nigerian university: prevalence and academic correlates. *Arch med surg.* Vol: 3Issue: 1, page: 6-10.
- 18) Aude Villatte, Diane Marcotte & Alexandra Potvin. (2017). Correlates of depression in First-year college students. *Canadian journal of higher education.* Vol: 47, No: 1, Pages 114-136.
- 19) Kaur S, Deepti S.S & Lal M. (2014). Prevalence and correlates of depression among College going students of district Amritsar, India. *International research journal of medical sciences.* Vol: 2(11), 5-9.
- 20) Abdul Raffie Naik & Tejaswini Padikkal. (2016). Depression among college students of Gulbarga city. *International journal of modern social sciences.* 5(1): 27-41. ISSN: 2169-9917.
- 21) Han SS, Lee SY, Choi WS, Kim SJ, Park SB, Lee SY. (2009). Depression and its influencing factors among Korean medical and engineering students in urban areas using zung self-rating depression scale. *Korean J Fam Med*; 30(7):539-48.
- 22) Abdulghan HM. (2008) Stress and depression among medical students: A cross sectional study at a medical college in Saudi Arabia. *Pak J Med Sci*; 24(1):12-7.
- 23) Saipanish R. (2003). Stress among medical students in a Thai medical school. *Med Teacher*; 25(5):502-6.
- 24) Faizah Mohd Khalid, Noor Suman, Farhan Rasid. (2016). Depression & Academic performance: A case study. <https://www.researchgate.net/publication/302406671>.
- 25) Kuehner, C. (2003). Gender differences in unipolar depression: An update of epidemiological findings and possible explanations. *ActaPsychiatricaScandinavica*, 108(3), 163-174.
- 26) Sarah Naushad, Waseem Farooqui, Satish Sharma, Mukthi Rani, Rajashree Singh & Supreet Verma. (2014). Study of proportion and determinants of depression among college students in mangalore city. *Niger med j.* 55(2): 156-160.
- 27) DeDreu, C. K., Baas, M., & Nijstad, B. A. (2008). Hedonic tone and activation level in the mood-creativity link: Toward a dual pathway to creativity model. *Journal of Personality and Social Psychology*, 94(5), 739-756.
- 28) Beck AT, Ward CH, Mendelson M. (1961). An inventory for measuring depression. *Arch Gen Psych.* 4:53-63.
- 29) Hossain M.M & Wahab M.A. (2016). Academic stress, Anxiety and depression among the Students of Armed Forces Medical College, Dhaka cantonment. *JAFMC Bangladesh.* Vol 12, No 1.

- 30) Nazma Sultana. (2011). Stress and depression among undergraduate medical students of Bangladesh. *Bangladesh journal of medical education*. Vol-02, Issue-01.
- 31) Tapas Karmakar & Santosh Kumar Behera. (2017). Depression among the college Students: An empirical study. *An int.j. Of education and applied science*. Vol: 8 No: 1, PP-163-170.
- 32) Khan MS, Mahmood S, Badshah A, Ali SU, Jamal Y (2006). Prevalence of depression and anxiety among medical students in Karachi, Pakistan, and their related factors *Journal of Pakistan Medical Association*; 56:583-586.
- 33) Supe AN (1998). A study of stress in the Seth G.S. Medical College medical students *Journal of Post graduate Medicine*; 44(1):1-6.
- 34) Wafaa Yousif Abdel Wahed & Safaa Khamis Hassan. (2017). Prevalence and associated Factors of stress, anxiety and depression among medical fayoum university Students. *Alexandria journal of medicine*. 53, 77-84.