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Depression, Anxiety and Stress among the Undergraduate Students of Pokhara Metropolitan, Nepal

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ABSTRACT

Background: The university period is taken as a risk period for the onset of several mental disorders as this period is stressful and most of the lifetime mental disorders start typically during this young age. The present study aimed to assess the prevalence and risk factors associated with depression, anxiety, and stress among undergraduates residing at Pokhara Metropolitan, Nepal.

Methods: A cross-sectional study was conducted among 681 undergraduates from different academic institutions of Pokhara Metropolitan using DASS-21 to assess the level of depression, anxiety, and stress.

Results: The overall prevalence of depression, anxiety, and stress among the participants was found to be 38.2%, 46.9%, and 24.1% respectively. The level of depression and stress was not associated with the academic discipline but the higher prevalence was noted among the students from the non-technical group. The major risk factors associated with depression, anxiety and stress were parental education, family history of psychiatric disorders, self-esteem, and academic performance.

Conclusions: The prevalence of mental disorders is high among the undergraduates. Further assessment of these disorders targeting students from different academic disciplines is recommended.

Keywords: Anxiety; depression; risk factors; stress; undergraduates

INTRODUCTION

Depression is a mental disorder which consists of certain characteristics such as; depressed mood, loss of interest, low self-worth, disturbed appetite, and concentration. It is a major health concern because of its substantial morbidity and mortality.¹ Anxiety is a set of emotion characterized by the feeling of tension, worried thoughts, and some physical changes.² Stress is a reaction to a situation which makes a person tired, irritable and unable to enjoy their normal life.³

University period is stressful and risk period for the onset of several mental disorders which leads to various conditions and health risk behaviors such as; violence behavior, poor dietary habits, substance abuse, alcoholism, and suicidal ideation.⁴⁻¹⁰ The study aimed to assess the prevalence and risk factors associated with depression, anxiety, and stress among undergraduates residing at Pokhara Metropolitan, Nepal.

METHODS

This was a cross-sectional study conducted among the undergraduates from several academic institutions in Pokhara Metropolitan from June to December, 2017. Initially, the sample was estimated at 326, taking the prevalence as 30.6% which was a weighted mean prevalence among university students provided by a systematic review of twenty-four articles.¹¹ Then to obtain an optimum sample size the calculated sample of 326 was adjusted with the design effect of 1.5 and 30% non-response rate, thus the sample size reached 681.

In order to increase the representation of each academic group in the sample, we adopted stratified random sampling for which all the undergraduate courses which were available at Pokhara Metropolitan were identified. All the available course were then categorized into seven strata based on their nature such as engineering, management, allied sciences, education, health

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sciences, humanities, and law. The total number of bachelor-level students studying at Pokhara Lekhnath Metropolitan were 13,126 while each of these programs consists of 2304, 5842, 1648, 420, 1525, 835, 552 students respectively (excluding the 1st year students). After we identified the available courses and the total students enrolled, we randomly selected the students proportional to the size of each stratum to get a total of 681 students.

The study was executed after acquiring the ethical approval from the ethical review committee of Pokhara University. The permission from each academic institutions was acquired and the consent letter was signed by the authorities prior to data collection. The teachers were requested to arrange a session for an hour and in that time slot the questionnaire was distributed, explained and the informed consent from the undergraduates was acquired.

Self-administered questionnaire was used to collect the data which consisted of questions on socio-demographic profile, academic performance, and family history of psychiatric disorders. Additionally, the Rosenberg self-esteem scale was used to assess the level of self-esteem and 21-item Depression Anxiety Stress Scale was used to assess the level of depression, anxiety, and stress among the students.^{12,13}

Depression Anxiety Stress Scales 21¹⁵ is a short version of a 42-item self-report instrument designed to measure the three related negative emotional states of depression, anxiety, and stress. This is a 21-item scale measured on a 4-point rating scale (0-3), "0" denoting "did not apply to me at all" and "3" denoting "applied to me very much, or most of the time."

Translation and back translation (English-Nepali-English) of the questionnaire was performed. Pre-test of the data collection tool was carried out to enhance the reliability and validity of tools. Inter-item reliability (Cronbach's alpha) of the DASS-21 scales in this study was 0.92 whereas the depression, anxiety and stress items of the scale were at 0.79, 0.78 and 0.76 respectively.

The collected data was entered using Epidata software version 3.1 while the Statistical Package for Social Science (SPSS) version 20 was used for the analysis. Association between the independent and dependent variable was analyzed through a chi-square test with the level of significance at $p < 0.05$. Binary logistic regression was used to calculate the unadjusted odds ratio.

RESULTS

The research questionnaire was distributed to the sample of 681 undergraduate students and 618 approved to take part in this study achieving a response rate of 90.7 percent for all questions except the question regarding academic performance where the response rate was 78.99 percent. As the non-response of 30% was adjusted so the required sample was acquired. Among the total 618 students, 233 (37.7%) were male and 385 (62.3%) were female. The average age of the students in years was 20.39 ($SD \pm 1.57$), with a range of 18 to 29 years.

This study found the overall prevalence of depression, anxiety, and stress among the participants to be 38.2%, 46.9%, and 24.1%, respectively. The level of mild, moderate and severe depression was found to be 12.8%, 19.1%, and 6.3% respectively. Similarly, the cases of mild, moderate and severe anxiety were reported at 7.9%, 20.4%, and 18.6%, respectively whereas the stress level was at 11.7%, 7.9%, and 4.5%, respectively (Figure 1).

It was found that there was no association existing between the current academic discipline and the level of depression, and stress among the students. However, the higher rate was observed among the students from non-technical disciplines such as Humanities and Education (Table 1).

In the case of depression, the gender of the students was found not to be associated. It was observed that students with a family history of psychiatric disorders were 3.6 times more likely to be depressed than others. Almost three-fourths (74.2%) of the students who had lower self-esteem were depressed while the risk of being depressed was noted to be 7 times more among students with low self-esteem as compared to those who had normal self-esteem. The educational level of the father ($\chi^2 = 10.828$, $p < 0.01$) and the mother ($\chi^2 = 10.052$, $p < 0.01$) were associated with the presence of depression among the students. Students who failed their exams were 2.6 times more likely of being depressed than those who regularly cleared all their exams. (Table 2)

Similarly, in the case of anxiety, the prevalence of anxiety was associated with gender ($\chi^2 = 5.164$, $p < 0.05$). Students with a family history of psychiatric disorders were found 4.5 times more likely to have a certain level of anxiety. Majority (81.1%) of the students who had lower self-esteem had anxiety. The risk of having anxiety was noted to be 7.3 times higher among the students with low self-esteem as compared to those with normal self-esteem (Table 3).

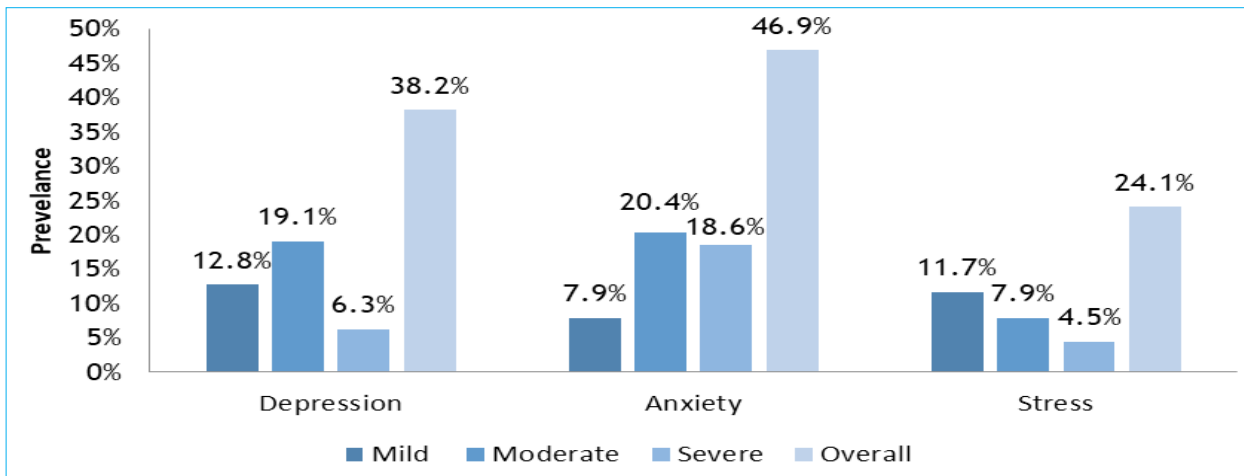


Figure 1. Prevalence of Depression, Anxiety and Stress.

Table 1. Association of academic discipline with depression, anxiety, and stress.

Academic discipline	Depression		Anxiety		Stress	
	Present (%)	x ²	Present (%)	x ²	Present (%)	x ²
Engineering	39 (40.6)		42 (43.8)		16 (16.7)	
Management	110 (38.5)		139 (48.6)		73 (25.5)	
Law	8 (28.6)		16 (57.1)		6 (21.4)	
Natural sciences	30 (36.6)	p-value =0.054	40 (48.8)	p-value =0.019*	24 (29.3)	p-value =0.194
Health Sciences	15 (24.6)		16 (26.2)		10 (16.4)	
Education	10 (45.5)		13 (59.1)		8 (36.4)	
Humanities	24 (55.8)		24 (55.8)		12 (27.9)	

*p-value significant at <0.05

Table 2. Factors associated with depression among the students.

Categories	Depression			x ²	p-value	Unadjusted Odds Ratio (95% CI)
	Present (%)	Absent (%)	Total			
Age (n=618)						
≤19 years	39 (35.8)	70 (64.2)	109	0.325	0.569	
≥20 years	197 (38.7)	312 (61.3)	509			
Sex (n=618)						
Male	89 (38.2)	144 (61.8)	233	0.000	0.997	
Female	147 (38.2)	238 (61.8)	385			
Family psychiatric disorder history (n=618)						
No	190 (34.7)	358 (65.3)	548	25.340	0.000***	Ref
Yes	46 (65.7)	24 (34.3)	70			3.611 (2.139-6.098)
Self-esteem (n=618)						
Normal	136 (29.1)	332 (70.9)	468	94.804	0.000***	Ref
Low Self-esteem	98 (74.2)	34 (25.8)	132			7.036 (4.540-10.905)
High self-esteem	2 (11.1)	16 (88.9)	18			0.305 (0.069-1.345)
Education level of Father (n=618)						
>5 years	160 (34.5)	304 (65.5)	464	10.828	0.001**	Ref
≤5 years	76 (49.4)	78 (50.6)	154			1.851 (1.280-2.678)

Education level of Mother (n=618)						
>5 years	100 (32.1)	212 (67.9)	312	10.052	0.002**	Ref
≤5 years	136 (44.4)	170 (55.6)	306			1.696 (1.222-2.354)
Academic Performance (n=497)						
Regularly passed all attended exams	101 (30.3)	232 (69.7)	333	25.374	0.000***	Ref
Failed any attended exams	88 (53.7)	76 (46.3)	164			2.660 (1.808-3.912)

*p-value significant at <0.05, ** p-value significant at p<0.01, ***p-value significant at <0.001

Table 3. Factors associated with anxiety among the students.

Categories	Anxiety			x ²	p-value	Unadjusted Odds Ratio (95% CI)
	Present (%)	Absent (%)	Total			
Age (n=618)						
≤19 years	45 (41.3)	64 (58.7)	109	1.691	0.193	
≥20 years	245 (48.1)	264 (51.9)	509			
Sex (n=618)						
Male	123 (52.8)	110 (47.2)	233	5.164	0.023*	Ref
Female	167 (43.4)	218 (56.6)	385			0.685 (0.494-0.950)
Family psychiatric disorder history (n=618)						
No	236 (43.1)	312 (56.9)	548	28.942	0.000***	Ref
Yes	54 (77.1)	16 (22.9)	70			4.462 (2.491-7.993)
Self-esteem (n=618)						
Normal	177 (37.8)	291 (62.2)	468	82.756	0.000***	Ref
Low Self-esteem	108 (81.8)	24 (18.2)	132			7.398 (4.577-11.958)
High self-esteem	5 (27.8)	13 (72.2)	18			0.632 (0.222-1.804)
Education level of Father (n=618)						
>5 years	202 (43.5)	262 (56.5)	464	8.597	0.003**	Ref
≤5 years	88 (57.1)	66 (42.9)	154			1.729 (1.197-2.499)
Education level of Mother (n=618)						
>5 years	137 (43.9)	175 (56.1)	312	2.300	0.129	
≤5 years	153 (50.0)	153 (50.0)	306			
Academic Performance (n=497)						
Regularly passed all attended exams	124 (37.2)	209 (62.8)	333	30.326	0.000***	1
Failed any attended exams	104 (63.4)	60 (36.6)	164			2.922 (1.983-4.305)

*p-value significant at <0.05, ** p-value significant at p<0.01, ***p-value significant at <0.001

Likewise, the prevalence of stress was 3.4 times higher among students with low self-esteem. The presence of stress was associated with the family history of psychiatric disorders ($x^2=9.023$, $p<0.01$), educational level of the father ($x^2=5.586$, $p<0.05$), educational level of the mother ($x^2=8.199$, $p<0.01$) and the academic performance ($x^2=9.220$, $p<0.05$) (Table 4).

As the depression, anxiety and stress scale (DASS-21) was used to assess the level of depression, anxiety and stress, the correlation between the sub scales of the tool was analyzed to explore the correlation between these conditions. There was a good correlation ($p<0.001$) found between depression, anxiety and stress scores. (Table 5).

Table 4. Factors associated with stress among the students.

Categories	Stress			x ²	p-value	Unadjusted Odds Ratio (95% CI)
	Present (%)	Absent (%)	Total			
Age (n=618)						
≤19 years	30 (27.5)	79 (72.5)	109	0.842	0.359	
≥20 years	119 (23.4)	390 (76.6)	509			
Sex (n=618)						
Male	54 (23.2)	179 (76.8)	233	0.178	0.673	
Female	95 (24.7)	290 (75.3)	385			
Family psychiatric disorder history (n=618)						
No	122 (22.3)	426 (77.7)	548	9.023	0.003**	Ref
Yes	27 (38.6)	43 (61.4)	70			2.193 (1.301-3.694)
Self-esteem (n=618)						
Normal	89 (19)	379 (81)	468	38.134	0.000***	Ref
Low Self-esteem	59 (44.7)	73 (55.3)	132			3.442 (2.276-5.205)
High self-esteem	1 (5.6)	17 (94.4)	18			0.250 (0.333-1.907)
Education level of Father (n=618)						
>5 years	101 (21.8)	363 (78.2)	464	5.586	0.018*	Ref
≤5 years	48 (31.2)	106 (68.8)	154			1.627 (1.084-2.443)
Education level of Mother (n=618)						
>5 years	60 (19.2)	252 (80.8)	312	8.199	0.004**	Ref
≤5 years	89 (29.1)	217 (70.9)	306			1.723 (1.185-2.505)
Academic Performance (n=497)						
Regularly passed all attended exam	63 (18.9)	270 (81.1)	333	9.220	0.002**	Ref
Failed any attended exam	51 (31.1)	113 (68.9)	164			1.934 (1.259-2.972)

*p-value significant at <0.05, ** p-value significant at p<0.01, ***p-value significant at <0.001

Table 5. Correlation between depression, anxiety and stress scores.

Variables	Depression	Anxiety	Stress
Depression	-	0.725 <0.001	0.730 <0.001
Anxiety	0.725 <0.001	-	0.766 <0.001
Stress	0.730 <0.001	0.766 <0.001	-

DISCUSSION

It was seen that the prevalence of depression among this study group was slightly higher in comparison to the study conducted among the students of two medical colleges of Nepal (29.9%) while the level of anxiety and stress were found to be at the similar rate of 41.1% and 27% respectively.¹⁴ The findings of this study line with the study conducted among 1,617 Turkish university students using DASS-42 which demonstrated the similar

rate of depression, anxiety, and stress at 27.1%, 47.1% and 27% respectively.¹⁵

Remarkably in this study, we found that the academic discipline was not associated with the prevalence of depression and stress. However, the rate of anxiety was significantly higher among the students from non-technical groups such as humanities and education. Health science courses are considered to be quite stressful so the health science students are mostly targeted as vulnerable groups for these kinds of studies.^{16,17} However, equal emphasis should be given to students from other academic backgrounds as well. Many studies suggest that no significant difference exists in the prevalence of depression among medical and non-medical students or even the non-medical students might be more depressed or stressed.¹⁸⁻²⁰

This study depicted, family history of psychiatric disorders is associated with depression, anxiety, and

stress which is consistent with the study conducted among Portuguese students.²¹ Similarly, a study conducted in Karnataka, India revealed that depression is high among those students with a family history of depression.²²

Low self-esteem is noted to play a significant role in the etiology and course of depressive symptoms and other mental problems.²³ Similar findings were observed in this study. Self-esteem has been found to be linked with various emotional and psychological attributes.²⁴

Parental education is associated with these mental disorders which line with other surveys conducted among the university students ($p < 0.01$).^{25, 26} Furthermore, the educational level of parents is found to be linked with low economic status, paternal unemployment, family conflict, which are associated to various mental disorders.²⁶

In case of academic performance, the occurrence of depression, anxiety, and stress was higher among the students who presumed to have lower performance, which lines with the studies conducted among the students from different academic disciplines.^{17, 27}

In this study, a significant correlation was observed between depression, anxiety and stress scale. This finding is in line with a past study conducted among the medical students of two medical colleges in Nepal.¹⁴ Stressful life events have been found to be the casual factor for the onset of anxiety as well as depression.^{28, 29} A prospective study suggests that the patients with anxiety are more likely to be depressed after the occurrence of stressful life events.³⁰

The studies sharing the similar findings suggest that these risk factors can be prevented or managed to a certain level with some approaches such as; planning appropriate interventions at academic institutions to detect and treat these disorders, promoting positive wellbeing and improving life satisfaction to support social and academic performance of university students.^{4,10,14,18,21}

The findings of the study are based on the primary information collected using standard tools through the active involvement of the researchers. However, it was a cross-sectional study conducted among minimum required sample of undergraduate students. There are several academic disciplines that this study failed to cover as they were not available in the study area so, the generalization of the acquired results might be a problem. Further analytical studies need to be

conducted to explore the causal associations.

CONCLUSIONS

The prevalence of these mental disorders seems to be high among the undergraduates. Family history of psychiatric disorders, self-esteem level, parental education, and academic performance were found to be their associated factors. This study also highlights the need for further assessment of these mental disorders targeting students from all academic disciplines. It is essential to develop interventions such as monitoring and support to the students, student counseling, stress management training program workshop, to detect, manage and treat students at risk in higher educational institutions.

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