Original Article

Anxiety and Depression and their Predictors among School Adolescents of Kathmandu, Nepal

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Abstract

Introduction: Adolescence is a vulnerable period in which different physical, psychological and behavioral changes occur contributing to mental health issues. Depression and anxiety occur more commonly than would be expected by chance in children and adolescents. Undetected and untreated mental disorders can impair one's ability to perform at school or work place, cope with daily life activities and can lead to severe mental disorders and related consequences. The aim of this study was to assess the levels of anxiety and depression and their predictors among the adolescents of Kathmandu, Nepal.

Methods: A cross-sectional study was conducted in different higher secondary schools of Kathmandu. Cluster random sampling method was used to select 482 students of Grade XI and XII. Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI)-II were used to assess the levels of anxiety and depression.

Results: Among 482 students, 230 (47.7%) were females and 252 (52.3%) were males with mean age of 17.25 (± 1.01) years. Majority (38.6%) had minimal anxiety and 11.6% had severe anxiety. On the other side, 45.9% had no depression and 16.4% had severe depression. Grade, sex, health problem, use of gadget and academic performance are found to be the predictors of anxiety, while, the predictors of depression are age, sex, health problem and academic performance.

Conclusions: Anxiety and depression are found prevalent among the adolescents, which need to be explored and addressed immediately through appropriate measures. Psychological counseling and support services should be available to vulnerable students.

Introduction

Adolescence is a transitional phase from childhood to adulthood. During this phase, mental health problems like depression, anxiety and other conditions can lead to various behavioral issues.[1] Study objective was to determine the prevalence and patterns of depression. Depression and anxiety in childhood and adolescence have long-term adverse effects and chance of recurrence for majority of young people.[2] Anxiety is a normal human emotion but can be considered excessive or pathological when such responses cause significant

distress or are out of proportion to the perceived source of stress.[3] Depression, a major cause of the global burden of diseases, is also one of the leading causes of illness and disability among adolescents and onset mostly occur during adolescente.[4]

Childhood mental disorders are of public health concerns due to increasing prevalence, early onset, and impact on children, families, and communities. It can interfere with children's ability to achieve social, emotional, cognitive, and academic milestones and to function in daily setting.[5] Adolescents are developmentally immature to experience depressive disorders, and adolescent low mood was seen as part of 'normal' teenage mood swings. Between childhood and early adolescence, anxiety typically precedes depression. From later adolescence onwards, however, the temporal sequence runs in both directions: anxiety predicts depression, but depressive disorders also predict later anxiety.[6] Mental health conditions account for 16% of the global burden of disease. Half of all mental health conditions start by 14 years of age but most cases are undetected and untreated. Suicide is the fourth leading cause of death in 15 to 19 year old teenagers. The consequences of not addressing adolescent mental health conditions extend to adulthood, impairing both physical and mental health and limiting opportunities to lead fulfilling lives as adults.[7]

Methods

A cross-sectional study was conducted among 15 to19 years students of higher secondary level of different academic institutes of Kathmandu Valley, with science programme from 14th March to 20th April, 2021. Considering prevalence of 47%,[8] precision 6%, and design effect 2, total 532 samples were calculated. The final sample came out to be 482, as there was 9.4% non-response rate in our study. Two stage cluster random sampling technique was used to select the samples. Out of 157 schools with science programmes, with each school having 60 to 80 students in each class, we adopted random sampling with lottery method to select five schools. Among each school, one section each from class 11 and 12 were randomly chosen, out of which all the available students were selected.

Ethical approval was taken from the Institutional Review Committee (IRC) of Nepalese Army Institute of Health Sciences (NAIHS). Written informed consent was obtained from the parents / guardians. Standard Beck Anxiety Inventory (BAI) and Beck Depression Inventory (BDI)-II were used to assess anxiety and depression. BAI has 21 items containing the list of common symptoms of anxiety, each item is categorized into four Likert scales, the maximum score being three. The total score is 0 - 63, ranging from minimal to severe anxiety.[9] Similarly, BDI-II consists of 21 groups of statements. Respondents are allowed to give ratings according to the severity of symptoms during the previous week. Each statement is given maximum three scores, and the total score ranges from 0 - 63, that is no depression to severe depression.[10] The internal consistency reliability (Cronbach's alpha) of BAI and BDI are 0.92 and 0.9 respectively.[11,12] The data

collected was entered in EpiData version 3.1 and then exported to Statistical Package of Social Sciences (SPSS) version 16 for analysis. Chi-square test was used to analyze the association of depression and anxiety with independent variables. The study variables showing significant association with anxiety and depression at 95% confidence interval (CI) were further subjected to multivariate analysis for adjustment of possible confounders. Multiple logistic regression analysis was used to find out the predictors of depression and anxiety.

Results

Sociodemographic characteristics of the studied population is shown in table I. Various factors associated with anxiety has been presented in the following tables.

Table 1. Socio-demographic characteristics of the respondents
N = 482

Characteristics	Number	Percent (%)
Grade		
11	157	32.6
12	325	67.4
Age (In years)		
Below 18	269	55.8
18 years and above	213	44.2
Mean age = 17.25 ± 1.01		
Sex		
Male	252	52.3
Female	230	47.7
Ethnicity		
Brahmin / Chhetri	225	46.7
Janajati	157	32.6
Madhesi	67	13.9
Others	33	6.8
Religion		
Hinduism	413	85.7
Buddhism	35	7.3
Others	34	5.8
Do not follow any religion	6	1.2
Residence		
Urban	351	72.8
Rural	131	27.2
Family type		
Nuclear	317	65.8
Family Type		
Joint	152	31.5
Extended	13	2.7
Socio-economic status		
Sufficient	235	48.8
Average	229	47.5
Less sufficient	18	3.7

Table 2. Educational and occupational status of the parents (N = 482)

Education and occupation of the parents	Number	(%) Percent
Father's education		
Illiterate	37	7.7
Just literate	21	4.4
Elementary level	75	15.6
Secondary level	188	39.0
Bachelor and above	161	33.4
Mother's education		
Illiterate	93	19.3
Just literate	40	8.3
Elementary level	112	23.2
Secondary	164	34.0
Bachelor and above	73	15.1
Father's occupation		
Labour	30	6.2
Service	214	44.4
Agriculture	69	14.3
Business	169	35.1
Mother's occupation		
Homemaker	297	61.6
Labour	9	1.9
Service	79	16.4
Agriculture	38	7.9
Business	59	12.2

Table 3. Use of gadgets

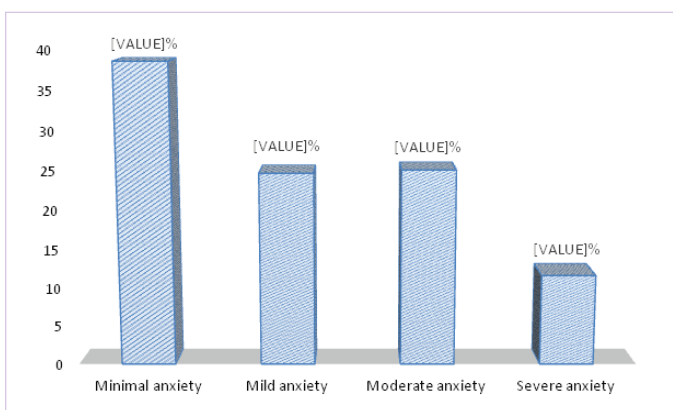| Use of gadgets	Number	(%) Percent
Gadgets used (n = 482)	318	66.0
Name of gadgets used (n = 318)		
Mobile	311	97.8
Laptop	61	19.2
Ipad / tablet	3	0.9
Television	3	0.9

Figure 1. Levels of Anxiety
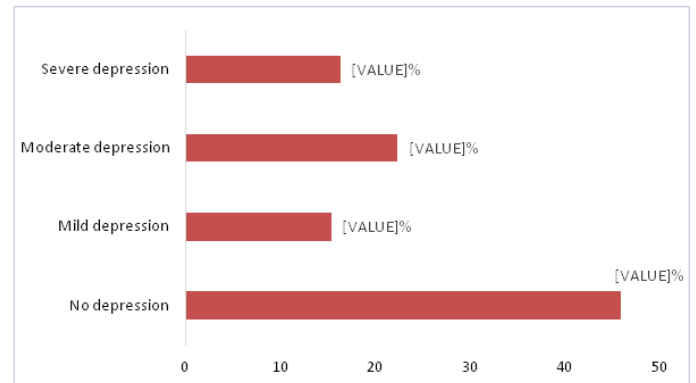
Figure 2. Levels of depression

Table 4. Association between level of anxiety and level of depression

Beck Depression level	Beck Anxiety Level				Chi-square value	p value
	Minimal	Mild	Moderate	Severe		
No	(67.0) 148	(23.5) 52	(8.1) 18	(1.4) 3		0.001>
Mild	(25.7) 19	(39.2) 29	(32.4) 24	(2.7) 2		
Moderate	(12.0) 13	(24.1) 26	(40.7) 44	(23.1) 25		
Severe	(7.6) 6	(15.2) 12	(44.3) 35	(32.9) 26		

Table 5. Association of anxiety with socio-demographic characteristics

Characteristics	Anxiety Level				Chi-square value	p value
	Minimal (%) n	Mild (%) n	Moderate (%) n	Severe (%) n		
Grade						
11	(26.8) 42	(26.8) 42	(33.1) 52	(13.4) 21	15.437	0.001
12	(44.3) 144	(23.7) 77	(21.2) 69	(10.8) 35		
(Age group (in years						
Below 18	(33.8) 91	(23.0) 62	(27.9) 75	(5.2`) 41	12.987	0.005
and above 18	(44.6) 95	(26.8) 57	(21.6) 46	(7.0) 15		
Sex						
Male	(48.0) 121	(23.8) 60	(20.6) 52	(7.5) 19	24.089	0.001 >
Female	(28.3) 65	(25.7) 59	(30.0) 69	(16.1) 37		
Family history of anxiety						
No	(39.1) 166	(23.1) 98	(25.9) 110	(12.0) 51	5.391	0.145
Yes	(35.1) 20	(36.8) 21	(19.3) 11	(8.8) 5		
Any health problem						
No	(40.2) 179	(25.4) 113	(23.1) 103	(11.2) 50	14.763	0.002
Yes	(18.9) 7	(16.2) 6	(48.6) 18	(16.2) 6		
Use of gadgets						
No	(48.8) 80	(26.2) 43	(20.1) 33	(4.9) 8	19.104	0.001 >
Yes	(33.3) 106	(23.9) 76	(27.7) 88	(15.1) 48		
Academic performance						
Good	(55.9) 119	(15.5) 33	(17.4) 37	(11.3) 24	24.320	0.001 >
Fair	(39.6) 99	(15.2) 38	(25.2) 63	(20.0) 50		
Poor	(15.8) 3	(15.8) 3	(42.1) 8	(26.3) 5		

Table 6. Association of depression with socio-demographic characteristics

Characteristics	Depression				Chi-square value	p value
	No (%) n	Mild (%) n	Moderate (%) n	Severe (%) n		
Grade						
11	(36.3) 57	(15.9) 25	(29.9) 47	(17.8) 28	10.864	0.012
12	(50.5) 164	(15.1) 49	(18.8) 61	(15.7) 51		
(Age group (in years						
Below 18	(41.3) 111	(13.8) 37	(29.0) 78	(16.0) 43	15.663	0.001
and above 18	(51.6) 110	(17.4) 37	(14.1) 30	(16.9) 36		
Sex						
Male	(55.6) 140	(15.9) 40	(16.3) 41	(12.3) 31	25.203	0.001 >
Female	(35.2) 81	(14.8) 34	(29.1) 67	(20.9) 48		
Family history of depression						
No	(46.7) 215	(14.8) 68	(22.4) 103	(16.1) 74	4.435	0.218
Yes	(27.3) 6	(27.3) 6	(22.7) 5	(22.7) 5		
Any health problem						
No	(48.5) 216	(15.3) 68	(22.5) 100	(13.7) 61	34.615	0.001 >
Yes	(13.5) 5	(16.2) 6	(21.6) 8	(48.6) 18		
Use of gadgets						
No	(49.4) 81	(17.7) 29	(19.5) 32	(13.4) 22	3.831	0.280
Yes	(44.0) 140	(14.2) 45	(23.9) 76	(17.9) 57		
Academic performance						
Good	(55.9) 119	(15.5) 33	(17.4) 37	(11.3) 24	24.320	0.001 >
Fair	(39.6) 99	(15.2) 38	(25.2) 63	(20.0) 50		
Poor	(15.8) 3	(15.8) 3	(42.1) 8	(26.3) 5		

Table 7. Predictors of anxiety

Levels of anxiety	Study Variables	AOR	CI 95%	p value
Moderate anxiety	Grade			
	11	2.296	4.123 - 1.278	*0.005
	12	Ref		
	Age (In years)			
	Below 18	1.061	1.863 - 0.604	0.837
	and above 18	Ref		
	Sex			
	Female	2.424	4.066 - 1.445	*0.001
	Male	Ref		
	Any health problem			
	Yes	6.414	17.180 - 2.394	*0.001 >
	No	Ref		
	Use of gadget			
	Yes	1.770	3.025 - 1.036	*0.037
	No	Ref		
	Academic performance			
	Poor	3.881	19.995 - 0.753	0.105
	Fair	2.201	3.677 - 1.317	0.003
	Good			
Severe anxiety	Grade			
	11	1.209	2.554 - 0.572	0.619
	12	Ref		
	Age (in years)			
	Below 18	2.064	4.455 - 0.956	0.065
	and above 18	Ref		
	Sex			
	Female	3.342	6.671 - 1.675	*0.001
	Male	Ref		
	Any health problem			
	Yes	4.776	16.717 - 1.365	*0.014
	No	Ref		
	Use of gadget			
	Yes	3.909	9.103 - 1.679	*0.002
	No	Ref		
	Academic performance			
	Poor	12.322	69.095 - 2.197	*0.004
	Fair	2.984	6.062 - 1.468	*0.003
	Good			

Table 8. Predictors of depression

Levels of depression	Study Variables	AOR	CI 95%	p value
Moderate depression	Grade			
	11	1.601	2.999 - 0.855	0.141
	12	Ref		
	Age (In years)			
	Below 18	1.904	3.631 - 0.999	*0.051
	and above 18	Ref		
	Sex			
	Female	2.802	5.003 - 1.569	*0.001 >
	Male	Ref		
	Any health problem			
	Yes	5.757	22.337 - 1.484	*0.011
	No	Ref		
	Academic performance			
	Poor	12.157	62.427 - 2.368	*0.003
	Fair	1.689	3.012 - 0.947	0.076
	Good	Ref		
Severe depression	Grade			
	11	1.641	3.454 - 0.779	0.193
	12	Ref		
	Age (In years)			
	Below 18	0.923	1.883 - 0.453	0.827
	and above 18	Ref		
	Sex			
	Female	3.403	6.696 - 1.729	*0.001 >
	Male	Ref		
	Any health problem			
	Yes	19.482	67.755 - 5.602	*0.001 >
	No	Ref		
	Academic performance			
	Poor	11.538	70.070 - 1.900	*0.008
	Fair	2.160	4.240 - 1.101	*0.025
	Good	Ref		

Discussion

Consistent high and unrelieved stress can cause physical and psychological problems. The study showed that majority of the respondents (38.6%) had minimal anxiety level. About one fourth had mild (24.7%) and moderate (25.1%) levels of anxiety, and 11.6% had severe anxiety. In contrast to this, a study conducted in 2014 showed higher proportion of very low anxiety (70.7%) and lower proportion of severe anxiety (4.9%) states.[13] However, similar to our findings, it showed 24.4% of moderate anxiety level. Another study showed that 90% had no any anxiety and only 10% had mild level of anxiety which did not support our findings.[14] This difference might be that this was conducted among small sample size and in a single school. Science students have long been recognized as facing numerous stressors that can influence their well-being. Anxiety and depression are worldwide problems which reveal the mental health status of the population.[15]

Nearly half of the respondents (45.9%) had no depression, one fifth (22.4%) had moderate and about one sixth were suffering from mild (15.4%) and severe depression (16.4%). This is in line with the study conducted in Saudi Arabia as similar levels of mild (21.1%), and severe (18.9%) depression was found.[16] A study in Nepal also shows similar results depicting that 18.9% had major depression, which needs immediate clinical attention.[17] We found highly significant association between anxiety and depression levels (p < 0.001). Those with moderate or severe anxiety were found to have similar levels of depression too. This is in accordance with another study which reported high and positive correlation between depression and anxiety scores.[14] The

anxiety level is found significantly associated with most of the variables like grade, age, sex, presence of health problem, use of gadgets and academic performance (p < 0.05). While talking about the level of depression, we found statistically significant association with grade, age, sex, presence of health problem and academic performance (p < 0.05). This is supported by another study in which depression was found to be significantly associated with gender (p < 0.05).[18] However, other studies did not show significant association with variables like age, sex, ethnicity, family type, parental occupation etc.[17,18]

The respondents aged below 18 years are twice as likely to have severe anxiety as those aged 18 years and above (AOR = 2.1, 95% CI = 1.0 - 4.5). Similarly, females are twice more likely than males to have moderate anxiety (AOR = 2.4, 95% CI = 1.4 - 4.1) and thrice more likely to have severe anxiety (AOR = 3.3, 95% CI = 1.7 - 6.7). Similar to this, a study conducted in Saudi Arabia noted females to be 5.8 times more likely to have anxiety and depression than males (95% CI = 1.3, 28.7).[19] Zhou SJ et al also revealed that female gender was the higher risk factor for depressive and anxiety symptoms (ORDE = 1.15, 95% CI = 1.05 – 1.26; ORAN = 1.10, 95% CI = 1.001 – 1.21).[20] Those with any health problem are more likely to suffer from moderate and severe anxiety. Anxiety and health problems are linked to each other. One may have anxiety because of having a health problem.[21] In addition, the adolescents using gadgets are more likely to suffer from moderate and severe anxiety. A review article on mobile phone usage also depicted that anxiety and depression have been related to mobile phone usage.[22] Excessive dependency on smartphones and gadgets may increase the risk of anxiety and depression.[23]

The respondents below 18 years of age are found twice as likely to suffer from moderate depression as those of 18 years and above (AOR = 1.9, 95%CI =1.0 - 3.6). This finding is not supported by the study by Bhattarai D.[17] Female students had higher chances of having depression compared to male students in other studies too.[13,24]

People who had chronic diseases like diabetes, cancer, heart disease, stroke etc. often also had depression.[21] Similar to this, the present study also revealed that those with chronic health problem are six times likely to suffer from moderate depression (AOR = 5.8, 95% CI = 1.5 - 22.3) and 19 times likely to suffer from severe depression (AOR = 19.5, 95% CI = 5.6 - 67.8). This finding is also supported by another study in the past.[25] Those with poor academic performance had increased risk of having moderate (AOR = 12.2, 95%CI = 2.4 - 62.4) and severe depression (AOR = 11.5, 95%CI = 1.9 - 70.1) compared to those with good academic performance. This finding is supported by other studies too[14,26,27] and its correlates among adolescents of rural Nepal. Data were collected among adolescents after multistage stratified proportionate random sampling by using the Patient Health Questionnaire (PHQ-9) The study had few limitations too as we included only the students of science programme. So, the findings might not be generalized to students of other programmes.

It is important to detect the problems on time and go for regular monitoring. Designated time for students' counseling and support programme like group exercise, physical activity, counselling services etc should be encouraged. These shall play vital role to save the adolescents from jeopardizing their bright career.

Conclusions

The study revealed significant proportion of adolescents with different levels of anxiety and depression. Anxiety was predicted by grade, sex, health problem, use of gadget and academic performance. Similarly, the predictors of depression are age, sex, health problem and academic performance.

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