Research Article

Prevalence of Depression, Anxiety and Stress among School Going Adolescents and their Relationship to Socioeconomic Status

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I N F O

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A B S T R A C T

Introduction: Adolescence is a phase involving risk taking, autonomy, adventure and efforts to fit into adulthood. Physical and emotional changes, peers, social media, education, family expectations etc. make individuals vulnerable.

Aims: To study the prevalence of depression, anxiety and stress in school going adolescents from 9th -12th standard from Bagdogra, to examine the association with family factors and Socio Economic Status and to identify the co-morbidities between Depression, Anxiety and Stress.

Methods: A cross sectional study was carried out using DASS-21 scale on a total of 231 students. In addition, a self-structured questionnaire on family structure and socio economic status was administered and SPSS software was used for analysis.

Result: Overall, 76.2% had at least one of the mental morbidities under study. Depression was significantly more common in class 12th, (28.4%), 9th (28.4%) &10th (27.6%) and stress was significantly common in 12th (55.4%) & 10th (55.2%). There was no significant difference in relation to age, sex, family structure and socioeconomic status. All mental morbidities more frequently occurred in combination with each other, rather than exclusively. Depression most frequently occurred with stress (8 times) followed by anxiety (4 times), whereas anxiety was 6 times more likely to occur with stress.

Conclusions: Almost 3 out of 4 children had symptoms related to at least one of the mental morbidities discussed. Depression and stress was significantly more prevalent in students answering board exams (class 10th and 12th) than those not answering board exams. Depression, Anxiety and Stress were highly correlated with each other.

Keywords: Depression, Anxiety, Stress, Adolescents, DASS 21, Mental Health

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Introduction

The second decade of life is an exploratory and highly challenging phase marked by rebellion, aggression, conflict and stress. Mental health conditions account for 16% of the global burden of disease among adolescents, half of which start by 14 years but remain undetected.[1] In India, psychiatric disorders among adolescents is around 7.3%.[2] Hormonal and emotional changes, social conditions, peers, career goals etc., make an adolescent vulnerable. The boom of social media and the ongoing pandemic of COVID-19 has added to the woes. Adolescents comprise about 20% of a country's population.[3] Mental health disorders can persist into adulthood and affect day-to-day and social functioning of an individual[4] and is a risk factor for suicidal tendencies.

Aim of the study

*   To study the prevalence of depression, anxiety and stress in school going adolescents from 9th-12th standard.
*   To examine the association of depression, anxiety and stress with family factors and Socio Economic Status and
*   To identify the co-morbidities between depression, anxiety and stress among adolescents.

Materials and Methods

A cross sectional study was conducted in schools from January to February, 2020. All students (aged 13-17 years) of grades 9th, 10th, 11th and 12th were included whereas participants undergoing treatment for mental illness were excluded from the study.

Sample size was calculated based on the WHO report on Mental Health Status of Adolescents in South-East Asia, wherein the varied prevalence of psychiatric morbidity was approximately 8% to 25%.[1] The mean prevalence with relative error of 5% was calculated to estimate the sample size. Although 211 was the minimum sample size estimated, 240 participants consented to participate.

Fourteen Schools from the area providing education from 9th to 12th standard with boys as well as girl students were eligible for the study, of which four were selected using lottery method. Fifteen students per class were selected from each school via Systematic Random Sampling. Altogether, 60 students were selected from each school from all classes. The same process was repeated in all four schools until a total sample size of 240 students was obtained. Of these, nine participants were excluded from the study due to the history of medications for mental illness (2), age 18 years and above (3) incomplete data (4). Final sample size obtained was 231.

A self-structured questionnaire on approximate monthly income, family structure including occupation and education of parents, number of siblings and socio-economic status was prepared based on Modified Kuppuswamy Scale 2019.[5]

DASS-21 questionnaire[6] was used to obtain prevalence of depression, anxiety and stress.

Ethical Clearance for the study was obtained from Institutional Ethics Review Committee of North Bengal Medical College. Permission from school principals and management, Written Informed Consent from parents and Written Informed Assent from the participants was taken prior to the study. Confidentiality and anonymity of the candidate was maintained throughout data collection, data entry and analysis.

Data entry was done in Microsoft Excel 2016 spreadsheet and was crosschecked for errors, double entry, missed entry and wrong entry. Data was analyzed using the SPSS software in the form of frequency tables, charts and crosstabs. For statistical significance proportion, chi square tests, correlation and odds ratios were computed.

Result

Table 1, shows the socio demographic profile of this sample. Of the total participants 33.3%, students were 17 years of age and females comprised 50.2% of the participants.

Table 1.Demographic Profile and Family Structure of the Participants

Charact-eristic	Parameter	No.	Percentage
Age	Early Adolescence (13-14)	35	15.2
	Middle Adolescence (15-17)	196	84.8
Sex	Male	115	49.8
	Female	116	50.2
Class Studying in	9th	57	24.7
	10th	58	25.1
	11th	60	26
	12th	56	24.2
Education of Head of Family	Illiterate	3	1.3
	Middle School Level	13	5.6
	High School Level	66	28.6
	Intermediate/ Post High School Diploma	70	30.3
	Graduate/ Post Graduate	77	33.3
	Professional Degree	2	0.9
Occupation of Head of Family	Unemployed	2	0.9
	Unskilled Worker	3	1.3
	Semi-Skilled Worker	7	3
	Skilled Worker	14	6.1

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	Clerk/ Shop/ Farm	155	67.1
	Semi Professional	48	20.8
	Professional	2	0.9
Family Size (No of Members)	Up to 4	137	59.3
	More than 4	94	40.7
Parental Status	Single Parents	8	3.5
	Both Parents	223	96.5
Sibling Status	Single Child	24	10.4
	Non Single Child	207	89.6
Socio Economic Status	I (Upper Class)	3	1.3
	II (Upper Middle Class)	131	56.7
	III (Lower Middle Class)	86	37.2
	IV (Upper Lower Class)	11	4.8
	V (Lower Class)	0	0
	Total	231	100

Symptoms of depression, anxiety and stress were not significantly related to age (depression $\chi2=3.5889$ p=0.166215; anxiety $\chi2=5.088$ p=0.078552; stress $\chi2=4.5525$ p=0.102668) or sex (depression $\chi2=2.406$ p=0.662; anxiety $\chi2=3.670$ p=0.453; stress $\chi2=1.4459$ p=0.694) of the participant. This could be due to similar response, susceptibility and coping mechanisms to acute and chronic stress in adolescents of 13-17 years and both sexes.

Table 2, shows prevalence of depression, anxiety and stress according to class of study. This result was significant for depression and stress ($\chi2=17.821$ p=0.000) ($\chi2=13.168$ p=0.004) respectively; thus, a significant difference exists between occurrence of symptoms of depression, stress and class of study. Regarding anxiety, most (27.1%) students with anxiety were from class 10. However, these findings were not statistically significant ($\chi2=3.970$ p=0.265).

On comparison between board classes (class 10th and 12th) and non-board classes (9th and 11th) it was observed that depression and stress in board classes was higher (65.8% & 55.3% respectively) in comparison to non-board classes (50.4% & 37.6% respectively), with mild, moderate and severe forms more common. These findings were statistically significant. (depression $\chi2=10.7672$, p=0.0293, stress $\chi2=8.304$ p=0.0401). Hence, a significant difference exists between occurrence of symptoms of depression, stress and class of participant.

Anxiety in board classes was higher, (53.8% i.e. 63/117 and 61.4% i.e. 70/114 respectively), with mild and moderate forms more common. However, these findings were not statistically significant ($\chi2=3.1574$ p=0.53183).

The reasons for these findings could be due to increased tension of approaching board exams of class 10th and 12th, with fear of failure or poor performance in the examinations which are believed to be a major milestone for future study and career opportunities. Presence of symptoms in class 9th may be due to upcoming final examinations, anticipation of promotion to the next class and the built up of pressure regarding the academic goals and examination stress which

Table 2.Prevalence of Depression, Anxiety and Stress according to Class of Study

	Class				
Morbidity	**9th**	**10th**	**11th**	**12th**	**Total**
	N (%)	**N (%)**	**N (%)**	**N (%)**	**N (%)**
Depression					
Present	38 (28.4)	37 (27.6)	21(15.7)	38 (28.4)	134 (100)
Absent	19 (19.6)	21 (21.6)	39 (40.2)	18 (18.6)	97 (100)
Chi Square=17.821, df=3, p-value =0.000 result is highly significant					
Anxiety					
Present	35 (26.3)	36 (27.1)	28 (21.1)	34 (25.6)	133 (100)
Absent	22 (22.4)	22 (22.4)	32 (32.7)	22 (22.4)	98 (100)
Chi Square=3.970, df=3, p value =0.265 result is not significant					
Stress					
Present	28 (26.2)	32 (29.9)	16 (15)	31 (29)	107 (100)
Absent	29 (23.4)	26 (21)	44 (35.5)	25 (20.2)	124 (100)
Total	57 (24.7)	58 (25.1)	60 (26)	56 (24.2)	231 (100)
Chi Square=13.168, df=3, p value =0.004 result is significant					

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will ensue. However, these aspects need further investigation and are beyond the scope of this study.

Regarding prevalence of mental morbidity according to socio economic status depression, anxiety and stress was higher in the students of upper and upper middle class i.e. 54.5%, 54.9% and 58.9% respectively. However, these findings were not statistically significant (depression χ2=1.63343 p=0.2012; anxiety χ2=1.2539 p=0.2628; stress χ2=0.0619 p=0.8035).

Prevalence of depression, anxiety and stress was not related to family size (χ2=1.89779 p=0.1683), number of siblings (χ2=0.4237 p=0.51509), parental status (i.e. either single parent or both parents) (χ2=0.5842 p=0.4446) and family income (χ2=8.4119 p=0.2094).

However, 24 children were a single child of which, 62.5% (15/ 24) were males. All belonged to SES II and III. Of these, 66.66% (16 out of 24) had depression of which around 54% (13 out of 24) had moderate to extremely severe forms. Anxiety and stress symptoms were present in 50% (12). Hence, it may be possible that being a single child makes a person more prone to mental health problems especially depression. This could be due to a lack of companionship and confidante, leading to less of discussion and sharing of emotional issues. However, an in-depth study with adequate sample size is needed to explore these findings.

Prevalence of mental morbidities with reference to family factors like education (χ2=1.39197 p=0.4986) & occupation of father (χ2=0.4835 p=0.7852) and mother education (χ2=0.1681 p=0.9826) and occupation (χ2=0.2482 p=0.6183) were also not found to have any statistical significance. However, 8 (3.5%) participants had single parents, of these, six (75%) were single mothers. it was observed that both students with single father and 83% (i.e. 5/ 6) students with single mother had symptoms of depression, anxiety and stress, of which most were moderate -severe- extremely severe in nature. Most of the participants (7 out of 8) belonged to the socio economic class II and III. Hence, students with single parents (87.5% i.e. 7/ 8) could be more prone to mental health problems due to lack of a role model, lack of care and attention, lack of sharing of emotional issues etc. However, these findings too need a detailed study with appropriate sample size.

Hence, symptoms of depression, anxiety and stress could occur due to reasons unrelated to education, occupation and socio economic status like genetic susceptibility, academic stress, peer pressure, parental pressure etc. which need to be further explored.

Figure 1, shows prevalence of depression, anxiety and stress in the study participants. It is observed that 76.2% participants had symptoms of at least one mental morbidity under study. Hence, more frequently, most of the individuals will usually have a combination of two or more mental morbidities, rather than exclusive presence of any one.
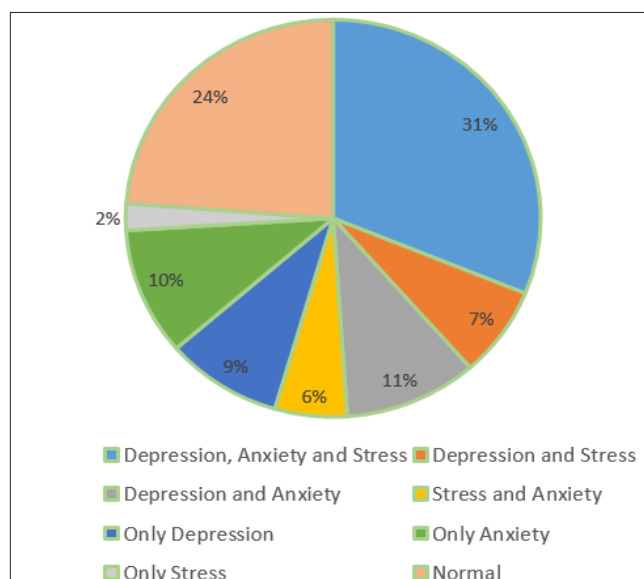

Figure 1.Prevalence of Depression, Anxiety and Stress

Table 3, shows comorbidity between occurrence of depression in relation to anxiety and stress Individuals with anxiety were 4 times (OR=4) more likely to suffer from depression and individuals with stress were 8 times (OR=8) more likely to have depression symptoms. These finding were highly significant (p=0.000), hence suggesting that there is significant association between occurrences of depression and anxiety or stress symptoms.

On similar comparison between anxiety and stress, it was seen that 79.4% (85) of the individuals have anxiety along with stress. Anxiety only was present in 38.7% (48) of the individuals whereas stress alone was present in 20.6% (22) of the individuals. Individuals with anxiety were 6 times more likely to have stress. This finding was highly significant (χ2=39.001 p=0.000).

Pearson's correlation coefficient showed a significant linear relationship between Depression, Anxiety and Stress (at 0.01 level). Overall, there was moderately positive correlation between depression- anxiety (r=0.598, p=0.000, n=231), depression- stress (r=0.654, p=0.000, n=231) and anxiety-stress. (r=0.649, p=0.000, n=231). The strength of the association was moderately strong (.5 < | r | < 0.9).Hence, increase in either one of the variables correlated with increase of other variables. These findings were highly significant.

Occurrence of depression and anxiety is usually a response to chronic stress and individual vulnerability and coping mechanisms. Stressors in this study could be exam tension, worry about exam performance, expectations from parents, competitiveness associated with exam results etc. Genetic factors and other social conditions like parenting, abuse, peer relationships, relationships with teachers etc. can predispose an individual to occurrence, of depression, anxiety and stress symptoms.

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Table 3.Presence of Depression in Relation to Anxiety and Stress

Morbidity	Depression		Total
	Present N (%)	Absent N (%)	N (%)
Anxiety			
Present	96 (71.6)	37 (38.1)	133 (57.6)
Absent	38 (28.4)	60 (61.8)	98 (42.4)
Chi square statistic =25.848, df=1, p value=0.000 result highly significant Odds Ratio=4.0967, CI; 2.350-7.1428			
Stress			
Present	89 (66.4)	18 (18.6)	107 (46.3)
Absent	45 (33.6)	79 (81.4)	124 (53.7)
Total	134 (100)	97 (100)	231 (100)
Chi square statistic is 51.838, df=1, p value is 0.000 findings are highly significant Odds Ratio=8.680, CI; 4.646 -16.216			

Discussion

In this study, about 31% had all the mental morbidities under study, 23.8% individuals did not have symptoms of any of the morbidities while, 76.2% of the individuals had at least one of the mental health morbidities. These findings were almost similar to observations made by a study amongst rural adolescents in Maharashtra (depression 53.9%, anxiety 59.7%, stress 43.8% and normal 27.3%. Single condition 18.4%, 23.9% two conditions & 30.4% all three conditions).[7]

However, the findings of this study are higher as compared to figures obtained from National Mental Health Survey of India,[2] wherein prevalence of psychiatric disorders was 7.3%. In addition, a study among higher secondary school students in Manipur observed Depression, Anxiety and Stress prevalence to be 19.5%, 24.4%, and 21.1% respectively.[8] However, some studies found 50% of the participants to have psychological problems.[9,10]

A study conducted in school going adolescents in Chandigarh, found prevalence of depression, anxiety and stress as 65.53%, 80.85% and 47.02%, respectively, with overall comorbidity between depression and anxiety 57.65%,[11] which was higher in comparison to the findings of this study.

Regarding gender, there was no statistically significant difference in Depression, Anxiety and Stress in both sexes. These findings were consistent with findings of other studies.[2,7,12,13] However, these findings were contradictory to studies showing higher prevalence of depression, anxiety and or stress in females[8,11,14,15] or males.[16,17]

In this study, there was no statistically significant difference in occurrence of Depression, Anxiety and Stress concerning age. These findings were contradictory to findings in school going adolescents of Chandigarh where overall trend showed that stress increased with age.[11]

According to class of study, it was found that depression was more prevalent in classes 9th (66.7%) 12th (67.9%) and stress was more prevalent in class 12th and 10th (55.4 & 55.2% respectively). Students of class 11th had comparatively lower prevalence of depression, anxiety and stress (35% i.e.21/60, 46.7% i.e.28/60 and 26.7% i.e.16/60 respectively).

These findings are consistent with some studies wherein students of 10th and 12th were found to have more prevalence of depression, anxiety and stress.[8] Further, study amongst Chandigarh school adolescents concluded that depression and stress were higher in board classes than non-board classes with depression higher in class 12, anxiety higher in class 10 and stress higher in 9th class,[11] which were almost similar to the findings of this study. Study among school children in Tiruchirappalli, India observed that half of the respondents of class 12th had moderate level of stress.[15]

In this study, no significant difference was observed between presence of symptoms of Depression, Anxiety and Stress with family size, maternal education and employment, paternal education and occupation, family income and socio economic class. These findings are similar to findings obtained by couple of other studies as well.[12,15]

Depression, Anxiety and Stress were significantly correlated with each other. This is in line with findings obtained in other studies.[12,14]

School based mental health interventions and internet-based prevention and treatment programs are effective for symptoms of anxiety and depression.[18] Screening programs, helplines, school education and life skill programs can be instrumental in bringing about diagnosis of mental illness and suicide prevention. Early identification and treatment of individuals with suicidal tendencies is crucial. Programs like Stop a Suicide Today, National Suicide Prevention Lifeline etc. need to be established and adequately programmed to reach the target individuals.[19]

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Conclusion

Thus, almost 3 out of 4 children from 9th to 12th class had symptoms related to at least one of the mental morbidities discussed i.e. either depression, anxiety and or stress. Depression and stress was found to be significantly more prevalent in students answering board exams than those not answering board exams. Students of class 11th had comparatively lower prevalence of Depression, Anxiety and Stress. In addition, more than one morbidity was more commonly observed rather than only one of the mental morbidities. Depression, Anxiety and Stress were highly correlated with each other.

As this study data was collected during Jan-Feb which is the period just 1-2 months before the scheduled annual/board exams it is possible that this study has been able to capture the most stressful phase during the participant's academic session, hence reflecting a higher prevalence of mental morbidities.

Limitation

As the study population was limited to school going students of standard 9th-12th (13-17 years) from Bagdogra, the findings cannot be extrapolated to non-school going adolescents, students from other classes, different ages, other areas and populations and rural regions. As this is a cross sectional study, causal effect cannot be interpreted.

DASS-21 scale was used for data collection and the findings cannot be used for allocation of participants to diagnostic categories according to classification systems like International Classification of Diseases (ICD) or Diagnostic and Statistical manual of Mental Disorders (DSM). Only mental morbidities of Depression, Anxiety and Stress were observed and other mental health issues were not discussed. The reasons for occurrence of Depression, Anxiety and Stress were not explored in this study.

Recommendation

Based on these conclusions, further studies that could address reasons of Depression, Anxiety and Stress including effects of single parenting and single child status are recommended. In addition, strategies to decrease stress factors for students should be planned. The recent proposal of the New Education Policy by the government of India could be a step in this direction towards improving mental health of adolescents, and comparative results of the same in the future would indicate the benefits that the Policy may achieve.

Acknowledgement

Conflict of Interest: None

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