IV. RESULTS AND DISCUSSION

The findings of the research **"Depression, Anxiety and Stress among Adolescents and efficacy of Preventive Intervention"** were presented based on the two phases of the study as described in the methodology.

The first phase of the study assessed the levels of DAS and its interrelationship. It also determined the interaction effect of socio-demographic factors on DAS. Further, the strength of the association between the DAS scores with that of its chosen determinants was analysed. The first part of the second phase of the study focused on the formulation of a preventive intervention. The detailed review of various interventions led the investigator to combine two interventions namely CBT (Cognitive Behavioural Therapy) and SIT (Stress Inoculation Training) and postulated a preventive strategy called Comprehensive School-based Intervention Training to alleviate Depression, Anxiety and Stress (CSIT-DAS). CSIT-DAS, a school-based mental health intervention module was formulated to build the skill repertoires of the students towards alleviating themselves from negative mental states in general and DAS in particular. The second part of the second phase aimed to evaluate the effectiveness and sustainability of the preventive intervention - CSIT-DAS, in terms of decrease in the levels of DAS among the chosen respondents and hence included a comparison of the pre-data, post-data, and follow-up data on DAS. The analysed data and corresponding discussions were presented in this section as sequenced below:

Phase I: IDENTIFY THE LEVELS OF DEPRESSION, ANXIETY AND STRESS (DAS), THEIR INTERRELATIONSHIP, AND THEIR DETERMINANTS

A. General profile of the respondents
B. Categorization of the respondents based on the levels of Depression, Anxiety and Stress
C. Interrelationship between Depression, Anxiety and Stress of the respondents
D. Association between sociodemographic variables and levels of Depression, Anxiety and Stress of the respondents
E. Relationship between Depression, Anxiety and Stress (DAS) and its potential determinants among the respondents

Phase II: EFFECTIVENESS OF THE FORMULATED PREVENTIVE INTERVENTION

A. Efficacy of Comprehensive School-based Intervention Training to alleviate Depression, Anxiety and Stress (CSIT-DAS) - Comparison between Pre-test and Post-test Depression, Anxiety and Stress levels between Experimental and Wait-list Control Group
B. Gender Comparisons of Pre-test and Post-test scores on Depression, Anxiety and Stress Score among Experimental and Wait-list Control Group
C. Sustainability of Comprehensive School-based Intervention Training to alleviate Depression, Anxiety and Stress among the Experimental group

The results and the corresponding discussions of each of these subsections were detailed below:

Phase I: IDENTIFY THE LEVELS OF DEPRESSION, ANXIETY AND STRESS (DAS), THEIR INTERRELATIONSHIP, AND THEIR DETERMINANTS

The results of phase I were discussed as per the subheads specified above.

A. General profile of the respondents

Depression, Anxiety and Stress (DAS) directly or indirectly have an impact on one's lifestyle in different aspects. Therefore, efforts were made to collect the general profile of the school-going adolescents based on the general profile questionnaire constructed. The different demographic characteristics of the students considered for the present study were gender, class of study, type of family, residence, and educational status of parents. Accordingly, Table IX shows the socio-demographic data drawing information on the social and statistical characteristics of the population selected.

Table IX

Sociodemographic characteristics of the respondents

N=1038

Variables and their description		**N**	**Percentage**
Gender	Male	512	49.3
	Female	526	50.7
Class of study	8^{th} standard	504	48.6
	9^{th} standard	534	51.4
Type of family	Nuclear	622	59.9
	Joint Family	312	30.1
	Extended Family	104	10.0
Residence	Urban	582	56.1
	Semi-urban	276	26.6
	Rural	180	17.3
Fathers' educational status	No Formal Education	49	4.6
	Primary	200	19.3
	Secondary	368	35.5
	Graduate	304	29.3
	Post Graduate	117	11.3
Mothers' educational status	No Formal Education	92	8.8
	Primary	200	19.3
	Secondary	357	34.4
	Graduate	280	27.0
	Post Graduate	109	10.5

Out of 1038 respondents, though the ratio of enrolment for male and female students was equal, the girls (50.7%) surpassing their counterparts (49.3%) substantiates the changed scenario that girls' enrolment in schools was on par with boys. The class-wise distribution shows that 51.4% of the respondents were from the 9^{th} standard followed by class 8 (48.6%). Glancing at the type of family, most of the children were found to hail from nuclear families (59.9%) followed by joint families (30.1%). This finding adds evidence to the reality that the joint family system was evading.

When it comes to the area of residence, the table states that 56.1% of the children hail from urban areas followed by 26.6% who came from semi-urban areas. As the schools selected for the study had an inclusion criterion of choosing urban schools the percentage of students residing in rural areas was comparatively lower (17.3%).

Looking at the results, it was observed that the mothers were equally educated as the fathers of the selected respondents. The table further details that a more or less equal percentage of fathers and mothers were educated right from the primary level of education to post-graduation. However, on the whole, the mothers who had no formal education (8.8%) were exactly twice in number when compared to their counterparts (4.6%).

B. Categorization of the respondents based on the levels of Depression, Anxiety and Stress

Adolescence, a period characterised by drastic physical and physiological changes, was also seen as a period of rapid changes in attitude and behaviour, heightened emotionality, changes in interest patterns, and changes in roles within the social group. Psychologically, it was in this period of life, that they become integrated into society as adults, wherein they face numerous psychological problems like stress, anxiety, aggression, undesirable complexes, depression, and frustration. These concerns mandate research in the domain of mental health. The current study had an objective to know whether the school-going children in their early adolescent period had been affected by negative mental states, if yes, then to which level have they perceived themselves to be depressed, anxious and stressed? Accordingly, a standardized tool developed by Lovibond (1995) titled DASS 42 (Depression Anxiety Stress Scale) was used. The scale was a 42-item questionnaire comprising three self-report scales to measure the levels of depression, anxiety and stress.

Accordingly, Table X and Figure 13 projected the level of Depression, Anxiety and Stress (DAS) of the selected group of respondents within the five levels of categorisation namely normal, mild, moderate, severe, and extremely severe, and their percentages.

Table X

Levels of categorisation of Depression, Anxiety and Stress (DAS) and its prevalence among the respondents

N=1038

Variables	Levels of categorisation	N	Percentage
Depression	Normal (0-9)	164	15.8
	Mild (10-13)	266	25.6
	Moderate (14-20)	363	35.0
	Severe (21-27)	189	18.2
	Extremely Severe (28+)	56	5.4
Anxiety	Normal (0-7)	91	8.7
	Mild (8-9)	146	14.1
	Moderate (10-14)	368	35.5
	Severe (15-19)	268	25.8
	Extremely Severe (20+)	165	15.9
Stress	Normal (0-14)	260	25.0
	Mild (15-18)	251	24.2
	Moderate (19-25)	342	32.9
	Severe (26-33)	150	14.5
	Extremely Severe (34+)	35	3.4

Distribution of the respondents based on the levels of DAS

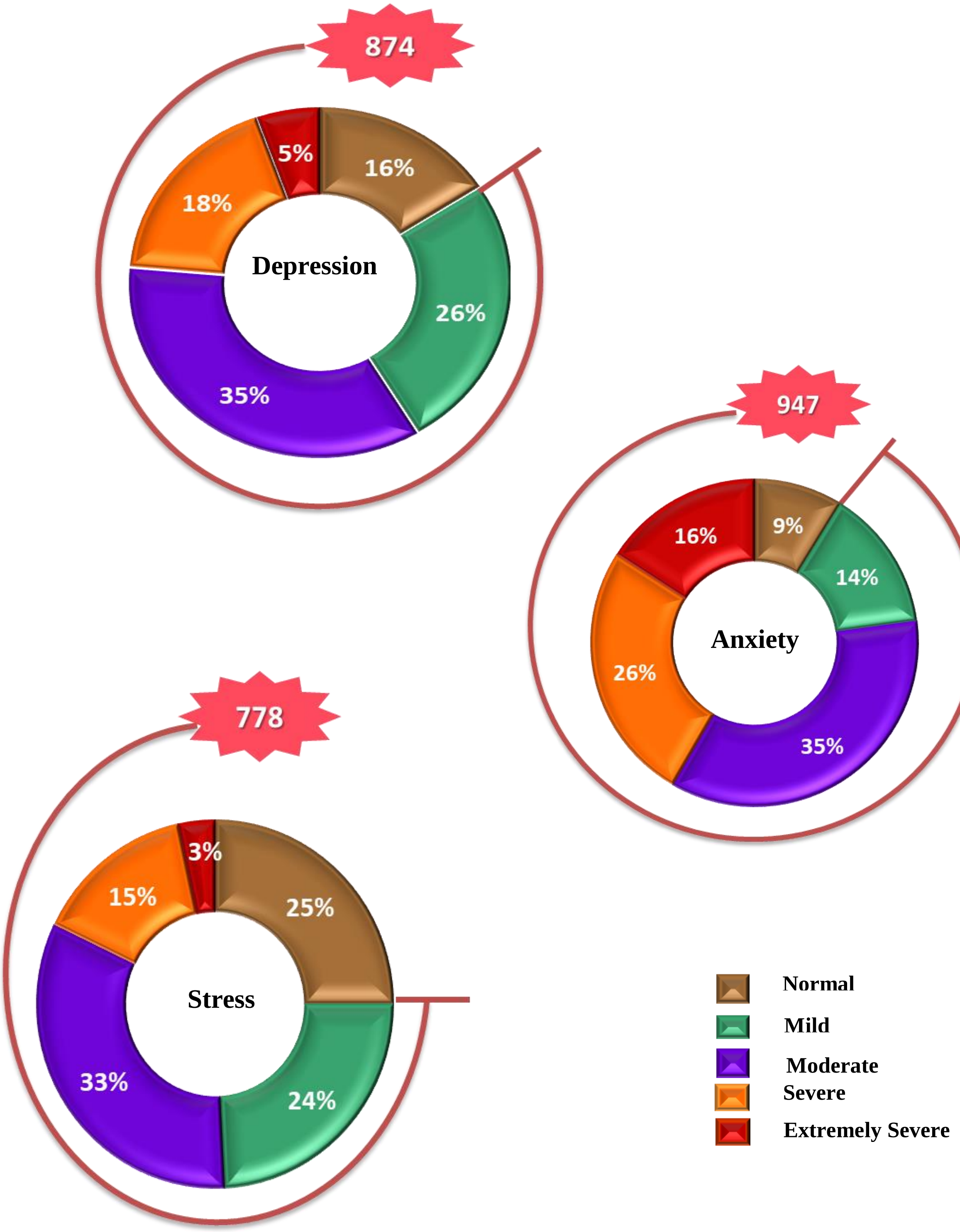


Figure 13

The data on depression levels of the selected school-going adolescents showed that a majority of them were moderately depressed (35%). The severe (18.2%) and extremely severe (5.4%) levels of depression among the selected respondents pose a threat to their future lives. The threshold score for the participants being labelled as anxious was also categorized under five categories, wherein, 35.5% (368 out of 1038) were anxious at a moderate level. Also, it was observed that 25.8 and 15.9% had severe and extremely severe anxiety respectively. The percentage of (32.9%) of the respondents who were moderately stressed was more in number (342) when compared to the other levels. The table further states that a good percentage of respondents were also severely stressed (14.5%) and extremely severely stressed (3.4%).

Overall, the figure clearly states that all three domains namely depression, anxiety and stress were affecting the mental health status of about 75% to 92% of the selected school-going adolescents at mild to extremely severe levels. Furthermore, anxiety tops the list with 91% of the selected respondents being affected followed by depression (84.2%) and stress (75%). The present finding was found to be concordant with the study conducted by Teh et al. (2015) in finding the prevalence of moderate to extremely severe levels of anxiety, depression and stress at 55.5%, 30.7% and 16.6% respectively among the student population.

This finding alerts school psychologists, teachers, parents, and educationists to focus on measures that would prevent the onset as well as alleviate the prevalence of mental health issues in the formative years. The results caution the school education policymakers in understanding the deep truth that as the age increases, the prevalence of DAS increases enormously and minimises their productive life. Hence, the integration of age-appropriate intervention within the regular academic curricular framework would be recommended as a mandate component of the whole package of the course of study.

C. Interrelationship between Depression, Anxiety and Stress of the respondents

Generally, students tend to ignore their mental wellness which might lead to several psychological issues (Chatterjee et al., 2014). They were more concerned about achieving and pursuing high grades without paying attention to their self-care. Moreover, a study conducted by Teh et al. in the year 2015 reported that depression, anxiety and stress as important indicators of mental health which, if untreated, can harm individuals. It was seen that not only depression but anxiety and stress were found to be interrelated with physical well-being where at some point in time directly or indirectly had an impact on one's lifestyle irrespective of age group. So, it had become important to examine the relationship between Depression, Anxiety and Stress (DAS) of the respondents.

As in many studies, where the direct effects of depression on anxiety and stress were witnessed, the study by Horwitz (2010) revealed that depression, anxiety and stress are emotionally related conditions. It was also stated that these disorders were very common and were experienced by any individual at different stages of life. Based on this verity, Table XI projects the correlation between Depression, Anxiety and Stress (DAS) among the selected lot of respondents.

Table XI

Interrelationship between Depression, Anxiety and Stress among the respondents

N=1038

	Depression		**Anxiety**		**Stress**	
	R	*p value*	*R*	*p value*	*R*	*p value*
Depression	1	-	**.495**	**.002**	**.378**	**.045**
Anxiety	**.495**	**.002**	1	-	**.301**	**.021**
Stress	**.378**	**.045**	**.301**	**.021**	1	-

R-Spearmen's Rank Correlation coefficient

It was very interesting to notice that the relationship between the three negative emotional states - DAS - had a significant positive association with each other. However, depression and anxiety had a moderate positive relationship (R= .495, p <.01) with each other, and stress with a weak positive association with depression (R = .378, p <.05) and anxiety (R = .301, p <.05). In, other words if a respondent suffers from depression, then he/she had anxiety and stress as well. Therefore, hypothesis H_o 1 stating that 'there is no relationship between Depression, Anxiety and Stress (DAS)' stands rejected. Studies conducted by Eisenbarth et al. (2013) and Hammen et al. (2004) were in concordance with the present finding in confirming a positive association between perceived depression, anxiety and stress.

On an overall note, the results from Table X indicated almost $3/4^{th}$ of the selected students were affected by DAS at varying levels, and at any point in time, these students may step into the next critical category. The results from Table XI cautioned that DAS was interrelated to each other. In other words, one negative emotional state leads to another and calls upon an instant but relevant programme on DAS management. It had to be formulated and implemented among this sect of students before it became serious as they were on the threshold of facing board exams.

D. Association between sociodemographic variables and levels of Depression, Anxiety and Stress of the respondents

The previous subsection indicated that out of 1038 total respondents, more than $3/4^{th}$ of them had perceived to be depressed (84%), anxious (91%), and stressed (75%), at varying levels from mild to extremely severe levels. However, to get deep into the results and to understand the influence of independent (sociodemographic) variables contributing to the prevalence of Depression, Anxiety and Stress (DAS) among the selected sect of the population, cross-tabulation and Chi-square tests for association were done to know the variation in the distribution of the respondents across the levels as a qualitative measure. Furthermore, to understand the causal association between variables through testing hypotheses, quantitative non-parametric tests were also computed. The qualitative and the quantitative results of the three negative emotional states - DAS - with that of the sociodemographic variables were explained in five subsections namely

i. Association of Gender on Depression, Anxiety and Stress (DAS)
ii. Association of the Class of Study on Depression, Anxiety and Stress (DAS)
iii. Association of the Area of Residence on Depression, Anxiety and Stress (DAS)
iv. Association of the Type of Family on Depression, Anxiety and Stress (DAS)
v. Association of the Educational Status of Parents on Depression, Anxiety and Stress (DAS)

i. Association of Gender on Depression, Anxiety and Stress (DAS)

Epidemiological research shows that in general, females tend to suffer more than males from mental problems. Based on this, understanding the role and impact of gender on the levels of DAS was considered to be an important step in the prevention and treatment of its associated long-lasting effects. Hence, descriptive statistics of Cross tabulation and Chi-square test were carried out to find the influence of gender on the levels of DAS and depicted in Table XII.

Table XII

Association of Gender on the Levels of DAS among the selected respondents

N=1038

Gender	Normal N (%)	Mild N (%)	Moderate N (%)	Severe N (%)	Extremely Severe N (%)	Total N (%)	X^2	*df*	*p value*
DEPRESSION									
Female	72 (14.1%)	129 (25.2%)	195 (38.2%)	86 (16.8%)	29 (5.7%)	511(49.3)	5.995	4.000	.200
Male	91 (17.3%)	137 (26%)	168 (31.9%)	104 (19.7%)	27 (5.1%)	527 (50.7)			
Total	163 (15.7%)	266 (25.6%)	363 (35%)	190 (18.3%)	56 (5.4%)	1038 (100%)			
ANXIETY									
Female	42 (8.2%)	71 (13.9%)	178 (34.8%)	133 (26.1%)	87 (17%)	511 (49.3)	4.3848	5	.500
Male	48 (9.1%)	76 (14.4%)	187 (35.5%)	140 (26.6%)	76 (14.4%)	527 (50.7)			
Total	90 (8.7%)	147 (14.2%)	365 (35.2%)	273 (26.3%)	163 (15.7%)	1038 (100%)			
STRESS									
Female	117 (22.9%)	137 (26.8%)	179 (35%)	66 (12.9%)	12 (2.3%)	511 (49.3)	**9.428**	**4**	**.050**
Male	139 (26.4%)	118 (22.4%)	163 (30.9%)	84 (15.9%)	23 (4.4%)	527 (50.7)			
Total	256 (24.7%)	255 (24.6%)	342 (32.9%)	150 (14.5%)	35 (3.4%)	1038 (100%)			

In the first part of the table, the data indicated that more male respondents were depressed severely (males - 19.7% and females - 16.8%) whereas, when it comes to a moderate level, it was the female respondents (38.2%) who had surpassed their cohorts (31.9%). However, the chi-square test for association reveals that there was no significant association between gender and depression domain.

Looking at the anxiety level among the sexes, the distribution of the respondents at all levels was almost equal except for the extremely severe level, wherein more female respondents (17% against 14.4%) were found to be anxious which cannot be ignored. However, the chi-square test for association reveals that there was no statistically significant difference between the levels of anxiety and gender. The study carried out by Costello et al. (2003) revealed that adolescent girls reported a greater number of worries, more separation anxiety, and higher levels of generalized anxiety. Likewise, another study by Khesht-Masjedi et al. (2019) observed that girls were more nervous than their counterparts.

The data on stress showed a similar trend as depression, wherein more females (35%) were stressed at a moderate level when compared to their male counterparts (30.9%), and at severe and extremely severe levels, more males were stressed than females. The chi-square test for association was significant (χ^2 (4) = 9.428, p<.05). It was noted that most studies as cited by Abdelwaheb and Hassan (2017) reported higher mean scores of depression, anxiety and stress among females than males, while few studies as cited by Choudhary et al. (2019) reported higher scores among male students than female students. There could be many reasons for this contradictory finding. One major reason as observed by the investigator through the casual discussions with the students was the parent's expectations of the boys in setting up higher goals and targets for their bright and successful careers, against the physiological and behavioural differences subjecting young females to be more prone to mental instability.

With the chi-square test being a qualitative measure to assess the association between gender and DAS, a quantitative analysis was also performed through the Mann-Whitney U test to compare the mean ranks of male and female respondents on DAS. The results were presented in Table XIII and Figure 14.

Table XIII

Differences in DAS of the respondents based on their Gender

N=1038

Negative Emotional States	Male (N=527)			Female (N=511)			Mann-Whitney U test	
	Mean Rank	SD	Median	Mean Rank	SD	Median	|z|	*p value*
Depression	15.34	7.209	15.00	15.66	6.859	15.00	0.95	.340
Anxiety	13.74	5.868	13.00	14.17	5.850	14.00	1.27	.203
Stress	19.03	8.101	19.00	18.64	6.838	19.00	0.66	.508

Comparison of DAS mean ranks based on Gender

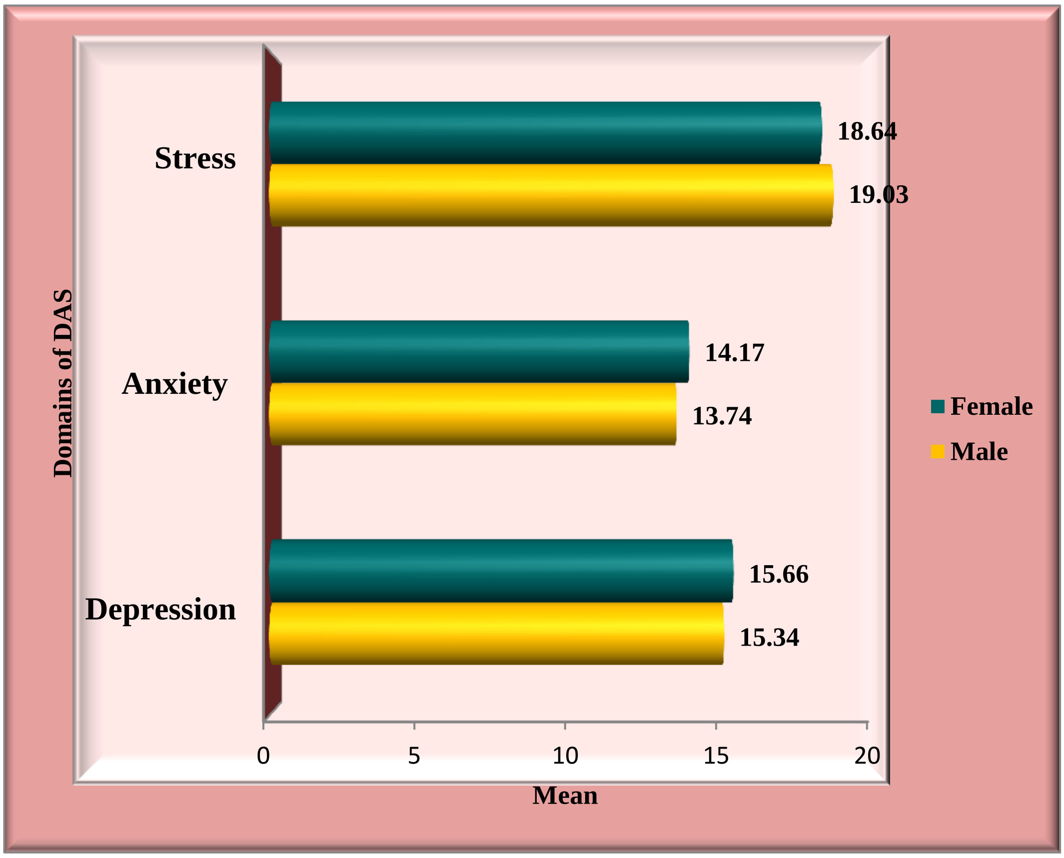


Figure 14

Analysis performed in the above Table XIII and Figure 14 answers the question - Does gender affect depression, anxiety and stress scores? Studying the output of the Mann-Whitney U test, it was evident that the stress mean rank was higher among male students (19.03) than female counterparts (18.64). The anxiety and depression scores revealed that females were more anxious and depressed (14.17 and 15.66 respectively) in comparison to males (13.74 and 15.34 respectively).

However, the Mann-Whitney U test revealed that these results were not statistically significant (Depression with $|z|=0.95$, $p>0.05$; Anxiety with $|z|=1.27$, $p>0.05$ and Stress with $|z|=0.66$, $p>0.05$). In other words, gender does not influence DAS among the respondents. Hence hypothesis H_o 2 that stated 'there is no difference in the levels of Depression, Anxiety and Stress (DAS) based on gender' was accepted. This finding was in concordance with those studies conducted by Liu et al. (2017) in China and Wong et al. (2006) in Hong Kong where they also found no significant gender differences in anxiety or stress scores. A study by Deb et al. (2015) that explored stress, anxiety, and mental health among Indian high school students, concluded that there were high levels of stress with no difference in gender.

ii. Association of the Class of Study on Depression, Anxiety and Stress (DAS)

A study suggested that the teachers, counsellors, administrators, and peers of all school settings were the first line of defence of students in dealing with mental health concerns, bringing awareness on DAS and educating helpful ways to cope with DAS (Thompson et al., 2013). Against this backdrop, the study wanted to investigate if the class of study does influence their level of DAS. Accordingly, Table XIV gives the descriptive statistics of Cross tabulation and Chi-square value between the class of study and the level of DAS among the selected school-going respondents.

Table XIV

Association of the Class of Study on the levels of DAS among the selected respondents

N=1038

Class of Study	Normal N (%)	Mild N (%)	Moderate N (%)	Severe N (%)	Extremely Severe N (%)	Total N (%)	X^2	*df*	*p value*
DEPRESSION									
8th	69 (13.3%)	143 (27.7%)	188 (36.4%)	90 (17.4%)	27 (5.2%)	517 (49.8%)	6.386	4.000	.172
9th	94 (18%)	123 (23.6%)	175 (33.6%)	100 (19.2%)	29 (5.6%)	521 (50.2%)			
Total	163 (15.7%)	266 (25.6%)	363 (35%)	190 (18.3%)	56 (5.4%)	1038(100%)			
ANXIETY									
8th	28 (5.4%)	77 (14.9%)	201 (38.9%)	133 (25.7%)	78 (15.1%)	517 (49.8%)	**17.784**	**5**	**.003**
9th	62 (11.9%)	70 (13.4%)	164 (31.5%)	140 (26.9%)	85 (16.3%)	521 (50.2%)			
Total	90 (8.7%)	147 (14.2%)	365 (35.2%)	273 (26.3%)	163 (15.7%)	1038(100%)			
STRESS									
8th	152 (29.4%)	126 (24.4%)	147 (28.4%)	77 (14.9%)	15 (2.9%)	517 (49.8%)	**16.578**	**4**	**.020**
9th	104 (20%)	129 (24.8%)	195 (37.4%)	73 (14%)	20 (3.8%)	521 (50.2%)			
Total	256 (24.7%)	255 (24.6%)	342 (32.9%)	150 (14.5%)	35 (3.4%)	1038(100%)			

The data presented in the first part of the table portrays the difference in levels of depression across the classes of study with more respondents from class 8 at a moderate level of depression (36.4% against 33.6%), whereas, at a severe level, the class 9 respondents exceeded their counterparts (19.2% against 17.4%) and at an extremely severe level a more or less equal distribution of students were observed. As we know during this period, they were often not sure about the choices they made and they were in doubt about their capacities, thus creating several depressive symptoms in them. However, the chi-square test for association revealed that there was no significant association between the class of study and the depression domain.

The data on anxiety showed similar results to depression. In other words, a noteworthy number of students from class 8^{th} standard perceived themselves to be affected by anxiety at a moderate level (38.9% against 31.5%), wherein the distribution at a severe level was slightly increased among the respondents of class 9 (26.9% against 25.7%). Further, the chi-square test for association reveals that there was a significant association (χ^2 (5) = 17.784, p <.01) between the class of study and the anxiety domain. These statistics indicated that the selected respondents were already at threat of anxiousness and at any point in time it might get worse. Research conducted by Hayward et al. (2000); and Schmidt et al. (2010) even cautioned that high levels of anxiety predict the occurrence of fright attacks and anxiety symptoms. Researchers have also found evidence to state that anxiety represents a risk issue for anxiety disorders among adolescents (Anderson and Hope, 2009).

The data in the table also validated the difference in levels of stress across the class of study where more class 9 students were stressed at moderate (37.4%) and extremely severe levels (3.8%) when compared to class 8 students. Whereas at a severe level, an almost equal distribution of respondents from both classes was observed. Accordingly, the chi-square test for association cogently revealed to be significant at a 5% level (χ^2 (4) = 16.578, p<.05). Academic pressure was found to be increased over the past few years; there were examinations, assignments, and many other activities that a student had to shuffle through. In addition, teachers and parents also burden the students with a lot of pressure to get good grades. These expectations make the students work relentlessly and end up creating more stress. A study conducted by Jain and Singhai (2018) also concluded that with academics, the parents and the institutions want the students to participate in extracurricular activities too, and the current expectation from the students was to be an all-rounder.

With the chi-square test being a qualitative measure to assess the association between the class of study and DAS, a quantitative analysis was also performed through the Mann-Whitney U test to compare the mean ranks of class 8 and 9 respondents on DAS. The results were presented in Table XV and Figure 15.

Table XV

Differences in DAS of the respondents based on their Class of study

N=1038

Domain	**Class 8 (N=517)**			**Class 9 (N=521)**			**Mann-Whitney U test**	
	Mean Rank	**SD**	**Median**	**Mean Rank**	**SD**	**Median**	**|z|**	***p* value**
Depression	15.53	6.772	15.00	15.47	7.298	15.00	0.11	.914
Anxiety	14.22	5.686	13.00	13.69	6.022	14.00	0.99	.320
Stress	18.18	7.821	18.00	19.49	7.125	19.00	2.85	**.004**

Comparison of DAS mean ranks based on Class of Study

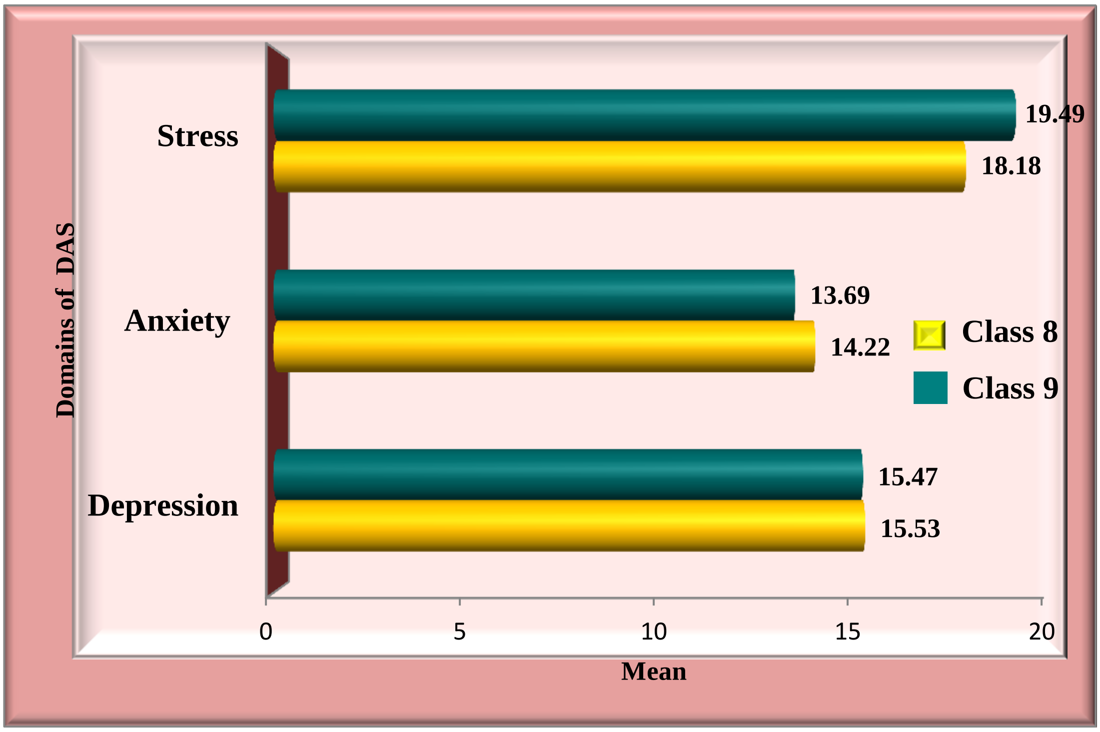


Figure 15

The Mann-Whitney U test between the 8^{th} and 9^{th} classes of study reveals a statistically significant value of ($|z|$=2.85; p <.01) concerning stress alone. Thereby, the hypothesis H_o 3 that stated 'there is no difference in the levels of Depression, Anxiety and Stress (DAS) based on the class of study' was accepted for depression and anxiety and rejected for stress. In other words, the class of study determines the respondents' perception of stress.

The figure depicts the comparison of the respondents' mean ranks on stress and was found to be high among class 9 against class 8 students (19.49 against 18.18). An important manifestation was that the class 9 students were more stressed as they were on the verge of appearing board exam. As pointed out by Talib and Rehman (2012), the workload could be one major cause of stress, it is understood that the class 9 respondents of the current study had an augmented workload when compared to their class 8 counterparts. Moreover, the anxiety and depression scores were almost similar irrespective of the class of study and hence not significant.

iii. ***Association of the Area of Residence on Depression, Anxiety and Stress (DAS)***

Children, the most treasured resources of any society, face numerous mental issues due to a lack of proper guidance and inability to manage and that results in a prolonged unbalanced life, and due course would turn out to be dangerous. They experience difficulties in managing their daily lives due to the disrupted capacity resulting from various socio-demographic factors. Previous researchers had observed that one such variable was the area of residence and hence it becomes necessary to carry out an in-depth analysis of it. The residing areas of the selected respondents were grouped into rural, semi-urban, and urban as per baseline data. Based on these categorical variables, descriptive statistics of Cross tabulation and Chi-square test were carried out to find the influence of the area of residence in the levels of DAS which were portrayed in Table XVI.

Table XVI

Association of the Area of Residence on the levels of DAS among the selected respondents

N=1038

Area of Residence	Normal N (%)	Mild N (%)	Moderate N (%)	Severe N (%)	Extremely Severe N (%)	Total N (%)	X^2	*df*	*p value*
DEPRESSION									
Rural	47 (26.1%)	48 (26.7%)	51 (28.3%)	28 (15.6%)	6 (3.3%)	180 (17.4%)			
Semi-urban	63 (22.8%)	66 (23.9%)	96 (34.8%)	44 (15.9%)	7 (2.5%)	276 (26.6%)	4.351	8	.824
Urban	146 (25.1%)	141 (24.2%)	195 (33.5%)	78 (13.4%)	22 (3.8%)	582 (56.0%)			
Total	256 (24.7%)	255 (24.6%)	342 (32.9%)	150 (14.5%)	35 (3.4%)	1038 (100%)			
ANXIETY									
Rural	12 (6.7%)	21 (11.7%)	56 (31.1%)	57 (31.7%)	34 (18.9%)	180 (17.4%)			
Semi-urban	15 (5.4%)	35 (12.7%)	109 (39.5%)	76 (27.5%)	41 (14.9%)	276 (26.6%)	**21.198**	**10**	**.020**
Urban	63 (10.8%)	91 (15.6%)	200 (34.4%)	140 (24.1%)	88 (15.1%)	582 (56.0%)			
Total	90 (8.7%)	147 (14.2%)	365 (35.2%)	273 (26.3%)	163 (15.7%)	1038 (100%)			
STRESS									
Rural	22 (12.2%)	54 (30%)	57 (31.7%)	37 (20.6%)	10 (5.6%)	180 (17.4%)			
Semi-urban	40 (14.5%)	68 (24.6%)	107 (38.8%)	51 (18.5%)	10 (3.6%)	276 (26.6%)	9.068	8	.337
Urban	101 (17.4%)	144 (24.7%)	199 (34.2%)	102 (17.5%)	36 (6.2%)	582 (56.0%)			
Total	163 (15.7%)	266 (25.6%)	363 (35%)	190 (18.3%)	56 (5.4%)	1038 (100%)			

The chi-square test for association revealed that there was no significant association between the area of residence and the depression domain (χ^2 (8) =4.351, p>.05). The current study was concordant with a study conducted by Haq et al. (2018) where they found that students originating from rural areas did not have significantly different levels of depression as compared to students originating from urban areas.

The data on anxiety showed that more percentage of respondents from semi-urban areas were found to be anxious at a moderate level (39.5%) in comparison to other levels. Remarkable differences in percentage were seen in the extremely severe level, wherein children from rural areas were found to be at more risk than others (18.9% against 14.9% and 15.1% respectively) and respondents from rural areas were anxious at the severe level (31.7%). Accordingly, the chi-square test for association reveals that there was a significant association (χ^2 (10) = 21.198, p<.05) between the type of residence and anxiety domain.

The percentage of distribution of the respondents at various levels of stress revealed similar results as anxiety where respondents from semi-urban areas were found to be stressed at a moderate level (38.8%) when compared to their urban (34.2%) and rural (31.7%) counterparts. At a severe level, 20.6% of the respondents from rural areas were found to be stressed compared to others (18.5% – semi-urban; 17.5% - urban). Also, the percentage of respondents categorised within the threshold of extremely severe was high among the urban children (6.2%). An interesting fact was that the percentages of rural respondents were much higher in perceiving themselves as not stressed and mildly stressed in comparison to others. The reason behind this fact might be due to the reality that the competitiveness of the urban and semi-urban environment pushes the parents with a desire to see their wards excel in studies and other co-curricular activities which ultimately leads to disturbances among children. Nevertheless, the chi-square test for association reveals that there was no significant difference between the area of residence and stress (χ^2 (8) =9.068, p>.05).

With the chi-square test being a qualitative measure to assess the association between the area of residence and the levels of DAS, a quantitative analysis was also performed through the Kruskal - Wallis Test to compare the mean ranks of DAS based on the area of residence. The results were presented in Table XVII and Figure 16.

Table XVII

Differences in DAS of the respondents based on their Area of Residence

N=1038

Domain	Rural (N= 180)			Semi-urban (N= 276)			Urban (N=582)			Kruskal - Wallis Test	
	Mean Rank	SD	Median	Mean Rank	SD	Median	Mean Rank	SD	Median	$X^2(2)$	*p value*
Depression	15.76	6.938	15.00	15.62	6.335	15.00	15.36	7.384	15.00	0.532	.766
Anxiety	14.78	5.768	15.00	14.33	5.502	13.50	13.53	6.022	13.00	**9.651**	**.008**
Stress	18.42	7.974	18.00	19.25	7.420	19.00	18.77	7.399	19.00	1.927	.381

Comparison of DAS mean ranks based on Area of Residence

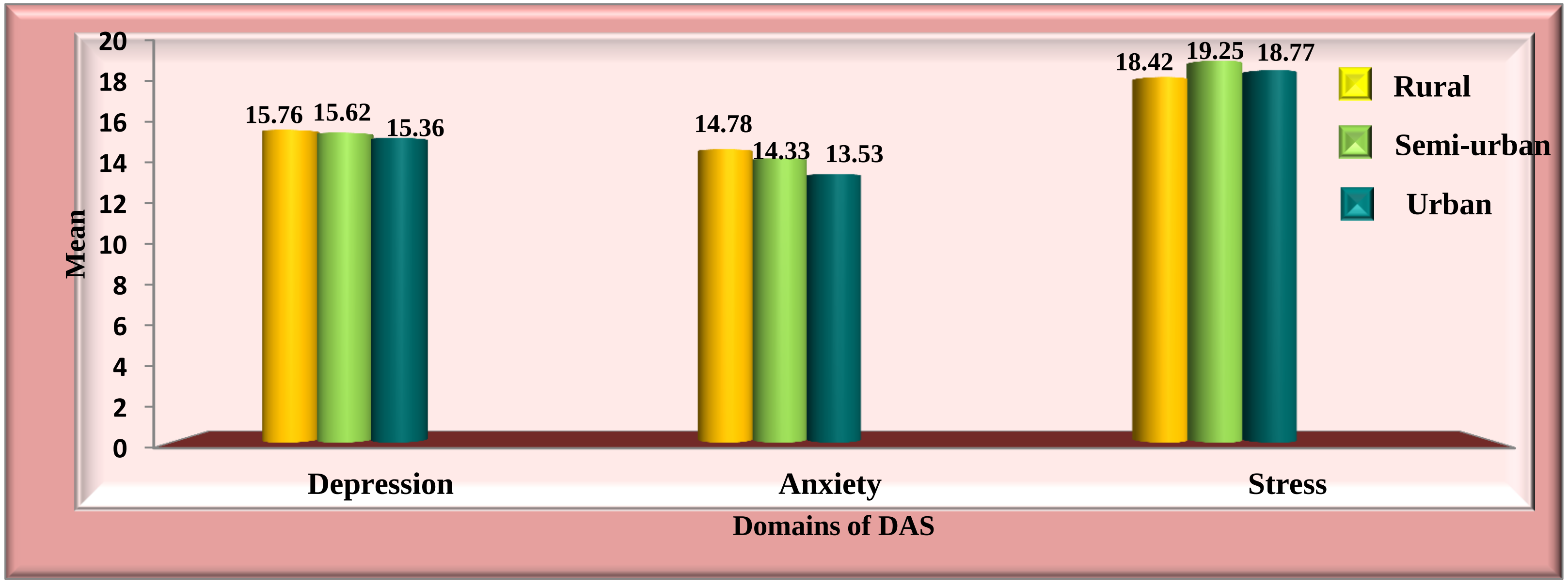


Figure 16

The above table depicted the significant association between the area of residence (Rural, Semi-urban, Urban) and DAS of the selected respondents, and showed a statistically significant value ($X^2(2) = 9.651$; $p < .01$) for anxiety alone. Moreover, the Kruskal-Wallis's test was not significant for depression and stress. In other words, depression and stress, though at a higher level were not influenced by the area of residence. Hence the hypothesis H_o 4 stating that 'there is no difference in the levels of Depression, Anxiety and Stress (DAS) based on the Area of Residence was accepted for depression and stress but rejected for anxiety. This finding was supported by research conducted by Anjum et al. (2022) that found that the residential setting had a statistically significant association with anxiety ($\chi 2 = 58.38$; $p<0.001$). This result was also compatible with the previous qualitative measure shown in Table XVI. The statistically insignificant influence of the type of residence on depression was further substantiated by an earlier study conducted by Mishra et al. (2018) in saying that there was no significant difference in the prevalence of depression among rural and suburban respondents.

The researcher also performed pairwise comparison (a statistical method of the different patterns that are ranked in terms of perceptible differences within the type of residence for the Anxiety domain since the quantitative and qualitative analysis had concluded that the type of residence had an impact on the prevalence and intensity of anxiety among the selected respondents. Table XVIII below illustrates the same.

Table XVIII

Pairwise comparisons within the Type of Residence for the Anxiety domain

N=1038

Pairs	Anxiety	
Rural – Semi-urban	$\|z\|$	0.989
	p value	.323
Rural-Urban	**$\|z\|$**	**2.771**
	***p* value**	**.006**
Semi-urban – Urban	**$\|z\|$**	**2.082**
	***p* value**	**.037**

Among the pairs of the type of residence, it was witnessed that the two pairs namely Rural over Urban and Semi-urban over Urban in the Anxiety domain were found to be significant (i.e., $|z| = 2.771$, $p < .01$ and $|z| = 2.082$, $p < .05$ respectively). The main aim of pairwise comparison was to find out which of the two entities had a greater influence. Accordingly, Table XVIII, indicates that children hailing from rural areas when compared to urban and semi-urban urban children were more anxious. Altogether, it was the rural students who were more anxious followed by semi-urban students. The investigator's observation and interaction with these children on the field owe the reason to the lack of frequent public and private transportation in rural areas, the distance between home and school, and less involvement of parents in their wards' school activities.

iv. Association of the Type of Family on Depression, Anxiety and Stress (DAS)

Recent research has found that family structure as being intensely associated with children's mental well-being (Park and Lee, 2020). Considering the impact of family structure on children's mental wellness, the researcher studied the association between the type of family and the levels of DAS among the identified respondents through descriptive statistics of Cross-tabulation and Chi-square test and its corresponding data were depicted below in Table XIX.

Table XIX

Association of the Type of family on the levels of DAS among the selected respondents

N=1038

Type of Family	Normal N (%)	Mild N (%)	Moderate N (%)	Severe N (%)	Extremely Severe N (%)	Total N (%)	X^2	*df*	*p value*
DEPRESSION									
Extended family	8 (7.7%)	30 (28.8%)	35 (33.7%)	25 (24%)	6 (5.8%)	104 (10.1%)	9.009	8.000	.342
Joint family	58 (18.6%)	79 (25.3%)	104 (33.3%)	54 (17.3%)	17 (5.4%)	312 (30.0%)			
Nuclear family	97 (15.6%)	157 (25.2%)	224 (36%)	111 (17.8%)	33 (5.3%)	622 (59.9%)			
Total	163 (15.7%)	266 (25.6%)	363 (35%)	190 (18.3%)	56 (5.4%)	1038 (100%)			
ANXIETY									
Extended family	4 (3.8%)	19 (18.3%)	32 (30.8%)	29 (27.9%)	20 (19.2%)	104 (10.1%)	11.646	10	.309
Joint family	27 (8.7%)	36 (11.5%)	110 (35.3%)	90 (28.8%)	49 (15.7%)	312 (30.0%)			
Nuclear family	59 (9.5%)	92 (14.8%)	223 (35.9%)	154 (24.8%)	94 (15.1%)	622 (59.9%)			
Total	90 (8.7%)	147 (14.2%)	365 (35.2%)	273 (26.3%)	163 (15.7%)	1038 (100%)			
STRESS									
Extended family	16 (15.4%)	29 (27.9%)	39 (37.5%)	15 (14.4%)	5 (4.8%)	104 (10.1%)	7.483	8	.485
Joint family	80 (25.6%)	81 (26%)	101 (32.4%)	42 (13.5%)	8 (2.6%)	312 (30.0%)			
Nuclear family	160 (25.7%)	145 (23.3%)	202 (32.5%)	93 (15%)	22 (3.5%)	622 (59.9%)			
Total	256 (24.7%)	255 (24.6%)	342 (32.9%)	150 (14.5%)	35 (3.4%)	1038 (100%)			

The summative scores of the current study indicated that out of 1038 total respondents, less than 1/4th of the total respondents (depression – 15.8%, anxiety – 8.7%, and stress – 25%) had perceived themselves to be normal. All others had professed to be influenced by DAS at varying levels between mild to extremely severe. Table XIX explains that

- Depression in children hailing from nuclear families was found to be augmented at a moderate level (36%), whereas at the severe level, the children from extended families surpassed their counterparts (24% against 17.3% and 17.8%). Depressive symptoms at an extremely severe level were witnessed to be more or less equally distributed within the three family structures.
- 35.9% of the children belonging to nuclear families seemed to be anxious at a moderate level, whereas anxiety at a severe level was found to be the highest among children from joint families (28.8% against 27.9% and 24.8%). Children from extended families seemed to be anxious at an extremely severe level (19.2%). Hence children were found to be anxious irrespective of the family structure.
- Children from extended families were found to be stressed at a moderate level (37.5%) and extremely severe (4.8%) when compared to the children of other family structures (Nuclear - 32.5% and 3.5%; Joint 32.4% and 2.6%). However, the percentages showed that the respondents from nuclear families do suffer from a severe level of stress when compared to their counterparts and were found to be at more risk than joint families (15% against 13.5%).

Accordingly, the chi-square test for association reveals that there was no significant association between the type of family and Depression, Anxiety and Stress (DAS). This finding was also partially supported by Jayashree *et al.,* (2018) and Jha *et al.,* (2017) that the type of family seemed to have no role in depression.

With the chi-square test being a qualitative measure to assess the association between the type of family and the three domains, a quantitative analysis was also performed through the Kruskal - Wallis Test to compare the mean ranks on DAS. The results were presented in Table XX and Figure 17.

Table XX

Differences in DAS of the respondents based on their Type of family

N= 1038

Domain	**Extended Family (N= 104)**			**Joint Family (N=312)**			**Nuclear (N=622)**			**Kruskal - Wallis Test**	
	Mean Rank	**SD**	**Median**	**Mean Rank**	**SD**	**Median**	**Mean Rank**	**SD**	**Median**	$X^2(2)$	*p value*
Depression	16.54	6.776	16.00	15.11	7.413	14.00	15.52	6.878	15.00	3.084	.214
Anxiety	14.66	5.752	14.00	14.45	6.460	14.00	13.59	5.534	13.00	4.374	.122
Stress	19.86	7.703	20.00	18.40	7.480	18.00	18.89	7.478	19.00	3.453	.178

Comparison of DAS mean ranks based on Type of Family

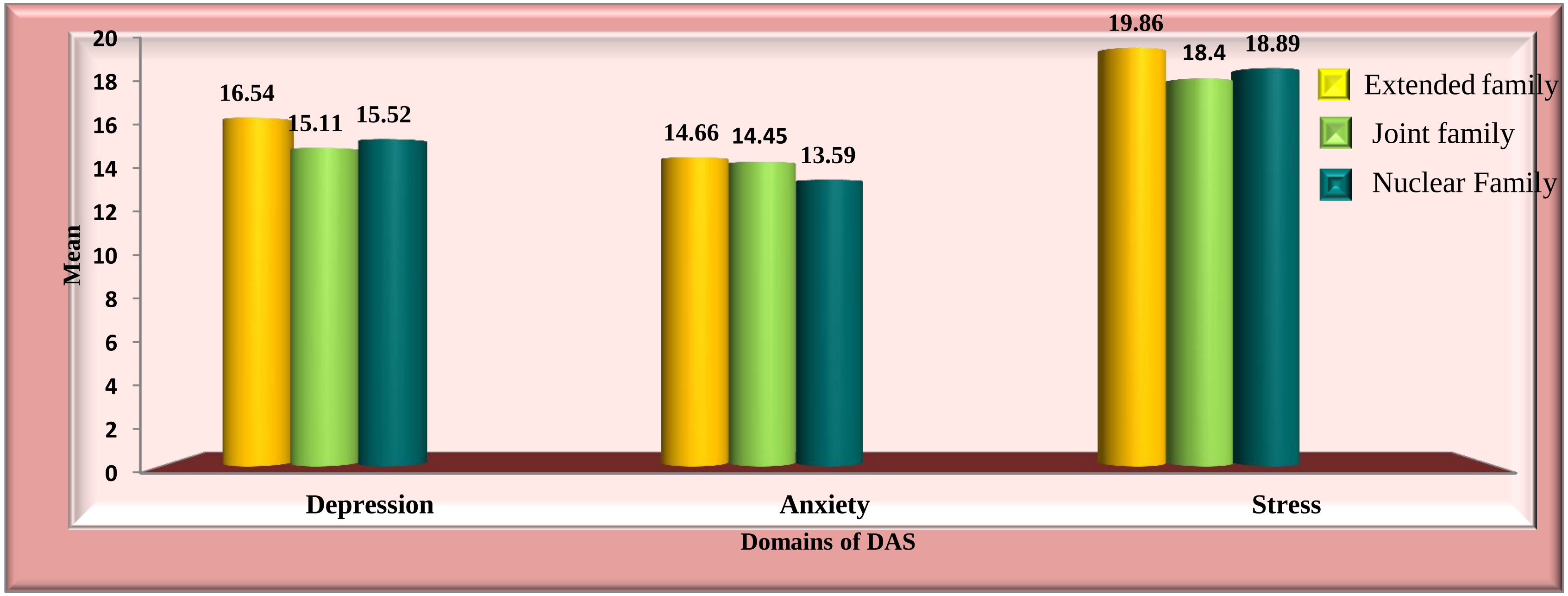


Figure 17

In summary of the above Table XX and Figure 17, it was observed that the mean ranks of Depression, Anxiety and Stress (DAS) were high among children who had hailed from extended families (16.54; 14.66; and 19.86 respectively) when compared to the other family structures. The mean rank of children from joint and nuclear families in all three domains was more or less equal. However, the Kruskal-Wallis's test revealed that these results were not statistically significant in all three negative emotional states. In other words, the type of family does not significantly influence the occurrence of DAS among the selected section of respondents. This result was similar to the previous qualitative measure shown in Table XIX. Overall, hypothesis H_o 5 which states that 'there is no difference in the levels of Depression, Anxiety and Stress (DAS) based on family type was accepted.

It was generally presumed that the modern family of today's generation had undergone significant transformations. The societal changes had subsidised from traditional typical families to nuclear families where nuclear family children stay alone. The parents of nuclear families were extremely busy as they did not have time to discuss any important matter with their children and in such cases, the children tried to make their own decisions where they failed and were faced with mental disturbances and problems. However, this understanding does not hold as per the results of the current study, wherein approximately 3/4th of the school children were mentally disturbed irrespective of the family structure they hailed from. Hence, the researcher concluded that the family structure was not that prominent in raising mentally healthy children, but it might be the parenting behaviour and the parent-child relationship that holds a remarkable role and this assumption needs further exploration.

v. Association of the Educational Status of Parents on Depression, Anxiety and Stress (DAS)

Studies revealed that several factors influenced the occurrence of Depression, Anxiety and Stress (DAS) among school-going adolescents. One such factor was parental educational status. As educational status had a direct positive association with the better occupational status of an individual, the current study did not attempt to consider the occupational status of the parents. So, the educational qualifications of both the father and mother of the selected respondents were taken into consideration and the data about the same were presented under two sub-heads as given below and each of its analysis and interpretations were as follows.

a. Father's educational status and Depression, Anxiety and Stress (DAS)
b. Mother’s educational status and Depression, Anxiety and Stress (DAS)

a. Father's educational status and Depression, Anxiety and Stress (DAS)

The existing literature contradicts each other in determining the status of school-going adolescents’ mental health and association with the father’s education. This necessitated the need to contribute more to the literature. Hence the study wanted to investigate if the fathers’ educational status influenced their children’s perception of DAS in them. Given that, Table XXI gives the descriptive statistics of cross-tabulation and Chi-square statistics between the fathers’ qualifications and the level of DAS among the selected school-going adolescents.

Table XXI

Association of Father's educational qualification on the levels of DAS among the selected respondents

N=1038

Educational Qualification	Normal N (%)	Mild N (%)	Moderate N (%)	Severe N (%)	Extremely Severe N (%)	Total N (%)	X^2	*df*	*p value*
DEPRESSION									
No Formal education	5 (10.2%)	14 (28.6%)	15 (30.6%)	12 (24.5%)	3 (6.1%)	49 (4.7%)	**29.4**	**16**	**.021**
Primary	27 (13.5%)	52 (26%)	79 (39.5%)	35 (17.5%)	7 (3.5%)	200 (19.2%)			
Secondary	39 (10.6%)	99 (26.9%)	140 (38%)	67 (18.2%)	23 (6.3%)	368 (35.4%)			
UG	69 (22.7%)	69 (22.7%)	96 (31.6%)	56 (18.4%)	14 (4.6%)	304 (29.5%)			
PG	23 (19.7%)	32 (27.4%)	33 (28.2%)	20 (17.1%)	9 (7.7%)	117 (11.2%)			
Total	163 (15.7%)	266 (25.6%)	363 (35%)	190 (18.3%)	56 (5.4%)	1038 (100%)			
ANXIETY									
No Formal education	1 (2%)	2 (4.1%)	23 (46.9%)	13 (26.5%)	10 (20.4%)	49 (4.7%)	**35.109**	**20**	**.020**
Primary	16 (8%)	33 (16.5%)	68 (34%)	53 (26.5%)	30 (15%)	200 (19.2%)			
Secondary	24 (6.5%)	49 (13.3%)	130 (35.3%)	113 (30.7%)	52 (14.1%)	368 (35.4%)			
UG	39 (12.8%)	42 (13.8%)	101 (33.2%)	67 (22.1%)	55 (18.1%)	304 (29.5%)			
PG	10 (8.5%)	21 (17.9%)	43 (36.8%)	27 (23.1%)	16 (13.7%)	117 (11.2%)			
Total	90 (8.7%)	147 (14.2%)	365 (35.2%)	273 (26.3%)	163 (15.7%)	1038 (100%)			
STRESS									
No Formal education	16 (32.7%)	12 (24.5%)	14 (28.6%)	6 (12.2%)	1 (2%)	49 (4.7%)	**38.318**	**16**	**.001**
Primary	45 (22.5%)	52 (26%)	78 (39%)	22 (11%)	3 (1.5%)	200 (19.2%)			
Secondary	89 (24.2%)	100 (27.2%)	123 (33.4%)	44 (12%)	12 (3.3%)	368 (35.4%)			
UG	63 (20.7%)	65 (21.4%)	104 (34.2%)	55 (18.1%)	17 (5.6%)	304 (29.5%)			
PG	43 (36.8%)	26 (22.2%)	23 (19.7%)	23 (19.7%)	2 (1.7%)	117 (11.2%)			
Total	256 (24.7%)	255 (24.6%)	342 (32.9%)	150 (14.5%)	35 (3.4%)	1038 (100%)			

The data on depression showed a distribution that could not be explained in terms of the father's education. However, getting deep into the percentages, a high percentage of children whose fathers had no formal education seemed to be depressed at a severe level (24.5%), children of fathers with primary education at a moderate level (39.5%), and children of fathers with postgraduate qualification at an extremely severe level (7.7%). Consequently, the chi-square test for association reveals that there was a significant association (χ^2 (16) =29.4, p<.05) between the father's qualification and the depression level of the respondents.

The second part of the table categorizing the respondents on various levels of anxiety based on their father's educational status clearly showed that an increased percentage of children whose fathers had no formal education were at risk in both moderate and extremely severe levels (46.9% and 20.4% respectively) when compared to their counterparts. The remarkable difference in the percentages was evident with the chi-square test for association revealing a significant association (χ^2 (20) = 35.109, p <.05) between the father's educational qualification and anxiety domain. This could be because, in India, the main documented cause of anxiety among school children and adolescents was parents' high educational expectations and pressure for academic achievement (Deb, 2001).

The percentage of children with a normal level of stress was found to be augmented among the fathers with postgraduate educational status closely followed by fathers who had no formal education. At the same time, a sizeable percentage of children of fathers with postgraduate educational status were severely stressed (19.7%), whereas stress at an extremely severe level was found to be the highest among children whose fathers had completed an undergraduate (5.6%). On the whole, the qualitative analysis (chi-square test) for association revealed that there was a significant association (χ^2 (16) = 38.318, p = .001) between the father's qualification and stress domain.

With the chi-square test being a qualitative measure to assess the association between the fathers' qualifications across domains, a quantitative analysis was also performed through the Kruskal-Wallis test to compare the mean rank of fathers' educational status on DAS. The results were presented in Table XXII and Figure 18.

Table XXII

Differences in DAS of the respondents based on their Father's educational qualification

Domain	No formal education (N= 49)			Primary (N= 200)			Secondary (N= 368)			Graduate (N= 304)			Postgraduate (N= 117)			Kruskal - Wallis Test	
	Mean Rank	SD	Median	Mean Rank	SD	Median	Mean Rank	SD	Median	Mean Rank	SD	Median	Mean Rank	SD	Median	$X^2(2)$	*p value*
Depression	16.57	6.958	17.00	15.54	6.037	15.00	16.11	6.731	15.00	14.67	7.480	14.00	15.21	8.192	14.00	7.682	.104
Anxiety	15.90	6.289	14.00	13.70	5.284	13.00	14.31	5.699	14.00	13.48	6.298	13.00	13.69	5.796	13.00	8.754	.068
Stress	17.92	7.068	18.00	18.87	6.388	19.00	18.63	7.090	18.00	19.85	8.174	20.00	17.21	8.569	17.00	**11.748**	**.019**

Comparison of DAS mean ranks based on Father's educational qualification

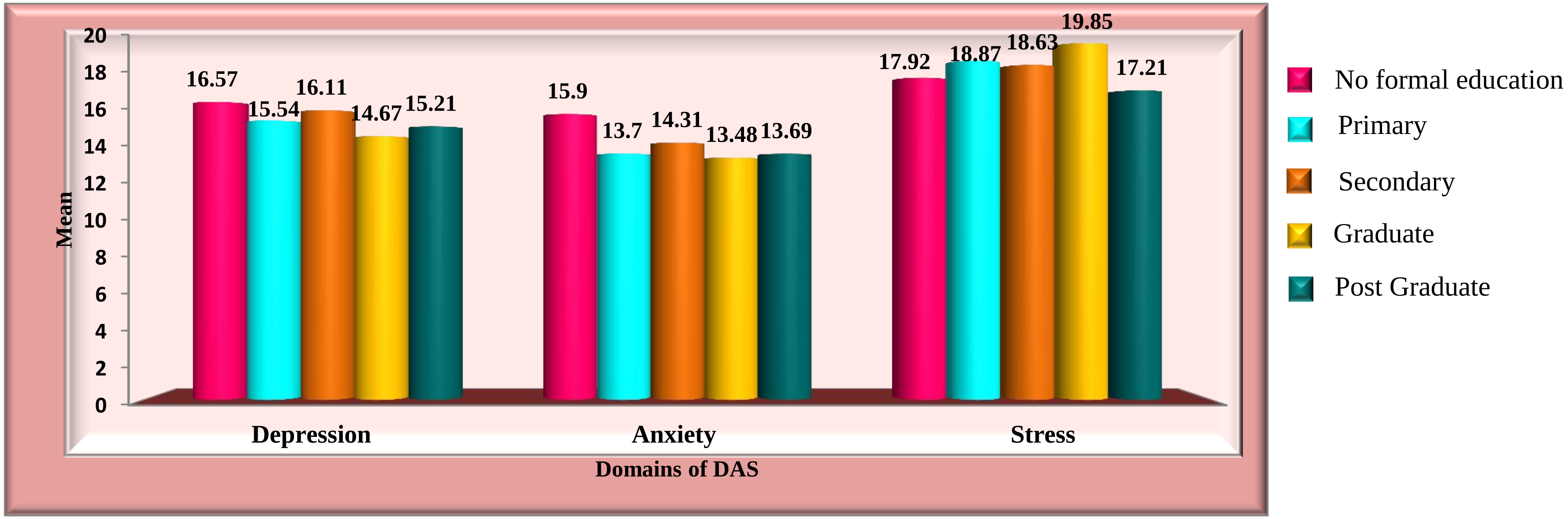


Figure 18

The mean rank of depression and anxiety as shown in Figure 18 vividly portrays that it was high among children born to fathers who had no formal education (16.57% and 15.90% respectively). However, the mean scores of the respondents in the stress domain were found to be amplified among the students of graduated fathers (19.85%), closely followed by the children of fathers who had their primary school level of education (18.87%). Furthermore, the Kruskal-Wallis test reveals a statistically significant difference between the levels of fathers' education and the stress mean score alone at a 5% level ($X^2(2)$ = 11.748; p <.05). Thereby hypothesis H_o 6 that stated 'there is no difference in the levels of Depression, Anxiety and Stress (DAS) based on the education status of the fathers' was accepted for depression and anxiety and rejected for stress. The above results contradicted the study done by Haq (2017), which revealed that the father's education was associated with levels of depression (F=3.119; p=.015), and anxiety (F = 2.702; p = .030), but no significant difference in the stress domain (F = 2.260; p = .062).

All the more, the qualitative measure in Table XXI revealed a statistically significant association between the fathers' educational status and all three emotional states of the respondents and the reason might be due to the chi-square value of the stress domain being comparatively higher concerning the other two negative emotional states. The quantitative and qualitative analysis clinched that the fathers' education influenced the pervasiveness and intensity of stress among the selected respondents. However, to further authenticate the results, a pairwise comparison between the father's qualification and stress mean score was depicted below in Table XXIII.

Table XXIII

Pairwise comparisons within the Father's educational qualifications for the stress domain

N=1038

Pairs	**Stress**	
Graduate - No formal	|*z*|	1.707
	p value	.088
Graduate – Postgraduate	**|*z*|**	**2.753**
	***p* value**	**.006**
Graduate – Primary	|*z*|	1.638
	p value	.101
Graduate – Secondary	**|*z*|**	**2.439**
	***p* value**	**.015**
No formal education – Postgraduate	|*z*|	0.524
	p value	.600
No formal – Primary	|*z*|	0.875
	p value	.381
No formal – Secondary	|*z*|	0.567
	p value	.570
Postgraduate – Primary	|*z*|	1.729
	p value	.084
Postgraduate – Secondary	|*z*|	1.530
	p value	.126
Primary-Secondary	|*z*|	0.627
	p value	.531

The table portrayed that among the pairs of father's educational qualifications on the stress of their children, the two pairs namely - Graduate and Postgraduate level of education were found to be significant at one percent level ($|z|= 2.753$; $p =<.01$) and Graduate and Secondary level of education at five percent level ($|z|= 2.439$; $p <.05$). Hence, the significant influence of fathers' education on the stress mean score of their children had come from graduate fathers in relation to their counterparts. In other words, children of graduate fathers were more stressed than their counterparts.

b. Mother's educational status and Depression, Anxiety and Stress (DAS)

A child spends most of his time with his/her primary caregiver who most often is the mother. Mother makes an important contribution in deciding the course of her child's life and her instructions reflect a very strong influence on the attitudes, abilities, and behaviour of children. Studies have revealed that those children who are well-adjusted and more successful come from homes where mothers have a favourable attitude and positive relationship with children (Aeri et al., 2010). The prevailing literature made the investigator add more. Hence the study wanted to investigate if the mother's educational qualification does influence their children's level of DAS. An assessment of the same in terms of descriptive statistics of Cross tabulation and Chi-square test of association between the mothers' educational qualifications and the level of DAS among the selected school-going adolescents were computed and projected in Table XXIV.

Table XXIV

Association of Mother's educational qualification on the levels of DAS among the selected respondents

N=1038

Educational status	Normal N (%)	Mild N (%)	Moderate N (%)	Severe N (%)	Extremely Severe N (%)	Total N (%)	X^2	*Df*	*p* value
DEPRESSION									
No Formal education	7 (7.6%)	30 (32.6%)	19 (20.7%)	32 (34.8%)	4 (4.3%)	92 (8.9%)	**56.849**	**16.000**	**.0001**
Primary	26 (13%)	50 (25%)	88 (44%)	25 (12.5%)	11 (5.5%)	200 (19.3%)			
Secondary	45 (12.6%)	99 (27.7%)	132 (37%)	64 (17.9%)	17 (4.8%)	357 (34.3%)			
Graduate	68 (24.3%)	59 (21.1%)	83 (29.6%)	51 (18.2%)	19 (6.8%)	280 (26.9%)			
Postgraduate	17 (15.6%)	28 (25.7%)	41(37.6%)	18 (16.5%)	5 (4.6%)	109 (10.6%)			
Total	163 (15.7%)	266 (25.6%)	363 (35%)	190 (18.3%)	56 (5.4%)	1038 (100%)			
ANXIETY									
No Formal education	2 (2.2%)	7 (7.6%)	30 (32.6%)	30 (32.6%)	23 (25%)	92(8.9%)	**48.146**	**20**	**.0001**
Primary	15 (7.5%)	31 (15.5%)	76 (38%)	50 (25%)	28 (14%)	200 (19.3%)			
Secondary	22 (6.2%)	52 (14.6%)	130 (36.4%)	105 (29.4%)	48 (13.4%)	357 (34.3%)			
Graduate	38 (13.6%)	34 (12.1%)	100 (35.7%)	64 (29.9%)	44 (15.7%)	280 (26.9%)			
Postgraduate	13 (11.9%)	23 (21.1%)	29 (26.6%)	24 (22%)	20 (18.3%)	109 (10.6%)			
Total	90 (8.7%)	147 (14.2%)	365 (35.2%)	273 (26.3%)	163 (15.7%)	1038 (100%)			
STRESS									
No Formal education	26 (28.3%)	22 (23.9%)	31 (33.7%)	10 (10.9%)	3 (3.3%)	92 (8.9%)	20.284	16	.208
Primary	42 (21%)	54 (27%)	70 (35%)	31 (15.5%)	3 (1.5%)	200 (19.3%)			
Secondary	78 (21.8%)	96 (26.9%)	127 (35.6%)	44 (12.3%)	12 (3.4%)	357 (34.3%)			
Graduate	73 (26.1%)	59 (21.1%)	87 (31.1%)	48 (17.1%)	13 (4.6%)	280 (26.9%)			
Postgraduate	37 (33.9%)	24 (22%)	27 (24.8%)	17 (15.6%)	4 (3.7%)	109 (10.6%)			
Total	256 (24.7%)	255 (24.6%)	342 (32.9%)	150 (14.5%)	35 (3.4%)	1038 (100%)			

Table XXIV explained that depressive symptoms were found to be highest at the moderate level among children of mothers with primary education (44%), whereas, at the severe level, the children whose mothers had no formal education exceeded their counterparts (34.8%). At an extremely severe level, the children of graduated mothers had an upsurge (6.8%) against their cohorts, which should not go unnoticed. A study conducted by Sukla et al. (2019), also found depression to be significantly higher among those whose mothers were educated up to primary (3.19; p = .01) or up to intercollege (1.59; $p < 0.001$) when compared with illiterate mothers.

The highest percentage (38%) of children of mothers who had primary education seemed to be anxious at a moderate level whereas anxiety at a severe and extremely severe level was found to be the highest among children from families whose mothers had no formal education (32.6% and 25% respectively).

Equal distribution of respondents stressed at a moderate level was found among children whose mothers had completed primary and secondary education (35% and 35.6%) and it was high when compared to their cohorts (Under Graduate – 31.1%, Post Graduate - 24.8%, and No formal education - 33.7%). Stress at the severe and extremely severe was found to be highest among children whose mothers had completed graduation (17.1% and 4.6%) closely followed by postgraduate-completed mothers' children (15.6% and 3.7%).

However, the chi-square test for association reveals that there was no significant association between the mother's qualification with stress, but with a significant association in the domains of anxiety and depression (χ^2 (16) =56.849, p = .0001 and χ^2 (20) =48.146, p = .0001). This result was similar to the results stated by Finkelstein et al. (2007) in revealing that adolescents from families with lower parental education were less optimistic than those from more educated families.

With the chi-square test being a qualitative measure to assess the association between the mother's qualifications with the three domains of mental status namely – DAS, a quantitative analysis necessitated and performed through the Kruskal - Wallis test to compare the mean rank on DAS and the results were presented in Table XXV and Figure 19.

Table XXV

Differences in DAS of the respondents based on their Mother's Educational qualification

N=1038

Domain	No formal education (N= 49)			Primary (N= 200)			Secondary (N= 368)			Graduate (N= 304)			Postgraduate (N= 117)			Kruskal - Wallis Test	
	Mean Rank	SD	Median	Mean Rank	SD	Median	Mean Rank	SD	Median	Mean Rank	SD	Median	Mean Rank	SD	Median	$X^2(2)$	*p value*
Depression	16.91	6.725	15.50	15.63	6.089	15.50	15.62	6.576	15.00	14.88	8.054	14.00	15.26	7.492	15.00	5.663	.226
Anxiety	16.02	6.155	15.00	13.63	5.087	13.00	14.13	5.613	14.00	13.36	6.203	12.50	13.75	6.478	13.00	**14.992**	**.005**
Stress	18.46	7.228	18.00	19.31	6.411	19.00	18.98	7.022	19.00	18.85	8.518	19.00	17.83	8.338	17.00	4.011	.404

Comparison of DAS mean ranks based on Mother's educational qualification

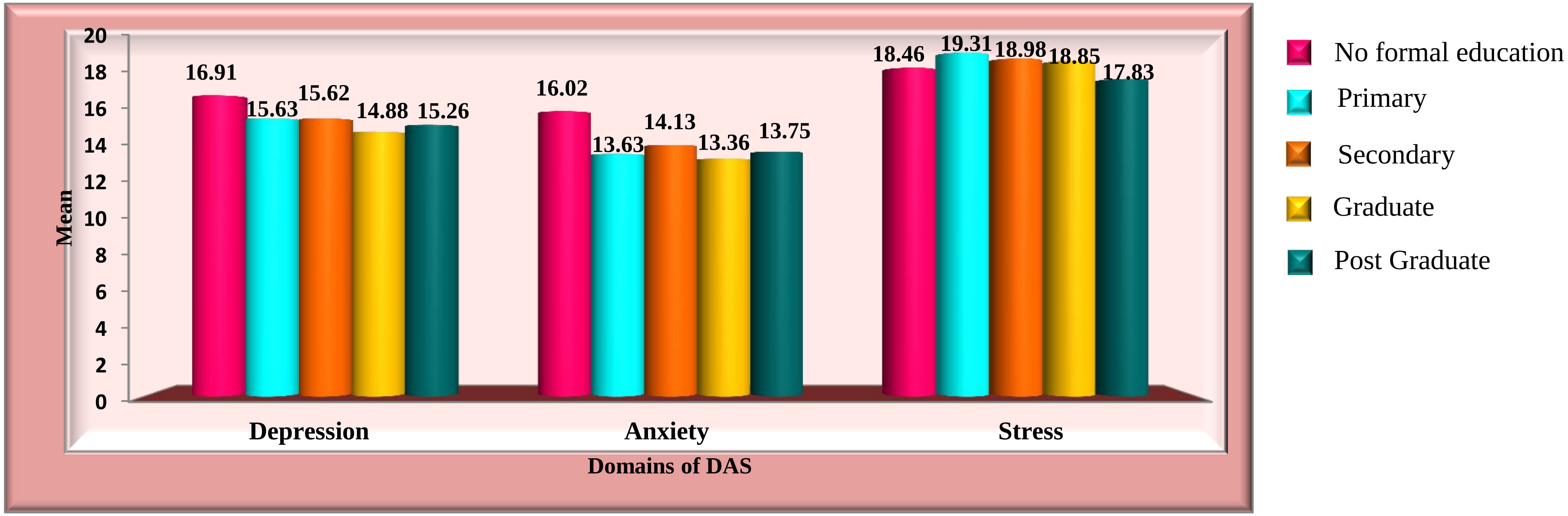


Figure 19

In summary of the above Table XXV and Figure 19, it was observed that the mean rank of stress was high among children of mothers who have had only a primary level of education (19.31%) closely followed by mothers having secondary education (18.98%) as their educational status. Whereas, the mean scores on anxiety and depression were remarkably augmented for children of mothers with no formal mothers (16.02% and 16.91%). However, the Kruskal Wallis test reveals that the results were statistically significant between the level of mothers' education and the anxiety scores ($X^2(2) = 14.992$; $p < .01$) alone. Hence the hypothesis H_o 7 that stated 'there is no difference in the levels of Depression, Anxiety and Stress (DAS) based on the education status of the mother' was accepted for depression and stress and rejected for anxiety.

These results were compatible with the previous qualitative measure on the anxiety and stress domain alone (Table XXIV). A study carried out by Haq et al. (2018) partially supported the current finding that the mother's education was associated with depression, anxiety and stress. The study also revealed that respondents whose mothers were illiterate had a higher mean score on depression than those whose mothers were educated. Similar findings were found in this present study pertaining to anxiety.

The researcher performed a pairwise comparison between the mother's qualification and anxiety mean score since the quantitative and qualitative analysis had concluded that the mother's education does have an impact on the prevalence and intensity of anxiety among the selected respondents and was depicted in Table XXVI.

Table XXVI

Pairwise comparison within the Mother's educational qualification in the anxiety domain

N=1038

Pairs	**Anxiety**	
Graduate - No formal	**|*z*|**	**3.574**
	p value	**.0001**
Graduate – Postgraduate	|*z*|	0.328
	p value	.743
Graduate – Primary	|*z*|	0.850
	p value	.341
Graduate – Secondary	|*z*|	1.894
	p value	.058
No formal – Postgraduate	**|*z*|**	**2.640**
	***p* value**	**.008**
No formal – Primary	**|*z*|**	**3.056**
	***p* value**	**.002**
No formal – Secondary	**|*z*|**	**2.608**
	***p* value**	**.009**
Postgraduate – Primary	|*z*|	0.272
	p value	.786
Postgraduate – Secondary	|*z*|	0.957
	p value	.339
Primary-Secondary	|*z*|	0.954
	p value	.340

The above table demonstrates that among the pairs of mother's educational qualifications on the anxiety mean score of the respondents, four pairs namely Graduate – No formal education, No formal education - Postgraduate, No formal education – Primary, No formal education–Secondary level of education were found to be highly significant level ($|z| = 3.574$; $p = .0001$, ($|z| = 2.640$; $p <.05$, ($|z| = 3.056$; $p <.01$ and ($|z| = 2.608$; $p <.05$ respectively). The commonality of all the pairs was that the mothers with no formal education had children who were more anxious when compared to their counterparts. The above findings reiterate the already presented results of Table XXV.

E. Relationship between Depression, Anxiety and Stress (DAS) and its potential determinants among the respondents

Increasing concern has been expressed about the mental health status of students in education even two decades ago and continues today. The incidence of diagnosable mental, emotional, or behavioural disorders is now estimated at between 10% and 20% among school children (Erskine et al., 2015). Further, the World Health Report declared that India has a substantial prevalence of childhood and adolescent mental health disorders (WHO, 2001).

World Health Organisation in its 2018 report articulated the prevalence of DAS as a common occurrence in adolescence. The report also voiced that in the transition from childhood to adulthood, they must have learned to cope with the psychological stress of growing up, deal with emotions, resolve conflicts, handle peer pressure, build bridges with friends and family, develop self-confidence, and protect themselves from high-pressure strategies like the stress of academic competition as well as peer pressure (WHO, 2018).

Hence, a thorough collection of literature aided in identifying a set of potential determinants for each of the negative emotional states of Depression, Anxiety and Stress (DAS). Accordingly, a self-formulated tool was devised and after testing the items for their psychometric properties, the tool was administered to the selected 1038 respondents as three sub-scales.

To determine the nature and strength of the relationship between the identified potential determinants and the DAS of the selected respondents, a non-parametric correlation called Spearman's Coefficient of Correlation was carried out. The statistics were carried out with the dataset acquired on two different tools, namely DASS-42 and

Potential Determinants with three subscales namely Determinants of Depression, Determinants of Anxiety and Determinants of Stress). The thumb rule of the DASS-42 was that the higher the score higher the level of depression, anxiety and stress among the respondents. Whereas for the second tool on determinants, the lower the score, the higher the influencing status of the determinants on depression, anxiety and stress as the case may be based on the subscale. The three subheads below detail the relationship of the potential determinants based on the three negative emotional states of the selected respondents.

i. **Relationship between depression and its potential determinants among the selected respondents**
ii. **Relationship between anxiety and its potential determinants among the selected respondents**
iii. **Relationship between stress and its potential determinants among the selected respondents**

i. Relationship between depression and its potential determinants among the selected respondents

The issue of students' mental health, a global concern that covers all developed and non-developed societies, both modern and traditional (Bayram and Bilgel, 2008). Costello et al. way back in 2006, expressed that depressive disorders among adolescents had become a major public health issue because of their high occurrence. Further, Sarokhani et al. (2013) also added that depression was one of the mental health problems which were most widespread across the world among the adolescent population. Recently, literature from community and school-based studies from different parts of the world suggested that the most common psychiatric disorder among adolescents was depression (Adolescent Mental Health, 2021) which continues to increase day by day and hence has become an area of notice.

Copeland et al., (2021) further confirmed that depression was one of the major psychological conditions where an individual tends to change their thought processing which seems to ultimately affect their social behaviour and hence their sense of physical well-being. Early onset of depression and its persistent symptoms throughout adolescence had a lasting impression on adulthood such as mental health disorders, substance use disorders, social dysfunction, and even non-communicable diseases like diabetes mellitus and high blood pressure. Accordingly, the study had the objective of identifying the factors that cause depression among the selected lot of school-going adolescents to get an insight into why such a high prevalence of depression among them. Consequently, Spearman Correlation Statistics were computed to check if the determinants identified through the collation of literature caused depression among the selected sect of respondents and Table XXVII presents the results.

Table XXVII

Correlation between potential determinants of depression and depression mean score

N=1038

Determinants	**r_s**	***p* value**
Attitudinal issues	**-.728**	**.0001**
Present/ future life concerns	**-.342**	**.0001**
Academic pressure	**-.305**	**.0001**
Family and relationship	**-.701**	**.0001**
Psychological concerns	**-.741**	**.0001**

All five determinants were found to be significantly correlated (p = .0001) to the depression score of the respondents. In other words, the identified potential determinants do cause depression among school-going adolescents. However, based on Cohen's (1988) conventions to interpret effect size using the correlation coefficient (r_s), the table revealed that three potential determinants namely, psychological concerns (-.741), attitudinal issues (-.728), and family and relationship issues (-.701) had a strong negative correlation to the depression of the selected respondents. Whereas the two determinants namely present/future life concerns (-.342) and academic pressure (-.305) had a weak negative correlation. The negative correlation was due to the nature of the scoring of the tools used. Hence the relationship can be interpreted as, the higher the depression among the respondents lower the score on determinants, thereby higher the influence of the determinant on depression. Hence hypothesis H_o 8 that stated 'there is no relationship between Depression and its potential determinants' was rejected.

A concordant study by Trindade et al. (2017) confirmed that attitudinal issues (self-esteem, optimism, negative self-image), current or past mental life concerns, and various other aspects, including psychological concerns (negative thinking, insight, cognitive fusion, emotional clarity), were identified as the most prevalent depressive factors. Scientific evidence revealed that attitudinal determinants like poor relationships with schoolmates, feelings of insecurity, and adverse life events increase the risk of depression in adolescents (Abela et al., 2005).

Another study by Patel et al. (2007) has identified family conflicts, poor family management, and family attachment as prevailing depressive indicators, which was found to be supportive of the present results in terms of the potential determinant – Family and relationship. Reiss (2013) in his study expressed that the relationship between academic pressure and depression among adolescents was not associated, which contradicts the present finding, however, the present study had only revealed a weak correlation.

ii. Relationship between anxiety and its potential determinants among the selected respondents

Essau, et al. (2018) stated that anxiety often occurs among adolescents and was found to be associated with substantial negative effects on their social, emotional and academic success. Even before two decades, Woodward and Fergusson (2001) cautioned that if anxiety remains untreated, it would affect young people's developmental progress, with implications for future health.

Recent studies by Ghandour et al. (2019) indicated that childhood anxiety was identified as a common psychiatric disorder and estimated that more than 7% of adolescents had been diagnosed with anxiety. Prevalence rates were approximately 20% for specific phobias, 9% for social anxiety disorder and generalized anxiety disorder (Walter et al., 2020). Risk factors for anxiety disorders in children and adolescents include low socioeconomic status, exposure to violence, trauma, and biological factors such as heritability and temperament (Zhu et al., 2019).

It was often noticed that poor social and coping abilities, avoidance of social interactions, loneliness, low self-esteem, fears of social rejection, and trouble developing friendships, were some of the specific triggers of anxiety (Weeks, 2009). With the scope of adding evidence to the existing literature, the present study identified four determinants, to determine the correlations between the total score of anxiety and its potential determinants among selected school-going children and the results were as presented in Table XXVIII.

Table XXVIII

Correlation between potential determinants of anxiety and anxiety mean score

N=1038

Determinants	r_s	*p* value
Generalised Panic	**-.612**	**.0001**
Social Anxiety	**-.581**	**.0001**
Specific Phobia	**-.745**	**.0001**
Academic Anxiety	**-.426**	**.0001**

All four determinants were found to be significantly correlated (p = .0001) to the anxiety score of the respondents. The above table also revealed that two potential determinants namely, generalised panic (-.612) and specific phobia (-.745) had a strong negative correlation to the anxiety of the selected respondents. Whereas, social anxiety (-.581) and academic anxiety (-.426) had a moderate negative correlation. As mentioned above the negative correlation was due to the nature of the scoring of the tools used. In other words, the identified four potential determinants do cause anxiety among the selected respondents. Hence hypothesis H_o 9 that stated 'there is no relationship between anxiety and its potential determinants' was rejected.

A study conducted by the Australian Bureau of Statistics (2007) identified social phobia (4.7%), and generalised panic (2.6%) as predominant anxiety determinants and the present finding also stated that generalized panic and social anxiety had a strong and moderate correlation with the total score of anxiety respectively and hence concordant. Similarly, the American Psychiatric Association (2013) highlighted some of the common types of potential determinants of anxiety namely generalized anxiety disorder, panic disorder, and social anxiety.

Deb (2001) observed that in India the main documented cause of anxiety among school children and adolescents was parents' high educational expectations and pressure for academic achievement which supported the present finding, as academic pressure had a moderate correlation. In India, it was amplified among school children that the preparedness for board examinations and in turn their score was the main determining criteria for future admission to a high-quality higher education. This induced fierce competition in the students' minds and the fear of not performing well, ultimately led to anxiety problems in them.

iii. Relationship between stress and its potential determinants among the selected respondents

Gradus (2017) estimated that 50% of the world's population experiences at least one stressful event in their lifetime and its prevalence has been increasing worldwide. UNICEF (2011) and WHO (2018) pointed out that in their entire life, adolescence faces enormous stress and mental issues. Some of the common reasons for stress during adolescence were because of disturbed family dynamics, peer pressure, inability to cope with studies, drug abuse and lack of competence (Ghatol, 2017).

Stress among school-going children occurs due to many external/internal factors. Shastri and Veena (2016) very well explained in their study the reason for enormous stress which varies from individual to individual. They threw light on the fact that some individuals were more sensitive to some stressors than others, as stress was caused by environmental and internal demands that needed to be adjusted continuously. Accordingly, the researcher identified four broad potential indicators namely family stress, drastic lifetime changes, attitudinal stress and academic stress to get an insight into why such a high prevalence of stress among them. Accordingly, Table XXIX captures the finding of the correlations between the total score of stress and its potential determinants among the selected respondents.

Table XXIX

Correlation between potential determinants of stress and stress mean score

N=1038

Determinants	**r_s**	***p* value**
Family Stress	**-.718**	**.0001**
Drastic change in life	**-.317**	**.001**
Attitudinal Stress	**-.707**	**.0001**
Academic Stress	**-.236**	**.004**

Spearman's coefficient of correlation test indicated a significant negative correlation between the stress score and all of its four potential determinants. Based on the effect size, the table revealed that stress had a strong negative correlation with two potential determinants namely: family stress (r_s = -.718 and p = .0001) and attitudinal stress (r_s = -.707 and p = .0001) of the selected respondents. Whereas the two determinants namely drastic life changes (r_s = -.317 and p = .001) and academic stress (r_s = -.236 and p < .01), though had a significant correlation, the magnitude of the relationship was weak. The negative correlation was due to the nature of the scoring of the tools used and indicated that the higher the effect of potential determinants of stress, the higher the signs and symptoms experienced due to stress among the respondents. Hence hypothesis H_o 10 that stated 'there is no relationship between stress and its potential determinants' was rejected.

The result confirms that family stress was a significant influencing factor of stress among the selected respondents, in concordance with the finding of Nagabharana et al. (2021) who mentioned family aspects as the most prominent stressors. The family structure has been shown to play an important role in stress development. Talwar and Kumar (2014) cited the study of Singh et al. (1990) where they found that stress was more common among adolescents belonging to nuclear families. The general profile that showed around 60% of the respondents were living in nuclear families and the tests of association on both the quantitative and qualitative measures revealed no significant relationship between the type of family with the stress level that needs to be recalled. Hence the family stress here does not indicate the type of family, but indicates the expectations and the pressure that the family poses on the adolescents.

Nagabharana et al. (2021) also focused on academic pressure where they mentioned that pressure to perform well academically featured repeatedly as one of the major stressors, mainly in younger adolescents. Stress was triggered not only by family and teachers but their fears for their future and it was concordant with the present findings where academic pressure had a statistically significant relationship to the stress score, though the effect size indicated a weak correlation.

The findings discussed so far, when put together had meticulously demonstrated that the DAS level and its potential determinants triggering DAS among the selected respondents had become a promising concern of inquiry. Accordingly, the first phase of the study puts forth two recommendations namely i) Teachers, parents, and significant others of the respondents need to have open communication with their wards to guide them on the right path and ii) Steps to be taken to initiate DAS alleviating programme and make it a regular practice.

Phase – II: EFFECTIVENESS OF THE FORMULATED PREVENTIVE INTERVENTION

Structured on the results of the first phase of the study, where more than 3/4th of the selected school children were found to be affected by Depression, Anxiety and Stress (DAS) at mild to extremely severe levels, Comprehensive School-Based Intervention Training to alleviate Depression, Anxiety And Stress abbreviated as CSIT-DAS was conducted through four-stage training phases namely Trust building and Eligibility check; Orientation and Pre-test evaluation; Education and training sessions; Post-Test Evaluation and follow-up sessions tailored to the need of the respondents.

On the whole, CSIT-DAS was specially made for school-going children addressing two major objectives, firstly to provide psycho-education about DAS and secondly to build up cognitive and behavioural coping skills to boost confidence to perform better in any situation faced. Of the 60 students categorized as an experimental group the ratio of boys to girls was 2:1 (girls-20 and boys-40) and of the 60 students categorized as the wait-list control group, girls were more than boys (girls-35 and boys-25).

The following sections provide the effectiveness of CSIT-DAS through statistical measures and were hammered into the following heads

A. Efficacy of Comprehensive School-based Intervention Training to alleviate Depression, Anxiety and Stress (CSIT-DAS) - Comparison between Pre-test and Post-test Depression, Anxiety and Stress levels between Experimental and Wait-list Control Group
B. Gender Comparisons of Pre-test and Post-test scores on Depression, Anxiety and Stress Score among the Experimental and Wait-list Control Group
C. Sustainability of Comprehensive School-based Intervention Training to alleviate Depression, Anxiety and Stress among the Experimental group

Each of the subsections was elaborated below with appropriate statistical measures testing the hypotheses stated in the first chapter.

A. Efficacy of Comprehensive School-based Intervention Training to alleviate Depression, Anxiety and Stress (CSIT-DAS) - Comparison between Pre-test and Post-test Depression, Anxiety and Stress levels between Experimental and Wait-list Control Group

The findings of the first phase of the study were concordant with the findings of Bertha and Balázs (2013) that showed a high prevalence of depression, anxiety and stress among adolescents, with a negative impact on quality of life, and a significant risk indicator later. Owing to these facts, the second phase formulated a preventive intervention module named CSIT-DAS and was tested among the selected school-going adolescents with the assumption that the intervention would equip them with a repertoire of skills for alleviating the three major negative emotional states – Depression, Anxiety and Stress (DAS).

To compare differences in scores on Depression, Anxiety and Stress (DAS) between students with intervention and those without intervention and to check if the intervention effect differs by time measures (Pre and Post) with an overall objective of evaluating the effectiveness of the CSIT-DAS among the selected respondents, a Two-way MANOVA of repeated measures [2 (experimental and wait-list control groups) x 2 (Pre and Post evaluation scores of the three dependent variables namely Depression, Anxiety and Stress (DAS)] were computed. The results presented in Table XXX illustrate the comparisons of the experimental and wait-list control group of respondents based on the mean score and SD of the three dependent variable measures – Depression, Anxiety and Stress (DAS) during the two times of measurement - pre and post.

Table XXX

Mean Scores and Standard Deviations of the Experimental and Wait-list Control Group in the pre and post phases of Intervention for Depression, Anxiety and Stress (DAS)

$N_1+N_2=120$

Dependent Variable	Time of measurement	Experimental Group ($N_1=60$)		Wait-list Control Group ($N_2=60$)	
		M	SD	M	SD
Depression	Pre-test	25.43	8.07	18.92	6.35
	Post-test	8.72	6.35	22.60	6.39
Anxiety	Pre-test	24.03	9.04	14.30	6.18
	Post-test	7.55	5.13	18.55	4.95
Stress	Pre-test	25.28	8.45	20.22	8.44
	Post-test	13.18	7.77	24.00	27.45

The experimental group of respondents' mean score showed a tremendous decline in the post-evaluation measures on all three dependent variables, the negative emotional states, namely Depression (from M (SD) of 25.43 (8.07) to 8.72 (6.35); Anxiety (from M (SD) of 24.03 (9.04) to 7.55 (5.13); and Stress (from M (SD) of 25.28 (8.45) to 13.18 (7.77). The decline in the score of DAS indicates that the signs and symptoms experienced by the experimental group of respondents leading them to perceive that they were depressed, anxious, or stressed have declined. The noteworthy decline owes to the intervention titled CSIT-DAS which has equipped the respondents with a repertoire of coping skills and facilitated them to practice and apply the same to combat DAS.

The table further depicted an important fact that the wait-list control group of respondents' mean score on all three dependent variables (Depression, Anxiety and Stress) was augmented – Depression from M (SD) of 18.92 (6.35) to 22.60 (6.39); Anxiety from M (SD) of 14.30 (6.18) to 18.55 (4.95); and Stress from M (SD) of 20.22 (8.44) to 24.00 (27.45). In other words, the level of DAS and its related sufferings were on the rise among the wait-list control group of respondents as they were not exposed to CSIT-DAS, which cautions the academicians and the policymakers that the DAS among the school children gets intensified if no integrated intervention aiming to alleviate DAS were provided to them.

The effect of intervention between the two groups (experimental and wait-list control), between the time measures (pre and post), and the interaction effect of both group and time provided evidence of whether or not the experimental and wait-list control group; pre and post; differ along the three dependent variables (three negative emotional states) namely Depression, Anxiety and Stress (DAS). Accordingly, Table XXXI depicts the multivariate analysis of variance for the given data set.

Table XXXI

Multivariate Analysis of Variance for Depression, Anxiety and Stress among the experimental and wait-list control groups

N_1+N_2=120

Measures	Wilk's Lambda (Λ)	F(*df1, df2*)	*p* value	η 2
Intervention (2 groups)	0.673	9.246 (3, 57)	**.0001**	.327
Time (2-time measures)	0.380	30.978 (3, 57)	**.0001**	.620
Intervention*Time	0.175	89.661 (3, 57)	**.0001**	.825

A statistically significant effect with F (3, 57) = 9.246, p = .0001, Λ= 0.673 with η2 = .327, confirms that the experimental and wait-list control groups do indeed differ in terms of intervention. Also, the effect of time measures (pre and post) gave an F (3, 57) = 30.978, p = .0001, Λ = 0.380 with η2 = .620 endorsing that the pre and post level of DAS do indeed vary in terms of time. The partial eta square of both the measures - two groups of intervention (experimental and wait-list control) and two groups of time measures (pre and post) - showed a large effect of 32.7% and 62% respectively on the three negative emotional states of the respondents, Depression, Anxiety and Stress, put together.

Moreover, the interaction effect between the intervention (2 groups) and the time (2 measures) over the combined dependent variables (Depression, Anxiety and Stress) was also statistically significant and explained 82.5% of the variance between the interacting groups (F (3,57) = 89.661, p = .0001, Λ =.175). In other words, the effects of the intervention were consistent across the time measure. Alternatively, but equivalently the effect of time measure also varies for experimental and wait-list control groups of respondents.

To test which of the dependent variable contributes to the combined significant effect as revealed in Multivariate analysis, the results of the Bonferroni-corrected Univariate analysis of variance was depicted in Table XXXII.

Table XXXII

Univariate Analysis of Variance for Depression, Anxiety and Stress among the experimental and wait-list control groups

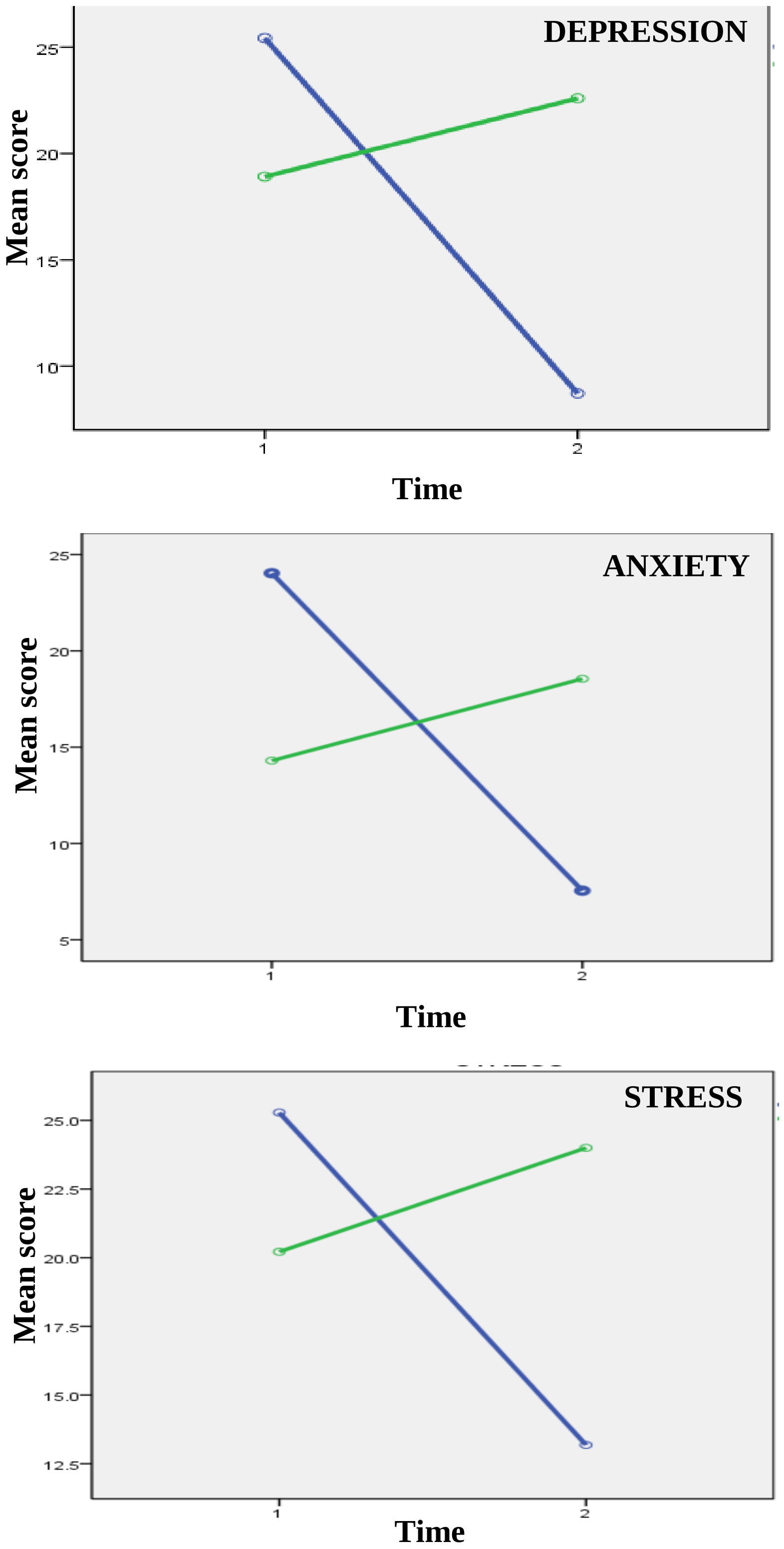
$N_1+N_2=120$

Measures	**Dependent Variables**	**Sum of squares**	**F(*df1, df2*)**	***p* value**	**η 2**
Group	**Depression**	814.017	23.782(1,59)	**.0001**	.287
	Anxiety	24.067	0.453(1.59)	.503	.008
	Stress	495.937	1.991(1,59)	.164	.033
Time	**Depression**	2548.017	73.639(1,59)	**.0001**	.555
	Anxiety	2244.817	88.344(1,59)	**.0001**	.600
	Stress	1037.504	4.526(1,59)	**.0001**	.071
Group*Time	**Depression**	6242.40	197.470(1,59)	**.0001**	.770
	Anxiety	6448.067	215.675(1,59)	**.0001**	.785
	Stress	3784.204	16.363(1,59)	**.0001**	.217

The interaction between the group and the time measures indicated a significant effect on all three negative emotional states – Depression F (1, 59) = 197.470, p = .0001; Anxiety F (1, 59) = 215.675, p = .0001 and Stress F (1, 59) = 16.363, p = .0001 with the corresponding partial eta square of .770, .785, and .217 respectively showing a large effect size between the group and time measure. The same was the case when only the time measures (Pre and Post) were considered, wherein, the three negative emotional states were significantly different (Depression $F (1, 59) = 73.639$, $p = .0001$; Anxiety $F (1, 59) = 88.344$, $p = .0001$ and Stress $F (1, 59) = 4.526$, $p = .0001$) The partial eta square of .555, .600, and .071 indicated large effect size in the depression, and anxiety domain, whereas a moderate effect on stress domain. However, the group measure (experimental and wait-list control) were not statistically significant with anxiety $F (1, 59) = 0.453$, $p > .05$ and stress $F (1, 59) = 1.991$, $p > .05$. But the depression domain alone was significant with $F (1, 59) = 23.782$, $p = .0001$ and $\eta 2 = .287$.

Now the question of why no significant variation in anxiety and stress domain was reported between the experimental and wait-list control group of respondents. The reason was that the change in the score of anxiety and stress among the experimental and wait-list control groups was similar. There were two possibilities for this. Firstly, the CSIT-DAS was not effective in the anxiety and stress domain. Secondly, the DAS score of the wait-list control group was augmented. As the univariate tests did not provide specific statistical measures of mean differences between the groups, the plots on the estimated marginal means of the three dependent variables for the two groups – the experimental and wait-list control – were analysed and portrayed in Figure 20.

Profile plots of the mean scores on Depression, Anxiety and Stress in the pre and post-tests of CSIT-DAS for the experimental and wait-list control groups



Experimental group   1 Pre-test

Wait-list Control group   2 Post-test

Figure - 20

The three plot diagrams above showed the changes in the mean score of the three negative emotional states (Depression, Anxiety and Stress) concerning the two-time measure (Pre and Post CSIT-DAS) of the experimental and wait-list control group of respondents. It vividly portrays that the mean score of the experimental group had a significant decline in all three negative emotional states. This decline was indicative of lower Depression, Anxiety and Stress (DAS) among the experimental group respondents. Whereas, the green line signifying the wait-list control groups' mean score showed an inclination towards a higher score in all three emotional states. The increase in the scores was indicative of higher depression, anxiety and stress among the wait-list control group respondents.

One important thing to be noted was that the preventive intervention CSIT-DAS of modules segregated around 4 months of sessions were conducted between Sep to Dec 2021 for the experimental group. This was the time when the schools had just reopened for normal classes after the pandemic after a long gap of 18 months of total lockdown. The lockdown made it difficult for the students to come back to the school setting of regular classes as they got used to online classes and exams. The informal interactions with the school children also revealed that they were not able to complete their tasks on time which had led them to many stressful situations and ultimately made them anxious and depressed as they were not able to stand up to their expectations as well as that of others. They were more tense as final exams were on the way.

All the more, the post-test assessment was conducted amidst their revision exam in January. During this entire period of Sep to Dec 2021, the students were burdened with completing portions, writing exams in between classes, submitting assignments, and other events like project work, etc. Hence it was obvious that the students of the wait-list control group had an augmented higher mean score on all the negative emotional states (Depression, Anxiety and Stress), indicating that their DAS level had significantly increased. Further, an informal discussion with the control participants revealed a justification for the data procured owing to the reason mentioned above.

Though the context was the same with the experimental group of participants, the CSIT-DAS facilitated them to practice a repertoire of coping skills and it was the only reason for their decreased DAS levels. In other words, CSIT-DAS helped them confront depression, anxiety and stress in them, which otherwise would have been elevated like the students of the wait-list control group. In sum, the CSIT-DAS that was tailored for school-going children and conducted in four phases had hand-held the experimental group of students by providing a shield over the susceptible trigger. Moreover, the augmented mean score of DAS among the wait-list control group cautions the academicians that the level of DAS soars among the student population if not intervened appropriately.

B. Gender Comparisons of Pre-test and Post-test scores on Depression, Anxiety and Stress Score among Experimental and Wait-list Control Group

Adolescence is often regarded as a critical period for mental health, with the onset of roughly half of lifetime mental disorders seemed to be occurring by the age of 15 years (Cohen et al., 2003). WHO (2001) articulated that, mental health problems amongst children and adolescents had amplified in recent years and were expected to increase up to 50% by the year 2020. The recent statistics confirm the anticipated figures.

The results of the first phase of the study revealed that gender as an independent variable was not associated with the depression, anxiety and stress scores of the respondents. However, gender was considered to be a critical element of mental health and mental illness. Haro et al. (2006) reinstated that women were exposed to more depression, anxiety and stress than men due to interactions between biological factors, social determinants, gender stereotypes, gender roles, social stigma, inequality and social autonomy. Owing to this verity, the present study wanted to analyse if the formulated preventive strategy abbreviated as CSIT-DAS differs based on gender. Accordingly, Table XXXIII portrays the gender-based comparison mean score between the experimental and wait-list control groups at both pre and and post-CSIT-DAS along with t-test statistics.

Table XXXIII

Gender comparisons of Pre and Post Depression, Anxiety and Stress (DAS) mean scores between the experimental and wait-list control group

N_1+N_2=120

Negative emotional states	**Variables**	**Pre**		**Post**	
		Mean	**SD**	**Mean**	**SD**
Depression	**Experimental Group**				
	Boys (40)	26.15	7.347	9.30	7.398
	Girls (20)	24.00	9.414	7.55	4.904
	‘t value	0.971		0.956	
	p value	.335		.343	
	Wait-List Control group				
	Boys (45)	17.87	4.853	22.00	6.164
	Girls (15)	19.27	6.790	22.80	6.528
	‘t’ value	-.736		-.417	
	p value	.464		.679	
Anxiety	**Experimental Group**				
	Boys (40)	25.23	8.328	8.00	5.791
	Girls (20)	21.65	10.143	6.65	3.422
	‘t’ value	1.456		0.960	
	p value	.151		.341	
	Wait-list Control group				
	Boys (45)	16.20	7.203	19.60	5.889
	Girls (15)	13.67	5.752	18.20	4.630
	‘t’ value	1.385		0.171	
	p value	.946		.348	
Stress	**Experimental group**				
	Boys (40)	25.85	8.319	13.78	8.838
	Girls (20)	24.15	8.833	12.50	5.176
	‘t’ value	0.731		0.478	
	p value	.478		.634	
	Wait-list Control group				
	Boys (45)	22.33	9.678	21.47	9.257
	Girls (15)	19.51	7.982	28.84	31.311
	‘t’ value	1.124		-0.410	
	p value	.266		.683	

Pre and Post Depression, Anxiety and Stress (DAS) mean scores of the experimental group based on gender

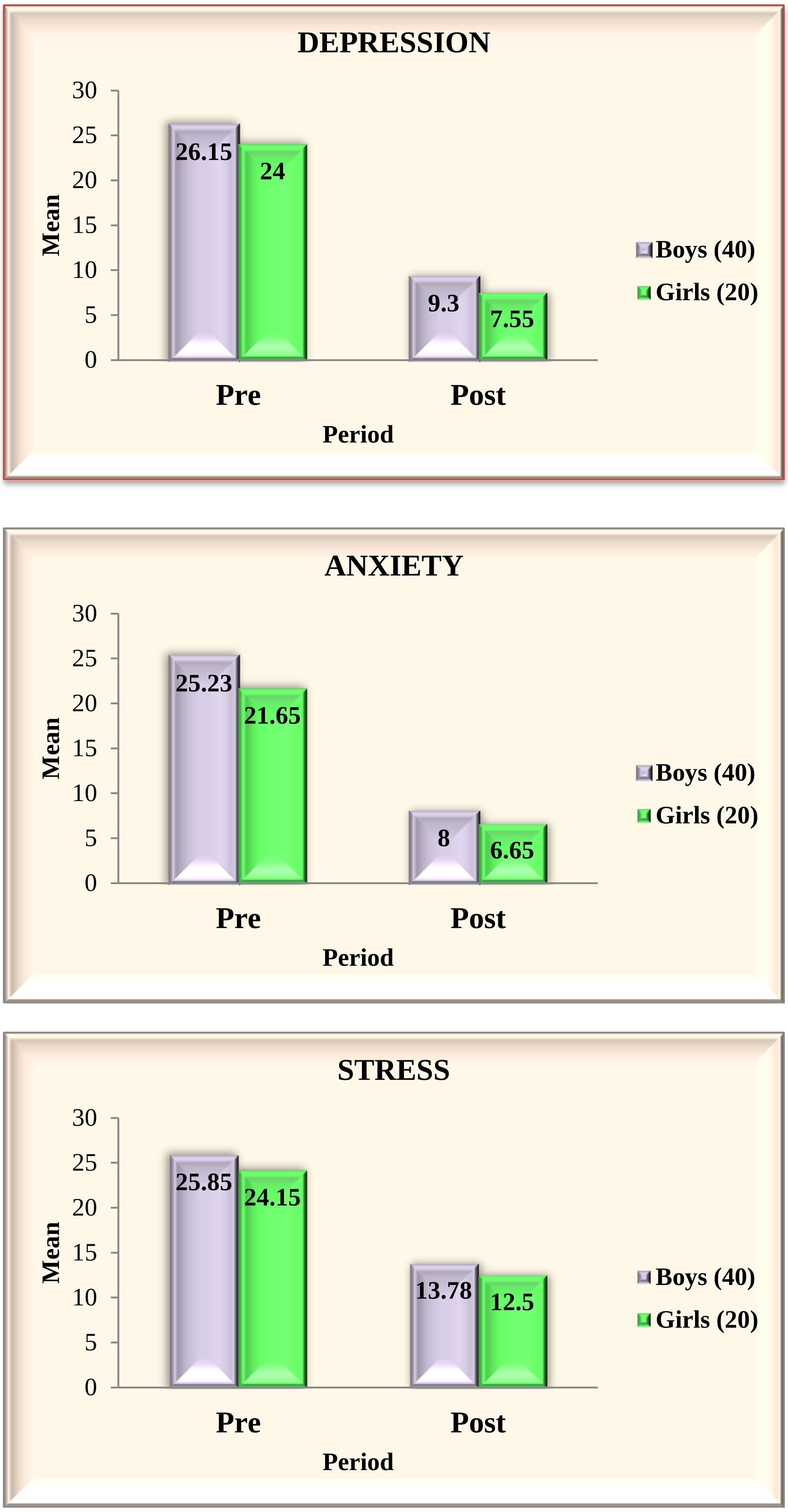
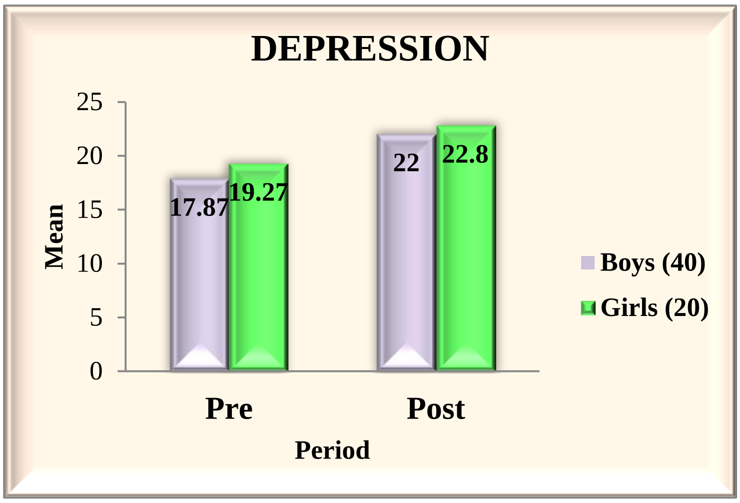
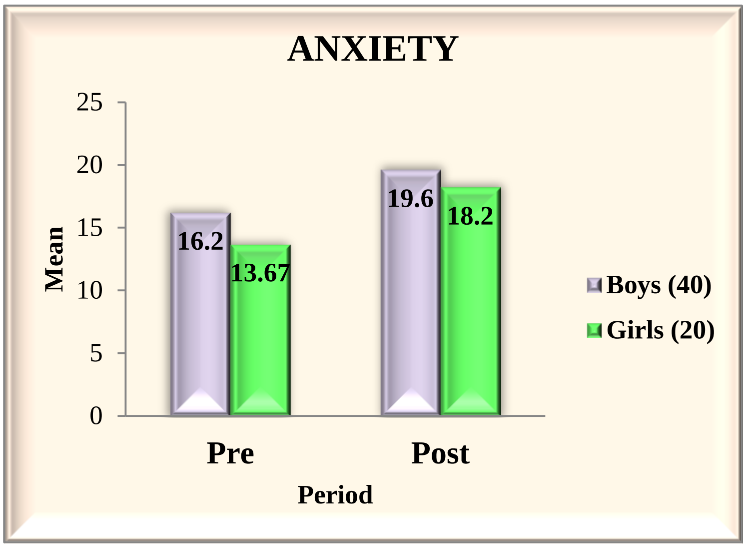


Figure - 21

Pre and Post Depression, Anxiety and Stress (DAS) mean scores of the Wait-list Control group based on gender





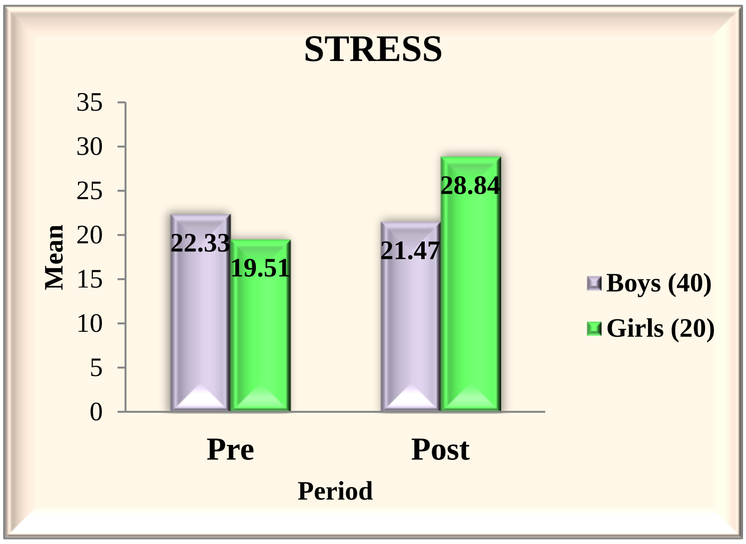


Figure - 22

Table XXXIII shows the gender-based comparisons among the experimental and wait-list control group of respondents between the pre-test and post-test scores on all the three negative mental states - Depression, Anxiety and Stress revealed a non-significant 't' value in every comparison of the mean score.

- The experimental boys and girls who had a higher mean score in the pre-test witnessed a tremendously lowered level of depression mean score in post-test score after CSIT-DAS (Boys - 26.15 to 9.30; Girls - 24.00 to 7.55). The same pattern was observed for anxiety (Boys - 25.23 to 8.00; Girls - 21.65 to 6.65) and for stress (Boys - 25.85 to 13.78; Girls - 24.15 to 12.50). The insignificant 't' value in all the measures vividly states that the mean scores at the pre and post-test for all of the emotional states were almost similar irrespective of the gender of the experimental respondents.
- Moreover, while meddling into the data of wait-list control group students, an augmented increase in the mean score of pre and post-test scoring was found for anxiety (Boys-16.20 to 19.60; Girls-13.67 to 18.20) and depression (Boys-17.87 to 22.00; Girls-19.27 to 22.80) as shown in Figure 22. However, the stress mean score was found to be the same in pre and post-data evaluation. Similar to the gender-wise comparison of the experimental group, the control group of respondents, amidst an augmented score of all three emotional states concerning pre and post-test, did not show a significant effect for gender. The insignificant t-statistics of the control group revealed that depression, anxiety and stress among school-going adolescents do not vary with gender at any point in time.

Altogether the table portrays that irrespective of the time measure, and the type of group, the mean score on depression, anxiety and stress did not vary based on gender. In other words, both male and female respondents had perceived DAS similarly. However, this table had an additional implication as portrayed in Figure 21 in terms of analysing whether the formulated preventive strategy titled CSIT-DAS differs based on gender.

The insignificant 't-test value for the experimental group of respondents in the post-measure (Depression $t = 0.956$, $p>.05$; Anxiety $t = 0.960$, $p>.05$; Stress $t = 0.478$, $p>.05$) had an important implication that the CSIT-DAS piloted for school-going adolescents did not have a gender-based impact on all three negative emotional states. In other words, the activities and the repertories of coping skills taught to the group of experimental students had an equal impact on both boys and girls. This was an optimistic result showing that the CSIT-DAS, thus formulated with fifteen sessions showed a greater reduction in DAS among the experimental group irrespective of gender. Hence hypothesis $H_{\circ}$ 11 that stated 'the formulated preventive intervention shows no difference in the levels of Depression, Anxiety and Stress (DAS) among the experimental group of respondents based on gender' was accepted.

C. Sustainability of Comprehensive School-based Intervention Training to alleviate Depression, Anxiety and Stress among the Experimental group

The previous section confirmed the effectiveness of the CSIT-DAS among the experimental group of school-going adolescents. However, the investigator wanted to analyse the sustainability of the formulated preventive intervention abbreviated as CSIT-DAS among the experimental group of respondents. So the DASS-42 Scale was re-administered two times after the post-test to the experimental group alone. Hence, every respondent of the experimental group had filled out the DASS-42 scale four times (pre-intervention, post-intervention, follow-up 1, and follow-up 2). The follow-up 1 and the follow-up 2 data collection were done after a week and a month's gap of post-intervention respectively.

To determine the sustainability of the CSIT-DAS, the three negative emotional states namely depression, anxiety and stress (dependent variable) were measured four times namely, Pre-test, Post-test, Follow-up 1, and Follow-up 2. As there were four-time scores for each dependent variable it was decided to use two-way MANOVA of repeated measures (Pre-test, Post-test, Follow-up 1, and Follow-up 2), and the results were presented below. Table XXXIV provides the mean and the standard deviation of the experimental group at all four times on DAS.

Table XXXIV

Mean scores and Standard Deviations of the Experimental Group during Pre-test, Post-test, Follow-up 1, and Follow-up 2 of Intervention for Depression, Anxiety and Stress

N_1=60

Dependent Variable	**Time of measurement**	**Experimental Group**	
		M	**SD**
Depression	Pre-test	25.43	8.079
	Post-test	8.72	6.679
	Follow-up 1	8.58	5.625
	Follow-up 2	7.80	5.364
Anxiety	Pre-test	24.03	9.048
	Post-test	7.55	5.134
	Follow-up 1	6.35	4.686
	Follow-up 2	6.40	4.691
Stress	Pre-test	25.28	8.457
	Post-test	13.18	7.778
	Follow-up 1	9.27	7.025
	Follow-up 2	9.75	7.175

For the first dependent variable, depression, the mean score during the pre-test (25.45) significantly reduced to a mean score of 8.72 during the post-test. Moreover, the mean score of follow-ups 1 and 2 also showed a noticeable decrease when compared to the post-test. When looking into the mean scores on anxiety during the four time measures, the post-test score of 7.55 against 24.03 during the pre-test was revealed. Follow-up 1 and follow-up 2 also showed a further decrease from the post-test. Just like the first and the second emotional state under study, the third state - stress has also witnessed the same pattern (25.28 in the pre-test and 13.18 in the post-test). The follow-up mean scores also further decreased.

On the whole, the reduction in the mean score of all three dependent variables – depression, anxiety and stress - within the four-time repeated measures authenticated the decrease in DAS scores and thereby, the sustainability of the intervention titled CSIT-DAS was evident. However, the follow-up 2 score in both anxiety and stress (6.40 and 9.75 respectively) had a mild increase in the mean score when compared with follow-up 1 (6.35 and 9.27 respectively). This finding leads to a recommendation that the CSIT-DAS implemented to alleviate DAS should be an ongoing continuous programme, refreshed periodically to maintain its sustainability among the respondents.

Further analysis of the four-time repeated measure MANOVA necessitates checking the homogeneity of variance, Hence, the test of Sphericity (Mauchly's W) for the dependent variables was computed and shown in Table XXXV.

Table XXXV

Test of Sphericity for Depression, Anxiety and Stress

N_1=60

Within Subject effect (N=60)	Variables	Mauchly's W	Chi-Square (χ2)	*df*	*p* value
Time	**Depression**	.875	7.687	5	.174
	Anxiety	.572	32.248	5	.716
	Stress	.918	4.968	5	.420

For the homogeneity of variance to be met Mauchly's W value should be non-significant. Accordingly, Mauchly's test of sphericity indicates that the assumption of sphericity has not been violated for all the three dependent variables (Depression - $X^2(5) = 7.687$, $p = .174$; Anxiety - $X^2(5) = 32.248$, $p = .716$; and Stress- $X^2(5) = 4.968$, $p = .420$). Consequently, the within subjects' interaction effects were then computed and projected as Table XXXVI

Table XXXVI

Multivariate Analysis of Variance for Depression, Anxiety and Stress

N_1=60

Measures	Wilk's Lambda Value (Λ)	F(*df1*, *df2*)	*p* value	η 2

Time (4-time measures)	0.160	29.807 (9,51)	**.0001**	.840

The above table shows the effect of the interaction between the four-time measures of the experimental group of participants as a combined measure of all three dependent variables with F (9, 51) = 29.807, p = .0001, and η2 = .840, showing a strong effect size. The partial eta square denotes a large effect size as it explains 84% of the variance in the combined dependent variable score (DAS) owing to the time gap between assessments. In other words, it could be interpreted that the mean scores were significantly different in every measure of time.

To find out which of the dependent variables contributed to the combined significant effect as revealed in the multivariate analysis, a univariate analysis of variance was computed and shown in Table XXXVII.

Table XXXVII

Univariate Analysis of Variance for Depression, Anxiety and Stress

N_1=60

Measures	Sum of squares	F(*df1, df2*)	*p* value	η 2
Depression	13136.63	104.24(3,177)	**.0001**	.639
Anxiety	13471.50	126.20(3,177)	**.0001**	.681
Stress	10073.85	59.50(3,177)	**.0001**	.502

The above table indicated a significant interaction effect of F (3,177) = 104.24, p = .0001 for depression; F (3,177) = 126.20, p = .0001 for Anxiety; and F (3,177) = 59.50, p = .0001 for Stress. The η2 of .639, .681, and .502 respectively, demonstrated a large effect size between time measured (4 measures) on the three negative emotional states – Depression, Anxiety and Stress (DAS).

The repeated measures MANOVA statistics with significant effect signifies that the experimental group of respondents had significant differences in mean score between the time measures in all three negative emotional states. But, the trend of difference in scores was not explained. Hence the univariate test was followed up by the Pairwise comparison to compare the four times measures in pairs to judge which time measure had the maximum variation on the dependent variables. The pair-wise comparisons were projected in Table XXXVIII.

Table XXXVIII

Pairwise comparisons for Pre-test, Post-test, Follow-up 1, and Follow-up 2 of intervention for the Experimental Group on Depression, Anxiety and Stress

N_1=60

Negative emotional states	(I) Time	(J) Time	Mean Diff. (I-J)	Std. Error	*p* value
Depression	Pre-test	Post-test	**16.717**	**1.341**	**.0001**
		Follow-up 1	**16.850**	**1.289**	**.0001**
		Follow-up 2	**17.633**	**1.159**	**.0001**
	Post-test	Pre-test	**-16.717**	**1.341**	**.0001**
		Follow-up 1	0.133	1.213	1.000
		Follow-up 2	0.917	1.032	1.000
	Follow-up 1	Pre-test	**-16.850**	**1.289**	**.000**
		Post-test	-1.33	1.213	1.000
		Follow-up 2	0.783	1.028	1.000
	Follow-up 2	Pre-test	**-17.633**	**1.159**	**.0001**
		Post-test	-0.917	1.032	1.000
		Follow-up 1	-0.783	1.028	1.000
Anxiety	Pre-test	Post-test	**16.483**	**1.330**	**.0001**
		Follow-up 1	**17.683**	**1.360**	**.0001**
		Follow-up 2	**17.633**	**1.213**	**.0001**
	Post-test	Pre-test	**-16.483**	**1.360**	**.0001**
		Follow-up 1	1.200	.873	1.000

		Follow-up 2	1.150	.780	.875
	Follow-up 1	Pre-test	**-17.683**	**1.360**	**.0001**
		Post-test	-1.200	.873	1.000
		Follow-up 2	-0.050	.809	1.000
	Follow-up 2	Pre-test	**-17.633**	**1.213**	**.0001**
		Post-test	-1.150	.780	.874
		Follow-up 1	0.050	.809	1.000
Stress	Pre-test	Post-test	**12.100**	**1.510**	**.0001**
		Follow-up 1	**16.017**	**1.462**	**.0001**
		Follow-up 2	**15.533**	**1.251**	**.0001**
	Post-test	Pre-test	**-12.100**	**1.510**	**.0001**
		Follow-up 1	**3.917**	**1.431**	**.049**
		Follow-up 2	3.433	1.331	.074
	Follow-up 1	Pre-test	**-16.017**	**1.462**	**.0001**
		Post-test	**-3.917**	**1.431**	**.049**
		Follow-up 2	-0.483	1.219	1.000
	Follow-up 2	Pre-test	**-15.533**	**1.251**	**.0001**
		Post-test	-3.433	1.331	.074
		Follow-up 1	0.483	1.219	1.000

Post hoc tests were performed to understand the sustainability of the CSIT-DAS in terms of the reduced mean score on depression, anxiety and stress with the four-time measures namely Pre-test, Post-test, Follow-up 1, and Follow-up 2 of CSIT-DAS.

The first part of the table showed a significant mean difference of (M=16.717, SE= 1.341, p = .0001) between the pre-test and the post-test measures of depression score. Moreover, a significant mean difference of (M=16.850, SE=1.289, p = .0001) and (M=17.633, SE=1.159, p = .0001) between the pre-test and the follow-up 1 measure and follow-up 2 measures respectively were reported. The positive mean difference signifies that the mean score of the experimental group of respondents on depression had greatly reduced, in other words, the signs and symptoms of depression experienced by the respondents had a significant decline. All the more, the mean difference between the other pairs namely the post-test with follow-up 1 (0.133) and post-test with follow-up 2 (0.917) were not significant. The insignificant mean difference for these time measures indicates that the depression score after the post-test was more or less similar among the respondents, thereby evidently proving the sustainability of the preventive intervention, CSIT-DAS.

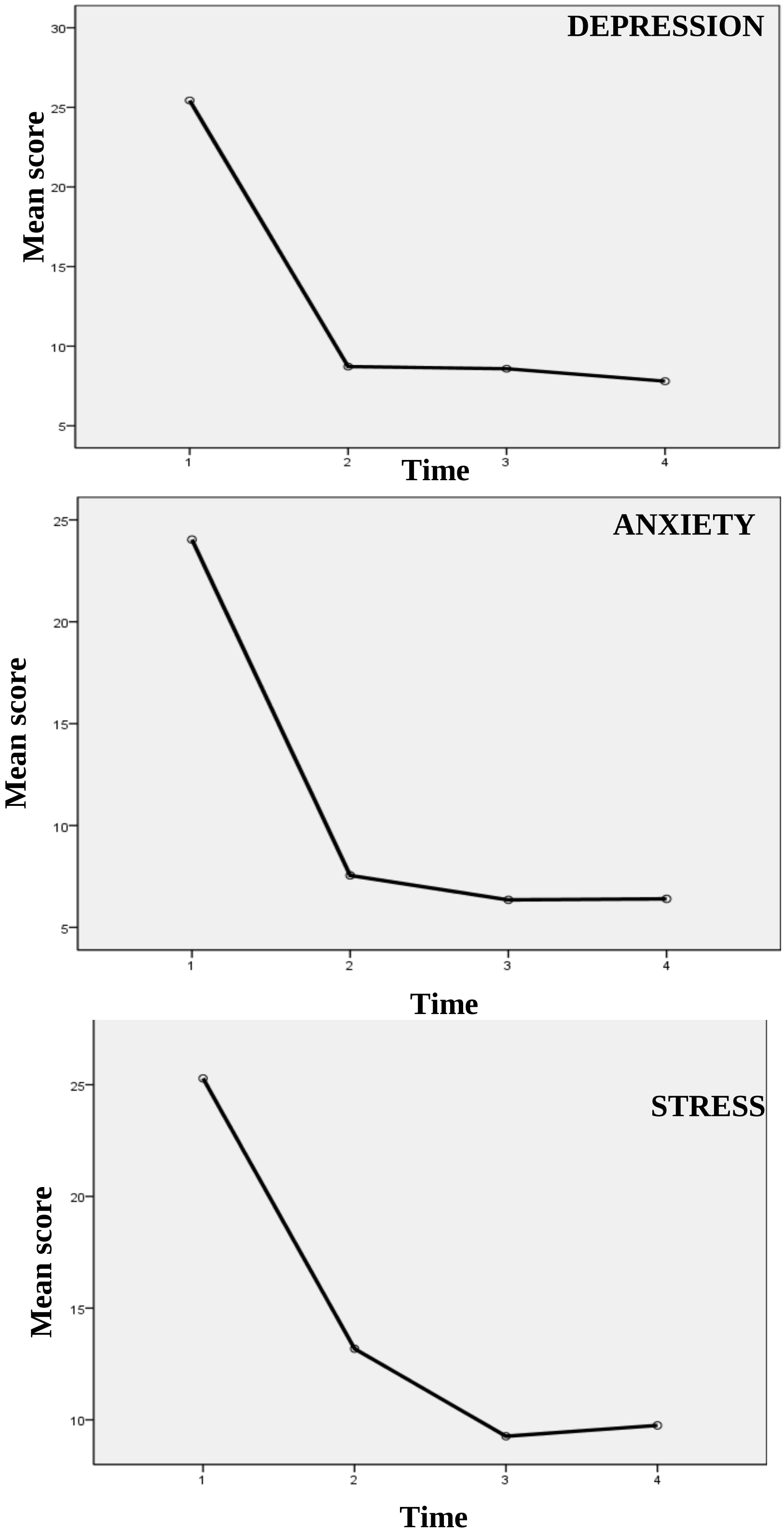
While glancing at the second part of the table, a similar pattern of post hoc results was reported. Significant positive mean differences between the pre-test and the post-test measures of anxiety score (M= 16.483, SE= 1.330, p = .0001) were noticed. Moreover, a significant positive mean difference of (M= 17.683, SE=1.360, p =.0001) and (M=17.633, SE=1.213, p = .0001) between the pre-test and the follow-up 1 and follow-up 2 measures respectively were reported. Subsequently, the mean differences between the other pairs namely the post-test with follow-up 1 and post-test with follow-up 2 were not significant.

The third part of the table also indicated a significant positive mean difference for stress from pre-test to post-test (M=12.100, SE=1.510, p = .0001); pre-test to follow-up 1 (M=16.017, SE= 1.462, p = .0001) and pre-test with follow-up 2 (M=15.533, SE = 1.251, p = .0001). Similar to depression and anxiety, the stress mean score did not significantly vary from the post-test to the two follow-up measures, indicating that the reduced stress score was retained by the experimental group of respondents. Hence the sustainability of the CSIT-DAS was evident.

Altogether, it could be concluded that the experimental group of participants due to early exposure and management of coping skills of DAS through CSIT-DAS had resulted in increased efficiency in handling negative emotional states. The efficiency was also found to be sustained even after a month’s gap of intervention as such. Further, the researcher while interacting with the participants made rationalisations for the above notions.

Further, the profile plots of all three dependent variables (Depression, Anxiety and Stress) within the four-time measures were portrayed in Figure 23 authenticating the sustainability of CSIT-DAS.

Profile plots of Depression, Anxiety and Stress in the Pre-test and Post-test, Follow-up 1, and Follow-up 2 of CSIT-DAS for the experimental group



1 – Pre-test 2 – Post-test 3 – Follow-up 1 4 – Follow-up 2

Figure 23

The profile plots of the two-way repeated MANOVA conducted for Depression, Anxiety and Stress (DAS) as a four-time measure namely pre-test, post-test, follow-up 1, and follow-up 2 showed a tremendous decrease in the Depression, Anxiety and Stress (DAS) score in the post-test when compared to the pre-test. Further a noticeable decrease in the plot for the follow-up 1 was also illustrated in all three emotional states. The follow-up 2 mean score was almost similar to the follow-up 1 mean score in all three states. Hence CSIT-DAS was found to be effective in reducing DAS among school-going adolescents and proved its sustainability.

In other words, the CSIT-DAS as a whole, implemented for the 8^{th} and 9^{th} graders not only trained and hoped to transfer skills among them but also helped them to generalize and apply the learned skills to alleviate the three negative emotional states – depression, anxiety and stress - at any point in time. Hence hypothesis H_o 12 that stated 'the formulated preventive intervention does not decrease the level of Depression, Anxiety and Stress (DAS) among the experimental group of participants' stands rejected.

Thus, CSIT-DAS had evinced that it was powerful in sustaining the decline in DAS which was verified even after a time gap. It helped to boost the students' awareness and develop a sense of mastery over the usage of coping skills, which undoubtedly validates the efficacy of the CSIT-DAS intervention provided to them. Therefore, the researcher suggested that CSIT-DAS especially tailored for school children were strongly recommended to be used by every school and should be integrated with the school curriculum to alleviate the risks of mental issues prevalent among the student population.