Evaluating the Anxiety Status Among School Students During Online Education in Dehradun, Uttarakhand.

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***Abstract*—Introduction: During COVID-19, an online education system was introduced for school and college students. Anxiety disorders are the most common form of emotional disorder that can affect anyone at any stage of their life. The most common symptoms of anxiety are confusion, nervousness, sweating, and palpitations. Prevalence of various other disorders due to a generalized anxiety disorder that involves sudden and long-lasting anxiety disorder. Aim: Evaluating the anxiety status among the secondary school students during the online education in Dehradun, Uttarakhand. Methods: The cross-sectional study uses a quantitative approach covering 170 participants through simple random sampling techniques. Descriptive analysis of the collected data was done by using SPSS (version 28) and Microsoft Excel. Result: Among non-board classes, the mean value of anxiety in boys was 39.86 and in girls 43.89. In both board and non-board classes, the level of anxiety was higher in girls as compared to boys. The t-test ratio was found to be 0.44 in board classes and 0.04 in non-board classes, which is lower than the t-critical value i.e. 1.96 at 0.05 level of confidence Conclusion: The Present study concluded that the effect of gender and class on anxiety among secondary school students plays a significant role during the online education. In both board and non-board classes, the level of anxiety was higher in girls as compared to boys.**

***Index Terms*—Anxiety, Online Education, COVID-19, Board classes and Non-Board classes**

I. INTRODUCTION

On March 11, 2020, WHO declared the Novel Coronavirus Disease (COVID-19) outbreak a pandemic and repeated call/warning alarms for countries to take immediate actions and scale up the response to treat, detect and reduce transmission to save individual lives (WHO, 2020). All the Educational Institutes (Schools, colleges, and universities) in India were closed due to the sudden outbreak of the COVID-19 pandemic. Other sectors, such as food industries, textile companies, factories, agriculture, small businesses, and automobile services, were also affected during the COVID-19 pandemic. During this lockdown period, India's economy, and education system were disturbed. 247 million children were enrolled in elementary and secondary schools in India whereas approximately 1.5 million of the schools closed (UNICEF, 2020).

During COVID-19, an online education system was introduced for school and college students. Online classes were started on various apps such as Google Meet, Zoom, Swayam, BYJUS, Unacademy, e-pathshala, and Whatsapp audio/video calls but there was a lack of resources (electronic gadgets like mobile phones, tablets, laptops, or computers) for online classes in the urban and rural area as well when the online education system had started (Jena, 2020).

A. Anxiety

Anxiety is an emotion characterized by the feeling of tension, worried thoughts, and physical changes like increased blood pressure (APA, 2022). Anxiety disorders are the most common form of emotional disorder that can affect anyone at any stage of their life. The most common symptoms of anxiety are confusion, nervousness, sweating, and palpitations. Anxiety also affects the various processes of the brain like thinking, learning, and the perceptions that result in a lack of concentration, lowering the decision-making power, inability to relate one item to another, and lowering the recall capacity. (Vishal et al, 2016). It's usual to feel anxious about going job interview, attending a test, and working in a new place. This type of anxiety is troublesome that comes and goes but does not obstruct our daily life activities. Intemperate/Excessive levels of anxiety can hinder relationships, eating habits, school life, sleeping patterns, work, and all areas of life (Annu, 2020).

The global burden of Anxiety disorder is that approximately 264 million adults are affected reported by WHO, 2017. Anxiety is more prevalent in female adolescents as compared to male adolescents, especially in the age group of 13-18 years NIHM, 2017. About one-third (31.9%) of adolescents of age 13-18 years had an anxiety disorder between the years 2001-2004, out of these adolescents, the 17- 18-year-old age group was more concerned Archives of General Psychiatry, 2005 (SingleCare Team, 2022).

Students from low-income families reported a higher level of stress, anxiety, and depression due to limited access to daily necessities/essentials, protective gear (face masks, gloves, and sanitizer) as well as a lack of resources for online education during the COVID-19 pandemic. During COVID-19, anxiety levels among school students were common because of digitalization in school education, lack of electronic gadgets in low and middle-class families, increased responsibilities of parents, and lack of understanding of topics/concepts during online education. The prevalence of depression, anxiety, and somatic symptoms among medical students was lower during online education as compared to Traditional learning (Bolatov et al., 2020) whereas the higher anxiety level in students acknowledges online exams in contrast with corona-virus-induced anxiety (Arora et al., 2021). The various studies conducted on students during online and traditional education revealed that the levels of anxiety and depression were higher in females as compared to males (Bolatov et al., 2020; Annu, 2020; Radwan et al., 2021; Vishal et al., 2016; Arora et al., 2021; Mridul et al., 2021; Schmits et al., 2021; Yaghi, 2022).

The main aim of this study was to evaluate the anxiety (effect on gender and class) among school students during online education in Dehradun, Uttarakhand.

II. MATERIALS AND METHODS

A. Research Design

The research design of the survey/research was a cross-sectional study.

B. Sample

The sample for the present study comprised adolescents between the age group of 14-18 years from class 9^{th} -12^{th} in that private school.

C. Sample Size

297 students from the private school, The Yamane formula was used to calculate the sample size. This formula is most simplified and used to calculate sample size when the population is known

$$n = \frac{N}{1+N\,(e)^2}$$

N = Population size (297)

e = Level of precision (5%= 0.05) Therefore,

n = 170.444 = 170

Using the Yamane formula, the calculation of the sample size was 170.

D. Sampling Technique

The simple random sampling technique was opted for this study. In this study, the use of computer-aided random selection through a random number generator app.

E. Criteria for sample selection

Inclusion criteria involve the students who give their consent for participation in the study. Students of Class 9^{th} to Class 12^{th} only. Exclusion Criteria involve the students who were absent on the day of data collection. Students less than 14 years old and above 18 years old.

F. Validity and Reliability of the Tool

State-Trait Anxiety Inventory (STAI) Form Y-2 questionnaire was used to assess anxiety among school students was standard and valid. The test-retest reliability of the STAI Form Y-2 questionnaire was 0.89.

G. Source of Data Collection

Google Form is used for the collection of data. Link shared with participants through WhatsApp group.

H. Description of the Tool

The State-Trait Anxiety Inventory (STAI) form Y-2. This questionnaire was developed by Charles D. Spielberger in 1983. The Trait Anxiety Scale (T-Anxiety) assesses a relatively stable facet of "anxiety proneness", including general states of calmness, confidence, and security (Julian, 2011). The STAI Y-2 questionnaire consists of 20 questions and each question has 4 possible responses ranging from 1-4 (1= not at all, 2= somewhat, 3= moderately, and 4= almost always). The scores for the absent items in anxiety were reversed, i.e., the scores for the marked responses

were 4, 3, 2, or 1 instead of scored 1, 2, 3, or 4. Items in the STAI Y-2 form that were scored reversed such as Questions 1, 3, 6, 7, 10, 13, 14, 16, or 19. The final score ranges from 20 to 80. STAI Y-2 questionnaire scores were categorized as low anxiety level (21-40), moderate anxiety level (41-60), and severe anxiety level (61-80). The higher the score, the higher the level of anxiety among school students.

I. Data Analysis

Data was analyzed through MS Excel and SPSS version 28. Descriptive statistics used in this study such as frequency distribution, mean and standard deviation were calculated. Inferential statistics such as t-tests are used to make the comparison. The results of quantitative data have been presented in the result section with appropriate tables, bar graphs, and pie charts.

J. Ethical Consideration

Ethical consideration was taken from the Ethical Review Committee of Eternal University, Baru Sahib. Permission letters were provided by the Principal of the Himalayan Public School of Dehradun. Informed consent was given to study participants for signing their parents. Secondary school students were approached to participate in the study with the assurance that their personal information would remain confidential and were guaranteed anonymity.

III. RESULTS

A. Socio-demographic Profile:

Table 1- Socio-demographic Characteristics

(n=170)

	Category	Frequency	Percentage
Gender	Male	68	40
	Female	102	60
Class	9^{th}	42	24.7
	10^{th}	44	25.88
	11^{th}	48	28.24
	12^{th}	36	21.18
Class based on Board Type	Board Exam Class	80	47.1
	Non-Board Exam Class	90	52.9
Age of the students	14 years	13	7.65
	15 years	31	18.23
	16 years	50	29.41
	17 years	48	28.24
	18 years	28	16.47

Table 1 depicts the distribution of study participants according to their Socio-demographic details. A total number of 170 participants from the private school in rural areas participated in the study. Out of 170 participants, 80 and 90 were from Board Class (10^{th} & 12^{th}) and Non-Board Class (9^{th} & 11^{th}).

A. Finding related to the effect of gender and class level on anxiety among school students

This section deals with the analysis of the effect of gender and class level on anxiety in school students in frequency, percentage, mean, standard deviation, and the grading of the standard tool given in Tabular form as well as the graphical presentation.

Table 2- Level of Anxiety according to Gender of students

(N=170))

Anxiety	Normal Range	Boys (N=68)	Girls (N=102)
		Frequency and Percentage	
No or low anxiety	20-40	27 (39.71)	31 (30.4)
Moderate anxiety	41-60	37 (54.41)	63 (61.76)
High Anxiety	61-80	4 (5.88)	8 (7.84)

Table 2 shows the different levels of anxiety based on gender category (boys and girls). Both categories of gender reported a moderate level of anxiety whereas a high level of anxiety was reported in girls as compared to boys.

Figure 1- Level of Anxiety according to Class of the students

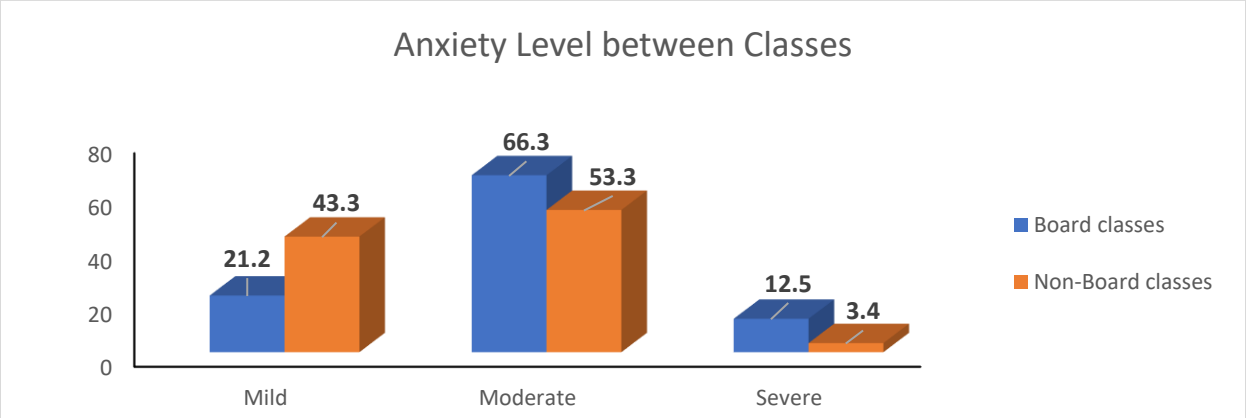

Figure 1 depicts the level of anxiety among board classes and non-board classes. A low level of anxiety was higher in non-board classes, a moderate level of anxiety was higher in board classes, and a high level of anxiety was also higher in board classes. Board classes were more anxious than non-board classes.

The mean and standard deviation for comparison between the effect of gender and class level on anxiety among school students. Out of 80 (47%) board class students, the mean and standard deviation among boys (n=40) was 45.83 ± 9.34 and in girls (n=40) was 47.53 ± 10.19. Out of 90 (53%) non-board class students, the mean and standard deviation among boys (n=28) was 39.86 ± 7.86 and in girls (n=62) was 43.89 ± 9.52 respectively. The t-test ratio was found to be 0.44 in board classes and 0.04 in non-board classes, which is lower than the t-critical value i.e. 1.96 at a 0.05 level of confidence. The findings show a significant difference does not exist in Anxiety between gender and class.

Figure 2- Comparison between the effect of Gender and class level on Anxiety among school students

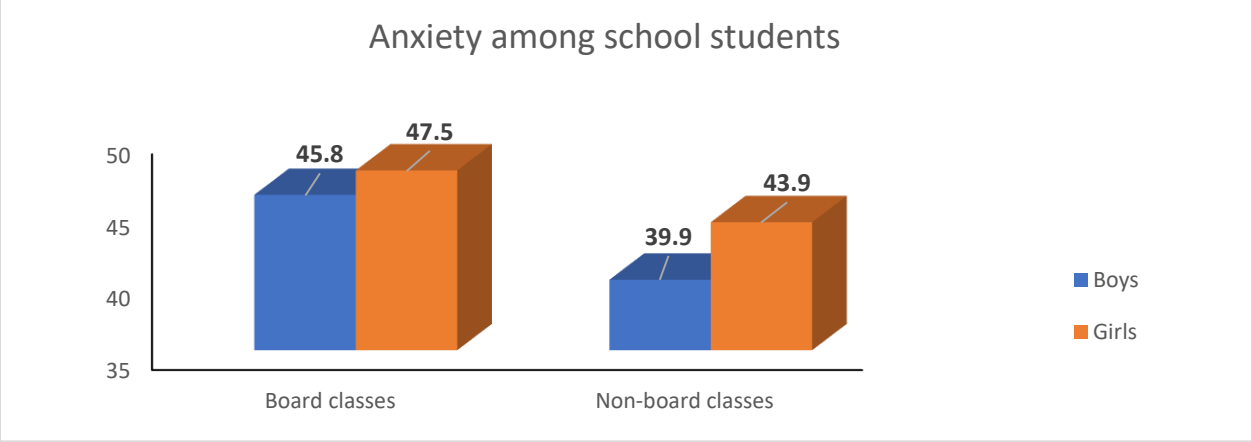

Figure 2 depicts the mean of anxiety based on gender (boys and girls) and classes (board and non-board

classes). Among non-board classes, the mean value of anxiety in boys was 39.86 and in girls 43.89. In both board and non-board classes, the level of anxiety was higher in girls as compared to boys.

IV. DISCUSSION

The psychological status of secondary school students was adversely affected due to lockdowns, schools shut down, and other educational outcomes such as online education and postponed board exams that resulted in negative effects of online education on the mental health of school students (Radwan et al., 2021). Stress, depression, sleep issues, online aggression, anxiety, mood swings, and the risk of online harm are some of the factors that affect the mental health of an individual.

In the present study, a total number of 170 participants were engaged. Out of these, 68 (40%) were male and 102 (60%) females. There was a prevalence of females and males with a ratio of 1.5:1. A similar study conducted for the comparison of anxiety among male and female students, with 100 school students who were consented to participate in the study. Out of these, 1:1 was the prevalence (Annu S., 2020). Another similar study was conducted on the association of psychosocial factors with aggression among school-going rural adolescents with a total population of 480. Out of these, 259 (54%) were male and 221 (46%) were females (Verma et al., 2021).

In the present study, the maximum number of participants was from class 11^{th} (28.24%) followed by class 10^{th} (25.88%), class 9^{th} (24.7%), and class 12^{th} (21.18%). This shows the maximum number of participants in non-board classes (9^{th} and 11^{th}) which was 90 (52.9%) and in board classes (10^{th} and 12^{th}), participants were 80 (47.1%) participated in this study. A similar study revealed that the maximum number of 323 (67.3%) participants from the 12- 14 years of age group followed by 142 (29.6%) participants from the 14-16 years of age group and 15 (3.1%) participants from 16-19 years of age group (Verma et al., 2021). The present study had a maximum number of participants of 16 years 50 (29.41%) followed by 17 years that was 48 (28.24%), 15 years that was 31 (18.23%), 18 years that was 28 (16.47%), and 14 years that was 13 (7.65%). Similar studies also had the two age groups of the respondents, the first group was 10-14 years 315 (75%) and the other group was 15-18 years 105 (25%) (Radwan et al., 2021).

The study was also undertaken to assess the effect of gender and class level on aggression among school students. The mean and standard deviation of anxiety was based on the Gender of the students. Among 170 participants, boys had a value of 43.25 ± 9.32 whereas girls had a value of 45.4 □ 9.99. In a similar study conducted among Palestinian students of 10-18 years with 420 participants, boys had a value of 14.52 ± 5.44 whereas girls had a value of 18.2 □ 5.77 (Radwan et al., 2021). The percentage of anxiety based on gender (boys and girls) among 170 participants, girls (51%) have more anxiety as compared to boys (49%). Another similar study showed the prevalence rate of anxiety in males and females was 8.6% and 16.56% conducted in University students in Turkey on Aggression and stress levels associated with the COVID-19 pandemic (Durbas et al., 2021).

The present study showed the level of anxiety among boys and girls. Low levels of anxiety were 39.71% in boys and 30.4% in girls, moderate levels of anxiety were 54.41% in boys and 61.76% in girls and high levels of anxiety were 5.88% in boys and 7.84% in girls. A similar study revealed that low levels of anxiety were 10.9%, moderate levels of anxiety were 32.4% and high levels of anxiety were 56.7% (Radwan et al., 2021). Previous research conducted at Ranchi University, Jharkhand, India showed that Mild levels of anxiety were higher in females (48%) and in boys (42%), moderate levels of anxiety in females and males were 24% and 20%, and severe level of anxiety among females and males were 12% and 8% (Annu, 2020).

In our study low levels of anxiety were higher in boys, moderate levels of anxiety were higher in girls, and high levels of anxiety were higher in girls as compared to boys. Girls were more anxious than boys. Similar students in our country showed that Female students experience a higher level of anxiety as compared to male students (Annu, 2020). The previous research on online classes during the COVID-19 pandemic: Anxiety, stress, and depression among university students in Himachal Pradesh, India showed that most students (55.96%) had a normal or low level of anxiety, 16.98% of students had a moderate level of anxiety and 27.05% students had a high level of anxiety (Mridul et al., 2021). Another similar study conducted in Telangana, India revealed that different levels of anxiety among medical students were 10%

low level, 64.3% medium level, and 25.7% high level of anxiety. Medical college students have a medium level of anxiety in males as compared to females who belong to low socioeconomic status (Vishal et al., 2016).

The present study showed the level of anxiety among board classes and non-board classes. Low levels of anxiety were 21.25% in board classes and 43.33% in non-board classes, moderate levels of anxiety were 66.25% in board classes and 53.34% in non-board classes and high levels of anxiety were 12.5% in board classes and 3.33% in non-board classes. A low level of anxiety is higher in non-board classes, a moderate level of anxiety is higher in board classes, and a high level of anxiety was also higher in board classes. Board classes were more anxious than non-board classes. A similar study showed the mean value of State anxiety among first, second, and third-year undergraduate medical students was 44.48, 44.28, and 41.59. Different years of medical courses play a significant role in the development of anxiety among medical students (Vishal et al., 2020).

According to the findings of the present study the comparison among these variables. The mean of anxiety was based on gender (boys and girls) and classes (board and non-board classes). Among board classes, the mean value of anxiety in boys was 45.83, and in girls was 47.53. Among non-board classes, the mean value of anxiety in boys was 39.86 and in girls 43.89. In both board and non-board classes, the level of anxiety was higher in girls as compared to boys. There exists no significant difference in Anxiety based on gender and class. The various studies conducted on students during online and traditional education revealed that the levels of anxiety and depression were higher in females as compared to males (Bolatov et al., 2020; Annu, 2020; Radwan et al., 2021; Vishal et al., 2016; Arora et al., 2021; Mridul et al., 2021; Schmits et al., 2021; Yaghi, 2022).

V. CONCLUSION

The Present study concluded that the effect of gender and class on anxiety among secondary school students plays a significant role during online education. Among non-board classes, the mean value of anxiety in boys was 39.86 and in girls 43.89. In both board and non-board classes, the level of anxiety was higher in girls as compared to boys. The findings show a significant difference does not exist in Anxiety between gender and class. Teachers and school administration staff need to be trained to handle the children having anxiety, aggression, or frustration/mood swings during school premises. Additional health care or psychiatric care will provided to those students who have faced mental health issues.

VI. LIMITATIONS OF THE STUDY

The study was limited to a particular rural area of district Dehradun (Uttarakhand), so the study participants may be mainly from affluent societies hence the results of the study cannot be generalized. The sample size of the study was quite low and study participants of a particular school only. Online Google forms for the collection of data that problem faced by the students who did not have mobile phones or had limited internet access. Online Google forms for the collection of data that problem faced by students who don't have mobile phones or have limited internet access

VII. RECOMMENDATIONS

Designing and implementing educational interventions for those students who are anxious. The need for interaction with academic institutes and parents is related to reducing frustration or failure in life, reducing academic stress, and management of aggression and anxiety among school students by listening to them, encouraging their positive behavior, and understanding their problems.

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A. Acronyms

WHO	World Health Organization
COVID-19	Corona Virus Disease
APA	American Psychological Association
STAI	State-Trait Anxiety Inventory for Adults
SPSS	Statistical Package for Social Sciences
UNICEF	United Nations Children's Fund

B. Funding declaration
No funding was received.

C. Conflicts of interest
There was no conflict of interest.

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