

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

Lopamudra Das Gupta^{1*}

ABSTRACT

The objectives of the concerned study were threefold; firstly, to assess the respective levels of state anxiety, perceived stress, depression and insomnia among the class 12 board examinees of session 2020 -2021; secondly, to compute and study the correlation and relationship between the mentioned variables; and lastly, to find out whether or not, the respective board examinees of CBSE, ISC and WBCHSEE educational boards differ in terms of their reported levels of state anxiety, perceived stress, depression and insomnia, respectively. Over span of one week, a total of 168 responses (CBSE board examinees= 61; ISC board examinees= 56; WBCHSE board examinees= 51) were collected using the self-report inventories, namely the State-Trait Anxiety Inventory Form X-1 (STAI Form X-1), the Perceived Stress Scale (PSS), the Beck Depression Inventory II (BDI II) and the Insomnia Severity Index (ISI). The sample, thus formed by employing convenient and snowball sampling techniques, consisted of board appearing students of the state of West Bengal only. Pearson's product moment correlation and ANOVA were used to analyze the respective data. The obtained findings were such that, the majority of the examinees, i.e., 76.80% in case of state anxiety and 83.33% for perceived stress, were found to experience high levels of the mentioned variables. About 39.88% of the board examinations were found to experience high levels of depression and 35.71% of the same reported experiencing moderate levels of the concerned variable. Subthreshold levels of insomnia were reported by 35.71% of the examinees, whereas, severe levels of insomnia disturbed 5.95% of the board appearing students. All the four variables of the present study, i.e., state anxiety, perceived stress, depression and insomnia, were found to be strongly, positively and significantly correlated with each other. The analysis of variance (ANOVA) revealed that the respective examinees of CBSE, ISC and WBCHSE boards did not differ significantly from each other, in terms of their reported levels of state anxiety, perceived stress, depression and insomnia, respectively. They reportedly experience similar levels of the mentioned variables, irrespective of their board of education.

Keywords: CBSE, ISC, WBCHSE, Anxiety, Stress, Depression, Insomnia

¹Student; Master of Science (M.Sc.) in Applied Psychology; University of Calcutta; Kolkata, West Bengal, India.

*Corresponding Author

Received: August 26, 2021; Revision Received: November 18, 2021; Accepted: December 08, 2021

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

In times as such, when the entire globe is hit by the SARS-CoV-2 virus, or the Covid-19 virus, the sector that ranks among the top-most affected areas, is that of education. The advent of the 'new normal', as a by-product of the pandemic scenario, has not only changed the mode of imparting education, i.e., from offline to online, but has also put a big question mark upon the future of each and every student, especially of those who are about to step into a wider world leaving the safe and secure space of their respective schools. Tagged as the "online batch", the students who appeared for their class XII board examination this year (session 2020-2021), could not sit for their exams in-person, as holding offline examinations in this scenario was not a permissible option. The students, thus, were decided to be evaluated based on their previous academic performances.

CBSE and Decisions regarding board examination

The Central board of Secondary Education, abbreviated as CBSE, is a national level board of education of India. The board is managed by the Union Government of India, under which there are, more-or-less, 21,271 public and private schools in the country, and to 220 schools outside the country.

The final decision regarding the CBSE board examination was taken on June 1 '21, whereby, Prime Minister Narendra Modi announced that no board examinations were to be held for class XII of the session 2020-2021

The board, on June 17 '21, announced the evaluation criteria and put forward the notice that the concerned board examinees would be assessed based on their obtained scores of class X board examination, and, class XI and class XII school examinations, respectively. 40% weightage was allotted to the scores of class XII unit test/mid-term/pre-board examinations. Class X and XI were given equal weightages of 30% each. The obtained score in the theoretical papers of final examinations were considered for the 30% from class XI and that obtained in the best three papers, out of five, were averaged for the other 30% from class X.

ISC and Decisions regarding board examination

The Council for the Indian School Certificate Examination, or the CISCE, is a 'Non-Governmental Board of School Education' (Constitution of India, 1958) in the country of India. The board is responsible for holding the ICSE or the Indian Certificate of Secondary Education, i.e., the class X level board examination for around 2,341 schools across India, and the ISC or the Indian School Certificate Examination for class XII in 1,125 schools across the country.

Much like the decision taken by the CBSE officials, the CISCE authorities also declared the cancellation of class XII ISC board examinations, for the session 2020-2021, on June 1st '21, itself.

The evaluation process was announced by the officials on June 17, 2021. Previous scores obtained by the respective students in class X board examinations, practical and project works, class XI school examination, class XII internal and pre-board examinations, and those of the past six years of school examinations were considered for assessing the board students. The best performance in terms of obtained marks with respect to the above-mentioned categories were averaged to frame the board results of the concerned students.

**Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board
Examinees of Class-XII: The Online Batch of 2020-2021**

WBCHSE and Decisions regarding board examination

Abbreviated to WBCHSE, the West Bengal Council of Higher Secondary Education is the state board of education of West Bengal, considering the classes of XI and XII, respectively. The WBCHSE board, established in 1975, comes under the direct authority of the state government of West Bengal, which is responsible for all the curriculum and examination related activities of the respective board.

Initially, the board decided to conduct the higher secondary (HS) examination in offline mode, suggesting that the students would appear for the same from their respective home centres. The examination was scheduled from June 15 '21 to July 2, 2021. On June 8 of the ongoing year, the expert committee that was appointed to decide for the evaluation, declared that the HS examinations, for the session 2020-2021, had been cancelled due to Covid-19 scenario. The announcement was made by the Chief Minister (of West Bengal) Mamata Banerjee.

The board released the details regarding the evaluation procedure on June 18, 2021. The marks obtained in the theoretical examination of class XI and, in theoretical and practical school-based examination of class XII were allotted a weightage of 60%. The remaining 40% were taken from the marks obtained in best four subjects, among all the respective subjects, of their class X board examination.

Examinees, unsatisfied with the respective modes of evaluation or that with their acquired scores, would be given the opportunity to sit for the respective physical, in-person examinations once the situation permits for the same.

Anxiety

Anxiety is “a state of helplessness, because of a perceived inability to predict, control, or obtain desired results or outcomes in certain upcoming personally salient situations or contexts.” (Barlow, 1998). According to the Diagnostic and Statistical Manual of Mental Disorders, (1980) it may be defined as internal or external apprehension, tension, or uneasiness that stems from the anticipation of danger. Levels of anxiety are considerably high when individuals are awaiting a test or test results, receiving the diagnosis, awaiting invasive medical procedures and anticipating or experiencing side effects of treatment (Jacobson et al., 1995; Leventhal et al., 2001).

Anxiety vs. Fear

Even though fear and anxiety might seem to be synonymous on various occasions, the two differ significantly from each other. Anxiety involves a usual feeling of apprehension about possible future danger, whereas, fear is an alarming reaction that occurs in response to an immediate danger (Butcher et al., 2017). Fear is an emotion involving the activation of the fight-or-flight response of the autonomic nervous system or ANS (McNaughton, 2008). Anxiety, on the other hand, is a complex amalgamation of unpleasant emotions and cognition which is more oriented to the future and considerably more diffused than fear (Barlow, 2002).

Stress

Stress is a reaction of a person made in order to adapt to internal and/or external threats (Lecic-Tosevski et al., 2011). When we experience personal challenges to our physical or emotional well-being that exceed our coping resources and abilities, the psychological

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

condition that results, is typically referred to as stress (Shalev, 2009). Stressor refers to any object, event, being or experience that elicits stress, i.e., considered stressful to an individual. Perceived stress represents the degree to which one perceives one's life as stressful, by leveraging how unpredictable, uncontrollable, and overloaded his or her life is (Cohen et al., 1983). It is the result of subjective perception of a stressor as threatening or non-threatening. It is also an individual's capacity to cope with the concerned stressor (Liu et al., 2020).

Depression

Depression can be referred to as a "character style that includes an unusual susceptibility to dysphoric feelings, a vulnerability to feelings of loss and disappointment, intense need for contact and support, and a proclivity to assume blame and responsibility and to feel guilty" (Blatt, 1974). It is a state of helplessness and hopelessness accompanied with feelings of loneliness and poor self-image. Depression is characterized by the loss of interest in activities which the person once enjoyed, leading to a variety of emotional as well as physical problems and resulting in a decrease in one's ability to function in a domestic or social setting.

Depression vs. Sadness

Although majority of individuals use depression and sadness synonymously, these two differ considerably from each other. Sadness is characterized by feelings of pain and upset-ness. Depression is sadness accompanied by impairment of social, occupational and other significant areas of functioning. Sadness is not clinically recognized as an illness or disorder. Depression is a recognized clinical condition which, if not treated in due course, can result in significant damage of the individual.

Insomnia

Insomnia may be considered as a condition whereby an individual faces difficulty in initiating and/or maintaining sleep. This is accompanied by impairments of daytime functioning and/or significant distress for more than one month. Often, insomnia is considered as a sign as well as a symptom that accompanies numerous sleep, medical, and psychiatric disorders, which are all characterized by a long-term difficulty in falling and/or staying asleep or having a poor quality sleep.

METHODOLOGY

Objectives

- To assess the respective levels of state anxiety, perceived stress, depression and insomnia among the class-XII board examinees (CBSE, ISC and WBCHSE) of West Bengal, session of 2020-2021.
- To study the correlational relationship between the variables of state anxiety, perceived stress, depression and insomnia.
- To determine whether the respective board examinees of CBSE, ISC and WBCHSE differ significantly in terms of their levels of state anxiety, perceived stress, depression and insomnia, respectively.

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

Hypotheses

Null Hypotheses

H₀₁: There is no significant difference in the of levels of state anxiety, perceived stress, depression and insomnia, respectively, among the concerned examinees with respect to the board of affiliation (CBSE, ISC and WBCHSE) of their respective academic institutions.

H₀₂: There is no significant correlation between the variables of state anxiety, perceived stress, depression and insomnia.

Alternative Hypotheses

H_{a1}: There is a significant difference in the of levels of state anxiety, perceived stress, depression and insomnia, respectively, among the concerned examinees with respect to the board of affiliation (CBSE, ISC and WBCHSE) of their respective academic institutions.

H_{a2}: There is a significant correlation between the variables of state anxiety, perceived stress, depression and insomnia.

Variables to be studied

- State Anxiety
- Perceived Stress
- Depression
- Insomnia

Operational definition

- **State Anxiety:** The score obtained on the State-Trait Anxiety Inventory Form X-1 (STAI Form X-1) the class-XII board examinees (CBSE, ISC and WBCHSE) of West Bengal, session of 2020-2021.
- **Perceived Stress:** The score obtained on the Perceived Stress Scale (PSS) by the class-XII board examinees (CBSE, ISC and WBCHSE) of West Bengal, session of 2020-2021.
- **Depression:** The score obtained on the Beck Depression Inventory II (BDI II) by the class-XII board examinees (CBSE, ISC and WBCHSE) of West Bengal, session of 2020-2021.
- **Insomnia:** The score of obtained on the Insomnia Severity Index (ISI) by the class-12 board examinees (CBSE, ISC and WBCHSE) of West Bengal, session of 2020-2021.

Inclusion criteria

- Students who appeared for their class XII board examination for the session- 2020-21, were only considered for the study.
- Students registered under academic institutions affiliated to CBSE, CISCE and WBCHSE, were only considered for the study.
- Students who are residents of West Bengal were only considered for the study.

Exclusion criterion

- Students who repeated class XII, and appeared for their board examination in the session- 2020-21, are not to be included in the study.
- Students registered under open schools are not to be included in the study.

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

Sampling method

- Convenience sampling- a non-probability technique sampling whereby, the inclusion of participants in a sample is based on the availability of the individuals and convenience of the researcher.
- Snowball sampling- a non-probability sampling technique in which, the participants of a concerned study, approach additional participants (mainly friends, relatives or associates) for the purpose of the research study.

Sample description

- Total number of participants (N): 168
- Age range: 17 to 19 years

Table 1. Sample distribution.

Affiliated Board	No. of participants (n)	Percentage
CBSE	61	36.31%
CISCE (ISC)	56	33.33 %
WBCHSE	51	30.36%

Instruments used for the study

State-Trait Anxiety Inventory (STAI): The State-Trait Anxiety Inventory or STAI (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983), is a self-report inventory that consists of 40 questions, 20 in Form X-1 and 20 in Form X-2. It is a 4-point Likert scale that measures two types of anxiety – state anxiety, i.e., the immediate or current level of anxiety existing within the individual, measured by Form X-1, and trait anxiety, i.e., the anxiety of an individual existing as a subjective trait, measured by Form X-2. In the present study, form X-1 has only been used, i.e., the one measuring State Anxiety. The total score obtained in STAI Form X-1 gives the measure of the level of anxiety. The scores are directly proportional to the level of anxiety measured, i.e., the lower the scores lesser is the level of anxiety, and vice versa. 10 out of 20 questions in Form X-1 are reverse items, the remaining 10 being direct items. The 4-point scale for State anxiety ranges from 1, denoting ‘Not at all’, to, 4, denoting ‘Very much so’ with 2, standing for ‘Somewhat’ and 3 for ‘Moderately so’ (Spielberger, Charles; Sydeman, Sumner, 1994). Hand-scoring was employed following the scoring key as proposed by Spielberger (2010) The scores were interpreted following the norm table.

Perceived Stress Scale (PSS): Developed by Sheldon Cohen (1983), the Perceived Stress Scale (PSS) is the most widely employed psychological tool for assessing stress perception. In the present study, PSS-10 version was used. The scale has 6 statements that are directly stated and 4 statements that are reversely stated. The 5-point scale of perceived stress is as follows: 0: Never, 1: Almost Never, 2: Sometimes, 3: Fairly Often, and, 4: Very Often. The scale scores are calculated by reversing responses of the 4 reverse statements and adding them up across the entire scale. The scores range from 0 to 40. The scores are directly proportional to the level of perceived stress measured, i.e., the lower the scores lesser is the level of perceived stress and vice versa. Hand-scoring was employed following the scoring key as proposed by Cohen (1994). The scores were interpreted following the norm table.

Beck Depression Inventory (BDI-II): The Beck Depression Inventory or BDI-II (Beck, Steer and Garbin, 1988) is a self-rated, multiple-choice inventory that consists of a total of

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

21-item. The inventory evaluates characteristic symptoms of depression which includes negative affect, hopelessness, sense of failure, guilt, self-blame, suicidal ideation, irritability, social withdrawal, confusion, decreased self-esteem, difficulty in concentrating and somatic symptoms like change in appetite, weight, sleep disturbances and loss of libido (Beck & Steer, 1984). Each group of items consists of statements that are scored from 0 to 3, with 0 portraying least or no symptom, and 3 denoting severe symptoms, for each respective group. The total scale score ranges from 0 to 63. Levels of depression as per the total score obtained on BDI II are as follows: - 1 - 10 = These ups and downs are considered normal; 11 - 16 = Mild mood disturbance; 17 - 20 = Borderline clinical depression; 21 - 30 = Moderate depression; 31 - 40 = Severe depression and above 40 (up to 63) = Extreme depression (Beck et al., 1996).

Insomnia Severity Index (ISI): The Insomnia Severity Index, or ISI, is a self-report inventory which evaluates the individual's perception of nocturnal and diurnal symptoms of insomnia. Developed by Morin (1993), the inventory is a 5-point Likert scale containing 7 items, each of which attempts to assess different dimensions of insomnia, such as severity of sleep onset, sleep maintenance, and early morning awakening problems, sleep dissatisfaction, interference of sleep difficulties with daytime functioning, noticeability of sleep problems by others, and distress caused by the sleep difficulties. The 5-point score ranges from 0, indicating no problem, to 4, indicating very severe problem, with 1, 2, 3 indicating mild/little, moderate/somewhat and severe/much, respectively. The total scale score ranges from 0 to 28, the levels of insomnia, as per the total score obtained on ISI, being 0-7: absence of insomnia; 8-14: sub-threshold insomnia; 15-21: moderate insomnia; and 22-28: severe insomnia.

Procedure

The data collection was conducted for a span of 7 days only. These 7 days consisted of the week just prior to final decision that was taken and announced by the supreme court regarding the cancellation and mode of evaluation of the class 12 board examinees of the respective boards.

Data was collected through online mode, i.e., through google forms. The link, of the form thus created, was shared among a number of known students who were perceived as potential participants for the present study. The students were then, in turn, asked to share the link of the form among their fellow classmates and friends, who were further asked to circulate the mentioned link among their group of friends. The participants were assured confidentiality of their respective responses on the part of the researcher. The distribution of the link of the google form was initiated on 28/05/2021. The link was closed and no further responses were accepted after 03/06/2021.

The google form created for the purpose of data collection consisted of the details of the respective survey along with the consent form in its initial page. Following this, the information schedule was presented which consisted of the students' required details such as, students' name (in initials), their age, gender, location of residence, school details and the academic session of class 12 board examination. The STAI FORM X-1 was added next, in the google the google form. Following STAI FORM X-1, PSS and BDI II was added. ISI was the last section of the google form which contained the 'submit' button, clicking on which a participant ended and successfully submitted his or her filled-up form. All the

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

required fields were marked mandatory to prevent the participants from submitting incomplete responses.

Following the completion of the data collection, scoring of individual items for each student was carried out. Lastly, the necessary statistical analyses were adopted to interpret and conclude the result of the present study.

Statistical analyses

- To assess the correlational relationship among the levels of state anxiety, stress, depression and insomnia, Pearson's R, i.e., moment correlation was used.
- To assess the difference between the of levels of state anxiety, stress, depression and insomnia, respectively, of the concerned students with respect to the board of affiliation, one-way analysis of variance (ANOVA) was adopted.

Ethical considerations

- The students should be provided with a consent form to ensure their voluntary participation in the present study.
- The participating students should have the right to withdraw their participation at any point during the course of the study.
- The responses of each participating student should be kept confidential to the best of the researcher's interest.
- The students should be debriefed about the purpose of the present study on completion of the concerned study.
- The data collected should only be used for research purposes to the best knowledge of the researcher.
- The students should not be exposed to any harm under any condition.

Norms

Table 2.1. Norms for STAI Form-1 (English Form) (Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).

A-STATE	Mean	Standard Deviation	Range
	42.89	9.63	33.26 - 52.52

Table 2.2. Norms for PSS (norms by L. Harris Poll, 1983).

N	Mean	Standard Deviation	Range
645	14.2	6.2	8.0 to – 20.4

Table 2.3 Norms for BDI II (Beck, Steer and Garbin, 1988).

Classification	Total Score	Level of Depression
Low	1-10	Normal ups and downs
	11-16	Mild mood disturbance
Moderate	17-20	Borderline clinical depression
	21-30	Moderate depression
High	31-40	Severe depression
	Over 40	Extreme depression

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

Table 2.4. Norms for ISI (Morin,1993).

Total Score	Categories
0–7	No clinically significant insomnia
8–14	Subthreshold insomnia
15–21	Clinical insomnia (moderate severity)
22–28	Clinical insomnia (severe)

RESULTS

Table 3. Descriptive Statistics for Levels of State Anxiety, Perceived Stress, Depression and Insomnia.

Variable		N	Mean	Standard Error (S.E.)	Standard Deviation (S.D.)	Minimum	Maximum
CBSE	State Anxiety	61	59.80	1.33	10.42	34	78
	Perceived Stress	61	27.23	0.72	5.60	11	39
	Depression	61	25.05	1.72	13.47	4	60
	Insomnia	61	11.82	0.76	5.90	2	26
ISC	State Anxiety	56	59.61	1.58	11.84	33	79
	Perceived Stress	56	26.48	0.90	6.75	3	39
	Depression	56	26.59	1.98	14.80	0	53
	Insomnia	56	12.20	0.87	6.48	0	26
WBCHSE	State Anxiety	51	56.82	1.76	12.55	23	77
	Perceived Stress	51	26.27	0.84	5.97	10	36
	Depression	51	27.61	1.79	12.75	0	56
	Insomnia	51	11.06	0.94	6.74	0	28
All Boards Combined (CBSE+ ISC+ WBCHSE)	State Anxiety	168	58.83	0.89	11.58	23	79
	Perceived Stress	168	26.69	0.47	6.09	3	39
	Depression	168	26.34	1.06	13.68	0	60
	Insomnia	168	11.71	0.49	6.34	0	28

Table 3 reveals the descriptive statistics for the levels of anxiety, perceived stress, depression and insomnia among class 12 board examinees.

Considering the mean values-

- The obtained means of the levels of anxiety of board examinees of CBSE, ISC WBCHSE and that of all boards combined were found to be 59.80, 59.62, 56.82 and 58.83, respectively.
- The mean values of levels of perceived stress of the examinees of the above-mentioned boards and considering all boards combined were calculated to be 27.23, 26.48, 26.27 and 26.69, respectively.
- For the boards of CBSE, ISC and WBCHSE, the means of the levels of depression of class 12 board examinees were obtained to be 25.05, 26.59 and 27.61, respectively. Combining all the mentioned boards, the mean value of the same was found to be 26.34.

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

- For the levels of insomnia, the mean values of the board examinees of CBSE, ISC and WBCHSE and that of all boards combined were obtained to be 11.82, 12.20, 11.06 and 11.71, respectively.

Considering the standard error (S.E) values-

- The standard error calculated for the levels of anxiety of board examinees of CBSE, ISC, WBCHSE and the mentioned boards combined were 1.33, 1.58, 1.76 and 0.89, respectively.
- The calculated values of the same for the levels of perceived stress of the board examinees of the above-mentioned boards and that of the concerned boards combined were found to be 0.72, 0.90, 0.84 and 0.47, respectively.
- The SE values concerning the levels of depression among the examinees of the respective boards of CBSE, ISC, WBCHSE and that of all the boards combined were obtained to be 1.72, 1.98, 1.78 and 1.06, respectively.
- For the levels of insomnia, the obtained SE values of the means of the examinees of individual concerned boards and that of all of them combined were calculated to be 0.76, 0.87, 0.94 and 0.49, respectively.

Considering the standard deviation (S.D) values-

- The SD values for the levels of anxiety in cases of CBSE, ISC, WBCHSE and all boards combined were found to be 10.42, 11.84, 12.55 and 11.58, respectively.
- The same for the levels of perceived stress for the above-mentioned cases were calculated to be 5.60, 6.75, 5.97 and 6.09, respectively.
- For the levels of depression, the calculated SD values for the boards of CBSE, ISC, WBCHSE and all the mentioned boards combined were 13.47, 14.80, 12.75 and 13.68, respectively.
- Considering the levels of insomnia, the SD values of the concerned boards of CBSE, ISC, WBCHSE and that of all boards combined were obtained to be 5.90, 6.48, 6.74 and 6.34, respectively.

Table 4. Levene's Test for Equality of Variances.

Variables	F-value	df1	df2	Sig.
State Anxiety	1.24	2	165	0.293
Perceived Stress	1.02	2	165	0.362
Depression	0.28	2	165	0.758
Insomnia	0.38	2	165	0.688

Levene's statistics was administered to check for the equality of variances. As can be seen from table 4, the df (degrees of freedom) values are all significant at levels greater than 0.05 level of significance. Hence, we can safely employ the parametric test of analysis of variance or ANOVA to determine whether or not there exist any difference among the means of the different boards concerned with respect to anxiety, perceived stress, depression and insomnia.

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

Table 5. Analysis of Variance (ANOVA)

Variables		Type Sum Squares	III of Df	Mean Square	F value	Sig.
State Anxiety	Between groups	296.93	2	148.46	1.11	0.332
	Within groups	22092.41	165	133.89		
	Total	22389.33	167			
Perceived Stress	Between groups	28.98	2	14.49	0.39	0.680
	Within groups	6172.93	165	37.41		
	Total	6201.90	167			
Depression	Between groups	187.10	2	93.55	0.50	0.609
	Within groups	31064.56	165	188.87		
	Total	31251.66	167			
Insomnia	Between groups	35.61	2	17.80	0.44	0.644
	Within groups	6666.68	165	40.40		
	Total	6702.29	167			

Table 5 displays the analysis of variance (ANOVA) which has been administered to test whether or not the means of the 3 boards of CBSE, ISC and WBCHSE differs with respect to the variables employed into the present study, i.e., anxiety, perceived stress, depression and insomnia.

- The F-value (1.11) obtained in case of anxiety has been found to be significant at 0.332 level of significance, which is greater than both 0.01 as well as 0.05 levels of significance, respectively.
- The computed value of F in case of perceived stress, i.e., 0.39 has been found to be significant at 0.680 level of significance. The mentioned level of significance is greater than 0.01 and 0.05 level of significance, respectively.
- For depression, the calculated F-value of 0.50 has been found to be significant at 0.609 level of significance, which is clearly greater than both, 0.05 and 0.01 levels of significance, respectively.
- Considering insomnia, the F-value of 0.44 has been found to be significant at 0.644 level of significance. The mentioned value of level of significance is considerably greater than 0.05 and 0.01 level of significance, respectively.

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

Table 6. Levels of State Anxiety, Perceived Stress, Depression and Insomnia among the examinees.

Variable	Levels		Number of examinees	Percentage of examinees
State Anxiety	Low		2	1.18%
	Moderate		37	22.02%
	High		129	76.80%
Perceived Stress	Low		1	0.60%
	Moderate		27	16.07%
	High		140	83.33%
Depression	Low	Normal ups and downs	23	13.70%
		Mild mood disturbances	18	10.71%
	Moderate	Borderline clinical depression	14	8.33%
		Moderate clinical depression	46	27.38%
	High	Severe depression	34	20.24%
		Extreme Depression	33	19.64%
Insomnia	No clinically significant insomnia		49	29.17%
	Subthreshold insomnia		60	35.71%
	Clinical insomnia (moderately severe)		49	29.17%
	Clinical insomnia (severe)		10	5.95%

Table 6 reflects the number of examinees and the percentage of them falling under the respective levels of anxiety perceived stress depression and insomnia.

- 2 examinees or 1.18% of the sample reported low levels of anxiety. 37 of the concerned students, i.e., 22.02% stood moderate and 129 board examinees or 76.80% reported high levels of anxiety.
- 1 respondent reported low level, 27 of them reported moderate levels and 140 examinees reported high levels of perceived stress, respectively. In other words, 0.60%, 16.07% and 83.33% of the board examinees reported low, moderate and high levels of perceived stress, respectively.
- 24.41% of the sample, i.e., 41 students reportedly displayed low levels of depression, 23 of whom reported normal ups and downs, while the remaining 18 reported mild

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

mood disturbances. 35.71% or 60 concerned examinees reported moderate levels of depression. Out of these 60, 14 examinees reported borderline clinical depression and 46 examinees reported moderate clinical depression. 67 or 48.88% of the board appearing students reported high levels of depression, out of which, 34 reported severe depression and 33 reported extreme depression.

- Considering the levels of insomnia, 29.17% of the concerned examinees reported no clinically significant insomnia, 35.71% subthreshold insomnia, 29.17% reported moderately severe clinical insomnia and 5.95% reported severe clinical insomnia. Putting the percentages in numbers, 49 board appearing students reported no clinically significant insomnia, 60 of them reported subthreshold insomnia, 49 students reported moderately clinical insomnia and 10 students reported severe clinical insomnia.

Table 7. Pearson's Product-moment correlation coefficient (r).

Variables	State Anxiety	Perceived Stress	Depression	Insomnia
State Anxiety	1	0.992**	0.977**	0.962**
Perceived Stress		1	0.969**	0.956**
Depression			1	0.984**
Insomnia				1

Note: **. Correlation is significant at 0.01 significance level (2-tailed).

Table 7 shows the product moment correlation between the variables of anxiety, perceived stress depression, and insomnia.

- As can be seen from the table, anxiety shares a strong and positive correlation with variables of perceived stress ($r= 0.992$), depression ($r= 0.997$), and insomnia ($r=0.963$), respectively, all of which are significant at 0.01 level of significance.
- The variable of perceived stress has been found to bear a strong and positive correlation with depression ($r= 0.969$) and insomnia ($r= 0.956$), respectively, both of which are significant at 0.01 level of significance.
- There exists a strong positive correlation between depression and insomnia ($r= 0.984$) which is significant at 0.01 level of significance.

DISCUSSION

The present study was aimed at assessing the respective levels of state anxiety, perceived stress, depression and insomnia, and determining the correlational relationship among the mentioned variables. The sample for the concerned study consisted of class-XII board examinees of West Bengal, India. This particular batch is also known as the 'online batch of 2020-21', those who qualified their school-leaving examination without sitting for the same, since the situation did not permit them to do so. The educational boards considered for the present study were CBSE, ISC (class-XII of CISCE) and WBCHSE, only. Hence, additionally, this study aimed at assessing the significant difference, if any, among the respective board examinees of CBSE, ISC and WBCHSE, in terms of their levels of state anxiety, perceived stress, depression and insomnia.

The collection of data, through google forms, was conducted a week prior the announcements regarding cancellation of the class XII board examinations were made by the authorities of the respective boards. During the concerned week, the sample was exposed to a situation-based condition, whereby, the examinees were anticipating decisions regarding their school-leaving examination and the prospects it would affect. It was, therefore,

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

considered that the respondents, while responding, would be at their optimum levels of state anxiety, perceived stress, depression and insomnia, which would, in turn, aid in obtaining reliable and valid responses from them.

The inventories employed to serve the objectives of the present study were-

- i. The State-Trait Anxiety Inventory Form X-1 (STAI Form X-1 by Spielberger, Gorsuch, Lushene, Vagg, & Jacobs, 1983).
- ii. The Perceived Stress Scale (PSS by Sheldon Cohen, 1994).
- iii. The Beck Depression Inventory II (BDI II by Beck, Steer and Garbin, 1988).
- iv. The Insomnia Severity Index (ISI by Morin, 1993).

Necessary statistical analyses were carried out upon the obtained responses and the calculated results were tabulated as given in the afore-mentioned section. The obtained results are discussed hereunder:

Table 3 shows the descriptive statistics of the obtained data.

Mean (or here, the statistical mean) is the computed average of a set of obtained scores. It is the simplest, yet the most useful measure of central tendency (S.K Mangal, 2002). The following are the discussions regarding the mean values calculated in the present study-

- As can be seen from the table, the mean values of the levels of state anxiety of the examinees of CBSE, ISC and WBCHSE, respectively, differed inconspicuously from each other. This indicates that the examinees of the respective boards can be taken to experience similar levels of state anxiety.
- Considering the levels of perceived stress, the mean values indicate that the board appearing students of CBSE perceive a greater degree of stress than those of ISC and WBCHSE, respectively. The students of the latter two boards experience more-or-less similar levels of perceived stress, which are slightly lower than those experienced by the CBSE. examinees.
- For depression, the mean values reveal that the board examinees of WBCHSE were more depressed than those of CBSE and ISC, respectively. Following WBCHSE, the students of ISC stood next in terms of reported depression, while those of CBSE were found to be least depressed among the students of the three respective boards.
- The ISC board examinees reported greater degree of difficulties in falling and/or staying asleep, in comparison to the class XII board appearing students of CBSE and WBCHSE, respectively. The students of WBCHSE board reported experiencing least insomnia related difficulties and those of CBSE ranked slightly above the students of WBCHSE in terms of the levels of the same.

Standard error of mean is a measure of the sampling error that indicates the deviation of the statistical mean from its corresponding parametric mean. Discussions regarding the standard error of mean (S.E), as calculated for the present study, is as follows-

- The S.E value obtained considering the examinees of all boards combined, is indicative of the finding that for the variables of perceived stress, depression and insomnia the respective sample means are considerably more precise to the population mean, than are the individual means of CBSE, ISC and WBCHSE students to their respective population means.
- Considering each board separately the S.E values in case of state anxiety, although differing just slightly from each other, show that the sample mean of CBSE students

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

deviate the least from its respective population mean, where is the same of WBCHSE students deviate the most from its respective population mean.

- The S.E values for the domain of perceived stress reveal that the sample mean of the CBSE students corresponds most accurately to its respective population mean, while that of ISC students corresponds least accurately to its respective population mean.
- For the variable of depression, the S.E values thus calculated, indicate that the sample mean of ISC board examination corresponds least to its respective population mean. The sample means obtained in case of CBSE and WBCHSE board examinees approximate to their respective population means, to more-or-less a similar extent, as is reflected from their respective S.E values.
- Lastly, considering the levels of insomnia, the S.E value in case of CBSE board examinees, has been obtained to be the least, while that of WBCHSE board examinees has been obtained to be the most, out of the three boards concerned. This suggests that the sample mean of CBSE board appearing students approximate to its population mean to a greater extent, while that of WBCHSE board examinees approximate least to its respective population mean.

Standard deviation, the most stable and reliable measure of variability (S.K Mangal, 2002), indicates the extent to which a set of scores is deviates from the mean or is scattered around the central value of mean. The following points discuss the standard deviation (S.D) values as has been calculated for the present study-

- The S.D values in case of state anxiety and insomnia reflect that the board examinees of CBSE board are most consistent in terms of their responses, out of the three both concerned, while those of WBCHSE board are least consistent in terms of their respective responses.
- Considering the variable of perceived stress, the S.D values show that the scores of CBSE board examinees are least diverse, while those of ISC board examinees are most diverse, out of the three boards concerned.
- The calculated values of S.D, in case of depression, indicate that the scores obtained by the students of WBCHSE board deviate the least from their sample mean while those obtained by the students of ISC deviate the most from the respective sample mean.

Note: All the calculated S.D values suggest that the obtained scores are considerably scattered around the respective means. This extent of dispersed scores might have resulted due to the small sample size of the present study. As it had been a time bound study, only a small amount of data could be collected. Had it been possible to increase the sample size, the variability among the responses could have been reduced to a considerable extent.

As can be seen from table 5, i.e., the ANOVA table, the obtained values of F-ratio in case of state anxiety, perceived stress, depression and insomnia, are all significant at levels greater than 0.01 and 0.05 levels of significance, respectively. Hence, the computed values of F-ratio are neither significant at 0.01 level of significance, nor at 0.05 level of significance. Thus, we may safely state that there exists no significant difference among the respective board examinees of CBSE, ISC and WBCHSE, in terms of their reported levels of state anxiety, perceived stress, depression and insomnia, respectively. This suggests that the concerned examinees of West Bengal went through similar levels of each of the mentioned variables irrespective of the board of affiliation (i.e., CBSE, CISCE and WBCHSE) of their

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

respective academic institutions. Hence, we accept the null the hypothesis (H_{01}) and reject the respective alternative hypothesis (H_{a1}).

As we know, the previous findings indicated that the respective board examinees of CBSE, ISC and WBCHSE do not differ significantly in terms of their reported levels of state anxiety, perceived stress, depression and insomnia, respectively. Therefore, the assessment of the levels of the mentioned variables was conducted by taking into consideration the entire sample of 168 board examinees, and not by evaluating the levels of the variables of the examinees of individual boards.

Table 6 shows the levels of state anxiety, perceived stress, depression and insomnia among the board examinees of West Bengal, for the session of 2020-2021.

- 129 out of 168 board examinees, i.e., 76.80% of the sample reported experiencing high levels of state anxiety prior the announcement regarding cancellation of their board examinations took place. While majority of the students were reportedly highly anxious, awaiting the decision about their respective board examinations, 37 examinees or 22.02%, and 2 examinees or 1.18% reported moderate and low levels of state anxiety, respectively.
- Similar to the findings of state anxiety, majority of the board examinees, i.e., 140 of them or 83.33% of the sample reported perceiving high levels of stress during the situation that called for the same. About 16.07% and 0.60% of the present sample reported experiencing moderate and low levels of perceived stress, respectively. converting the mentioned percentage into number of examination and putting the statement in other words, 27 examinees reportedly perceived moderate levels of stress, while only 1 examinee reported to have perceived a low level of the same.
- Unlike state anxiety and perceived stress, no mark majority was obtained for the levels of depression as reported by the board examinees of West Bengal. the responses of the students were scattered across the three levels of depression to more or less a similar extent, especially those for the moderate and high levels of the variable. About 67 (39.88%) individuals reported high levels of depression, 60 (35.71%) respondents reported having moderate levels of it, and the remaining 41 (24.41%) examinees reportedly experience low levels of depression. Based on the number of individuals in each level, it can be said that both, the respective levels high and moderate depression consisted of a greater number of students than the low levels of the same. Considering the six divisions of the levels of the variable, i.e., the levels of low, moderate and high further divided into two sub-levels each, the most and least number of respondents have been found to fall under the two respective sublevels of the moderate level. 46 board examinees, i.e., 27.38% of the sample reportedly experienced moderate clinical depression, while 14 examinees or 8.33% of the concerned students experienced borderline clinical depression. Both of the categories (i.e., borderline clinical depression and moderate clinical depression) fall under the broad category of moderate level.
- For insomnia, a greater number of students were found to fall under the subthreshold level of the variable, i.e., 60 examinees (35.71%) reported experiencing subthreshold insomnia. The number of respondents who experienced no clinically significant insomnia were found to be the equal to the number of individuals who reported having moderately severe insomnia, the number being 49, in each of the mentioned categories. In other words, 29.17% of the concerned sample reported no clinically

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

significant insomnia, and another 29.17% of the same sample experience moderately severe levels of insomnia. About 5.95%, or 10 concerned students were found to experience severe levels of clinical insomnia.

From table 7, it can be seen that each of the concerned variables, i.e., state anxiety, perceived stress, depression and insomnia, bears a strong, positive and significant correlation with every other concerned variable of the present study. The r -values (r is the correlation coefficient of Pearson's product moment correlation) thus obtained, are all significant at 0.01 level of significance, or 99% confidence level. The calculated findings suggest that an increase or decrease in the levels of any of the mentioned variables is associated with a respective increase or decrease in the levels of each of the other concerned variables. For example, considering the variable of state anxiety, an elevation in state anxiety levels is suggestive of an increase in the levels of perceived stress, depression and insomnia, respectively, and vice versa. Similarly, a decrease in the levels of the former is calculatedly found to be associated to a decrease in the levels of the latter mention variables, and vice versa. The same associative relation is true for the levels of perceived stress, depression and insomnia, as well. Therefore, we accept the alternative hypotheses (H_{a2}) and reject the respective null hypothesis (H_{02}).

Limitations of the present study

- The number of examinees included in the sample was too less to generalize the findings to the respective population at large.
- As non-probability sampling methods, i.e., convenience sampling and snowball sampling, were used for data collection, the resulting sample was not an accurate representation of the respective population.

Scope for further research

- The present study can be extended to include other national-level educational boards, such as those of NIOS, IGCSE, etc.
- An increase in the sample size can aid in obtaining considerably more prominent results.
- The present study can be conducted by considering the state boards of other states as well.

CONCLUSION

The findings, as obtained in the due course of the present study, are concluded hereunder-

- i. The respective levels of state anxiety, perceived stress, depression and insomnia among the class-XII board examinees (CBSE, ISC and WBCHSE) of West Bengal, session of 2020-2021, were assessed. A considerable number of students were found to experience reportedly high levels of state anxiety and perceived stress, respectively.
- ii. The correlational relationship between the variables of state anxiety, perceived stress, depression and insomnia was studied. Each of the variables of state anxiety, perceived stress, depression and insomnia were found to have a strong, positive and significant (at 0.01 level of significance) correlation with the other.
- iii. The respective board examinees of CBSE, ISC and WBCHSE were found to not differ significantly in terms of their levels of state anxiety, perceived stress, depression and insomnia, respectively.

REFERENCES

- Asmundson, G. J., Abramowitz, J. S., Richter, A. A., & Whedon, M. (2010). Health anxiety: current perspectives and future directions. *Current psychiatry reports*, 12(4), 306-312.
- Barlow DH (2000). "Unraveling the mysteries of anxiety and its disorders from the perspective of emotion theory". *The American Psychologist*.55(11), 1247-63. <https://doi.org/10.1037/0003-066X.55.11.1247>
- Beck, A. T. (1967). *Depression: Clinical, experimental, and theoretical aspects*. New York: Beck, A. T., & Steer, R. A. (1984). Internal consistencies of the original and revised Beck Depression Inventory. *Journal of clinical psychology*, 40(6), 1365-1367.
- Beck, A. T., Steer, R. A., & Brown, G. (1996). *Beck Depression Inventory-II* [Database record]. APA PsycTests. <https://doi.org/10.1037/t00742-000>
- Beck, A. T., Steer, R. A., & Garbin, M. G. (1988) Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clinical Psychology Review*, 8(1), 77-100.
- Bibring, E. (1953) The mechanism of depression. In P. Greenacre (Ed.), *Affective disorders: Psychoanalytic contributions to their study*. New York: International Universities Press.
- Brown, G. W, & Harris, T. (1978). *Social origins of depression*. New York: Free Press.
- Brown, G. W. (1974). Meaning, measurement, and stress of life events. In *Stressful Life Events: Their Nature and Effects*, ed. B. S. Dohrenwend, B. P. Dohrenwend, (pp. 217- 44). New York: Wiley.
- CBSE Board Results 2021: What is the new evaluation criteria for Class 12 students, and when and where to check score* (2021, June 17). Firstpost. <https://www.firstpost.com/india/cbse-board-results-2021-what-is-the-new-evaluation-criteria-for-class-12-students-and-when-and-where-to-check-score-9727881.html>
- Choi, K., Son, H., Park, M., Han, J., Kim, K., Lee, B., Gwak, H. (2009). Internet overuse and excessive daytime sleepiness in adolescents. *Psychiatry Clin Neurosci.*, 63, 455-462. doi: 10.1111/j.1440-1819.2009.01925. x.
- Chorpita, B. E, & Barlow, D. H. (1998). The development of anxiety: The role of control in the early environment. *Psychological Bulletin*, 124, 3-21.
- CISCE cancels ISC 12th Board Exams 2021* (2021, June 01). Times Now. <https://www.timesnownews.com/education/article/west-bengal-12th-exam-date-2021-wbchse-waits-for-state-government-decision/756387>
- Cohen S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 385-396.
- Cohen, S. (1994). *Perceived Stress Scale*. Mind Garden. <https://www.mindgarden.com/documents/PerceivedStressScale.pdf>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1994). Perceived stress scale. *Measuring Stress: A Guide for Health and Social Scientists*, 10, 1-2.
- Das, D. & Das, A. (2008). *Statistics in Biology and Psychology*. Calcutta: Academic Publishers. (Latest edition).
- Depression and other common mental disorders:(Mar-2017) Global health estimates. Geneva: World Health Organization; (<http://apps.who.int/iris/handle/10665/254610>)
- DSM-5 Diagnostic and statistical manual of mental disorders. 5th edition (2013) American Psychiatric Association
- Garrett, H.E. (1981). *Statistics in Psychology and education*. VakilsFeffer & Simons Ltd.

Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021

- Gray, J. A., & McNaughton, N. (1996). The neuropsychology of anxiety: *A reprise*. In D. A. Hope (Ed.), *Nebraska Symposium on Motivation: Vol. 43: Perspectives on anxiety, panic, and fear*, 61-134. Lincoln: University of Nebraska Press.
- Kovacs, M. (1990) Comorbid anxiety disorders in childhood onset depressions. In: *Maser, J.D. and Cloninger, C.R. (Eds.), Comorbidity of Mood and Anxiety Disorders*. American Psychiatric Press, Washington, DC, (pp. 271-281).
- Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. New York: Springer.
- Limcaoco, R. S. G., Mateos, E. M., Fernandez, J. M., & Roncero, C. (2020). Anxiety, worry and perceived stress in the world due to the COVID-19 pandemic, March 2020. Preliminary results. *MedRxiv*.
- Mangal, S.K. (2012). *Statistics in Psychology and Education (2nd Ed.)*. New Delhi: PHI learning Pvt. Ltd.
- Morin, M.C. (1993). *Insomnia Severity Index*. https://www.ons.org/sites/default/files/InsomniaSeverityIndex_ISI.pdf
- Paul J. Rosch, M.D., F.A.C.P. The American institute of stress. <https://www.stress.org/about/hans-selye-birth-of-stress>
- Snigdha, A. (2021, June 17). *ISC Result 2021: CISCE To Consider Class 11, 12 Marks; Know Details*. NDTV Education. <https://www.ndtv.com/education/isc-result-2021-cisce-consider-class-11-12-marks-know-details>
- Spielberger, C. D. (2010). State-Trait anxiety inventory. *The Corsini encyclopedia of psychology*, 1-1.
- Spielberger, C. D., & Sydeman, S. J. (1994). *Anxiety Inventory and State-Trait Anger Expression Inventory*. University of South Florida, 292-231.
- Spielberger, C. D., Gorsuch, R. L., Lushene, R., Vagg, P. R., & Jacobs, G. A. (1983). *Manual for the State-Trait Anxiety Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Średniawa, A. (2019). Insomnia and the level of stress among students in Krakow, Poland. Retrieved from
- Tabulation Policy Class XII 2021* (2021, June 17). <https://www.cbse.gov.in/cbsenew/documents/Tabulation%20Policy%20Class%20XI%202021.pdf>
- Weissman MM, Greenwald S. (July1997) The morbidity of insomnia uncomplicated by psychiatric disorders. *General Hospital psychiatry*. Volume 19
- West Bengal Madhyamik, HS evaluation criteria released*. (2021, June 18). *The Indian EXPRESS*. <https://indianexpress.com/article/education/west-bengal-board-releases-evaluation-criteria-for-madhyamik-uchhmadhyamik-result-class-10th-class-12th-wbbse-wbchse-7358416/>

Acknowledgement

The author appreciates all those who participated in the study and helped to facilitate the research process.

Conflict of Interest

The author(s) declared no conflict of interest.

How to cite this article: Das Gupta L. (2021). Assessment of State Anxiety, Perceived Stress, Depression and Insomnia Among the Board Examinees of Class-XII: The Online Batch of 2020-2021. *International Journal of Indian Psychology*, 9(4), 1147-1165. DIP:18.01.109.20210904, DOI:10.25215/0904.109