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Alleviate examination anxiety and conserve mental health of the adolescent students: The future of the nation

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Adolescents are the potential human resource of every nation. Various determinants may influence the mental and physical well-being of the youth. Examination anxiety is one such. It is a prevalent problem for many adolescent students; affecting approximately 10-40 percent of all students. Yoga can act as one of the best alternative methods of treatment. It aims at creating and preserving a proper balance between the body and the mind. 61 adolescent students, of age group 14-16 years, suffering from examination anxiety participated in this study. Examination Anxiety Scale for adolescents, developed and standardized by the investigators, was used for assessing examination anxiety. The subjects were divided into two groups randomly- the experimental group and the control group. The experimental group participated in the yoga intervention program for six weeks, whereas, the control group did not participate in the same. After six weeks, both the groups were assessed again. The result showed that the mean examination anxiety score reduced from 71.70 to 68.80 for the experimental group and it was statistically significant at (P <0.05). For the male and the female experimental groups, the mean examination anxiety score reduced from 71.84 to 68.92, and 72.12 to 68.71, respectively. For the male group, reduction in examination anxiety score was not statistically significant (P =0.106) whereas, for the female group changes were statistically significant (P <0.05). From the result, it can be concluded that yoga has a significant effect on attenuating the examination anxiety. Further, the result showed that yoga reduced examination anxiety in both males and females. However, the positive effect of yoga intervention was more significant in females than in males.

Keywords: Academic performance, Human resource, Mental well-being, Test anxiety

The youth or the adolescents are often considered as the future of the nation. Development of the youth as an efficient, productive and responsible citizen is necessary for the overall development and prosperity of the nation. Various determinants such as nutrition, clothes, sleep, health, security, love and belongingness, self-esteem, *etc*. influence the growth and development of these potential human resources of every country. Of the many factors 'health' is one of most essential factor responsible for the harmonious development of the adolescents into well-balanced young adults. Health includes both physical and mental health essential for the progress of an individual who further contributes for the prosperity of his or her country[1]. The World Health Organization have defined mental health as a state of mental well-being that enables people to cope with the stresses of life, realize their abilities, learn well and work well, and contribute to their community. It is an integral component of health and well-being that underpins our individual and collective abilities to make decisions, build relationships and shape the world we live in. Mental health is a basic human right. And it is crucial to personal, community and socio-economic development. Mental health is more than the absence of mental disorders. Thus, a mentally healthy individual is able to work productively, enjoy his or her leisure time and contribute fruitfully to his or her community[3].

Adolescence is considered the most crucial stage of development and is often denoted as the period of storm and stress as during this stage often then suffer from identity crisis, feeling of rejection from peers, parents and others. All these may be detrimental to their growth and development. Further academic pressure and examination anxiety may affect their physical and mental well-being.

Examination anxiety or test anxiety is a threatening issue that determines the success and achievement of the adolescent students. During the examination, when the students go through the fear caused by high

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expectations, they perform poorly. Sieber, O'Neil & Tobias[4] defined test anxiety as a scientific concept that combines behavioral, phenomenological, and physiological reactions in connection with anticipated concern regarding negative results or failure in the examination or any kind of assessment. Sarason[5] observed that test anxiety is a type of anxiety having academic or assessment based concern. In test anxiety, anxiety gets connected with academic or assessment situations[5]. He also observed that a person having severe test anxiety worries regarding the examination and at the same time, express physiological responses that are deeply connected with worry[5]. According to Friedman[6], examination anxiety is an emotional and mental reaction to the threat of failure on test or assessment or evaluation.

In fact, examination anxiety is an unpredictable worry about the consequence regarding performance, fear of being assessed, and the apprehension about the results. Actually, it is after all irrational and absurd fear about examinations and its outcomes.

From the cognitive perspective, students who suffer from examination anxiety, experience worry, lack self-confidence, preoccupied with the negative thought of failure, and feeling adequate in evaluative situations[7,8].

According to Zeidner[9] "many students have the ability to do well in exams, but perform poorly because of their debilitating levels of anxiety. Consequently, test anxiety may limit educational or vocational development, like test scores and grades influence entrance to many educational or vocational training programs in modern society**".**

Cortisol, DHEAS, and GABA levels indicate the level of stress and anxiety[10]. Several studies and research prove that examination causes psychological distress among students[11]. Consequently, the examination is supposed to be a key factor in generating acute stress as it is connected with the performance of the students and has prominent future consequences[12]**.** Examination act as an unavoidable natural stressor and leads to an increase in stress and anxiety and increases the releasing level of cortisol[13].

Yoga has been practiced over 3000 years[14]. It is a body-mind intervention having a healing effect. For a long time, yoga has been treated as a strong methodology for relaxation, healing, and exercise; it assimilates all the physical, emotional, intellectual, and spiritual factors [15]. Yoga brings calmness to the body. It manages stress and examination anxiety by controlling the mind and body. Fear and negative emotion disturb our nervous system; consequently, it affects our physical system. Yoga has a strong determining factor for bringing the clarity of thought, inner freedom as well as 'It helps to attain mental well-being'[16]. Yoga also serves as an alternative to pharmacological treatment and also reduces the examination anxiety symptoms[17].

However, the opinion of Shraddha and Nanda[18] coincides with the conclusion of an earlier study[15], but they restricted it up to the physiological level.

Sharma and his associates opine that yoga positively affects HPA Axis by reducing the autonomic regulation caused by examination anxiety among students[19].

Yoga works primarily by strengthening the weaker muscles, but it also helps to control the autonomic reaction of the body. Yoga has a strong impact on the system of the body, such as it brings normalcy in breathing patterns, sleeping patterns, and bowel habits. Yoga also has a deeper role by furnishing a mood of relaxation, and it relieves the tension of the muscles and nerves that naturally increases the energy[20]. The aims of the study are to determine the effectiveness of yoga on examination anxiety and to compare the effect of the yoga of male and female adolescent students.

Materials and Methods

Population

Students suffering from high examination anxiety from the schools of Jalpaiguri district of West Bengal.

Sample selection

There are Eighty-seven schools affiliated to the West Bengal Board of Secondary education in Jalpaiguri district. One school, namely Mudipara Nagendranath High School, was selected randomly from the sampling frame.

The investigators selected sixty one students of class X from the school, as mentioned earlier, based on their scores on the Examination Anxiety Scale for adolescents developed by the investigators. Out of 61 students, 27 students are male, and 34 students are female. They suffer from high examination anxiety. All the subjects were physically and mentally healthy. Then the subjects were randomly divided into two groups. The first was the experimental group (N =30) and the second was the control group (N=31).

Inclusion criteria

i) Students of class X belonging to the age group 14-16 years.

ii) Gender: both male and female
iii) Students suffering from high examination anxiety were assessed by the Examination Anxiety Scale.
iv) Student who are willing to participate in the yoga training session.

Exclusion Criteria

i) Students having a history of previous yoga training experience.
ii) Students having a history of drug abuse.
iii) Students having a history of physical and mental disorder.

Design of the study

Experimental design

Procedure

In the present study, the researcher adopted a pre-test post-test randomized experimental group design. In the pre-test, the examination anxiety level of both the groups was evaluated by using the Examination Anxiety Scale. All the subjects were randomly divided into two groups. The first one is the experimental group, and the second one is the control group. The experimental group consisted of 30 subjects, whereas the control group comprised of 31 subjects. The experimental group participated in a yoga training program for six weeks, and the control group did not participate. After six weeks, the examination anxiety level of all the subjects was assessed again for post-test evaluation.

Tool used in the research

Examination Anxiety Scale for adolescents was constructed and standardized for the purpose of data collection. The scale has 21 items, aims at measuring the worry, bodily symptoms, emotional reaction, as well as the behavioral reaction of adolescent students. The reliability coefficient of the scale was obtained 0.801 by the test-retest method. The reliability coefficient is 0.767 as measured by the Split half method and 0.764 when measured by Cronbach's Alpha method. The validity of the scale is 0.71[21].

Orientation of the subjects

Before administrating the test, the subjects were oriented by providing adequate information to them about the purpose of the test, method of test administration as well as demonstration to acquaint them with the type of test. The researcher obtained permission from their respective authorities for conducting the study.

Administration of Yoga practice program

The yoga practice protocol for the experimental group was administrated in the assembly-hall of Mudipara Nagendranath High School. The yoga schedule was practiced by the subjects; five days per week for a period of six weeks. The duration of each experimental session consisted of 45 min as per the class timetable. Written consent was collected from the Head of the Institution and the parents of the students who were selected for the yoga treatment group. All the subjects were instructed about the yoga training program. The only experimental group participated in the yoga program. The control group did not participate in the yoga program.

Description of Yoga Training Protocol

To ensure the accuracy of yoga efficacy, yoga practice protocol was designed by consulting qualified yoga experts. The description of the yoga practice protocol is mentioned below.

1. Initial Prayer: (2 min)
2. Suryanamaskar (12 counts): 5 min (6 rounds)
3. Asanas: 15 min
   i) Savasana (2 min), ii) Sarvangasana (1 min), iii) Paschimottasana (1 min), iv) Bhujangasana (1 min), v) Salvasana (1 min), vi) Ustrasana (1 min), vii) Bajrasana (1 min), viii) Padahastasana (1 min), ix) Trikonasana (1min), x) Savasana- (5 min)
4. Pranayama: (10 min)
   i) Surya vedana (3 min), ii) Chandra vedana (3 min), iii) Anulomevilome (4 min)
5. Meditation: (10 min)

Statistical analysis

Data were recorded and analyzed by IBM SPSS 20. Software. At first, homogeneity of the data was tested by Levene's test for equality of Error variances method, and normality of the data was tested by Kolmogorov-Smirnov test and Shapiro–Wilk test. The two groups were compared by using ANCOVA. Pre-test data was taken as a covariance. The results of statistical analysis were interrelated on confidence levels of 95%, with a p-value less than 0.05 considered significant.

Results

Effect of yoga on examination anxiety of the adolescent students

Table 1 shows the descriptive statistics of the experimental (yoga treatment group) group and control group in examination anxiety. The unadjusted

mean scores for the pre-test of the experimental group and control group are 71.70 and 71.97, respectively. For post-test, the unadjusted mean scores of the experimental group and control group are 68.80 and 71.58, respectively.

The standard deviation for the pre-test of the experimental group and control group are 6.665 and 5.023 respectively.

The standard deviation of the experimental group and control group for the post-test are 6.661 and 5.23 respectively.

Table 2 depicts the adjusted mean scores of the control group and experimental group in examination anxiety. The Adjusted mean scores for the control group are 71.46 and the adjusted mean score for the experimental group is 68.92.

Since the significant value of the group is 0.00 at the 0.05 level, which is less than 0.05 that indicates that there is a significant difference in the adjusted mean of examination anxiety between two groups (experimental group and control group). That mean values of the two groups differ significantly. As the adjusted mean score of examination anxiety for the post-test of experimental group is less than the control group that signifies that the experimental group suffer less examination anxiety after the yoga treatment than the control group. Therefore it can be inferred that yoga has a significant effect on lowering the examination anxiety of adolescent students.

Comparison of the effect of yoga on examination anxiety of the male and the female adolescent students

Pre-test result

In case of the experimental group, the mean values of male and female students on examination anxiety scale are 71.84 and 72.12, respectively.

For the experimental group, the S.D value of male and female students on examination anxiety scale are 7.75 and 5.91, respectively.

For the control group mean value of male and female adolescent students on examination anxiety scale are 72.50 and 71.53, respectively.

For control group S.D of male and female students on examination anxiety scale are 6.97 and 2.71, respectively.

Post-test result

For the experimental group, the mean values of male and female adolescent students on examination anxiety scale are 68.92 and 68.71, respectively.

For the experimental group, the SD value of male and female students on examination anxiety scale are 7.69 and 5.99, respectively.

For the control group, the mean values of male and female students on examination anxiety scale are 72.29 and 71.00, respectively.

For control group S.D value of male and female students on examination anxiety scale are 7.25 and 2.398, respectively, (Tables 3-5).

Table 1 — Descriptive statistics of examination anxiety of experimental group and control group in pre-test and post-test

Tests	Group	Mean	Standard deviation
Pre-test	Control group	71.97	5.023
	Experimental group	71.70	6.665
Post-test	Control group	71.58	5.230
	Experimental group	68.80	6.661

Table 2 — Adjusted Post-Test Mean of Examination Anxiety of different group

Groups	Means	Std. Error	95% Confidence level	
			Lower Bound	Upper Bound
Control	71.46	0.400	70.657	72.258
Experimental	68.92	0.0.407	68.115	69.741

Covariates appearing in the model are evaluated at the following values: pre-test = 71.84

Table 4 — Descriptive statistics of pre-test and post-test of Examination Anxiety of Control group and Experimental group on the basis of gender

Test	Groups	Gender	Mean	SD	N
Pre-test	Control	Male	72.50	6.97	14
		Female	71.53	2.71	17
	Experimental	Male	71.84	7.75	13
		Female	72.12	5.91	17
Post-test	Control	Male	72.29	7.258	14
		Female	71.00	2.398	17
	Experimental	Male	68.92	7.69	13
		Female	68.71	5.99	17

Table 3 — Analysis of co-variances of comparisons of mean values of the Experimental group and Control group in Examination Anxiety:

Source	Sum of Squares	df	Mean Squares	F	Sig.	Partial Eta squared
Pretest	1788.876	1	1788.876	360.921	0.00	0.862
Groups	97.554	1	97.554	19.682	0.00	0.253
Errors	287.473	58	4.956			
Totals	302917.002	61				
Corrected Total	2194.230	60				

Figure 1 shows that, there is no significant change in examination anxiety score between the pre-test and post-test in the case of the male control group and female control group. However, in the case of the female and male experimental groups, a decrease in the mean value of examination anxiety was observed in the post-test data, as compared to the pre-test value. Again when female and male groups are compared, then it is observed that the mean value of examination anxiety scale of the female experimental group is less than the male experimental group.

Since the significant value of the treatment group is 0.00 at the 0.05 level, which is less than 0.05, that means the groups differ significantly.

In Table 6, the Pair-wise comparison shows that in the case of females, the mean difference between the control group and the experimental group is 2.846. The significant value 0.003 signifies that there is a significant difference between the female experimental and control groups in terms of the effect of yoga on examination anxiety of female students.

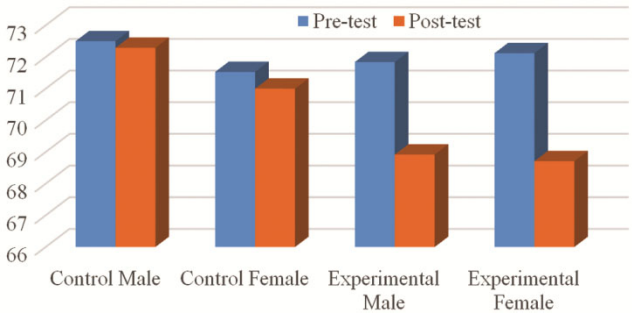

Fig. 1 — Bar diagram displaying the mean of examination anxiety score between the control group and the experimental group for pre-test and post-test. There is negligible change in examination anxiety score between pre-test and post-test for the control group, whereas, in the case of the experimental group, the changes were significant

However, in the case of the male, the mean difference is 2.10, which is less than the mean difference of female difference, and the significant value is 0.106, which is greater than the 0.05; therefore it is not significant at 0.05 level of confidence.

Discussion

Effect of yoga on examination anxiety of the adolescent students

The result revealed that yoga is effective in reducing examination anxiety level in adolescent students. The finding is consistent with Pant, Bera & Shete[15]. They examined the impact of yoga on examination anxiety among secondary school students and found that yoga has a remarkable role in reducing and controlling the examination anxiety[18,22,23]. In their studies, they found that yoga has a significant effect on reducing general anxiety as well as examination anxiety level of students in particular. In 2012 Nemati[24] investigated the role of pranayama on examination anxiety and examination performance of 107 M.A students. The statistical result showed a significant depletion in the examination anxiety level of the experimental group than the control group.

Comparison of the effect of yoga on examination anxiety of the male and the female adolescent students

Furthermore, it was also found from the data analysis regarding the second objective that yoga has a significant positive effect on reducing the examination anxiety of female students, but for male students, the impact of yoga was found to be not significant. However, the slight decrease in the mean value of examination anxiety was observed in the post-test of that cohort. Hence it shows that yoga also has a positive effect on the examination anxiety of male students. Another study[25] found the similar

Table 5 — Analysis of co-variances of comparisons of means of Experimental group and Control group in Examination Anxiety

Source	Sum of Square	df	Mean Square	F	Sig	Partial Eta Square
Pretest	1786.164	1	1786.164	360.912	0.00	0.866
Treatment Group	107.881	3	35.960	7.266	0.00	0.280
Error	277.146	56	4.949			
Total	302917.00	61				
Corrected	2194.230	60				

Table 6 — Pair-wise comparisons: Dependent variable: post test

Control	Experimental	Mean difference	Std Error	Sig	Remarks
Female control	Female experimental	2.846	0.764	0.003	Significant
Male Control	Male Experimental	2.100	0.859	0.106	Not significant

findings-college-based meditation program was administered on 77 university students and it revealed that meditation brought better effect on females than males on the basis of emotional regulative strategy. Supporting the previous concept, another study[26] penetrated deeper in redefining the emotion regulatory strategy and revealed that women and men react differently in controlling the negative situations as well as emotions. In adverse situations, women generally "internalize" by ruminating or involving with self-introspective nature, whereas, men "externalize" either by diversion or involvement with the situation[27,28]. The earlier study[26] also admitted that meditation is more fruitful for women because it generally attenuates ruminating nature. Therefore we can say that women are more benefitted by meditation than man[25]. Katz and Tonar[29] also observed meditation therapy might be more effective on women than man. Chauhan and Kumar[30] showed that there is no significant effect of yoga on anxiety on the basis of gender. Finally, we can propose that yoga intervention naturally provide benefit to both male and female.

In spite of many positive findings, the study possesses some limitations. The result of the study would become more appropriate if the sample size was more. The length of the yoga intervention could be extended to have better result to figure out the intensity of efficacy.

Analyzing the above result, it may be inferred that yoga facilitates in controlling the examination anxiety of both male and female students. But in the case of female students, yoga has a significant effect in controlling the examination anxiety, whereas such significant effect was not observed in case of male students.

Conclusion

Findings of the study signify that the examination anxiety play a crucial role in the psychological well-being of the adolescents. Alleviation of test anxiety is essential for the fruitful growth and development of the youth. Yoga may be considered as one of the effective measures to control and eradicate the examination anxiety, improve the academic performances of the adolescents. These measures further facilitate the physical and mental health of this cohort and promote the development of human resource of the nation. In other countries too, such measures may be found effective in various educational contexts.

Conflict of interest

All authors declare no conflict of interest.

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