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Research Article

Prevalence and Influencing Factors of Test Anxiety Among Adolescent School Students in A South Indian Town – A Cross-Sectional Interventional Trial.

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Abstract: Test anxiety is a common issue among students. Some students find that anxiety interferes with their learning and test-taking to such an extent that their performance suffers. These students may study hard but perform poorly because they may have anxiety-provoking thoughts, such as a desire for perfection or a fear of failure. Furthermore, these negative thoughts may have other consequences, such as dissatisfaction with studies, which can lead to poor academic performance. This study aimed to determine the prevalence of test anxiety among adolescent students and to correlate the level of test anxiety among adolescent students with selected demographic variables. The research design was quantitative descriptive. Purposive sampling was used to select 144 adolescent students who fulfilled the inclusion criteria and were available during the data collection period at selected schools in Puducherry. They were divided into two groups to receive a writing intervention. The standardized Westside test anxiety scale was used to collect data. The majority of subjects (71 – i.e., 49.3%) had a high level of test anxiety. Among the others, 56 (38.8%) reported severe test anxiety. But only 17 (11.9%) had extremely high test anxiety. The test anxiety score was associated with selected demographic variables, with statistically significant associations in socio-demographic variables such as the mother's occupation and family monthly income. Test anxiety is one of the most common problems among students, and it is also regarded as one of the most significant barriers to academic success. Writing intervention was very effective in decresing tets anxiety. Therefore, interventions to reduce test anxiety among adolescents should be promoted to make the examination atmosphere more congenial.

***Keywords*:** Test Anxiety, Adolescents, Students, Examination

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1. INTRODUCTION

The term "adolescence" comes from the Latin word adolescence, which means "to grow into adulthood." It begins with the onset of puberty and ends with the assumption of adult responsibilities; as one philosopher remarked, adolescence begins in biology and ends in culture[1]. Mental health problems can develop at any point in life. Various factors, including genetics or family history of a disorder, chemical imbalances in the brain, or environmental stressors, may influence them.[2] World Health Organization reported the increase in mental health problems such as depression, anxiety, and suicide rate might reflect the difficulties that some adolescents face as they encounter the cognitive, physical, psychological, and spiritual changes that accompany puberty [3]. Test anxiety is one of the major problems among students, and it is also thought to be one of the biggest hurdles in achieving good grades. Whenever students take some test, they encounter anxiety, which decreases their performance. Anxiety is a mood concerned with the future, in which an individual prepares to deal with forthcoming problems[4]. Test anxiety (TA) is a reasonably stable propensity to produce an exaggerated emotive reaction in academic assessment instances because of apprehension concerning poor performance and potential adverse outcomes. Test anxiety is the Psychological condition of the brain of a contestant as articulated by the degree of concern, dread, ambiguity, distress, and vulnerability shown before, during, or even after an exam[5]. Test anxiety is trepidation when a subject comes across an exam at any stage in any shape[6]. Test anxiety is a particular state of affairs related to an individual, and it has two components: emotion and worries [7]. Boys perceive test circumstances as a challenging task, and their response is determined by the perceived notion of their expertise in dealing with the task; if they believe they are capable of completing the test, they get involved behaviorally and emotionally; if they are not, they abandon, exhibiting low levels of TA in both cases. On the contrary, girls perceive test situations as more dangerous and exhibit greater levels of TA, which manifests as fear, difficulty concentrating on the task, and low academic esteem.

1.1 Factors associated with test anxiety

Test anxiety is a common problem that affects students of all ages. Factors associated with test anxiety include academic stress, negative self-talk, and low self-esteem. Prior test experiences and negative performance feedback, low self-esteem, and low sense of control over the test outcome have been identified as predictors of test anxiety. Comorbid disorders such as Generalized Anxiety disorder (GAD), Social Anxiety disorder (SAD), Specific Phobia, and cognitive factors such as Negative Automatic Thoughts and maladaptive coping strategies are often associated with higher levels of test anxiety. Other factors such as genetics, physical health, and personality traits may also play a role. Research shows that the cognitive elements of test anxiety may be manifested as worry, not noting the mistakes, misunderstanding the task, thought blocking, poor concentration, forgetting, poor listening, unclear thoughts, clinging to the same thoughts, task-irrelevant thoughts, not understanding the questions, reduced attention[8] Even though there is a lot of work being accomplished and seen in the literature, there are very studies in India. The attitude of the students varies with country, region, and statewide. A very limited study was conducted to assess the test anxiety level among adolescents, especially in Puducherry. Hence we wanted to study the student population of a small town in South India.

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2. MATERIALS AND METHODS

2.1 Study Primer

The study was conducted on adolescents at an academic institute after ethical clearance and parental clearance (IHEC/2018/KGNC/112. The study had permission from the authorities of the institute. Informed assent was obtained from all the parents, class teachers, and their school principals of the study subjects. The work was done in accordance with the declaration of Helsinki. The study had no intervention and minimal risk, according to ICMR risk 2017.

2.2 Study area and population

The study population includes adolescent students of an academic institute in Pondicherry, a semi-urban town in South India. This is a cross-sectional study among students of pre-college students. The possible student sample was supposed to write the pre-college exams in the coming months.

2.3 Inclusion and exclusion criteria

The adolescents who were willing to participate with parental consent and who could understand the scales and scores were included in the study. The students who needed help comprehending the score and answering the questions and were unwilling to cooperate with the answers were excluded. Any cardiac, respiratory, and neurological illnesses were excluded. The students with mental ill health were also excluded.

2.4 Sample size determination and technique

Purposive sampling is a technique used in qualitative research to select participants for a study based on specific characteristics or criteria. It is a non-random method used when the researcher has a clear idea of the type of participants they want to include in their study. This technique is often used in exploratory or descriptive research when the population is small or specific. For example, the researcher may select participants based on age, gender, occupation, or specific experiences. The goal of purposive sampling is to select participants who can provide valuable information about the research topic. It should be noted that purposive sampling can introduce bias into the study, as the researcher may only select participants who confirm their hypotheses or preconceptions. Therefore, it is important to be transparent about the sampling method used and its potential limitations in the research report. Hence we were transparent in

selecting a sample of 144 students. The writing therapy was considered as the intervention.

2.5 Instrument and validity

Schools are quite focused on the impairment component of the condition (TA), which includes physiological over-arousal cognitions such as worry and expectations of a major failure. The Westside scale includes six items that assess impairment, four that assess worry and dread, and none that evaluate physiological over-arousal. As a result, the Westside scale has high face validity because it includes the highly relevant cognitive and impairment factors but excludes the marginally relevant over-arousal factor.

2.6 Data collection

2.6.1 The Westside Test Anxiety Scale

The Westside Test Anxiety Scale is a ten-item questionnaire to identify students with anxiety disorders who might benefit from such an anxiety-reduction intervention. The scale items address self-reported anxiety impairment and cognitions that can impede performance. Using a purposive sampling technique, 144 adolescents who scored 3.0 or above on the Westside Test anxiety scale were selected, and their socio-demographic profiles were obtained. Westside Test anxiety scale was a brief ten-item instrument to identify students with anxiety impairments. The score ranges from 1.0 – 5.0. The interpretation of the score is measured by the sum of the ten questions divided by 10**.** Scores between 1.0 to 2.9 are within the normal range. Scores above 3.0 suggest a high level of test anxiety, and they tend to benefit from test anxiety reduction intervention. Adolescents who scored 3.0 or above on the Westside Test anxiety scale and who fulfilled the inclusion criteria were included in the study.

3. STATISTICS

Several sampling techniques can be used to study test anxiety interventions. One common technique is purposive sampling, which involves selecting participants for a study based on specific characteristics or criteria. For example, researchers may use purposive sampling to select participants with high test anxiety levels for a study investigating the effectiveness of a test anxiety intervention. Another technique is random sampling, which involves selecting participants for a study randomly from a larger population. This can increase the generalizability of the findings. A third is stratified sampling which refers to a sampling technique where the population is divided into different groups or strata, and samples are taken from each stratum. This can ensure that the study sample is representative of the population in terms of important characteristics. We have used the most suitable one. We have arrived at a sample size of 140, taking into account the alpha power of 5 % and power of 80.

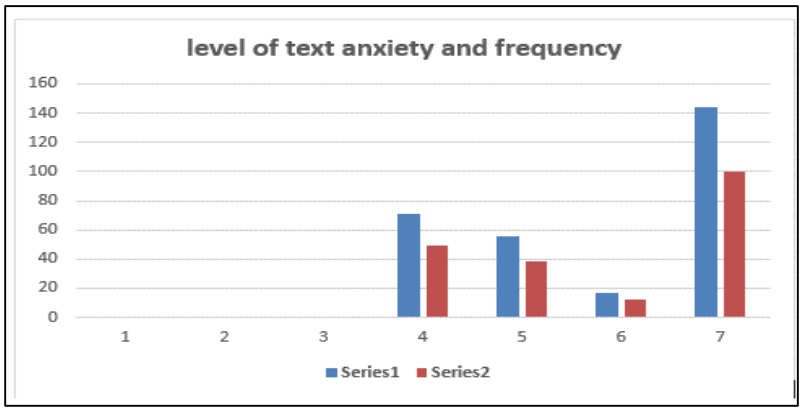
3.1 PLAN FOR DATA ANALYSIS AND STATISTICS

Both Descriptive and Inferential statistics were used to analyze the data. The descriptive statistics were frequency, percentage, mean, and standard deviation. In addition, inferential statics Kruskal-Wallis test**,** and **the** Mann-Whitney test were used to assess the effectiveness of Expressive writing therapy in reducing test anxiety.

Background questions;

When researching test anxiety or assessing an individual's experience with test anxiety, several background questions were asked to gather information.

- Have you ever felt nervous, anxious, or stressed before or during a test or examination?
- How often do you experience test anxiety?
- Have you ever struggled to concentrate or remember information during a test or examination due to anxiety?
- Have you ever avoided taking a test or examination because of anxiety?
- How does test anxiety affect your academic performance?
- Have you ever received any treatment or support for test anxiety?
- Have you ever been diagnosed with an anxiety disorder?
- Do you have family members or close relatives who struggle with test anxiety or an anxiety disorder?
- Do you have any other comorbid conditions or life stressors that may be influencing your test anxiety?



From scores 4 – 6 and the total is displayed as a bar diagram.
Series 1 – frequency series 2 - percentage

Fig 1 shows the flow chart of the research work.

3.2 Demographics

The study included 144 participants who scored 3.0 or above on the Westside test anxiety scale and fulfilled the inclusion criteria. Among 144 adolescents, 116 (80.5%) of the subjects were 17 years. In Gender Majority of 96 (66.6%) of the subjects were males. In Birth order, 63(43.75%) subjects were first children. A maximum number of the subjects, 99(68.75%), lived in urban areas. The majority, 142(98.6%) of the subjects, had the Tamil language as their mother tongue, and regarding religion majority, 126 (87.5%) of the subjects were Hindus.

3.3 Social variables

The majority of 100(69.4%) of the subjects belong to the Nuclear family. Regarding the education of the father and mother, 45 (31.25%) of the subjects were educated up to Secondary education, and for the mother, 43 (31.25%) were educated up to Secondary education. Regarding the occupation of their parents, 97 (67.3%) of the subject's fathers were working as coolie, and also around 64(44.4%) of the subject's mothers were working as coolie. Regarding monthly income, 84(58.3%) subjects had a family monthly income of Rs.6,000 – Rs 1,000.

3.4 Predictors of anxiety and depression

Several factors have been identified as potential predictors of test anxiety in individuals with depression. One factor related to testing anxiety in individuals with depression is the severity of their depression symptoms. Individuals with more severe depression symptoms may be more likely to experience test anxiety. Another predictor of test anxiety in individuals with depression is the presence of comorbid disorders such as Generalized Anxiety disorder (GAD), Social Anxiety disorder (SAD), and Specific Phobia. Cognitive factors such as Negative Automatic Thoughts and maladaptive coping strategies have also been associated with higher test anxiety levels in individuals with depression. Additionally, prior test experiences and negative performance feedback, low self-esteem, and low sense of control over the test outcome have been identified as predictors of test anxiety in individuals with depression. It's worth noting that the individual factors that predict test anxiety in individuals with depression may vary and that other variables such as genetics, physical health, and personality traits may also play a role.

Table: 1 -A: Frequency, percentage distribution, and comparison of demographic variables in Both Experimental and Control Groups before intervention (N = 144)

DEMOGRAPHIC VARIABLES		Frequency	Mean	SD	Median	Percentile 25	Percentile 75	KW/MW test	p-value
Age in year	16 years	28	35.21	4.43	34	32.5	37	0.0581	0.8096
	17 years	116	35.16	3.71	35	32	38		
Gender	Male	96	34.96	4.05	34	32	37.5	2.0782	0.1494
	Female	48	35.6	3.38	36	33	38		
Birth order First child	First child	63	34.97	3.93	34	31	38	4.7916	0.0911
	Second child	62	34.84	3.56	34	32	37		
	Third child	19	36.95	4.14	38	33	40		
Place of living	Urban	99	35.46	4.12	35	32	38	0.8834	0.3473
	Rural	45	34.53	3.1	33	32	37		
Mother tongue	Tamil	142	35.18	3.84	35	32	38	0.0026	0.9999
	Others	2	35	5.66	35	31	39		
Religion	Hindu	126	35.17	3.87	35	32	38	0.2993	0.8610
	Christian	17	35.35	3.84	35	32	39		
	Muslim	1	33	.	33	33	33		
Family type	Joint family	44	35.61	4.1	34.5	32	39	0.9027	0.3421
	Nuclear family	100	34.98	3.73	35	32	37		
Education of father	Primary education	22	34.41	3.66	32	32	38	7.0264	0.1345
	Secondary education	45	35.29	3.55	35	33	38		
	Higher Secondary	36	34.06	3.26	33	31	36.5		
	Graduate	6	36.17	2.23	36	35	38		
	No formal education	35	36.49	4.71	36	33	39		

Table: 1 -B: Frequency, percentage distribution, and comparison of demographic variables in Both Experimental and Control Groups before intervention									
Education of Mother	Primary education	29	34.59	3.12	33	32	37	2.1158	0.7145
	Secondary education	42	35.07	3.61	34	32	38		
	Higher Secondary	28	34.82	3.54	35	31.5	38		
	Graduate	9	34.56	4.28	33	31	38		
	No formal education	36	36.19	4.67	35	33	39		
Occupation of Father	Government employee	2	31	1.41	31	30	32	5.5821	0.2326
	Private employee	9	33.56	2.3	33	32	34		
	Self-employee	31	34.74	3.23	34	32	37		
	Coolie	97	35.46	4.07	35	32	38		
	Unemployed	5	36.8	4.44	37	34	40		
Occupation of Mother	Government employee	1	30	.	30	30	30	12.9200	**0.0117**
	Private employee	8	32.75	2.05	32	31	34.5		
	Self-employee	16	37.56	3.61	37	35	40.5		
	Self-employee	55	35.11	3.54	35	32	38		
	Coolie	64	35.02	4.07	34	32	38		
Family monthly income	Rs. 1000 – Rs. 5000	22	36.14	4.02	36	33	39	7.7189	**0.0211**
	Rs. 6000 – Rs. 9000	84	34.32	3.2	34	31	37		
	>Rs. 10000	38	36.5	4.57	35.5	33	39		

3.5 Anxiety levels

There were no students in the first three near normal anxiety levels. For all 100 % of the students, the scores were more than 4. Fifty percent of the students were in danger zones of anxiety scores. These are described in Table 2

Table: 2: Frequency and percentage distribution of Pre-test level of Test anxiety among Adolescents in Experimental and Control Group N = 144		
LEVEL OF TEST ANXIETY	**FREQUENCY (n)**	**Percentage (%)**
1. Comfortably low test anxiety	0	0
2. Average test anxiety	0	0
3. High normal test anxiety	0	0
4. Moderately high	71	49.3
5. High test anxiety	56	38.8
6. Extremely high anxiety	17	11.9
7. Total	144	100

The above table shows the prevalence rate of test anxiety among study subjects. The majority of the subjects, 71(54.1%), had moderately high test anxiety levels. At the same time, 56 (38.8 %) had high test anxiety. But only 17(11.9%) had extremely high test anxiety.

Table 3: Assessment of the items of the test anxiety scale among participants	
Items	**Mean**
The closer I am to a major exam, the harder	3.65
it is for me to concentrate on the material. When I study, I worry that I will not	3.6
remember the material on the exam. During important exams, I think that	3.25
I am doing awful, or I may fail, I lose focus on important exams, and I cannot remember material that I knew before the exam	4.56
I finally remembered the answer to exam questions	5.2
after the exam is already over, I worry so much before the major exam that I am	4.42
too worn out to do my best on the exam, I feel out of sorts or not myself when	3.64
I take important exams I find that my mind sometimes wanders when	4.9
I am taking important exams. After an exam, I worry about whether I did well enough	4.50
I struggle with writing assignments or avoid them as	4.8
long as I can. I feel that whatever I do will not be	

4. DISCUSSION

This study was undertaken to identify the prevalence of test anxiety among adolescent students and to associate the level of test anxiety among Adolescents with selected demographic variables. The study was conducted among 144 adolescents who scored 3.0 or above on the Westside test anxiety scale—for the level of test anxiety among study subjects. The majority of the subjects, 71(54.1%), had moderately high test anxiety levels. At the same time, 56 (38.8 %) had high test anxiety. But only 17(11.9%) had extremely high test anxiety. The present study findings were supported by Mary R, Marslin G, Franklin G, and Sheeba C**,** who conducted a study to analyze the level of test anxiety among board exam-attending school students in Tamilnadu. Their results showed that boys had higher anxiety levels than girls, among whom 8% of boys had severe anxiety, 38% had moderate anxiety, and 4% had mild anxiety. The significance of the difference between the mean value of male and female students was calculated by independent sample *t*-test ((98) = 5.736), and the existing difference was found to be statistically significant ($P = 0.000$).[9] The present study revealed that there was significant relation found in the socio-demographic variables such as the occupation of the mother and family monthly income. with the post-test level of test anxiety. Oladipo S et al study. supported our study's findings; The findings revealed that the study does not have a significant correlation with any of the variables in the study. This study concluded that other variables apart from demographics may account for test anxiety among undergraduates in Nigeria [10.] Sobana et al. [11] proved that after eight weeks of yoga therapy, there was a significant improvement in stress and self-confidence scores in men with insomnia. There were no significant side effects. And the authors concluded that yoga is an effective treatment option for insomnia patients. The stress reduction with yoga is also well established in children Jaiganesh et al. [12] have shown that correlations between personality traits, coping strategies, psychomotricity, and grades among high-achievers showed had a statistically significant positive correlation between EOC (emotion-oriented coping) and Neuroticism. It's clear from their studies that medical students adopt strategies to overcome stress. The same authors[13] have also shown that combined yoga and Surya namaskar is extremely useful in combating students' stress. The remembrance anxiety in our study has the highest score, which needs to be addressed in the type of teaching and learning. We had targeted test anxiety rather than general anxiety to record its high prevalence. There is a positive association between TA and age, with older adolescents exhibiting increased anxiety levels, similar to social anxiety disorder when the adolescent is subjected to social evaluation[14]. The influencing factor, sex, was not an influencing factor as given by others. Age in years was found to have a relationship with test anxiety in a study that we could not find. [15] In our study, this was not the case.

5. LIMITATIONS

It is a single-center study of 144 students. A large multicentric study will spell out the limitations of our study and validate the findings. The age groups did not vary variables to find many differences between different age groups.

6. CONCLUSION

Test anxiety is one of the major problems among students, and it is also thought to be one of the biggest hurdles in achieving good grades. In addition, the test anxiety score was associated with selected demographic variables, with statistically significant associations in socio-demographic variables such as the mother's occupation and family monthly income. Our intervention of writing therapy has produced good results. Therefore, to reduce test anxiety among adolescents, many interventions need to be applied to resolve their anxiety levels.

7. AUTHOR CONTRIBUTION STATEMENT

concept, data collection, and analyses, done by Boominathan. V Prabavathy S has done the manuscript preparation

8. CONFLICT OF INTEREST

Conflict of interest declared none.

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