

A STUDY ON ACADEMIC STRESS AND LEARNING OUTCOMES IN MATHEMATICS AMONG SECONDARY SCHOOL STUDENTS

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ABSTRACT

Academic stress is multidimensional in nature influencing behavioural, emotional and cognitive responses of students to demands of education and students at school levels are facing heavy pressure from different sources for attaining higher level of achievement in their academic activities. Academic stress is a major prevalent issue among secondary school students and adversely impacting their physical, mental and social well beings and is mainly affecting their learning outcomes. Academic stress is directly obstructing focus, decreasing cognitive abilities and increasing anxiety and burnout which are significantly influencing learning outcomes of secondary school students. The results explicate that significant difference is seen in academic stress and type of school, father's education and mother's education. Academic stress of Secondary School Students is having significant, negative and moderate relation with their learning outcomes in mathematics. Hence, Secondary Schools should create pleasurable and favourable atmosphere through which Secondary School Students easily reaching out to mentor for free discussion and counseling for reducing their academic stress. Parents must help their Secondary School Students for avoiding over commitment to school and extracurricular works. Secondary Schools should teach effective stress management techniques to their Secondary School Students to reduce their academic stress and then increase their learning outcomes in mathematics. Besides, Secondary School Students must sleep 8–10 hours daily and they should use planner for tracking deadlines for practical work and examination dates and learn mathematics in calm and distraction free atmosphere and these measures will increase their learning outcomes in mathematics.

Keywords: Academic Stress, Learning Outcomes, Mathematics, Secondary School Students

1. INTRODUCTION

Academic stress is mental agony in relating to some expected challenges pertaining to failure in academics activities or knowledge on those failures (Gupta and Khan, 1987). Academic stress is an unlikable psychological circumstance which is coming from education and schools and it is seen observed in various aspects of student's atmosphere, school and family environment, relation with peers and also neighbourhood (Prabu, 2015). Academic stress is multidimensional in nature influencing behavioural, emotional and cognitive responses of students to demands of education (Sharma et al. 2017) and students at school levels are facing heavy pressure from different sources for attaining higher level of achievement in their academic activities. Academic stress of school students is a kind of stress coming out of anxiety on examinations, poor study skills, heavy academic load, assignments and unfavourable atmospheres in classroom (Dhakal, 2013). Besides, test or examination, marks, evaluation and need for academic progress and anticipation from others are leading to academic stress among school students (Kouzma and Kennedy, 2004). Academic stress is experienced by school students due to anticipation of parents, heavy syllabus, competition and pressure for getting good marks in tests and it is highly affecting their mental health (Nagle and Sharma, 2018). Personal inadequacy, fear of failure, satisfaction on teaching and learning activities and sufficient learning materials and relation among students and teachers are the main factor causing academic stress among school students (Reddy et al. 2018) and it is the outcome of academic oriented demands and materials available to students. Furthermore, academic stress is a state which is arising because of challenges and pressure experienced by students that make them not able to manage their academic demands (Alvin, 2007) and it is the pressure which happens among students made by competition or demands of academic activities (Barseli and Ifdil, 2017). Poor

relation among students, poor relation among teachers and students and personal problems of students are causing academic stress among them (Joseph and Henry, 2009) and academic stress is also significantly affecting achievement of students in their academic activities (Yang et al. 2022) and it is arising out of academic demands strongly influencing performance of students in their academics.

Secondary school education is highly important for each and every person and in this stage; performance in academic activities is playing a critical role in determining their educational goals, professional development and career (Rosa and Preethi, 2012). Academic stress is a major prevalent issue among secondary school students and adversely impacting their physical, mental and social well beings and is mainly affecting their learning outcomes. Academic stress is directly obstructing focus, decreasing cognitive abilities and increasing anxiety and burnout which are significantly influencing learning outcomes of secondary school students in mathematics subject. With this backdrop, an attempt is made to study academic stress and learning outcomes in mathematics among secondary school students.

2. REVIEW ON EARLIER STUDIES

Karki et al (2026) found that near to half of secondary school students had higher degree of academic stress and male students had higher academic stress in comparing with their female counterparts and no significant disparity was also found in academic stress among categories of grades scored by them.

John and Golden (2025) concluded that major proportion of secondary students had higher degree of academic stress and it was significantly varying among their gender and it had affected performance in their academics.

Mishra and Choudhuri (2024) revealed that majority of higher secondary schools students were holding moderate degree of academic stress and male students had higher degree of stress as compared to female students and it was differing among their gender.

Isagani and Hernandez (2023) showed that major portion of high school students had moderate degree of academic stress and it was not differing significantly among their profile and it had positive relation with well being and academic performance.

Shama (2022) indicated that most of secondary school students were holding moderate degree of academic stress and significant disparity was existed in academic stress amongst gender and school type of secondary school students and girls students had higher degree of academic stress than boys students.

Bhalala (2021) found that girls students had higher degree of academic stress as comparing to boys students and no disparity was existed in academic stress amongst gender and school type and it was significantly differing among 10th and 12th students.

Gupta (2020) concluded that most of adolescent students had moderate degree of academic stress and it was significantly differing among school type of students and it had negatively related with their mental health.

Annalakshmi and Jayanthi (2019) revealed that male high school students had higher degree of academic stress in relating to female students and it was significantly differing amongst their gender and school type and it had negatively related with their mental health.

Anupama and Sarada (2018) indicated that majority of high school students had high degree of academic stress and girls students had higher academic stress as compared to boys students. Besides, it was not significantly differing among their gender,

Subramani and Kadiravan (2017) showed that academic stress of high school students was significantly differing among their type of school and it had significantly related with their mental health. In addition, academic stress of government high school students was higher as compared to private school students.\

3. OBJECTIVES OF THE STUDY

1. To examine difference in Academic Stress amongst Gender, Type of School and Locality of School of Secondary School Students.
2. To study difference in Academic Stress amongst Medium of Instruction, Father's Education and Mother's Education of Secondary School Students.
3. To analyze relation amongst Academic Stress and Learning Outcomes in Mathematics of Secondary School Students.

4. HYPOTHESES OF THE STUDY

1. There is no significant difference in Academic Stress amongst Gender, Type of School and Locality of School of Secondary School Students.
2. There is no significant difference in Academic Stress amongst Medium of Instruction, Father's Education and Mother's Education of Secondary School Students.
3. There is no significant relation amongst Academic Stress and Learning Outcomes in Mathematics of Secondary School Students.

5. RESEARCH METHODOLOGY

This study is conducted in Chennai district of Tamil Nadu state. Secondary School Students are selected by employing random sampling method for the present study. The sample size for this study is 920 Secondary School Students and questionnaire method is used to collect data from them. Academic Stress Scale (ASS) is adapted to Indian conditions by Rajendran and Kaliappan (1990) and Rao (2012). Learning Outcomes in Mathematics Test (LOMT) is constructed and validated by the Investigator and Research Supervisor in the year 2025 and these two tools are used in this study. Percentages, t and ANOVA tests and correlation analysis are used to study and test hypotheses of this study.

6. RESULTS

6.1. PROFILE OF SECONDARY SCHOOL STUDENTS

The profile of Secondary School Students is given in Table-1.

Table-1. Profile of Secondary School Students

Profile	Frequency(n=920)	%
Gender		
Male	507	55.11
Female	413	44.89
Type of School		
Government	311	33.80
Government Aided	202	21.96
Private	407	44.24
Locality of School		
Urban	530	57.61
Rural	390	42.39
Medium of Instruction		
Tamil	321	34.89
English	599	65.11
Father's Education		
Illiterate	211	22.94
School	327	35.54
College	382	41.52
Mother's Education		
Illiterate	269	29.24
School	433	47.06
College	218	23.70

The results demonstrate that 55.11% of Secondary School Students are males, while, 44.89% of them are females, 44.24% of them are studying in private schools, while, 21.96% of them are studying in Government aided schools and 57.61% of them are studying in urban schools, while, 42.39% of them are studying in rural schools.

The results elucidate that 65.11% of them in English medium, while, 34.89% of them in Tamil medium, 41.52% of their fathers are having college education, while, 22.94% of them are illiterates and 47.06% of their mothers are having school education, while, 23.70% of them are having college education.

6.2. PROFILE OF SECONDARY SCHOOL STUDENTS AND THEIR ACADEMIC STRESS

The difference amongst Profile of Secondary School Students and their Academic Stress is given below as:

6.2.1. Gender and Academic Stress

The difference amongst Gender of Secondary School Students and their Academic Stress is given in Table-2.

Table-2. Gender and Academic Stress

Gender	N	Mean	SD	t-value	Level of Significance
Male	507	110.48	14.26	0.855	0.05
Female	413	111.26	13.29		

Female Secondary School Students (Mean=111.26) are having higher degree of Academic Stress as against Male Secondary School Students (Mean=110.48). The t-value of 0.855 reveals that significant difference is not existed amongst Gender of Secondary School Students and their Academic Stress as it is not significant.

6.2.2. Type of School and Academic Stress

The difference amongst Type of School of Secondary School Students and their Academic Stress is given in Table-3.

Table-3. Type of School and Academic Stress

Type of School	N	Mean	SD	F-value	Level of Significance
Government	311	111.84	12.42	5.415	0.01
Government Aided	202	108.03	13.32		
Private	407	111.44	14.92		

Secondary School Students studying in Government Schools (Mean=111.84) are having higher degree of Academic Stress as against Private (Mean=111.44) and Government Aided Schools (Mean=108.03). The F-value of 5.415 reveals that significant difference is existed amongst Type of School of Secondary School Students and their Academic Stress since it is significant 1% level.

6.2.3. Locality of School and Academic Stress

The difference amongst Locality of School of Secondary School Students and their Academic Stress is given in Table-4.

Table-4. Locality of School and Academic Stress

Locality of School	N	Mean	SD	t-value	Level of Significance
Urban	530	110.39	11.52	1.126	0.05
Rural	390	111.43	16.46		

Secondary School Students studying in Rural Schools (Mean=111.43) are having higher degree of Academic Stress as against Secondary School Students studying in Urban Schools (Mean=110.39). The t-value of 1.126 reveals that significant difference is not existed amongst Locality of School of Secondary School Students and their Academic Stress because it is not significant.

6.2.4. Medium of Instruction and Academic Stress

The difference amongst Medium of Instruction of Secondary School Students and their Academic Stress is given in Table-5.

Table-5. Medium of Instruction and Academic Stress

Medium of Instruction	N	Mean	SD	t-value	Level of Significance
Tamil	321	111.11	13.93	0.447	0.05
English	599	110.68	13.79		

Secondary School Students studying in Tamil Medium (Mean=111.11) are having higher degree of Academic Stress as against Secondary School Students studying in English Medium (Mean=110.68). The t-value of 0.447 reveals that significant difference is not existed amongst Medium of Instruction of Secondary School Students and their Academic Stress as it is not significant.

6.2.5. Father's Education and Academic Stress

The difference amongst Father's Education of Secondary School Students and their Academic Stress is given in Table-6.

Table-6. Father's Education and Academic Stress

Father's Education	N	Mean	SD	F-value	Level of Significance
Illiterate	211	107.36	10.27	29.636	0.01
School	327	108.37	14.83		
College	382	114.85	13.69		

Secondary School Students with Father's Education of College education (Mean=114.85) are having higher degree of Academic Stress as against School Education (Mean=108.37) and Illiterate (Mean=107.36). The F-value of 29.636 reveals that significant difference is existed amongst Father's Education of Secondary School Students and their Academic Stress since it is significant 1% level.

6.2.6. Mother's Education and Academic Stress

The difference amongst Mother's Education of Secondary School Students and their Academic Stress is given in Table-7.

Table-7. Mother's Education and Academic Stress

Mother's Education	N	Mean	SD	F-value	Level of Significance
Illiterate	269	111.42	11.91	2.554	0.05
School	433	109.78	15.99		
College	218	112.18	11.04		

Secondary School Students with Mother's Education of College Education (Mean=112.18) are having higher degree of Academic Stress as against Illiterate (Mean=111.42) and School Education (Mean=109.78). The F-value of 2.554 reveals that significant difference is existed amongst Mother's Education of Secondary School Students and their Academic Stress since it is significant 5% level

6.3. RELATION AMONGST ACADEMIC STRESS and LEARNING OUTCOMES IN MATHEMATICS OF SECONDARY SCHOOL STUDENTS

The correlation analysis is applied to study relation amongst Academic Stress and Learning Outcomes in Mathematics of Secondary School Students and the outcome are given in Table-8.

Table-8. Academic Stress and Learning Outcomes in Mathematics of Secondary School Students

Particulars	Correlation Coefficient
Academic Stress and Learning Outcomes in Mathematics of Secondary School Students	-0.41

** Significance in 1% level

The coefficient of correlation amongst Academic Stress and Learning Outcomes in Mathematics of Secondary School Students is -0.41 and it implies that they have significant, negative and moderate relation amongst them.

7. CONCLUSION

The foregoing analysis reveals that significant difference is seen in academic stress and type of school, father's education and mother's education. Academic stress of Secondary School Students is having significant, negative and moderate relation with their learning outcomes in mathematics. Hence, Secondary Schools should create pleasurable and favourable atmosphere through which Secondary School Students easily reaching out to mentor for free discussion and counseling for reducing their academic stress. Parents must help their Secondary School Students for avoiding over commitment to school and extracurricular works. Secondary Schools should teach effective stress management techniques to their Secondary School Students to reduce their academic stress and then increase their learning outcomes in mathematics. Besides, Secondary School Students must sleep 8–10 hours daily and they should use planner for tracking deadlines for practical work and examination dates and learn mathematics in calm and distraction free atmosphere and these measures will increase their learning outcomes in mathematics.

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