



## SOCIO-DEMOGRAPHIC FACTORS AND MATHEMATICS ANXIETY AMONG ADOLESCENTS

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## ABSTRACT

**Background and objectives:** The aim of the present study was to find out the relationship between levels of mathematics anxiety and socio-demographic variables among adolescents.

**Methods:** The sample size consists of 160 students 80 each from both male and female. Students within the age group of 14 to 16 years studying in IX and X standard and who were able to give the assent for participating in the study were selected through stratified random sampling method. Semi-structure proforma was used for collecting the socio-demographic profiles of the participants and Mathematics Anxiety Rating Scale- India (MARS-I) was used for measuring the mathematics anxiety of the adolescence.

**Results:** The finding of the study showed significant difference in gender ( $p$ -value=0.001) and educational qualification ( $p$ -value=0.017) with respect to math anxiety. However, other socio-demographic factors such as religion, type of school management, family type and place of residence do not have any statistical significance.

**Conclusion:** The present study concluded that socio-demographic factors contribute mathematics anxiety among school going adolescents. Female adolescents have higher mathematics anxiety than the male counterpart. Adolescents who are studying in class IX have higher mathematics anxiety than class X students. Thus preventive measures and coping strategies could be used more often in order to reduce mathematics anxiety.

## KEYWORDS

Adolescents, mathematics anxiety, socio demographic factors

## INTRODUCTION

Mathematics is a core subject in secondary schools. The study of mathematics was established to produce a competent person who is able to apply knowledge of mathematics in everyday life effectively and responsibly in solving problems and making decisions. Mathematics is fundamental to national prosperity in providing tools for understanding science, engineering technology and economics. It is essential in public decision making and for participation in the knowledge economy.<sup>1</sup> Mathematics anxiety is a psychological dimension of learning that is important for educators to identify. Mathematics anxiety is an anxiety about one's ability to do mathematics.<sup>2</sup> Mathematics anxiety is defined as feeling of tension and anxiety that appears when someone is engaged in the manipulation of figures to solve mathematical problems in both academic and daily-life situations.<sup>3</sup> People who suffer from math anxiety feel that they are incapable of doing activities and classes that involve math. The incidence of math anxiety among college student has risen significantly over the last decade. Many students have even chosen their college major in the basis of how little math is required for the degree. <sup>4</sup> Math anxiety usually comes from negative experiences in working with teachers, tutors, classmates, parents or siblings. Other times the anxiety comes from stress or a personal problem that was going on at the same time s/he was learning a particular concept. In this case, s/he associates math with whatever was going on at that time. <sup>5</sup> Mathematics anxiety is considered to be a form of state anxiety that is specific to mathematics instruction and mathematics-related activities and that it is debilitating in nature in that it can interfere with mathematics performance and inhibit subsequent learning. <sup>6</sup> Math anxiety is a real issue that can impact a young person's goals, many career-related decisions they may make in life and their overall future. With increased demand for people in science, technology, engineering and math (STEM) fields, it is evident schools need to focus on young people's understanding mathematics at a level that enables students to enter STEM career field.

## Objectives

- 1) To study the level of mathematics anxiety among adolescents.
- 2) To study the relationship between level of mathematics anxiety and socio-demographic variables of the study samples.

## Materials and Methods

A cross sectional study design was used in the present study. The study was conducted in the Department of Clinical Psychology, RIMS, Imphal. The data was collected from high school of Imphal West

district of Manipur through stratified random sampling technique. The sample consists of 160 students of which 80 were females and another 80 were males. Students within the age group of 14-16 years, and who were able to give the assent for participating in the study was selected for the present study. Semi-structure Proforma was used for collecting the socio-demographic profiles of the participants and Mathematics Anxiety rating scale (MARS-I) 7 was used to measure the mathematics anxiety of the adolescence.

**Procedures:** In the present study, the researcher approached the government and private Schools situated in Imphal west district of Manipur. Necessary permissions were taken from the concerned authorities and thoroughly explained about the purpose of the study. An assent was taken from each participant. Once the assent was obtained, a semi-structure Proforma for collecting socio-demographic details and questionnaire on mathematics anxiety rating scale were administered.

## Result

The present study was based on the primary sample of 160 cases of school going adolescents who are within the age range of 14-16 years of age. Parameters such as gender, educational qualification, religion, type of school management, type of family and place of residence were analyzed statistically with the mathematics anxiety rating scale.

Table No. 1 Gender and levels of Mathematics anxiety

Gender	Mathematics anxiety			
	High	Normal	Low	Total
Male	4 (5%)	48 (60%)	28 (35%)	80 (100%)
Female	12 (15%)	58 (73%)	10 (13%)	80 (100%)
Total	16 (10%)	106 (66%)	38 (24%)	160 (100%)

Chi-square = 13.470; d.f. = 2;  $p$ -value = 0.001; Remarks = Significant  
Table No. 1: It is observed from this table that there is a significant relationship between levels of mathematics anxiety and gender as manifest by  $p$ -value = 0.001. The finding indicates that, female adolescents (15%) are having higher mathematics anxiety than the male adolescents (5%).

Table No. 2 Educational qualification and levels of Mathematics anxiety

Educational qualification	Mathematics anxiety

	High	Normal	Low	Total
Class IX	8 (11%)	39 (55%)	24 (34%)	71 (100%)
Class X	8 (9%)	67 (75%)	14 (16%)	89 (100%)
Total	16 (10%)	106 (66%)	38 (24%)	160 (100%)

Chi-square = 8.105; d.f. = 2; p-value = 0.017; Remarks = Significant  
Table No. 2: It is perceived from this table that there is a significant relationship between educational qualification and levels of mathematics anxiety as manifest by p-value = 0.017. When analysed in terms of percentage, class IX student (11%) are having higher mathematics anxiety than class X student (9%).

**Table No. 3 Religion and levels of Mathematics anxiety**

Religion	Mathematics anxiety			
	High	Normal	Low	Total
Hindu	11 (9%)	78 (66%)	29 (25%)	118 (100%)
Muslim	4 (20%)	11 (55%)	5 (25%)	20 (100%)
Christian	1 (5%)	17 (77%)	4 (18%)	22 (100%)
Total	16 (10%)	106 (66%)	38 (24%)	160 (100%)

Chi-square = 3.829; d.f. = 4; p-value = 0.430; Remarks = Insignificant  
Table No. 3: The table shows that Muslim (20%) has higher mathematics anxiety than other religions however, when analysed statistically, it is found to be insignificant relationship between religion and levels of mathematics anxiety as manifest by p-value = 0.430.

**Table No. 4 Type of school management and levels of Mathematics anxiety**

Type of School	Mathematics anxiety			
	High	Normal	Low	Total
Government	7 (9%)	51 (64%)	22 (28%)	80 (100%)
Private	9 (11%)	55 (69%)	16 (20%)	80 (100%)
Total	16 (10%)	106 (66%)	38 (24%)	160 (100%)

Chi-square = 1.348; d.f. = 2; p-value = 0.510; Remarks = Insignificant  
Table No. 4: The table shows that student studying in private school (11%) has higher mathematics anxiety than the student studying in government school (9%). When statistically applied chi-square test it is found to be insignificant relationship between type of school management and levels of mathematics anxiety as manifest by p-value = 1.348.

**Table No. 5 Type of family and levels of Mathematics anxiety**

Type of family	Mathematics anxiety			
	High	Normal	Low	Total
Joint	9 (15%)	39 (66%)	11 (17%)	59 (100%)
Nuclear	7 (7%)	67 (66%)	27 (27%)	101 (100%)
Total	16 (10%)	106 (66%)	38 (24%)	160 (100%)

Chi-square = 3.607; d.f. = 2; p-value = 0.165; Remarks = Insignificant  
Table No. 5: It is observed from the table that student coming from joint family has higher mathematics anxiety than the student coming from nuclear family however, when applied chi-square test it was found to be insignificant relationship between type of family and levels of mathematics anxiety.

**Table No. 6 Place of residence and levels of Mathematics anxiety**

Place of Residence	Mathematics anxiety			
	High	Normal	Low	Total
Rural	3 (6%)	34 (69%)	12 (25%)	49 (100%)
Urban	13 (12%)	72 (65%)	26 (23%)	111 (100%)
Total	16 (10%)	106 (66%)	38 (24%)	160 (100%)

Chi-square = 1.183; d.f. = 2; p-value = 0.553; Remarks = Insignificant  
Table No. 6: It is observed from this table that there is significant relationship between place of residence and levels of mathematics anxiety as manifest by p-value = 1.183. When analysed in terms of percentage, adolescent residing in urban area (12%) has higher mathematics anxiety than the adolescent residing in rural area (6%).

## Discussion

The present study was carried out to find out the relationship between mathematic anxiety and socio demographic profiles of the study sample. On statistical findings, socio-demographic factors such as religion, type of school management, family type and place of residence do not have any statistical significance with respect to mathematics anxiety. However, certain factors were found to be having significance – those students who read in class IX are found to have high mathematics anxiety. It might be due to experiences of failures or negative evaluation in mathematics lead to an increase in mathematics anxiety. This is consistent with findings that age was not statistically significant in the determination of the level of math anxiety. There is no significant difference in math anxiety between older and younger students. Another factor which was found to be significant is gender with female having high mathematics anxiety. This result might suggest that girls may have had the potential to perform better than boys in mathematics however their performance may have been attenuated by their higher level of mathematics anxiety. Female may be more willing to admit to feelings of anxiety than males because the expression of emotion by females may be accepted whereas the expression of anxiety in males may be view as less acceptable. This finding is consistent with studies by which determined that there was a relationship between mathematics anxiety and gender, all of which noted significant differences in mathematics anxiety according to gender, with female students exhibiting higher math anxiety than their male counterparts. However, these findings contradict with the earlier studies which concluded that there is no relationship between mathematics anxiety and gender.<sup>9</sup>

## Conclusion

The present study concluded that there was significant difference in gender and educational qualification with respect to math anxiety. However, other socio-demographic factor such as religion, type of school management, family type and place of residence do not have any statistical significance. In spite of the limitations, the present study revealed that socio-demographic factors contribute mathematics anxiety among school going adolescents. Female adolescents have higher mathematics anxiety than the male counterpart. Adolescents who are studying in class IX have higher mathematics anxiety than class X students. Thus the above findings could be summarized that math anxiety is very real and occurs among many of the students. Many of this anxiety happen in the classroom due to lack of considerations of different learning styles of students. Math must be looked upon in positive light to reduce math anxiety. Once young children see math as fun, they will enjoy it, and the joy of mathematics could remain with them throughout the rest of their lives.

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