

Exploring the Factors Contributing to Mathematics Anxiety of Secondary School Students

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ABSTRACT

Mathematics anxiety is a feeling of fear, tension or worry when dealing with tasks related to mathematics such as solving problems, attending classes, taking tests, etc. The present study explored the levels of mathematics anxiety and its contributing factors among secondary school students in Serchhip, Mizoram. An explanatory mixed method research design was employed among 90 students selected across six different schools in Serchhip town of Mizoram, Northeast India. The findings indicated that majority of the students had average level of mathematics anxiety, implicating that mathematics anxiety exists at a moderate, common level among students, neither alarming nor negligible but still important to address. Further, it was found that several factors contributed to students' mathematics anxiety. Among these, the most dominant factors were long answer type questions, performance pressure during examination, parental pressure and comparison with peers. These findings suggest that efforts need to be made to reduce mathematics anxiety among students so that mathematics can be learned joyfully and not seen as a burden by every student.

Keywords: Anxiety, Mathematics Anxiety, Levels of Mathematics Anxiety, Anxiety causing Factors, Secondary School Students, Mathematics Education

Anxiety is a widespread mental experience that influences thoughts, emotions and actions. In today's competitive world, it has become more and more significant, predominantly in educational settings where performance, evaluation and expectations influence students' learning experiences. While a moderate level of anxiety can stimulate students to prepare and perform better, extreme level of anxiety may harm concentration, confidence and achievement. Understanding anxiety is therefore necessary to create supportive learning environments capable of developing students' mental health and academic success.

Anxiety is an uncontrollable, diffuse, unpleasant and persistent state of negative effect, characterized by apprehensive anticipation regarding unpredictable and unavoidable future danger, and accompanied by physiological symptoms of tension and a

constant state of heightened vigilance (Barlow, 2002). It is frequently associated with symptoms like restlessness, nervousness, increased heart rate, sweating and difficulty in concentration. Unlike stress, which arises from a particular external demand, or phobia, which is an extreme fear of a specific object or situation, anxiety is a broader feeling of nervousness that may occur even without a clearly identifiable reason. Mathematics anxiety is a feeling of tension, apprehension or fear that interferes with math performance (Ashcraft, 2002). It refers to feelings of fear, nervousness or worry experienced while learning

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or performing tasks associated with mathematics. It is a multidimensional occurrence caused by several personal, instructional and environmental factors.

Mathematics is the art and science of discovering patterns in nature and explaining them. These patterns are found in technology and in the movement of celestial objects like sun, moon and stars. It exists in various aspects of life, ranging from shopping and cooking to contemplating about climate and space. Beyond arithmetic, mathematics develops logical reasoning, creativity, problem-solving and communication skills. It also facilitates learning in disciplines like Science, Social Science, Art, Physical Education and Vocational Education. Today, computational thinking has become essential in fields like Artificial Intelligence, Data Science and Climate Modeling. Therefore, developing Mathematics education is crucial for informed decision-making, positive involvement in social life and future progress of nations.

Based on the reports of PARAKH Rashtriya Sarvekshan (2024), there is a significant decline of students' proficiency in Mathematics from early to middle grades. This highlights difficulties in preserving learning progress over time. Achievement levels of students vary noticeably across states, with some consistently having better performance than others. Between boys and girls, there is a slight performance advantage of boys over girls. It is found that students from General category outperform those from other categories such as SC, ST and OBC communities. Across school settings, students from rural and government schools outperform their peers in the early grades, whereas those from urban and private schools exhibit higher achievement in upper grades.

As per National Curriculum Framework for School Education (2023), the present education system faces numerous challenges in Mathematics education. Many students fail to achieve foundational numeracy in early grades, which limits their future learning potential and meaningful participation in society. Mathematics teachers often give importance to rote learning, symbolic manipulation and memorization rather than creative thinking, reasoning and real world connections with Mathematics. Students find mathematical concepts harder to understand when textbooks and classroom examples are unrelated to their real life experiences. Assessment practices

reinforce mechanical learning instead of creativity and contribute to students' fear to pursue any task related to Mathematics. This fear, often leading to anxiety, is intensified by learning gaps that built over time, poor conceptual understanding and societal pressures regarding performance in Mathematics.

Research conducted over the years has identified several factors contributing to mathematics anxiety of students. Student factors consist of low self-confidence, fear of failure and negative experiences with mathematics (Finlayson, 2014; Escalera-Chávez *et al.* 2017; Denhere, 2015). Teacher factors like traditional instructional strategies and teachers' own mathematics anxiety also play important roles (Wani, 2020). Family factors comprise parents' mathematics anxiety and lack of parents' support (Beilock & Maloney, 2015; Sule, 2017). Social and cultural factors such as gender stereotypes (Dowker *et al.* 2016) and peers' negative behavior (Garba *et al.* 2020) have been connected with increased mathematics anxiety. Environmental conditions such as crowded classrooms and broad curricula also contributed to students' math anxiety (Caglar & Senol, 2021). Biological and cognitive factors such as genetic predisposition (Ramirez *et al.* 2018), learning disabilities like dyscalculia (Gabriel, 2022) and cognitive overload (Beilock & Maloney, 2015) have also been associated with mathematics anxiety. Besides these, fear of comparison with peers and examination stress also increase mathematics anxiety of students (Mansor *et al.* 2024).

Since mathematics anxiety is multidimensional and context dependent, more research can be conducted across different educational environments for better clarification of its causes and then develop effective interventions.

Review of the Related Literature

Numerous studies have identified a broad range of factors responsible for students' mathematics anxiety. Student factors such as fear of failure, poor mathematical foundation, lack of practice, low self-esteem and negative attitudes towards mathematics were reported over and over again as major sources of mathematics anxiety (Finlayson, 2014; Escalera-Chavez *et al.* 2017). Insufficient preparedness, weak study routine and lack of interest in mathematics further increased anxiety (Paudel, 2019; Akram *et al.*

2021). Students were also anxious due to negative past experiences with mathematics such as being scolded, ridiculed, repeated poor performance and problems in understanding mathematical concepts (Denhere, 2015; Atoyebi & Atoyebi, 2022). Math anxiety was also caused by students' fear of judgment regarding their performance, low self-esteem during assessments and inability to keep up with teaching-learning process (Ablian & Parangat, 2022; Mansor *et al.* 2024). Stoebr (2017) further identified that mathematics anxiety affected students' sense of competence, identity and social belonging.

Teachers were commonly identified as significant contributors of students' mathematics anxiety. Poor teaching strategies, excessive emphasis on rote learning, poor communication and inadequate assistance increased students' anxiety (Finlayson, 2014; Akram *et al.* 2021). Traditional teaching methods and limited attention given by teachers to each student's specific needs further intensified students' math anxiety (Wani, 2020; Caglar & Senol, 2021). Teachers' own math anxiety also influenced students to develop anxiety when dealing with mathematical tasks (Beilock & Maloney, 2015; Gabriel, 2022). The findings of Zanabazar *et al.* (2023) emphasized that teacher competence, communication between teachers and students, and instructional quality play crucial roles as factors of mathematics anxiety of students. Acharya *et al.* (2026) similarly found that instructional and institutional factors significantly shaped students' mathematics anxiety.

Family also played an important role as influencer of their children's math anxiety. Highly math anxious parents could unintentionally transfer their anxiety to their children, particularly when involving with their home assignments (Beilock & Maloney, 2015; Ramirez *et al.* 2018). Shortage of parental guidance, high expectations, incompetence to help with mathematical tasks and frequent comparison with other children also contributed to students' math anxiety (Sule, 2017; Adeniyi *et al.* 2021). The findings of Polacco *et al.* (2023) reaffirmed that parents' own mathematics anxiety influences their children's anxiety.

Social and environmental factors played major roles in students' mathematics anxiety. The belief that mathematics is only for highly gifted students

or male students increased students' anxiety, particularly among females (Denhere, 2015; Dowker *et al.* 2016). Comparison with classmates, exclusion from group activities and negative comments from peers also increased math anxiety of students (Garba *et al.* 2020; Mansor *et al.* 2024). High societal expectations, especially in academically competitive countries such as Korea and Japan, reinforced mathematics anxiety (Dowker *et al.* 2016; Prahmana *et al.* 2021). Overcrowded classrooms, broad curricula, insufficient learning materials and inappropriate assessment methods were additional sources of math anxiety (Caglar & Senol, 2021; Ablian & Parangat, 2022). Yuliani *et al.* (2019) also identified that mathematics anxiety increased with progressing grade level and could discouraged students from pursuing careers associated with mathematics.

General anxiety, genetic predisposition, weak numerical and spatial abilities were identified as contributing factors of students' math anxiety (Dowker *et al.* 2016; Ramirez *et al.* 2018). Dyscalculia, low level of abstract thinking and poor mental image formation also caused students' math anxiety (Gabriel, 2022; Caglar & Senol, 2021). Li (2025) further demonstrated that psychological and attitudinal factors like test anxiety, statistics anxiety, creativity anxiety and intolerance of uncertainty contributed more to students' math anxiety than their demographic characteristics.

Overall, these literatures indicated that mathematics anxiety is a multidimensional phenomenon shaped by the interaction of student, teacher, family, social, environmental, cognitive and psychological factors.

Rationale of the Study

Mathematics anxiety has long been a serious and prevalent issue among students. Students cannot simply quick Mathematics as it is a mandatory subject in schools (up to high school level) and is also required to tackle various competitive examinations such as entrance examinations, eligibility tests and job applications. These caused numerous problems and challenges for them in fulfilling their academic tasks and future careers. As Mathematics itself is an important discipline which is widely used in various other disciplines, technology and for the improvement of life, reducing students' mathematics anxiety can help

them to achieve success in careers related to mathematics and then contribute to society. Several studies from the past revealed numerous factors contributing to mathematics anxiety of students. Although extensive research had been conducted across nations, mathematics anxiety is a context dependent phenomenon influenced by factors such as teaching methods, classroom environment, cultural expectations and individual experiences. Therefore, it is important to study mathematics anxiety within specific local contexts. In this regard, focusing on Serchhip town of Mizoram, Northeast India, is significant as the educational setting, socio-cultural background and learning conditions may differ from those in other regions.

Furthermore, though quantitative methods are useful for identifying the level or extent of mathematics anxiety among students, they do not explain why students are experiencing it. Such approaches often overlook students' personal experiences, perceptions and the deeper factors influencing their anxiety. Therefore, there is a clear need for a qualitative approach which can provide richer, more detailed insights into students' thoughts, feelings and experiences related to mathematics. So the present study is conducted to answer the following questions.

Objectives of the Study

1. To study the level of mathematics anxiety among secondary school students in Serchhip.
2. To investigate the factors contributing to mathematics anxiety of secondary school students in Serchhip.

Methodology

Research Method

In order to fulfill the objectives of the study, a research was conducted on January, 2026. An explanatory mixed method research design was employed and conducted in two phases. The first phase was done to find out the mathematics anxiety level of the students. The second phase was done to find out the reasons behind students' mathematics anxiety.

Sampling

The population comprised of all secondary school

students within Serchhip, Mizoram. Currently, there are nine secondary schools in Serchhip town. Only those schools having minimum of 50 students and are affiliated to Mizoram Board of School Education (MBSE) were selected, totaling to six schools. For the first phase, 15 students each from Class IX of the selected schools were chosen using incidental sampling, thus resulting in a total of 90 students. For the second phase, students whose anxiety level reached above average or higher were selected.

Research Instruments

For the first phase, Mathematics Anxiety Scale-India (MAS-I) developed by Dr. Ayatollah Karimi and Prof. S. Venkatesan (2011) was used. The tool consisted of 37 items divided into two domains – Math test anxiety (19 items) and Numerical anxiety (18 items). It can be conducted to individuals as well as groups. Likert scale of 1 (Not at all) to 5 (Always) is used for both the items of the two domains. Some items from Domain 1 were:

"Being asked to explain how you arrived at a particular answer for a problem".

"Receiving the final math grade of my report card".

Domain 2 consisted of items such as:

"Being asked to add up $976 + 777$ in my head".

"Having someone watch me as I divide a 5 digit number by a 2 digit number".

The reliability coefficients of the MAS-I measured using Cronbach's Alpha for internal consistency were 0.80 for domain 1, 0.88 for domain 2 and 0.84 for the total score. Convergent validity was examined through two correlation studies, showing a correlation of 0.88 between overall scores of MAS-I and MARS-Suinn in India, 0.77 with TAI and -0.44 with mathematics performance.

For the second phase, an Interview Schedule developed by the investigator was employed. The tool was designed to explore students' experiences, feelings and perceptions regarding mathematics anxiety. It collected information on factors such as difficult topics, teaching methods, exam stress, peer and parental pressure, and personal attitudes toward mathematics. There were 10 questions for the students. The interview was conducted

individually in a quiet environment, lasting 10–15 minutes, with responses recorded manually and digitally. Some of the questions asked during the interview were:

1. *Do you enjoy solving mathematical problems? Why or why not?*
2. *Are there particular chapters in mathematics that make you stressed? If yes, which ones and why?*
3. *Does the way mathematics is taught in your class make you uncomfortable? If yes, why?*

Statistical Technique Used

For the first phase, statistical techniques like Mean, Standard Deviation, Frequency and percentage distributions were used to describe the mathematics anxiety levels of the students. In the second phase, Thematic Analysis was used to find out the contributing factors of students' math anxiety. Frequency and percentage distributions were used to explore the strength of each contributing factors.

RESULTS

Students' scores from the Mathematics Anxiety Scale-India (MAS-I) were calculated. The data was examined in accordance with the objectives of the study. The objective wise analyses are presented as follows.

Objective 1: To study the level of mathematics anxiety among Secondary School students in Serchhip.

The mean and standard deviation of students' scores were found to be 96.14 and 20.28, respectively. Based on their scores, students were classified into five levels of mathematics anxiety as per the MAS-I. These are presented in Table 1 along with the frequency (N) and percentage (%) distributions of the students in each level. Each percentage (%) of student was calculated out of 90 students.

Table 1: Levels of Mathematics Anxiety among Secondary School students in Serchhip

Levels	Category	N	%
Moderate to Severe Mathematics Anxiety	130 and above	2	2.22
Above Average	111-130	21	23.33
Average	67-110	56	62.22
Below Average	46-66	10	11.11
Definitely Below Average	Below 46	1	1.11

Table 1 presents the levels of mathematics anxiety among secondary school students in Serchhip. It shows that students' levels of mathematics anxiety varied significantly. Around a quarter of students (23.33%) had 'Above Average' level of mathematics anxiety. Majority of them (62.22%) had 'Average' level of mathematics anxiety. Few students (11.11%) had 'Below Average' level of mathematics anxiety. Only one student had 'Definitely Below Average' level of mathematics anxiety and only two students had 'Moderate to Severe' level of mathematics anxiety.

These results indicate that mathematics anxiety is present among students but not severe for most students. Thus, it can be concluded that mathematics anxiety exists at a moderate, common level among students, neither alarming nor negligible but still important to address.

Objective 2: To investigate the factors contributing to Mathematics anxiety of Secondary School students in Serchhip.

Out of 90 students, 23 of them had above average or higher math anxiety levels. Themes and codes were identified from the responses of these students in the Interview Schedule held among them. These revealed the contributing factors of students' mathematics anxiety. Frequency and percentage distributions were used to show the strength of these factors. The percentages were calculated out of the 23 interviewees. Students were given codes based on their gender and type of school. For example:

- ❑ MPU1 refers to a male student from Private Unaided School assigned serial no. 1.
- ❑ FPU1 refers to a female student from Private Unaided School assigned serial no. 1.
- ❑ MSG1 refers to a male student from State Government School assigned serial no. 1.
- ❑ FSG1 refers to a female student from State Government School assigned serial no. 1.
- ❑ MAA1 refers to a male student from Ad-hoc Aided School assigned serial no. 1.
- ❑ FAA1 refers to a female student from Ad-hoc Aided School assigned serial no. 1.

The contributors of students' mathematics anxiety based on the present study are as follows.

Conceptual understanding issues

These include mixing up contents, difficulty in understanding and procedural problem in mathematics. Around a quarter of the students (26.09%) were affected by this factor. Students' responses supporting these findings were:

"I always mixed up what I have learnt". (MSG23)

"I find the procedures too complex". (MPU18)

Attitudinal issues of students

These consist of lack of interest, attention deficiency and perceiving weakness in mathematics. Around 21.74% of the students were influenced by these issues. Students' responses that supported these were:

"I am very weak in mathematics". (MPU16)

"It is not my area of interest". (FPU11)

Memory related issues of students

These comprise forgetting formulas, forgetting multiplication table and forgetting contents in mathematics. Around 17.39% fall within these issues. The students provided responses in support of these as follows:

"I do not learn multiplication tables well which cause me lots of trouble while solving problems". (FSG19)

"There are too many formulas to remember". (MSG22)

Problem based issues

These include difficult problems and excessive number of problems. More than a quarter of the students (30.43%) belong here. One student's response was:

"There are lots of problems to encounter which worried me a lot". (FSG20)

Problems caused by specific areas of mathematics

These comprise Geometry (39.13%), Mensuration (8.69%), Algebra (26.09%) and Trigonometry (17.39%), affecting students' understanding,

retention and problem-solving abilities.

For Geometry, one student's response was:

"I am most stressful with 'Constructions' because it is very exhausting and I cannot remember the steps". (FSG17)

Concerning Mensuration, one student said:

"It is very vast and contains lots of formulas". (MSG21)

Regarding Algebra, one student claimed:

"I find Polynomials most stressful because they are very confusing". (MSG20)

In case of Trigonometry, one student told:

"I do not understand right from the basic". (FPU12)

Poor teaching-learning methods

These issues affecting few students (13.04%) consist of quick explanations, conflicting explanations of teachers and peers, unclear explanations and need of listening to teacher while writing at the same time. One student's claim was:

"We have to listen and write at the same time so it is very difficult to catch up with the explanations". (MPU15)

Excessive workload in mathematics

Only one student belonged to this issue. It was reported that there was uncomfortable feeling due to the large amount of homework and class tests given by the teacher. The student's response with regard to this is quoted as follows:

"Our teacher gives too much homework along with class tests". (MSG25)

Time constraints in mathematics

These include lack of sufficient time for practice and clarifying doubts in mathematics, affecting less than one-third of the students (30.43%). One student told:

"I do not get enough time which makes me worry". (FAA9)

Examination related issues

These cover fear of twisted questions (4.35%), performance pressure (47.83%), learning difficulties

(39.13%), poor time management (8.69%) and poor preparation (8.69%) of students in mathematics. Quotes from students in support of these were:

"I fear that I will fail while my friends will pass the exam". (MPU17)

"I have a difficulty in time management". (MSG23)

Problems caused by multiple choice questions

One student reported nervousness due to the high chance of losing marks and few students (13.04%) reported feeling nervous due to its vast portion during examinations. Students' responses in support of these were:

"It is very easy to lose marks". (FAA9)

"There are so many things to learn and the portion is too vast". (MSG25)

Problems caused by short answer questions

One student reported feeling nervous due to forgetting already learned contents when attempting short answer questions in mathematics. This was supported by the following response:

"I often forget what I have learnt due to lack of enough practice". (MSG20)

Problems caused by long answer questions

Majority of the students (73.91%) were nervous due to the complex, lengthy and time consuming processes, difficulties in remembering and understanding, and mixing up related contents. Students' responses lent support to these as follows:

"They are lengthy and exhausting". (FSG19)

"The procedures are more complex". (MSG19)

Teacher's negative attitude

Few students (13.04%) reported being discouraged by their teachers when they could not perform well in Mathematics. One student's claim was:

"Our teacher used to beat us with a stick if our performances are poor". (FSG20)

Parental pressure

More than one-third of the students (47.83%) reported experiencing stress due to significant parental pressure regarding their performance in mathematics. This was corroborated by one student's response:

"My parents put lots of pressure on me and this gives me stress". (FSG20)

Comparison with peers

Comparing students with their peers regarding their performance in mathematics caused anxiety among more than one-third of the students (43.48%). One student told:

"I am frustrated when people do not understand my problem and expect me to perform like my classmates. I hate it when they judge me without knowing my efforts". (MSG23)

Encountering real life problems

More than one-third of the students (39.13%) had anxiety when encountering mathematical problems in their daily life such as shopping, cooking, etc. Within this, 13.04% reported lacking the skills to apply mathematical concepts to real life situations which led to feelings of uneasiness when encountering them. Additionally, 21.74% were weak in calculations due to limited arithmetic skills, causing nervousness. Furthermore, one student reported forgetting the procedures required to solve problems related to real-life situations, leading to anxiety. Evidences for these were reflected in students' responses as follows:

"I feel uneasy with solving mathematical problems in daily life as I cannot properly relate and utilize what we learnt from school". (FSG20)

"I am weak in calculations especially if they involve large numbers". (MSG24)

Insufficient effort in learning mathematics

One student faced anxiety in mathematics due to insufficient effort given for learning. This was supported by the following response:

"Many of our problems regarding Mathematics are due to lack of sufficient practice. So it is important to

give ourselves time and effort to learn Mathematics". (MAA5)

Difficulty balancing mathematics and other subjects

One student felt anxious due to difficulty in managing time between learning mathematics and other subjects. This was corroborated by the following response:

"I feel uneasy when I cannot keep balance between my time for studying Mathematics and other subjects. So I need to learn to manage my time effectively". (MAA6)

Comprehensiveness of Mathematics course

Few students (8.69%) belonged to this issue. One student reported that the main problem with mathematics was the excessive number of concepts and formulas to learn. Another student indicated that the course was too vast to keep up with. Students expressed views that supported these were:

"My main problem with Mathematics is that there are lots of concepts to understand and formulas to remember". (FSG20)

"My other problem is that the course is too vast and I cannot keep up with it". (MSG18)

Among these 23 students, the most dominant factor contributing to their math anxiety was long answer type questions (73.91%), followed by other prevalent factors like performance pressure during examination (47.83%), parental pressure (47.83%) and comparison with their peers (43.48%).

DISCUSSION

The findings of the study exposed that most of the students (62.22%) had 'Average' level of mathematics anxiety, indicating that anxiety is present among them without severity for most students. The study also provides valuable insights into the several factors influencing students' math anxiety. In corroboration with the findings of Finlayson (2014) and Sule (2017), it was found that the reason many students faced mathematics anxiety was due to their fear of failure in examinations. The findings of Ablian & Parangat (2022) and Mansor *et al.* (2024) corroborated well with the findings

that students had anxiety towards mathematics due to lack of confidence to perform well in the subject. In line with the findings of Finlayson (2014) and Caglar & Senol (2021), it was found that poor teaching methods were another reason for students' math anxiety. Negative classroom environment like quick explanations, conflicting explanations, unclear explanations and listening and writing simultaneously, also contributed a lot to students' math anxiety. These were well supported by the findings of Denhere (2015) and Paudel (2019).

Another major factor found was parental pressure upon their children to perform well in the subject. Students developed anxiety towards mathematics when they received high expectations from their parents regarding their performance in the subject. This was in agreement with the findings of Wani (2020) and Caglar & Senol (2021). It was found that students were anxious towards mathematics when they were compared with their peers who perform better than them. This was similar to the findings of Caglar & Senol (2021) and Mansor *et al.* (2024). The finding that students stress a lot when they encountered mathematical problems related to real life such as shopping, cooking, etc. corroborated the result found by Mansor *et al.* (2024). The vast course of mathematics also contributed to students' math anxiety. This can be seen as well in the findings of Caglar & Senol (2021) which revealed that the huge curriculum of mathematics was a contributing factor of students' anxiety. Students faced anxiety when they lacked basic arithmetic skills and were weak in calculations. These shared similarities with the findings of Ramirez *et al.* (2018).

It was found that students developed math anxiety due to perceiving weakness in mathematics. This was in agreement with the findings of Denhere (2015), Escalera-Chávez *et al.* (2017) and Umar & Wachiko (2021). In corroborated with the finding of Akram *et al.* (2021), it was revealed that students who had no interest in mathematics were vulnerable to math anxiety. It was also found that lack of attention during teaching-learning process contributed to math anxiety as revealed by the finding of Finlayson (2014). Another finding indicated that students developed math anxiety when they were unfamiliar of the pattern of questions such as fearing that the questions would be twisted. This came in corroboration with the

findings of Ablian & Parangat (2022). In support of the findings of Polacco *et al.* (2023), it was found that the difficulty level of mathematics had lots of influence on students' anxiety. Findings showed that students enjoyed mathematics depending on whether they could solve a particular problem or not. Excessive workload, in corroboration with the findings of Zanabazar *et al.* (2023), also contributed to students' anxiety in mathematics.

Lack of conceptual understanding caused students to develop anxiety towards mathematics. This was in corroboration with the findings of numerous scholars like Finlayson (2014), Paudel (2019), Yuliani *et al.* (2019), Akram *et al.* (2021) and Caglar & Senol (2021). Discouragement from teachers due to poor performance was one factor of math anxiety among students. The findings of Denhere (2015) and Adeniyi *et al.* (2021) well corroborated this result. Another contributing factor revealed was poor time management of students during examinations, which was similar to the finding of Wani (2020). In corroboration with the finding of Denhere (2015), students developed anxiety due to the complex processes involved in mathematics, particularly content related to long answer questions. It was revealed that students were anxious towards mathematics due to lack of sufficient time for practice. This was corroborated by the findings of Adeniyi *et al.* (2021) and Akram *et al.* (2021).

The findings of the study suggest that efforts need to be made to reduce and tackle mathematics anxiety among secondary school students. Teaching should shift from procedure first to concept first approaches. Teachers can use concrete examples, visual models and real life contexts to make abstract mathematical ideas meaningful. They should integrate activity based learning, games, puzzles and discussions to make lessons more interactive. They must include real life problem solving tasks such as budgeting, measurements and practical scenarios. There must be a non-threatening classroom environment where mistakes are treated as part of learning. Students should be encouraged to understand the logic behind formulas and learn to derive them in order to improve long term retention. Examination anxiety can be reduced by familiarizing students with different question types through regular practice under relaxed conditions. Parents must avoid comparison of their wards with

their peers or siblings, appreciate effort rather than only results and provide emotional support.

CONCLUSION

The study found that mathematics anxiety was generally moderate and widespread among secondary school students in Serchhip. The causes were multifaceted, comprising conceptual problem, negative attitudes toward mathematics, retention difficulty, problem solving challenges and poor arithmetic skills among many others. Geometry was the most anxiety provoking content, succeeded by Algebra, Trigonometry and Mensuration. Fast paced instructions, vague explanations, limited practice time and heavy workload also contributed to anxiety. Among all the factors, the most dominant was long answer type questions, followed by performance pressure during examinations, pressure from parents and comparison of students with their peers. Overall, mathematics anxiety was influenced by the interaction of cognitive, emotional, instructional and social factors. These highlight the need for improved instructional strategies, supportive learning environments, adequate practice opportunities and reduced social pressures.

GENERATIVE AI DECLARATION

The author(s) confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript, and no images were manipulated using AI. The authors developed and verified all scientific content, data analysis, interpretation of results, and conclusions. The authors take full responsibility for the accuracy, integrity, and originality of the work presented, and no AI tool was listed as an author.

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