

SUPPLEMENTARY PRIVATE TUTORING FOR SCIENCE STUDENTS OF HIGHER SECONDARY (HSC) LEVEL IN BANGLADESH: PERCEIVED FACTORS, CAUSES AND CHALLENGES

Arifa Rahman Ruma¹

Abstract

Students use supplementary private tutoring for their education which is a worldwide phenomenon particularly in science education. The present study aimed to examine how household heads of Bangladesh perceive supplementary private tutoring factors, causes and challenges for science students of higher secondary (HSC) level. In this study, a survey questionnaire was administered with 200 randomly selected household heads of higher secondary science students in Mymensingh district of Bangladesh. To supplement the quantitative survey, the study also collected qualitative data from 12 higher secondary science teachers, 12 tutors as well as 20 students in two FGDs. The study shows that the level of income, education level and occupation of household heads may affect in taking the supplementary private tutoring for science students in Mymensingh. The main causes to take the tutoring are obtaining better result, making hard subjects easier, getting admission into better institutes, achieving local and foreign scholarships are mentioned as the causes of providing extra tutoring to their children. Moreover, lack of knowledgeable tutors, increasing initiatives for tutors and increasing expenditures for tutoring are identified as the major challenges. The findings of this study would have implication with policy initiatives and teaching learning practices in the science education development of Bangladesh.

Keywords: Supplementary Private Tutoring, Factors, Causes, Challenges, Science Students.

Introduction

The phenomenon of supplementary tutoring is a widespread practice across the countries often refers as the shadow education. The ‘shadow education’ refers to

¹ **Arifa Rahman Ruma**, Associate Professor, School of Education, Bangladesh Open University, Gazipur-1705, Bangladesh. Email: rumaarifa@gmail.com

the imitating of the public schools' curricula and their experience which is somewhat shadow of legitimacy and legally (Bray, 1999; Bray & Lykins, 2012). The supplementary tutoring or shadow education disrupt the learning system in schools by disrupting the application of curricula (Lee, Kim, & Yoon, 2004; Dawson, 2010 cited in Bray & Lykins, 2012), classroom and school climate (Kim, 2007 cited in Bray & Lykins, 2012), students-teachers relationship and reducing the quality of the teacher (OECD, 2014). This education system is therefore found different forms and scales globally. It is also found in Bangladesh in various forms for many years. Sometimes it is payable and sometimes it is free of cost. The first form 'payable' is conducted by the tutors and the second form 'free of cost' is conducted by the family members and close relatives. The payable form is also practiced in the country including another different sub-form called '*lodging master*'. The lodging master provides supplementary tutoring for the students of the household which provides food and shelter or resident for them. These two forms of providing supplementary tutoring are popular and well-known as well.

Problem Statement

Among the subjects in school, science subjects are generally regarded as difficult or abstract in nature. It is our common experience that almost all the science students of higher secondary level get involve in supplementary private tutoring for their education in Bangladesh. The parents usually search for tutors for providing supplementary tuitions for their children. The common reason for taking for this supplementary private tutoring is to obtain better results. The difficulties of science subjects to understand, lack of quality science teachers in their children's school as well as lack of laboratory equipment at school are considered by parents to search tutors for their children. Moreover, the changing curriculum imposes the students to search tutors as their family members who studied previous curriculum cannot provide supplementary tutoring for them. To obtain better result, make the harder subject easier, get admission into better institute for higher education, compete in the classes, regionally, nationally, and globally, achieve foreign and other scholarship also push them to find supplementary private tutor in-house and in-out of the household. However, the occupation of household heads, their education level and income level of secondary science students may have relation to take supplementary private tutoring in Bangladesh which is not explored yet. Moreover, the causes of taking this tutoring and the challenges to take this tutoring for HSC science students have also not explored. This study therefore aims to explore the factors, causes and challenges to take supplementary private tutoring for HSC level science students in Bangladesh.

Purpose and Research Questions

This study has mainly intended to identify the affecting factors, causes and challenges of supplementary private tutoring for science students of higher secondary level in Bangladesh. The research questions of this study are as follows:

1. What factors of household heads of higher secondary science students influence in taking supplementary private tutoring for their children?
2. What are the causes of taking supplementary private tutoring for higher secondary science students?
3. What are the challenges in getting supplementary private tutoring for higher secondary science students?

Review of Literature

There is not much literature found in relation to the factors, causes and challenges in taking supplementary private tutoring. Nath (2007a) explores the trends of supplementary tutoring, socio-economic differentials in getting supplementary tutoring, expenses in supplementary tutoring and the impacts of it on the learning achievement among the students at primary schools. The author also explores the silence of policy documents which impose the students to get private supplementary tutoring at primary level students and the study adds that the private supplementary tutoring is significantly increasing with rate of two percent per year. Again Nath (2007b) discusses about the remunerated supplementary tutoring in rural Bangladesh in another study. This study explains two types of supplementary tutoring in out of school in rural Bangladesh where it is found that the first type may free supplementary tutoring provided by the parents, siblings, relatives, and neighbours where the remunerated tutoring is provided by their own teachers, teachers from educational institutions and coaching centres.

Yueyun Zhang and Yu Xie (2016) found that higher parental education, higher family income, and fewer siblings are associated with a higher likelihood of private tutoring and higher levels of expenditure on tutoring. Judith Ireson and Katie Rushforth (2014) noted that home support is provided by parents with higher educational levels. They mentioned that parents who value educational achievement tend to provide higher levels of home support and thus the employment of private tutoring is predicted by parents' educational level. This study also mentioned that educated parents and well-off families were more likely to arrange supplementary tutoring for their children (Nath, 2007a).

The above studies have explored the trends of supplementary tutoring, socio-economic differentials in getting supplementary tutoring, expenses in supplementary tutoring, the impacts, and types of supplementary tutoring (the first type may free supplementary tutoring provided by the parents, siblings, relatives, and neighbours. And most of cases the tutoring were provided by their own teachers, teachers from educational institutions and coaching centres at primary level students. Some of the studies have examined the private supplementary tutoring in English. However, there are limited study available examined the factors, causes and challenges of the supplementary tutoring for science students of higher secondary (HSC) level from the parents' point of view while this study has investigated on the parents of higher secondary level science students in Bangladesh. Therefore, this study aimed to identify the affecting factors, causes and challenges of private supplementary tutoring for science students of higher secondary level in Bangladesh.

Causes of supplementary private tutoring

Supplementary tutoring has some positive impact on students' achievements. Shihab and Sultana (2017) explain the necessity and impacts of private supplementary tutoring in English among the secondary level students in Bangladesh. The authors find that achieving better results, understanding the subject matter in the classroom, capacity for how to explain subject matter, how to answer the questions and how to sum up the knowledge and mistakes are the impacts of private tutoring. They add private tutoring increases the academic performance and level of understanding the lesson among the students. Hamid, Sussex, and Khan (2009) explore the nature and practice of the private tutoring in English of the disadvantaged group of people in rural Bangladesh where the authors relate the private tutoring in English to achieve scholastic results in English. They investigate the attitudes and motivation of the students private tutoring while make the core profile of private tutoring by relating school system, expectation of stakeholders in private tutoring such as, students and their parents and achievement of the private tutoring in English.

Methodology

A strategy of inquiry provides a specific direction for the procedure in a research design (Creswell, 2015). There are three research questions in this study. These research questions deal with the three different and related variables and central phenomena of this study. To explore these variables and central phenomena both quantitative and qualitative study is needed as Creswell (2015) stated that mixed

research is most suitable for exploring and developing a detailed understanding of central phenomena. The strategy of inquiry of this research is mixed in nature. More specially, this research basically will use Explanatory Sequential Mixed design (Creswell, 2015). Firstly, quantitative data will be collected and analysed. Based on these findings, qualitative data will be collected.

This study aims to explore the parental view on affecting factors, causes and challenges of the supplementary private tutoring for science students of higher secondary level in Mymensingh district, Bangladesh. The Mymensingh district was selected purposively because it is one of the education cities in Bangladesh. The data sources of this study are household heads of students of higher secondary level, higher secondary teachers, students, and tutors. The quantitative data have been collected from 200 male and female household heads between 35-60 years of age range and who have the science students of higher secondary level in their household. The parents were selected randomly from the list provided by purposively selected higher secondary level institutions. The selected institutions cover from high, mid, and low achievers. The qualitative data of this study were also collected from 12 teachers of higher secondary level and 12 tutors and selected purposively considering urban and rural context who are engaged in private tutoring for students of higher secondary level. A total 20 students were also involved in two FGD, one in urban and one in rural area.

A semi-structured questionnaire was used to collect data from parents, two different interview schedules and students FGD guidelines were used to collect data from teachers, students, and tutors. This study was conducted in Mymensingh town from January-March' 2020. The questionnaire for parents has been developed by reviewing some related documents and pre-tested before conducting field study. All the relevant ethical issues were also considered during the data collection process. The collected quantitative data have been analysed using descriptive analysis techniques. The qualitative data were analysed using the thematic approach of data analysis.

Results

The result section of this study is consisting of four main sections. These are basic demographic information of household heads (B) Factors influence in taking supplementary private tutoring (C) Causes of taking supplementary private tutoring and finally (D) Challenges in getting supplementary private tutoring for science students at higher secondary level.

A. Basic demographic information of household heads

The age range of the respondents was between 35-60 years where the highest 30% were between 45-49 years followed by 25% were between 50-54 years, 18% were between 55-60 years, 15% were between 40-44 years and 12% were between 35-39 years. The male and female ratio of the respondents was 1:1. Among the respondents, 80% were Muslim whereas 14% were Hindu, 4% were Christian and 2% were Buddhist. The majority 90% of the respondents were married followed by 4% were widowed, 3% were single, 2% were divorced and 1% were separated (See the Table 1).

Table 1: Percentage distribution of the respondents by basic demographic information

| Age (Years) | % | Gender | % | Religion | % | Marital Status | % |
|-------------|----|--------|----|--------------|----|----------------|----|
| 35-39 | 12 | Male | 50 | Islam | 80 | Married | 90 |
| 40-44 | 15 | Female | 50 | Hinduism | 14 | Divorced | 2 |
| 45-49 | 30 | | | Buddhism | 2 | Widowed | 4 |
| 50-54 | 25 | | | Christianity | 4 | Single | 3 |
| 55-60 | 18 | | | | | Separated | 1 |

Occupation of the household head

The highest 14% of the household heads' occupation were agriculture followed by 12% small and medium business. 11% of them were in private services, 10% in secondary level teaching, 8% in government service, transportation, business (large) and primary level teaching. Moreover, 6% of them are in college level and tertiary level teaching. Furthermore, 4% of them were engineer, 3% of them were politician and finally 2% of them were doctors. (See the Figure 1).

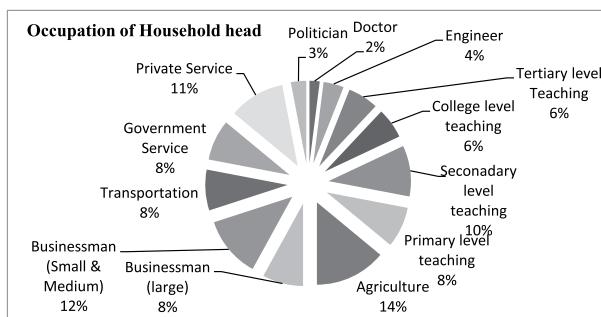


Figure 1: Percentage distribution of the respondents by occupation of the household head

Level of education of the household head

The highest 25% of the respondents' household heads' education level were honours passed followed by 22% were SSC passed, 20% were HSC passed, 21% had master's degree, 8% were IX and X passed and 4% were primary passed (See the Figure 2).

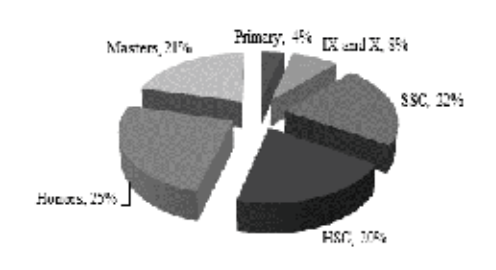


Figure 2: Percentage distribution of the respondents by the level of education of the household head

Level of income of the household head

The figure-3 shows that 25% of the respondents' household heads earned between Tk.10,001-20,000 followed by 20% of them earned between Tk. 20,001-30,000, 17% of them earned between Tk.30,001-40,000, 12% of them earned more than 60,000, 11% of them earned between Tk.50,001-60,000, 8% of them earned between Tk. 40,001-50,000, and finally 7% of them earned less than 10,000 (See the Figure 3).

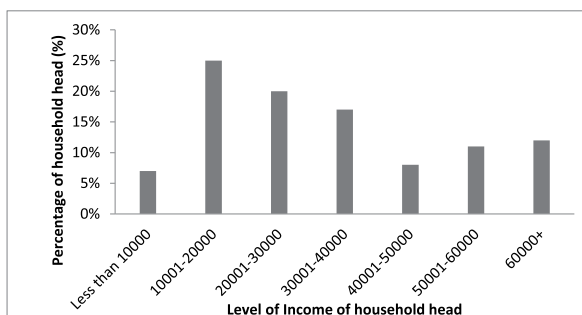


Figure 3: Percentage distribution of the respondents by the level of income of the household head

B. Factors of household heads that influence in taking supplementary private tutoring

This sub-section presents the result of factors of household heads that influence in taking supplementary private tutoring for the science students at the higher secondary level.

B.1. Influence of Occupation of the household heads in taking tutoring for their children

The following table-2 shows the data for occupation of the household heads in taking supplementary private tutoring for their children.

Table-2: Occupation of household heads vs taking supplementary private tutoring

| Occupation | Provide supplementary Private Tutoring | |
|------------------------------|--|----------------|
| | Yes (Frequency) | No (Frequency) |
| Doctor | 4 | 0 |
| Engineer | 6 | 2 |
| Tertiary level Teaching | 10 | 2 |
| College level teaching | 10 | 2 |
| Secondary level teaching | 18 | 2 |
| Primary level teaching | 14 | 2 |
| Agriculture | 24 | 4 |
| Businessman (large) | 16 | 0 |
| Businessman (Small & Medium) | 22 | 2 |
| Transportation | 14 | 2 |
| Government Service | 14 | 2 |
| Private Service | 20 | 2 |
| Politician | 6 | 0 |
| Total | 178 (89%) | 22 (11%) |

The data from the above table reflects that

- 89% household heads take supplementary tutoring service for the HSC science students.
- All household heads with doctor, businessmen (large) and politician occupation use supplementary private tutoring.
- In most of the cases, the occupation is not a factor for using supplementary private tutoring for HSC science students.

The following table-3 present data for the place of taking supplementary private tutoring based on the occupation of the household heads.

Table-3: Occupation of household heads vs place of taking supplementary private tutoring

| Occupation | At Home | Outside Home |
|------------------------------|------------|--------------|
| Doctor | 3 | 1 |
| Engineer | 5 | 1 |
| Tertiary level Teaching | 8 | 2 |
| College level teaching | 5 | 5 |
| Secondary level teaching | 4 | 14 |
| Primary level teaching | 1 | 13 |
| Agriculture | 4 | 20 |
| Businessman (large) | 10 | 6 |
| Businessman (Small & Medium) | 2 | 20 |
| Transportation | 0 | 14 |
| Government Service | 2 | 12 |
| Private Service | 2 | 18 |
| Politician | 4 | 2 |
| Total | 50 (28.1%) | 128 (71.9%) |

The data from the above table reflects that among the household heads whose children take supplementary private tutoring:

- 71.9% of them take it at outside of home.
- The household heads with doctor, engineering, tertiary level teaching, Businessman (large), and politician are mostly use supplementary private tutoring at home.
- The household heads with secondary and primary level teaching, businessman (small & medium), transportation, government service as well as private prefer their children to take support of supplementary private tutoring outside at home.
- In general, occupation may have a connection in choosing the supplementary private tutoring at home or outside their home.

The following table 4 present data for the subjects of taking supplementary private tutoring based on the occupation of the household heads.

Table-4: Occupation of household heads vs subjects of taking supplementary private tutoring

| Occupation | Bangla | English | Science Subjects |
|------------------------------|------------|-------------|------------------|
| Doctor | 1 | 4 | 4 |
| Engineer | 2 | 4 | 6 |
| Tertiary level Teaching | 1 | 6 | 10 |
| College level teaching | 2 | 8 | 10 |
| Secondary level teaching | 2 | 12 | 18 |
| Primary level teaching | 2 | 10 | 14 |
| Agriculture | 2 | 12 | 24 |
| Businessman (large) | 16 | 16 | 16 |
| Businessman (Small & Medium) | 2 | 12 | 22 |
| Transportation | 2 | 8 | 14 |
| Government Service | 2 | 8 | 14 |
| Private Service | 2 | 8 | 20 |
| Politician | 2 | 4 | 6 |
| | 38 (21.3%) | 112 (62.9%) | 178 (100%) |

The data from the above table reflects that among the household heads whose children take supplementary private tutoring:

- All of them take tutoring in science subjects.
- Students do not need that much supplementary tutoring for Bangla (only 21.3%), but more than half (62.9%) of them take tutoring for English.
- The occupation is not a factor for using supplementary private tutoring in science subjects.

In response to the findings of quantitative data from household heads, the tutors, science teachers of higher secondary level as well science students mentioned their opinions. One of the Tutors mentioned that:

Generally, we do support higher secondary science students from different occupation of household heads. Almost all the science students at higher secondary level use supplementary private tutoring. The occupation of household heads may be factor when they choose place of taking tutoring support.

One of the teachers stated that:

There are many students in my class from different family background. They come from families with household heads of doctor, engineering, businessman, teacher, government service holder, CNG driver and so on. Although students with less family income are unable to provide more supplementary tutoring, but almost all of them take supplementary tutoring to some extent.

The above qualitative data from the tutors, students and teachers reflect that the findings have alignment with the finding of household heads.

B.2 Influence of education level of the household heads in taking tutoring for their children

The following table 5 shows the data for education level of the household heads in taking supplementary private tutoring for their children.

Table-5: Education level of household heads vs taking supplementary private tutoring

| Education | Provide supplementary Private Tutoring | |
|-----------|--|----------|
| | Yes | No |
| Masters | 36 | 6 |
| Honours | 42 | 8 |
| HSC | 38 | 2 |
| SSC | 42 | 2 |
| IX –X | 16 | 0 |
| Primary | 4 | 4 |
| | 178 (89%) | 22 (11%) |

The data from the above table reflects that:

- 89% household heads take supplementary tutoring service for the HSC science students.
- All household heads who passed grade IX-X use supplementary private tutoring.
- In most of the cases, the education level of household head is not a factor for using supplementary private tutoring for HSC science students.

The following table -3 present data for the place of taking supplementary private tutoring based on the education of the household heads.

Table 6: Education level of household heads vs place of taking supplementary private tutoring

| Education | At Home | Outside Home |
|-----------|------------|--------------|
| Masters | 22 | 14 |
| Honours | 14 | 28 |
| HSC | 6 | 32 |
| SSC | 6 | 36 |
| IX –X | 2 | 14 |
| Primary | 0 | 4 |
| | 50 (28.1%) | 128 (71.9%) |

The data from the above table reflects that among the household heads whose children take supplementary private tutoring:

- 71.9% household heads among them who use tutoring prefer outside tutoring.
- Most of the household heads with higher education use supplementary private tutoring for their children at home.
- Most of the household heads with lower education level use supplementary tutoring outside home.
- In most of the cases, the education level of household head is a factor for using supplementary private tutoring for science students at home or outside home.

The following table 7 present data for the subjects of taking supplementary private tutoring based on the education level of the household heads.

Table-7: Education level of household heads vs subjects of taking supplementary private tutoring

| Education | Bangla | English | Science Subjects |
|-----------|------------|-------------|------------------|
| Masters | 16 | 28 | 36 |
| Honours | 10 | 30 | 42 |
| HSC | 8 | 22 | 38 |
| SSC | 2 | 24 | 42 |
| IX –X | 2 | 8 | 16 |
| Primary | 0 | 0 | 4 |
| | 38 (21.3%) | 112 (62.9%) | 178 (100%) |

The data from the above table reflects that among the household heads whose children take supplementary private tutoring

- All of them take tutoring in science subjects.
- Most of household heads with higher education level use supplementary tutoring for their children in Bangla and English.
- Most of household heads with lower education level do not use supplementary tutoring for their children in Bangla.
- The education level of household head is not a factor for using supplementary private tutoring in science subjects.

In response to the findings of quantitative data from household heads, the tutors, science teachers of higher secondary level as well science students mentioned their opinions. One of the students in FGD mentioned that:

Although our parents are eager to provide us tutoring on their own, they are not so much comfortable with the subject matters. It would be positive on our side if our parents were capable to do so. This would reduce the expenditure along with the time and energy we waste to go to tutors' home.

One of the teachers stated that:

Our parents generally think that students will learn better if they get supplementary tutoring at home. Although tutoring at home is a little bit expensive but we can ask as many questions as we want as there are no other students. The total time of the tutor is only dedicated to us, and they can focus on our weaknesses.

The above qualitative data from the tutors, students and teachers reflect that the findings have alignment with the finding of household heads.

B.3 Influence of income level of the household heads in taking tutoring for their children

The following table 8 shows the data for income level of the household heads in taking supplementary private tutoring for their children.

Table-8: Monthly income level of household heads vs taking supplementary private tutoring

| Income level (in Taka) | Provide supplementary Private Tutoring | |
|------------------------|--|----|
| | Yes | No |
| Less than 10000 | 0 | 14 |
| 10001-20000 | 46 | 4 |

| | | |
|-------------|-----------|----------|
| 20001-30000 | 38 | 2 |
| 30001-40000 | 32 | 2 |
| 40001-50000 | 16 | 0 |
| 50001-60000 | 22 | 0 |
| 60000+ | 24 | 0 |
| | 178 (89%) | 22 (11%) |

The data from the above table reflects that:

- All the household heads with monthly income of TK. 40000 or more use supplementary private tutoring for their children
- No household heads with monthly income of TK. 10000 or less use supplementary private tutoring.
- Most of the household heads with monthly income less than Tk 30000 do not use supplementary private tutoring for their children.
- Students' supplementary tutoring has a strong relation with their household heads' monthly income. There is a tendency to take more supplementary private tutoring if the household heads' income level rises.

The following table 9 present data for the places of taking supplementary private tutoring based on the income level of the household heads.

Table 9: Monthly income level of household heads vs place of taking supplementary private tutoring

| Income level (In Taka) | At Home | Outside Home |
|------------------------|------------|--------------|
| Less than 10000 | 0 | 0 |
| 10001-20000 | 0 | 46 |
| 20001-30000 | 0 | 38 |
| 30001-40000 | 2 | 30 |
| 40001-50000 | 10 | 6 |
| 50001-60000 | 18 | 4 |
| 60000+ | 20 | 4 |
| Total | 50 (28.1%) | 128 (71.9%) |

The data from the above table reflects that among the household heads whose children take supplementary private tutoring

- All the household heads with monthly income of TK. 30000 or less use supplementary private tutoring outside home.

- There is a tendency to choose supplementary private tutoring at home over outside home as the income level of household heads' rises.
- The income level of household heads has a strong relation to take supplementary private tutoring at home over outside home

The following table 10 present data for the subjects of taking supplementary private tutoring based on the income level of the household heads.

Table-10: Monthly income level of household heads vs subjects of taking supplementary private tutoring

| Income level (In Taka) | Bangla | English | Science Subjects |
|------------------------|----------|-----------|------------------|
| Less than 10000 | 0 | 0 | 0 |
| 10001-20000 | 0 | 0 | 46 |
| 20001-30000 | 0 | 34 | 38 |
| 30001-40000 | 2 | 22 | 32 |
| 40001-50000 | 6 | 18 | 16 |
| 50001-60000 | 12 | 18 | 22 |
| 60000+ | 18 | 20 | 24 |
| Total | 38 (19%) | 112 (56%) | 178 (89%) |

The data from the above table reflects that among the household heads whose children take supplementary private tutoring:

- Household heads with monthly income of TK. 20000 or less do not use tutoring for Bangla and English, they use tutoring only for science subjects.
- There is a tendency to take supplementary private tutoring for all subjects (Bangla, English and Science subjects) as the income level of household heads' rises. Students with household heads who earn TK. 50000 or more mostly tend to take tuitions for all subjects.
- The level of income of the household head affects the supplementary tutoring. The general constitute is families which have more income, they provide more and special supplementary tutoring for their children. However, the level of income of household heads is not a factor for using supplementary private tutoring in science subjects

In response to the findings of quantitative data from household heads, the tutors, science teachers of higher secondary level as well science students mentioned their opinions. One of the tutors mentioned that:

Most of my students come from families with financial stability. I guess all my students come from families with household heads' income more than TK. 30000 or from those families where there are more than one earning person, may be both the parents or an elder brother earns and contributes to family expenditures.

One of the students in FGD stated that:

We also feel the urge to go for supplementary tutoring for English, but our family can barely afford that. Our family can hardly support us for one tutor and science subjects are always our priority as these subjects are quite hard. Sometimes we skip supplementary tutoring for biology as it is optional, and we can memorize it on our own. It is a burden on one tutor to provide tutoring of all the science subjects to a student.

The above qualitative data from the tutors, students and teachers reflect that the findings have alignment with the finding of household heads.

C. Causes of supplementary tutoring

This subsection presents results from the data of household heads, tutors, students, and teachers about the cause of taking supplementary private tutoring.

The Table 11 highlights that all the respondents (100%) mentioned that they have provided supplementary tutoring for their children to obtain better result in the examination. Most of them mentioned that sometimes the students have been dropped out because of the poor marks in the science subjects.

Table-11: Percentage distribution of the respondents by the causes of supplementary tutoring

| Causes of supplementary private tutoring | % |
|---|----------|
| Obtain better result | 100 |
| Make hard subject easier | 55 |
| Gain competency to get admission into better institutes | 60 |
| Lack of communication of teachers with students | 50 |
| Lack of feedback on classwork | 40 |
| Lack of teacher attention to individual students | 45 |
| Societal pressure for better result | 30 |
| Insufficient equipment in college laboratory | 35 |
| Inadequate knowledge of subject teachers | 70 |

| | |
|--|----|
| Hard to understand the subject matter within a short period of time in classroom | 42 |
| To understand how to answer questions | 25 |
| Lack of support from family members | 10 |
| Get pass marks | 12 |
| Lack of remedial service for students due to teachers' workload | 05 |

(N.B.: Considered multiple responses)

The majority (70%) of the parents stated that inadequate knowledge of subject teachers influenced them to provide supplementary tutoring for their children. Half of the parents mentioned that teachers have lack of communication skills and 40% of them mentioned that teachers do not give feedback on classwork. Almost half (45%) of the parents noted that teachers cannot provide attention to each student due to the large number of students in a classroom. Lack of remedial service for students due to teachers' workload was also noted by 5% of the parents as a cause of supplementary private tutoring. It is hard for students to understand the subject matter within a short period of time in classroom and 42% also identified this as a reason behind supplementary tutoring. Tutors mentioned that most of their students generally do not understand the subject matters from their teachers. Students who do not take tuitions also mentioned that they are unable to understand the lessons teachers deliver in the classroom and they do not get any opportunity to clarify their confusions. Teachers stated that they do not get enough time to observe and reach every student to address their weaknesses due to workload and time constrain.

60% of the respondents have provided supplementary tutoring for their children which was significant because according to them, gain competency to get admission into better institutes make the future of the children. Students also agreed that getting admission into a better institute requires private tuition. One of the students in FGD mentioned that:

If we only depend on our school, we will never be able to get admission to the engineering or medical colleges. School is not supportive enough to help us reach there. All our seniors who got admission to the best institutes had to take tuitions

A very few (10%) parents also stated that it would be better if they could guide or follow-up their children's progress, but they are out of enough time to do so which is why they use supplementary private tutoring as an alternative. Some of the students whose parents have honours or master's degree mentioned that their parents are capable to guide them, but they remain very busy with their jobs and other responsibilities.

A considerable number of parents (35%) stated that there is a lack of laboratory equipment in their children's educational institution which is why sometimes they need to search for such tutors who also provide practical classes. Students mentioned that it is very common among higher level science students to attend private tutoring for laboratory work during the last couple of months before HSC examination. Tutors who provide supplementary tutoring outside home also agreed that sometimes they provide lessons on laboratory work to higher secondary science students. Teachers noted that there is not enough equipment in their laboratory to prepare their students properly.

The subject matter of the subjects of science group is harder so, the parents (55%) have provided supplementary tutoring for their children to make it easier to understand. Students mentioned that they do not clearly understand all the science concepts from their teachers, it is easier for them to concentrate when they are learning alone or with fewer students and they get the chance to ask as much questions as they want. A teacher mentioned that:

Students of science group are more likely to take tuitions. Sometimes they also miss the classes because of tuitions. Although we try hard to attract them to the classroom, it is quite impossible to address every problem of every student of a class and clarify all their confusions.

12% of the respondents stated that they have provided supplementary tutoring for their children to get pass marks in the exams. Although students and teachers said that getting pass marks does not require private tutors, some of the tutors mentioned that they need to help a few of their students to plan and write the exam paper strategically to get passing marks. Parents (25%) also mentioned that supplementary tutoring help their children to answer questions better.

A considerable number of parents (30%) identified societal pressure for better result as a cause of supplementary private tutoring. Parents think of their children's academic performance as a family pride. Secure good grades in every board examination are regarded as a must to ensure the prestige of parents. Tutors and teachers also stated that most of the parents feel societal pressure to provide supplementary tutoring, sometimes they even compare how many tutors they provided for their children with the other students' number of private tutors. Students mentioned that everyone's parents expect highest possible result in board examinations which creates a burden not only on themselves, but also on the students and their private tutors too.

D. The challenges in getting supplementary private tutoring for science students at secondary level.

This subsection presents results about the challenges in getting supplementary private tutoring for science students at secondary level.

The following table presents the data from the household heads for the challenges in getting supplementary private tutoring for higher secondary science students.

Table-12: The challenges in getting supplementary private tutoring

| Challenges | Number of Respondents | Percentage |
|--|-----------------------|------------|
| Lack of knowledgeable tutors | 144 | 72% |
| Increased incentives for tutoring | 168 | 84% |
| Familial expenditure issue | 129 | 64.5% |
| Expenses for tutoring | 150 | 75% |
| Lack of eagerness among the students | 176 | 88% |
| Choosing tutor for female students | 33 | 16.5% |
| Tutors lack of familiarity with current question pattern | 43 | 21.5% |
| Busy schedule of tutors | 69 | 34.5% |

(N.B.: Considered multiple responses)

Lack of knowledgeable tutors

As the science subjects are harder so the parents search for knowledgeable tutors for providing tutoring. The lack of knowledgeable teachers in their own institutes who conduct the classes in classroom and lack of sufficient knowledge on science subjects among the family members also push the parents to search for supplementary tutoring.

Table 13: Percentage distribution of the respondents by the criteria of lack of knowledgeable tutors as the challenge

| This challenge faced for tutoring: | Number of household heads who mentioned this challenge | Percentage (%) |
|------------------------------------|--|----------------|
| All subjects | 30 | 15% |
| Science subjects | 114 | 57% |
| Total | 144 | 72% |

The table-13 shows that 15% of the respondents think that teachers lack knowledge is a challenge for all the subjects while 57% mentioned it as a problem only for

science subjects. Students also agreed with this issue. One of them mentioned in FGD that:

Sometimes we do not understand what our tutors teach us, they may have lack of content knowledge or lack of the ability to explain a certain concept. For this reason, our parents need to search for tutors again and again and changing tutors more frequently hampers our learning.

Increased incentives for tutoring

The expense of supplementary tutoring is increasing day by day. In Mymensingh, students get tutoring by paying handsome amount of money and this situation is also mentionable for the parents who earn comparatively less money. The families which have more students who want tutoring also to face the challenge in providing tutoring for the science students of higher secondary level.

Table 14: Percentage distribution of the respondents by the criteria of increased incentives for tutoring as the challenge

| This challenge faced for tutoring: | Number of household heads who mentioned this challenge | Percentage (%) |
|------------------------------------|--|----------------|
| All subjects | 21 | 10.5% |
| Science subjects | 147 | 73.5% |
| Total | 168 | 84% |

The table-14 shows that 10.5% of the respondents think increased incentives for tutoring as a challenge for all the subjects while 73.5% mentioned it as a problem only for science subjects. Among 12 tutors, 9 of them agreed with this statement while 3 disagreed. One of the tutors who disagreed mentioned that:

Although the expenditure is increasing day by day and because of that we demand more money from household heads, it is not always the case. If we get the hints that the students' family is financially not that stable, we try to reduce the fees as much as possible.

Familial expenditure issue

The familial expenditure level is increasing gradually due to the increasing inflation rate. The families with less income level face this problem persistently. Sometimes they face this problem in affording the cost of tutoring for their children and they do not provide supplementary tutoring.

Table 15: Percentage distribution of the respondents by the criteria of familial expenditure issue as the challenge

| This challenge faced for tutoring: | Number of household heads who mentioned this challenge | Percentage (%) |
|------------------------------------|--|----------------|
| All subjects | 102 | 51% |
| Science subjects | 27 | 13.5% |
| Total | 129 | 64.5% |

The table-15 shows that 51% of the respondents think that familial expenditure issue is a challenge for all the subjects while 13.5% mentioned it as a problem only for science subjects.

Expenses for tutoring

It is mentionable that the expense for tutoring depends on the family's income level, number of current students in the family, number of tutors in providing tutoring, nature of the tutoring like, single or group tutoring. Sometimes the families with more students with less income level face the challenge like expense for tutoring.

Table 16: Percentage distribution of the respondents by the criteria of expenses for tutoring as the challenge

| This challenge faced for tutoring: | Number of household heads who mentioned this challenge | Percentage (%) |
|------------------------------------|--|----------------|
| All subjects | 74 | 37% |
| Science subjects | 76 | 38% |
| Total | 150 | 75% |

The table-16 shows that 37% of the respondents think that expenses for tutoring is a challenge for all the subjects while another 38% mentioned it as a problem only for science subjects.

Lack of eagerness among the students

Sometimes the students do not attend the tutoring classes because of the fear among them about science subjects, prestige issues in tutorial session and engagement with secrete activities.

Table 17: Percentage distribution of the respondents by the criteria of lack of eagerness among the students as the challenge

| This challenge faced for tutoring: | Number of household heads who mentioned this challenge | Percentage (%) |
|------------------------------------|--|----------------|
| All subjects | 31 | 15.5% |
| Science subjects | 145 | 72.5% |
| Total | 176 | 88% |

The table 17 shows that 15.5% of the respondents think that expenses for tutoring is a challenge for all the subjects while another 72.5% mentioned it as a problem only for science subjects. Students and tutors also agreed to this issue and noted it as a vital challenge.

Choosing tutor for female students

Parents are generally more conscious about their daughters' safety which is why it is a big concern to certain families with female students. They are more likely rely on female tutors rather than male tutors. It is quite difficult to find female tutors with sound subject matter knowledge for students.

Table 18: Percentage distribution of the respondents by the criteria of choosing tutor for female students as the challenge

| This challenge faced for tutoring: | Number of household heads who mentioned this challenge | Percentage (%) |
|------------------------------------|--|----------------|
| All subjects | 6 | 3% |
| Science subjects | 27 | 13.5% |
| Total | 33 | 16.5% |

The table 18 shows that 3% of the respondents think that choosing tutor for female students is a challenge for all the subjects while another 16.5% mentioned it as a problem only for science subjects. One female student mentioned that:

For the last 2 months, I had no supplementary tutor as my mother was unable to find a female tutor for me. My family is not comfortable with any male tutor teaching me alone. I wanted a tutor who will come to my home and provide lessons to me individually, but now I have joined a coaching centre where a group of 8 students learn together from a male tutor.

Tutors' lack of familiarity with current question pattern

In recent years, the question pattern of higher secondary level has changed a lot. Creative question pattern along with several types of new multiple-choice questions were introduced. Although school teachers frequently get instruction and training on these new questions, private tutors are deprived of this opportunity. This why it is difficult to find such tutors who understand these question patterns clearly.

Table 19: Percentage distribution of the respondents by the criteria of tutors' lack of familiarity with current question pattern as the challenge

| This challenge faced for tutoring: | Number of household heads who mentioned this challenge | Percentage (%) |
|------------------------------------|--|----------------|
| All subjects | 20 | 10% |
| Science subjects | 23 | 11.5% |
| Total | 43 | 21.5% |

The table 19 shows that 10% of the respondents think that tutors lack of familiarity with current question pattern is a challenge for all the subjects while 11.5% mentioned it as a problem only for science subjects. Students also agreed to this challenge.

Busy schedule of tutors

Lack of teachers with sound content knowledge create a pressure on certain tutors who can deliver quality lessons to the students. Therefore, tutors with a good grasp on subject matter remain very busy and provide a very limited time for individual students. Tutors' busy schedule has become a big issue in certain areas where there is a handful number of quality teachers.

Table 20: Percentage distribution of the respondents by the criteria of busy schedule of tutors as the challenge

| This challenge faced for tutoring: | Number of household heads who mentioned this challenge | Percentage (%) |
|------------------------------------|--|----------------|
| All subjects | 9 | 4.5% |
| Science subjects | 60 | 30% |
| Total | 69 | 34.5% |

The table 20 shows that 9% of the respondents think that busy schedule of tutors is a challenge for all the subjects while 30% mentioned it as a problem only for

science subjects. Students and tutors also agreed to this issue. One of the tutors mentioned that:

Around five years ago, I used to provide tuitions by going to students' home and teach them individually. Students started to like my lessons and approach of teaching and more tutoring offers started to come. Then I decided to teach in groups like a coaching centre. It is more profitable, and I can deliver to many students in a short period of time.

The above-mentioned challenges are valuable in getting supplementary private tutoring for science students at higher secondary level.

Discussion

This study mainly focuses on understanding factors, causes, and challenges in taking supplementary private tutoring for the higher secondary science students in Bangladesh. The findings of the study are interpreted with the relevant available literature in the following sections.

Factors of Household heads' influencing supplementary tutoring

The result implies that 89% household heads take supplementary tutoring service for the HSC science students. The household heads' occupation is not a factor for using supplementary private tutoring or their chosen subject for tutoring. Occupation has influence on whether the student will get the tutoring at home or outside home. Household heads with doctor, engineering, tertiary level teaching, businessman (large), and politician are mostly use supplementary private tutoring at home while the household heads with secondary and primary level teaching, businessman (small & medium), transportation, government service as well as private prefer their children to take support of supplementary private tutoring outside at home.

The education level of household head is not a factor for using supplementary private tutoring for HSC science students or their chosen subject for tutoring. Education level has influence on whether the student will get the tutoring at home or outside home. Most of the household heads with higher education use supplementary private tutoring for their children at home. On the other hand, most of the household heads with lower education level use supplementary tutoring at outside home.

Students' supplementary tutoring has a strong relation with their household heads' monthly income. There is a tendency to take more supplementary private tutoring

if the household heads' income level rises. All the household heads with monthly income of Tk. 40000 or more use supplementary private tutoring for their children. On the other hand, no household heads with monthly income of TK. 10000 or less use supplementary private tutoring. The income level of household heads has also a strong relation to take supplementary private tutoring at home over outside home. There is a tendency to choose supplementary private tutoring at home over outside home as the income level of household heads' rises. However, the level of income of household heads is not a factor for using supplementary private tutoring in science subjects.

Yueyun Zhang and Yu Xie (2016) found that higher parental education, higher family income, and fewer siblings are associated with a higher likelihood of private tutoring and higher levels of expenditure on tutoring. Judith Ireson and Katie Rushforth (2014) noted that home support is provided by parents with higher educational levels. They mentioned that parents who value educational achievement tend to provide higher levels of home support and thus the employment of private tutoring is predicted by parents' educational level.

Causes of supplementary private tutoring-

The findings of this study indicates that supplementary tutoring can obtain better result in the examination. Students stated that getting admission into a better institute requires private tuition. The subject matter of the subjects of science group is harder so, the parents have provided supplementary tutoring for their children to make it easier to understand. Lack of teacher attention to individual students, lack of communication of teachers with students, lack of feedback on classwork, inadequate knowledge of subject teachers, time constrain and workload of teachers and insufficient equipment in laboratory were identified as some vital reasons behind supplementary private tutoring. Societal pressure for better results and lack of guidance from family members also acted as causes of supplementary tutoring.

Shihab and Sultana (2017) explain the necessity and impacts of private supplementary tutoring in English among the secondary level students in Bangladesh. The authors find that achieving better results, understanding the subject matter in the classroom, capacity for how to explain subject matter, how to answer the questions and how to sum up the knowledge and mistakes are the impacts of private tutoring. They add private tutoring increases the academic performance and level of understanding the lesson among the students. Hamid et al. (2009) explore the nature and practice of the private tutoring in English of the disadvantaged group of people in rural

Bangladesh where the authors relate the private tutoring in English to achieve scholastic results in English.

Challenges in getting supplementary tutoring

The findings indicates that challenges of getting supplementary tutoring includes scarcity of knowledgeable tutors for providing tutoring, increased expense of supplementary tutoring and increased familial expenditure. The number of current students in the family also caused challenge for some families. Sometimes the students do not attend the tutoring classes because of the fear among them about science subjects, prestige issues in tutorial session and engagement with secrete activities. Parents of female students are more conscious about their daughters' safety. Private tutors lack of idea about current question pattern is another challenge. Lack of teachers with sound content knowledge create a pressure on certain tutors who can deliver quality lessons to the students. Tutors' busy schedule has become a big issue in certain areas where there is a handful number of quality teachers.

Implications

This study has implications for current teaching learning practice, policy as well as for the further research. It is found from the findings of the study that most of the students irrespective of occupation, education and income level of their household heads use supplementary private tutoring. It is therefore motivating students to give their attention in the class activities to achieve their optimum level of knowledge is very much a concern. Moreover, infrastructural facilities of the educational institute are more important in providing science education which make equal opportunities among the students. Furthermore, quality of teachers may prevent the students from supplementary private tutoring. It is therefore a requirement to recruit more qualified teachers and provide training to them to improve their quality.

This study has also implication for rearranging and making inclusion and exclusion in the existing education policy. This inclusion and exclusion may have a link with the scope of remedial service by teachers themselves for the betterment of the science students at the higher secondary level. Furthermore, this study may have implications in replications for other districts to understand whether the findings are same or different as well as conduct a national study to know about the more valid and reliable factors, causes and challenges in taking supplementary private tutoring for the higher secondary science students in Bangladesh.

References

- Bray, M. (1999). *The Shadow Education System: Private Tutoring and Its Implication for Planners*. Paris: UNESCO International Institute for Educational Planning.
- Bray, M., & Lykins, C. (2012). *Shadow Education: Private Supplementary Tutoring and Its Implications for Policy Makers in Asia*. Mandaluyong City: Asian Development Bank.
- Creswell J. W. (2015). *Research Design: Qualitative, Quantitative and Mixed Methods Approaches 2nd Eds*. London: Sage Publication
- Dawson, W. (2010). Private Tutoring and Mass Schooling in East Asia: Reflections of Inequality in Japan, South Korea, and Cambodia, *Asia Pacific Education Review*, 11 (1), 14-24.
- Hamid, M., Sussex, R., & Khan, A. (2009). Private Tutoring in English for Secondary School Students in Bangladesh, *TESOL Quarterly*, 43(2), 281-308. Retrieved from <http://www.jstor.org/stable/27785005> (Accessed on April 19, 2021)
- Kim, M. (2007). School Choice Private Supplementary Education in South Korea, Paper presented at the Policy Forum 'Confronting the Shadow Education System, Paris, UNESCO Institute for Educational Planning.
- Lee, J. T, Kim, Y. B., & Yoon, C. H. (2004). The Effects of Pre-class Tutoring on Students Achievement: Challenges and Implications for Public Education in Korea, *KEDI Journal of Educational Policy*, 1(1), 25-42.
- Nath, S. R. (2007a). Private Supplementary Tutoring Among Primary Students in Bangladesh, *Educational Studies-EDU STUD*, 34, Doi: 10.1080/03055690701785285.
- Nath, S. R. (2007b). Remunerated Supplementary Tutoring in-out-of School Study in Rural Bangladesh, *BRAC Research Report*, Research and Evaluation Division, BRAC Center: Dhaka.
- OECD (2014). Supplementary Education in East Asia, Strong Performers and Successful Performers in Education: Lesson from PISA for Korea. Available at <https://doi.org/10.1787/9789264190672-en> (Accessed on 15 April 2021)
- Shihab, R., & Sultana, N. (2017). Sensing the Necessity and Impacts of Private Tuition in English among Secondary Students in Khulna, Bangladesh, *Global Journal of Human-Social Science (G)*, 17 (6) Version. I