BASELINE REPORT 2023

Effectiveness and Scalability of Programs for Children who are Out of School and At Risk of Dropping Out in Bangladesh

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Acknowledgement

This Baseline Survey Report is an output from Bangladesh Team of the joint project "Effectiveness and Scalability of Programs for Children who are Out of School and At Risk of Dropping Out in Nepal, Bhutan and Bangladesh" among the Kathmandu University School of Arts, Paro College of Education (PCE), and South Asian Institute for Social Transformation (SAIST). Funded by Global Partnership for Education (GPE), Knowledge and Innovation Exchange (KIX) and International Development Research Centre (IDRC), this project aims to enhance inclusive access and learning outcomes for Out-of-School Children and children at risk of dropping out. We are grateful to GPE, KIX and, IDRC for their generous gesture of contribution by funding this project. We would like to acknowledge the contributions of many individuals who made this work possible. Gratitude for Prof. Dr. Bellal Hossain, Dr. Rakibul Islam, and Dr. Amm Quamruzzaman for their insights in preparing the baseline tool. We also would like to praise the whole research team and our data enumerators for active participation in the field work, and for their commendable inputs in the field observation part. Our special thanks go to Engr. Md Abdul Awal, Chairman of SAIST Foundation, who has supported us magnanimously in various ways. Finally, we express our gratitude to the principals, honorable teachers, and members of the school managing committees as well as the students and their parents for sharing their experiences and perspectives by participating. It would have not been possible without their valuable time and information.

Dr. U S Rokeya Akhter, Project Leader and Juwel Rana, Country Research Leader

Executive Summary

With 53 million residents (nearly 40% of the whole population) in the urban areas of the country, Bangladesh is contributing to the rapid urbanization, that is taking place in the whole world. However, school dropout rates, especially in urban areas in Bangladesh are a major source of concern. Poverty, unaffordable cost of living and deplorable living conditions are some of the reasons why dropout rates are ascending among the slum children of Dhaka. Hence, there have been initiatives taken by both government and other non-governmental agencies, to address and resolve this issue of high dropout rates. The South Asian Institute for Social Transformation (SAIST) is working on joint research project titled "Effectiveness and Scalability of Programs for Children who are Out of School and At Risk of Dropping Out in Nepal, Bhutan and Bangladesh" with a goal to ensure equal participation and learning achievement for the Out-of-School Children and children at risk of dropping out. This project is a collaboration between the Kathmandu University School of Arts, Paro College of Education (PCE) along with SAIST. It is aided by the International Development Research Centre (IDRC), Canada, Global Partnership for Education (GPE) and Knowledge and Innovation Exchange (KIX).

The project aims to identify, contextualize, adapt, test, and learn about innovations (practices and strategies) used to overcome the barriers to inclusive, equitable, and gender-friendly education. Additionally, its another goal is to assess scalability and identify potential pathways to scale up the relevant innovations.

Methods

A baseline survey was conducted to achieve the study objectives, that started with desk reviews, followed by household mapping and finally participants' data collection. A quantitative approach was used for the baseline survey design. A total of 8 schools (4 Primary, 4 Secondary) were purposefully selected for this survey, depending on the proximity to the selected study areas. 1040 students in total (130 from each school) were selected randomly for the survey, based on their rate of absenteeism. However, the survey employed both purposive and simple randomized sampling methods for participant selection.

The entire study consists of a mixed method approach. While the quantitative analysis incorporates existing administrative data as well as a baseline survey, the qualitative analysis used Key Informant Interview (KII) of teachers from both the Control and Treatment schools. The quantitative data was analyzed using STATA 14, for the qualitative data, thematic analysis was used. The study findings are given below:

Findings

Teacher Level:

- Teachers in their interviews, reported illness to be the most common reason of students' absence (96.30%). Other reasons include family issues (37.04%), Lack of interest (33.33%), migration (37.04%) etc. In these scenarios, 96.3% teachers contacted with the parents regarding their absenteeism, while 18.52% teachers reported about other actions, such as, talking to the students, considering the special situations, reducing the school fees, etc.
- In the KIIs, teachers from treatment group have focused on their lack of proper resources (lack of multimedia classrooms, inadequate computers in lab) and expressed their need for adequate equipment. Although most of the teachers have agreed that they are getting the help and

guidance they need from the directorates and Thana education office, a considerable proportion believes that, the directorates are not doing enough. Different modes of conducting classes, such as use of multimedia contents, practical demonstration, quizzes, and games, exercise and resting in between studies have come up from teachers' interviews. Moreover, teachers, especially from treatment group have shown their genuine interest in receiving more effective trainings, which will be fruitful for them while teaching in classrooms.

Student Level:

- About 75% of students on average have access to digital devices whereas, only about 50% of the students on average have access to internet facilities. But only 27% use devices for study purposes.
- Among the primary school students, most of the boy students stay absent for 5 to 7 days on average and 15 days highest. On the contrary, majority of the girl students stay absent from schools for 5 to 8 days on average and maximum 16 days. This rate is also nearly similar for the boys and girls from secondary schools.
- Students from middle-income households stay absent for higher number of days than the students from low- and high-income households. However, among the control groups, students from the comparatively richer group stay absent at schools, than the other wealth index groups.
- The survey data have presented the facts that 8% of secondary and 3% primary students wear glasses in the treatment group. 10.57% of primary students in the treatment group struggle with self-care, such as feeding or dressing on their own. Another mind-boggling fact that has come up from the survey is that 56.50% in treatment group and 70.04% students in control group have no control over their behavior. When it comes to learning new things, 23% students on average experience difficulties, in both the treatment and control groups.
- Interesting results have come up regarding participants' interest in STEM and preferred learning techniques. Students from control group seem to have more confidence than the students from treatment group. About 60% of students rated themselves as not at all to moderately good in science in the treatment group. But a considerable number of students (about 13% on average) rated the teaching skill as not good at all to somewhat good.
- A majority of students were reported not to have basic knowledge about nutrition and health, as well as maintaining nutritious diet regularly. 70% students in the primary schools and 11% in the secondary schools reported that they are not being taught about healthy food and nutrition in the classes. Moreover, knowledge and practice of basic hygiene is also limited within a small proportion of students. While the majority of students (80%) wash their hands after using the restroom, just 70% wash their hands before eating or preparing meals.
- Unfortunately, 86.05% students in treatment group and 87.42% students in control group, who are menstruating, lack in menstrual knowledge. Above 90% of the students in both treatment and control group reported that, they don't change pad/clothes at school, which is quite alarming.
- Survey data shows that, about 20% students in primary schools have reported to experience some form of bullying. Verbal bullying including- making fun of skin color (8.33%), making fun of overweight (16.67%), different religion (5.56%), sexual jokes, comments, or gestures (2.78%), and body or face looks (11.11%) were the reasons reported by the participants.

- Among the secondary students, 10% from the treatment group and 7% from the control group reported experiencing some form of sexual harassment, among whom, 96% in treatment group and 100% in control group were female.

Parent Level:

- Mothers of primary school students in treatments areas had the highest percentage (21-25%) of having no education, while mothers of high school students had the lowest percentage. On the other hand, the percentage of fathers completing secondary or higher education was highest among those from secondary school in the control group, while the percentage of no education was lower in the treatment group.
- Only 50% of parents attended meetings of the school governing body on average. In the past 6 months, 70% parents, on an average, visited their children's schools, both in Primary and Secondary, for purposes such as – taking child to school, report card collection and complaint submission, community gatherings etc.
- In both the treatment and control groups, more than 90% of parents are concerned about their children's homework. And roughly 80% of parents or other elderly people at home assist with homework. But, only about 65% of parents or elderly at home assist with homework in the treatment areas' secondary schools.

Designed Intervention

A set of proven interventions are being undertaken to ensure equal participation and learning achievement of the participants. These interventions not only include the students, but also their parents and the teachers from the schools. A wide range of activities that encompasses Science and Math fairs in the selected schools, health and nutrition campaigns and all-out support for teachers in creating ICT-based content to bring backward students into the mainstream. Science and Math Fairs arranged in schools will help to enhance attendance of these students, as well as motivate students to learn from experiments from their daily life incidents. Health and Nutrition Camp are being designed, which would not only help to determine the nutrition and health related issues among children, but also make them aware of the healthy eating habits, demerits of junks foods and maintaining a healthy diet. Teachers, on the other hand, would be receiving capacity strengthening training in Experimental and Experiential teaching in Science and Math, along with financial incentives. Learning influencers will help the teachers to provide technical help to promote blended teaching (ICT based, YouTube channel opening). Hence, that parents are not excluded from the intervention activities. At parental level, monthly engagement with teachers, and community campaigns (courtyard meetings) will be held to make the families aware about their children.

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1. Introduction

1.1 Background & Context

Dropout rates in schools in Bangladesh is a significant concern. According to the Bangladesh Bureau of Education Information and Statistics (BANBEIS), the dropout rate for primary schools in Bangladesh was 18.5% in 2017. The dropout rate for secondary schools was even higher, at 27.5%. nearly seven out of ten out-of-school children e.g., 4.6 million children between the age of lower secondary and upper secondary—are not enrolled in school (BBS, 2020). These rates have remained relatively consistent over the past few years. About half of the students who do not finish each level of education are children who live in Dhaka and Chattogram (BBS, 2020).

Bangladesh is among the nations that will soon contribute the most to the global urban population as the world quickly turns urban. One of the countries with the highest population density in the world is Bangladesh. She has a population of 160 million, 53 million of which reside in the urban areas. Approximately 40% of them are children (UNICEF, 2017). As per the 2022 census, a total of 52,009,072 people live in urban areas (Dhaka Tribune, 27 July 2022). The dropout rate among slum children in Dhaka, Bangladesh is a significant concern. According to a study by the Bangladesh Institute of Development Studies (BIDS), the dropout rate among slum children in the city is significantly higher than the national average. The study found that the dropout rate among primary school children in slums was 35%, while the dropout rate among secondary school children was 45%.

There are several reasons why the dropout rate among slum children in Dhaka is so high. One of the main reasons is poverty. Many families living in Dhaka slums are unable to afford the cost of education for their children, and as a result, children are forced to drop out of school to work and support their families (Cameron, 2016). Additionally, the poor living conditions in slums can also contribute to high dropout rates, as children may be more susceptible to illnesses and may be unable to attend school as a result (Mohamud & Mollah, 2019; Smita, Rabbi and Mohammad, 2020).

Another factor that contributes to high dropout rates among slum children is the lack of access to quality education. Many schools in Dhaka city slums are overcrowded and under-resourced, which can make it difficult for children to learn and stay engaged in their studies (Farah, Karim, & Afrin, 2019; and Mostafa et al., 2018). Additionally, many slum children may not have the same level of educational support as children from more affluent families, which can also contribute to high dropout rates.

Despite these challenges, there have been efforts to address the problem of high dropout rates among slum children in Dhaka. The government has implemented programs to provide financial assistance to the poor families to help cover the cost of education for their children. Additionally, there have been efforts to improve the quality of education in slums by building new schools and hiring additional teachers. However, many of these efforts have not been sustainable and effective as presumed.

Regarding these initiatives (activities, practices, and approaches) targeted at out of school children (OOSC) and children at risk of dropping out, this study will primarily be an evaluative action research that will examine and evaluate the schemes for the OOSC in the country and scan, test, and assess its potentiality for scalability and contribute to capacity building of stakeholders who

directly engage in adopting, implementing, continuing, and scaling these initiatives for future. The study will focus on the practices, methods, and tools used to identify OOSC and children at risk of dropping out. Aim of this baseline study is to identify the factors working behind at risk of dropout and, to plan efficient and effective interventions that potentially provide the children access to education and retain them in school.

SAIST therefore aims to identify the factors working behind at risk of dropout among the slum children studying at 8 schools of Dhaka South and North City Corporations. Identifying the factors, efficient and effective interventions will be planned and implemented that are expected to potentially provide the children access to education in Kajlarpar Slum and Bhasantek Slum through the IDRC-funded 2021-2023 project. Through this project SAIST will target to increase attendance of children in the primary and secondary schools of these two slum areas by intervening both at school and community level. The three-years project period will contribute to preventing at risk of drop out by reducing absenteeism caused by multiple factors at school level, academic level, and community level. It will ensure inclusive access to learning opportunities for all children in the selected slum areas. It will also improve access to quality education through strengthening the experimental and experiential teaching capacity of the teachers. Bangladesh team is also focusing on the blended learning that will give students to access the learning materials from anywhere. Beside focusing on strengthening teachers' capacity, parental involvement will also be emphasized. To ensure the good learning environment at home, there will be several sessions at parents.

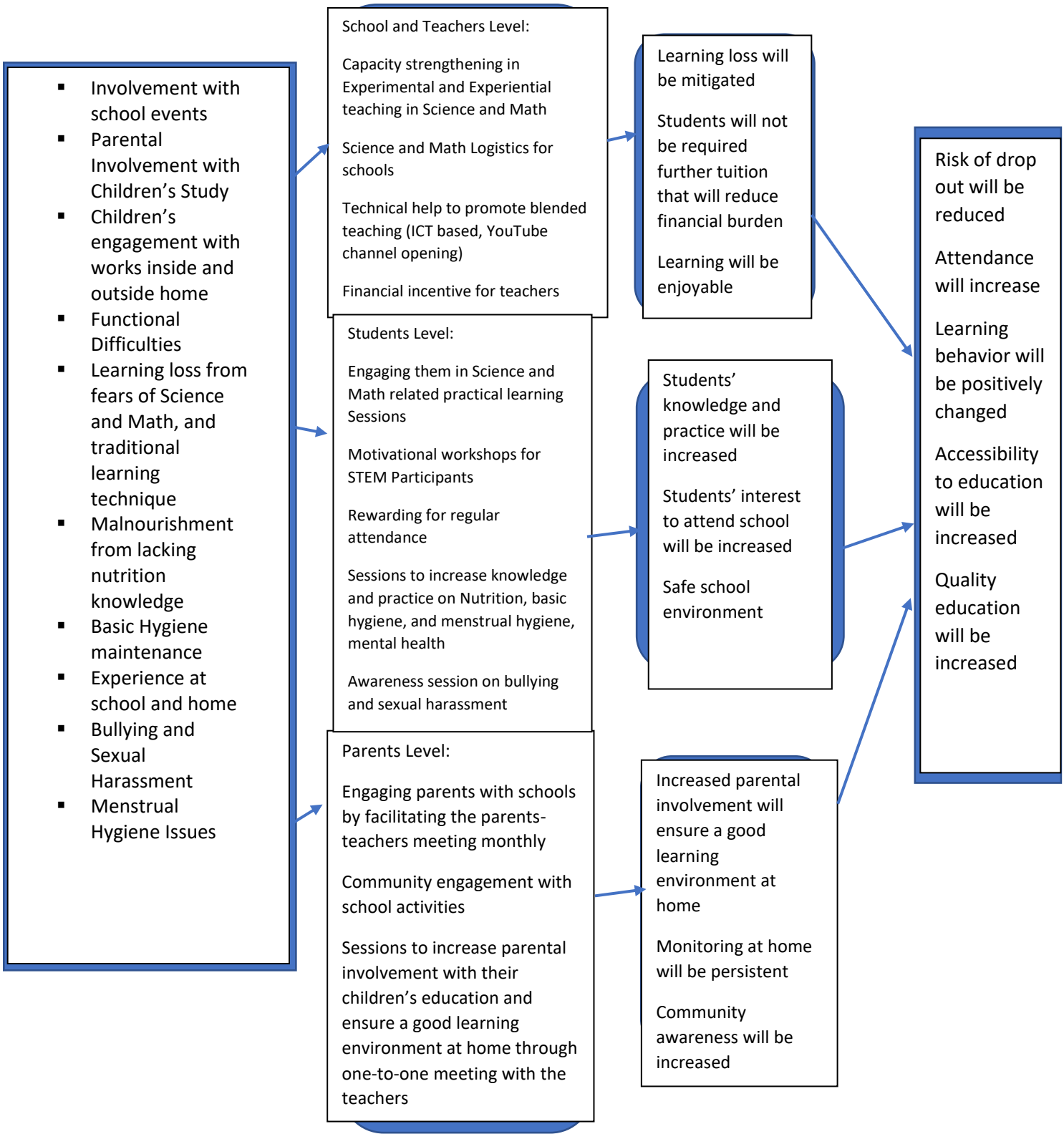

Figure 1: Conceptual Framework

1.2 Objectives

The main objectives of this baseline survey were the following:

- To use evidence and local knowledge to design the interventions to prevent at risk of dropout
- To use an integrated approach to evaluate the intervention and to build further evidence

2. Methodology

The baseline survey process started with desk reviews (preparing the questionnaires), household mapping, and training of the enumerators, which was followed by data collection by mid-December 2022. SAIST team conducted this baseline survey with the help of its research team members and external data enumerators who were recruited for a couple of days to support the data collection part. The assistant research coordinator and the research associate developed the questionnaire which was reviewed and edited by the country leader and the principal investigator. The team worked out details of the baseline survey methodology and subsequent translation of the survey tool into the local language (Bangla) for ease of understanding for the enumerators. Prior to data collection, the Asst. Research Coordinator trained the enumerators who mainly comprised of volunteers (07) and SAIST staff (04). SAIST then deployed the volunteers to the field for data collection under the supervision of the SAIST staff. The research team then analyzed the data and wrote the baseline report.

This survey used mixed methods within the participator action research approach. The quantitative analysis combines the existing administrative data, and a baseline survey. It helps investigate the situation of at-risk children and their condition of accessibility to education. The qualitative data helps understand the existing educational approaches addressing inclusive education and the learning environment in public schools.

2.1. Survey design

The baseline survey employed quantitative survey approach. The method was purposively selected in order to help collect quantitative data needed to set appropriate indicator targets. Note that for the administration of this baseline survey (data collection and analysis) SAIST opted to utilize an online data collection platform – Kobo toolbox.

2.2. Desk reviews

For purposes of identifying key deliverables and parameters for the baseline survey, desk review was among the methods employed for the survey. It involved reviews of project information and important project documents, relevant reports and important secondary data that were available and others that were accessible online. To develop the survey tool, many literatures were reviewed, and standard questionnaires were followed.

2.3. Sampling techniques

Simple probabilistic and non-probabilistic sampling techniques were used to calculate and select samples. Accordingly, first stage sampling was done by selecting two city corporations of Dhaka city. The second state sampling units included programmatic localities, from which four localities namely kajlarpar, Bhasantek, Boro Moghbazar, and Rupnagar slum areas were purposively selected (02 as treatment group and 02 as control group), as per the specific needs of the projects. The participant size, participant type (parents, teachers, and students of class 1-8) were among the factors considered for selecting the slums for the baseline survey. A total of 08 govt. and MPO enlisted schools (04 primary and 04 secondary) were purposely selected for the survey considering the proximity to the selected slums. Respondents for the baseline survey in these schools were selected considering their last 6 months' attendance at school. Students with below 20% attendance during the school days, were selected for the study. From the identified students 130 students from each school were randomly sampled.

2.4. Sample frame and sample size

The sampling frame for the baseline survey included all potential students from the 08 schools (04 primary schools and 04 secondary schools) of four selected areas in Dhaka North and South City Corporations. The sampling frame also included the parents of the selected students as the project intends to intervene from the micro level. The types of participants selected for this study are- students from grade 1- grade 8, parents of the selected students, and teachers at the selected schools.

At each school, minimum 130 students were found to be absent at school for about 80% of the time or above. To reach out as many students as possible, 130 students from each of the 08 schools were selected. So, in total (130*8) 1040 students were selected from all the 08 schools.

For teachers' key informant interviews (KIIs), Science and Math teachers who teach in class 1 to 8, from both Control area and Treatment area were considered as participants for the KIIs, and total 24 interviews were conducted. As the study is focusing on ICT-based interventions, including experiential learning in Science and Math especially, teachers particularly teaching these two subjects were given preference.

2.5. Selection of respondents

Both purposive and simple randomized sampling methods were used in the survey. There are 1,639 slums with 4,99,011 population under Dhaka North City Corporation (DNCC) and 1,755 slums with 1,47,056 population in Dhaka South City Corporation (DSCC) (The Daily Star, 2019). Among all these slums in DNCC and DSCC, at first, 04 slum areas in Dhaka City (02 in DNCC and 02 in DSCC) were selected where there are government schools within 2 km radius. The 04 selected slums were- Kajlarpar slum area, Bhasantek slum area, Boro Moghbazar slum area, and Rupnagar Slum area. Slum adjacent nearest primary and secondary schools were selected. For the treatment group, two primary schools and two secondary schools were selected that are nearest to Kajlarpar slum area, and Bhasantek area. As for the control group, in Boro Moghbazar area, and in Rupnagar area two primary schools and two high schools were selected. From each of the schools, 130 students (in Primary schools' grade 1 to grade 5, and in high school grade 6 to grade 8) were selected respectively based on their attendance of 6 months. Students' who were absent for more than a month or who had attendance less than 20% for those 6 months were included in the study. In total 1040 students and their parents were selected from these areas for the baseline survey.

2.6 Address Collection and Mapping

After the selection process, SAIST team collected parents contact numbers from the schools and communicated with the parents for their addresses. During 10th September 2022- 20th October 2022, selected participants' addresses were collected and verified over phone while completing the introductory part of the team and project's objective. After collecting the addresses, SAIST team moved to the selected sites for mapping the participants' household. During 7th November 2022- 7th December 2022, the team went to the participants' houses for mapping. They went door to door in the community and talked about the objective of the study while building rapport with the community people for the next step. In total 1026 houses could be mapped out.

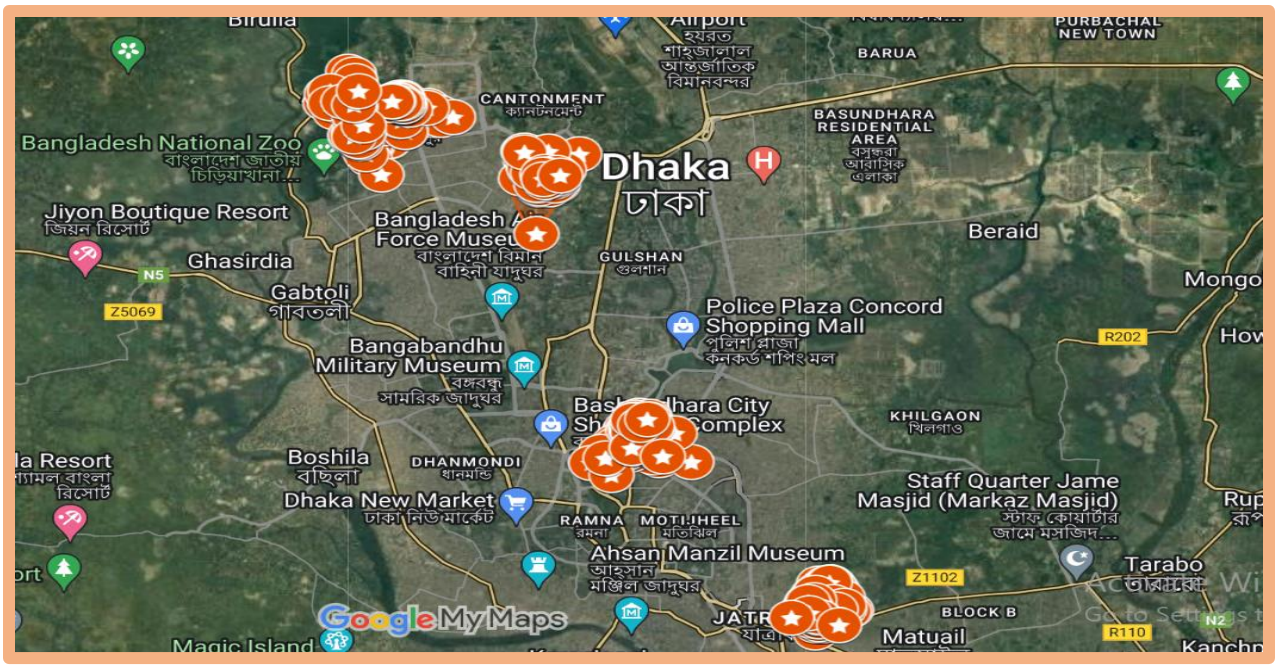

Photo 1: Household Map of the Participants

2.7. Data collection: Organization method and Tool

Following the mapping phase, data collection was carried out between 21st December 2022 to 26th January 2023. Volunteer enumerators supervised and guided by SAIST staff – i.e., four supervisors, one in each area, collected all the required data. Prior to field data collection, all from the field team (data collectors) were trained on the basics of baseline survey and were extensively exposed to the questionnaires for this baseline survey. This was followed by field pretesting exercises to familiarize the enumerators with the eventual field work. In the field, the supervisors took full charge of the administration of the questionnaires and monitoring the data collection in the field. The supervisors guided and supported the enumerators and were there to help resolve minor field difficulties, beside collecting their share of data as well.

Although other methods (such as, desk reviews, observations) may have been used in the survey, parents and students survey questionnaire that included household information, academic information and, other indicators that explain the absenteeism of the children were the key tool used for collecting data for this baseline survey. After each interview data enumerators uploaded the data in Kobo server. At the end of the day, the supervising team carefully looked through each data entry submitted to the server and thereby edited any discrepancies that may have been detected. Soon after the fieldwork was completed, the field supervisors supported by the Research Coordinator cleaned the dataset again and shared the final data file. In this way, the team ensured all data were cleaned and readied for analysis.

For the teachers' perception, Key Informant Interviews (KII) occurred in the teachers' place of work on a prearranged and mutually agreed day. Interviews were semi-structured, with a set of open-ended questions as well as a set of structured survey questions. The questions include their view about the school, perspectives on new teaching techniques, situation before and after Covid, steps taken to fill in the gaps and so on. Where appropriate, the interviewer prompted participants to expand on relevant and interesting responses.

2.8. Data analysis and reporting

The quantitative data were analyzed using STATA 14. The analyzed data was crosschecked for consistency and presented in the form of tables, graphs, charts, and figures where appropriate. For ease of understanding, important sections and/or elements of the analyzed data were explained in brief narratives. One explanatory variable was, wealth index which was constructed from data on household assets (e.g., televisions, bicycles, sources of drinking water, sanitation facilities and construction materials). To create the wealth index, each household asset was assigned a weighted score through principal component analysis and then divided the score distribution into five quintiles equally expressing as wealth quintiles from 1 (lowest) to 5 (highest). The process information was triangulated with information gathered through desk reviews and project information. After all the above, a draft baseline report was produced.

The qualitative part used Thematic Analysis. This required the Bengali transcription of interview recordings. Then the transcriptions were translated into English, and coding stages were followed. The second level of analysis involved preparing themes and putting the codes under specific themes.

2.9. Ethical consideration

Before conducting the Baseline, local ethical approval was collected from North South University Ethical Review Board. The NSU IRB ID is 2023/OR-NSU/IRB/0307. Ethical practices were carefully explained and discussed with data collection team during pre- data collection training. It involved proper introduction of data collector, explaining the purpose of the baseline survey, how the information would be used, the participant's voluntary participation and freedom to exit/refuse participation at any stage without consequences. All this was done with the aim of obtaining informed consent of each participant before proceeding with data collection. During the field data collection, the survey team led by their supervisors, met associated stakeholders, such as, the ministry of education, thana education officers and headteachers of the schools for introduction and to seek their consent for the baseline survey. In every engagement and/or meeting with the stakeholders and participants, the survey teams respected cultural norms and practices. As the survey used household questionnaires, the survey team ensured that household member interviewed selected a place where s/he was comfortable with, and family norms were respected. Finally, at the end of the questions/discussion, the data collectors thanked the respondents for their time, willingness, and effort to provide data for the baseline survey.

2.10. Limitation

There were few limitations in this survey. These were both the expected and experienced limitations, what were overcome by the team tactfully. Firstly, cultural perceptions on regarding men interviewing females alone and cultural perceptions regarding young enumerators interviewing older people questions. In both cases fear to ask sensitive questions may have affected the quality of the interview and data collected. Secondly, the risk of not answering all the survey questions due to unavoidable factors beyond the control of enumerators.

3. Findings & Discussion

3.1 Socio-demographic Background

This section includes the schools' socio-demographic background and the structural backgrounds, and participants and their parents' background information.

3.1.1 Study areas and School's Socio-demographic and Structural Background

Most of the selected areas in this study are situated in urban centres and are congested with overcrowded settlements with no proper infrastructure and amenities. These slums are mostly unplanned and do not have access to regular amenities necessary for living. One of the slums located at Kajla, Jatrabari with approximately more than 1000 households. Most of the people living here are lower-class people with no basic education and work as a labourer in the fish wholesale market, vegetable wholesale market, factories, Garments, and Rickshaw Puller. Another study area is Boro Moghbazar situated beside the Moghbazar rail line. The housing pattern of this area has changed in recent years with the establishment of many new buildings and roads. As found from interviews, the area was considered a slum due to its previous state and now its landscape might confuse people about whether it can be called a slum. The area is densely populated with 5-6 families living on a single floor of a building. People are mostly small businessmen, day labourers, rickshaw pullers, factory workers and garments workers. Duaripara is situated in Mirpur area of Dhaka north city corporation with more than 1000 houses. Most of the people are day labourers or small businessmen. Many women are employed as housemaids at various residences in the neighbourhood. Another slum is situated in Bhasantek area of Mirpur thana, Dhaka North. This slum is beset with many issues including continuous threat of eviction. From 04 slum areas 08 schools comprises of 04 primary schools and 04 secondary schools were selected for this study. Below table explains the infrastructures and facilities of the selected schools.

Table 1: School Infrastructure

School Name	Treatment School 1_Primary School	Treatment School 2_Secondary School	Control School 1_Primary School	Control School 2_Secondary School	Treatment School 3_Primary School	Treatment School 4_Secondary School	Control School 3_Primary School	Control School 4_Secondary School
Distance between School and Community	Less than 1 KM	Less than 1 KM	Less than 1 KM	Less than 1 KM	Less the 1 KM	Less than 1 KM	Near to 1 KM	More than 1 KM
# (total) of students	700 students	800 students	505 students.	373 students	400 students	470 students	423 students	450 students
# of Teachers	11	18	15	18	6	11	19	19
# of Science Teachers	4	4	4	4	3	3	3	4
# of Math Teachers	5	6	5	5	5	4	6	3
# of ICT Teachers	0	2	0	6	1	2	0	6
Class hour	50 mins	50 mins	50 mins	50 mins	50 mins	50 mins	50 mins	50 mins
Conducts Parents-teachers meeting	Once every three months	Once every six months	Once every three months	Once every three months	Once every six months	Annually	Once every six months	Once every three months
Classroom Infrastructure	2 stored Building	2 stored Building	2 stored Building	2 stored Building	2 stored Building	2 stored Building	6-storied building	3-storied building
Ramp Available	No	No	No	No	No	No	Yes	No
ICT Lab/Classroom available	No but they have Multimedia classroom	Yes	Yes	Yes	No	Yes	3 lab rooms	No but they have Multimedia classroom

	materials available							materials available
Science Lab available	N/A	Yes, but not functional	N/A	Yes	N/A	Yes	N/A	Yes
Separate washroom for Boys & Girls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Female-friendly washroom-Pad disposal facility	No	No	No	Yes	No	No	Yes	No
Playground available	No	No	No	Yes	No	No	Yes	No
Extra-Curricular Activities in the School	Regular assemblies and annual sports days	Regular assemblies and annual sports days	No Statement	They arranged an annual sports day before Covid	Regular assemblies and annual sports days	Regular assemblies and annual sports days	Regular assemblies, sports programs, and cultural programs are arranged.	Regular assemblies, sports programs, and cultural programs are arranged

Among these 08 selected schools, disable students with physical and mental disabilities were found in 5 schools. Those students are mostly irregular. Those students are mostly irregular. Some just attend the schools for the public exams. In terms of disability friendly environment, the schools face infrastructural gap, gap of special trainings on disable friendly teaching technique for the students, and lack of logistics. From observation, it was found that, none of these schools have disable friendly toilet, arrangement for sign language,

arrangement for interpretation, and simplified information for disabled students. Only, one primary School has the brail for the students; one high school has the disable friendly entrance; and another high school has ramp, disable friendly entrance, and disable friendly lift.

3.1.2 Students' Demographic Information

The table shows that there are more girls respondents than boy respondents in both the treatment and control groups of students. The age of the respondents ranges from 8 to 18 years old. The composition of students based on their age shows that approximately half of the students in both treatment and control groups are of the right age. There are almost 40% of overage students in both the treatment and control groups of students. According to the National Education Policy 2010 of Bangladesh, the age range for primary school students from grade 1 to grade 5 is six to ten years old, and the age range for students in grades 6 to 8 is 11 to 13 years old.

From the findings it is also visible that, around only 75% students on average have access to digital device at their households. Whereas, only about 50% of the students on average have access to internet facilities. And only about 27% on average reported that, they use the device for study purposes.

Table 2: Demographic Information of the Students

Indicators		Treatment (n=244)	Control (n=234)	Treatment (n=236)	Control (n=253)
		Primary School		**Secondary School**	
Student's Mean Age (SD)	------	10.15 (1.94)	9.62 (1.93)	13.28 (1.41)	13.05 (1.41)
Student's Age (%)	Underage	0	1.28	2.12	3.56
	Right age	56.15	66.24	55.51	60.87
	Overage	43.85	32.48	42.37	35.57
Students' Gender (%)	Boy	41.06	45.15	42.37	62.99
	Girl	58.94	54.85	57.63	37.01
Students' Grade (%)	Grade 1	12.60	18.57	----------	----------
	Grade 2	21.95	25.74	----------	----------
	Grade 3	27.24	21.94	----------	----------
	Grade 4	16.26	22.36	----------	----------
	Grade 5	21.95	11.39	----------	----------
	Grade 6	---------	---------	39.83	39.76
	Grade 7	---------	---------	33.05	38.58
	Grade 8	---------	---------	27.12	21.65
Access to Digital Device	----------	74.59	73.93	78.81	86.56
Access to Internet	----------	50.66	49.34	74.15	74.31
Use Digital Device for Study Purpose	----------	26.42	37.08	25.42	25.30

3.1.3 Parents' Socio-demographic Background

The socio-demographic table revealed several key findings regarding the parents of the students of primary and secondary schools of both treatment and control areas in the study.

Table 3: Socio-demographic Information of Parents

Indicators		Treatment (n=244)	Control (n=234)	Treatment (n=236)	Control (n=253)
		Primary School		Secondary School	
Mothers' Age (year)	Mean	32.79 (5.95)	33.29 (6.63)	35.30 (5.77)	35.36 (5.32)
Fathers' Age (year)	Mean	39.78 (7.67)	40.36 (7.65)	42.71 (8.47)	43.16 (7.70)
Mothers' Occupation (%)	Work Outside	32.65	45.76	28.94	32.54
	Homemakers	67.35	54.24	71.06	67.46
Fathers' Occupation (%)	Unemployed	4.51	1.71	3.90	3.66
	Driver/Rickshaw Puller	22.95	19.66	13.42	18.70
	Garments Worker	2.05	5.13	0.43	2.03
	Day Laborer	24.18	18.38	18.18	18.70
	Construction Worker	5.74	7.69	9.09	5.69
	Hotel Worker	0.41	2.56	2.60	1.22
	Own Small Business	25.82	18.80	35.93	29.67
	Service	13.11	20.09	15.15	17.48
	Industrial Worker	0.41	-------	0.43	------
	Street Hawker	0.41	2.99	0.87	0.81
	Security Guard	0.41	2.99	-------	2.03
Parental Marital Status (%)	Married	95.53	91.98	92.77	94.09
	Widowed	03.25	03.38	4.68	4.72
	Divorced	0.41	0.42	0.43	0.00
	Separated	0.81	04.22	2.13	1.18
Wealth Index	Poorest	12.30	43.16	12.29	10.28
	Poorer	26.23	16.67	20.76	18.18
	Middle	26.64	8.97	18.64	23.32
	Richer	16.80	18.80	22.46	24.51
	Richest	18.30	12.39	25.85	23.72

The mean age of the mothers fell within the range of 32 years to 35 years, while as fathers' mean age fell within the range of 39 years to 43 years in all the selected areas. The most common occupations among fathers were the daily workers' occupation, such as- construction worker, rickshaw puller, truck driver, garments worker, street hawkers etc. which were mentioned as day laborer in the table. About 50% fathers on average were found to be in this occupation. Rest of the fathers were engaged with service or own business, which has higher percentage among the fathers of secondary schools of treatment areas. However, it was found that, on average around 4% fathers of participants from primary and secondary schools of the treatment areas were unemployed. In terms of mothers, about 28% to 46% mothers from both treatment and control areas, work outside. The occupations were mostly found to be- garments worker, housekeeper, chefs at hotels, construction workers, street hawkers etc. The percentage of working mothers was found highest in the control areas. On the other hand, on average 65% mothers from all the areas are homemakers.

The majority of parents were married, with above 94% of parents reporting this status. About 3-4% of the parents were reported as widow, and 1-2% were divorced or separated. Between the treatment and control area slums, among primary school students' families the percentage of poorest is the higher in control area, whereas, poorer and middle are higher in treatment area. However, among the secondary school students' families, poorest and poorer is higher among the treatment group, in comparison to the control group.

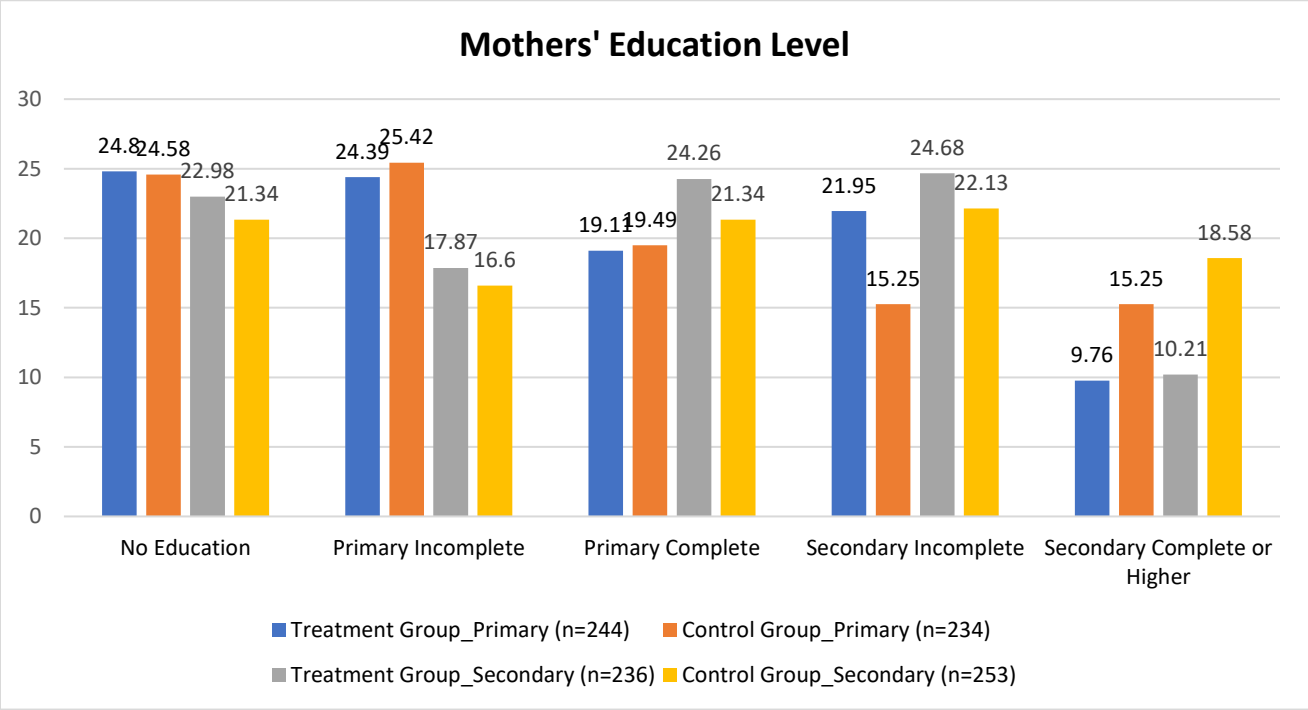

Figure 2: Mothers' Education Level

About 21% to 25% of mothers have no education both in treatment and control areas. The mothers of primary school students in treatments areas were found to be highest in percentage of having no education. About 24% of mothers of participants from primary school had their primary schools incomplete, whereas in terms of the mothers of high school students, it was 16-18% in both treatment and control areas. Only 9-10% mothers of primary and secondary school students from the treatment areas completed their secondary education, whereas for the control group it was almost double (15-18%).

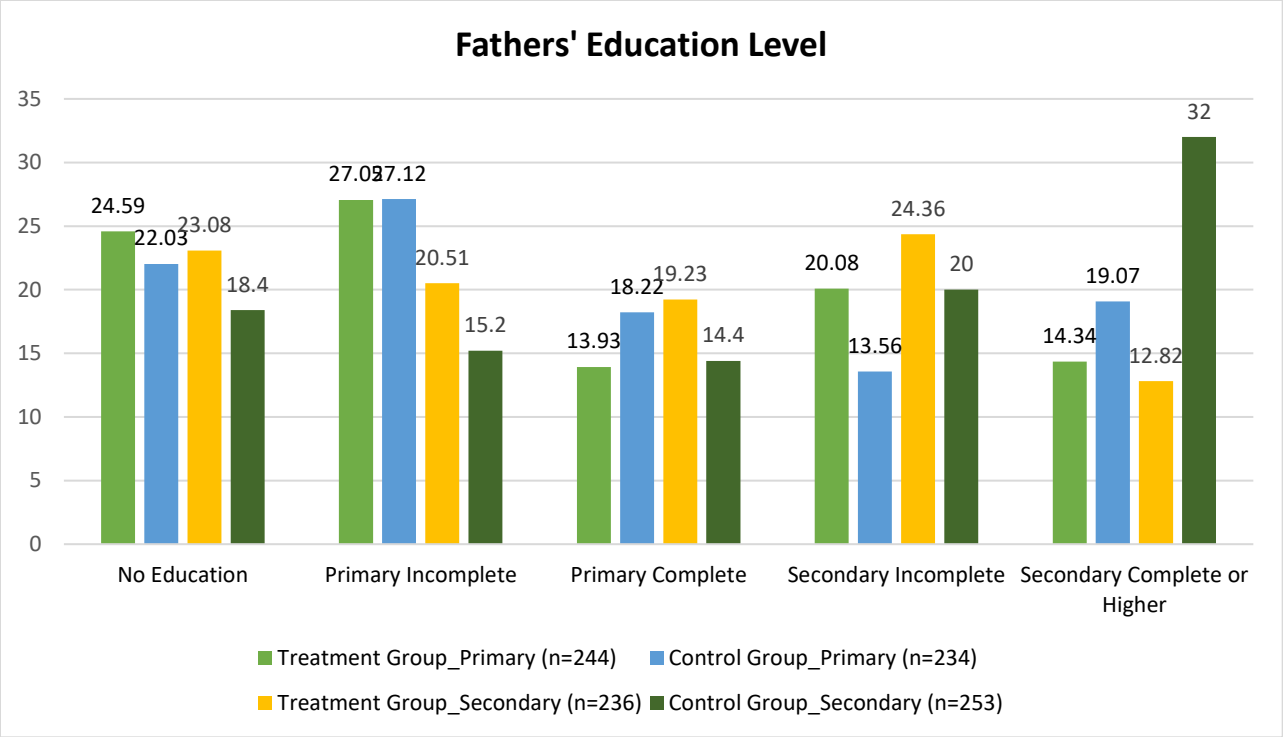

Figure 3: Fathers' Education Level

In terms of fathers' education level, there is a noticeable dispersion. In terms of the fathers of participants from primary school and secondary school in treatment group, on average, 23% fathers had no education, 24% fathers did not complete their primary education, 16% completed their primary education, 22% did not complete secondary education, and 13% complete secondary education or higher. Whereas, in the control group, the percentage of completing secondary or higher education was highest among the parents of participants from secondary school. In terms of no education, the percentage was lower than the treatment group.

The findings suggest that the parents of the students in the study had diverse socio-demographic backgrounds, with variations in age, occupation, education, and marital status. These variations may have implications for parental involvement in their child's education and ultimately affect student outcomes.

3.2 School and Teachers Related Findings

This section will discuss reasons of absenteeism from teachers' perception through both qualitative and quantitative analysis, and what are the measures taken to prevent that. It will also explore teachers' professional development related information and their modes of conducting classes in the schools.

3.2.1 Reason of Absenteeism and Measures Taken

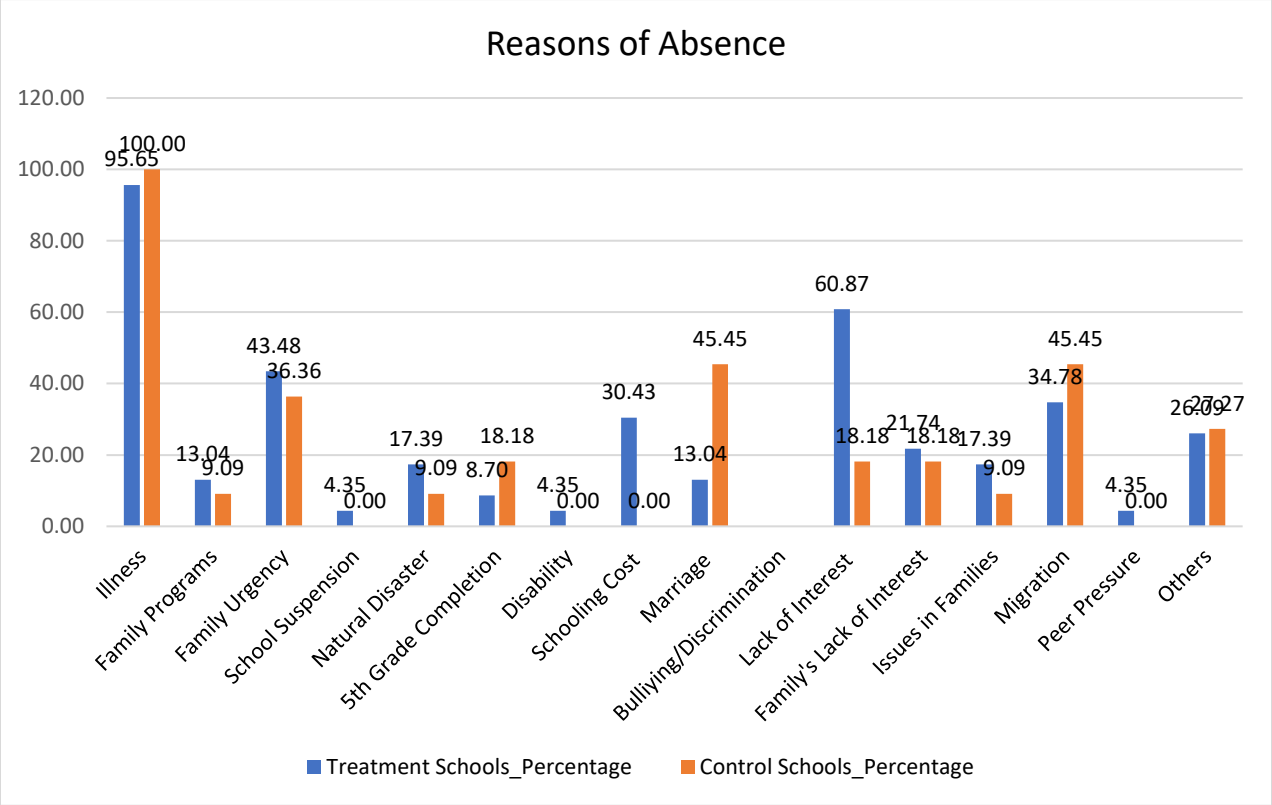

Figure 4: Reasons of Absenteeism based on Teachers Perception

According to the 95.65% teachers in treatment schools, illness is one of the most common reasons for absenteeism at schools. Students may miss school due to various illnesses such as fever, cold, cough, and stomach problems. These illnesses can be a result of poor hygiene, lack of access to healthcare, or exposure to unhygienic conditions. Another common reason for absenteeism is family issues and 43.48% teachers in treatment school agreed to this. Students may have to stay at home to take care of a sick family member or attend to family emergencies. Some students may also be affected by issues such as divorce, separation, or the death of a family member. 60.87% teachers in treatment schools reported that, lack of interest in coming to school is another reason for absenteeism. Students who are not motivated to attend classes or who find the subject matter too difficult may miss school frequently. This could be due to less traditional teaching methods, lack of engaging activities, or a feeling of disconnection from the school environment. According to the 34.78% teachers in treatment schools, migration is another major reason of absenteeism.

Teachers also identified several other reasons of absenteeism, such as- affected by natural disasters or hazardous weather conditions; physical, cognitive, emotional, or other disability which made continued schooling too difficult; difficulty in keeping up with peers/poor results in class Peer pressure (such as friends not going to/dropping out from school); difficulty in commuting to school Unable to afford the costs of schooling (such as uniform/clothing, school materials, etc.); marriage; discrimination/victim of bullying at school Work (including both formal and informal, paid, and unpaid work) etc.

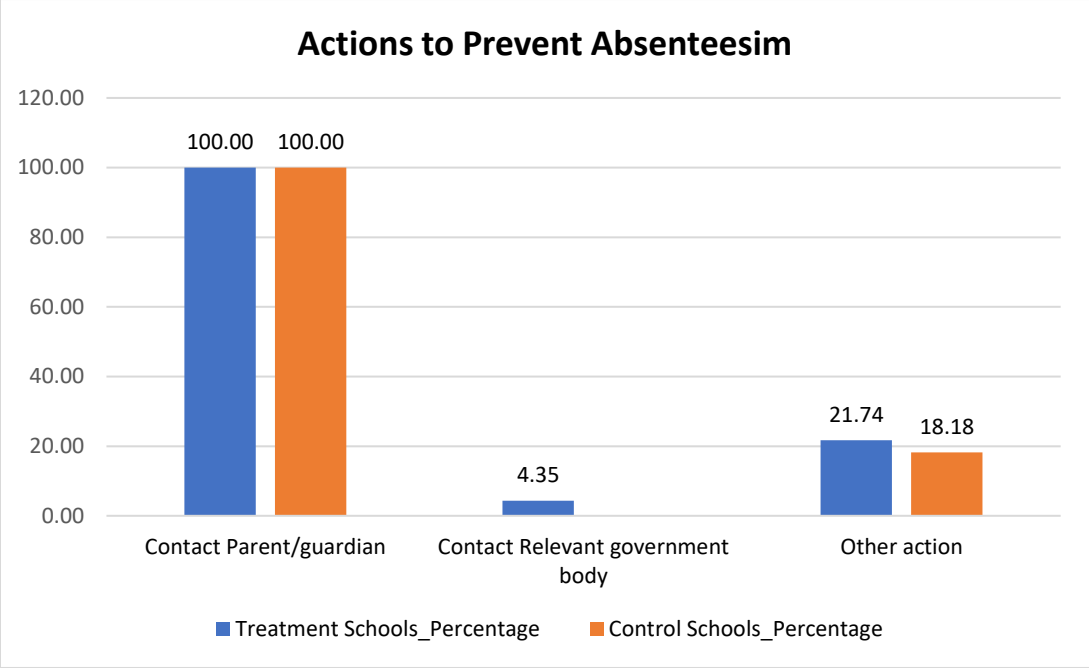

Figure 5: Measures Taken by Teachers to Prevent Absenteeism

About the steps taken, 100% teachers in both treatment and control schools reported that they contacted with the parents regarding the absenteeism. 21.74% teachers in treatment schools and 18.18% teachers in control schools reported about other actions, such as, talking to the students, considering the special situations, reducing the school fees, etc.

3.2.2 Modes of Conducting Classes

Teachers of the treatment and control schools were asked about the mode of conducting the classes. Majority of the teachers reported that, they conduct classes through class discussion, which is mainly a traditional way of teaching. 82.61% teachers in treatment schools and 72.73% teachers in control school conduct classes through class discussion. Among the treatment schools teachers, 60.87% conducted classes through practical demonstration, 56.52% through games, 39.13% through multimedia contents, and 17.39% through quizzes. Whereas, among the control group teachers, 72.73% teachers used practical demonstration mode for conducting the classes, 36.36% used multimedia contents, and 36.36% and 18.18% used games and quizzes respectively.

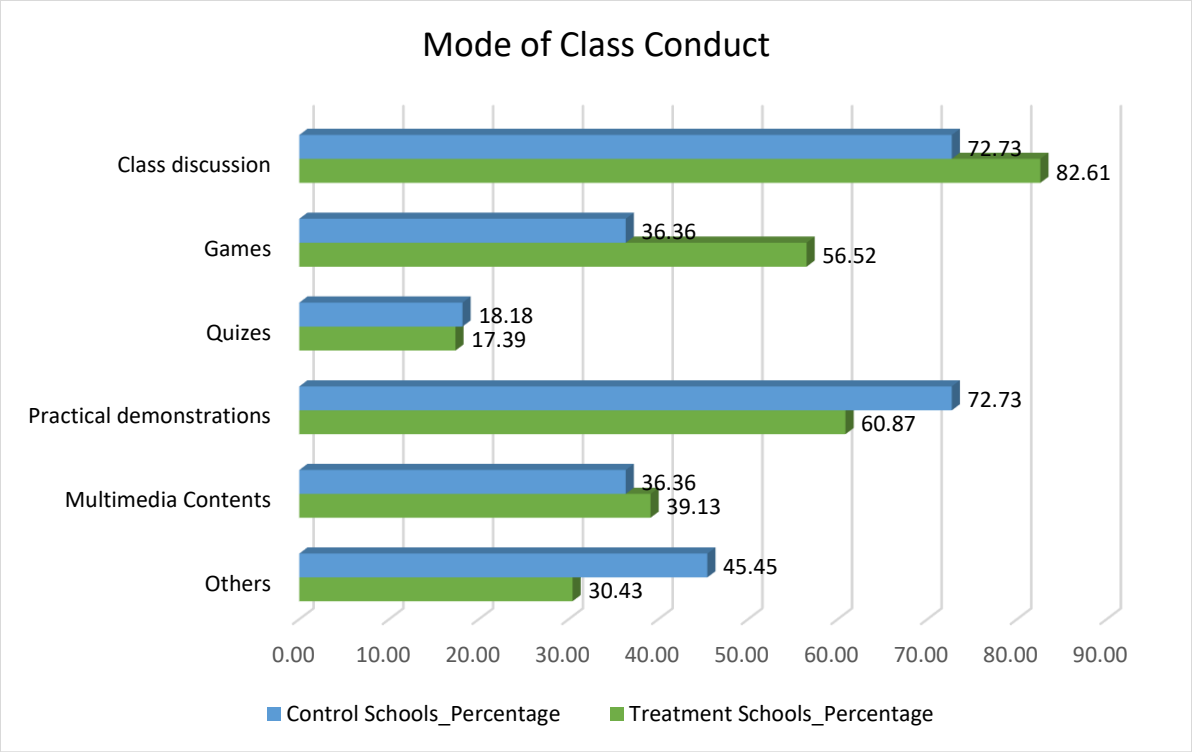

Figure 6: Modes of Conducting Classes by the Teachers in Treatment and Control Schools

However, among treatment group teachers 30.43% and among control group teachers 45.45% conducted classes in other modes such as- group works, singing or dancing to learn poems, and assignments-based teaching.

3.2.3 Teachers' Professional Development Information

This section gives detailed information about teachers' professional development training. It describes the types of training that teachers received and also if teachers received the adequate training that are focused on this study.

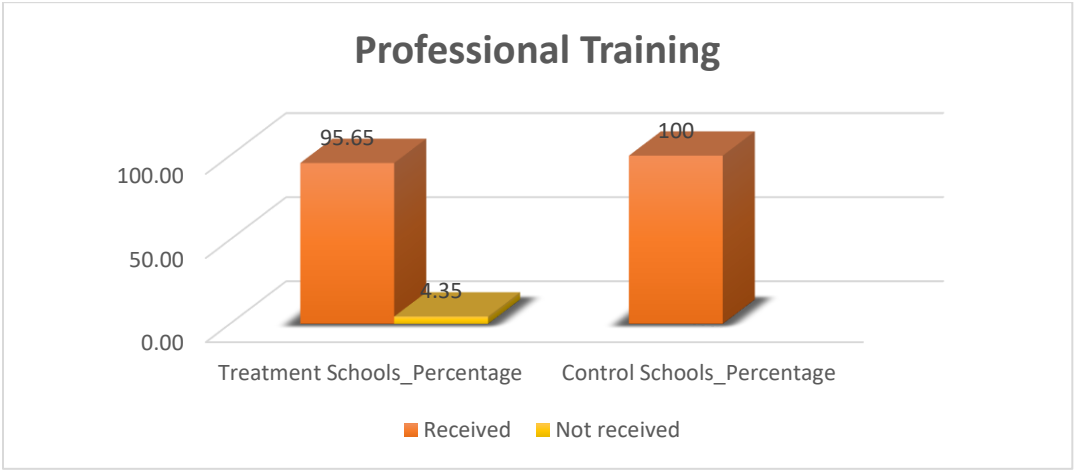

Figure 7: Percentage of Teachers Received Professional Development Training

Among 34 teachers, 23 in treatment areas and 11 in control areas, 95.65% and 100% respectively reported that they received professional development training.

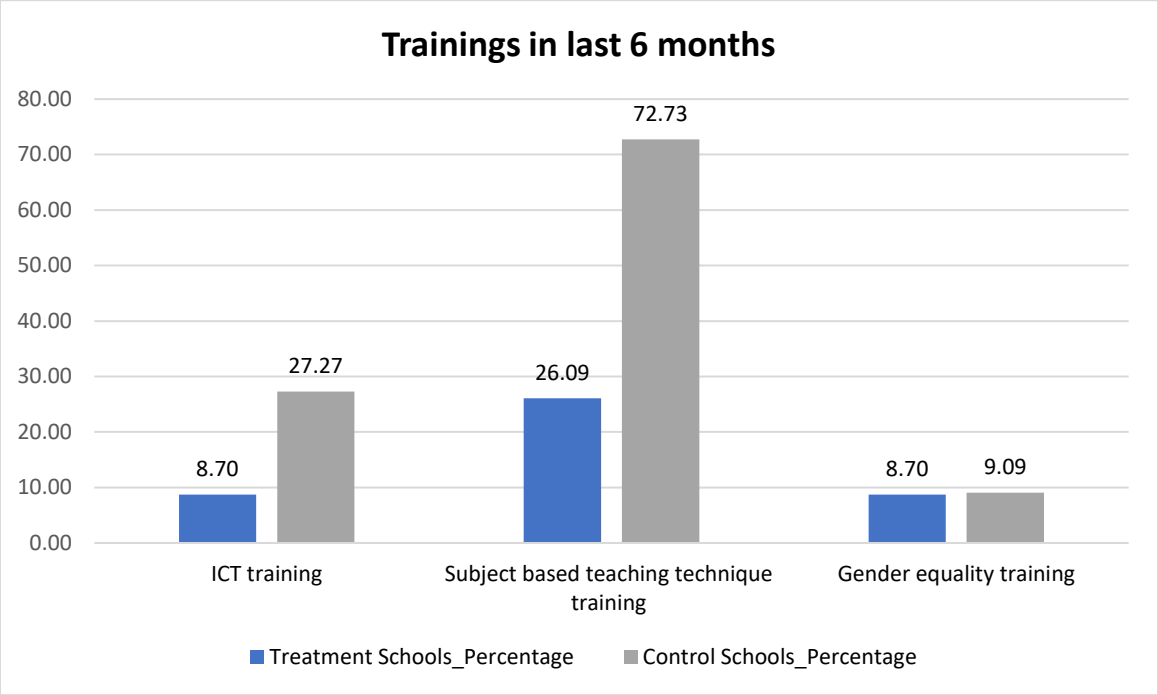

Figure 8: Percentage of Teachers Received ICT, Subject based, and Gender based Training

Among the treatment schools and control schools, it is clearly visible that, higher percentages of teachers from control schools received ICT, subject based, and gender equality training than the treatment schools' teachers. 8.70% teachers from treatment schools received ICT training, whereas, among the control school the percentage is 27.27, which is quite higher. It is even further higher in terms of subject based training. The interviews were done mostly with the science, math, and ICT teachers, where only 26.09% teachers from treatment schools reported that they received subject based training. But, in control school the percentage is 72.73%. However, in terms of gender equality training, the dispersion is quite less, which is 8.70% among treatment group and 9.09% among control group respectively.

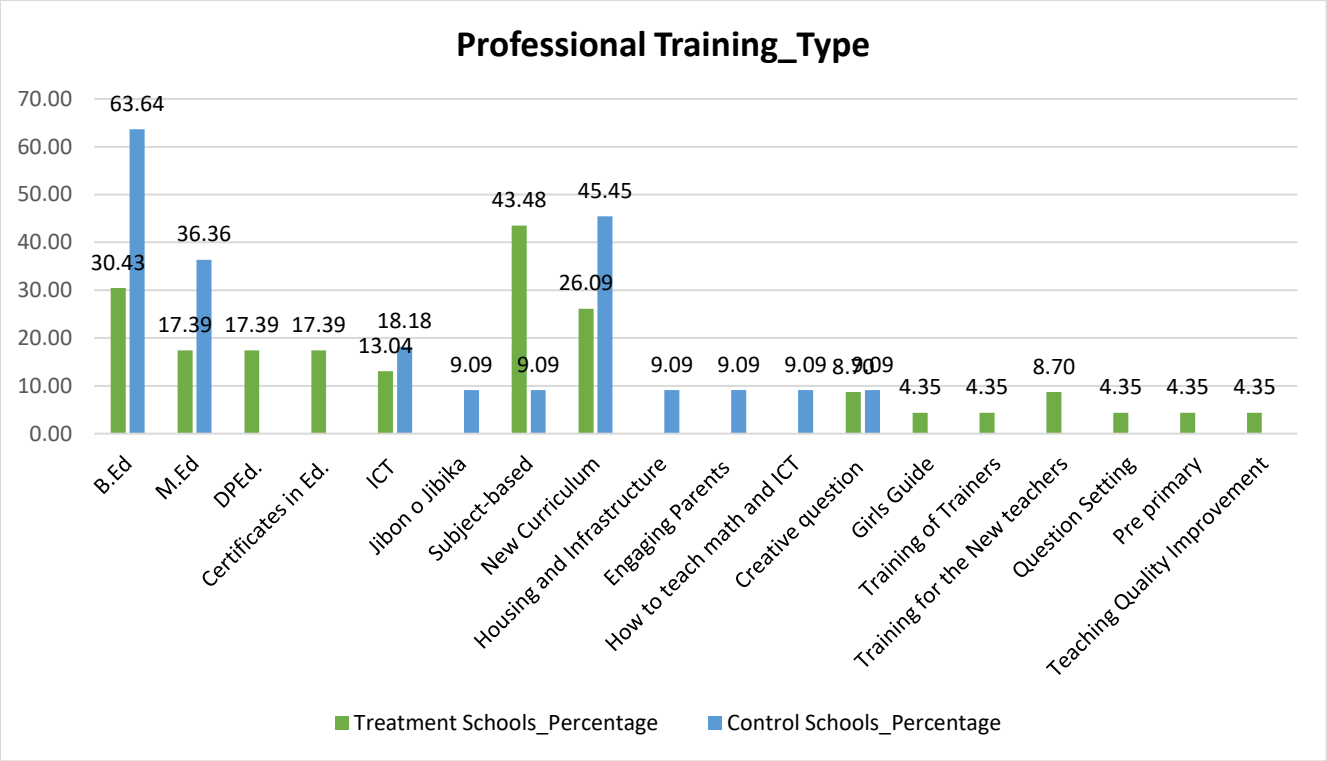

Figure 9: Percentage of Different Types of Professional Training

Teachers from treatment group and control group reported different types of training that they received during their service period. Among them, treatment group teachers received variety of trainings, such as- B.Ed, M.Ed, DPEd, C in Ed, ICT, subject based, new curriculum based, creative question, extra-curricular (Girls Guide), ToT, Training for New Teachers, Question Setting, Pre-Primary, and Teaching quality improvement training. The most reported three were- B.Ed (30.43%) , subject based training (43.48%), and new curriculum training (26.09%).

3.2.4 Teachers' Perception about the Learning Environment, Infrastructure, and Monitoring

a. Challenges in Classes

Multiple difficulties have been reported by teachers from the schools of treatment areas while teaching in the classrooms. These challenges not only include infrastructure problems, but also challenges related to physical and mental health, for both the teacher and the students.

Low Student Engagement:

The teachers noted that the students lacked motivation and engagement. They expressed their concern that the students were not being challenged enough and were not fully engaged in their learning. Teachers mentioned that students lack interest when they have to sit in the class for hours and study or learn just from textbooks. Without some activities, practical work, it becomes monotonous for them. The majority of teachers, however, reported that students are very likely to participate and be present in the class, when they take classes using multimedia.

> *"On the days we have multimedia classes, they are very enthusiastic, and there is also a very high rate of class attendance on those days* (Teacher, Secondary School, Treatment area 2)

Assistant teacher from Control area 2 stated,

> *"Students who study in our schools come from financially deprived families. There are 3 to 4 students in each of my class who have become so apathetic towards studies that, no efforts are working anymore to make them interested in studies."*

Another teacher from the control area' secondary school shared,

> *"After covid, when schools were opening, we are having so many difficulties teaching in class. Students have become so restless; they do not want to study at all. We are working harder than before, but even we are realizing that we need to adopt new teaching strategies for them to pay attention in classes."*

This might be evidence that Covid-19 has indeed created an unfulfillable gap in the students' life, leading them to an uncertain future. Additionally, there might be a rising need to change the teaching and learning techniques for better learning outcomes.

More children and Less Teachers:

Teachers, especially from Primary schools have reported that, there are more students in each class, comparing to the actual class size.

> *One of the most challenging things I find in teaching a class is keeping the class quiet. because we have more kids than the class can accommodate* (Primary Teacher, Treatment area 1)

This leads to a struggle to handle the students, keeping them calm in the classroom as well as delivering the lessons in the specific class time. In addition, lack of teachers makes it tougher that there is no helping hand to guide them.

Irregular Routine and Carelessness:

The second challenge is that most of the kids in the treatment area come from the root level – they do not eat breakfast most of the time.

> *"Their parents go to work early in the morning, so they cannot prepare breakfast for the children. That is why the children cannot in sustain the classroom." (*Primary teacher Treatment area1)

According to the primary teachers, it is torturous for the children to continue class from 9am to 2.30pm. Without proper breakfast, it is really hard for them to concentrate on their studies. Moreover, children do not have a proper nutritious meal even after school. Most of them eat *Panipuri*, *Phuchka*, junk fried foods from carts outside the schools. These unhealthy food habits lead them to waterborne disease such as typhoid, diarrhea as well as chronic malnutrition.

Increased Use of Phone:

Some children are not interested in learning in the classroom. Teachers from Secondary schools have complained that almost every student after Covid19 owns a mobile phone. One treatment

school does not have proper rules about bringing phones to school, which is why Science teacher from the Treatment area 1 has stated that they cannot control it even if they try. Students did not want to write in their copies in classrooms, they wanted to take photos of the blackboard.

> *"As they are more interested in mobiles and internet, I wish we could take more classes in Multimedia so that they will grow an interest towards study."* (Teacher, Control area 1)

Guardians are also somewhat indifferent to these situations. These situations have mostly started from the Covid-19 pandemic, which has not only lessened child's interest in studies, but also increased the use of mobile phones at a drastic rate.

b. *Challenges faced by School Managing Committee*

Challenges are identified by teachers, when it comes to enhancing teaching capacity and providing optimal learning environment for students. Whereas teachers from Control area have reported their school facing no such issues regarding lack of resource or money, the scenario in Treatment schools is quite the opposite. Shortage of resources, need of teachers' training, lack of good learning environment is some of the major problems reported by the teachers in the interviews.

Resource Shortage:

A major issue that was reflected in the teachers' interview from Treatment areas was insufficient resources. The classrooms do not have benches, or large spaces or environments suitable for group work or study. Physical infrastructure has problems and class capacity is low compared to the number of students.

> *"I prefer smaller classrooms with less students. Because, in large classrooms, now it is quite* impossible *for me to attend to every student within such a short period"* (Assistant Teacher, Treatment school 1)

> *"If we had multimedia in every classroom, then children can be attracted more towards reading.* (Secondary teacher, Treatment area2)

Trainings on New Curriculum:

Teachers have mentioned that they have been sent from schools for trainings such as DPEd., C in Ed., subject wise trainings, ICT trainings and so on. They have put an accent on the practicality of these training courses.

> *"We have been trained in digital content creation. Some classes have been taken for children through Google, YouTube, and they seem to have a lot of interest in these classes."* (Secondary teacher, Treatment area2)

> *"A few days ago, we were given subject-based training for the new curriculum. I am trained in science. In this training we got a better idea about teaching students"* (Secondary Teacher, treatment area1)

9 Out of 10 teachers, in Teachers' survey, have also accentuated on the necessity of more trainings as such -

"Obviously, It's necessary. For example, I need ICT training for making useful contents." Primary teacher Treatment area1)

"There are different topics in science for example. So, how much easily I can deliver my lectures to students will definitely depend on my training and skills." Primary teacher Treatment area1)

"We are always receiving training. As a teacher, there's always more to learn and a lot more to teach, which is why I need training." (Secondary Teacher, treatment area2)

"I am interested in taking a training on gender equality. This training is very useful for science. For instance, I might hesitate a bit when teaching specific chapters of a science book. I teach in co-ed; I have to present the topics in such a way so that both boys and girls can learn in an acceptable way. That is why I need the training." (Primary Teacher, Treatment school 1)

However, teachers believe that training that they are receiving on new curriculums is not completely applicable in the schools. First of all, only 5-7 days' training on a completely new curriculum cannot clarify every teacher's concept. It needs to be extended for a few more days.

Moreover, because of lack of sufficient space and equipment, teachers cannot apply the activities or their training in the classrooms.

Financial Problems:

The financial problem is the main one. Teachers have stressed the need for additional resources such as computers and other technology. For instance, to conduct digital classes, such supplies must be available. Teachers face obstacles in this regard. Assistant teacher from the primary school of Treatment area 2 stated,

"We do not have multimedia classrooms. So, it is more hassle for me to carry the projector from room to room. Also, it takes time to set the projector and meanwhile settle the students."

On the other hand, teachers from Secondary school of the same area stated that, although they have a lab, they could not fit the whole class in the lab. The scenario is the same here.

"We try to take classes in the lab as much as we could, but the lab is small for the students' usage." (Assistant Teacher, Secondary School, Treatment area 2)

The classrooms where the teachers take classes, there is no projector in each class, that is needed to show digital content. Only one lab is definitely not enough for 10-12 teachers and for so many students.

Behavior and Manner:

Teaching students about school behavior is the biggest challenge for teachers.

"Teaching student behavior is our biggest challenge. As most of the children come from the slums, it is difficult to teach them about proper behaviour." (Assistant Teacher, Secondary School, Treatment area 2)

Teachers reported that, most of the children do not have that sense of manner. In many cases politeness or respect towards teacher does not exist. They do not learn from their families how to behave in the classroom, school space or with teachers, which makes teaching students in class a bit more challenging.

Good Environment:

Another problem the teachers face in providing a good educational environment is that most of the students' parents work outside. As both parents are not at home, the child only studies when he comes to school, then when he goes home, he wanders around or does something else. As a result, there is no one at home to guide the children. There is no opportunity to follow up what he studied in school at home. Basically, teachers have reported that this problem is occurring due to the lack of awareness of the parents. And it cannot be solved in any way.

c. A Reflection of Trust:

Teachers are found to have immense trust in the education system, as well as the official personnels involved with the entire system i.e., the Thana Education Officers, Zilla Education Officers, Officials from the Ministry of Education etc. Most of the teachers have expressed their thankfulness especially towards the Thana Education Officers, who frequently visit the schools and tend to solve any and all kind of problems they face.

Assistance from Directorate and TEO:

More than 60% of the teachers' agreed to the fact that they are getting proper help and guidance from the Directorate of Primary Education, Directorate of Secondary and Higher Education and the Thana Education Offices. But here, the guidance comes more from the TEOs. They pay visit to the schools in a regular manner and immediately try to solve if any kind of problem occurs in the school. However, when it comes to the Directorates, teachers have stated that they are not getting enough help regarding school equipment, services, and guidance. Whereas some teachers have stated that, directorate is very helpful, most of the others, especially teachers from Secondary schools have stated that, they are not receiving sufficient assistance from the directorate.

> *"We were given 10-12 computers for our lab once… After that, no assistance came from the Directorate"* (Science Teacher, class 6 & 8, Secondary School from Treatment Area 2).

Another science teacher from the same school stated,

> *"The Directorate does not offer us much assistance. But I believe that students should have access to something. Getting some financial aid might be a good idea".*

Effective governance is essential to achieve successful outcomes. Basically, the teachers believe that they are being deprived of many necessities, because of communication gap, nobody listens to their problems, lack of transparency etc.

Helpful Education Policies:

Teachers both from Primary and Secondary schools believe that the education policies are aligned with the education related programs and activities in the schools. Although 4 out of 10 believe that there are some loopholes in the policies. Starting new experimental programs and then closing it

after a 2/3 years, excessive burden on primary teachers apart from their responsibilities, frequent changes in the curriculum makes the situation difficult for the teachers, according to a statement.

"Children struggle to adapt to these changes" – according to one of the assistant teachers in Primary School 1 under Treatment Area 2. Nonetheless, everyone believes that a good result will come through these changes, if proper time is given.

> *"The government is trying to change the education system of our country in line with other countries"* says the Science teacher at Secondary School 2 under Treatment area 1.
>
> *"This may take some time as it takes time to implement a new system. We all need to change our perspective and have to be patient".*

She believes that the problems they faced as children will not be there in the new system.

> *"Changes need to be done keeping pace with time. Now students are learning a lot on their own online, we just need to monitor if they are on the right track*."

Teachers have mentioned that blended learning is starting to make a change in the education system. Thus, proper advocacy from Education directorates can make it easier for the teachers as well as the school committee to get a good learning outcome from students.

d. Modern and Innovative Teaching Techniques

When interviewed, the teachers were found to apply various methods of teaching in the classrooms. Teachers from Primary schools were found to use materials to visualize the lessons for the students. They also use group activities, paired up works for weaker students. On the other hand, teachers from Secondary schools were found to use multimedia contents more as well as group activities. But the ICT integrated activities in the classroom seemed to be insufficient as per teachers' statements.

"Unfortunately, many teachers still do not use ICT effectively; or, even if they use ICT, it is not integrated into their pedagogy in a meaningful way." (Possibilities and Challenges of ICT Integration in the Bangladesh Education System, Shahrina Mou, Vol. 56, No. 2 March-April 2016).

Multimedia Contents:

> *"I took many classes last year on digital content",*

Says the science teacher at the secondary school from treatment area 2.

"Although head teachers and assistant teachers mentioned many classes using multimedia, the students' words and observed class information gave alternative facts" (Multimedia classrooms of the secondary schools in Bangladesh: A situation analysis, S. M. Kamruddin Ropum[1], Muhammad Monirul Islam[2], Md. Fajlay Rabbi[3], Vol 2(2), 2022)

> *"Since it is the beginning of the year, we haven't created any digital content yet according to the new curriculum. There are previous ones, but now classes cannot be taken with the previous ones."* (Science teacher, Secondary school, Treatment area 2)

According to his statement, the teachers will be able to create new content and take classes with those with the help of Google and YouTube, based on the training they got.

However, Primary schools are a bit behind regarding the usage of multimedia in classes. A possible reason that has been reflected from the teachers' interview is that the classrooms are not digital.

According to the Assistant teacher at Primary School, Treatment area 2

> *"Although students like multimedia classes, conducting classes in multimedia is a bit tough. It is not always possible to go to class carrying a heavy projector and use it to teach class. If we had such advanced classes, where every class had a projector in the class, we could sit in the class and show them...then it would have been a different story."*

So, resource shortage, which was discussed in the earlier section is the main problem here.

Being friendly and free:

Getting friendly with the students and talking with them freely helps a lot in teaching, according to a statement. Giving them motivation to study, to work hard for their parents can be useful to them as per the teachers' statement.

Group work and Pair up Tasks:

Math teacher of class5 from Primary School of Treatment area stated that, using group work as a strategy in class teaching is always beneficial to the students, because most of the children are a little weak in studies. Teamwork allows them to watch each other, work and learn. Those who are comparatively weaker than the others can get help from the ones who catch the lessons in a short time. A spirit of cooperation and competition is created, and they get good results.

Pictures and Drawings:

Teachers from Primary school reported that use of pictures and equipment (even a small ball) can create good effect in learning.

> *"When they see visual representations, it makes the study easy for them to memorize."*

Moreover, teachers follow other techniques. Such as, the teacher says in the class that,

> *"We will read this topic today, let's see who can come and write it on the board".*

Many students come forward and write spellings in the board. It increases their confidence, those who are weak in spelling can learn this way. Besides, teachers try reading out loud in the classroom. Many students have problems in reading. When asked to read in front of the whole class, it increases their confidence.

Playing Games and Activities:

There are some activities and games that are played while reading, these are entertaining. One will read and the other will listen in pairs. One has to write how many mistakes his/her partner made

in reading. Whoever makes a mistake here is ashamed, so he will study more and be prepared so that he won't make mistakes again.

e. Gender Differentiation

Questions on gender differentiation in teaching and learning processes tend to reflect on the different techniques followed by teachers in class for girls and boys. In addition, it was also inquired whether there was any different approach of learning of the students regarding gender.

Difference in Learning:

There was a positive response that girl students are far ahead of boys in terms of class performance than the male students. When it comes to responding in classes or doing good results, girls are more active. On the other hand, teachers from Secondary schools have reported that, boys are more restless and less tolerant.

> *"Boys are a little fickle and restless by nature. It takes a bit time trying to calm them down before starting the class."* (Assistant Teacher, Secondary School, Treatment area 2)

So, it is more difficult when it comes to teaching in the boys' section.

Difference in Teaching:

Teachers have stated no specific techniques that they follow gender wise. Class Teacher of class 1 in Treatment area 1, who also teaches Science in class 4 believes, that there is difference in lecture delivering while teaching a specific chapter (such as – menstruation) in class, because one group has to apply the teachings in their real life and the other group has to learn about that. But other than that, there was no different teaching or learning techniques reported for girls and boys.

f. Training – Sufficient or Insufficient?

Almost all the teachers, from Primary to Secondary, from those who have passed SSC/HSC to those who have completed Honors/master's degree, everyone reported to receive a wide range of trainings from the very beginning of their teaching life.

"Effective training is the key to creating effective workers. …Teachers need to go through continuous training for quality teaching-learning to happen" (Importance and Practice of Teachers Training in Bangladesh, Ahmed S, 2022)

Teachers have expressed their feelings that are twofold –

Allocation of More Training Days:

Although teachers have expressed their satisfaction with the trainings they are receiving, they have also talked about the limitation of timeframe of the trainings. Assistant teacher from Secondary School, Treatment area 2 disclosed that the training on new curriculum was only for 5 days, which according to her is not sufficient at all. She believes the training should be expanded as a completely new curriculum is on board. In addition, teachers have also emphasized that training is necessary to improve their skills.

"Teachers can play important roles in shaping kids' future. So, they always need proper training regarding gender equality, equal education for all etc" (Primary Teacher, Treatment Area1*)*

The interviews have reflected upon the fact that, trainings to provide to reduce psychological gap, to understand the overall mentality of student, especially 3 to 8 and to learn about gender dynamics for implementing an equitable learning environment are essential for every teacher.

Thinking about Alternatives:

Assistant teacher from Primary School, Treatment area 2 believes that, government should think about more effective alternative trainings for teachers.

She stated,

> *"In my opinion better training is provided by TRC than DPEd."*

She and her colleagues have contacted the Directorate expressing that TRC training should be given more importance rather than DPEd.

Teachers from all the schools have shown their genuine interest in receiving more effective training. Fruitful training will help them to offer effective experiential teaching in the classroom.

3.3 Findings related to the students

3.3.1 Absenteeism among Students

This section explains the absenteeism among treatment and control school students of primary and secondary sections. How absenteeism is differed by wealth index or gender is explained in this section.

Absenteeism by treatment and control group

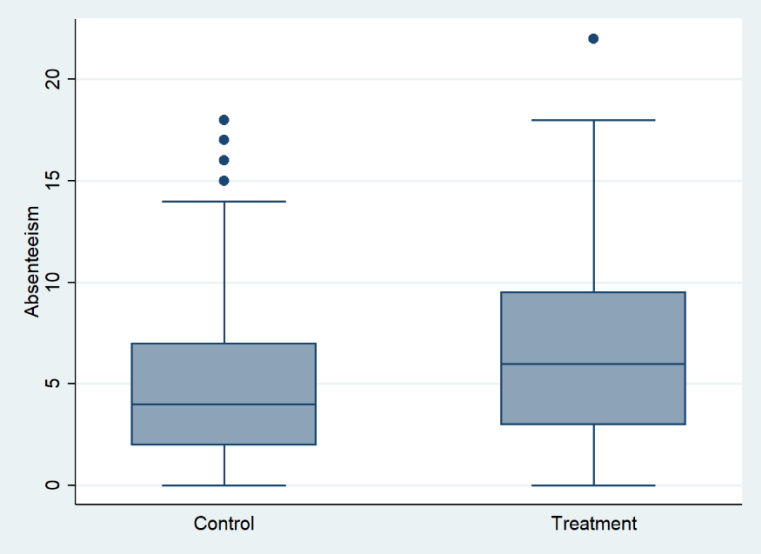

Figure 10: Absenteeism among the Treatment Group (n=244) & Control Group (n=234) of Primary School Students

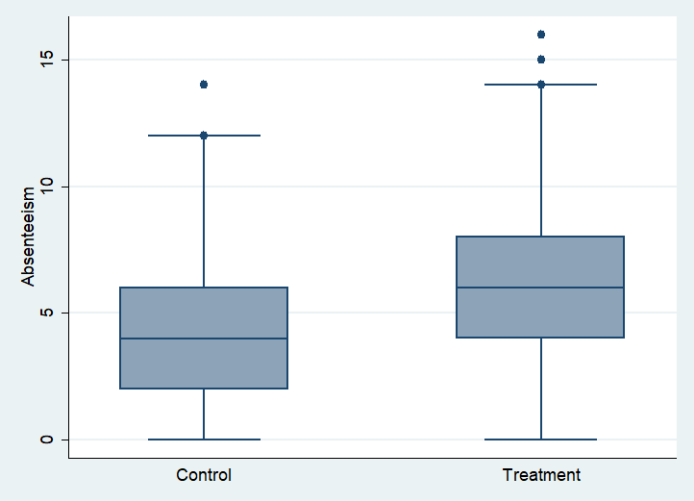

Figure 11: Absenteeism among the Treatment Group (n=236) & Control Group (n=253) of Secondary School Students

The box plots above show the distribution of average absenteeism among the treatment schools' students and control schools' students for a sample of 478 students in primary schools and 489 students in secondary schools.

For the treatment groups of primary schools and secondary schools, the median absenteeism is 6 days, meaning that 50% of the students in treatment schools of primary and secondary stay absent at schools for less than 6 days and 50% stays absent for more. The first quartile (25th percentile) is 3 days for primary and 4 days for secondary schools, indicating that 75% of students stay absent more than 3 days and 4 days respectively. The third quartile (75th percentile) is 10 days for primary school students and 8 days for secondary schools' students, meaning that 25% of students stay absent at schools more than 10 days and 8 days at primary schools and secondary schools respectively. The box plot suggests that the distribution of absenteeism among treatment schools' students both in primary and secondary schools are somewhat skewed to the right, with a majority of students being absent at schools between 6 to 10 and 8 days respectively.

Sex Disaggregated Findings of Absenteeism

Primary Schools

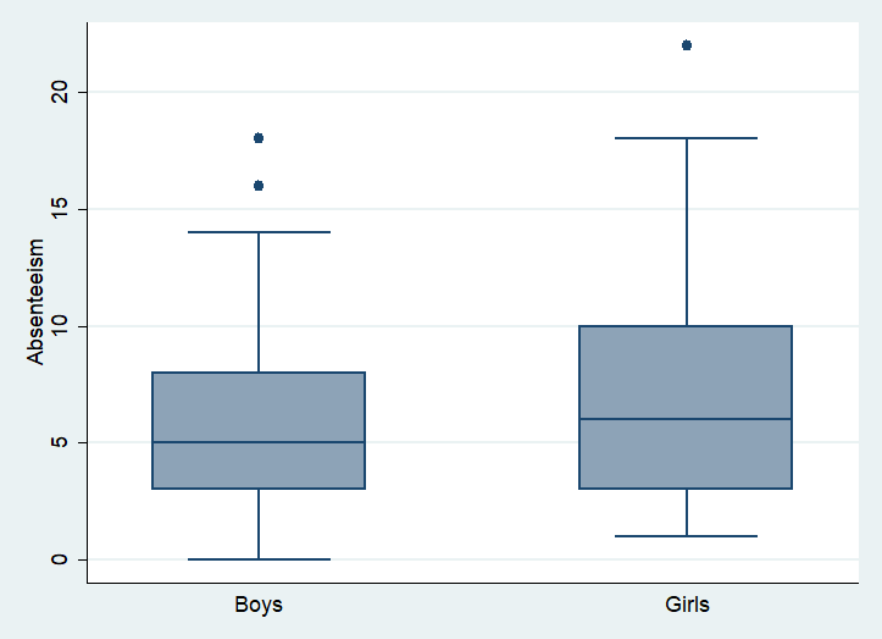

Figure 12: Sex Disaggregated Findings of Absenteeism among the Treatment Group (n=244) of Primary School Students

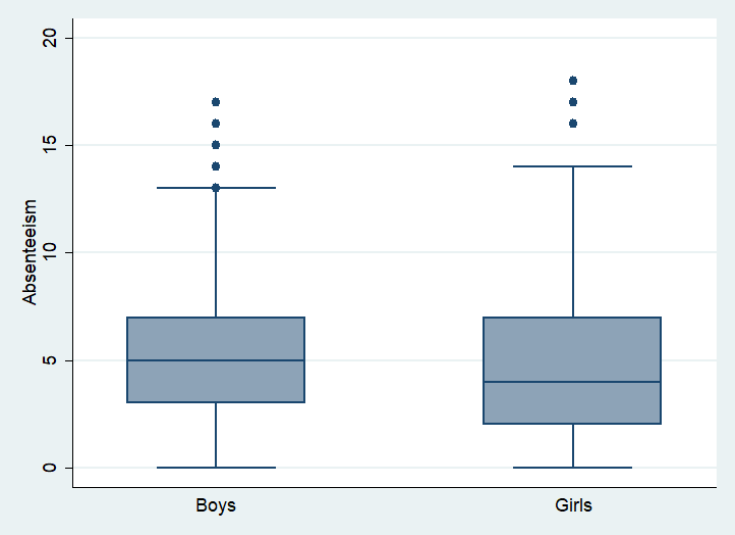

Figure 13: Sex Disaggregated Findings of Absenteeism among the Control Group (n=234) of Primary School Students

The box plots above show the distribution of average absenteeism among the boys and girls students of primary schools of treatment group and control group.

Among the treatment group students, absenteeism among boys has a median score of 5 days, a first quartile (25th percentile) score of 3 days, and a third quartile (75th percentile) score of 8 days. And it is slightly right skewed, which represents that most of the boys students stay absent for 5 to 8 days on average. The highest absenteeism days for boys is 14 days on average. However, among the girls students, the median score is 6 days, a first quartile (25th percentile) score is 3 days, and a third quartile (75th percentile) score is 10 days. The box plot is distinctively skewed to the right, that reflects that, majority of the girls students stay absent from schools for 6 to 10 days on average. The highest absenteeism for girls students is 18 days, which is quite a shocking number for the primary school students.

Among the control group students, absenteeism among boys has a median score of 5 days, a first quartile (25th percentile) score of 3 days, and a third quartile (75th percentile) score of 7 days. And it is equally skewed, which represents that equal number of boys students stay absent for 3 to 5 days and 5 to 7 days on average. The highest absenteeism days for boys is 13 days on average. However, among the girl students, the median score is 4 days, a first quartile (25th percentile) score is 2 days, and a third quartile (75th percentile) score is 7 days. The box plot is slightly skewed to the right, that reflects that, majority of the girls students stay absent from schools for 4 to 7 days on average. The highest absenteeism for girls students is 14 days, which is close to the boy students absenteeism score.

Comparing the two box plots among treatment schools and control schools, it's clear that, within treatment schools, girls are mostly affected by absenteeism than boys. Whereas, in control schools it is somewhat balanced.

Secondary schools

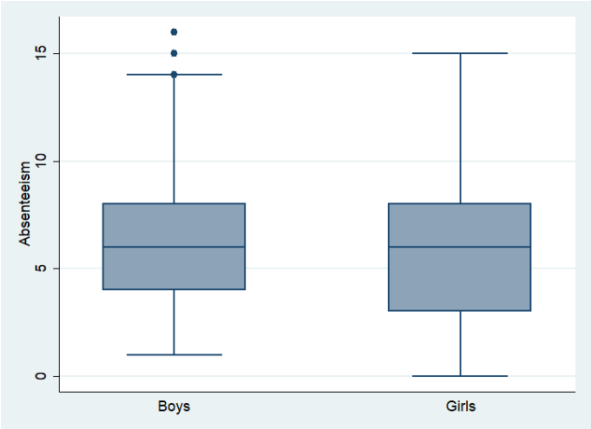

Figure 14: Sex Disaggregated Findings of Absenteeism among the Treatment Group (n=236) of Secondary School Students

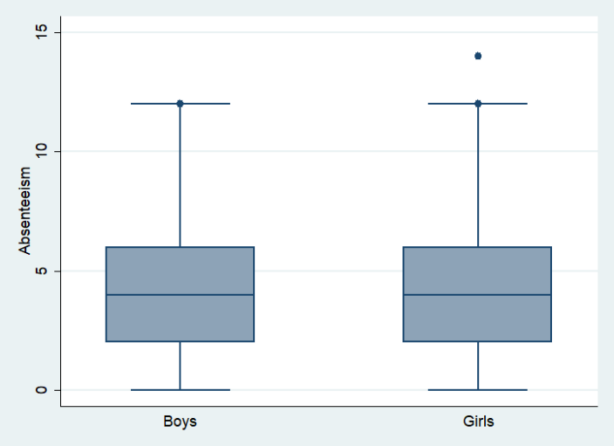

Figure 15: Sex Disaggregated Findings of Absenteeism among the Control Group (n=253) of Secondary School Students

Comparing the above boxplots that represent the distribution of gender-based absenteeism in secondary schools in treatment and control groups, it was found that-

The box plots above show the distribution of average absenteeism among the boys and girls students of primary schools of treatment group and control group.

Among the treatment group students, absenteeism among boys and girls has a median score of 6 days, a first quartile (25th percentile) score of 4 days for boys and 3 days for girls, and a third quartile (75th percentile) score of 8 days both for boys and girls. In terms of girls, it is slightly left skewed, which represents that most of the girls students stay absent for 3 to 6 days on average. The highest absenteeism days for boys is 14 days on average and for girls is 15 days on average.

Among the control group students, absenteeism among boys and girls has a median score of 4 days, a first quartile (25th percentile) score of 2 days both for boys and girls, and a third quartile (75th percentile) score of 6 days respectively. For both boys and girls, the box plots are equally skewed, which represents that an equal number of students in both gender stay absent for 2 to 4 days and 4 to 6 days on average. The highest absenteeism days for boys and girls is 12 days on average.

Comparing the two box plots among treatment schools and control schools for the secondary school students, it is evidential that, among the secondary school students, absenteeism does not vary much across the gender.

Absenteeism by Wealth Index

Primary Schools

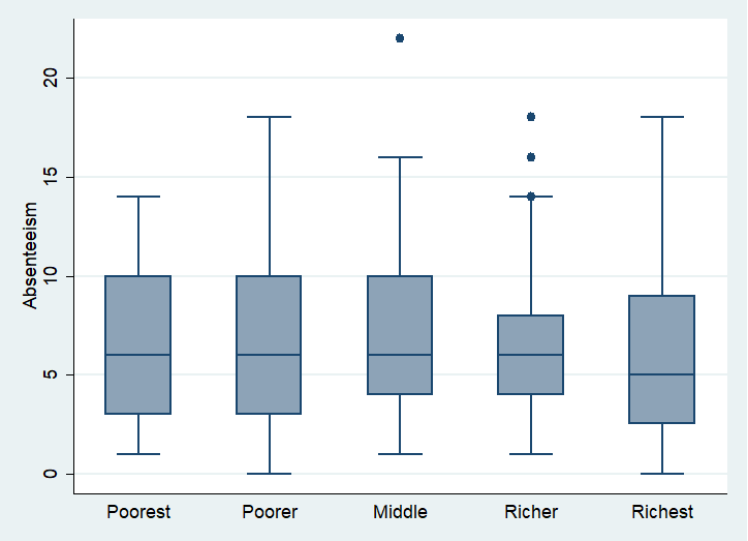

Figure 16: Wealth Index based Distribution of Absenteeism among the Treatment Group (n=244) of Primary School Students

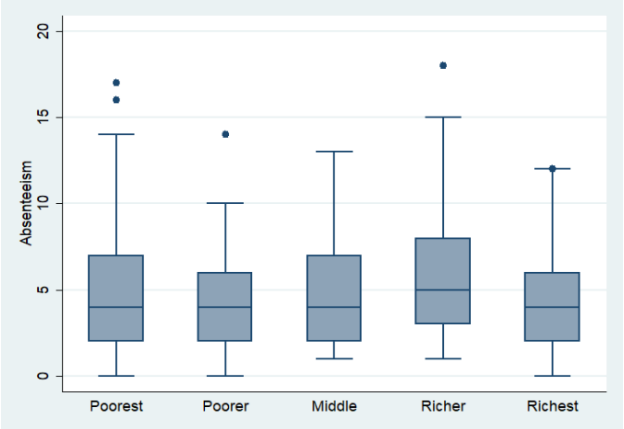

Figure 17: Wealth Index based Distribution of Absenteeism among the Control Group (n=243) of Primary School Students

The box plots above show the distribution of average absenteeism among the five categories of wealth index of the students of primary schools of treatment group and control group.

Among the treatment group students, absenteeism among the 5 categories has a median of 6 days except for the richest group, where the median score is 5 days. However, it is visible that, among the 5 categories, comparatively students from poorest, poorer and middle-income households stay absent for higher amount of days than the richer and richest group.

However, among the control group students, the scenario is a bit different. Here, students from the comparatively richer group stay absent at schools, than the other wealth index groups.

Secondary Schools

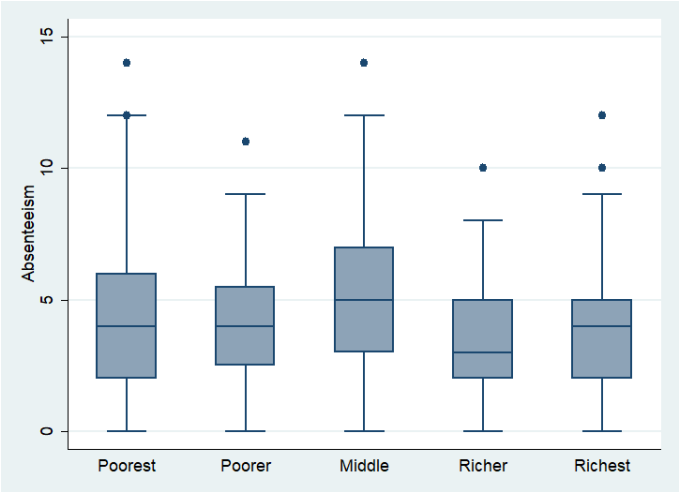

Figure 18: Wealth Index based Distribution of Absenteeism among the Treatment Group (n=236) of Secondary School Students

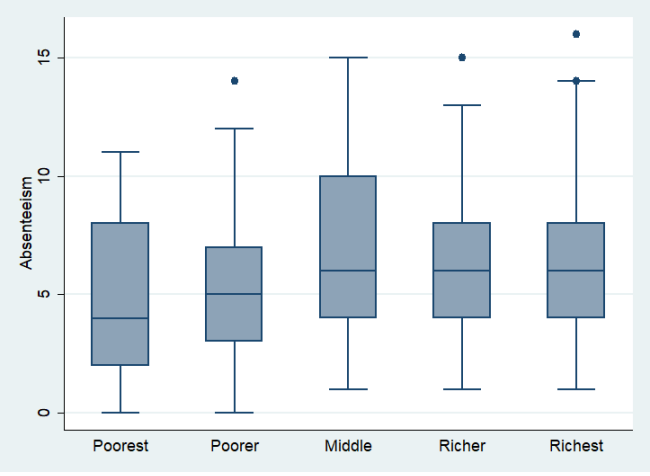

Figure 19: Wealth Index based Distribution of Absenteeism among the Control Group (n=253) of Secondary School Students

The box plots above show the distribution of average absenteeism among the five categories of wealth index of the students of secondary schools of treatment group and control group.

Among the treatment group students, absenteeism among the 5 categories has a median of 4 days among the poorest, 5 days among the poorer, and 6 days among the middle, richer and richest groups. However, it is visible that, among the 5 categories, comparatively students from middle-income households stay absent for higher number of days than the other 4 groups.

Among the control group students, the scenario is almost similar. Here, students from the comparatively middle-income group stay more absent at schools, than the other wealth index groups.

3.3.2 Science, Math, and Global Score of Students Disaggregated by Study Groups

Primary School

Science Score by Study Groups

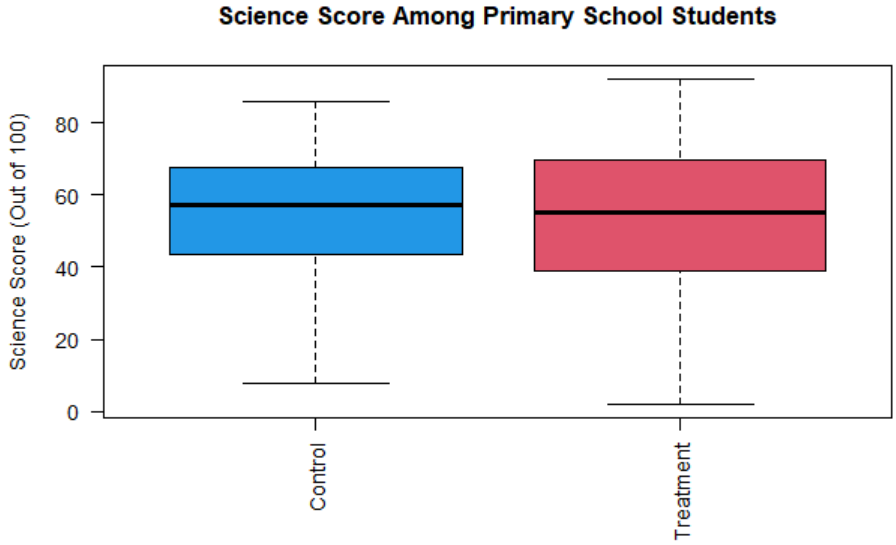

Figure 20: Science Score Among Primary School Students Disaggregated by Treatment (n=104) and Control (n=84) group.

The figure above explains the relationship between science score and treatment-control group. Here, there is slight difference between the median score of treatment (median score 58) and control group (median score 59). It is found that, control group students of primary schools scored slightly better than the treatment group students. However, in terms of highest score or lowest score, treatment group had the highest score of 97 and lowest score of 03.

Math Score by Study Groups

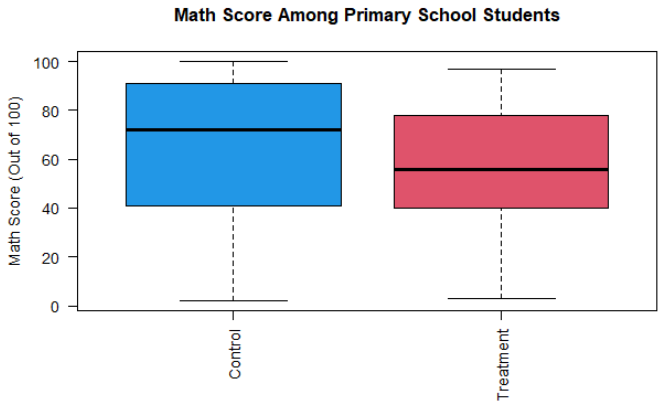

Figure 21: Math Score Among Primary School Students Disaggregated by Treatment (n=104) and Control (n=84) group.

The box plot above explains the relationship between Math score and treatment-control group. Here, there is a noticeable difference between the median score of treatment (median score below 60) and control group (median score about 70). It is found that, control group students of primary schools scored way better than the treatment group students. However, control group's graph is left skewed, which give an impression that, majority of the students scored between above 40 to 70; where as in treatment group majority's score is above 50 to 80.

Global Score by Study Groups

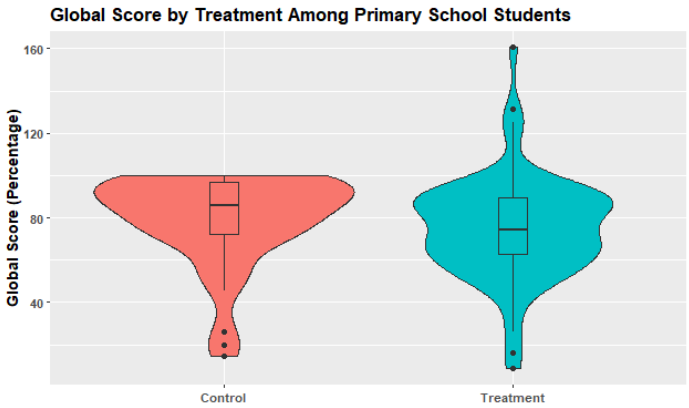

Figure 22: Global Score among the Treatment (n=104) and Control (n=84) group of Primary School Students.

This violin plot shows the relationship of global score and the study groups. The box plot elements show the median score for treatment is lower than the control group. The shape of the distribution indicates the scores of treatment groups are highly concentrated above the median, whereas for control group, it is around the median. Which implies that, in treatment group majority students scored above 80%.

Secondary School

Science Score by Study Groups

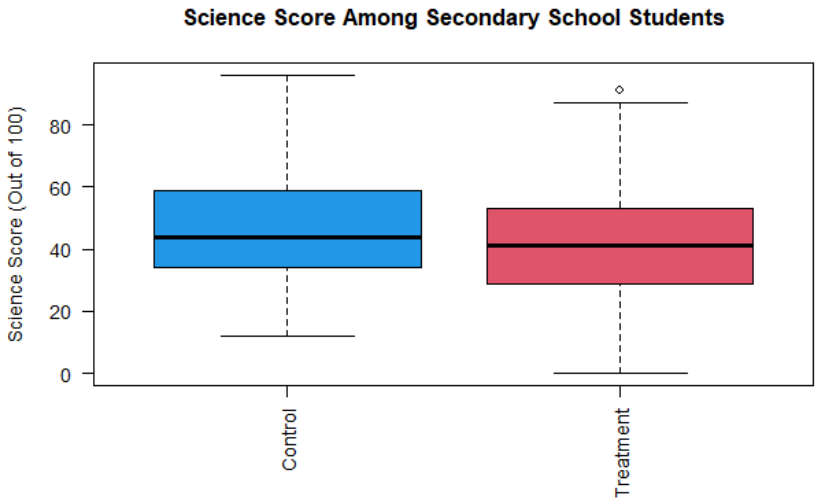

Figure 23: Science Score Among Secondary School Students Disaggregated by Treatment (n=231) and Control (n=117) group.

The figure above explains the relationship between science score and the study groups. There is slight difference between the median score of treatment (median score 40) and control group (median score 41). It is found that, control group students of secondary schools scored slightly better than the treatment group students. Treatment group's highest score was found around 90 whereas, control group's highest score was near to 100. In terms of lowest score too, treatment group had the lowest one.

Math Score by Study Groups

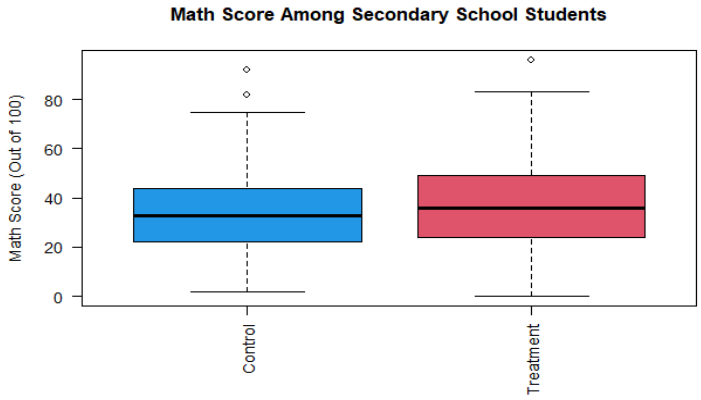

Figure 24: Math Score Among Secondary School Students Disaggregated by Treatment (n=231) and Control (n=117) group.

The figure above explains the relationship between math score and the study groups. There is no noticeable difference between the median score of treatment (median score around 38) and control group (median score 37). It is found that, treatment group students of secondary schools scored

slightly better than the control group students. Treatment group's highest score was found around 85 whereas, control group's highest score was below 80. In both the groups, majority of the students score within a range of 20 to 45 marks in the math exam.

Global Score by Study Groups

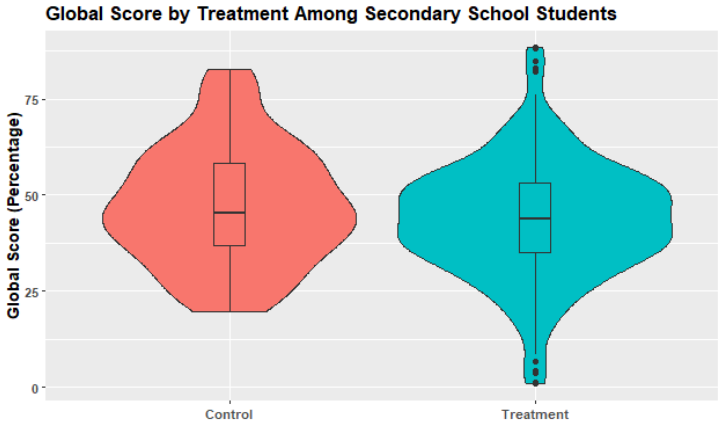

Figure 25: Global Score among the Treatment (n=231) and Control (n=117) group of Secondary School Students.

This violin plot shows the relationship of global score and the study groups. The box plot elements show the median score for the treatment group and the control group are almost same. The shape of the distribution indicates that the scores of both treatment and control groups are highly concentrated around the median. Which implies that, majority of the students in both group scored 40 to 50% marks in global score.

3.3.3 Interest in Science, Math and ICT and Preferred Learning Techniques

This section explains students interest in math, science, and ICT, and their classroom support from teachers in regard to these subjects.

Table 4: Science, Math and ICT Related Findings

Indicators		Treatment (n=244)	Control (n=234)	Treatment (n=236)	Control (n=253)
		Primary School		Secondary School	
How good are you at the Science?	Not good at all	8.84	5.00	2.54	3.15
	Slightly good	14.36	13.75	12.29	9.84
	Somewhat good	34.81	38.13	52.54	54.33
	Quite good	34.81	32.50	22.46	29.53
	Extremely good	7.18	10.63	10.17	3.15

How good are you at Math?	Not good at all	6.50	4.22	5.08	6.30
	Slightly good	11.79	11.39	19.49	10.63
	Somewhat good	25.20	29.54	34.75	35.43
	Quite good	39.84	34.18	25.85	31.10
	Extremely good	16.67	20.68	14.83	16.54
How good are you at ICT?	Not good at all			1.69	2.36
	Slightly good			6.78	6.30
	Somewhat good			23.73	25.20
	Quite good			47.03	50.39
	Extremely good			20.76	15.75
How well do your teachers explain science in class?	Not good at all	5.46	1.86	1.69	0.79
	Slightly good	8.20	6.83	2.54	1.97
	Somewhat good	16.94	23.60	7.20	11.81
	Quite good	45.90	44.72	59.75	67.72
	Extremely good	23.50	22.98	28.81	17.72
How well do your teachers explain Math in class?	Not good at all	1.63	1.27	2.54	0.79
	Slightly good	3.25	3.80	5.08	2.36
	Somewhat good	17.89	12.24	14.41	7.09
	Quite good	49.19	49.79	45.34	57.87
	Extremely good	28.05	32.91	32.63	31.89
How well do your teachers explain ICT in class?	Not good at all			1.27	1.18
	Slightly good			3.39	2.36
	Somewhat good			7.63	12.20
	Quite good			57.63	65.35
	Extremely good			30.08	18.90
How comfortable are you asking subject teacher questions about what you are learning in the class?	Not comfortable at all	16.26	9.70	11.86	8.27
	Slightly comfortable	13.01	12.66	13.56	9.45
	Somewhat comfortable	25.61	27.43	32.20	31.10
	Quite comfortable	45.12	50.21	42.37	51.18
Do you need to get extra tuition for science?	Yes	64.21	58.93	94.92	92.13
	No	35.79	41.07	5.08	7.87
Do you need to get extra tuition for math?	Yes	74.80	69.20	99.58	99.61
	No	25.20	30.80	0.42	0.39
Do you need to get extra tuition for ICT?	Yes			90.25	76.38
	No			9.75	23.62
Which way of teaching can make a subject interesting to you in class?	Multimedia Contents	21.14	43.46	37.29	45.67
	Practical demonstrations	15.45	14.77	41.95	45.28
	Learning through quizzes	2.85	2.11	16.95	22.05
	Learning through games	28.46	19.41	17.80	22.44
	Class discussion	28.05	18.99	40.25	32.28
	Others	4.07	1.27	15.25	13.78

Findings suggest that math is a subject that many primary and secondary school students struggle with. While 25% of students in secondary school and 39% students in primary school of treatment group reported feeling confident in their ability to do math, 5 to 35% students rated their ability from not good at all to somewhat good. However, in control group students seem to be more confident in doing extremely good at math, in comparison to the students at treatment group. Findings also suggest that science is also a subject that many primary and secondary school students struggle with. The analysis shows that, in comparison to math, students are less confident in doing good at science. On average 30% of students reported that they're quite good at science, whereas about 60% students rated themselves as not good at all to somewhat good in the treatment group. In regard to Information and Communication Technology (ICT), a considerable number of students feel confident about their ability in both the group, whereas, only about 25% rated themselves in accordance to not good at all to somewhat good. However, while asked about teachers' skill in teaching these subjects well in the classrooms, about 60% of the students rated their teachers as quite good and extremely good at teaching these subjects in both the treatment and control group. But a considerable number of students (about 13% on average) rated the teaching skill as not good at all to somewhat good. A lot of the students (about 25% on average in both primary and secondary schools) are somewhat to not comfortable in asking questions at the class even. Which explains their response to the following questions where they were asked about getting extra tuition for these subjects.

In the treatment group, 74.80% and 64.21% students of primary schools require extra tuition for math and science respectively. Whereas, in the secondary schools of treatment group above 90% students require the extra tuition for math, science and ICT. In low-income countries, the need for extra tuition in math and science is particularly acute, as students often face significant challenges in accessing quality education and resources. While extra tuition can be an important tool for improving academic performance, there are also potential harmful impacts on absenteeism and academic performance, especially for low-income students. Research has shown that extra tuition can exacerbate existing inequalities in low-income countries. Students from disadvantaged backgrounds may not have access to affordable or high-quality tuition services, which can widen the gap between those who can afford extra tuition and those who cannot (Karemera, 2016). Additionally, students who receive extra tuition may become overly reliant on this support, which can hinder the development of independent learning skills and self-motivation (Liu, 2019). Moreover, the pressure to perform well in exams and tests, which is often the main focus of extra tuition, can cause stress and anxiety among students, which can lead to absenteeism and decreased academic performance (Kamau, 2015). Students who receive extra tuition may also feel overburdened by the additional workload and may struggle to balance their academic responsibilities with other obligations, such as household chores and part-time work (Abiola, 2019).

While asking the students about their preferred methods of learning, about 40% of the students in secondary schools expressed their interest in learning through practical demonstrations, whereas in the primary schools students are more interested in learning through games. Studies suggest that experiential learning through games and practical demonstrations can be an effective approach for reducing absenteeism and increasing academic performance. By actively engaging students in the learning process, this approach can promote motivation, interest, and a deeper understanding of the subject matter. Using games as a teaching tool has been found to be effective in improving

academic performance and reducing absenteeism. A study conducted in Malaysia found that students who participated in a game-based learning program for science had significantly higher test scores and lower absenteeism rates compared to students who received traditional instruction (Rosli & Azman, 2017). Similarly, a study conducted in China found that using games to teach math was effective in improving student motivation and academic performance (Zhang & Xie, 2017). Practical demonstrations, such as science experiments and field trips, have also been found to be effective in promoting experiential learning and improving educational outcomes. A study conducted in India found that students who participated in a science camp that included hands-on activities had significantly higher test scores and lower absenteeism rates compared to a control group (Ghosh & Chakraborty, 2019). Another study conducted in Kenya found that students who participated in a field trip to a wildlife conservancy had higher test scores and were less likely to be absent from school compared to a control group (Mwenda & Mutie, 2018).

3.3.4 Learning Environment at School

This section explains students learning environment at school.

Table 5: Students' Experience at School

Indicators		Treatment (n=244)	Control (n=234)	Treatment (n=236)	Control (n-253)
		Primary School		**Secondary School**	
Have a sound relationship with teachers	Yes	89.02	92.41	86.86	94.49
	No	10.98	7.59	13.14	5.51
Teachers respect views	Yes	84.96	86.92	88.56	95.28
	No	15.04	13.08	11.44	4.72
Teachers punish students in the class for any misconducts	Yes	90.24	83.97	94.49	91.34
	No	9.76	16.03	5.51	8.66
Mode of punishment	Verbal abuse	18.02	23.23	62.33	65.50
	Physical abuse	63.51	58.59	70.85	44.98
	Parents calling	6.31	6.57	17.94	13.54
	Others	12.16	11.62	22.42	37.12
During the past 30 days, how often were most of the students in your school kind and helpful towards you?	Never	1.63	2.11	1.27	0.39
	Rarely	3.25	1.27	0.85	1.57
	Sometimes	13.01	14.77	12.29	6.69
	Most of the time	32.93	22.78	33.90	29.92
	Always	49.19	59.07	51.69	61.42

Students were asked about having sound relationship with their teachers. About 90% students from all the schools reported to have sound relation, whereas 10% from primary schools and 13% from secondary schools in treatment group reported not having any sound relation with their teachers. 15% students from primary school and 11% students from secondary school of the treatment group also think that teachers don't respect their views in the classes. Above 10% of the students reported about teachers punishing students for any misconduct at school. About the mode of punishment,

most of the students reported about physical punishment. Teachers' attitudes towards students have been found to have a significant impact on reducing absenteeism and increasing academic performance. When teachers display positive attitudes towards their students, it can create a supportive learning environment, which can lead to increased engagement and motivation among students. On the other hand, negative attitudes from teachers can lead to decreased engagement, motivation, and absenteeism among students. Studies found that students who reported positive relationships with their teachers had higher academic achievement, better attendance rates, and were more likely to graduate from high school (National Education Association, 2014). Another study found that teacher support was a significant predictor of students' academic achievement and absenteeism. Specifically, students who perceived higher levels of teacher support had better academic achievement and were less likely to miss school (Reyes et al., 2012). Furthermore, research has shown that teachers' attitudes towards students can impact students' emotional well-being, which can in turn affect academic performance and absenteeism.

Apart from teachers' attitude towards them, while the students were asked about receiving kind and helpful behavior from other students at school, about 50% reported that they always receive kind and helpful behavior, whereas rest 50% reported not receiving the warmly behavior all the time.

3.3.5 Knowledge and Practice of Menstrual Hygiene

This section will discuss about the menstrual hygiene knowledge and practice among the female students at secondary schools in both treatment and control group.

Table 6: Menstrual Hygiene Knowledge and Practice among the Secondary School Students

Indicators		Treatment (n=136)	Control (n=159)
Menstruating	Yes	86.05	87.42
	No	13.95	12.58
What is Menstruation?	Normal Physiological process	89.66	89.55
	Not a Normal Physiological process	10.34	10.45
What is the source of menstrual blood?	Abdomen	54.55	26.92
	Bladder	6.06	13.46
	Vagina	24.24	25.00
	Uterus	15.15	34.62
What is the duration of menstrual bleeding?	3–4 days	19.67	21.01
	5–7 days	78.69	77.54
	8–9 days	1.64	1.45
What is the duration of menstrual cycle?	< 21 days	9.57	6.82
	21–35 days	89.57	90.91
	> 35 days	0.87	2.27
Usually what do you use during menstruation?	Old Cloth (rag)	6.19	5.97
	New clothes	8.85	4.48
	Sanitary Pad	84.07	88.06
	Cotton	0.00	0.00

	Tissue paper	0.88	0.00
	Nothing	0.00	0.75
	Other	0.00	0.75

Based on the survey of the female students from secondary school, it was found that 86.05% students in treatment group and 87.42% students in control group are menstruating. However, 105 of them think that menstruation is not a normal physiological process. About 55% in the treatment area and 27% in the control area answered that, the source of menstrual blood is abdomen, whereas only 15% in treatment area and 34% in control area could answer it correctly. Regarding the duration and cycle majority of the students answered correctly. But a considerable number of students (19.67%) in treatment area think that the duration is of 3-4 days, which explains their lack of menstrual knowledge. Above 80% of the students use sanitary napkin, while around 7% of the students still use old clothes.

Menstrual hygiene knowledge and practice are crucial for maintaining good health and preventing absenteeism among girls and women. Menstruation is a natural process, but a lack of knowledge and inadequate menstrual hygiene practices can lead to several health problems and negatively impact academic performance. According to the World Health Organization (WHO), poor menstrual hygiene can lead to vaginal infections, urinary tract infections, and cervical cancer (WHO, 2015). In addition, girls who do not have access to sanitary products may be more likely to use unhygienic materials, such as cloth or paper, which can further increase the risk of infection.

3.3.6 Nutrition Habit and Knowledge

This section explores students' food consumption habit and access to knowledge about nutrition and healthy eating.

Table 7: Students' Food Consumption Status

Indicators		Treatment (n=244)	Control (n=234)	Treatment (n=236)	Control (n=253)
		Primary School		Secondary School	
Daily consumption of fruits	Did not eat fruit daily in the past 30 days	74.80	63.71	74.15	65.35
	1 time per day	21.95	29.96	22.88	31.10
	2 times per day	3.25	4.22	2.12	3.15
	3 or more times per day	0.00	2.11	0.85	0.39
Daily consumption of vegetables	Did not eat vegetable daily in the past 30 days	27.64	28.69	47.88	39.37
	1 time per day	51.63	44.73	31.78	42.13
	2 times per day	20.33	21.52	16.95	16.93

	3 or more times per day	0.41	5.06	3.39	1.57
Consumption of carbonated drinks	Did not have any soft drinks in the past 30 days	82.93	71.31	85.17	75.20
	1 time per day	15.04	21.10	11.02	21.26
	2 times per day	2.03	6.75	2.12	3.15
	3 or more times per day	0.00	0.84	1.69	0.39
Daily consumption of outside food in last 7 days	0 days	20.33	28.69	21.61	24.41
	1 day	13.82	11.39	8.05	13.78
	2 days	19.11	18.14	14.83	19.29
	3 or more days	46.75	41.77	55.51	42.52
Was taught in any of his/her classes about the benefits of healthy eating	Yes	17.48	15.61	83.47	92.91
	No	71.54	75.11	11.44	4.33
	Do not know	10.98	9.28	5.08	2.76
Was taught in any of his/her classes about the benefits of eating more fruits and vegetables	Yes	17.07	15.19	83.90	93.31
	No	72.36	75.95	11.86	4.33
	Do not know	10.57	8.86	4.24	2.36

Survey of primary and secondary school students found that the majority of students reported not having basic, nutritious foods on a regular basis. For example, about 70% of students reported not eating fruits daily and about 25% students on average do not have vegetables daily both in treatment and control group. However, some students reported unhealthy eating practices, such as, or consuming carbonated drinks at least one time per day (15 to 20% of students). On average 45% students from all the schools have outside food on regular basis.

The consumption of non-nutritious and outside foods has been linked to several negative health outcomes, including an increased risk of absenteeism, and reduced academic performance in students. Eating foods that are high in sugar, fat, and salt but low in nutrients can lead to poor health outcomes such as obesity, diabetes, and heart disease. Studies found that students who regularly consume unhealthy foods has higher rates of absenteeism and lower academic performance compared to students who consume healthy foods (Voss et al., 2013; Vyas & Koliwad, 2016). Consumption of outside foods that are prepared in unhygienic conditions can lead to foodborne illnesses such as diarrhea, vomiting, and fever. These illnesses can lead to increased absenteeism and reduced academic performance. A study conducted in Nigeria found that students who reported eating outside foods had a higher risk of contracting foodborne illnesses and missing school due to illness (Oluwafemi et al., 2019).

Students were asked questions about learning the benefits of healthy eating and consuming fruits and vegetables regularly. 70% of the students in primary schools reported not learning about the benefits from any of their classes, whereas in the secondary schools 11% students reported the same. However, teaching students about healthy diets has been found to have a significant impact on reducing absenteeism and increasing academic performance. Poor nutrition and an unhealthy diet can negatively affect a student's cognitive function, mood, and overall health, leading to poor academic performance and increased absenteeism. On the other hand, a healthy diet can provide the necessary nutrients and energy for students to perform well academically and improve their overall well-being. Study conducted by the Centers for Disease Control and Prevention (CDC) (2018) found that students who ate a healthy breakfast had better attendance rates and were less likely to be tardy compared to those who skipped breakfast or had an unhealthy breakfast. Additionally, students who regularly consumed fruits and vegetables had higher academic achievement compared to those who did not. Another study conducted by the World Health Organization (WHO) (2018) found that students who had access to healthy food options at school had better academic performance and were less likely to miss school due to illness. Furthermore, the implementation of nutrition education programs in schools has been shown to have a positive impact on students' eating habits and overall health. A study conducted by the American Journal of Public Health (2015) found that a nutrition education program implemented in schools led to an increase in the consumption of fruits and vegetables among students. Another study conducted by the Journal of School Health (2017) found that a nutrition education program led to a decrease in the consumption of unhealthy foods among students.

3.3.7 WASH and Hygiene Knowledge

This section explains WASH and hygiene knowledge among the students from primary and secondary schools of both the treatment and control group.

Table 8: WASH and Hygiene Knowledge of the Students

Indicators		Treatment (n=244)	Control (n=234)	Treatment (n=236)	Control (n=253)
		Primary School		Secondary School	
Wash hands before eating	Never	0.00	0.42	0.00	0.00
	Rarely	0.81	0.84	0.42	0.00
	Sometimes	4.88	9.28	5.51	5.12
	Most of the time	15.45	10.55	14.41	9.06
	Always	78.86	78.90	79.66	85.83
Wash hands after using the toilet or latrine	Never	0.00	0.84	0.00	0.39
	Rarely	0.81	0.42	0.42	0.00
	Sometimes	2.85	4.22	1.27	0.79
	Most of the time	11.38	9.70	4.66	1.57
	Always	84.96	84.81	93.64	97.24
	Never	0.41	3.38	0.00	0.39

Use soap when washing hands	Rarely	8.13	5.91	2.97	0.00
	Sometimes	15.04	16.88	18.22	12.20
	Most of the time	26.83	16.88	25.00	26.38
	Always	49.59	56.96	53.81	61.02

Findings suggest that many primary and secondary school students in both treatment and control group have limited knowledge and practice of basic hygiene. While most students reported washing their hands after using the toilet (80%), only 70% reported washing their hands before eating or preparing food. Additionally, only 50% of students reported using soap and water to clean their hands.

3.4 Parental Engagement Related Findings

This section includes socio demographic information about the parents, their involvement with children's study and the school events.

3.4.1 Involvement with Child's School Events

This table contains the information about parents knowledge about school governing body and their involvement with the school events.

Table 9: Parental Involvement with Child's School Events

Indicators	Treatment (n=246)	Control (n=237)	Treatment (n= 236)	Control (n=254)
	Primary School		**Secondary School**	
Know about School Governing Body	54.29	62.03	51.27	59.84
Attended Parents-Teachers meeting in last 1 year	43.50	61.18	52.12	43.70
Received report card from school for their children	73.06	83.47	74.58	84.65
Attended celebration of any event or sport event at child's school in last 1 year	23.78	45.00	23.77	18.80
Went to school to discuss child's progress with teachers	92.96	94.41	91.87	92.48

Based on our baseline assessment, we found that parental involvement with school events is moderate, but there is room for improvement. On average, only 50% of parents participated in the school governing body's meetings. Though, 90% of the parents went to school to discuss about their children's progress in study, only around 28% on average went to any other events or sports day.

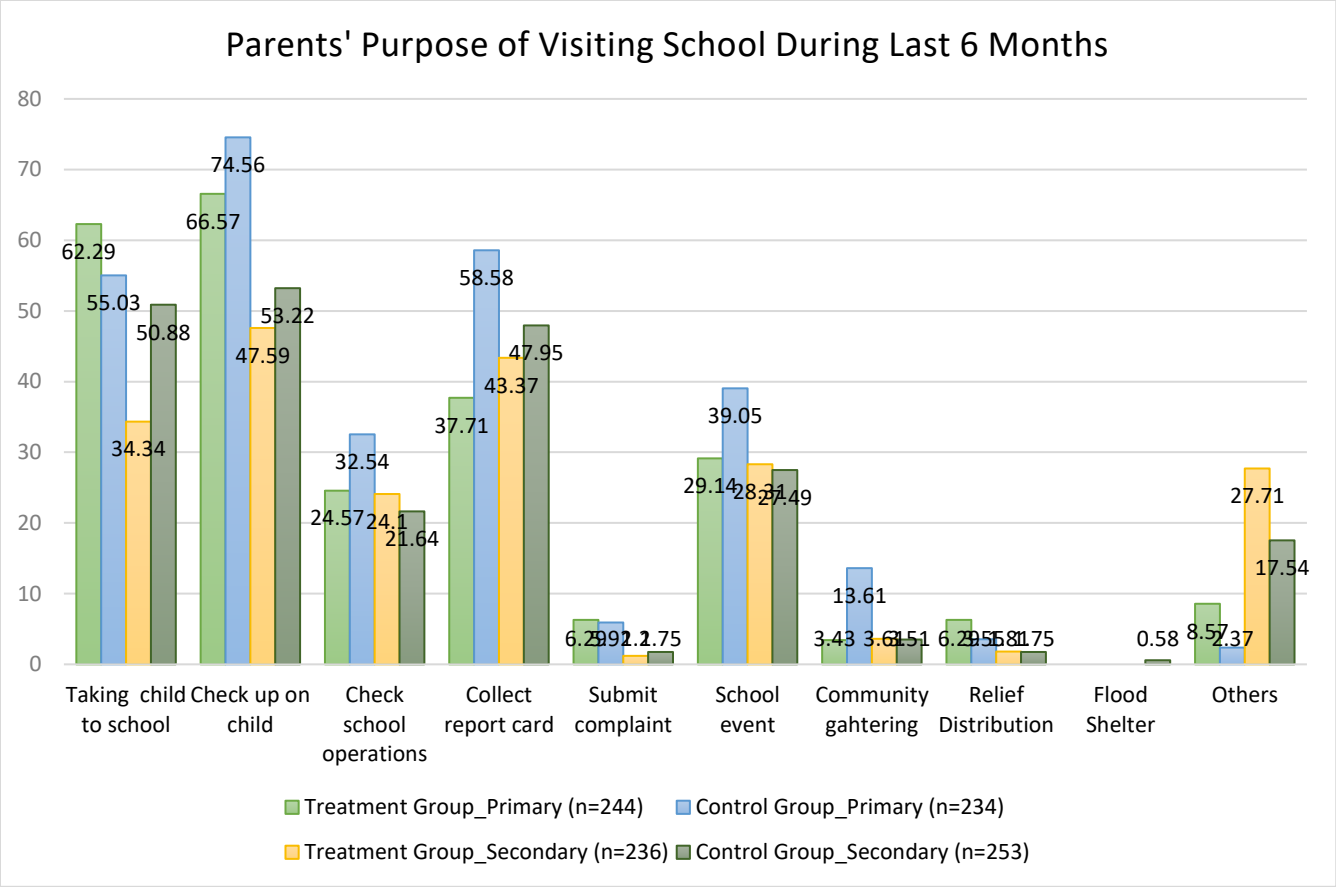

Figure 26: Parents' Purpose of Visiting School

During last 6 months, on average 70% parents visited their children's schools both in primary and secondary schools. As the visiting purpose they stated several reasons (figure 2) that included taking children to school, checking what their children do in school (attendance, study), checking the school operation (classes running, teacher attendance), collecting report card, submitting complaints, community gathering (election, campaign), relief distribution (flood relief, COVID vaccination) etc. Most of the parents of both primary school students and secondary school students stated that, they mainly go to school to check on their children's activities in schools, to take the children to school, and to collect the report cards.

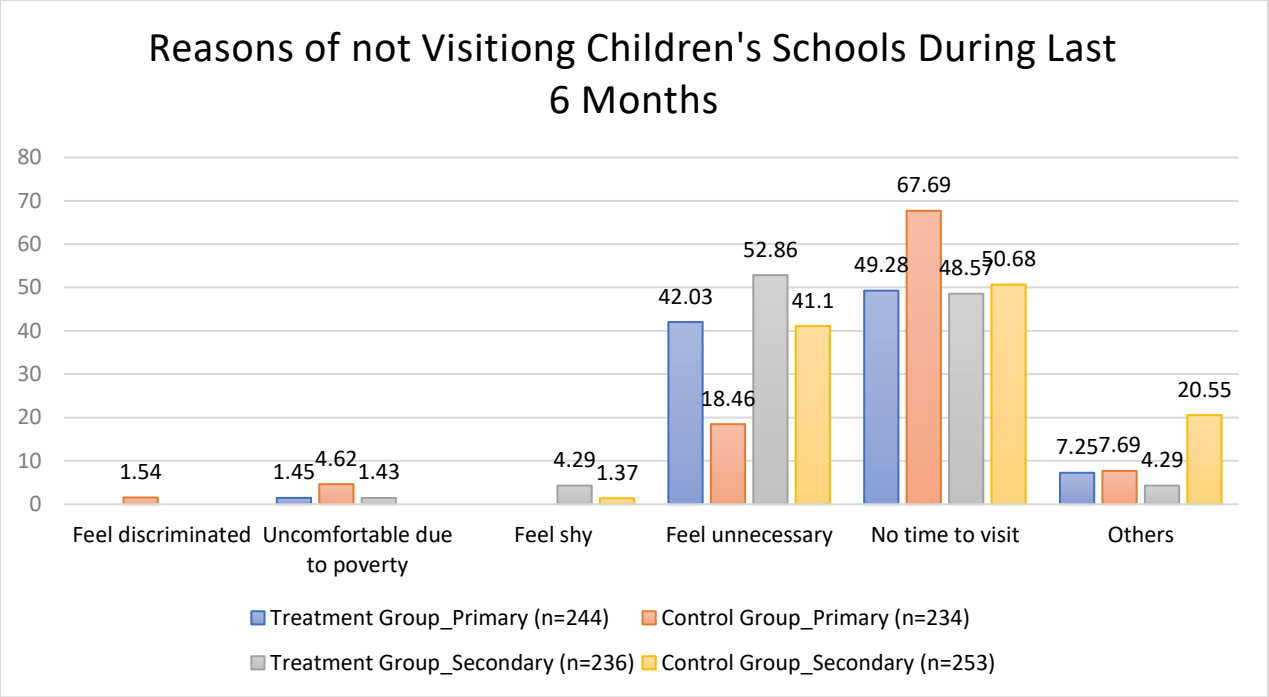

Figure 27: Parents' Reasons of Not Visiting School

Rest of the parents who did not visit their children's schools during the last 6 months, stated few reasons as well that included- don't have time to visit, feel unnecessary to visit school, feel shy to visit school, feel uncomfortable due to the poor financial condition, feel discriminated due to marginalized community etc. However, as the main reasons they marked, not having time and not feeling it necessary to visit their children's schools.

Parental involvement in their children's education has been shown to have a positive impact on academic achievement and student engagement. Several studies have consistently reported a correlation between parental involvement and reduced absenteeism in school-aged children. Studies showed that, students whose parents were involved in school events had an average of 1 to 1.5 fewer absences per year than those whose parents were not involved (Gottfried, Fleming, & Gottfried, 2001; Epstein & Sheldon, 2004). Another study conducted among the K-12 students in a large urban school in Columbia found that parental involvement, as measured by parent-teacher conference attendance, was significantly associated in reducing absenteeism by 1.24 times among students than those whose parents did not attend the meetings (Islam & Shapla, 2021). Another study conducted among 29 elementary schools and 10 high schools of National Network of Partnership Schools (NNPS), also concluded that, family and community involvement is critical in addressing chronic absenteeism, and in this case schools can engage families and communities in promoting attendance, such as sending regular attendance reports to parents, providing resources and support to families to address barriers to attendance, and collaborating with community organizations to promote attendance (Sheldon & Epstein, 2004).

According to the National Education Policy 2010 of Bangladesh, parents-teachers meetings are an important aspect of the education system. The policy recognizes the importance of involving parents in their children's education and encourages regular meetings between parents and teachers to discuss students' academic progress and other issues related to their education. The policy states

that these meetings should be held at least twice a year and should involve both parents and teachers in a constructive dialogue about students' strengths and weaknesses, as well as any concerns or challenges they may be facing. The meetings should also provide an opportunity for parents to share their views and provide feedback on the school's performance. In addition to regular parents-teachers meetings, the policy emphasizes the importance of maintaining open communication between parents and teachers throughout the school year. Teachers are encouraged to provide regular feedback to parents on their children's academic progress, behavior, and other areas of development

3.4.2 Parental Involvement with Children's Study

The table below contains information about parental involvement to their children's study.

Table 10: Parental Involvement with Children's Study

Indicators	Treatment (n=244)	Control (n=234)	Treatment (n= 236)	Control (n=253)
	Primary School		**Secondary School**	
Parents know about homework	93.50	94.94	92.37	93.31
Parents help with homework	81.71	82.28	64.83	75.98

From the survey, it was found that, above 90% of the parents in both treatment and control areas, are concerned about their children's homework. And about 80% parents or other elderly people at home help doing the homework. However, in the secondary schools of treatment areas, only around 65% parents or elderly at home help with the homework.

Research shows that, increased parental involvement in homework, decrease absenteeism among students. Parents who are actively involved in their child's homework are better able to monitor their child's academic progress and provide support when needed, which ultimately leads to better attendance and improved academic performance. Muyabi and his team (2022), examined the impact of parental involvement on reducing learner absenteeism in primary schools in the Kazungula District of Zambia. The study found that parental involvement has a significant role in reducing learner absenteeism, and schools should actively involve parents in their children's education. However, the study also identified several barriers that hinder parental involvement, such as poverty, illiteracy, and cultural beliefs. Therefore, the authors recommend that schools address these barriers to increase parental involvement, particularly in low-income communities. Paulynice (2020) also had similar findings from his comparative study on parental involvement among the participants from United States and Haiti. He found that, in the United States, parental involvement was encouraged, and parents were expected to participate actively in their children's education, whereas in Haiti, the level of parental involvement was lower due to poverty, lack of education, and cultural beliefs. Another study stated that, parental involvement at home allows parents to take care of their children and support their academic endeavors, while parental involvement in school boosts students' self-esteem and self-worth due to their parents' presence significantly (Grepon & Cepada, 2021). Beside stating the significant association of parental involvement with reducing the rate of truancy, two more studies marked that social determinant of health, such as poverty, food insecurity, and poor health, were associated with chronic absence from school and lower levels of parental engagement in early education. The authors emphasize

the importance of addressing social determinants of health, family-school partnerships in promoting parental homework involvement and chronic absenteeism to improve parental engagement in early education and ultimately promote children's academic success (Paulson et al., 2021; and Dettmers, Yotyodying, and Jonkmann, 2019).

3.5 Gender Equality and Social Inclusion (GESI) Related Findings

This section explains the functional difficulties among students, sex disaggregated data on their involvement to household chores and its association with absenteeism, association of the wealth index to absenteeism, association of absenteeism with different sex, schools structural provision of menstrual hygiene, and students experience of bullying and sexual harassment.

3.5.1 Functional Difficulties among Students

This section discusses the seeing, hearing, walking, self-care, communication, learning, remembering, concentrating, accepting change, controlling behaviour, and making friends among the children.

Table 11: Functioning Difficulties Among the Students

		Treatment (n=244)	Control (n=234)	Treatment (n=236)	Control (n=253)
Indicators		**Primary School**		**Secondary School**	
Wear glasses	Yes	2.85	2.95	8.05	9.45
	No	97.15	97.05	91.95	90.55
Have difficulty in seeing	No Difficulty	95.93	95.78	89.83	89.76
	Some Difficulty	3.66	2.95	7.20	7.87
	A lot of Difficulty	0.00	1.27	2.97	2.36
	Cannot See at all	0.41	0.00	0.00	0.00
Use a hearing aid	Yes	2.44	1.69	1.27	3.15
	No	97.56	98.31	98.73	96.85
Have difficulty hearing sounds e.g., people's voice, music etc.	No difficulty	98.37	97.89	98.73	98.03
	Some difficulty	1.63	1.69	1.27	1.18
	A lot of difficulty	0.00	0.42	0.00	0.39
	Cannot hear at all	0.00	0.00	0.00	0.39
Need assistance in walking	Yes	5.28	2.53	1.69	3.15
	No	94.72	97.47	98.31	96.85
Have difficulty walking 100 yards on level ground	No difficulty	94.72	95.36	94.49	98.03
	Some difficulty	4.07	3.80	5.51	1.57
	A lot of difficulty	1.22	0.84	0.00	0.39
	Cannot walk 100 y at all	0.00	0.00	0.00	0.00
Have difficulty walking 500 yards on level ground	No difficulty	77.24	75.95	83.05	87.40
	Some difficulty	18.29	16.88	13.14	9.84
	A lot of difficulty	4.07	2.95	3.39	1.97
	Cannot walk 500 y at all	0.41	4.22	0.42	0.79
Have difficulty with self-care, such as, feeding or dressing on his/her own	No difficulty	88.62	95.36	97.88	98.03
	Some difficulty	10.57	4.22	1.69	1.97
	A lot of difficulty	0.41	0.42	0.42	0.00
	Cannot do self-care at all	0.41	0.00	0.00	0.00
	No difficulty	89.02	92.41	91.95	93.31

When speaking, has difficulty in being understood by people	Some difficulty	10.57	7.59	7.20	5.51
	A lot of difficulty	0.41	0.00	0.85	1.18
	Cannot be understood at all	0.00	0.00	0.00	0.00
Has difficulty learning things	No difficulty	71.95	74.26	75.00	74.80
	Some difficulty	23.58	23.63	23.73	24.02
	A lot of difficulty	4.47	1.69	1.27	1.18
	Cannot do at all	0.00	0.42	0.00	0.00
Has difficulty remembering things	No difficulty	71.14	71.31	71.19	63.39
	Some difficulty	22.76	22.78	24.15	30.71
	A lot of difficulty	6.10	5.06	4.66	5.91
	Cannot do at all	0.00	0.84	0.00	0.00
Has difficulty in concentrating on an activity that S/he enjoy doing.	No difficulty	79.27	76.79	82.63	71.65
	Some difficulty	15.04	19.83	13.56	24.02
	A lot of difficulty	4.88	2.53	3.39	4.33
	Cannot do at all	0.81	0.84	0.42	0.00
Has difficulty accepting changes in the routine	No difficulty	79.67	75.11	79.24	74.41
	Some difficulty	19.11	21.94	18.64	24.41
	A lot of difficulty	1.22	2.95	2.12	1.18
	Cannot do at all	0.00	0.00	0.00	0.00
Has difficulty controlling behavior	No difficulty	3.66	2.11	68.22	65.75
	Some difficulty	9.76	5.91	28.39	25.98
	A lot of difficulty	30.08	21.94	2.97	7.48
	Cannot do at all	56.50	70.04	0.42	0.79
Has difficulty making friends	No difficulty	90.24	92.83	87.29	87.40
	Some difficulty	8.54	4.64	10.17	10.24
	A lot of difficulty	0.81	2.11	2.12	1.97
	Cannot do at all	0.41	0.42	0.42	0.39

From the survey of primary and secondary school students it was found that 0.41 to 7.20% of students in treatment group reported having severe to some degree of vision impairment. Among them, about 8% in secondary and 3% in primary schools wear glasses. Among the treatment group 2.44% students in primary schools and 1.27% students in high school require hearing aid. Whereas, in the high schools of control school it is higher (3.15%). In the treatment group, 5.28% students in primary school need assistance in walking, while in secondary schools it is 1.69%. 10.57% primary school students in treatment area have some degree of difficulties with self-care, such as, feeding or dressing on his/her own. In the secondary schools of the treatment area, it is 1.69%. In the treatment group, 10.57% students in primary schools and 7.20% students in secondary schools have some degrees of speech difficulties. They often face difficulties in being understood by people while talking. In terms of learning, on average 23% students in all the schools of both treatment and control groups, have some degree of difficulties. 22 to 24% students at both primary schools and secondary schools of treatment group reported some difficulties in remembering

things. A considerable number of students (13 to 15%) face some degree of difficulties in concentrating too. 18.64% students in secondary schools of treatment group and 19.11% students at primary schools, face difficulties in accepting changes. Also, a high number of students in all the schools of both treatment and control group have some to severe level of difficulties in controlling their behavior. Among the primary school students, 56.50% in treatment group and 70.04% students in control group cannot control their behavior at all. Whereas, in terms of secondary schools, 28.39% in treatment group and 25.98% in control group have some degree of difficulties in this regard. Interestingly, regarding making friends, more secondary school students than the primary school students in both groups face some degree of difficulties.

These findings suggest that functional difficulties are a common and significant issue among primary and secondary school students. Efforts to improve educational outcomes and support student success should prioritize the development and implementation of inclusive policies and practices that address the specific needs of students with functional difficulties.

Absences from school can be directly related to functional difficulties. For example, children with attention-deficit/hyperactivity disorder (ADHD) may miss school due to behavioral issues or difficulties with organization and planning, which are common symptoms of the disorder (Langberg, Epstein, Becker, Girio-Herrera, & Vaughn, 2012). In addition to absenteeism, functional difficulties can also impact academic performance. For example, children with learning disabilities may struggle with reading, writing, or math, which can result in lower grades and difficulty keeping up with their peers (Kavale & Forness, 2000). Students with ADHD may struggle with attention and organization, which can make it difficult to complete assignments and study effectively (Langberg et al., 2012). Moreover, functional difficulties can lead to poor mental health outcomes such as depression, anxiety and stress that can further worsen absenteeism and academic performance (Fryers, Melzer, & Jenkins, 2003).

Overall, it is crucial for schools and educators to identify and address functional difficulties to ensure that all students have the opportunity to succeed academically. Interventions such as individualized education plans (IEPs) and accommodations, such as extra time for assignments, preferential seating, and assistive technology, can help to mitigate the impact of functional difficulties on absenteeism and academic performance.

3.5.2 Students Involvement in Household Chores

Below table shows sex disaggregated information of students' involvement with household chores. It was found that, both among primary school and secondary school students, girls are higher in number who spend time in household chores, such- daily food shopping, cooking, looking after elderly or siblings, washing dishes, washing clothes, fetching water etc.

Table 12: Sex Disaggregated Information of Students Involvement with Household Works

Household Chores Involvement	Primary School (n=478)		Secondary School (n=489)	
	Boys (n=206)	Girls (n=272)	Boys (n=194)	Girls (n=295)
Work	31.19	68.81	26.38	73.62
Don't Work	53.08	46.92	63.48	36.52

68.81% girls in primary schools and 73.62 girls in secondary schools spend less than an hour to above 8 hours in doing household chores. Regarding boys, 31.19% in primary schools and 26.38% in secondary schools are involved with household works.

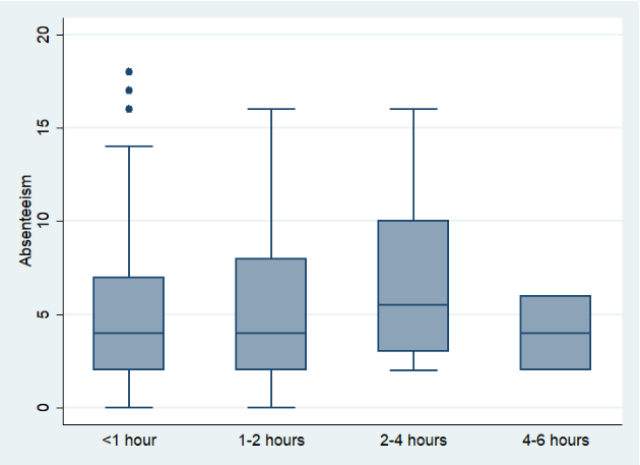

Figure 28: Absenteeism among the Primary School Students in Accordance to the Distribution of Work Hours in Household Chores (n= 218)

Among the boys and girls who do household works, absenteeism was found quite high. Especially among the boys and girls who do household chores for 2-4 hours per day miss school for about 6 days on average. 75% of them miss school up to 10 days. However, interestingly, primary school students who work for 4-6 hours, miss school for about 4 days.

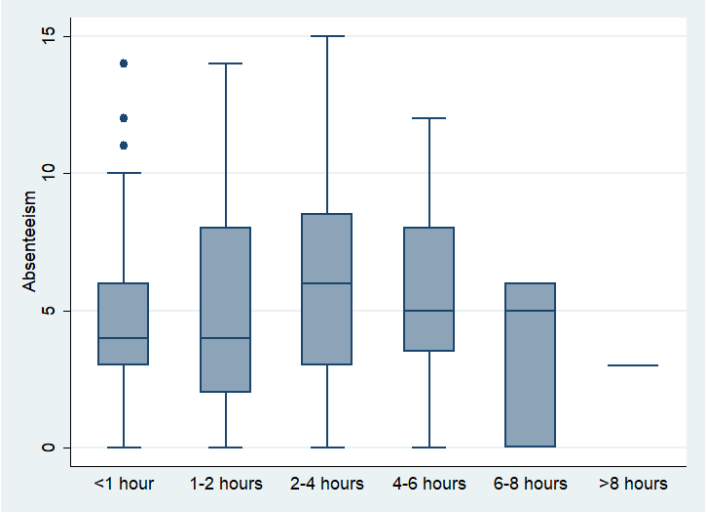

Figure 29: Absenteeism among the Secondary School Students in Accordance to the Distribution of Work Hours in Household Chores (n= 307)

Among the secondary school students, boys and girls who spend 2-4 hours per day in household chores miss school frequently for about 6 days. 75% of these students miss school from 6 to 8 days. Students who do household chores for 4-6 hours, 6-8 hours, 1-2 hours, or less than an hour; 50% of them miss school for about 4-5 days.

3.5.3 Sex Disaggregated Information of Students Interest in STEM

This section explains sex disaggregated information of students interest in math, science , and ICT.

Table 13: Sex Disaggregated Information of Interest in STEM

Indicators		Boys (n=206)	Girls (n=272)	Boys (n=194)	Girls (n=295)
		Primary School (n=478)		Secondary School (n=489)	
How good are students at Science	Not good at all	7.04	6.70	1.55	3.73
	Slightly good	16.20	12.89	8.25	12.88
	Somewhat good	36.62	37.11	46.39	57.97
	Quite good	32.39	34.54	33.51	21.36
	Extremely good	7.75	8.76	10.31	4.70
How good are students at Math	Not good at all	4.85	5.56	2.58	7.85
	Slightly good	11.65	11.85	15.98	14.33
	Somewhat good	28.64	27.04	29.38	38.91
	Quite good	34.95	38.15	27.32	29.01
	Extremely good	19.90	17.41	24.74	9.90
How good are students at ICT	Not good at all	----------	----------	1.58	2.51
	Slightly good	----------	----------	7.37	6.45
	Somewhat good	----------	----------	24.21	26.52
	Quite good	----------	----------	47.89	45.52
	Extremely good	----------	----------	18.95	19.00

Among the primary school students, it was found that, between boys and girls, girls are higher in percentage who are somewhat good, quite good and extremely good at science. Among boys, the percentage was found 36.62%, 32.39%, and 7.75% respectively, whereas among the girls it was, 37.11%, 34.54%, and 8.76% respectively. In case of Math subject, it was found that boys are higher in percentage when they identified themselves as extremely good. 17.41% girls and 19.90% girls think that they are extremely good at math.

Among the secondary schools, the scenario is just the opposite in terms of science. Here, boys are higher in percentage identifying themselves as quite good (33.51%) and extremely good (10.31%) at science. Whereas 57.97% of the girls, think themselves as somewhat good at science. In Math as well, 24.74% boys reported themselves as extremely good at math, whereas only 9.90% girls think they're good at math. However, in terms of ICT subject, the ratio between the categories is almost same for the boys and girls.

3.5.4 Wealth Index based Distribution of Absenteeism among Students

This section will describe students' absenteeism in primary and secondary schools based on their wealth index.

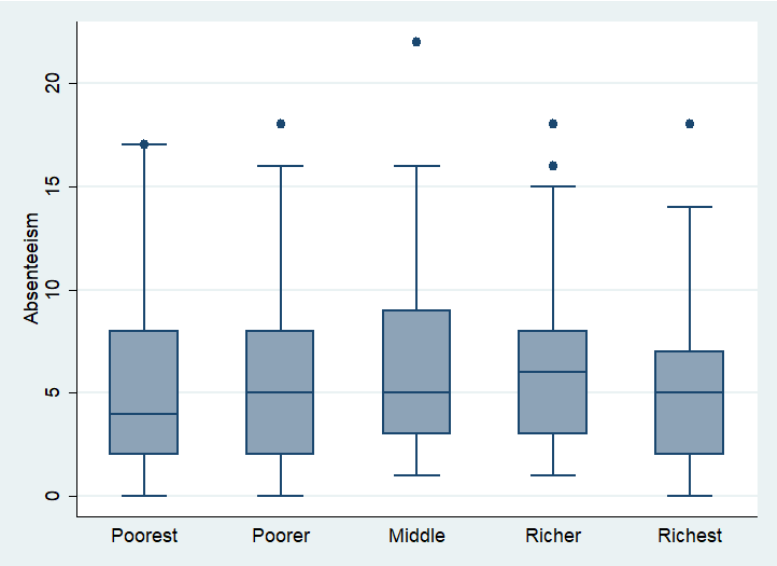

Figure 30: Wealth Index based Distribution of Absenteeism among the Primary School Students (n=478)

The box plots above show the distribution of average absenteeism among the five categories of wealth index of the students at primary schools. Among the primary school students, absenteeism among the 5 categories has a median of 5 days except for the poorest group, where the median score is 4 days. However, it is visible that, among the 5 categories, comparatively students from richest, richerer and middle-income households stay absent for higher number of days than the poorer and poorest group.

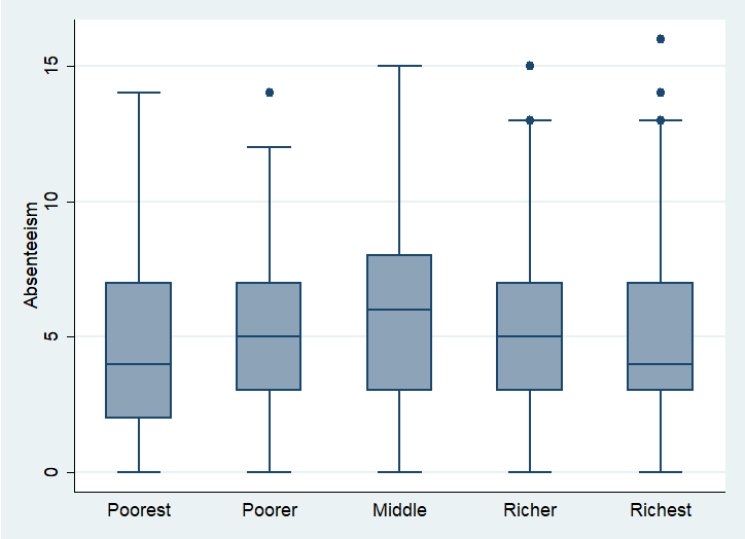

Figure 31: Wealth Index based Distribution of Absenteeism among the Secondary School Students (n=489)

The box plots above show the distribution of average absenteeism among the five categories of wealth index of the students of secondary schools. Among the students, absenteeism among the 5 categories has a median of 4 days among the poorest, 5 days among the poorer, and 6 days among the middle, 5 days among the richer and 4 days among the richest groups. However, it is visible that, among the 5 categories, comparatively students from middle-income households stay absent for higher number of days than the other 4 groups.

3.5.5 Wealth Index based Distribution of Science, Math and Global Score among Students

Primary School

Distribution of Science Score by Wealth Index

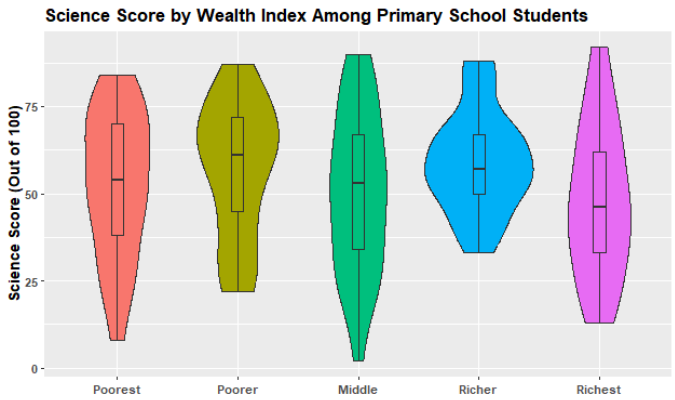

Figure 32: Science Score by Wealth Index among the Primary School Students (n=188)

This violin plot shows the relationship of wealth index to science score of primary school students. The box plot elements show the median score for the richest group is lower than for other wealth index. The shape of the distribution indicates the score of comparatively richer students are highly concentrated around the median. Here, to be mentioned that, among the study groups, the wealth

index was calculated according to their household possessions and household structures. And, apparently, students that belong to the higher wealth index, mostly have two working parents and involved in household chores. Students whom result data could be collected, 41 of them belong to the poorest WI and poorer WI respectively, 35 of them belong to the middle WI, 42 of them belong to richer WI, and 29 of them belong to richest WI.

Distribution of Math Score by Wealth Index

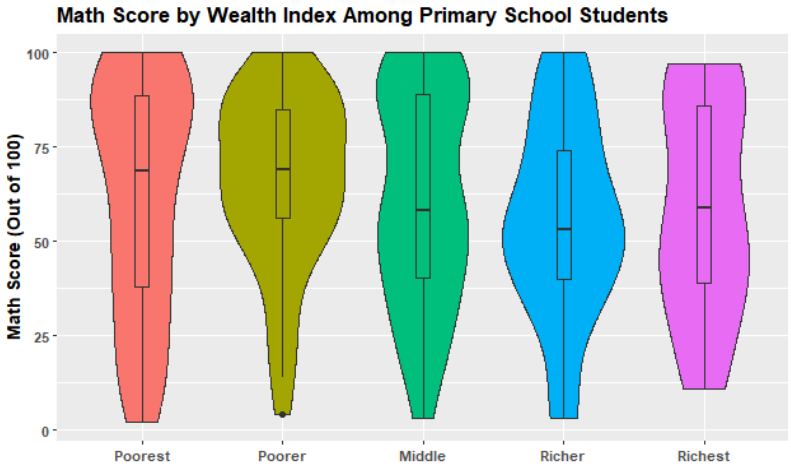

Figure 33: Math Score by Wealth Index among the Primary School Students (n=188)

This violin plot shows the relationship of wealth index to math score of primary school students. The box plot elements show the median score of the richer group is lower than the other wealth index. The shape of the distribution indicates the score of comparatively richer students are highly concentrated around the median. However, sticking to the previously mentioned background, this finding is found relevant.

Distribution of Global Score by Wealth Index

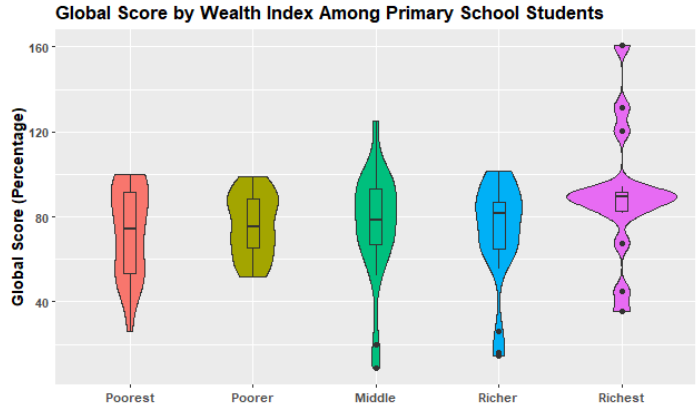

Figure 34: Global Score by Wealth Index among the Primary School Students (n=188)

This figure above shows the relationship of wealth index to global score of primary school students. The box plot elements show the median score of the richest group is higher than the other wealth index. The shape of the distribution indicates the score of comparatively richest students are highly concentrated around the median. The findings somewhat a bit different from the individual scores of science and math, which implies that the students in the richest group obtained better marks in other subjects.

Secondary School

Distribution of Science Score by Wealth Index

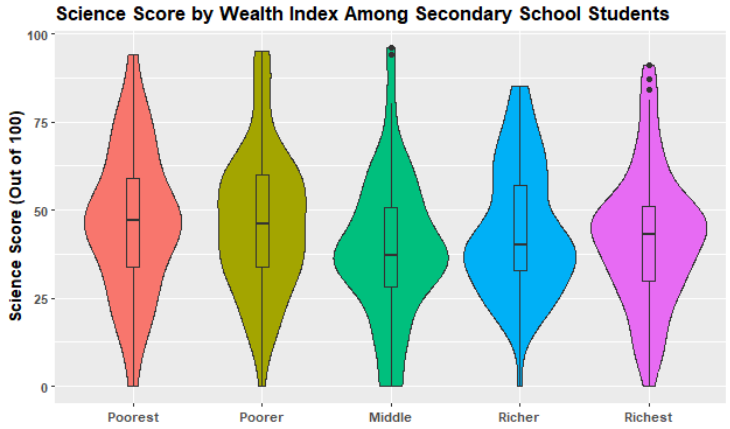

Figure 35: Science Score by Wealth Index among the Secondary School Students (n=348)

This above plot shows the relationship of wealth index to science score of secondary school students. The box plot elements show the median score for the middle wealth index group is lower than for other wealth index. The shape of the distribution indicates the score of comparatively richer students are highly concentrated around the median. Here, to be mentioned that, among the study groups, the wealth index was calculated according to their household possessions and household structures. And, apparently, students that belong to the higher wealth index, mostly have two working parents and involved in household chores. Students whom result data could be collected, 39 of them belong to the poorest WI, 73 of them belong to poorer WI, 78 of them belong to the middle WI, 83 of them belong to richer WI, and 75 of them belong to richest WI.

Distribution of Math Score by Wealth Index

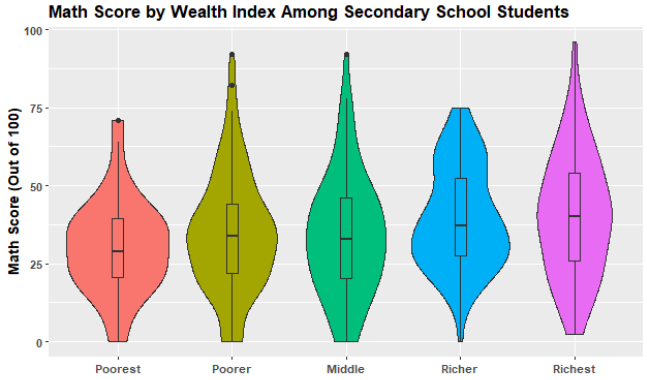

Figure 36: Math Score by Wealth Index among the Secondary School Students (n=348)

This violin plot shows the relationship of wealth index to math score of secondary school students. The box plot elements show the median score of the poorest group is lower than the other wealth index. The shape of the distribution indicates the score of comparatively richer students are highly concentrated around the median. The findings depict that, students from higher wealth index group scored higher marks in math subject.

Distribution of Global Score by Wealth Index

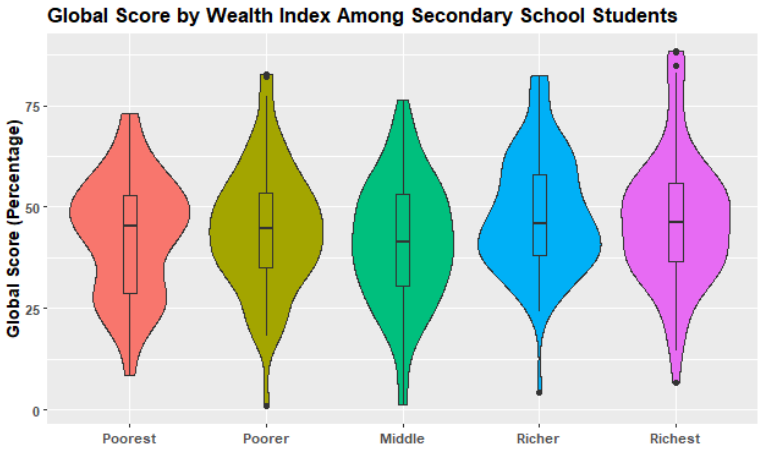

Figure 37: Global Score by Wealth Index among the Secondary School Students (n=348)

This figure above shows the relationship of wealth index to global score of secondary school students. The box plot elements show the median score of the middle wealth index group is lower than the other wealth index. The shape of the distribution indicates the score of comparatively poorer students are highly concentrated around the median.

3.5.6 Sex Disaggregated Distribution of Absenteeism among Students

This section will describe sex disaggregated information of students absenteeism in primary and secondary schools.

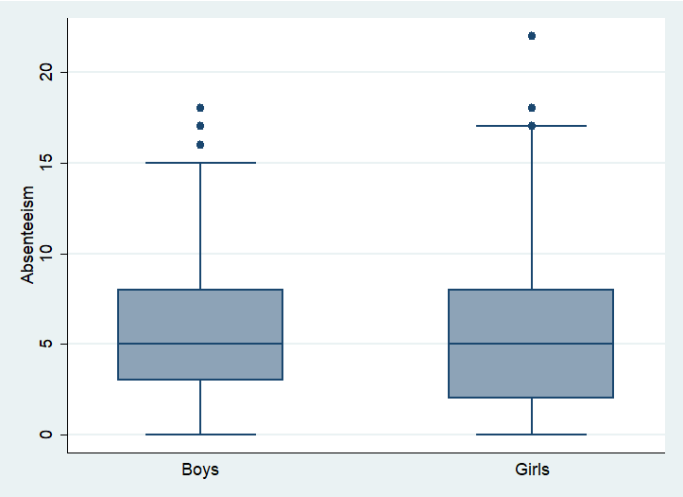

Figure 38: Sex Disaggregated Findings of Absenteeism among the Primary School Students (n=478)

The box plots above show the distribution of average absenteeism among the boys and girls students of primary schools.

Among the primary school students, absenteeism among boys has a median score of 5 days, a first quartile (25th percentile) score of 4 days, and a third quartile (75th percentile) score of 7 days. And it is slightly right skewed, which represents that most of the boy students stay absent for 5 to 7 days on average. The highest absenteeism days for boys is 15 days on average. However, among the girl students, the median score is 5 days, a first quartile (25th percentile) score is 3 days, and a third quartile (75th percentile) score is 8 days. The box plot is distinctively skewed to the right, that reflects that, majority of the girl students stay absent from school for 5 to 8 days on average. The highest absenteeism for girl students is 16 days.

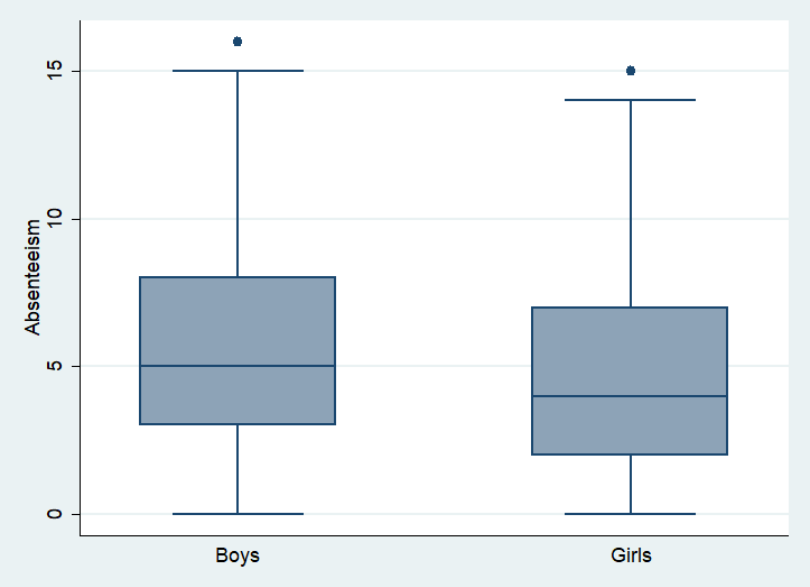

Figure 39: Sex Disaggregated Findings of Absenteeism among the Secondary School Students (n=489)

The box plots above show the distribution of average absenteeism among the boy and girl students of secondary schools.

Among the secondary school students, absenteeism among boys has a median score of 5 days, a first quartile (25th percentile) score of 4 days, and a third quartile (75th percentile) score of 8 days. And it is slightly right skewed, which represents that most of the boy students stay absent for 5 to 8 days on average. The highest absenteeism days for boys is 15 days on average. However, among the girl students, the median score is 4 days, a first quartile (25th percentile) score is 3 days, and a third quartile (75th percentile) score is 7 days. The box plot is distinctively skewed to the right, that reflects that, majority of the girl students stay absent from schools for 4 to 7 days on average. The highest absenteeism for girl students is 14 days.

3.5.7 Sex Disaggregated Information about Science, Math, and Global Score

Primary School

Sex Disaggregated Science Score

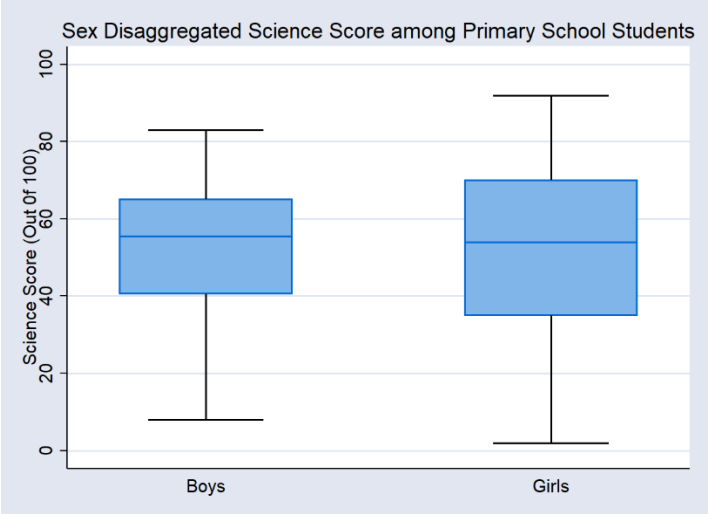

Figure 40: Sex Disaggregated Science Score Among the Primary School Students (n=188)

Above figure demonstrated the relationship between science score and sex difference among the primary school students of treatment group. In the box plot above, median score of science is equal among girls (n=122) and the boys (n=66). However, majority of the girls scored between 35 to 55 marks, whereas, most of the boys scored 40 to 65 marks in science out of 100 marks.

Sex Disaggregated Math Score

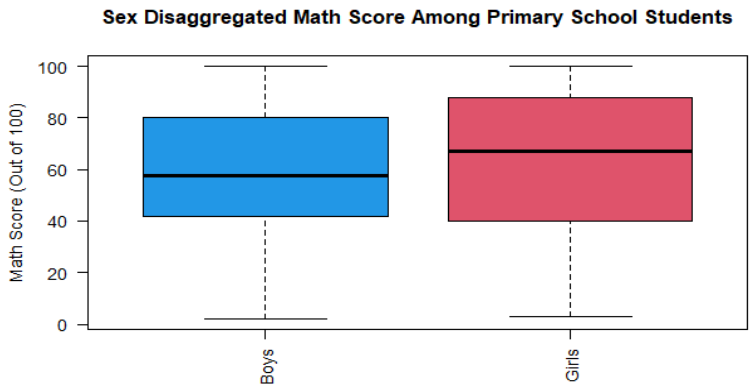

Figure 41: Sex Disaggregated Math Score Among the Primary School Students (n=188)

Above figure demonstrated the relationship between math score and sex difference among the primary school students of treatment group. In the box plot above, median score of math is higher among girls (n=122) than the boys (n=66). However, majority of the girls scored 40 to 70 marks, whereas, most of the boys scored 60 to 80 marks in math out of 100 marks.

Sex Disaggregated Global Score

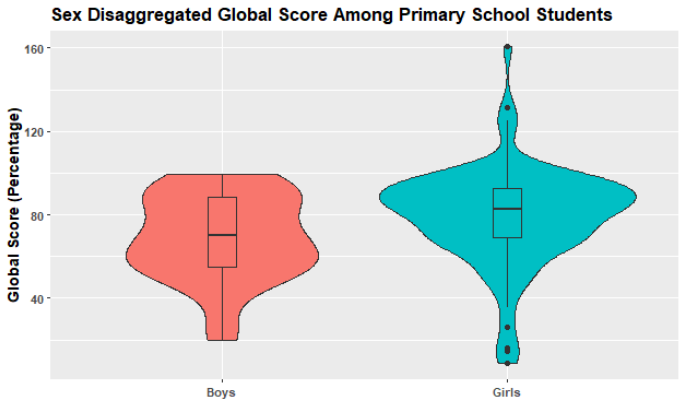

Figure 42: Sex Disaggregated Global Score among Primary School Students (n= 188)

Above figure manifests the relationship between global score and sex difference. It depicts that, in the box plot, the median of global score among girls is higher than the boys. It also shows that, girls' global score is highly concentrate around median score, which implies that, majority of the girls scored above 80%. However, regarding boys the highest concentration is below median or around 60%.

Secondary School

Sex Disaggregated Science Score

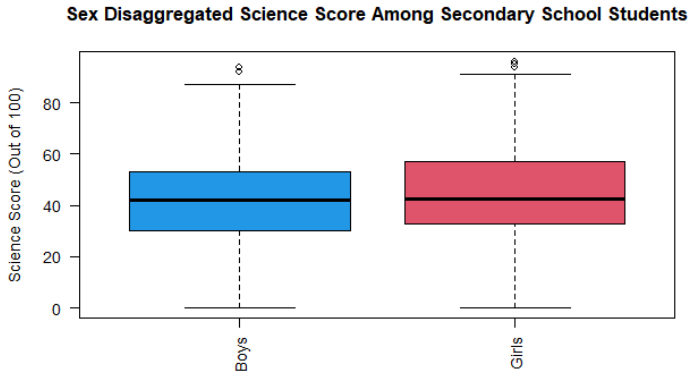

Figure 43: Sex Disaggregated Science Score among Secondary School Students (n=348)

Above figure demonstrated the relationship between science score and sex difference among the secondary school students of treatment group. In the box plot above, median score of science is equal among girls (n=202) and boys (n=146). However, majority of the girls scored about 40 to

60 marks, whereas, equal percentage of the boys scored below and above 40 marks out of 100 marks.

Sex Disaggregated Math Score

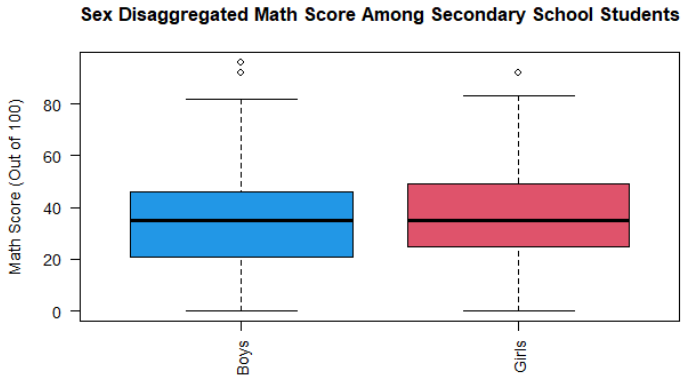

Figure 44: Sex Disaggregated Math Score among Secondary School Students (n=348)

Above figure demonstrated the relationship between science score and sex difference among the secondary school students of treatment group. In the box plot above, median score of science is equal among girls (n=202) and boys (n=146). However, majority of the girls scored about 35 to 50 marks, whereas, majority of the boys scored below 40 marks out of 100 marks.

Sex Disaggregated Global Score

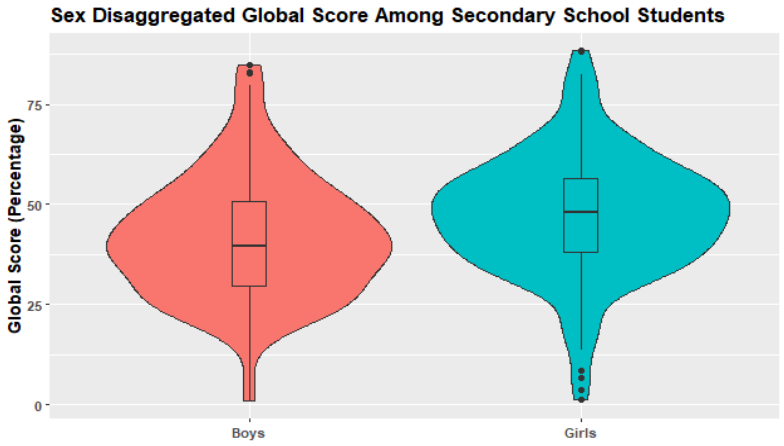

Figure 45: Sex Disaggregated Global Score among Secondary School Students (n= 348)

Above figure manifests the relationship between global score and sex difference among the secondary school students. It depicts that, in the box plot, the median of global score among girls is higher than the boys. It also shows that, girls' and boys' global scores are highly concentrate

around median score, which implies that, majority of the girls scored around 50% marks and majority of the boys scored around 40% marks.

3.5.8 Students Experience of Bullying

This section will discuss the issues of bullying among the primary school and secondary school students. Parents of primary school students were asked in this regard, whereas secondary school students were asked directly about being bullied.

Table 14: Incidents of Bullying among the Primary School Students

Primary School			
Indicators		Treatment (n=244)	Control (n=234)
Were bullied at school	Yes	20.73	19.41
	No	79.27	80.59
Reason of the bullying	Language	0.00	2.17
	Financial Status	9.80	13.04
	Physical structure	23.53	8.70
	Disability	3.92	4.35
	Enforced gender norms	0.00	4.35
	No reason	31.37	50.0
	Others	31.37	17.39
Feels uncomfortable going to school because of that	Yes	52.94	50.0
	No	47.06	50.0

Based on the survey of primary school students, it was found that 20% of students reported experiencing some form of bullying. While exploring the reasons, surprisingly most of the students (in treatment group 30% and in control group 50%) were bullied without any reason. Rest of the students were bullied due to their language, financial status, physical structure, disability, gender norms etc. 50% of the students feel uncomfortable going to school due to that.

Table 15: Incidents of Bullying among the Secondary School Students

Secondary School			
Indicator		**Treatment (n=236)**	**Control (n=253)**
Were bullied	Yes	15.32	10.24
	No	84.68	89.76
Type of Bullying	Was hit, kicked, pushed, shoved around, or locked indoors	19.44	6.90
	Was made fun of because of skin color	8.33	13.79
	Was made fun because of weight	16.67	10.34
	Was made fun of because of religion	5.56	3.45
	Was made fun of with sexual jokes, comments, or gestures	2.78	6.90

	Was left out of activities on purpose or completely ignored	13.89	24.14
	Was made fun of because of body or face looks	11.11	13.79
	Was bullied in some other way	38.89	51.72

15% in the treatment group and 10% in the control group reported that, they were bullied at the schools. The most common types of bullying reported by students in the treatment group was verbal bullying that included- was made fun of because of skin color (8.33%), was made fun because of weight (16.67%), was made fun of because of religion (5.56%), was made fun of with sexual jokes, comments, or gestures (2.78%), and was made fun of because of body or face looks (11.11%).

From the findings it is found that bullying is a significant problem among primary school students. It can have a significant impact on students, leading to increased absenteeism and reduced academic performance. When students experience bullying, it can lead to physical and emotional distress, which can negatively affect their ability to attend school and perform academically. Studies found that students who reported experiencing bullying had lower academic achievement and were more likely to miss school compared to students who did not experience bullying. Additionally, students who witnessed bullying but did not experience it themselves also had lower academic achievement and were more likely to miss school (Fink & Gallup, 2019; Kearney, 2008; and Wolke et al., 2013). Efforts to address bullying should focus on both prevention and intervention, and should involve collaboration between students, teachers, and parents. Additionally, efforts should be made to ensure that students feel comfortable reporting incidents of bullying, and that appropriate action is taken to address these incidents when they are reported

3.5.9 Students Experience of Sexual Harassment

This section will discuss about the incidents of sexual harassment among the students at secondary schools.

Table 16: Incidents of Sexual harassment among the Secondary School Students

Indicators		Treatment (n=28)	Control (n=20)
Place of experiencing sexual harassment	At school	1	1
	At home	------	------
	On the way to school	20	18
	Another place	7	1
Gender	Male	1	0
	Female	27	20
Frequency of experiencing sexual harassment	Once/twice	15	11
	Sometimes	8	5
	Often	5	4
Type of sexual harassment experienced	Unwanted physical contact	6	2
	Jokes of a sexual nature	5	1

	Display of sexually offensive materials in a public space	1	------
	Unwanted comments on dress or appearance	7	3
	Invasion of personal space	1	1
	Staring or Leering	10	11
	Intimidating presence (e.g., following at close proximity)	16	6
Steps taken	Talked to teacher	4	----
	Talked to parents	19	9
	Talked to others (friends or family members)	5	1
	Did nothing	9	10
Thought of stop going to school	----------	7	3

From the survey of secondary school students, it was found that 10% of students from the treatment group and 7% of students from the control group reported experiencing some form of sexual harassment. This suggests that sexual harassment is a significant problem in our secondary schools. Among the harassed group of students, 96% in treatment group and 100% in control group were female. They experienced the harassment mostly (70%) on their way to school or school to home. 51% from the treatment group reported that, they experienced harassment once or twice, while the rest experienced it quite often. About the type of harassment, most of the students in the treatment group reported that, they were followed from close proximity (55.17%), people caste bad look on them (34.48%), or pass bad comment on their dress or appearance (24.14%). 67.86% of the students in treatment group sometimes talked to their parents about it, but majority (32.14%) reported that they also do nothing at times as it become a daily phenomenon. Among the harassed students in treatment group 17.50% reported that, they thought of dropping school due to the incidents.

Research has shown that sexual harassment can have a significant impact on a student's academic performance. Students who experienced sexual harassment were more likely to report lower grades, decreased motivation, and difficulty concentrating in school (AAUW, 2001). Another study found that sexual harassment can lead to increased absenteeism, which can further negatively impact academic performance (Barr, 2019). The impact of sexual harassment on absenteeism is particularly concerning. Students who experience sexual harassment may feel unsafe or uncomfortable attending school, which can lead to increased absences. In fact, a study by the National Women's Law Center found that 47% of students who experienced sexual harassment reported missing at least one day of school (National Women's Law Center, 2018). This can lead to a significant loss of instructional time, which can negatively impact academic performance and future success. Furthermore, the impact of sexual harassment on academic performance can extend beyond the immediate effects of absenteeism. Students who experience sexual harassment may struggle to focus or concentrate in class, leading to decreased academic performance over time. This can have long-term consequences, as poor academic performance can limit a student's future

opportunities and success. It is important for schools, colleges, and universities to take steps to prevent sexual harassment and provide support to students who have experienced it. This can include implementing policies and procedures to address sexual harassment, providing counseling and support services, and promoting a safe and inclusive learning environment for all students.

3.5.10 School's Structural Provision for Menstrual Hygiene

This section describes the schools' structural provision to practice menstrual hygiene in treatment and control areas.

Table 17: Schools' Structural Provision for Menstrual Hygiene in the Secondary Schools

Indicator		Treatment (n=136)	Control (n=159)
Do your school have separate room/place to change the disposable pad/cloth during menstruation?	Yes	32.14	41.98
	No	67.86	58.02
Is the place safe, clean and private?	Safe	86.96	73.08
	Clean	78.26	71.15
	Private	26.09	19.23
Disposal bin	Yes	43.36	47.73
	No	56.64	52.27
What do you do if there is no place to dispose the used cloth/pad?	Openly dispose	3.26	4.39
	Dispose inside toilet pan	1.09	2.63
	Hide inside the classroom	0.00	0.88
	Do not change staying at school	95.65	92.11
Do you go to school during menstruation?	Yes	71.68	83.85
	No	28.32	16.15
If not, why?	No place to change the rag/clothes	8.57	3.70
	I do not feel comfortable	14.29	25.93
	I remain sick	68.57	55.56
	Over bleeding	8.57	14.81
	Other	0.00	0.00
Do you think menstrual problems interfere with school performance?	Yes	57.14	49.23
	No	42.86	50.77
Did you miss any class during menstruation in the last Three months?	Yes	47.32	25.19
	No	52.68	74.81
	One day every cycle	29.09	25.64

If yes, how often (during last three months in school days)?	Two days every cycle	34.55	43.59
	Three days every cycle	18.18	7.69
	Four days every cycle	7.27	5.13
	Five days every cycle	9.09	7.69
	Six days every cycle	0.00	0.00
	Seven days every cycle	1.82	10.26
	More than Seven days	0.00	0.00

Regarding the disposal, 67.86% students in treatment group reported that, they do not have separate room/place to change the disposable pad/cloth during menstruation. Rest who reported of having separate place to change the disposable pad/cloth, think that it is not safe (14%), not clean (22%) or not private (74%) to use. Above 90% of the students in both treatment and control group reported that, they don't change pad/clothes at school at all due to not having the proper disposable way. While asked about school performance, 57.14% in treatment group and 49.23% in control group think that menstrual problems interfere with school performance. 47.31% students in treatment group and 25.19% students in control group reported to miss school during last three months due to menstruation. Majority of them reported to miss school two days at every cycle (34.55% at treatment group, and 43.59% at control group). Moreover, the stigma surrounding menstruation can also lead to absenteeism among girls and women. A study conducted in India found that girls who reported feeling ashamed or embarrassed about their periods were more likely to miss school (Sommer et al., 2016). Similarly, a study conducted in Bangladesh found that girls who reported feeling discomfort or pain during menstruation were more likely to miss school (Kamal et al., 2014). However, menstrual hygiene knowledge and practice can help to reduce absenteeism among girls and women. Education about menstrual hygiene can help to reduce the stigma surrounding menstruation and promote better menstrual hygiene practices.

4. Conclusion

Based on this baseline study, it can be concluded that there are various factors that contribute to absenteeism in primary and secondary schools. These determinants can be categorized into individual, family, and school level factors. Individual-level determinants include student's health status, motivation, and engagement in school. Family-level determinants include socioeconomic status, family structure, and parental involvement in education. School-level determinants include the quality of teaching, school environment, and teachers' perception to address absenteeism. The major factors found from this study is lack of parental involvement with schools; students' inaccessibility to quality education and lack of nutrition and hygiene knowledge and practice; bullying and sexual harassment; and barriers to teachers' application of experiential teaching methods in the classrooms ensuring a friendly learning environment.

To address these factors to prevent absenteeism, Bangladesh team will be working on teachers' capacity building in experiential teaching, increasing students' awareness, knowledge and practice regarding the concerning issues, such as- nutrition, health and hygiene, menstrual hygiene, bullying, and sexual harassment, and community engagement programs for parents by facilitating awareness sessions, and parents-teachers meeting.

While addressing absenteeism in schools requires a multifaceted approach, this baseline report can also serve as a starting point for policymakers and educators to identify and prioritize the most pressing determinants of absenteeism in their specific contexts. By understanding the root causes of absenteeism, schools can develop targeted interventions to improve student attendance and ultimately improve academic outcomes. This report highlights the need for collaboration between schools, families, and communities to address the complex issue of absenteeism and create a supportive environment for students to succeed.

5. Designed Intervention

Analyzing the survey findings and students' need, Bangladesh team has planned to work on three groups of population- parents, students, and teachers. To bring an end to prevent at risk of dropout and eventually dropout, it is highly crucial to intervene in these three groups parallelly. Bangladesh team has planned to conduct community engagement program for parents; workshops, sessions, and school-based activities for the students; and capacity building workshops for teachers using the existing resources and capacities.

5.1 Teachers' Experiential and Blended Teaching-Learning Based Capacity Building

Bangladesh team will assist teacher in applying experiential teaching in the classroom. Experiential teaching is an innovative approach to education that involves hands-on learning experiences, such as field trips, project-based learning, and simulations. Experiential teaching has been shown to have a positive impact on student engagement and academic performance, and it may also help to reduce absenteeism among students. Research has shown that experiential teaching can increase student engagement and motivation, which can lead to better attendance and reduced absenteeism. According to a study conducted by the National Survey of Student Engagement, students who reported participating in experiential learning activities were more likely to attend class regularly and be more engaged in their coursework (Kuh et al., 2008). Moreover, experiential teaching can help to create a positive classroom environment and promote social and emotional learning, which can also contribute to reduced absenteeism. A study conducted by the University of California found that students who participated in experiential learning activities reported feeling more connected to their peers and their school community, which may have contributed to better attendance (Jacobsen et al., 2016). In addition, experiential teaching can provide students with real-world experiences that help to bridge the gap between theory and practice, which may make the learning experience more meaningful and relevant to students. This can increase their motivation to attend class and engage in their coursework. A study conducted by the Association for Experiential Education found that students who participated in experiential learning activities reported increased interest and motivation in their coursework, which may contribute to better attendance and reduced absenteeism (Association for Experiential Education, 2015). However, it is important to note that the impact of experiential teaching on absenteeism may vary depending on the specific learning experiences and the needs of the students. Teachers and educators should consider the needs and preferences of their students when designing experiential learning activities to ensure that they are effective in reducing absenteeism and promoting student engagement and academic performance.

Bangladesh team will appoint two teaching assistants to assist science and math teachers of treatment groups in the classrooms to apply the experiential teaching method. They will be assisting in demonstrating the experiments and preparing the class lectures. Through this intervention teachers are expected to be engaged in a flow of activities and gradually will be used to it, which may sustain even after the intervention stops.

Beside working on experiential teaching-learning, Bangladesh team will be working on blended teaching-learning as well. Teachers will be assisted to create individual youtube channel for each schools where they will be uploading the class lectures for students to catch up at their feasible time. This will help teacher diving towards blended teaching , and students to catch up with the lectures whenever they get stuck at certain topic.

5.2 School Based Programs for Students

Events and sessions for students about a variety of critical issues, including nutrition, health and hygiene, bullying, participation in STEM, creating a disability-friendly environment, gender equity, and menstrual hygiene, are essential to reduce school dropout and absenteeism. These events and sessions can provide students with the knowledge and skills they need to thrive in school and beyond, while also addressing some of the key challenges that can lead to school dropout and absenteeism.

Nutrition, health, and hygiene are critical factors in ensuring that students have the physical and mental well-being they need to succeed in school. SAIST team will conduct a health camp where healthy diets, proper hand washing techniques, and other health practices will be discussed, that can help to prevent illness and promote overall well-being.

Bullying is a major issue in many schools. Workshops on bullying can educate students on the impacts of bullying and help them to understand the importance of creating a safe and inclusive learning environment. By addressing bullying, schools can create a more supportive and positive learning environment for all students.

STEM education is crucial for the future of Bangladesh, and workshops on this topic can help students to develop the skills they need to succeed in the fields of science, technology, engineering, and mathematics. By providing students with hands-on experience and real-world applications, STEM workshops can increase student engagement and motivation, and help to reduce school dropout and absenteeism.

Creating a disability-friendly environment is important for ensuring that all students in Bangladesh have access to education. Sessions on this topic can help students to understand the challenges faced by students with disabilities and how to create a supportive learning environment. By promoting accessibility and inclusiveness, schools can ensure that all students are able to succeed in school and reach their full potential.

Gender equity is also a critical issue, and workshops on this topic can help students to understand the importance of promoting gender equality and addressing gender-based violence. By addressing gender equity, schools can create a more supportive and inclusive learning environment for all students, regardless of gender.

Finally, menstrual hygiene is a critical issue for many girls in Bangladesh and can impact their ability to attend school regularly. Session on menstrual hygiene can educate girls about the menstrual cycle and help them to understand how to manage their periods in a healthy and hygienic manner. By addressing menstrual hygiene, schools can help to reduce absenteeism among girls and ensure that they have the support they need to succeed in school.

SAIST team will conduct session for students to promote awareness regarding nutrition, health and hygiene, menstrual hygiene, anti-bullying, and disable friendly environment at school. We will also conduct two half yearly science fair for the students as a part of their extra-curricular activities. This fair will motivate them towards STEM and give hand on opportunity to showcase their understandings and learnings.

Beside these, students' attendance and nutritional growth will be monitored regularly through implementing attendance card, door to door awareness meeting with parents and through the growth chart provided for each student.

5.3 Community Engagement Campaign for Parents

Promoting the necessity of education, necessity of nutrition, health, and hygiene, preventing child marriage, reducing child labor, and increasing parental involvement in children's education is crucial for reducing school dropout and absenteeism rates. According to the United Nations Children's Fund (UNICEF), nearly one in three girls in Bangladesh are married before the age of 18, which is illegal. Child marriage can lead to early pregnancy, which can have long-lasting effects on the health of both the mother and the child. Eventually, it also leads to absenteeism and school dropout, as married girls are often expected to leave school to care for their families.

Child labor is also a major issue in Bangladesh, with approximately 2.2 million children engaged in child labor, according to the International Labor Organization (ILO). Engagement to income generating work or long-time engagement to household chores can prevent children from attending school and limit their study time even at home. It also puts children at risk of physical and psychological harm and can have long-lasting effects on their health and wellbeing.

Furthermore, a lack of parental involvement in children's education can also contribute to school dropout and absenteeism. In Bangladesh, many low-income families place a low priority on education and may not fully understand the importance of their children's education. As a result, children may not receive the support they need to succeed in school and may be more likely to drop out or be absent from school.

Poor nutrition is also a major issue in Bangladesh, with a significant portion of the population suffering from malnutrition. Malnutrition can lead to a range of health problems, including stunted growth, weakened immune systems, and decreased cognitive development. These health problems can make it difficult for children to attend school regularly and perform well academically.

In addition to poor nutrition, poor health and hygiene practices can also contribute to school dropout and absenteeism. Many children in Bangladesh lack access to basic health services, including vaccinations and preventive care, and may suffer from preventable diseases. Additionally, many children in Bangladesh lack access to clean water and sanitation facilities, which can contribute to the spread of disease and make it more difficult for children to attend school.

To address the issues, community engagement campaigns for parents are necessary to raise awareness. These campaigns can be conducted through various channels, including local organizations, social media and other digital platforms, community events, and schools. SAIST team will be promoting these campaigns by partnering with schools. We will collaborate with schools' management committees in spreading the awareness through regular teachers-parents meetings. Schools can provide valuable resources, such as classrooms and staff, to support the campaigns and reach a large number of families. Beside these, to alert parents time to time, monthly phone text and home-visit on their children's attendance will be conducted.

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7. Annex

7.1 Annex. A

KAZLAR PAR AREA

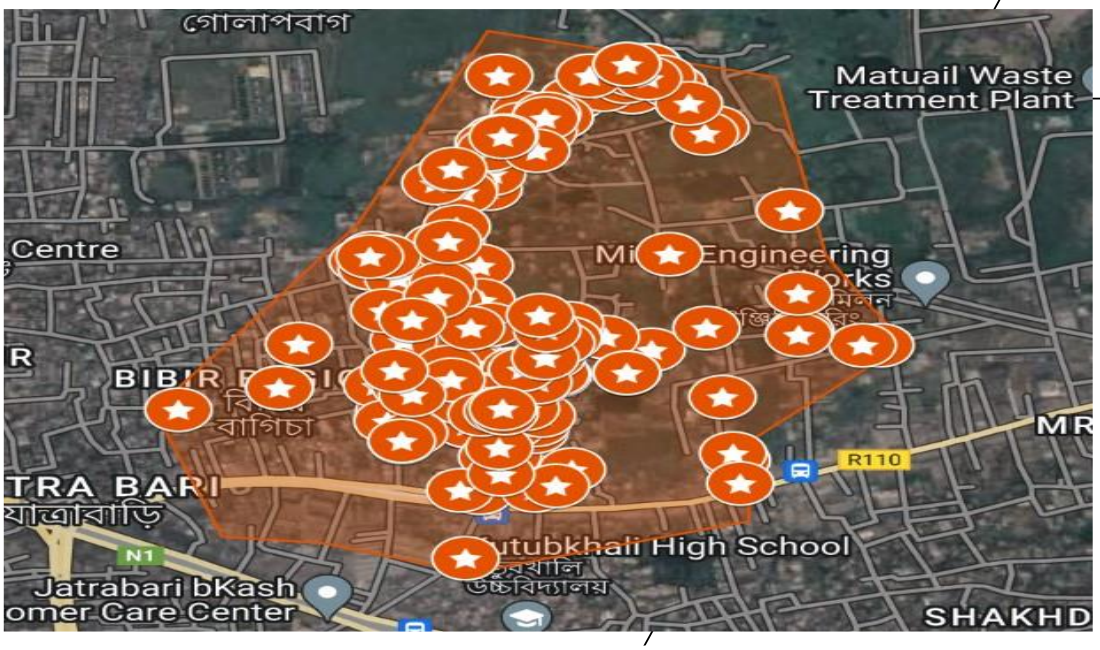

Photo 2: Household Map of Kajlarpar Area

BHASANTEK AREA

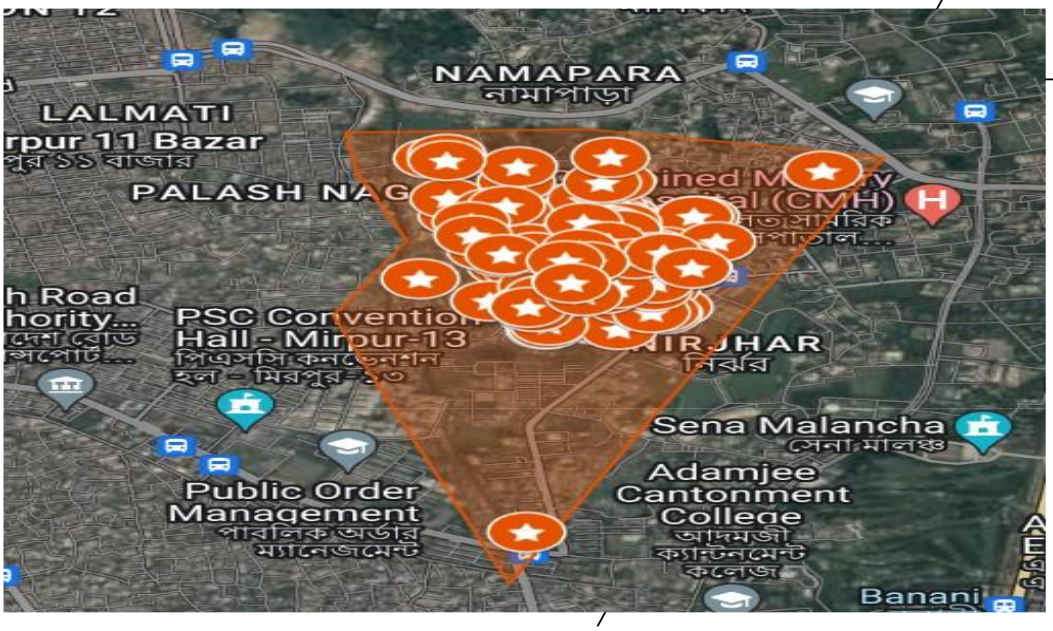

Photo 3: Household Map of Bhasantek Area

BORO MOGBAZAR AREA

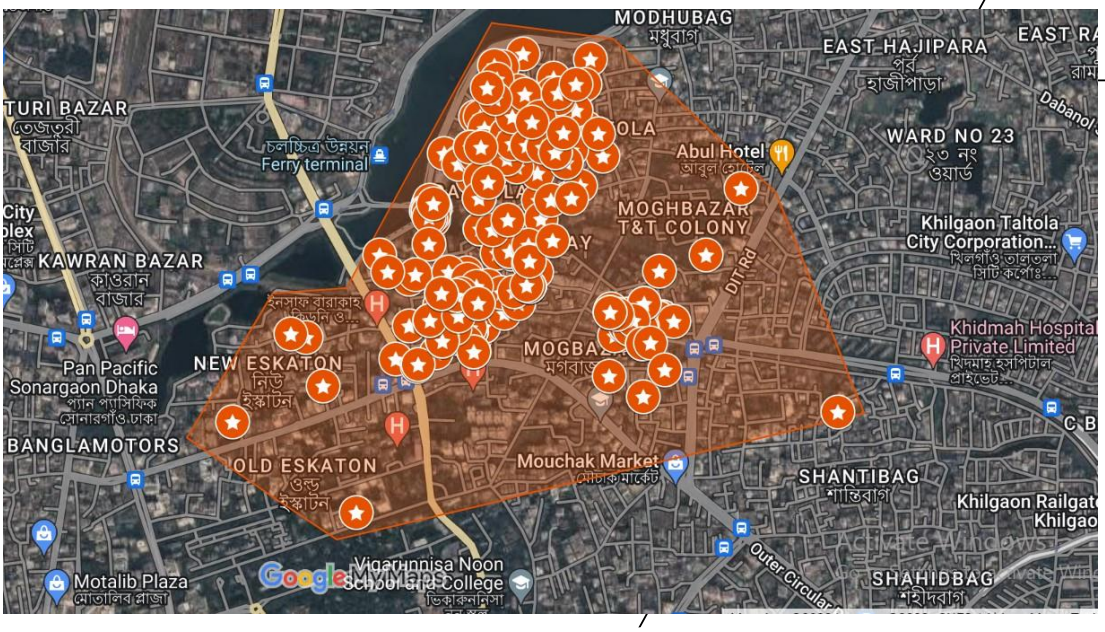

Photo 4: Household Map of Boro Moghbazar Area

RUPNAGAR AREA

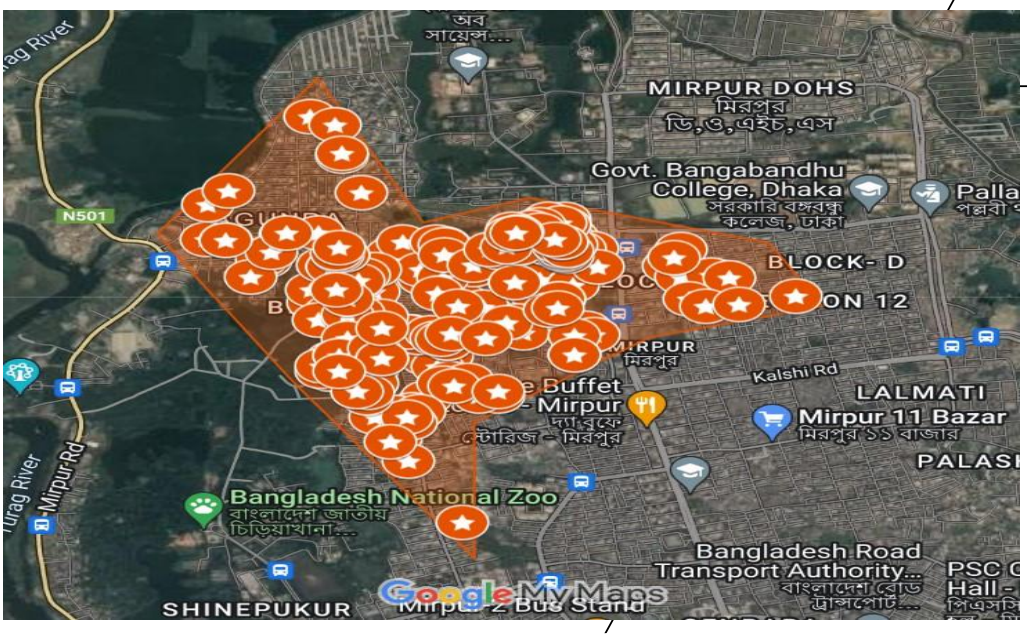

Photo 5: Household Map of Rupnagar Area

7.2 Annex. B

Photo 6: Enumerators collecting data from students and their parent