Impact of Flood on Primary School Going Students' Performance: A Qualitative Study

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Abstract: The result of this research showed that flood impacts directly on the performance of the primary school-going students. The study discovered that students' access to their educational rights was disrupted and that there were significant levels of sensitivity to the effects of flooding. According to the findings, both public and private assets incur more damage during a flood disaster. The study suggests educating students about disasters and getting acquainted with them so they can adapt to their impacts. The operation of education in good facilities increases the quality of education and improves overall student performance. The study's findings demonstrated that floods had a direct effect on elementary school pupils' academic performance. The study found that there were notable levels of sensitivity to the impacts of floods and that students' access to their rights to an education was hindered. The results show that after a flood disaster, assets owned by the public and private sectors sustain more damage. According to the study, in order for pupils to be able to adjust to the effects of catastrophes, they need learn about and get familiar with them. When education is conducted in well-maintained facilities, both the overall performance of students and the quality of instruction are enhanced.

Keywords: Floods, Infrastructures, Vulnerability, Student Performance, Education.

1.1. Introduction

Bangladesh is one of the world's most disaster-prone countries; it is ranked the ninth highest disaster-risk country, according to the 2018 World Risk Index. (Fatemi et al., 2020) Monsoon flood is a common phenomenon in Bangladesh (Choudhury & Bhuiya, 1993). This ranking is informed by its high risk and vulnerability to climate change impacts and weak response capacities of both its residents and institutions. Perennial floods are the main disasters and environmental risks in Bangladesh—worsened by the frequent flooding of the 700 rivers, tributaries, and distributaries during the monsoon season. Altogether, these water bodies cover about 5% of the land surface and are about 22,155 km in length. Bangladesh has approximately 163 million people and high population densities. (Fatemi et al., 2020)

Bangladesh is a low-lying floodplain country with only a few hills in the south-east and the north-east part. Undoubtedly, education is a principal factor of socio-economic development (Habiba et al., 2021). Disasters have huge impacts on children and youth and overall education systems (Bastidas, 2011). Flood disasters are considered as most leading and significant natural disasters worldwide and cause human impacts and economic losses (Jonkman, 2005). Further, he explained that the flash flood increases the mortality per event and in Asia, the mortality rate is much higher because the rivers are most significant in the case of killing and death of humanity.

The northeastern region of Bangladesh is experiencing flash floods for the second time in the year 2022. According to the Flood Forecasting & Warning Centre (FFWC), it had predicted the early arrival of monsoon than usual. As predicted, the cumulative amount of rain exceeded 122 years' record in the surrounding area and it is worse than the 1998 and 2004 floods as it struck at a time when the people were recovering from the earlier flood that hit in late May, it swept away homes and inundated farmlands, forcing families to seek shelter on higher ground. (UNICEF,2022)

According to the Flood Forecasting and Warning Centre (FFWC), around 94 per cent of Sunamganj and over 84 per cent of Sylhet are submerged. The United Nations on Monday said more than 1.5 million children in the

country were at increased risk of waterborne diseases, drowning and malnutrition due to the floods. (UNRCB,2022)

Experts say days of heavy rains in the region, including northeastern India, triggered the pre-monsoon floods last week, with water flowing down the Himalayan hills to Bangladesh's northern plains. The water from upstream in India's northeast swelled Bangladesh's Surma and Kushiara Rivers, which breached a major embankment and submerged hundreds of villages. (Mahmud F. 2022)

An estimated 4.3 million people are impacted by this sudden flash flood and water congestion in seven northeastern districts of Sylhet, Sunamganj, Moulivazar, Habiganj, Netrakona, and Brahmanbaria. Many households are isolated due to floods, while some have taken shelter in open areas. The safety and security of women and girls in those households are at high risk. As many as 25,000 people have been taken to around 450 shelter centres in Sylhet; at the same time, 65,000 people were evacuated to 200 shelter centres in Sunamganj in a combined effort of the Army, Navy, Fire Service, and the local authorities, according to the Ministry of Disaster Management and Relief (MoDMR). People in Sylhet and Sunamganj were without power as the electricity supply was stopped to avoid accidents. Due to disrupted electricity connections, mobile communications make it difficult to get updated information in the affected areas. Major regional highways, including Sylhet-Sunamganj and Sylhet-Bholaganj, are submerged, and road connectivity has already snapped due to the intensity of flooding. (UNRCB,2022)

1.2. Literature Review

Chaudhary et al. in their research article 'Impact of Flood on Performance of Students the Case of Secondary School Students in Jaleshwor Municipality, Mahottari' has attempted to explain the issue impact of the flood on the performance of students in Nepal. The mixed method was used to collect the data and analyse it with the use of simple statistical tools. The paper shows that School buildings are vulnerable towards natural disasters in Nepal and many of them are poorly constructed, old and situated on marginal lands. The study aimed to assess the perception of school students on the potential effects of floods on the school infrastructures, the students' residents, community infrastructures and overall impacts on their academic performance. The result of this research showed that flood impacts directly on the performance of the students. Due to the flood disaster, many schools closed, the infrastructure was damaged, and the number of students increased which ultimately impacted the performance of the students. When the school closed for long periods due to the impact of such disasters, their poor parents involved their children in labour work.

Chang S, F. et al. conducted a research paper on 'Flood Disasters and Its Impacts on Child Education in Sindh (A Case Study of 2010 Flood)'. They focus on some problems such as access to safe water, sanitation, quality of education and health awareness are desperately needed, along with micro-economic development to bring the population up to a livable standard. This study investigates the horrifying disasters in the Sindh province and analyses their impacts on child education and national development. For the collection of data, a meeting was held and direct communication was established with key representatives of national and international organizations and authorities which were actively participated in disaster risk reduction and disaster management and other United Nations agencies. Researchers find in this article disasters have led many schools to be closed, student dropouts have increased, properties of people destroyed, and infrastructure damaged, all these aspects have a direct effect on the development of nations. However, this research did not show how flood affects students' academic performance poor results, and less concentration in studies. They also focus on only secondary school students. Judith, A., S. K et al.in their research article 'Horrifying disasters in western Kenya; Impact on education and national development' have tried to investigate the horrifying disasters in the region and analyze their impact on education and national development. They explain in their study that most schools throughout the region are in pathetic situations which dishearten educationists. For example, a school consists of six or ten classrooms in two or three blocks, if the school is fortunate; the oldest block will have been built sturdily, though newer blocks, often built by the community seem temporary. These blocks will vary in quality from mud and cement blocks used in construction. They suffer from inadequate maintenance and the compounds are usually dusty. The additional students from disaster-affected areas lead to hundreds of pupils squeezing into poorly-lit rooms usually designed for not more than forty some without chairs and desks. They focus on school infrastructure but it would be better if they include other factors like housing infrastructure, Kousky Carolyn in his article 'Impacts of Natural

Disasters on Children' explains how disasters affect children. They want to see how disasters affect physical health, and how disasters affect health during childhood focus on malnourishment in developing countries, it can cause myriad emotionally harmful circumstances for children, and it can harm the schooling of children.

The limitation of this research is they have poorly understood which mechanisms operate when, or to what degree. They don't know enough about whether and how living with a higher risk of disasters can affect students' academic performance.

Choudhury, A.Y et al. In their research paper 'Effects of Biosocial Variables on Changes in Nutritional Status of Rural Bangladeshi Children, Pre- and Post-Monsoon Flooding'. This study examined the effects of biosocial variables on changes in the nutritional status of rural Bangladeshi children, aged less than 2 years, preened post-1987 monsoon flooding. Data were analyzed using both univariate and multivariate statistical techniques. The logistic regression analysis was used since the dependent variable was binary. The findings of this research are negative relationship between severe malnutrition and the economic condition of the household was observed during both the pre-and post-flood periods. The adverse effect of the flood was visible among children of all three categories of households; however, the increase in the proportion of severe malnutrition was greatest among children from the poorest households. This research did not show how flood affects their school infrastructures and school-going students' academic careers.

Maetine, M.L. in his article 'Child Participation in Disaster Risk Reduction: The Case of Flood-affected Children in Bangladesh' explain that Children are particularly vulnerable to the effects of natural disasters. This article aims to gain a deeper understanding of the specific effects of natural disasters on children and how they could better be involved in the disaster risk reduction (DRR) process. He analyses the traditional coping mechanisms developed by communities, highlighting where they could be improved. This paper will do so using Bangladesh as a case study. The research showed that children face great vulnerability during floods. Children represent a country's future, and the capacity of Bangladesh to face new challenges associated with climate change depends highly on the knowledge, abilities and skills developed by children on disaster risk reduction issues.

The study would be better if they highlighted the indirect effects of flood such as loss of income, and expanded opportunity cost of attending school, leading to parents' negative attitude in sending their children to school.

1.3. Rationale of the study

The purpose of this research was to know how primary school-going students perceive the flood disaster and their impact on their educational performance.
There is no specific research on the effects of floods on students in primary school and their academic performance in Bangladesh. As a result, every year these students and their families suffer a lot of problems which leads them to drop out, and poor performance in their studies.
We wanted to show how floods have an impact on primary stages of education. How damage to housing infrastructures and school infrastructures disrupts the continuation of children's studies, reduces attention from studies, and how parents' express unwillingness to continue their children's studies due to the economic damage of floods. So, the government, international organizations and Private organizations (NGOs and others) can take proper steps to reduce student vulnerability.

1.4. Objectives

The objective of this research was to explore how primary school-going students perceive the flood disaster and their impact on their educational performance. It also sought to investigate the sensitivity of current school infrastructures and physical resources, the impact of flood disasters on students' academic performance, the state of public utilities on students' academic performance, and the sensitivity of students' residents' infrastructures.

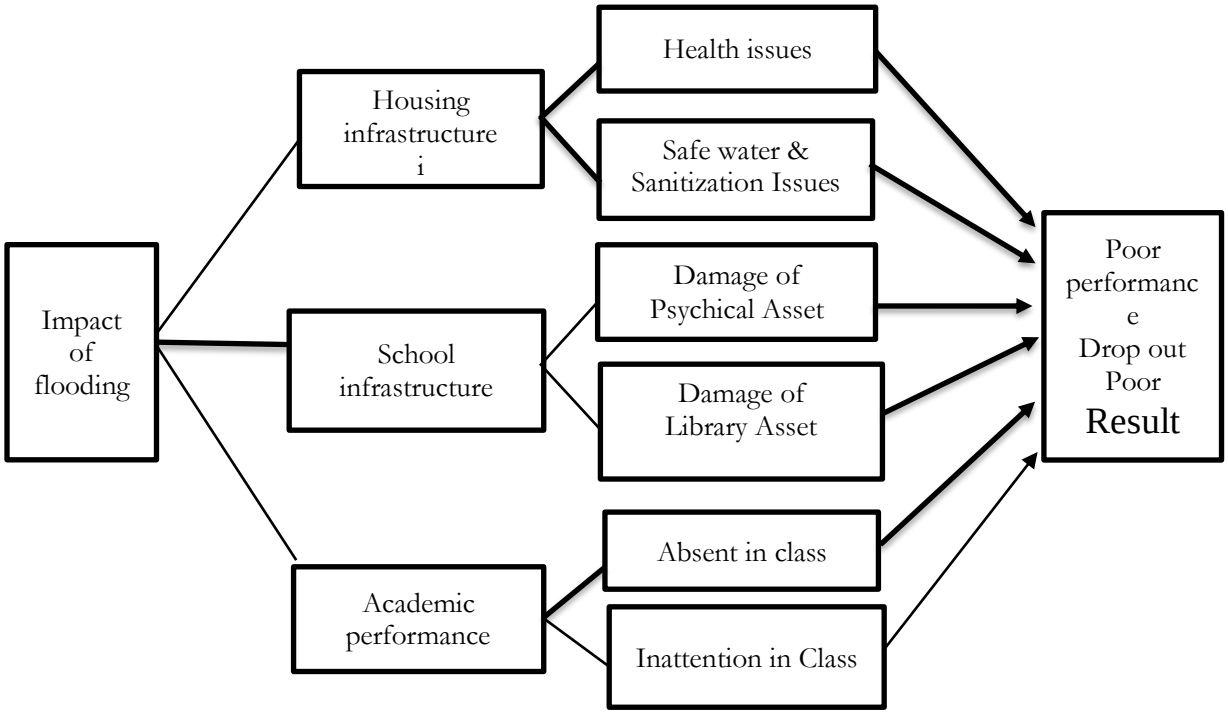
It provides information on how vulnerable schools are to flood disasters and how well students are performing in class to the relevant school administrations and other stakeholders, including the government. The government can take appropriate action to lessen the vulnerability of school buildings, protect the lives of students, teachers,

staff, and community members, and improve the academic performance of students if the school facilities are in vulnerable situations.

1.5. Research Question

A. How do primary school student's notion the impact of flooding on their housing infrastructures?
B. How do primary school student's notion the impact of flooding on their school infrastructures?
C. How do primary school student's notion the impact of flooding on their route from house to school?
D. How do primary school student's notion the impact of flooding on their academic performance?

1.6. Conceptual Framework



2. Methodology

2.1. Study Methods

A qualitative study was conducted for this research, which was appropriate for the research as it can provide an in-depth understanding.

2.2. Study Area

The study was conducted at Sunamganj Sadar Upazila in the Sunamganj district of Bangladesh. Sunamganj is the most flood-affected district in the Sylhet division and Upazila is affected by floods every year. For this research, we select two primary schools named by Gudargao govt. primary school and Khamtior govt. primary school of Kurban Nagar Union. The river Surma flows by the side of this union and It's surrounded by haor.

2.3. Population

The students of this primary school, their guardians, and their teachers *are the population of this study.*

2.4 Sampling

In this study, non-probability sampling has been used. For the qualitative, purposive sampling has been used. 20 samples are selected from Kurban Nagar Union. These samples are selected purposively.

2.5. Data Collection.

For this research, In-depth interviews (IDI) were conducted. For in-depth interviews, participants were chosen from specific communities where people knew details about primary school-going students. Twenty IDIs were performed; Six were conducted with a female guardian, four were conducted with male guardians, four were conducted with the teacher of primary school and six were conducted with the primary school-going students. All IDIs were conducted following guidelines by face-to-face interviews at the household level. This qualitative research technique has vast advantages in exploring the interviewee's perspective on a particular situation. The time duration for IDI conduction was 15–20 minutes. The objectives of the research were demonstrated to the respondents before the interviews. A written consent was taken from each of the respondents before the interviews.

To conduct this study, we intended to use the following data collection methods:
- In-depth interview
- Observation
- Phone calls

Tools

- Interview Schedule
- Field diary
- Field note
- Voice recording

Table 1. List of participants in the qualitative study.

Qualitative Instruments	Age	Range Participants
In-depth interviews (IDI) (n = 20)	12- 50 years	Female Guardian (06) Male Guardian (04) School Teacher (04) Students (06)

Table 2. Content of in-depth interview.

Area of Discussion	Types of Questions Used
Impact of flooding on their housing infrastructures.	Have you suffered flooding in your residence? How much was your house flooded during the flood? How long did the flood last? What is the damage to your home? Did you have a physical illness? What are they? What was the problem of accessing clean water and hygienic toilets?
Influence of Flood on the Infrastructures of School.	How much damage was done to the school's physical assets? How much damage was done to school infrastructure? What was the problem of adequate clean water and hygienic toilets in the school? How much damage was done to the school's physical assets in the library?
Impact of flooding on their route from house to school.	Did students regularly attend class? How much damage has been caused by the closure of educational programs?

	How was the classroom environment after the flood?
Impact of flooding on their academic Performance.	Did students regularly attend class? How much damage has been caused by the closure of educational programs? How was the classroom environment after the flood? How were students' attention levels in their studies after the flood? Did the flood damage affect student enrollment? Have students dropped out due to flooding? What percentage has fallen and what are the reasons?

2.6. Data Analysis

The data was gathered using a variety of questions. Audio voice recording was done with prior permission from the respondents. From the audio recordings and hand notes of the interviewers, we prepared verbatim transcripts of the IDIs in the native Bengali language. Later, English translations of the transcripts were performed. After reading and rereading the data, the themes were discovered, and an analysis of the data was then carried out. The participants' words were analyzed as actual content, and the interpretation and judgment of participants' response was analyzed as latent content. We analyzed the data with a repeated look over the written transcription by identifying each of the meaning units and listening to the audio recorder.

3. Result and Findings

Flood is a common and annual natural disaster in the study area, especially during monsoon in the Sadar Upazila, Sunamganj, Bangladesh. School-going children are the most vulnerable during floods. During the flood, the majority of the families were compelled to drink tainted water. Additionally, waterlogged and unusable was the toilet in each of the homes. The students' use of open, elevated areas to urinate contaminated the surrounding landscape. Additionally, this activity cut down on the time needed to get ready for school. There was more absenteeism in the classrooms since the students couldn't get to school. All of these issues contribute to the students' subpar academic performance. Their education, and physical and mental health are severely affected. Their families suffer a lot when there is a monsoon season or flood, which results in many students dropping out or losing focus on their studies. After the flood they don't get enough financial support from family, don't get enough books or stipend.

3.1 Impact of flooding on their housing infrastructures.

Most of the community people who participated in IDI had a perception of natural disasters and maternal death in their area. However, they perceive that both of the things occur due to destiny/ill fate, even though floods occur in one season (monsoon) their effects persist throughout the year in that area. Floods make their life more complicated as there are problems with housing, communication, food, and medical treatment. Their lives become under threat during flooding.

The house is subject to flooding each year. Every year, the streets and backyards are submerged by floodwaters. Flood waters rise above the danger level and water quickly seeps into the area. In areas where people live, the water can rise to 4 feet. Everyone embraced the flooding inside the home and built a living space close to the shed to protect themselves. Every year, there are floods here, and the water lasts for 5 or 6 days. But in this year, it lasted for about 20 days.

The flood this year has caused significant harm to people, animals, birds, and plants. The water carried away all of their home's everyday essentials, including pots, pans, tiles, mattresses, books, and notebooks. Their riches, food supplies, and cattle were all lost. Their homes were mud-walled huts made of tin. As a result, the powerful water flow destroyed the mud walls.

Everyone boiled and drank the floodwater when it was at a low level. However, the water level grew to 4 feet when the floodwater reached the house. Then the structure of the house becomes waterlogged. Then they used to drink flood water. We made a boat out of banana trees and urinated behind the house.

My young child, who is only two years old, caught a fever in the floodwater, and the older kids, who attend other schools, suffered from stomachaches and numerous skin disorders. Body weakness caused by 15 lengthy days without food was one of the other health issues. [One of the female guardians]
We drank water from the front of the home and had to drink the poisoned water since we had no other option. We store saline and essential medicines from grocery shops. We used to drink the medicine to treat our family member who became ill after drinking floodwater. There was no sanitation or safe water because the houses were almost entirely submerged in the heavy flood. [One of the male guardians]

3.2. Influence of Flood on the Infrastructures of Schools.

On the first day of the flood, water was up to the school's balcony, and on the 2nd and 3rd days, half of the school was underwater. It was impossible to transfer anything, including classroom furniture like chairs, tables, desks, and projectors, to a safe place due to the flood's dramatic increase in water. As a result, significant and expensive electronic equipment within the school was damaged by the flood water. During the flood, all classes were cancelled. The roads were much too dangerous for teachers or students to use, and everyone's families were underwater. After the floods, it took a long time for the classroom environment to be restored, and teachers struggled to convince students to concentrate in class. According to sources, some classroom walls and washroom doors shatter along with roofs being blown off whenever there is flooding. Children at risk are those who spend a lot of time in school. Children reported that because of the broken walls in their classrooms, they are still afraid and anxious.

The assets in the library were damaged. Books, the registrar's books, and essential student and teacher informational files were destroyed in the flood water. As a result, all the information had to be collected after the flood. [One of the teachers]
The toilet and water pump at the school were both underwater. As a result, there was no access to toilets or safe water. The septic tank was full of floodwater, contaminating the area and endangering the health of the nearby students. The children were forced to use bush toilets due to the toilet's collapse and flooding, which contaminated the water and caused the cholera sickness to spread. [One of the teachers]

3.3. Impact of flooding on their route from house to school.

When the roads are impassable due to flooding, students must rely on boats to get to school. The students frequently have to go through mud or floodwater to go to school because the roads are broken, which makes them physically ill. During a flood, the majority of students always had trouble getting from their homes to school and simultaneously. When a heavy flood occurred while the students were in school, the majority of them failed to return to their homes in time. To reach the school, some of the students had to cross a few little streams. They could not go to school during the flood when they were at home. The student's academic performance was significantly impacted by this. Additionally, students are hesitant to go to class and give less attention to their schoolwork during this period. Both major concrete highways and passable country roads were destroyed.

3.4. Impact of flooding on their academic Performance.

During the time of the floods, fewer students attend classes. In addition, attendance among students declines by 20% during the rainy seasons of the year. Additionally, 50% fewer students attend class when there is flooding.

This year the school was closed for about a month during and after the flood. It led to a loss of instructional time, which had an impact on the standard of instruction. The students' performance suffered as a result of the teachers' inability to finish the courses on time. The children's concentration was weakened as a result of the delayed school shutdown.

"Most of my students have forgotten the previous class," [One of the teachers]
*"Some of our books were washed away in the flood, while the rest were ruined by the water." So, since we didn't have a textbook, we read from the guidebook. [*One of the students*]*
After the flood, some fresh books were given to the children. However, it was impossible to provide books to everyone because of the limited number of textbooks. We realize that insufficient textbooks as a significant contributor to students' unsatisfactory classwork. [One of the teachers]

It has been discovered through discussions with the student's parents that "it cost a lot of money to rebuild their homes during the flooding. Since the majority of them work as day labourers, they borrow money to repair the houses. As a result, they found it difficult to continue their children's academic subjects those whose houses were destroyed by the flood.

In addition to the damage to school infrastructure, floods have also been found to affect the total number of students who properly register and attend classes in primary schools. We discussed with three head teachers of primary schools and they said that total enrolment was much lower in flood-affected schools compared to non-flood-affected schools. However, as the children grow older and move to higher grades, the cost of books, uniforms, clothes and other school necessities increase, making it difficult for parents to cope. This, coupled with the fact that at higher grades, most children become more engaged in income-generating activities to contribute towards sustaining their families, explains the lower enrolment rate in higher grade levels in flood-affected schools.

Discussions with parents and community members revealed that "poor parents bear the burden of debt and do not want to enrol their children in secondary school even after completing primary education. Because the cost of education in secondary school is high which is beyond their affordability?

Many of my students left their residences and migrated because they were completely breaking. In addition, some students work as day labourers to help their fathers pay their expenses. They thus did not begin studying again. [One of the teachers]
" I can't let my elder son go to school after the flood. He was a J.S.C. candidate this year. Thus, many parents say that many students have dropped out of secondary school despite being able to complete primary School education. [One of the male guardians]

4.1. Discussion:

Sunamganj is the most flood-affected district in Sylhet division. Flood disaster occurs almost every year at the Saddar Upazila of the Sunamganj district in Bangladesh. The river Surma flows near this area The calamity happens right after the heavy rainfall. The effect lasts for a whole year. Climate change is mostly to responsible for the increased frequency and severity of floods throughout time. During the floods, it is challenging to communication, transportation, find housing, and obtain food and safe water.

According to the study's findings and replies, most of the student households were also at risk of flooding. Every year, the majority of the homes flooded during the rainy season. The foundations of their homes could not withstand the pressure of the water and become harmed. The observation revealed that the majority of the buildings had mud-plastered walls made of split bamboo and woven walls. Even in framed constructions, dwellings were built without following building codes, which left them vulnerable to flooding. When the components of houses were damaged, it was discovered that only a few families suffered injuries.

In Muzarabani District, Zimbabwe floods exposed children to multiple health risks. Stagnant water exposes children to diseases such as cholera and malaria with cholera reported to be the most widespread illness causing loss of children's lives. The second most common disease is malaria, which was also reported to be the reason for the deaths of children in the study area. Interviews with health service officials indicated that they have to attend to cholera and malaria sicknesses more during the rainy season (Mudavanhu, 2014).

Floods caused low enrolment of children in school, increased drop-out rates, and lower educational attainment. Unfortunately, the damage caused by floods to physical infrastructure hindered school attendance for a longer time, especially in developing countries such as Sindh, where reconstruction of the damaged schools usually occurred long after the disaster. (M Chang,2013)

According to the study's findings, a 39-year-old vehicle driver named Faruqe said that He had a daughter and two boys. His daughter was in primary school, while one of his two sons was a student in class six. After the flood, roads were impassable. Throughout the flood, his kids did not routinely attend school. As a result, following the floods, their academic performance was severely subpar. They encountered numerous physical and psychological challenges both during and after the storm.

5.1. Conclusion:

The key to civilization and enlightenment, as well as a source of wealth and power, is education. There is little doubt that the flooding calamity has disrupted the classroom environment for the children. The pupils' vulnerable homes also have a big impact on schooling during disasters. Due to their inability to focus on their studies, the pupils ended up dropping out. Due to the flooding disaster, several schools were closed, the infrastructure was damaged, and the number of student dropouts increased, all of which had an impact on the students' academic performance. The students are constantly terrified of being victims of flooding because of these school infrastructures. Children are especially vulnerable because of their socioeconomic status, education, housing situation, ownership of land, political engagement, and exposure to hazardous conditions during and after a disaster. The rate of school dropouts rises as a result. In our disaster-prone nation, it is possible to reduce the number of dropouts and the negative effects of disaster on children's academic performance and health status by providing adequate health care facilities and mitigation techniques both during and after a disaster. Due to the flooding's destruction of crops and the absence of access to markets in the upper land after all food reserves have been destroyed, flooding periods are associated with insecurity and high rates of malnutrition. If the government or humanitarian organizations do not step in to provide relief aid, food insecurity may endure for months or even a whole year. In particular, malnourished children get ill and die.

5.2 Limitation of Research

There are basic limitations to this research. It is telling that the study's findings will be more specific if these obstacles can be removed. Because of time limitations, it was unable to conduct additional interviews with more considerable variation. The number of samples used to get the data was rather little; therefore, the results might not be entirely accurate. Because this research focused on a specific area, it did not examine all of the students' situations. It would have been better to study the psychological condition of the students during the flood and their economic and social condition after the flood.

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