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Coping Strategies in Response to Riverine Floods During Pandemic Time: A Household Study in Kurigram, Bangladesh

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ABSTRACT

Bangladesh is one of the countries at risk of COVID-19 and climate change. The lockdown efforts failed to flatten the curve and needed to be more effective. As a result, the significant risk of transmission is obvious, given the rising incidence of cases. Due to climate risks like cyclones, floods, landslides, and heat waves, a multiple hazards scenario could arise in this country. This study sought to evaluate the potential vulnerabilities of a confluence of infectious disease epidemics and natural hazards like floods. This study used a mixed methodological approach to examine the multi-hazard scenario in a resource-constrained area with a high population density. This study used a questionnaire survey with 150 respondents and in-depth interviews with 20 villagers. The findings showed a high likelihood of worsening the effects of the COVID-19 pandemic if a climatic disaster like a flood occurs. This nation's inadequate and frail healthcare system cannot handle the extraordinary load. A lack of sectoral collaboration, communication and risk assessment could limit the government's contingency strategy. A strict strategic plan for emergency response and short-term and long-term management should be developed in light of the unprecedented worst-case scenarios.

Keywords: *Coping strategies, riverine floods, pandemic time, COVID-19, Bangladesh*

INTRODUCTION

Bangladesh is prone to natural disasters due to its geographic location and topography (Alam, 2017; IPCC, 2014). Floods, droughts, cyclones, and tidal surges strike this country yearly. Floods are the most common occurrence in Bangladesh as three major rivers, the Ganges, the Brahmaputra, and the Meghna (GBM), flow through the country (Alam, 2016). The government has a long history of floods. Several disastrous floods have struck the country in the last 70 years, including 1954, 1955, 1970, 1974, 1980, 1987, 1988, 1998, 2004, 2007, 2017 and 2020 (Hossain et al., 2012, DDM, 2017). Among these floods, the 2020 flood was the worst for Bangladeshis, as it was the second-longest flood and preceded the monsoon flood of 1998 (Barua et al., 2011; NAWG, 2020). The 2020 flood appeared to be qualitatively different from previous significant floods in the last twenty years due to some notable characteristics, such as the prematurely early timing (late June), longer flood period length (roughly ten weeks) and the flood having a triple peak, a never seen before occurrence (Chowdhury and Masud, 2020).

Furthermore, the flood of 2020 came with protracted flooding and the COVID-19 pandemic. As a result, unlike before, the low-income communities in Bangladesh were slapped with an intricate situation in 2020. The COVID-19 outbreaks and the emergence of the 2020 flood have affected 15.4 million people in 49 districts of Bangladesh (NAWG, 2020). These two significant calamities never

happened simultaneously in Bangladesh's history until 2020. As a result, these calamities severely harmed the victims' resilience, impairing their ability to recover from their losses. Historically, Bangladeshis have an excellent reputation for their flood-coping abilities. However, the backdrop of the 2020 flood differs because the country was under a "double" lockdown: the COVID-19 lockdown declared by the government and the water lockdown imposed by the floods. Thus, managing and surviving the pandemic and major floods simultaneously necessitate additional resilience for the community.

Several researchers have attempted to investigate the recovery processes following natural disasters. For example, Sadik et al. (2018) tracked the recovery of Bangladeshi citizens affected by Cyclone Aila. Another study found that structural and operational elements are vital in determining meaningful community participation in long-term disaster recovery programs. This research was also based on Cyclone Aila (Islam et al., 2020). Several academics have depicted Bangladeshi villagers' flood-coping tactics (Sultana and Rayhan, 2012; Paul and Routray, 2010). In 2017, Mondal et al. (2021) attempted to determine the determinants of post-flood disaster coping techniques at the household level. They studied the 2017 floods in three districts on the right bank of the Teesta River: Nilphamary (Dimla upazila), Rangpur (Gangachara upazila), and Gaibandha (Sundarganj upazila).

Several studies have examined post-disaster coping strategies for riverine floods and coastal cyclone recovery. They looked for coping tactics in either a flood or a cyclone. However, during the literature review and data collection process, researchers have yet to look at a combination of disasters, such as floods and COVID-19, at the same time to determine post-disaster recovery tactics. This study aims to close a research gap and study the household-level post-disaster coping mechanisms in responding to and recovering from riverine floods and COVID-19. The study chooses Kurigram, one of Bangladesh's most flood-prone and economically impoverished districts. COVID-19 and the flood of 2020 were disastrous for the whole nation, particularly the underprivileged. However, the government has yet to progress in recovery after disasters like floods, cyclones, and COVID-19. Victims rarely attempt to heal on their own, and thus, research into coping techniques for responding to and recovering from riverine floods and COVID-19 at the family level is critical.

The research could provide crucial information on how floods and pandemics with lockdowns affect the adaptive capacity of affected households. On the other hand, international humanitarian groups and non-governmental organisations (NGOs) actively work in post-flood recovery efforts in underdeveloped countries such as Bangladesh. Therefore, the findings can help shift their focus from post-storm relief to holistic livelihood rehabilitation initiatives for flood victims, strengthening the recovery process and evaluating recovery decisions, policy implications, and flood preparedness in the future. The Bangladeshi government and various global and bilateral development partners could launch recovery support programs covering livelihoods, housing, economy, education, sanitation, hygiene and health, water supply, and infrastructure. Finally, this study could be helpful for academics and planners for conducting post-flood recovery studies in poor nations.

METHOD

Study Area

The study was conducted in Rajarhat upazila, Kurigram district, at two unions (administrative sub-units of an upazila), including Bidyananda and Nazimkhan. This area is an agricultural area with high poverty because most people work in primary industries (farming, fishing) with no savings or deposits (Table 2). Furthermore, because the huge Teesta flows through the area, this area is subjected

to riverine floods and riverbank erosion every year (Fig. 1). The flood of 2020 has wreaked havoc on this region and residences, claiming the lives of cattle and livestock, as well as crops, agricultural fields, homestead lands, and property. During the flood, people faced numerous challenges, including cooking challenges (e.g., cooking on the bed), starvation, no help from relatives, living with water, lack of pure drinking water, medical facilities shortage, communications problems, living in the open sky, taking shelter in the shelter centre, and relatives hoarding food.

On the other hand, the country enforced a lockdown to stop the spread of COVID-19, threatening their lives and livelihoods. Poor people were deprived of income because they could not work, and families could not help because of the rigorous lockdown. With the dual lockdown, the underprivileged group suffered from a poor socioeconomic situation. Therefore, it is an ideal setting for investigating the recovery processes of poorer homes following the flood of 2020 and the pandemic scenario, as these houses frequently need external assistance following disasters.
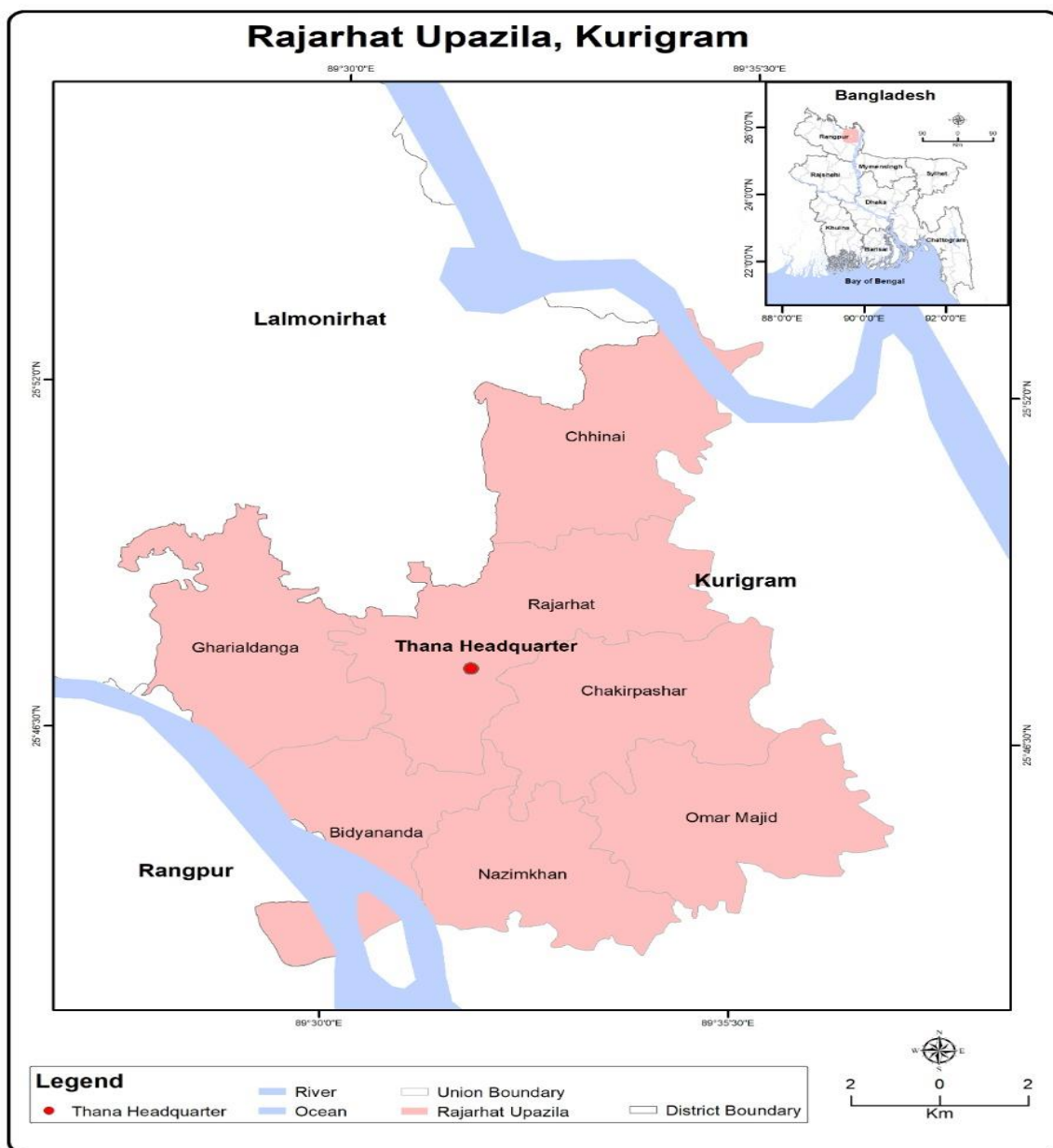
Figure 1: The Study Area (Source: The Authors, 2022).

Methods and material

The research followed mixed research methods, with more emphasis on qualitative data. However, quantitative data was also collected for the demographics and other essential information. About 150 families from the unknown population were chosen from the study region using convenient sample techniques (Table 1). Data was collected using a semi-structured questionnaire (i.e. an open-ended and closed-ended questionnaire) following a structured interview. Data was collected from the field via face-to-face interviews from 25 January to 15 February 2022. The questionnaire asks various questions under four broad sections, including demographics, socioeconomic conditions, housing information, and recovery techniques after a dual lockdown. The researchers conducted 20 in-depth interviews with the villagers, which helped validate the survey questionnaire. The in-depth interviews were conducted using a checklist with a semi-structured questionnaire. These 20 villagers were selected purposely after all the data had been gathered.

District	Upazila	Union	Village	Sample size (households)
Kurigram	Rajarhat	Nazimkhan	Somnarayan	80
		Bidyananda	Taiyubkhan	70
Total				**150**

Table 1: Study area and sample size (Source: Field Survey, 2022)

An interview with the heads of the homes had been planned previously. The researchers needed help locating the household head in the randomly picked residences. Therefore, researchers continued to interview the family head (male or female) or the older adult conveniently in residence to conduct the field survey. The questionnaire and interview were conducted in Bengali. The study's goal was explained to the respondents before the interview, and they were asked if they wanted to participate. After getting verbal approval from the respondents, the interview was undertaken.

The SPSS software (version 20) was used to code and analyse the data. Descriptive statistics (frequency, average, sum) were used to understand the characteristics of respondents based on various factors. Pearson's correlation coefficient investigated the association between factors influencing household-level coping methods to respond and recover from riverine floods and COVID-19. Figure 2 depicts a summary of the research procedures. The study area map has been produced using ArcGIS (version 10.8).
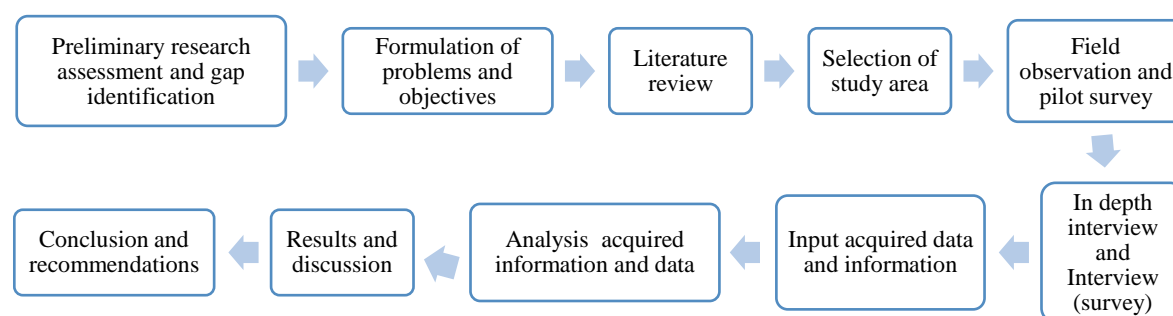
Figure 2: Methods and process implemented in this research (modified from Sileyew 2019)

FINDINGS

Characteristics of the respondents

Table 2 below presents the respondents' demographic information at the household level. The marginalised communities dominate the neighbourhood since they are involved in primary activities (approximately 70%). Most are illiterate or only attended school for a few days, according to household demographic statistics (about 50.3 per cent). Approximately 34% of respondents completed primary and secondary school. Thus, they cannot work at the secondary or tertiary level, limiting their monthly income. For example, more than half of the respondents (about 61.3 per cent) have a monthly income of less than or equal to 10,000 BDT. Only roughly 11.4 per cent of the population earns more than 15000 BDT monthly. Their income and expenditure, on the other hand, are nearly identical. As a result, most households (except 4 per cent of households) still need deposits. Furthermore, more than two-thirds of households (87.3 per cent) had only one working or income-generating member. More income-generating members in the family meant more income in the family, but they were limited due to illiteracy.

Items	Characteristics	Respondents (percentage)
Gender	Male	132 (88%)
	Female	18 (12 %)
Age-group	Below 30	21 (14%)
	31- 40	45 (30%)
	41-50	39 (26%)
	Above 50	45 (30%)
Marital Status	Married	145 (96.7%)
	Unmarried	5 (3.3%)
Education	Illiterate	62 (41.3%)
	Able to sign/ went to school for a few days	15 (10%)
	Grade I to V	30 (20%)
	Grade VI to VIII	21 (14%)
	Grade IX to XII	13 (8.7%)
	Graduate	7 (4.7%)
	Postgraduate	2 (1.3%)
Occupation	Unemployed	8 (5.3%)
	Farming	38 (25.3%)
	Fishing	24 (16%)
	Business	24 (16%)
	Day laborer	43 (28.7%)
	Service	13 (8.7%)
Income per month	0-5000 BDT[1]	27 (18%)
	5001-10000 BDT	65 (43.3%)
	10001-15000 BDT	41 (27.3%)
	15001 or more BDT	17 (11.4%)
Expenditure per month	0-5000 BDT	26 (17.3%)
	5001-10000 BDT	69 (46%)
	10001-15000 BDT	42 (28%)
	15001 or more BDT	13 (8.7%)
Workable member (s)	One person	131 (87.3%)
	Two persons	19 (12.7 %)

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[1] 86.67 BDT= 1 USD (as of April 2022)

Table 2: Demographic information of the respondents at the household level (Source: Field Survey, 2022)

Floods and COVID-19 have wreaked havoc in the surrounding households. They cannot regain momentum in their lives and livelihoods without healing. They tried to return to normalcy swiftly after two major calamities by employing several coping mechanisms, as shown in Figure 4. There is a positive correlation between the educational qualification of the family head and times towards everyday life after the flood in 2020 and withdrawal of COVID-19 lockdown ($p<0.05$) at 2- -tailed, and a negative correlation with the sex of the family head ($p<0.01$) at 2-tailed. However, there is no correlation between demographic characteristics, including age, religion, marital status, occupation, income and time towards everyday life after the flood in 2020 and the withdrawal of the COVID-19 lockdown. A significant correlation was not found between socio-economic characteristics followed by agricultural land, homestead land, the number of poultry and cattle before the flood in 2020, the pandemic and times towards everyday life after the flood in 2020, and the withdrawal of COVID-19 lockdown.

Borrowing money

Borrowing money is one of the most essential coping methods for responding to and recovering from the 2020 flood and COVID-19. Most victims (74.7 per cent of the households) took loans to recover from the disasters as no other options were available. Households used these loans desperately to maintain their lives and livelihoods. For example, these loans were used for educational purposes, medical services (birthing costs, treatment), assets purchasing (boats, fishing nets, home, land), repairs, reclaiming land from a money lender, businesses (buying seeds, starting small businesses), and for repaying a loan.

One of the **household heads of 47** years old stated in his interview:

"This year, the sufferings from the flood were of another level. Unlike the floods of previous years, this year, during the flood time, the government imposed a lockdown to stop the spread of COVID-19. We understand the government's difficulties, but the vulnerability we had to maintain our livelihoods at that time was limitless. My primary occupation is fishing, where I need to go to the river every day, and after catching the fish, I need to sell them in the market. I never had any savings during my difficult period. However, as the government imposed a sudden announcement of lockdown to minimise the spread of Coronavirus, we could not go to the river to catch the fish. This put me in a serious vulnerability to maintain my family expenses. Though I did not have any income then, I needed to maintain my family's expenses of 6 members. I had my old mother of 75 years who needed medicine regularly for her health. Moreover, I have three school and college-going children in my house who need education fees even though their institutions were closed then. These expenses were fixed together with our regular expenses for food and utilities. Though I had no income then, my regular expenses were a must to spend. Getting no alternative of money, I took a loan from the local loan shark with a high-interest rate."

The family borrowed money from both formal and informal lenders. NGOs (non-governmental organisations) and banks are formal sources, while clubs, relatives, neighbours, friends, and loan sharks are informal sources. NGOs (such as BRAC, Grameen Bank, ASA, RDRS, TMSS, Uddipan, and others) are more accessible to low-income people. Following disasters, around 48% of those affected borrowed money from NGOs. However, it is regrettable that non-governmental organisations (NGOs) gave high-

interest loans to the impoverished (i.e., the interest rate is sometimes 25 per cent). Neighbours and family also lent money to those who are afflicted. Nearly 13% of families borrowed money from their neighbours, while about 7% borrowed money from relatives. The neighbours and relatives also charged interest from the poor people. In extreme situations, some affected people borrow money by selling labour or crops with an advance payment.

Assets Disposal

Those affected by disasters choose different ways to recover. The underprivileged commonly have little money or physical assets. Physical assets include chickens, cattle, crops, fish, trees, and furniture were around 40.7 per cent of households, with cattle (28%) and poultry (6%) topping the list. After the flood and lockdown, the marginalised people utilised these tangible assets to resume their everyday lives. On the other hand, only 4% of the households held financial assets, such as deposits. Financial assets are derived from physical assets and are employed in disaster recovery.

A day labourer of 38 years old uttered his vulnerabilities of the 2020 floods. He said:

"I don't want to recall my vulnerabilities from flood 2020. Floods and natural disasters are widespread in our area. We are very used to dealing with the suffering. However, this time, our condition was badly disrupted, as we needed to use our assets due to the lockdown. As I could not go to work during this pandemic lockdown and flood time, to avoid loans from loan sharks, we prefer to use our domestic assets like chicken and duck. Moreover, the flood made it difficult for us to maintain safety and food for our domestic poultry. We prefer to sell it to our neighbouring families or consume it for family purposes. Though with these, we intended to avoid loan from a loan shark, unfortunately, as the lockdown was longer, we had no alternative of doing the loan."

Consumption reduction

People living in disaster-prone locations frequently reduce their consumption. Almost every impacted person (94 per cent of households) in the research area would change their eating habits after the flood of 2020 and the lifting of the COVID-19 lockdown because they had no other choice. They could not work outdoors during the flood and lockdown, forcing them to stay home and eat whatever was available. Consumable products or foods (such as livestock, poultry, crops, vegetables, and fish) decreased as the lockdown continued. Thus, the floodwaters receded only after a few months, and the lockdown was lifted; no food or assets remained in the residence following the tragedies. As a result, the afflicted victims, primarily female household members, gradually shifted their eating habits, as seen in Figure 3.
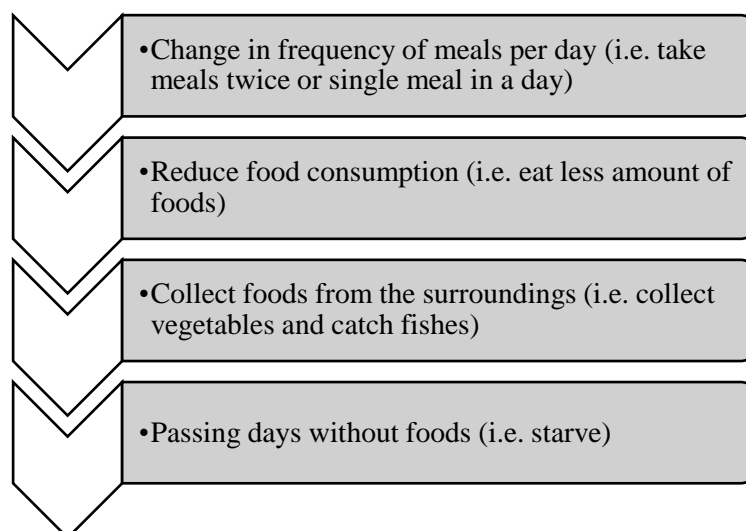
Figure 3: Changing sequence of food habits to respond and recover from flood and COVID-19 (Source: Field Survey, 2022).

A female respondent, 32 years old, from a female-headed household, shared her practice of disastrous days during the pandemic. She said:

"I lost my husband ten years ago, and from that time, I have been working as a day labourer in other people's farming land. The challenge of my profession is I need to remain jobless at certain times of the year. This happens mostly during disastrous times. As the farming lands and other areas went under flood water, I had no work to do to make my living. During this time, I must compromise my usual food habits as my kids will get less if I take a full portion of my food. In these times, I work as a housemaid in some rich people's homes. In return, they gave me food. But that is for me only. If I take my food, two kids of mine will remain starving. However, this year, the flood lasted longer than the previous times, and we were kept in-house for Coronavirus. In this situation, no one looks for any work to help or get food from them. This situation put our family of three into a serious vulnerability. Three of us had no main food for around 3-5 days and depended only on dry food like biscuits and chira (dried rice). We did not get any assistance from the government. Some people may get help, But I am not sure."

Cutting back on non-food expenditures

Households employ various tactics to reclaim the momentum of everyday life, such as reducing non-food expenses. Non-food expenditures, such as clothing, education, and medication, were cut in every household. Affected parents, for example, may discontinue their children's schooling or fail to provide a house tutor. Furthermore, families do not buy new clothes for their children, even during celebrations such as Eid or Puja. They forgo purchasing medicine and instead rely on government or relief-program-provided medicine.

The COVID-19 situation with long-term lockdown increased the vulnerability of the flood-affected community of Kurigram. The household's primary requirement was maintaining the living and arranging the household's food expenditure. Thus, the other non-food expenditures were treated as secondary requirements. To minimise household expenditures, most households cut down on non-food

expenditures. In this regard, **one of the male respondents, 55 years** old with four children, expressed his situation as follows:

> *"I know education is essential for my children's future. I have a very marginal income to maintain our family expenses. This income falls in danger during this lengthy period of flood. We got relief from the government and non-government organisations in the previous year's floods. With these, we maintained our flood time crisis, and once it is over, we can return to work to settle our livelihood. Nevertheless, this time, we did not get relief from any organisations as strict lockdown was carried out during the same time. We somehow maintained our living; some days, we needed to stay without food. On some other days, we only provide food for our kids. In this situation, providing education and new dresses was like wasting money. If we cannot live for now, what will we do with education in future!! So, I stopped my two daughters' education from their schools. However, I kept continuing my elder son's education. He managed to pay education fees independently, trying from his teachers and friends. My younger daughter cried a lot because she wanted to continue her education."*

Migration

Migration, particularly seasonal or temporary migration to nearby towns and cities or flood-free locations, is a common coping technique for disaster recovery. Around 18% of households migrated to compensate for losses experienced by the floods of 2020 and COVID-19. Approximately 9.3% of these migrants migrated temporarily (i.e., returned to their origin within 06 months). The head of the household, an older family member (such as a son or daughter), or the entire family migrated outside the study area to reclaim their pre-disaster socioeconomic status. Most of the time (14 per cent), the family's head of household left the location of origin. The affected population preferred to migrate to economically developed areas such as Dhaka, Cumilla, Bogura, Rangpur, Tangail, and Kurigram Sadar. Dhaka, the capital of Bangladesh, is a popular choice among the victims (i.e., about 9.3% of the affected people). Table 4 describes the characteristics of the migrants.

A 60-year-old household head expressed his dissatisfaction by saying,

> *"This is a common practice in our area to conduct seasonal migration to other places. When we do not have work in our place, some members move to other places for work and living. My two elder sons also migrate to other districts, mostly in Dhaka, to work for our livelihood. However, as strict movement control was going on, they could not go to Dhaka for work. Unfortunately, we had no living to continue our family expenses. We have a big family of 11 members, but my sons could not go out for work due to floods and COVID-19 with a longer lockdown. We needed more savings to meet the crisis, and we took loans with high interest rates from others, which was not enough for our family. So, by taking the risk of life, my two sons were bound to go out. They tried to go to Dhaka but were not able to reach it. So, they work in the village areas where lockdown is not strict and work for the agricultural sector as day labourers. Though the wage in the agricultural sector is less, we were still able to have food for two times a day with that money. They went to Bogura, which is a district near our village. This is how, by doing temporary migration, we arrange food for us during the longest flood time."*

Migrants	Percentage	Destination	Percentage	Types of work	Percentage	Duration	Percentage
Head of the household (HH)	14.0	Long distance (Dhaka, Kumilla, Tangail)	12.7	Day labourer (Agricultural labour)	8.0	Below 6 months	9.3
Male member (excluding the HH)	2.7	Short distance (Bogura, Rangpur, Kurigram Sadar)	5.3	Driving (CNG, Rickshaw)	6.0	6 to 12 months	2.7
Others	1.3			Service (Garments, Shopping market)	4.0	Above 1 year	6.0
Total	**18**	**Total**	**18**	**Total**	**18**	**Total**	**18**

Table 4: Characteristics of the migrants (Source: Field Survey, 2022)

Generating more income

Affected residents of the study area attempted to work more hours to generate additional revenue to recover from disasters as quickly as feasible. Around 74 per cent of households tried to work more to improve their financial situation. Furthermore, they (about 14 per cent of households) enlisted the help of other family members to continue their livelihood and return to pre-crisis conditions. As a result, only some families send their children to adjacent towns or cities to work or beg to supplement their income.

Dependency on relief

In most homes, the flood and epidemic badly impacted livelihood-sustaining activities, income-generating activities, local market functioning, crops, livestock, and fisheries, resulting in a heavy reliance on external donations or aid. Grants from outside sources are a part of the recovery process after disasters. These people used flood disasters as an aid in recouping their losses. The local government (i.e., Chairman and Members) and students from various educational institutes distribute grants. Dry items, such as rice, oil, buffed rice, potato, onion, garlic, biscuit, salt, and medicine, such as tablets and saline, were given to the affected people in this area as a relief. Aside from that, just a few households received cash. The assistance distribution program had a few things that needed to be fixed. Some folks received respite more than once, while others did not receive relief at all.

People impacted by catastrophes have taken several steps to respond and recover as quickly as feasible. They implemented more strategies at the same time. However, the study revealed little evidence that they implemented recovery procedures sequentially, as seen in Figure 4.

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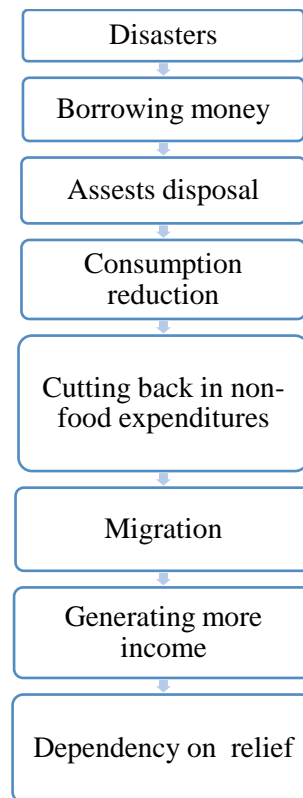
Figure 4: Post-disaster coping strategies to respond and recover from riverine floods and COVID-19 at the household level (Source: Field Survey, 2022).

DISCUSSION

Every year, there is a flood in Rajarhat, Kurigram. People in this area strive to recover from floods using various strategies based on their life experiences. The 2020 flood was even worse for the people because it was the biggest and happened during the COVID-19 lockdown transmission, which was still in effect across the country. People have no income during the flood and lockdown since they cannot go outside. As a result, they experienced food shortages. Those with food cannot prepare it due to a lack of fuel, which the disastrous flood waters have contaminated.

Furthermore, during the lockdown and flood of 2020, people were forced to change their eating habits and lessen their meal frequency. In the worst-case scenario, they were forced to starve. They adjusted their food habits, such as reducing food consumption, buying cheaper food, and collecting food (e.g. fish, veggies) from neighbouring areas, even after the lockdown was lifted and the flood waters subsided. After the cyclone, Paul and Routray (2011) discovered that the coastal residents of Bangladesh used similar techniques. Coastal residents also reduce their consumption after a hurricane by skipping meals or going hungry. They also collected wild foods and restored low-cost foods. Moreover, Islam and Ahmed (2017) highlighted that coastal people change their food consumption habits as a part of their recovery tactics from the incurred disaster.

After the floods of 2020 and the COVID-19 lockdown, households employed various post-disaster coping tactics to cope and recover. They consumed or sold their productive assets, including cattle (cows and goats) and poultry (chickens, hens, ducks). Affected people borrow money from NGOs (e.g. ASA) at exorbitant interest rates (i.e. 25%) to resume their everyday lives and complete their children's schooling. Furthermore, a high percentage of households aimed to cut costs in education,

clothing, and medication. The other researchers have found that disaster-affected people may employ methods such as reducing non-food expenditures (such as schooling, clothing, and medical), selling or consuming livestock (i.e. cattle and poultry), borrowing money from formal and informal sources with high interest to buy food and to fund other expenses (Beck, 2005; Hossain & Rahman, 2021).

Following calamities (i.e., the flood of 2020 and the pandemic), some family members, primarily male members, relocated from the devastated area in quest of work or jobs to supplement their income and return the family to its previous state. Mondal et al. (2021) found that moving to cities or other flood-free places is a typical way for people to reclaim their last socioeconomic status after a flood. For financial reasons, family members relocated outside the flood-prone area, only to return to their homes within six months. People, particularly pregnant women and children, were more vulnerable during the lockdown and the flood of 2020 due to a lack of food intake. As a result, following a flood or a pandemic, households attempt to provide intensive care to youngsters and pregnant women. The pregnant woman's mother or sister occasionally visited her residence to look after her. Children and pregnant women receive more nutrient-dense food from family members.

Furthermore, during disasters, students' education is disrupted. As a result, in the aftermath of disasters, parents attempt to provide them with a private teacher to reduce losses and speed up their studies. It was discovered that it takes at least eight months for each home to recuperate from the flood of 2020 and be released from the pandemic lockdown. On the other hand, roughly 31% of households are still struggling to reclaim their everyday lives.

Households in need of assistance were sometimes reliant on relief supplies. Rice, pulses, salt, soap, sugar, buffed rice, biscuits, oil, onion, garlic, and potatoes are among the items offered by representatives of the local government (i.e. Chairman, Members) and students from various educational institutions. Even though they did not receive sufficient help, they were grateful for their assistance during this trying time. Mathura et al. (2013) similarly concluded that external funds or relief are more or less necessary for the short-term survival of Zimbabwe's disaster-affected people. According to Hossain and Rahman (2021), social cooperation, including relief and economic assistance, supports the flood-vulnerable people. There are certain limitations to the research. The study's findings were based on a relatively limited sample size that might only represent part of the country.

CONCLUSION

After the floodwaters retreated and the curfew was lifted, residents attempted to improve their socioeconomic conditions. They used various tactics to survive and recover from disasters, such as the flood of 2020 and COVID-19. Borrowing money to buy food and cover other expenses, for example, is followed by education, farming, agricultural equipment, loan repayment and other needs. Borrowing money is the most prevalent approach used in the aftermath of calamities. Because they had no deposits, affected households borrowed money from NGOs, family, friends, neighbours, or moneylenders at high interest rates. Due to the lack of savings, marginal people were forced to take out loans from the sources above. As a result, both formal and informal sources prey on poorer households. Assets disposal is another way of recovery. Distressed sales of cattle, poultry, trees, crops, and fish made these people face more difficulty recovering these assets.

Furthermore, afflicted persons gradually change their eating habits over time. Impoverished households frequently adopt consumption reduction. Many families cut back on their regular food intake, surviving on a single or twice-day meal. A small percentage of families did not consume protein or oil. Malnutrition is noticeable in the affected families among children, the elderly, and pregnant

women. They also decreased spending on non-food items like education, clothing, and medicine. High migration levels also occurred, even though money and prospects were constrained owing to the pandemic. Some families sent their youngsters to adjacent towns or cities in search of work or begging to supplement their family's income. However, in the study area, post-disaster vulnerabilities remain.

This study provided valuable recommendations to increase the post-disaster coping strategies to respond and recover from riverine floods and pandemic situations at the household level. Access to trustworthy sources of financing with low-interest rates and rehabilitation of education facilities for marginalised persons could be beneficial initiatives. Another suggestion is to support building flood-resistant housing, such as moveable housing, to cope with floods. Also, it is suggested that a barrier from Lalmonirhat (Dalia Bridge) to Jamuna should be built to mitigate the flood crisis. Finally, a well-organized and effective relief distribution scheme should be created locally. More research into the effectiveness of coping strategies for responding to and recovering from disasters. Replicating this study in other parts of Bangladesh might provide valuable insight into how people recover and respond to floods and pandemics.

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