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Socio-Economic Condition and Livelihood Status of Fishers Involved in the Meghna Riverine Fish Market Chain in Bhola, Bangladesh

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Abstract

In Bhola, Bangladesh, the fishing communities of Burhanuddin, Daulatkhan, and Tazimuddin Upazila were the focus of a socioeconomic study conducted between September 2022 and August 2023. Through focus groups and questionnaire interviews, information was gathered from sixty randomly chosen fishers in the nearby fishing village. The results indicate that 30% of the respondents were in the 30 to 40-year age range. Families with five to ten individuals often make up the greatest 65% of fishing communities' family sizes. According to the study, 73% of fisher had a joint family, and 85% of fisher are married. Here, the literacy rate was a mere 26%. About 93% of them reside in tin sheds. Most fisher houses, 97% of them have an electricity connection, either by solar power or rural electrification. Additionally, the report revealed that 52% of fisher utilize tube wells for drinking water. Nearly every household has a private or shared enclosed pit toilet. In this study region, fisher who fish daily, over long distances, and in deep water use gear (drift gill net, set bag net, current net) and craft (non-mechanized and mechanized boat with 16–40 HP). Throughout the year, riverine fishers reportedly operate in deeper river channels, with fishing depths ranging from 30–80m. The majority of fisher's (49%) yearly earnings from fishing were between BDT 70000 and BDT 100000. Only informal microfinance NGOs, such as stubborn, Moneylender or Sailor, provide loans and giving to fishermen; but they lacked an appropriate management program, these funds were insufficient to meet their daily needs. Because of this, fishers were left defenseless amid natural disasters, banned areas, etc. To ensure

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sustainable livelihoods and the long-term conservation of national fisheries resources, fishers require strengthened institutional, organizational, and technical support from government organizations (GOs), non-governmental organizations (NGOs), and international NGOs (INGOs).

Keywords: Bangladesh, Fishing communities, Livelihood status, Socio-economic condition

Introduction:

Due to its deltaic environment, characterized by numerous rivers, streams, and distributaries, Bangladesh possesses extensive opportunities for fisheries development (Rahman, 1994a). Padma, Jamuna, Teesta, Brahmaputra, Surma, Meghna, and Karnaphuli are among several notable rivers that make up the nation's river chain.

For a living, a huge number of people rely on river fishing as well as other fishery-related occupations including the marketing and trade of fish, the production of crafts, and the upkeep of fishing equipment, among others according to M.M. Rahman 2002. It also mentioned that fishing is sometimes a seasonal activity for many people, it is often the main or even the sole occupation in traditional fishing communities. Small scale fisher who lacks their own financial resources are disadvantageous socially, economically, and educationally.

In the end of the 2020–21 fiscal year, Bangladesh had produced 13.01 million metric tons (MT) of fish, making it self-sufficient in this area (DoF, 2023). With 1.22 million MT of fish caught in 2018, Bangladesh climbed to third place in the inland capture fishery (FAO, 2020). Around 1.36 million people rely on the fishing sector for a living, either directly or indirectly. Of those, 516,000 are employed in the maritime industry and 800,000 are involved in inland fishing (DoF, 2018).

Fishing communities have historically received limited attention from government and policy-making institutions, despite their significant contribution to national food security and employment (Islam et al., 2011). Most fishing villages are found in isolated locations without modernization. According to the reports (Mozahid et al., 2018; Islam et al., 2013; Kabir et al., 2012; Islam et al., 2018), fishers are one of the most vulnerable communities due to their low living standards, widespread illiteracy, lack of proper health facilities, debt and loans, low income, lack of capital, inadequate alternative job opportunities, etc. The Meghna River is blessed with very resourceful, full of riverine fisheries resources, major catches are hilsa, poa, icha, taposhi/rickshaw, bata, pangas etc. (Sazzad A., 1993).

By raising the socioeconomic standing of fisher, effective planning and implementation can help the fisheries sector flourish. Knowledge about their way of life and social standing is crucial before making any plans. This is why the current study emphasized evaluating the socioeconomic circumstances of the fisher in the

Burhanuddin, Daulatkhan, and Tazimuddin Upazila along the Meghna River of Bhola district.

Materials and Methods:

To gain a comprehensive understanding of the fundamental characteristics of fishers at the Meghna riverine fish market chain in Bhola, Bangladesh, the study was carried out over the course of a year, from September 2022 to August 2023.

Designing of the experiment:

Standardized questionnaires were developed to collect information on the socio-economic status of fishers, including household demographics, education, income, sanitation, and livelihood strategies. The questionnaire interviews in this study were conducted using random sample techniques of Henry (2010) and Das et al. (2011). Figure 1 illustrates the research design. Focus group discussions (FGD), a Participatory Rural Appraisal (PRA) tool, were used with fisher for the current study. To gain a general understanding of topics including current fishing systems and the socioeconomic status of fisher, FGD was employed.

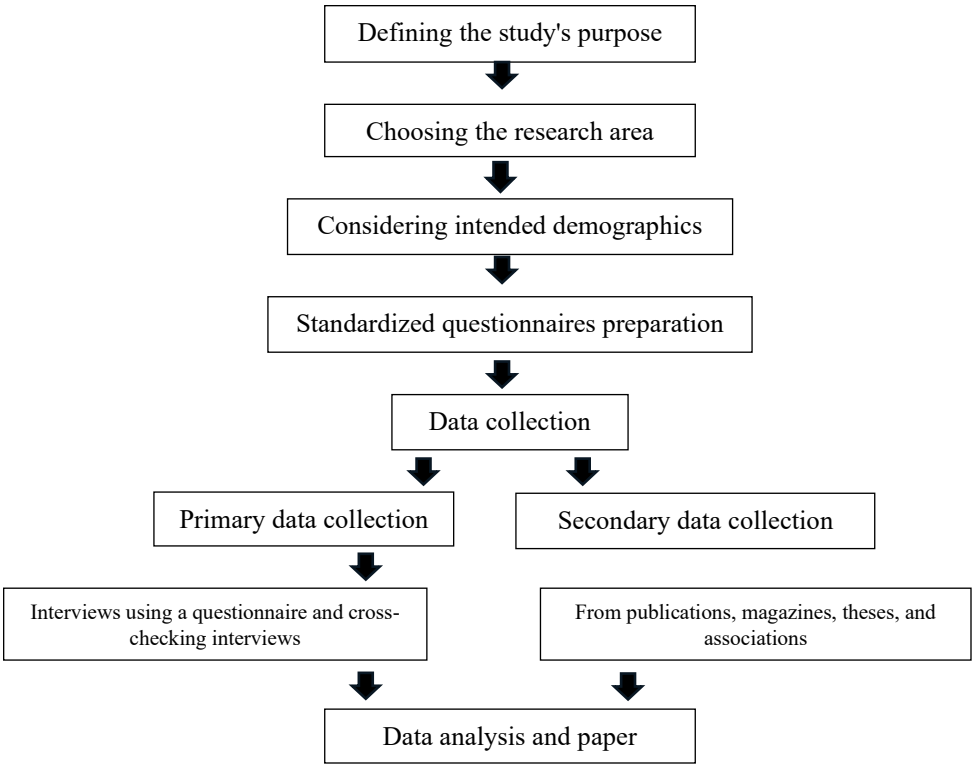

Fig. 1. Design of the study

Study area selection:

The current research investigation was carried out in three upazilas along the Meghna River: Burhanuddin (22.508528N, 90.753612E), Daulatkhan (22.589265N, 90.749837E), and Tazimuddin (22.411064N, 90.857384E). It was conducted from September 2022 to August 2023. Riverine fishing, a major industry in this region, employs most of the people in this area in one capacity or another. No research has been done on the fishing community in these upazilas. The map of these research areas, produced with QGIS 3.34.3 software, is displayed in Figure 2.

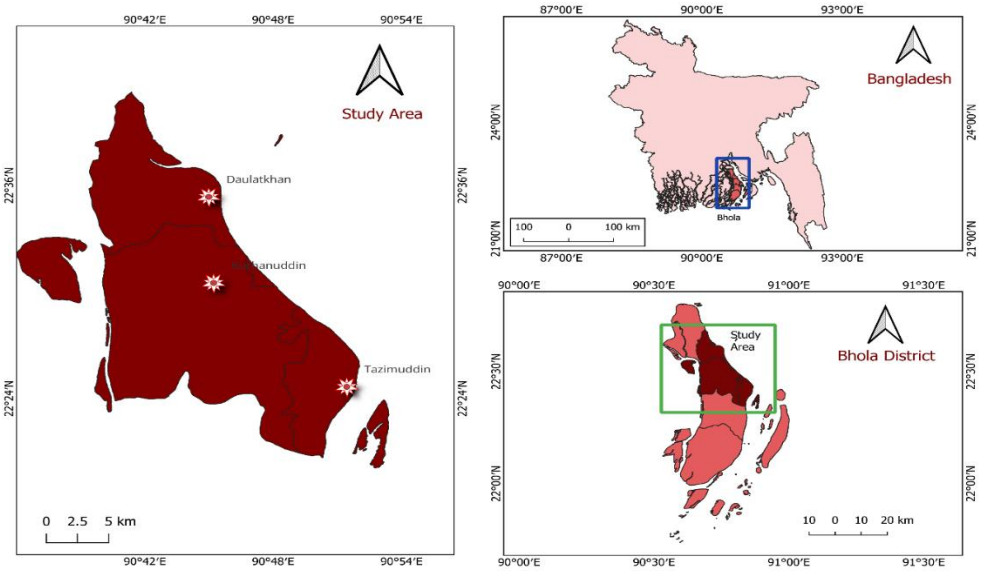

Fig. 2. Map of the study area

Data collection and analysis:

The field survey that served as the basis for this study comprised gathering primary data from sixty fishers who were actively engaged in fishing. Furthermore, six focus group discussions with eight to twelve participants each were held. Three approaches can be used to conduct surveys and collect data, according to Dillon and Hardaker, 1993: direct observation, interviewing respondents, and having respondents' records keeping.

A sample of 60 fishers was selected via random sampling across three Upazilas. This size is representative due to the high homogeneity of the community's socioeconomic status and gear usage. To minimize the margin of error, data was triangulated with six Focus Group Discussions (FGDs) involving 48–72 participants, ensuring thematic saturation. This approach follows established precedents for research on isolated, small-scale fishing communities in Bangladesh.

Every bit of data that had been acquired had been carefully reviewed and updated to eliminate any possible errors and discrepancies. After the tabulation process was complete, Microsoft Excel was used to input, process, and analyses the primary data.

Data Validation and Cross-Checking

To ensure the honesty of reported income and debt notoriously difficult to capture in dadon-heavy communities' data was validated through a three-step process:

- **Triangulation:** Reported earnings were cross-referenced with interviews of Aratdars and Mohajons to verify average catch values and prevailing debt rates.
- **Expenditure Balancing:** Individual income was checked against reported expenditures (food, medication, gear maintenance) to identify and clarify financial discrepancies.
- **Community Consensus:** Reported figures were presented during FGDs to establish "typical" local ranges, ensuring individual data aligned with the community's economic reality.
- **Anonymity:** Strict confidentiality was maintained to prevent fear of social or institutional repercussions from influencing responses.

Results and Discussion

Subsequently, the data was exhibited in textual, tabular, and graphical formats to facilitate comprehension of the present livelihood situation and constraints faced by the fisher in the studied area. Results attempt to evaluate the social and economic characteristics that fisher currently display in the Bhola region of Bangladesh.

Household demography

Age: Age structure plays a significant part in determining a fisherman's status and roles within his society as well as his behavior. The fisherman ranged in age from eighteen to sixty-five. Age groups 30–40 had the largest percentage (30%) (Figure 3). The next 10% of respondents belonged to the 20–30 and 40–50 age groups.

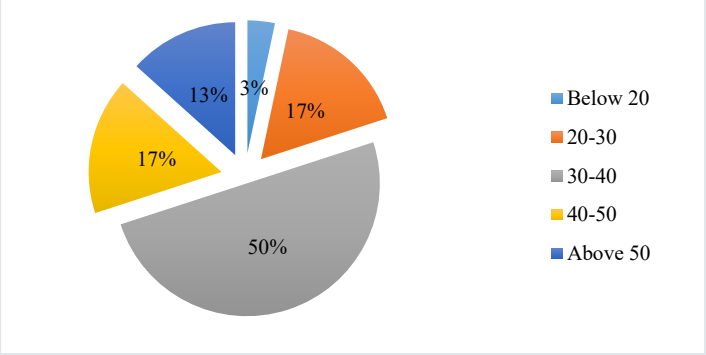

Fig. 3. Age structure of fisher

Education: It was shown that 74% of fisherman were illiterate, with 67% barely being able to sign and 7% not being able to sign at all (Figure 4). Just 25% of them finished their primary schooling, and only 1% finished their secondary schooling. Participants highlighted that the lack of local schools and the immediate need for child labor to support family income are the primary drivers of the 74% illiteracy rate.

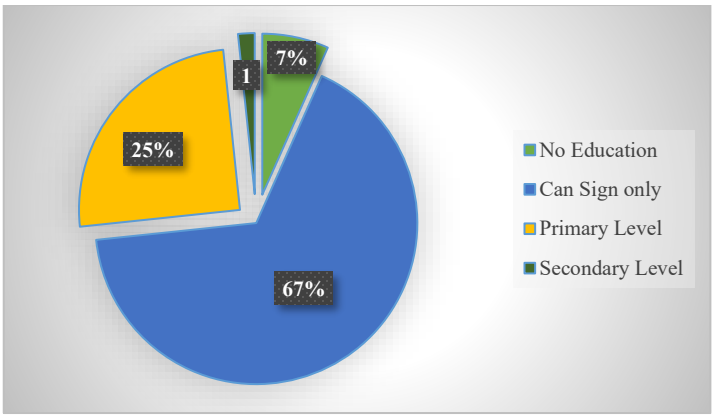

Fig. 4: Educational status

According to Minar et al. (2012), 8% of riverine fisher in Barisal town had only completed their primary school, 12% could only sign, and 80% were illiterate. The high percentage of illiteracy indicated that children were working to support their parents, and that fisher had limited access to school.

Marital status

According to the survey, the majority of fisherman (63%) were married, whereas the proportion of single fisher among active fisher was only 15%. About 22% of fisher were polygamous. This survey did not find any divorced or persecuted individuals among respondents.

Family type & Size

Families in Bangladesh's rural areas are divided into two categories. A joint family is made up of people from three or more generations, whereas a nuclear family is made up of parents and children. According to this finding, just 27% of families were nuclear, while 73% of families were joint.

The nature of a family also influences its status and its relationships both inside and between communities, as well as with other families. In this survey, only 5 members make up 28% of the families. In the top 65% of families, there are just five to ten people. The percentage of families with more than ten members was 7%.

The prevalence of joint families (73%) serves as a dual-edged social coping mechanism. While it provides a vital safety net by sharing food and resources during the 22-day and 65-day ban seasons, it creates a heavy "earning person" burden. With 50% of households having only one wage earner supporting 5–10 members, subsistence needs often deplete any potential capital for investing in modern fishing gear or crafts.

Physical capital

Housing conditions

In the study region, tin, wood, and tin roofs make up the majority of the fisher's homes. This survey reported the greatest number of thatched tin dwellings was 93%. Merely 2% of fisher live in straw or mud homes, and 5% have semi-paca buildings, which are thought to be majhee.

Figure 5 shows the distribution of homeowners by type of property ownership: 5% live free with a neighbor or relatives, 2% own their home through a mortgage, 83% own their home, and 10% in rented home. According to a DFID assessment, Bangladeshi fisher faces societal disadvantages and struggle to meet their fundamental necessities.

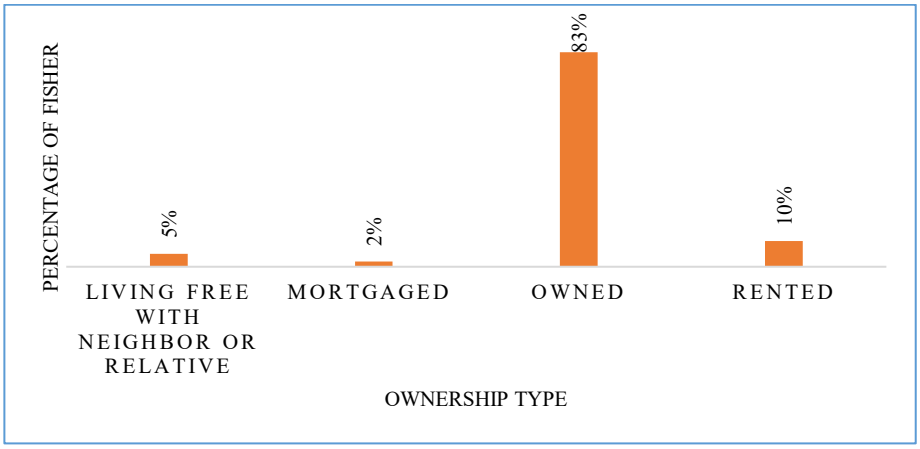

Fig. 5. Ownership of fisher house

Use of electricity

About 97% of the fisher have electricity connection in the study areas which is the remarkable development of fisher of the study area. Most of fisher use electricity of solar plant or palli bidhut.

A significant contrast exists between physical development and human capital: 97% of households have electricity, yet the literacy rate is only 26%. This indicates that while physical infrastructure has successfully reached remote riverine villages, social development (education) has lagged. Policy interventions must shift focus from

physical capital to targeted functional literacy to empower fishers to navigate formal banking and break the Dadon cycle.

Sanitary Facilities

Most respondents (72% in the investigated region) had private enclosed pit toilets, 22% had communal enclosed pit toilets, 3% had sanitary latrines, and 3% had slabs with rings. Because of things like low income and ignorance of environmental and health issues, fisher was unaware (M.G. Rabbani, 2007). A substandard sanitation system is indicative of a lower socioeconomic status and income level.

Drinking water facilities

According to the survey, drinking water for fisher homes came from rivers, cannels, and tube wells. Of them, about 52% of the households of fisher used tube wells for drinking water, while 48% drew water from ponds, rivers, and cannels since tube wells were unavailable. Figure 6 shows that just 5% of fisherman had their own tube well; the remaining 82% used shared tube wells with their relatives; 11% used neighbor's tube wells; and the remaining 2% used the government tube well.

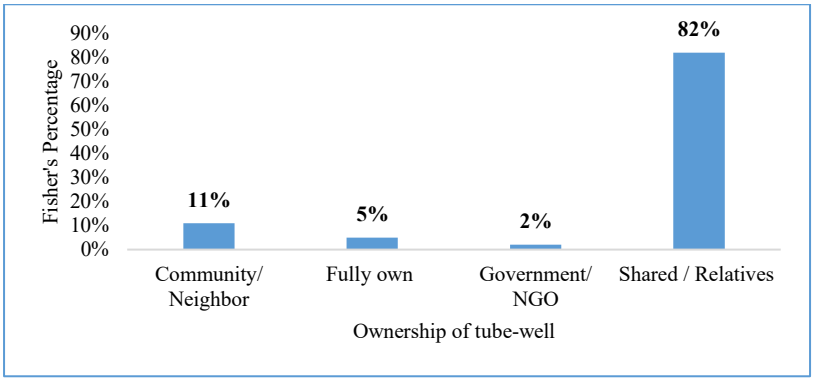

Fig. 6. Ownership of tube-well

Healthcare facilities

Although it relies on their economic situation, healthcare facilities have been established over the decades in the studied region. The village doctor, pharmacy, and kabiraj treat the impoverished fisherman. Fisher who are relatively well-off visit Sadar Hospital and Upazila Health Complex when they are very ill.

Fishing gear & craft status

According to the current data, 1% of fisher owned their boats and nets. The majority of fisher (72%) collaborated with other fisher who owned boats and fishing equipment. Figure 7 shows that about 27% of fisher worked in tandem with another fisherman.

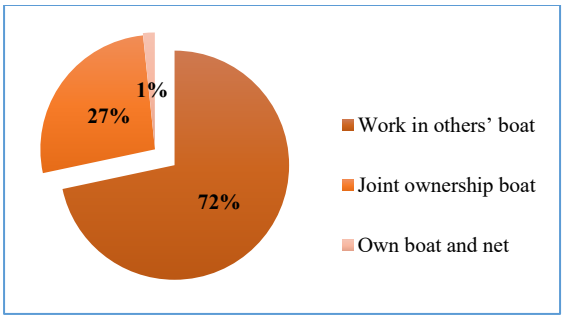

Fig. 7. Ownership of fishing gear and craft

Fishing area and fishing trip duration

Since fish habitats are not found everywhere in the sea, fishing area is a crucial feature, particularly for commercial fishing. All year long, they catch fish more than 15 to 80 km (kilometers) from the coast. Throughout the year, fisher descend to a depth of 30-80 meters (meters) to catch fish in rivers. Sea fishers catch fish from 150 to 250 kilometers offshore all year round.

Fisher was reported to fish both in rivers and the sea in the study area. It's possible to estimate that 40% of fisher use both motorized and non-engine boats for daily fishing. The Meghna River is where they fish. Fishing is typically done by daily fisher during peak season, which lasts an average of 20 days per month, and off season, which lasts an average of 8 days per month. Fisher who catches fish in the Meghna River and the sea are referred to as long-distance mechanized fisher, spending four to twelve days in the water. Most of them fish in the river throughout the year, with the exception of the 22-day ban season. Those who fish in the sea cease operations during the 22-day mother hilsa ban season and the 65-day marine ban season.

Fishing gears and crafts operated for fishing

In the study region, several types of nets were utilized. Many fishers use borrowed nets to fish instead of owning their own. The nets that fisher use is:

I. Drift gill nets (vasa and khuta jal), which are used to catch fish like Hilsha, lakha and surma

II. Set bagnets, also called behundijal, are used to catch fish such as tuler dari, loitta, chingri, and kajoli etc.

III. Current net, also known as a sutar jal, is used to catch fish like bagda pl and chingri.

In the study region, mid-sized mechanized boats of 30–40 horsepower were employed. In the area, a few small, mechanized boats of 16–25 horsepower were also utilized for fishing. A few trawlers were available for deep-sea fishing. They were all powered by engines. There were also a few tiny, non-mechanized boats in this area

that belonged to or were shared by two or three fishers. While some fisherman owned their own boats, some obtained theirs through group ownership, and the remaining fisher obtained theirs through dadon from moneylenders.

Occupation and Income of fisher

According to the survey, most participants are thought to be involved in fishing, either directly or indirectly. For their livelihood, they participate in a variety of fishing-related activities both on and off farm throughout the banned season.

Earning person

According to this report, about 50% of families only have one wage earner. Only 1% of families have three or more earners, but over 33% of families have two or more.

Annual income from fishing activities

The main source of income is fishing. According to this report, 49% of fisherman earned between 70,000 and 100,000 BDT from fishing, which is considered a moderate income. The greatest income ranged from 100,000 to 200,000 BDT, or 23% of total revenue. Figure 8 shows that just 2% of respondents reported yearly incomes less than 50,000 BDT from their main income source.

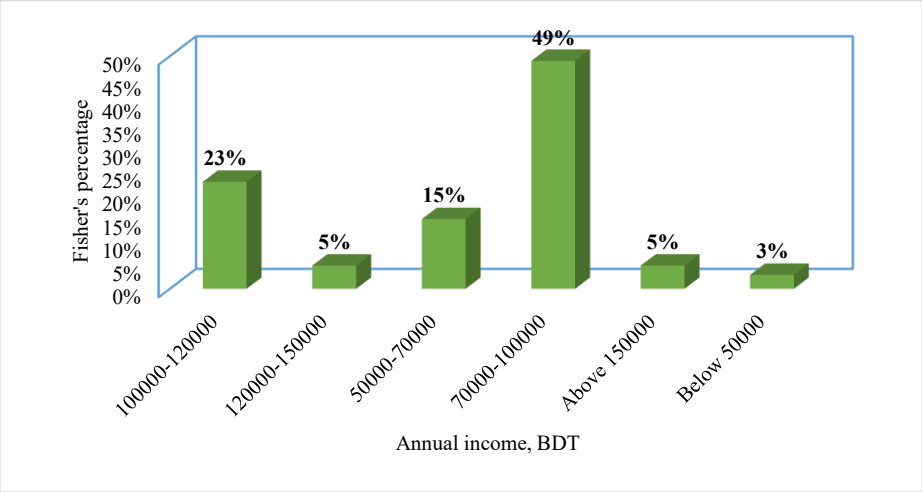

Fig. 8. Annual income of fisher from fishing activities

Secondary occupation of fisher

Therefore, 88% of respondents stated that they occasionally engage in a variety of fishing-related and non-fishery-related activities in addition to their occupation of fishing, which accounts for a significant portion of their annual income. Of them, the bulk work in PL collection, agricultural, boat and net manufacturing, day labor, and rickshaw, van, and wagon hauling. Accordingly, 64% of fishers earn less than 10,000 BDT annually, while 23% earned between 10,000 and 30,000 BDT.

Credit facility

Nearly all fisher borrowed money, or dadon, from aratdar or mohajon. The ability of the fisherman to catch fish, the size of the boat, the number of fishing days, and the fisher's loyalty to the Dadondar all affect the quantity of Dadon. The range is BDT 30,000–BDT 500,000. 78% of families have received loans from NGOs operating microfinance programs (Figure 9).

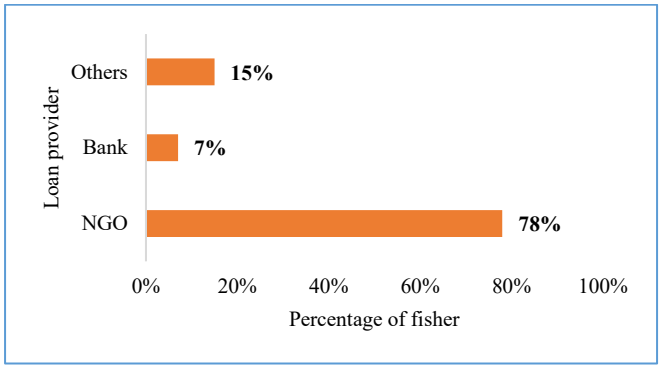

Fig. 9. Loan provider's status

Fishers reached a consensus that the *Dadon* system from *Aratdars* is an inescapable trap. While it provides vital survival funds during ban seasons, the high interest and loyalty requirements prevent them from ever accumulating their own capital.

A variety of NGOs, including Proshika, Coast Trust, ASA, Grameen Bank, TMSS, Karitas, BRAC, and other somobaysomitti, lend money to fisher. These companies provide loans with interest rates that go up to 15% and change according to the time of year. A typical situation, aside from these sources, is a kind loan from a retailer for domestic purposes. Preparing fishing nets and boats, home repairs, dowry payments, loan repayment, purchasing food and medication, and other expenses are among the primary uses of the loan.

Vulnerability context

In the fishing community, there were found so many social and climatic vulnerabilities as well as coping mechanisms to deal with these circumstances.

Natural catastrophes

Every year, fishers had to deal with natural disasters like floods, storms, cyclones, and thunder. During that period, they resided at an embankment, visited relatives' homes, or went to shelter centers with their families and animals. Fisher and their families used a variety of coping mechanisms to lessen the effects of natural disasters, including cutting back on food intake, borrowing money, buying less clothes, selling livestock or other possessions that were valuable, and waiting for donations or assistance from GOs, NGOs, wealthy neighbors, or close relatives.

Migration of Fisher

Based on this investigation, it was found (Figure 10) that around 70% of the fisher in this area moved about 1-2 times, with most of them moving 3–4 times. Fisher moved in search of a better lifestyle, protection from the terrible effects of natural disasters on their household, and to avoid erosion, storms, cyclones, water logging, and flooding condition.

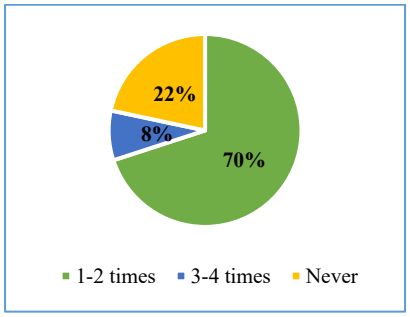

Fig. 10. Times of fisher migration

Discussions revealed that the frequent migrations (70%) are not just for better jobs but are desperate "survival moves" following the loss of homes to riverbank erosion and intensified storm surges.

Household socio-economic Status

According to Figure 11, 72% of fisher modified their livelihood conditions somewhat, 23% did so partially, and 5% made an effort to maintain their current standard of living. About 8% of fisher express extreme dissatisfaction with their socioeconomic situation, compared to 39% who express dissatisfaction and 53% who express moderate satisfaction.

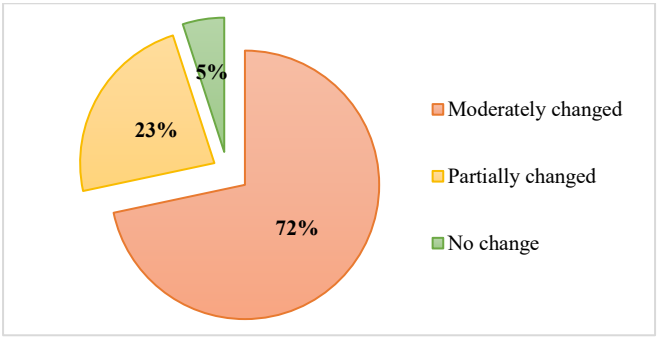

Fig. 11. Changing of livelihood condition

The greatest obstacles to the growth of these riverine fisheries community were socioeconomic ones, such as the pressures of raising a family at an early age, low income, illiteracy, low economic standing, and a lack of alternative career

alternatives. Their needs won't be satisfied by the loan facilities that various dadondar, GOs and NGOs were offering. Furthermore, they must pay a hefty interest rate to obtain such loan facilities. The marine resources were being impacted by these socioeconomic variables. The education of their children, nourishment, cooking fuel, animal feed, and building materials for houses were other issues that fisher deal with. The majority of fishers cited their biggest issues as being a lack of funding and growing fishing pressure.

Bangladeshi fisherman struggle to meet their necessities and are socially disadvantaged (DFID, 1998). Rahman, 1994 said that the majority of fisher lived below the poverty line and faced daily struggles related to health, nutrition, sanitation, water supply, soil fertility, cooking fuel, animal feed, and building materials for their homes.

The Literacy-Indebtedness Nexus: A Regional Perspective

The high illiteracy rate (74%) among Bhola's fishers is a critical structural pillar that sustains the exploitative *Dadon* system. Illiteracy creates an "informational asymmetry" where fishers, unable to maintain formal records or navigate bank procedures, rely on verbal, trust-based contracts with *Aratdars*. This forces a cycle where debt is often inherited, and repayments are deducted from daily catches at rates below market value.

Comparing these findings with other SAARC regions highlights the severity of the local situation in Table 1:

Table 1. Socio-Economic Comparison: Bhola vs. Regional SAARC Fisheries

Indicator	Bhola, Bangladesh (Current Study)	West Bengal, India	Sri Lanka
Literacy Rate	26.0%	77–94% in Digha (Pradhan & Bera, 2024) to ~68% in Purba Medinipur (Giri & Jana, 2025).	95.9% among boat owners (Harshana & Sivashanthini, 2025) and ~51% in Trincomalee (Sinthuja & Prasada, 2024).
Credit System	Dadon (Informal); 78% rely on NGOs/Moneylenders.	Cooperative-heavy: 25,649 fishery cooperatives providing institutional credit (Ministry of Cooperation, 2023).	Institutional: Strong state credit focus and cooperative efficiency (Dept. of Fisheries SL, 2024).
Annual Income	BDT 70k–100k for 49% of fishers.	Moderate: ~33% earn below BDT 120k/year; higher margins for cooperative members (Pradhan & Bera, 2024).	High: Peak seasonal earnings reach 150k–250k LKR/month in specialized sectors (Sinthuja & Prasada, 2024).
Infrastructure	97.0% Electricity via Solar/Palli Bidhut.	High: Broad electrification through the state grid (Giri & Jana, 2025).	Universal: 100% access to electricity and water in studied coastal provinces (Harshana & Sivashanthini, 2025).

Indicator	Bhola, Bangladesh (Current Study)	West Bengal, India	Sri Lanka
Sanitation	72.0% Enclosed pit toilets.	Mixed: Ranges from 52% poor sanitation to 60% improved access (Pradhan & Bera, 2024).	Excellent: Full access to improved sanitation in boat-owning households (Harshana & Sivashanthini, 2025).
Vulnerability	70.0% Migrated due to natural disasters/erosion.	Low/Moderate: Seasonal migration exists, but lower disaster-induced displacement (Giri & Jana, 2025).	Resilient: Higher technical mobility and lower internal displacement rates (Dept. of Fisheries SL, 2024).

Policy Implications and Recommended Actions:

To address the vulnerabilities identified in the Bhola fishing community, interventions must shift from general support to targeted, actionable reforms. The following strategies are proposed:

Financial Reform: Breaking the Dadon Cycle

The study highlights that 49% of fishers earn a modest BDT 70,000–100,000 annually, yet they remain trapped in the Dadon system because microfinance funds are often insufficient for daily needs. Financial reform should prioritize the establishment of interest-free micro-credit specifically designed for the 22-day and 65-day ban seasons. By providing specialized liquidity during these periods, the government can weaken the grip of high-interest moneylenders and Aratdars who currently provide the only accessible funds during disasters.

Human Capital: Educational Flexibility

A striking contrast exists between infrastructure and human capital: while 97% of households have electricity, the literacy rate is only 26%. This disparity indicates that physical infrastructure has reached remote villages, but social development has lagged. To bridge this gap, educational flexibility is required through "Mobile Boat Schools" or evening literacy programs. These should align with fishing schedules—intensifying during off-seasons or ban periods to improve literacy without compromising the community's immediate survival.

Climate Resilience: Protecting the "Defenseless"

Since 70% of fishers have migrated due to natural disasters like cyclones and erosion, climate resilience must be enhanced through a Community-Based Early Warning System. Furthermore, a specialized insurance fund for gear and crafts is essential to protect the community. Currently, most fishers (72%) do not own their equipment, and losing borrowed gear to storms leaves them "defenseless" and deeply indebted.

Participatory Management

Future research and interventions must be practical and culturally sensitive, involving the government, NGOs, and local players. These efforts should focus on transitioning

from individual informal loans to cooperative-based marketing models to ensure sustainable fisheries resource management and an increased contribution to the national economy.

Conclusion

The study demonstrates that riverine fishers in the Meghna River region remain highly vulnerable due to limited income opportunities, exposure to environmental hazards, and inadequate institutional support. However, further research is required to address the more particular problems and encourage fishing villages' capacity to contribute to the national economy. Both the government and non-governmental organizations ought to take proactive measures to address their issues and inspire them to generate substantial prospects for improved livelihood structures and sustainable fisheries resource management.

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Ethics declaration:

This study was conducted according to the ethics statements of Declaration of Helsinki. First, all aspects concerning participation in the study, its objective, method, risks involved, and the potential benefit that it will carry had to be informed to the participants. Informed consent was obtained voluntarily from all participants prior to data collection. There was also complete liberty on their part to withdraw from participation in this test. The responses were anonymized, and data was safely stored. Every precaution was taken such that the current study did not pose any significant or physical risk to its participants. Thus, the ethical standards of the research study were met in respect of human research participants.

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