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RESEARCH ARTICLE
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Socio-economic Status of Fishermen: A Case Study in the Bangali River Region, Bangladesh

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ABSTRACT

The fishery sector plays a dynamic role in Bangladesh's socio-economic development. The socio-economic status of fishers reflects the sector's overall impact on the community's overall scenario. This research was designed to study the socio-economic conditions of the fishermen's community near the Bangali River region in Sariakandi and Dhunat Upazila of Bogura District, Bangladesh. Data were collected from 110 fishermen through interviews, surveys, individual and group discussions (primary source) and government and non-government entities (secondary sources) from June 2024 to November 2024. Data revealed that most fishermen were full-time (78.18%), whereas only 21.82% were part-time. A significant number of the fishermen were young and middle-aged. Among the fishermen, 27.27, 50.91, and 21.82% had more than 20 years, 11-20 years, and 1-10 years of fishing experience, respectively. About 22.73% of the fishing community was illiterate, 22.73% knew only signs, and 33.64% belonged to the primary level. Most were extended families (70.91%), and about 54.55% typically had 3-5 family members. Only about 10% of fishermen built their houses with bricks, while the majority (51.82%) used bamboo and tin, indicating their poverty. About 90.91% had access to electricity facilities, 60% had good sanitary facilities, and only 27% sought advice from MBBS doctors at the government health complex. The fishermen's income levels were dire, with 32.73% earning below 10,000 BDT monthly. Consequently, many shifted occupations, and 44.55% engaged in subsistence work. If this trend continues, most fishermen will abandon their primary occupation and adopt other occupations. Governments and other organizations must take immediate steps to improve their socio-economic conditions and ensure a sustainable standard of living.

Keywords: Fishermen, Socio-economic condition, Bangali River, Bogura district, Bangladesh.

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INTRODUCTION

Globally, fisheries play an important part in providing a living for a large portion of the people. The fisheries sector generates significant economic value, with small-scale fisheries accounting for 44% (US$77.2 billion) of the total fishing (Basurto et al., 2025). Approximately 660-820 million people worldwide depend on fisheries for their livelihoods, and they provide 154 million tons of fish and 16.6% of the world's population's animal protein consumption (FAO, 2012). Fish supplies vital nutrients, such as Omega-3 fatty acids and minerals, for solving health concerns (Rahman et al., 2024). Fish culture and fishing have long been important sources of employment, money, export revenue, and human nourishment for Bangladeshis (Shamsuzzaman et al., 2020). According to the FAO,

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Bangladesh is one of the world's most important inland fishing nations (Azad & Azad, 2022; Hasan et al., 2021). About 7 million fishermen directly and 12 million indirectly depend on this industry for their livelihoods, contributing 3.61% of GDP and 2.73% of export earnings in subsidies (DoF, 2018). However, fisheries encounter overfishing, climate change, and pollution challenges, requiring sustainable management strategies (Cheung et al., 2024).

The socio-economic development of Bangladesh depends significantly on the fisheries sector (Haque et al., 2021). For those who rely on it, fishing is very vital. Social identity and connections are determined by this way of life rather than merely as a means of subsistence (Coulthard et al., 2011). Between 1990 and 2010, employment in the fishing industry grew at a faster rate than that of agriculture (FAO, 2012). Fish trade, processing, shipping, marketing, exporting, and other associated activities may provide full-time and part-time employment for around 20 million people (DoF, 2024). Inland water bodies provide a wealth of fisheries resources. They have a higher potentiality for fish production and are part of the vast interior fisheries resources (Haque et al., 2023). They also offer substantial prospects for fisheries development in terms of increasing fish production and generating income to support the local population (Hara et al., 2021).

The Bangali River is an intermittent river in Bangladesh. It connects with the Karatoya (via the Katakhali) in the west and the Jamuna in the east. Sariakandi Upazila is adjacent to the Bangali River. The water level rises as water flows upstream during the wet season. It then begins to decline in the winter and eventually drops to its lowest possible water flow during the dry season. The Sariakandi fish pass was constructed in 2001 in Sariakandi Upazila, Bogra, to facilitate the fish movement between the Jamuna and Bangali rivers. Many residents of this area depend on the river's fishing resources as it flows through Sariakandi Upazila in the Bogra District. Moumita et al. (2011) studied the Sariakandi fish pass, which significantly affected the fish population. However, little is known about the socio-economic status of the fishing community of the Bangali River, Bogra District, Bangladesh.

The socio-economic standard of the local population is considered when determining the quality of life. To understand the residents' economic activity and diversity, one must thoroughly understand their socio-economic situation (Islam, 2020). The term "livelihood" describes the collection of abilities, interests, and resources, and their availability that determines a household's quality of life in the neighborhood (Jaman et al., 2024). Due to the daily loss of their land, their low average monthly income that prevented them from leading better lives, and their socio-economic standing that was out of step with Bangladesh's general economic development, the fishermen of Sariakandi and Dhunat were living in abject poverty. A section of the Bangali River area is located in Sariakandi and Dhunat Upazilas in Bangladesh's Bogura District. The legal and social contexts, and the material, human and financial resources required to manage the Bangali River's fishery to improve the local community's living standards, may be effectively linked to the wetland's potential uses. The study aimed to determine fishermen's socio-economic status and means of sustenance in the Bangali River area, namely in the Bogura District's Sariakandi and Dhunat Upazilas, as well as their challenges while fishing and trading.

MATERIALS & METHODS

Study Area and Duration

The current research was conducted along the Bangali River in seven villages (Ramchandrapur, Chagoldhara, Domkandi, Bashhata, Kalaihata, Nimgachi, and Bilchapri), which are part of the Sariakandi and Dhunat Upazilas of the Bogura District in Bangladesh (Fig. 1). The local fishermen's community is renowned for its fishery endowment and relies on fishing as its main source of income. For the six-month experiment (June 2024 to November 2024), 110 fishermen were randomly selected.

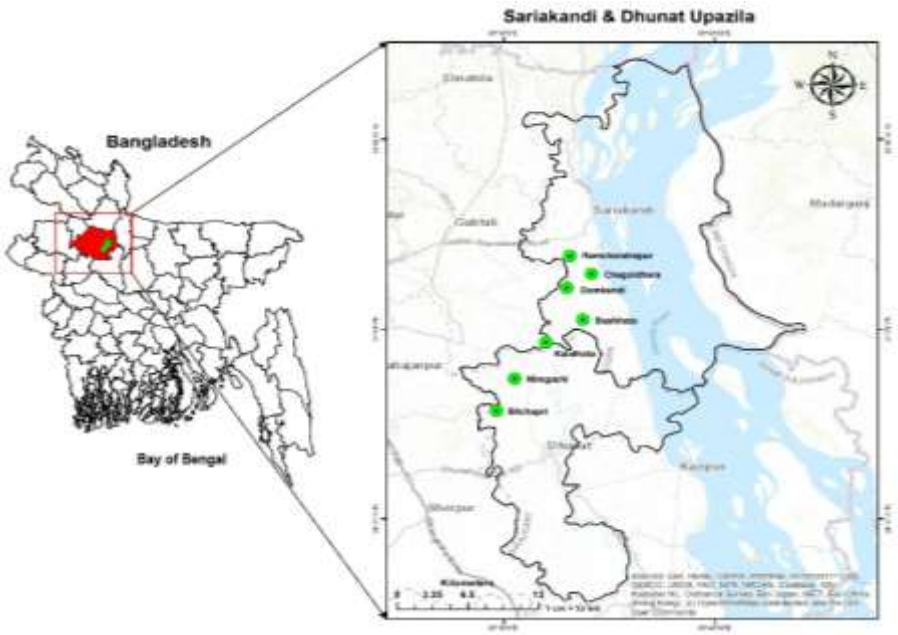

Fig. 1: Location of the study stations in the Bangali River.

Data Collection

A. Primary Data Sources: The primary data were collected using a) Method of interview surveys and b) Field surveys using a pre-made questionnaire.

a) Method of Interview Surveys: The socio-economic conditions of the fishermen living near the Bangali River were investigated using direct interview research. Fishermen from Ramchandrapur, Chagoldhara, Domkandi, Bashhata, Kalaihata, Nimgachi, and Bilchapri in the Sariakandi and Dhunat Upazilas of Bogura District were randomly selected. Their cooperative attitudes, honesty, and patience were also considered to obtain unbiased information.

b) Field Survey using a Pre-made Questionnaire: A previously established questionnaire, pretested and used to collect information from fishermen in Ramchandrapur, Chagoldhara, Domkandi, Bashhata, Kalai Hata, Nimgachi, and Bilchapri, all of which are part of the Sariakandi and Dhunat Upazilas in Bogura District. Local rural elites assisted in conducting this survey.

B. Secondary Data Sources: Secondary data were collected and utilized from relevant journals, books, papers, published theses, and fish markets in the investigation region via the internet and the Department of Fisheries (DoF).

Data Analysis

The gathered data were coded, inputted, and examined using Microsoft Excel 2019. The data were then presented in textual, tabular, and graphical formats to help readers understand the fishermen's current financial situation and livelihood conditions in the research area.

RESULTS

Socio-economic Status of Fishermen

The following paragraphs thoroughly examine the previously listed parameters regarding the fishermen's livelihood qualities.

Fisher Types

According to a recent survey, 78.18% of fishermen were full-time, while 21.82% were part-time. This depends on the time of year and fish availability (Fig. 2).

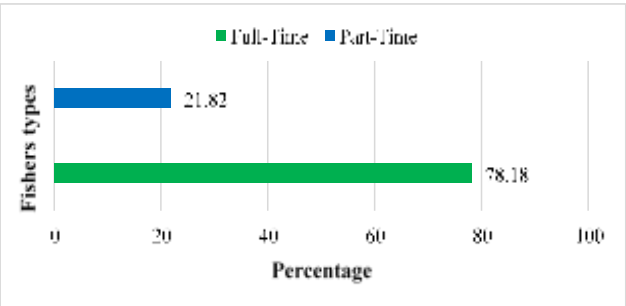

Fig. 2: Fisherman types in the Bangali River.

Age Group

Several age groups were considered to investigate the age group (Fig. 3) under 15, 15-25, 26-35, 36-45, 46-55, and over 55. According to our data, the largest proportion of fishermen (29.09%) were aged 36-45, while the smallest proportion (2.73%) were under 15.

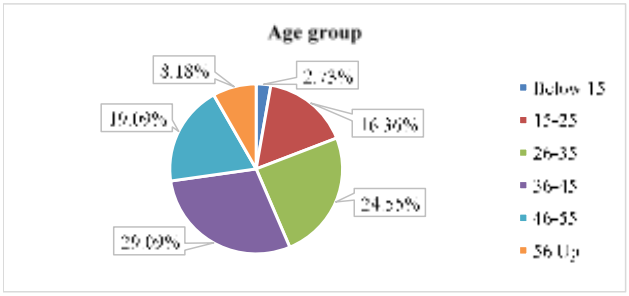

Fig. 3: Age group of the fishermen in the Bangali River.

Fishing Experience

Based on fishing experience, fishermen were divided into three groups: those who had fished for 1-10 years, 11-20 years and more than 20 years. Fig. 4 shows that 50.91% of the fishermen had been fishing for 10-20 years.

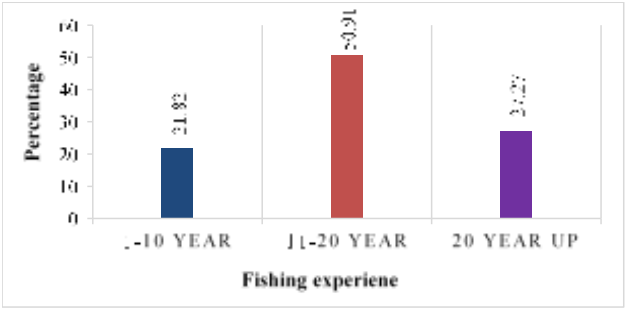

Fig. 4: Fishing experience of the fishermen in the Bangali River.

Educational Status

Five categories were formed by the fishermen in this study, mostly based on their level of education. Of the fishermen, 25.45% only knew sign language, followed by those who were illiterate (22.73%), had only a primary education (33.64%), a secondary education (12.73%) and a small amount of higher secondary education (5.45%) (Fig. 5).

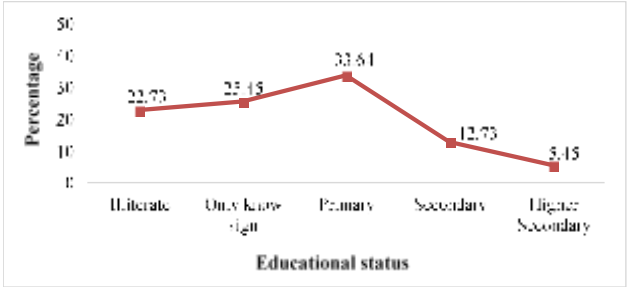

Fig. 5: Educational status of the fishermen in the Bangali River.

Marital Status

The present study found that 83.64% of fishermen were married, whereas 16.36% were unmarried (Fig. 6).

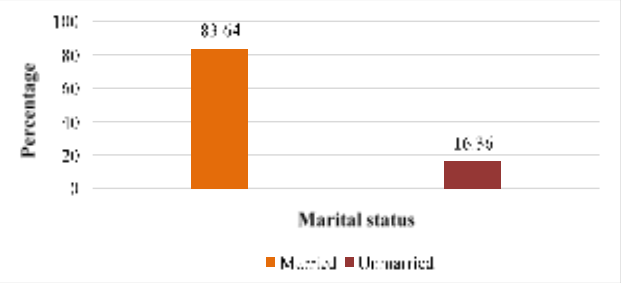

Fig. 6: Marital status of the fishermen in the Bangali River.

Family Types

Notably, 70.91% of fishermen's families were extended, and 29.09% of families in the study region were nuclear (Fig. 7).

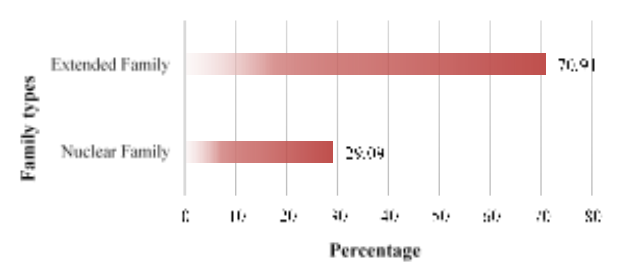

Fig. 7: Family types of the fishermen in the Bangali River.

Family Size

Family patterns may take many different shapes. Studies were conducted on four of these family groups. Just 6.36% of all households had more than eight people. Just 54.55% of households had three to five individuals, 17.27% had six to eight, and 21.82% had fewer than three (Fig. 8).

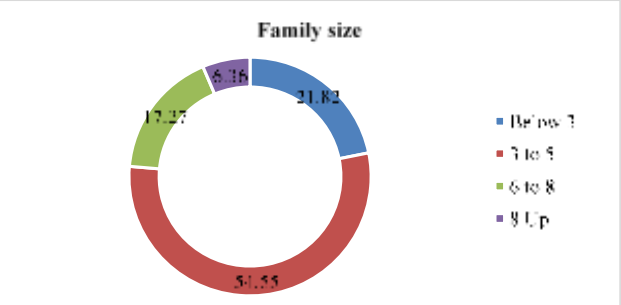

Fig. 8: Family size of the fishermen in the Bangali River.

Housing Condition

Evidence of the fishermen's living circumstances is included in this research. The dwellings of 51.82% of the fishermen were constructed their houses with bamboo and tin, 30% of tin and wood, only 10.91% of cement and brick, and 7.27% of bamboo and straw (Fig. 9).

Drinking Water Facilities

During this research period, 68.18% of fishermen drank water from their own tube well, 24.55% used a neighbor's tube well, and 7.27% drank water from a government tube well (Fig. 10).

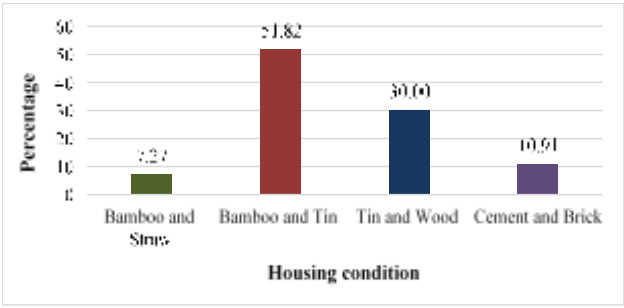

Fig. 9: Housing condition of the fishermen in the Bangali River.

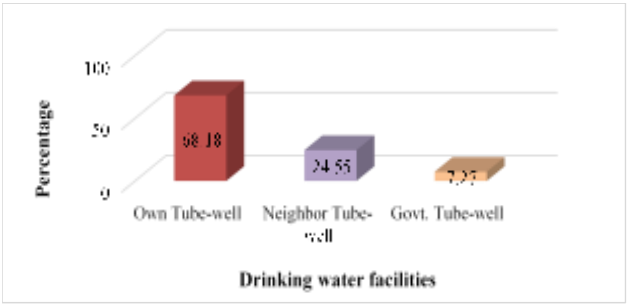

Fig. 10: Drinking water facilities of the fishermen in the Bangali River.

Electricity Facilities

According to the study, 90.91% of fishermen possessed electrical facilities, compared to 9.09% (Fig. 11).

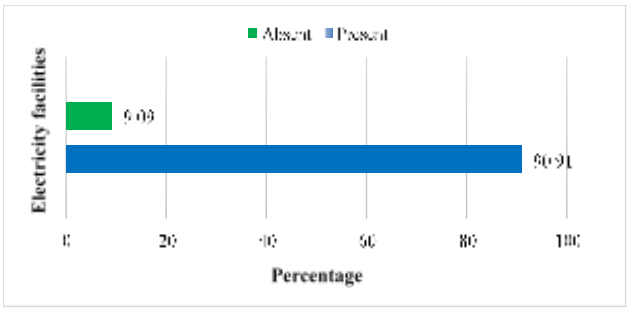

Fig. 11: Electricity facilities of the fishermen in the Bangali River.

Sanitary Facilities

The living circumstances of the fishermen in the research region were unsanitary. Around 60% of the sanitation facilities used by the fishermen were Kacha, made with bamboo and tin, and 25.45% were Paka, made with cement or wood and having a poor drainage system (Fig. 12).

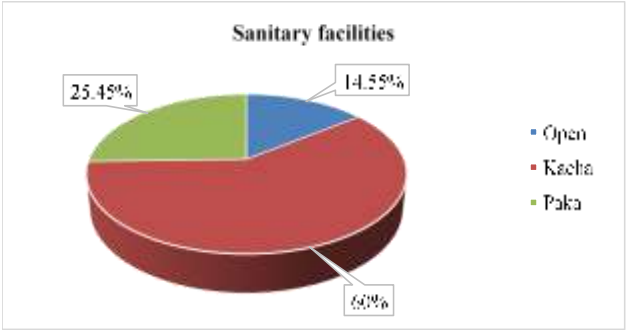

Fig. 12: Sanitary facilities of the fishermen in Bangali River.

Health Facilities

Medical facilities provided to the fishermen were insufficient. Most fishermen initially saw the local doctor (60.91%) and kobiraj (12.73%) for health issues. If the health condition was serious, 26.36% sought medical treatment at the Upazila Health Complex (Fig. 13).

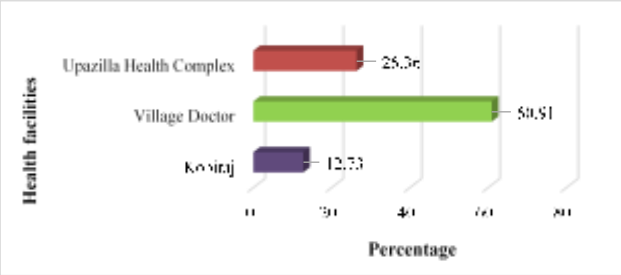

Fig. 13: Health facilities of the fishermen in the Bangali River.

Level of Income

A fisherman's income is the main factor determining their social standing. The average monthly income for fishermen was 32.73% below 10,000 BDT, 23.64% between 11,000 and 15,000 BDT, 27.27% between 12,000 and 20,000 BDT, and 16.36% above 20,000 BDT. Fishermen's livelihoods were miserable due to low earning capabilities. Many experienced fishermen were compelled to retire due to the catastrophic economic crisis (Fig. 14).

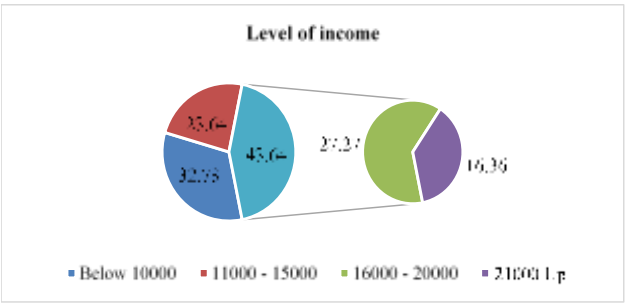

Fig. 14: Income level of the fishermen in the Bangali River.

Substitutional Occupation

Fishers in the study area sought other sources of income due to the economic slump. Only 55.45% of fishermen relied solely on fishing. They now work in secondary occupations, including agriculture (21.82%), day labor (10.91%), and others (11.82%), because they can no longer afford the increasing cost of basic needs (Fig. 15).

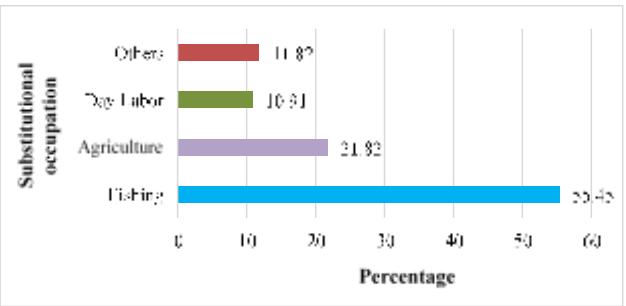

Fig. 15: Substitutional occupation of the fishermen in the Bangali River.

Lend Facilities

Fishermen in the study region borrowed money from family members, neighbors, and several non-governmental organizations (NGOs) to purchase boats and fishing equipment. According to our data, 40% of fishermen obtained loans from non-governmental organizations, 13.64% obtained loans from neighbors, 17.27% obtained loans from family members, and 29.09% obtained no loans (Fig. 16).

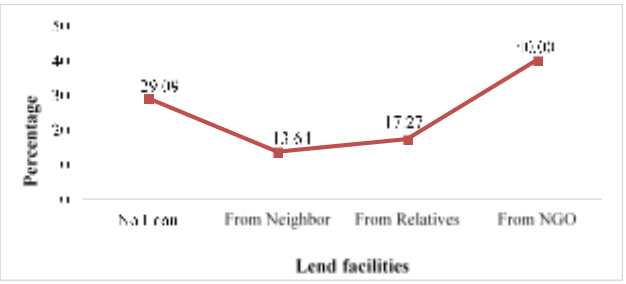

Fig. 16: Lend facilities of the fishermen in the Bangali River.

DISCUSSION

Fishermen's socio-economic situation was studied, considering variables like fisherman types, age group, fishing experience, educational attainment, marital status, family size and type, housing type, and access to sanitary facilities, electricity, and health care, as well as income level, alternative jobs, and lending facilities. Overall, the socio-economic condition fell short of expectations. Two groups of fishermen were recorded in our study, where 78.18% of the fishermen were full-time, and 21.82% were part-time. Similar findings were documented by Haque et al. (2024), where 23.93% were occasional, and 76.07% were professionals, which is more or less identical to our study. Jaman et al. (2024) also found that 81.67% of fishermen were professional, which is identical to the study. A variety of age groups of fishermen were seen, where 16.36% were young aged, 24.25% middle-aged, and 29.09% older aged. According to a study by Islam et al. (2021), 13% were young-aged, 40% middle-aged and 47% of fishermen were older, which is similar to our study. This findings are also more or less similar to Roy et al. (2022) and Latifa et al. (2022). Based on the experience, fishermen were divided into three groups: those who had fishing experience for 1–10 years, 11–20 years, and >20 years. Among 50.91% of fishermen had 11–20 years of fishing experience. According to Haque et al. (2024), 41% of the fishermen were highly experienced, which is like our study. On the other hand, about 33.64% of fishermen finished primary school, and 22.73% had no formal education. Alam et al. (2023) reported that 14% of fisherman were illiterate, whereas Jaman et al. (2024) indicated that 10% of fishermen were illiterate, which closely correlates with our findings. In our study, 70.91% of family types were joined, whereas 29.09% were nuclear. According to Sufian et al. (2017), 67.5% of families were mixed, while 32.5% were nuclear, which matches our study. The size of the fishermen's families varied greatly. Families varied in size from 6.36%, which contained more than eight people, to

54.55%, which was the majority and included three to five people. Islam et al. (2017) found that 32% of families had two to four people, 48% had five to six people, and 18% had seven to ten people. The research focused on the local fishing community near the Sirajganj Sadar fish departure point. These findings are consistent with our study. The living facilities of the fishermen were inadequate. Most fishermen's homes (51.82%) were constructed with tin and bamboo which is more or less similar to Alam et al. (2023). In line with the present statistics, 81% of fishermen had kacha dwellings, whereas 12% owned semi-paka homes (Islam et al., 2022). Around 68.18% used their own tube well for drinking water, and about 90% of fishermen had access to electricity. According to Ali et al. (2014), 60% of the remaining population in the school area utilized government tube wells. Additionally, 65% of fishermen lacked electrical facilities, whereas 35% of fishermen had them, contrasting the study. The hygiene conditions in the study area were insufficient due to a lack of funds and ignorance. While 14.55% of the lavatories used by the fishermen lacked sanitary facilities, and 60% had Kacha toilets. Haque et al. (2024) found that just 6% of fishermen had only access to hygienic facilities, which contrasts with our study due to the different locations. Halim et al. (2017) found that 70% of fishermen accessed the Kacha toilets, identical to our studies. Ghosh et al. (2015) found that 25% had just partially built sanitary facilities, while 65% of fishermen lived in unbuilt sanitary facilities comparable to the study. The condition of the medical facilities for the fisherman was terrible. Only 12.73% of fishermen go to Kobiraj, while the largest proportion (46.67%) see a local doctor, and a very small proportion (26.36%) took government medical facilities. The findings are relatively similar to those of Haque et al. (2024), Kabir et al. (2012), and Khan et al. (2013), which resemble the study. Most fishermen in the study area were impoverished, earning between BDT 5,000 to 22,000 monthly. Our study recorded the income level below 10000 BDT of 33% of fishermen which is more or less similar to Haque et al. (2024). About 40% of fishermen were lent money from NGOs in our study, which is identical with Rahman et al. (2021) findings.

Conclusion

The outcomes of this research indicate that the Bangali River's fragile environment and the substandard living conditions of its fishermen were threatening their lifestyles. Many factors, such as overfishing, negligent fishing gear usage, water-borne contaminants, sludge and environmental erosion, poor management techniques, and the shortage of legal regulation, caused the river's total yield decline. Moreover, unstable factors such as market fluctuations, shocks, and cyclical changes sometimes worsen this situation. Furthermore, the Bangali River fishermen in the Sariakandi and Dhunat Upazilla, Bogura District, are in a terrible socio-economic condition, lacking access to essential services, including sanitary facilities, education, decent housing, health care and other income sources. The government must act swiftly to support conservation, increase the fish population in the Bangali River, and take the necessary steps to improve the fishermen's socio-economic status.

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Conflict of Interest: The authors declare no conflict of interest.

Author's Contribution: Conceptualization- MSH and SAH; Data collection- MTI, and MSH; Visualization-MBH; writing—original draft preparation, MSH, S E and MMH; writing—review and editing, SAJ, MRS and SAH final revisions, SAH and MSH All authors have read and agreed to the published version of the manuscript.

REFERENCES

Alam, M.S., Rahman, M.H., Binti, N.T., Mely, S.S., Ahamed, S., & Rahman, M.M. (2023). Socio-economic appraisal of fish sanctuary on livelihood of fishermen in Chikadubi beel of Dingapota Haor, Netrokona, Bangladesh. *Archives of Agriculture and Environmental Science*, *8*(4), 524-530.

Ali, M.M., Hossain, M.B., Minar, M.H., Rahman, S., and Islam, M.S. (2014). Socio-Economic Aspects of the Fishermen of Lohalia River, Bangladesh. *Middle-East Journal of Scientific Research*, 19 (2): 191-195. https://doi.org/10.5829/idosi.mejsr.2014.19.2.8235

Azad, K.N., & Azad, K.N. (2022). Current status and chronological development of fisheries and aquaculture in Bangladesh. *Journal of Bioscience and Agriculture Research*, *29*(02), 2484-2496.

Basurto, X., Gutierrez, N.L., Franz, N., Mancha-Cisneros, M.D.M., Gorelli, G., Aguión, A., & Thilsted, H.S. (2025). Illuminating the multidimensional contributions of small-scale fisheries. *Nature*, 1-10.

Cheung, W.W., Pauly, D., & Sumaila, U.R. (2024). Hope or Despair Revisited: Assessing Progress and New Challenges in Global Fisheries. Fish and Fisheries.

Coulthard, S., Johnson, D., & Mcgregor, J.A. (2011). Poverty, sustainability and human wellbeing: A social wellbeing approach to the global fisheries crisis. *Global Environmental Change*, 21, 453-463. https://doi.org/10.1016/j.gloenvcha.2011.01.003

DoF (2018). National Fisheries Week 2018. Dhaka: Department of Fisheries, Government of Bangladesh.

DoF (2024). National Fish Week Compendium, Ministry of Fisheries and Livestock. The Government of Peoples Republic of Bangladesh. 21

FAO (2012). The state of world fisheries and aquaculture 2012. Rome: Fisheries and Aquaculture Department, Food and Agriculture Organization of the United Nations.

Ghosh, S.K., Ahmmed, M.K., Ahmed, S.I., Ahsan, M.K., and Kamal, M. (2015). Study on the socio-economic conditions of the fishermen in Teknaf. *Research in Agriculture Livestock and Fisheries*, 2 (3): 483-489. https://doi.org/10.3329/ralf.v2i3.26172

Halim, M.A., Haque, S.A., Islam, M.S., Rayhan, A., & Sku, S. (2017). Socio-economic aspects of fisher communities in Kafrikhal Beel under Mithapukur Upazila, Rangpur, Bangladesh. *International Journal of Fauna and Biological Studies*, 4(1), 119-124.

Haque, S.A., Islam, M.F., Rahman, M.C., Islam, M.S., & Rahman, M.M. (2021). Supply Chain and Logistics of Fish: A Case Study of Jamalpur District Markets in Bangladesh. *Asian Journal of Agricultural Extension, Economics & Sociology*, 39(7), 8–27. https://doi.org/10.9734/ajaees/2021/v39i730604

Haque, S.A., Jaman, A., & Hasan, M.S. (2023). Environmental impacts on seasonal fish diversity in Jamuna River, Bangladesh. *Journal of Survey in Fisheries Sciences*, 3019-3030. https://doi.org/10.53555/sfs.v10i1.1037

Haque, S.A., Jufaili, S.M.A., Hasan, M.S., Jaman, A., & Islam, M.F. (2024). Assessment of fishing gear efficiency, species diversity, and socio-economic impacts on fishermen along the Jamuna River, Bangladesh. *Journal of Survey in Fisheries Sciences*, 11(1) 01-17. https://doi.org/10.53555/sfs.v11i01.1917

Hara, M., Muchapondwa, E., Sara, J., Weyl, O., & Tapela, B. (2021). Inland fisheries contributions to rural livelihoods: an assessment of fisheries potential, market value chains and governance arrangements. *Water Research Commission: Pretoria, South Africa*.

Hasan, J., Lima, R.A., & Shaha, D.C. (2021). Fisheries resources of Bangladesh: A review. *International Journal of Fisheries and Aquatic Studies, 9*, 131–138.

Islam, M.A., Al Asif, A., Samad, M.A., Sarker, B., Ahmed, M., Satter, A., & Hossain, A. (2017). A comparative study on fish biodiversity with conservation measures of the Bhairabriver, Jessore, Bangladesh. *Asian Journal of Medical and Biological Research*, 3(3), 357-367. https://doi.org/10.3329/ajmbr.v3i3.34526

Islam, M.N. (2020). Seasonal Livelihood Variation and Socio-economic Conflict of the Chalan beel Wetland Area: A Case of Beel Chiroil at Pabna District in Bangladesh. *Pabna University of Science and Technology Studies*, 4(1), 29-37.

Islam, M.F., Haque, S.A., Islam, M.S., Das, P.S. and Rahman, M. (2021). Socio-economic status of fisher communities in Dengar beel under Melandah Upazila, Jamalpur, Bangladesh. *Asian Journal of Medical and Biological Research*, 7(2), 164-173. https://doi.org/10.3329/ajmbr.v7i2.54996

Islam, M.F., Ali, M.F., Rahman, M.S., Haque, S.A., & Juthi, R.A. (2022). Assessing socio-economic patterns and trends of livelihoods of fisher's community of the Old Brahmaputra River: A case study in Jamalpur, Bangladesh. *Archives of Agriculture and Environmental Science*, 7(4), 611-617. https://doi.org/10.26832/24566632.2022.0704021

Jaman, A., Enam, S., Islam, M.T., Hasan, M.S., Hasan, M.M., Rahman, M.M., and Islam, M.S. (2024). An Overview of Socio-Economic Situation of Fishing Community nearby Dorsha River of Bangladesh. *World Journal of Fish and Marine Sciences*, 16 (2): 21-31. https://doi.org/10.5829/idosi.wjfms.2024.21.31

Kabir, K.R., Adhikary, R.K., Hossain, M.B., & Minar, M.H. (2012). Livelihood status of fishermen of the old Brahmaputra River, Bangladesh. *World Applied Sciences Journal*, 16(6), 869-873.

Khan, M.R., Miah, M.I., Hossain, M.B., Begum, A, Minar, M.H., & Karim, R. (2013). Fish biodiversity and livelihood status of fishing community of Tista River, Bangladesh. *Global Veterinaria*, 10(4), 417-423. https://doi.org/10.5829/idosi.gv.2013.10.4.7241

Latifa, G.A., Parvin, M.M., & Sardar, M.A. (2022). Fish diversity and socio-economic condition of fishermen at the Halti Beel in Natore District, Bangladesh. *Bangladesh Journal of Zoology*, *50*(1), 37-49.

Moumita D., Hussain M.A., Alam M.M., Mazlan A.G., and Simon K.D. (2011). Impact of Sariakandi fish pass on fisheries diversity of Bangali river, Bogra, Bangladesh. *AACL Bioflux*, 4(5), 621-626.

Rahman, M.M., Motin, M.A., Islam, M.S., Haque, S.A., Islam, M.F., and Rahman, M. (2021). Assessing livelihood and socio-economic status of fishermen community adjacent to Chalan beel area in Faridpur upazila, Pabna, Bangladesh. *Journal of Bioscience and Agriculture Research*, 28(01), 2324-2333. https://doi.org/10.18801/jbar.280121.282

Rahman, M., Sasidharan, A., Sabu, S., & Rajan, D.P. (2024). Fish Structural Proteins and its Derivatives: Functionality and Applications. Springer Nature.

Roy, D., Didar, N.B., Sarker, S., Khan, M.A. R., & Latifa, G.A. (2022). Appraisal of different attributes of fish community in Andharmanik River of coastal Bangladesh and socio-economic conditions of fishermen. *Heliyon*, *8*(7), e09825. https://doi.org/10.1016/j.heliyon.2022.e09825

Shamsuzzaman, M.M., Mozumder, M.M.H., Mitu, S.J., Ahamad, A.F., & Bhyuian, M.S. (2020). The economic contribution of fish and fish trade in Bangladesh. *Aquaculture and Fisheries*, *5*(4), 174-181.

Sufian, M.A., Kunda, M., Islam, M.J., Haque, A.T.U., and Pandit, D. (2017). Socio-economic conditions of fishermen of dekar haor in sunamganj. *Journal of Sylhet Agriculture University*, 4(1), 101-109