

Published with Open Access at **Journal BiNET**

Vol. 28, Issue 01: 2324-2334

**Journal of Bioscience and Agriculture Research**Journal Home: [www.journalbinet.com/jbar-journal.html](http://www.journalbinet.com/jbar-journal.html)

## Assessing livelihood and socio-economic status of fishermen community adjacent to *Chalan beel* area in Faridpur upazila, Pabna, Bangladesh

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Article received: 28.06.2021; Revised: 18.08.2021; First published online: 30 August, 2021.

### ABSTRACT

*The present study was carried out to update the livelihood and socio-economic conditions of the fishermen community adjacent to the Chalan beel area in Faridpur Upazila of Pabna District in Bangladesh. The data was collected from primary sources (interviews, questionnaire surveys, personal and group discussions) and secondary sources (government and non-government organizations) from July 2020 to December 2020. The fishermen community mainly depends on Chalan beel for self-employment (fishing), income, food and nutrition, as well as sustainable livelihood status, etc. According to the findings, the bulk of the fishermen (40%) were between the ages of 31 and 45, as well as more than two thirds of the respondents (68%) were Muslims and the rest were Hindus. About 70% of responding fishermen were illiterate and 30% were literate. The respondent fishermen also suffered from various common diseases, i.e. gastritis (36%), diarrhoea (24%), fever (23% etc. Here, 5% of fishermen had Kacha houses (made of mud and straw), 70% had tin shed houses, 18% had half-buildings and only 7% of fishermen had buildings (made of concrete). Due to the gradual development of the whole of Bangladesh over time, all of the fishermen got access to electricity facilities and used tube-well water for drinking purposes and mobile phones as modern communication devices. However, because of the increased rate of illiteracy, decreased income level, and climate change (frequent natural disasters such as floods, droughts, cyclones, etc.), their livelihood and social status face a risk of vulnerability throughout the year. Consequently, they lived in poverty and did not meet their demands satisfactorily beyond basic needs from generation to generation. So, government and non-government organizations should take constructive initiatives to boost their livelihoods and socio-economic standing by offering high-quality educational facilities, more financial assistance, rehabilitation and proper infrastructural improvement for road communication in the study area.*

**Key Words:** Sustainable livelihood, Fisher communities and Chalan beel.

**Cite Article:** 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. **Crossref:** <https://doi.org/10.18801/jbar.280121.282>



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## I. Introduction

The Bangladeshi fisheries sector can contribute significantly to national socio-economic growth, economic recovery, poverty reduction, employment opportunities, food security and foreign exchange revenues. In our country, a large portion of the population relies on the fisheries sector for a stable income and people take more than 60% of animal protein from fish as the main animal protein source (DoF, 2020). In Bangladesh's economy, this sector is also quite important. i.e. fish marketing, distribution, processing and export etc., post-harvest activities (Haque et al., 2021). So, there is an urgent need to improve fish production, preservation and distribution, and marketing for the sustainable development of the country. Exporting fish, shrimp, and other fisheries goods brought in a lot of money for Bangladesh (Islam et al., 2021a). This country is blessed with enriched aquatic resources, a large variety of fish fauna and many forms of wetlands. Many water bodies are found in our country, such as rivers, haors, baors, beels, ponds, floodplains and marshes, which are important fisheries resources (Debnath et al., 2019). In our country, seasonal flood plain wetlands remain submerged for 3-4 months (around July to November) during the rainy monsoon and produce a considerable number of small fishes at this time.

The *Chalan beel* (24°31'12" N, 89°0'36" E) is a very valuable wetland in Bangladesh which, during the rainy season, is over 400 km<sup>2</sup> but its water area is reduced to around 60 km<sup>2</sup> during the dry winter and summer season (Hossain et al., 2009). It produces huge tons of fish naturally every year and supports the livelihoods of thousands of people here. About two-thirds of the respondents (67.4%) are dissatisfied, and 22.1% are highly dissatisfied with the role of government organizations in flood disaster management activities (Paul and Hossain, 2013). It was important to develop people's awareness and suitable coping strategies, which may be employed to enhance the long term resiliency of people in the flood prone areas of Bangladesh (Islam, 2020). In order to preserve fish species and increase fish production for future generations, study attempts should be made into conservation strategies as well as aquaculture production strategies that might improve fishers' livelihoods (Hasan et al., 2021; Haque et al., 2015).

The term 'livelihood' consists of the abilities, activities and possessions, as well as their availability, that determines a household's level of living in society (Chambers and Conway, 1992). The socio-economic situation of the population in a given area is included in the standard of living. Understanding the local people's economic activity and variety requires an understanding of their socio-economic situation. (Islam, 2020). According to Hossain et al. (2020); the economic status of fishers at Sunamganj was very poor because their land was decreasing day by day, their average income per month was not sufficient for better livelihood, as well as their socio-economic status didn't reflect the overall national economic progress in Bangladesh. A part of the *Chalan beel* area is situated in Faridpur Upazila of Pabna District in Bangladesh. The potential of this wetland can be effectively linked with financial, physical and human assets and institutional and political environment required to properly manage the *Chalan beel* fisheries on a sustainable basis for improvement of the livelihood status of the adjacent area. However, the study was to determine the livelihood and socio-economic status of fishermen in the *Chalan beel* area, particularly in the Faridpur Upazila of Pabna District, as well as the constraints during fishing and trading operations.

## II. Materials and Methods

The present study was conducted in the *Chalan beel* area at Punguli Union under Faridpur Upazila of Pabna District in Bangladesh (Figure 01). It is famous for its reserve of aquatic resources and is the heart of the local fishermen community that supports their livelihood. A total of 200 (two hundred) fishermen were selected for the study to be conducted for 6 (six) months from July 2020 to December 2020.

### Data collection

**A. Primary data sources:** The primary data were collected through a) Interview survey method and b) Field survey with a prepared questionnaire.

**a) Interview survey method:** A direct interview study was undertaken to learn about the current livelihood status of fishermen living around *Chalan beel*. Fishers were selected based on a random

sampling method at Punguli Union under Faridpur Upazila of Pabna District and their cooperative mentality, sincerity, and patience were also considered for non-biased and transparent information.

**b) Field survey with prepared questionnaire:** A previously prepared questionnaire was also used to get necessary information about fishers at Punguli Union under Faridpur Upazila of Pabna District. Here, local rural elite people helped to conduct this survey authentically with their maximum effort.

**B. Secondary data sources:** Secondary data was acquired and processed from relevant journals, books, documents, published theses, fish markets in the study area, the internet, the Department of Fisheries (DoF), the Bangladesh Fisheries Research Institute (BFRI) and others.

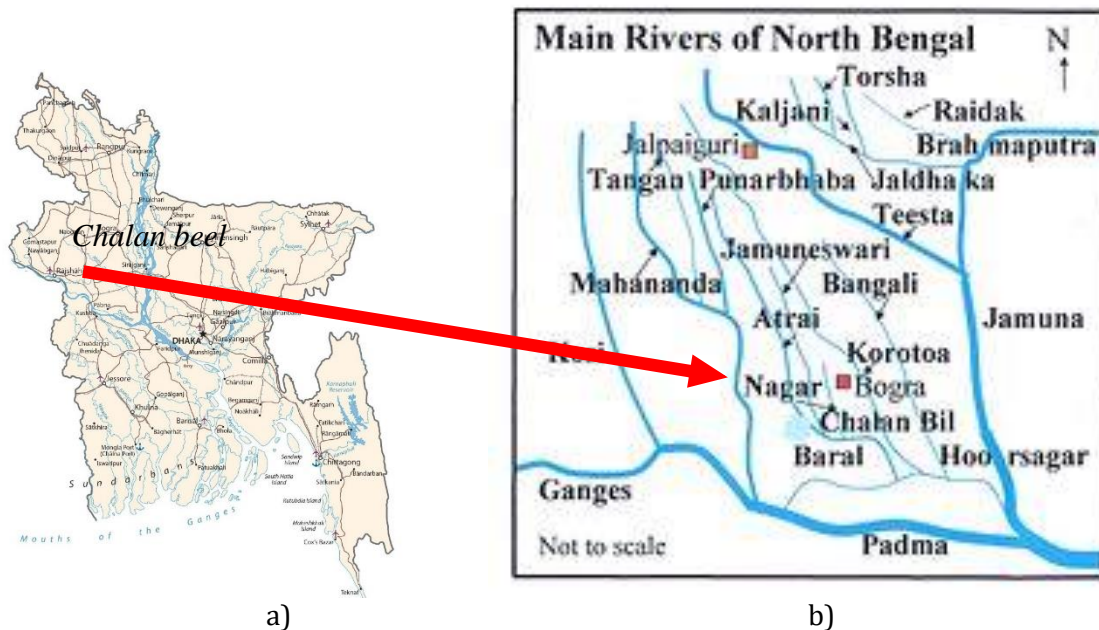


Figure 01. Map of Bangladesh showing *Chalan beel* area (a, b)

### Selection, sampling and data analysis

The sampling procedure is a vital part of research as it helps gather information about livelihoods, socio-economic conditions and gain information about the whole. The target people were selected and the required data were collected by the above mentioned methods. For systematic and fruitful analysis, collected raw data were coded and organized; then a useful data set was prepared by SPSS (Statistical Packages for Social Sciences, version-25) and Microsoft Office Excel (version-2016). Different types of charts and graphs were used to ease the analysis and interpretation as well as to achieve the aims of the study.

## III. Results and Discussion

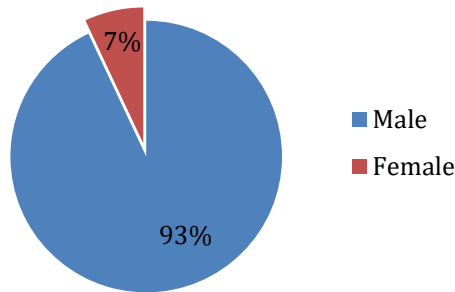
### Gender ratio

According to the gender ratio in this study, 93% of male respondents and 7% of female respondents participated in fishing activities where female respondents were indirectly engaged in processing fish, making fishing gear, assistance in fish marketing (Figure 02) and these study results are more or less similar to the others. Das et al. (2015) reported that a total of 82% male and 18% female respondents of the fishermen community were actively involved in fishing in the southwest region of Bangladesh. Due to the man headed family and social system, women are involved in house holding domestic work rather than direct income generating fishing activities in Bangladesh. Ultimately, women support their family men in fishing. Besides, female ratio decreases due to decreasing fishing area, less fish available and changing professions to others, like agriculture, small business etc.

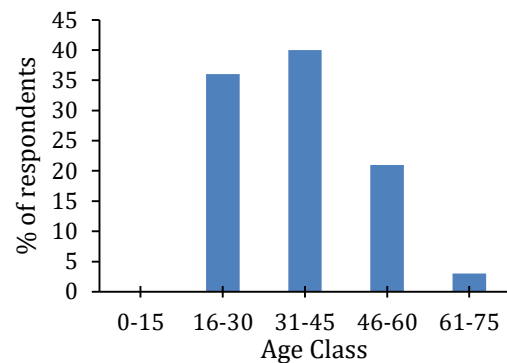
### Age class and distribution

In evaluating the potential of human resources and sustainable livelihood options, the age distribution of the fishermen community is significant. In the present study, the ages of fishermen were classified into five groups as 0-15, 16-30, 31-45, 46-60, and 61-75 years (Figure 03). The majority of fishermen

(40%) belonged to the 31-45 age group, while the 61-75 age group had the lowest involvement in fishing (3%). The findings of the study are comparable to those of [Das et al. \(2015\)](#), who found that in the fishermen community in Bangladesh's southwest region, the majority of fishermen were in the 16-30 age group (45%) and the minority were in the 61-75 age group (4%). [Halim et al. \(2017\)](#) found that among the responded fishermen; 65.5% were 25 to 34 years old, 29.5% were 35 to 55 years old and 5% were 18 to 24 years old.



**Figure 02. Gender ratio related to fishing prevails adjacent to *Chalan beel* area**



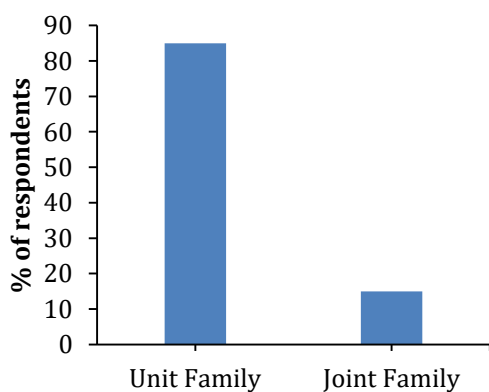
**Figure 03. Age class and distribution prevail adjacent to *Chalan beel* area**

### Family status

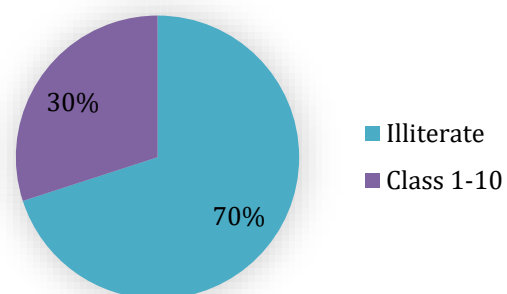
The trends of joined families are continuously decreasing day by day, not only in the fishermen's society but also in Bangladesh. This could be owing to the fishermen's decreased income, lack of education and natural disasters. According to the findings, fishermen families ranged in size from three to six individuals, with the majority of fishermen living in single families (85 percent) and a smaller proportion preferring joint families (15%) ([Figure 04](#)). [Islam et al. \(2021b\)](#) were noted that the Dengar Beel of Melandah Upazila, more or less like current findings, has 33% families and 67% are nuclear families. [Minar et al. \(2012\)](#) found that 84% of fishermen families were jointed and 16 % of families were nuclear in the Kirtonkhola River near Barisal town. [Ali et al. \(2010\)](#) reported that approximately 42.5% of farmers in Mymensingh district lived in nuclear households, while the remaining figure was 57.5%.

### Level of Education and Literacy

In the present study, it was found that class 1 to 10 were literate and that percentage was only 30%, while the maximum number of fishermen (70%) had no academic education and were illiterate. Any SSC or higher level passed fishermen were not found in the study area. As most of them were illiterate and poor, they were not conscious of the necessity of education for their children. Due to the scarcity of food and money, their children came to this profession with older people for income in the study area ([Figure 05](#)). [Hannan \(1994\)](#) concluded that the greater percentage of fishermen (96.97%) in the Kalapara Upazilla's coastal fishing community were literate at varying levels of education, whereas literacy rates in Tangail were 69 percent, according to [Ahamed \(1996\)](#).



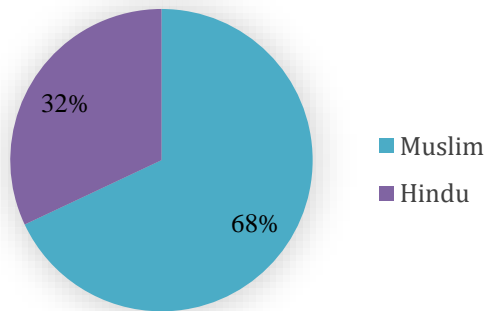
**Figure 04. Family status of the respondents prevails adjacent to *Chalan beel* area**



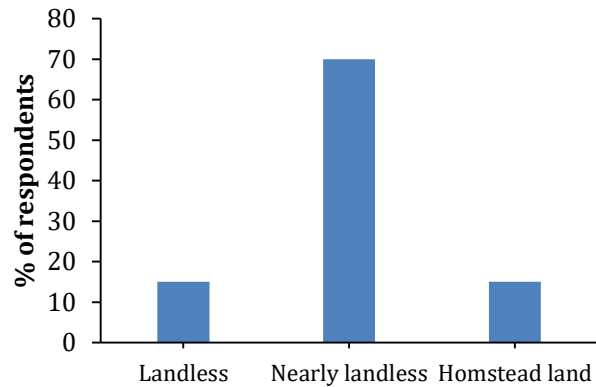
**Figure 05. Level of education of respondents prevails adjacent to *Chalan beel* area**

### Religious status

According to the findings, the majority of fishermen (68%) belonged to the Muslim community, while the remainder (32%) belonged to the Hindu community (Figure 06). Ahmed (1999) noticed that most of the fishermen were Muslims (68%) in the coastal areas of Bangladesh. Morsheduzzaman et al. (2010) stated that two thirds of the fishermen community in the studied river *Jolkor* were Muslims and one third of the fishermen community were Hindus. As observed in the present study, the majority of Muslims in the fishing community indicated that Muslims were coming to this profession in an increased number due to economic adversity and lack of employment opportunities in other sectors.



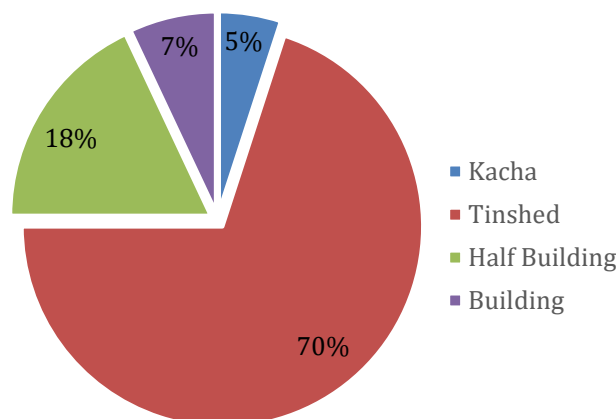
**Figure 06. Religious status of the fishermen community prevails adjacent to the Chalan beel area**



**Figure 07. Land ownership of the respondents prevails adjacent to the Chalan beel area**

**Land ownership and Housing Condition**

Land ownership and housing conditions always represent the richness and poverty of any society and measure the level of the standard of living of society. The land is so necessary that people cannot build houses and produce crops. In the present study, we found that some fishermen were completely landless, some were nearly landless and some had homestead lands (Figure 07). Among the studied respondents, completely landless (15%) fishers had no own houses but lived in others' homes, while fishers with homestead lands (15%) had their own houses and cultivated some vegetables and crops on their homestead lands. The majority of the fishermen (70%), who were nearly landless, had only their own houses but no cultivable land (Figure 08). According to Ahamed (1996), 94% of fishermen owned their own home, while Mannu (1999) found that 28% of fishermen built houses on *khas* land (government-owned land) outside of the dam, 36% were house owners, 8% lived with their father-in-law and 12% shared a house with their father.



**Figure 08. Housing status of the respondents prevails adjacent to Chalan beel area**

The people's living conditions revealed the fishermen's socio-economic status in society. In this survey, 5% of fishermen's homes were kacha houses (made of bamboo, wood, and tree leaves), 70% of tin shed houses, 18% of half-building houses (made of tin and brick) and only 7% of building houses were found (proper, good quality, made of bricks). Ali et al. (2008) reported that 54 percent of fish

farmers in the Bagmara Upazilla of Rajshahi district had a tin shed, 26 percent had a half-building, 14 percent had a building and just 6 percent had a kacha house. Ali et al. (2010) discovered that nearly 50% of the residences in the Tarakanda Upazila of Mymensingh were tin sheds, with reminders of being kacha (23%), semi pucca (23%) and pucca(4%), respectively. Halim et al. (2017) discovered 55 percent kacha dwellings, 29 percent houses with straw roofs, 11 percent semi-pucca buildings and just 5 percent pucca houses in Kafrikhal beel, Mithapukur Upazila, Rangpur. In case of Ichamati river Jolkor, Morsheduzzaman et al. (2010) observed that 78% of the fishermen had *Kacha* houses, which reflected the deplorable and distressing condition of the fishing community, about 15% were semi-pucca and the rest 7% were pucca. A similar scenario regarding the housing conditions of fishermen was also described by Alam (2004) and Hossain (2007) in Gazipur Sadar Upazila and Kaliakoir Upazila in Gazipur district.

**Use of Electricity**

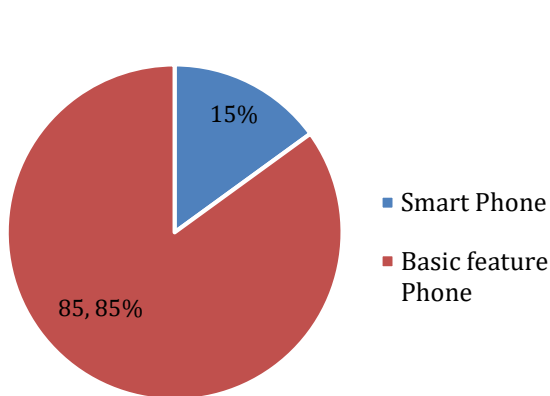
This study observed that all fishermen (100%) had access to electricity facilities and none of them had electricity access. The electricity facility in Faridpur Upazila of Pabna District in the fishermen community was good because the electricity supply had increased in Bangladesh. In the Dengar beel of Melandah Upazila, Jamalpur district, Islam et al. (2021b) observed that 100 percent of fisher's families were connected to power, similar to the current findings. Ali et al. (2010) found that 95% of fish farmers had electricity facilities, whereas 5% of farmers did not have electricity facilities at their residences at Tarakanda Upazila of Mymensingh District. But Sultana and Islam (2017) reported that 92% of fishermen connected to electricity lines in the *Chalan beel* area at Gurudaspur Upazila, Natore.

**Use of Mobile phone**

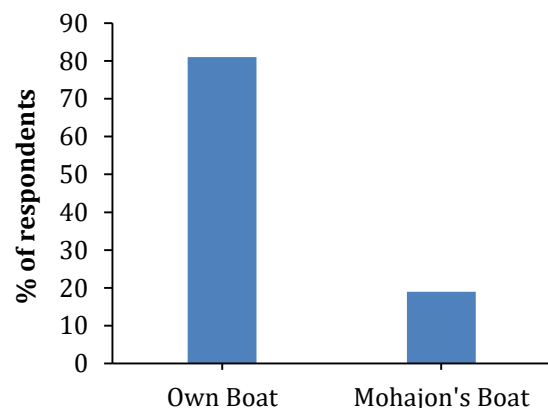
To get different government services and financial helps, mobile phone numbers are essential as a communication medium. According to the findings, the vast majority of fishermen (85%) had basic feature phones, the rest (15%) had smartphones and none had no phone (Figure 09). Most of them were illiterate, so they could not effectively use the features of phones as modern communication devices. However, fishermen had gradual trend of using the mobile phone as a modern communication device.

**Boat and fishing pattern**

As a fishing craft, boat is very much essential for fishermen to harvest fish commercially. Fishermen captured fish in the study region using Bhela (banana tree raft), small or medium-sized boats and occasionally tiny engine-operated boats (Figure 10). It was observed that the majority of the responded fishermen (81%) worked in their own boats, while the rest of them (19%) worked as day labourers on *Mohajon's* (Usurious) boats. According to Das et al. (2015), 57% of fishermen owned their own boats, whereas just 18% worked as day laborers on *Mohajon's* (usurious) fishing vessels.



**Figure 09. Use of Mobile Phone user (%) prevails adjacent to *Chalan beel* area**



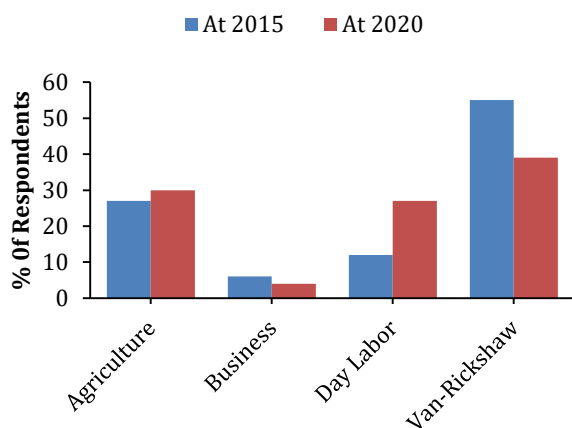
**Figure 10. Boat Status of the Fishermen (%) prevails adjacent to *Chalan beel* area**

**Alternative livelihood options**

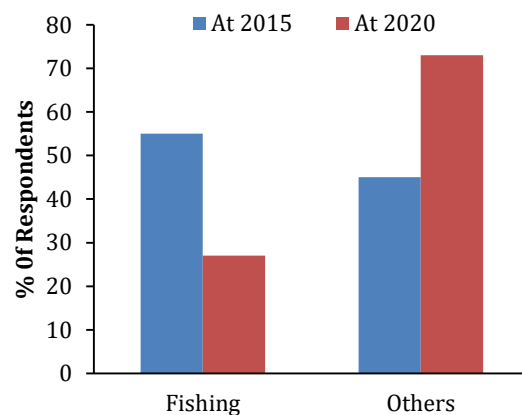
According to the current study, average monthly revenue increased throughout the rainy season (June to October) but was insufficient to support fishermen's subsistence. (Figure 11). However, during the dry season (generally the winter and summer), fish harvesting in different ponds as haired fishermen

groups was their primary profession. They did not get work as fishing/harvesting in ponds every day in a week or month, so fishermen had to get involved in agriculture, day labor, small business, van-rickshaw pulling etc., as their alternative income sources. Besides, males and females, even children of fishermen's families, made or repaired the net during their leisure periods throughout the year, beyond their routine domestic and household work.

Fishing was the principal occupation for the vast majority of the fishermen who responded to this study in 2015, with secondary occupation percentages being negligible. Although fishing would continue to be their primary occupation in 2020, secondary occupation percentages would be significant. Similar results were also reported by Das et al. (2015). However, this study showed that fishermen were very prone to agriculture, day-laboring and van-rickshaw pulling etc. occupations due to the scarcity of fish abundance and lower income from the fishing profession. The interesting point was that many fishermen were being migrated to the town/city to get jobs as day laborers, garments workers etc. and this trend was becoming gradually higher.



**Figure 11. Secondary Occupation of the Fishermen prevails adjacent to *Chalan beel* area**



**Figure 12. Changes of income Source of fishermen prevails adjacent to *Chalan beel* area**

### Changes in income sources

In the present study, 55% of fishermen's families were fishing dependent and 45% were other sources dependent in 2015 (Figure 12). However, in the year 2020, 27% of fishermen were dependent on fishing all year round and the other 73% of fishermen were seasonally dependent on fishing and did miscellaneous jobs. The graph shows that fishing-dependent households were dropping and other-source dependent families were expanding gradually. According to Mannu (1999), 72% of the fishermen were full-time. The majority of the fishermen in the study region were from a very impoverished and deprived background. They were unable to improve their socio-economic status by working in the fishing industry, as the sector's income was steadily decreasing. As a result, they are being transferred to other sources of income in order to continue their precarious existence.

### Problems faced by fishermen

Due to fishing in different weather conditions, fishermen have to face different types of problems. According to the findings, 60% of fishermen were affected by various calamities (such as floods, droughts and other natural disasters), 38% were afflicted by sickness and 2% were afflicted by pirates (Figure 13). Sometimes, they also faced capital and transportation problems as well as fish trading problems. These findings are more or less similar to Das et al. (2015).

### Fishermen's perception of status of fish abundance

In this study, 64% of fishermen said that fish abundance in the *Chalan beel* was low in recent years, while other 33% and 3% of fishermen thought the abundance was medium and high, respectively (Figure 14). Older fishermen opined that fish abundance decreased in the *Chalan beel* area, although younger fishermen gave different opinions. Similar results were found by Das et al. (2015). Day after day, fish populations (total production and diversity) decrease in the *Chalan beel* due to different man made and natural causes.

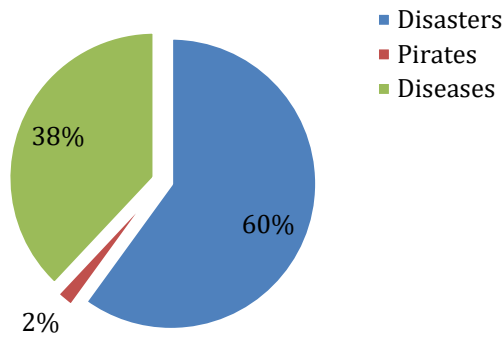


Figure 13. Various problems faced by the fishermen during fishing prevails adjacent to Chalan beel area

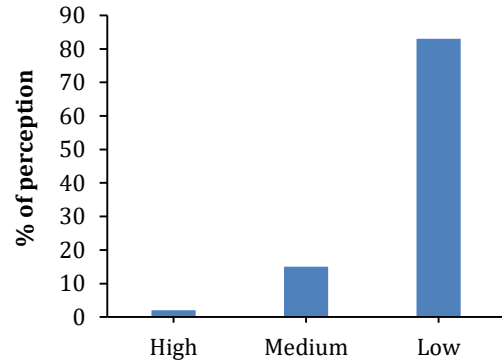


Figure 14. Fishermen's perception on status of fish abundance into the study area.

### Process of fish preservation by fishermen

Among the studied respondents, the maximum number of fishermen (75%) did not preserve fish, but sometimes 20% of fishermen dried some fish in direct sunlight, rest (5%) might have used ice or others for short-term preserving their wet fish (Figure 15). After harvesting, almost all of them tried to come back to the land as early as possible and sell the fish to the fish depot at the fish market. So, they did not need any preservation method for their newly caught wet fish on a large scale. More or less similar findings for preserving wet fish were also observed by Das et al. (2015) in the fishing community in the southwest region of Bangladesh.

### Fish Selling Process by fishermen

Fish selling or marketing is a way to supply fish to consumers, which is important for fishermen. This study stated that the fish were sold to the storehouse/depot (35%), the retail markets (30%), dealers (15%) and wholesalers (20%) (Figure 16). Due to a shortage of funds, fishermen were forced to rely on moneylenders for fishing *dadon* (highly rated usurious loan). Moneylenders provided loans to fishermen for fishing, but they were unable to return the funds directly. The moneylender's boat was similarly given in such a state (usurious). When the fisherman returned from the beel after fishing, the moneylenders took the entire catch. Moneylenders received their loan amount after selling all of the captured fish. The fishermen in the research area were dissatisfied with the fish selling procedure since they were impoverished and couldn't do anything other than relying on these mechanisms to fight money lenders. Similar types of results were also reported by Das et al. (2015).

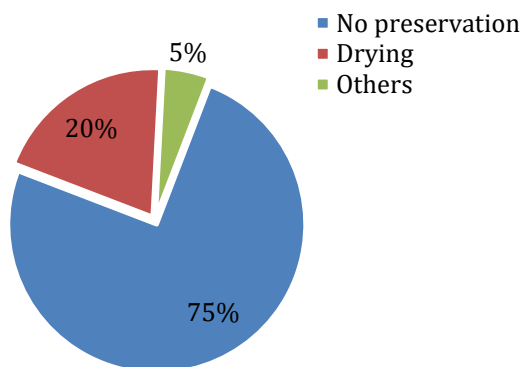


Figure 15. Process of preservation technique by the fishermen in the study area



Figure 16. Selling process of fish in the study area

### Sources of drinking water

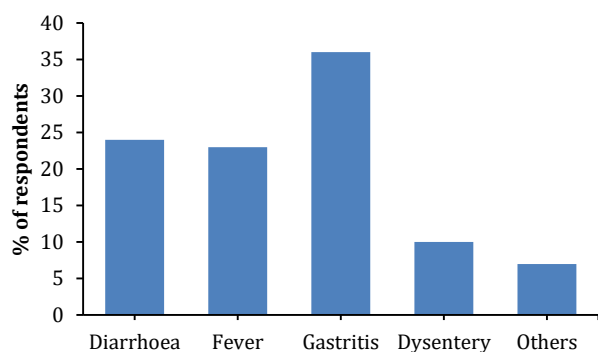
Among the total surveyed respondents, all of them (100%) used tube-well water for drinking and other daily activities (cooking, bathing, and washing) purposes. Some fishermen were using governmental tube wells because the government provided the tube wells to the poor people. Besides, nowadays, society people were more conscious of their good water supply and health fitness. According to Mahbullah (1986), 41% of fishermen got their drinking water from tube wells. In the



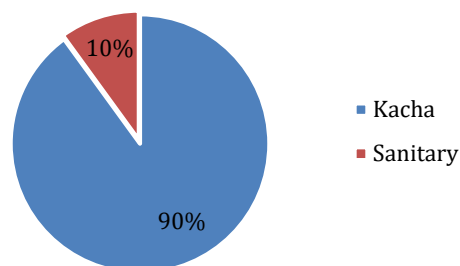
polder and estuarine fishing community of Bangladesh, Rahman and Hassan (1992) found that 11% for drinking, cooking and bathing, 18% for drinking and cooking and 29% for solely drinking.

### Effect of diseases

Body fitness ensures the good productivity of any fisherman because body health and mental health are very much interrelated. The majority of the fishermen here were constantly afflicted with waterborne disorders such as diarrhoea, dysentery, and typhoid, among others. The majority of patients (36%) had gastric difficulties, while 10% had dysentery, 24% had diarrhoea, 23% had fever and 7% had other disorders such as typhoid, jaundice, ulcer and respiratory problems (Figure 17). In Gollamari fishing settlements, Khulna District, Shamima (2000) reported that 52 percent of fishermen had fever. As most of them are illiterate and less conscious about health and sanitation, so these diseases are most common among them all year round.



**Figure 17. Common diseases among the fishermen prevails adjacent to Chalan beel area**



**Figure 18. Sanitation practice by the fishermen prevails adjacent to Chalan beel area**

### Sanitation practice used by fishermen communities

Good sanitation practices in a community ensure the good health of the people. In the study region, the majority of the fishermen (90%) used a sanitary toilet for defecation, while the remaining 10% utilized a *Kacha* (open, unsanitary) toilet (Figure 18). This might be due to poor income and the unconsciousness of the community people. Das et al. (2015) found that most fishermen (59%) used *Kacha* toilet in their study area.

## IV. Conclusion

The livelihood and socio-economic status of the fishermen in the *Chalan beel* area were not satisfactory, as they were deprived of many facilities from the modern era. Due to the lack of awareness and poverty, they could not gain education and improve their livelihood strategy from generation to generation. When they continuously passed several workless days in a week, they suffered from distress because most lived from hand to mouth and lived below the poverty line. Therefore, the government should take some pragmatic steps by providing some management policy as well as providing some extra prudence during the restricted period of fishing to conserve aquatic biodiversity and production, which ultimately may improve their livelihoods. This may be done by law enforcement, providing VGF (Vulnerable Group Feeding) cards, awareness campaigns etc. Besides government activities, NGO's activities (i.e. giving loans, income generating mechanisms, education, health awareness, training, awareness campaigns etc.) must be ensured for the sustainable improvement of their livelihoods and socio-economic status in their society in the study area.

### Acknowledgement

The authors appreciate the technical help provided by the Department of Fisheries (DoF), Ramna, Dhaka, Bangladesh, in conducting the study.

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#### HOW TO CITE THIS ARTICLE?

**Crossref:** <https://doi.org/10.18801/jbar.280121.282>

#### MLA

Rahman, M. M. et al. "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), (2021): 2324-2334.

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#### Harvard

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), pp. 2324-2334.

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Rahman, MM, Motin, MA, Islam, MS, Haque, SA, Islam, MF and Rahman, M. 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*, 2021 August, 28(01): 2324-2334.