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A Case Study on Fishing Gears, Fish Species Composition and Fisher Folk Community at Jamuna River of Sirajganj Sadar Fish Landing Site, Bangladesh

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Abstract A profilistic study on the socio-economic status of the fishermen community of Jamuna River under Sirajganj Sadar, was conducted for a period of 1 year and 6 months from August 2014 to February 2016 by employing PRP tools. A total sample of respondent was 120 families and head of the family was considered as respondents for accuracy of information. In this investigation information on fishing gears, fish diversity and social status such as education level, religion, age, occupation, housing condition, sanitary condition, electricity facilities and other facilities was studied. The surveyed result identified total 11 types on fishing net under 5 major groups of net of which Current jal, Chandi jal under the group of Gill net and Ber jal under Seine net group was responsible for large-scale caught. A total of 55 species under 44 genera and 28 families were identified from River Jamuna in the catches of different gears. Among different families Cyprinidae contributes highest number (10 species) of species and genus (7 genera) which was followed by Schilbeidae had 4 species under 4 different genera. The socio-demographic study revealed that most of the fishermen had aged 30-50 (62%) indicated middle class family. The majority of fishers are Muslim (69%). 62% fishermen were engaged in fishing as their main occupation. But, 53% had no educational knowledge. Monthly income varied from 3-25 $ of fisher community. About 61% house had no electricity because of bad communication system. Social condition is not good because majority of them are landless. All of these situation can be promoted if the government and non-governmental organisation trying their best affort and increase their facilities among the fisher folk community of Jamuna River around Sirajgonj district.

Keywords: *livelihood, fisherman, fishing gear, fish species, socio-condition, jamuna river*

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1. Introduction

Fish and fishing business is an important sector of many nations of the world from the standpoint of income and employment generation. Fishing plays an important role in supporting livelihood worldwide and also forms an important source of diet for over one billion people [1]. Fisheries sector of Bangladesh is the most dynamic sector which has great contribution to national income. Fisheries resources of the country are generally classified into inland and marine water fisheries. Inland fisheries comprise of capture (open water fishery) and culture (closed water fisheries) based fisheries. Inland water resources of Bangladesh are considered to be one of the richest resources in the world both in area and potential for Fisheries Development [2]. The inland aquatic habitats of Bangladesh are rich in faunal diversity containing at least 293 species of finfish, 63 species of prawn, several species of turtles, tortoises, freshwater mussels and other living aquatic organisms [3]. This sector therefore contributes about 3.69% in GDP (Gross Domestic Product) and 22.76% in agricultural GDP and supply about 60% animal protein consumption. About 11% of the populace is reliant on directly and indirectly of this dynamic sectors for their living [4]. The sector also recognized as cheap source of protein, employment opportunities, food security, foreign incomes and socio-economic improvement [5]. Hence, Fisheries sector of the country has great influence on the livelihood of the people of Bangladesh in terms of nutrition supply, employment generation and foreign exchange earnings. Livelihood comprises the capabilities, the assets (natural, physical, human, financial and social capital), the activities and the accesses to these (mediated by institutions and social relations) that together determine the living gained by the individual household [6]. Livelihood includes some vital characteristics of the

people directly linked with heir sources of income, earning pattern and occupation having relevance with their age, health, education, assets, technical issues, food and nutrition, sanitation, credit availability and membership with social association.

In Sirajganj Sadar, the prominent fresh water resource is Jamuna River contributing huge aquatic resources for dramatic changes of lifeline of thousands of fisher folk community. Fisheries of Jamuna River in terms of food supply and source of income has a great support for many riverine fishermen living around the coast of the river. But, at present time, reduction in the abundance and fish species from the water is a burning issue which has great deleterious impression on fishermen. At present, fishermen are one of the most vulnerable communities in the world as well as Bangladesh. They are poor by any standard and over the years the economic condition of the fishermen had further deteriorated [7]. This scenario is also applicable for the fisher community of Jamuna River around Sirajganj Sadar fish landing site. Most of fisher's community are hand to mouth and cannot get facilities which are provided. They are dominated by others especially political leaders, artistic person of the society. As a result, trying hard but their socio-economic condition cannot be changed. A detailed study on socio- economic condition of the fishers, fish species and the fishing gears of the Jamuna river system together has not been documented earlier in Sadar upazilla in Sirajganj district. The present study has been pledged to evaluate the socio-economic conditions of the fishermen as well as fishing gear used in Jamuna River.

2. Materials and Methods

2.1. Study Area

The present investigation was carried out in Jamuna River located at Sadar upazila under Sirajganj district fish landing site (Figure 1). Sirajganj district has area of 2497.92 sq. km, located in between 24°01' and 24°47'N latitudes and 89°15' and 89°59'E longitudes. The Jamuna River is the widest river in the country and its length is 276 km. The previous name of this river is Jonai and it is flow over the Natore, Pabna and Sirajgonj district. The study was conducted for a period of 1 year and 6 months from August 2014 to February 2016.

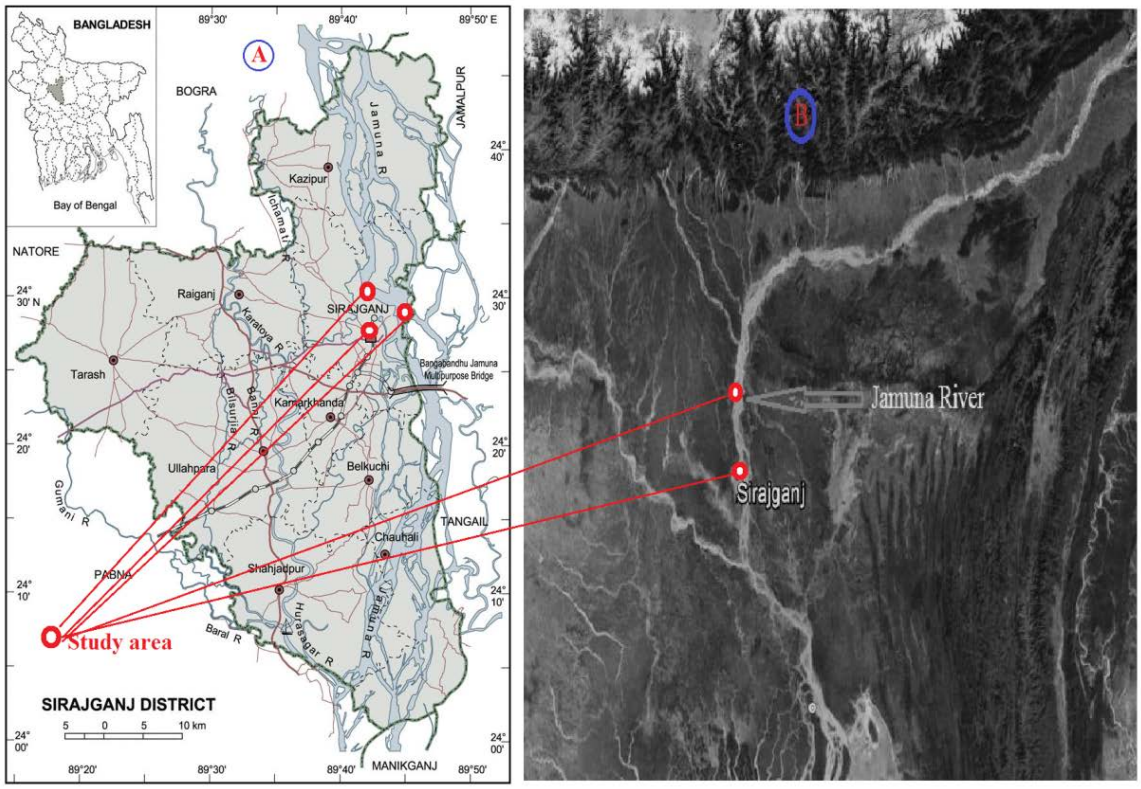

Figure 1. Geographical location of study area with the red mark indicates; (A) Map of Sirajganj district and (B) Satellite view of Sirajganj district and Jamuna River

2.2. Data Collection

For collecting data, some steps has been followed such as primary data collection, observation in fields, face to face interviewed. For collecting a primary data, a simple hand made questionnary was made. Data was collected on the basis of age group, religion, occupation, educational, sanitary condition, electricity, housing condition, daily income, refrigerator, television etc. by employing PRP tools like FGD (Focus Group Discussion), Key Informants (KI) with the fisher community. Each respondent was asked at least for 30-45 minutes. Again, Secondar data was collected from books, journals, NGO, Upazila fisheries officer etc.

2.3. Fishing gears Surveyed

The fishing gears including their mesh size, price per meter and catching season of fish were surveyed by face to face interviewed with the fishermen. The fishing gears

were categorized under different major groups followed by Ahmed [8].

2.4. Fish Assemblages Studied

Fish sample of different gears were collected and then identified based on their taxonomic characteristics. The collected specimens were identified to species level with the help of standard taxonomic keys followed by Talwar and Jhingran [9] and Rahman [10].

2.5. Data Processing and Analysis

All the collected data and information are accumulated for selection. After processing and calculated carefully, most acceptable data should given place. All sclected data are analyzed in MS Excel 2010. Then it is presented in textual, tabular and graphical form for easy understanding of present findings.

3. Results

3.1. Fishing gears

Numbers of fishing gear were practiced in Jamuna River to catch the fish and other related aquatic organisms. The surveyed result identified total 11 types on fishing net under 5 major groups such as Gill net (Current jal, Nagini jal, Chandi jal), Push net (Thela and Moiya jal), Cast net (Jhaki jal), Hook and line (Barshi, Wheel Barshi, Down Barshi/ Hajari Barshi, Daina Borshi, Seine net (Ber jal) etc. (Table 1).

Table 1. List of fishing gears with their mesh size, market price and fish capturing seasons

Gear type		Gear Name	Mesh size (Cm)*	Market price (Tk/m)** BDT	Capturing season***
Nets	Gill net	Current jal	1.27-3.81	65	TY
		Nagini jal	2.54-3.81	23	RS
		Chandi jal	4.5	37	RS
	Push net	Thela jal	0.5	17	RS
		Moiya jal	0.3	33	RS
	Cast net	Jhaki jal	0.4	21	TY
	Seine net	Ber jal	0.5	127	TY
Hook and line		Wheel Barshi	800-1000 Cm long	Depending on size and shape	TY
		Barshi	500-600 Cm long	Depending on length	SS
		Dawn Barshi/ Hajari Barshi	-	Depending on size and length	TY
		Daina Barshi	200-2500 Cm long	20	RS

* Cm= Centimeter; **= Bangladesh Currency; ***TY= Throughout the Year, RS= Rainy Season, SS= Summer Season.

3.2. Species Specificity of Fishing Gears

Species specificity of fishing gears exposed Current jal and Chandi jal under the group of gill net was accountable to catch all types of fish species, Ber jal under the major group of seine net also has great contribution to catch fish species (Table 2).

Table 2. Illustration of species specificity of fishing gears recorded from Jamuna River

Gear Name	Targeted species	Number of species caught
Current jal	All types of fish species	-
Nagini jal	Ayre, Bele, Boal	3
Chandi jal	All types of fish species	-
Thela jal	Chela, Cheua, Tengra, Kaski, Kajoli, Kachkiki	5
Moiya jal	Choto Chingri, Chela, Cheua.	3
Jhaki jal	Faissa, Cheua, Baim, Tengra, Chingri, Chela punti, Boal	7
Ber jal	Chela, Boal Tengra, Kaski, Kajoli, Cheua, Faissa, Baim, Chingri, Chela punti	10
Wheel Barshi	Baghair, Boal, Rita, Ayre	4
Borshi	Rita, Punti, Ayre, Jat Punti, Boal, Magur.	7
Down Barshi/ Hajari Barshi	Ayre, Boal, Baghair.	3
Daina Barshi	Rita	1

3.2. Fish Assemblages

Table 3 represents different fish species with their English and local name recorded during the study period. A total of 55 species under 44 genera and 28 families were identified from River Jamuna. Among families Cyprinidae contributes highest number (10 species) of species and genus (7 genera) which was followed by Schilbeidae has 4 species under 4 different genera, Osphronemidae responsible for 3 species under 2 genera and maximum family has single species with single genus (Figure 2).

3.3. Fish Capturing Season

A fisherman cannot get enough fish around the year. It is almost evidence that rainy season (June-September) is the most suitable time to get more fish species. In this

time the river is fulfill of water and it is the breeding season of fishes. But in the dry season (November -March) it is relatively inverse condition. In this season river is almost drying out. In that season fishers cannot get enough work to do it. So, that time they passed their leisure time.

Table 3. Systematic position of finfish species with their English and local name recorded from Jamuna River

Family	Scientific Name	English Name	Local Name
Ambassidae	1) *Parambassis ranga*	Indian glassy fish	Ranga chanda
	2) *Chanda nama*	Elongate glass- perchlet	Lomba chanda
	3) *Chanda lala*	Highfin glassy perchlet	Choto chanda
Aplocheilidae	4) *Aplocheilus panchax*	Blue panchax	Bechi
Badidae	5) *Badis badis*	Badis	Napte koi
Bagridae	6) *Rita rita*	Rita	Rita
	7) *Sperata seenghala*	Giant river-catfish	Ayre
	8) *Mystus vittatus*	Stripedd warf catfish	Tengra
	9) *Mystus aor*	Long whiskered catfish	Ayre
	10) *Mystus tengana*	Tengara catfish	Choto tengra
Belonidae	11) *Xenentodon cancila*	Freshwater garfish	Kakila
Channidae	12) *Channa marulius*	Great snakehead	Gozar
	13) *Channa punctate*	Spotted snakehead	Taki
	14) *Channa striata*	Snakehead murrel	Shol
	15) *Channa orientalis*	Walking snakehead	Cheng
Clariidae	16) *Clarias batrachus*	Walking catfish	Magur
Clupeidae	17) *Gudusia chapra*	Indian river shad	Chapila
	18) *Tenualosa ilisha*	Hilsa shad	Hilsa
Cobitidae	19) *Botia Dario*	Bengal loach	Bou mach
Cyprinidae	20) *Devario devario*	Sind danio	Banspata
	21) *Labeo bata*	Bata	Bata
	22) *Labeo calbasu*	Orange-fin labeo	Kalibaus
	23) *Amblypharyngodon mola*	Mola carplet	Mola
	24) *Puntius sarana*	Olive barb	Shorpunti
	25) *Barbonymus gonionotus*	Java barb	Rajputi
	26) *Rasbora daniconius*	Slender rasbora	Darkina
	27) *Salmostoma acinaces*	Silver razorbelly minnow	Chela punti
	28) *Labeo dyocheilus*	-	Ghora mach
	29) *Cyprinus carpio*	Indian major carp	Catla
Dasyatidae	30) *Dasyatis zugei*	Pale-edged stingray	Sapla pata
Gobiidae	31) *Glossogobius giuris*	Tank goby	Bele
	32) *Pseudapocryptes elongates*	-	Chewa
Hemiramphidae	33) *Dermogenys pusilla*	Wrestling halfbeak	Ek thota
Heteropneustidae	34) *Heteropneustes fossilis*	Stinging catfish	Shing
Mastacembelidae	35) *Mastacembelus armatus*	Zig-zag eel	Baim
	36) *Macrognathus aculeatus*	Lesser spiny eel	Tara baim
Mugilidae	37) *Sicamugil cascasia*	Yellowtail mullet	Kachki
Nandidae	38) *Nandus nandus*	Gangetic leaffish	Nandil
Notopteridae	39) *Chitala chitala*	Clown knifefish	Chital
Osphronemidae	40) *Colisa fasciata*	Banded gourami	Khailsha
	41) *Pseudosphromenus cupanus*	Spiketail paradisefish	Koi
	42) *Colisa lalia*	Dwarf gourami	Lal kholisha
Pangasiidae	43) *Pangasius pangasius*	Yellowtail catfish	Pangas
Schilbeidae	44) *Ailiichthys punctata*	Jamuna ailia	Kajuli
	45) *Pseudeutropius atherinoides*	Potasi	Batashi
	46) *Ailia coila*	Gangetic alia	Baspata
	47) *Clupisoma garua*	Garua bacha	Gang gaira
Sciaenidae	48) *Otolithoides pama*	Pama croaker	Poa
Siluridae	49) *Wallago attu*	Wallago	Boal
	50) *Ompok pabda*	Pabdah Catfish	Pabda
Sisoridae	51) *Bagarius bagarius*	Dwarf goonch	Baghair
Soleidae	52) *Brachirus pan*	Pan sole	Kathal pata
Synbranchidae	53) *Monopterus cuchia*	Cuchia	Kuchia
Syngnathidae	54) *Ichthyocampus carce*	Crocodile-tooth pipefish	Kumirer khil
Tetraodontidae	55) *Tetraodon fluviatilis*	Green puffer fish	Potka

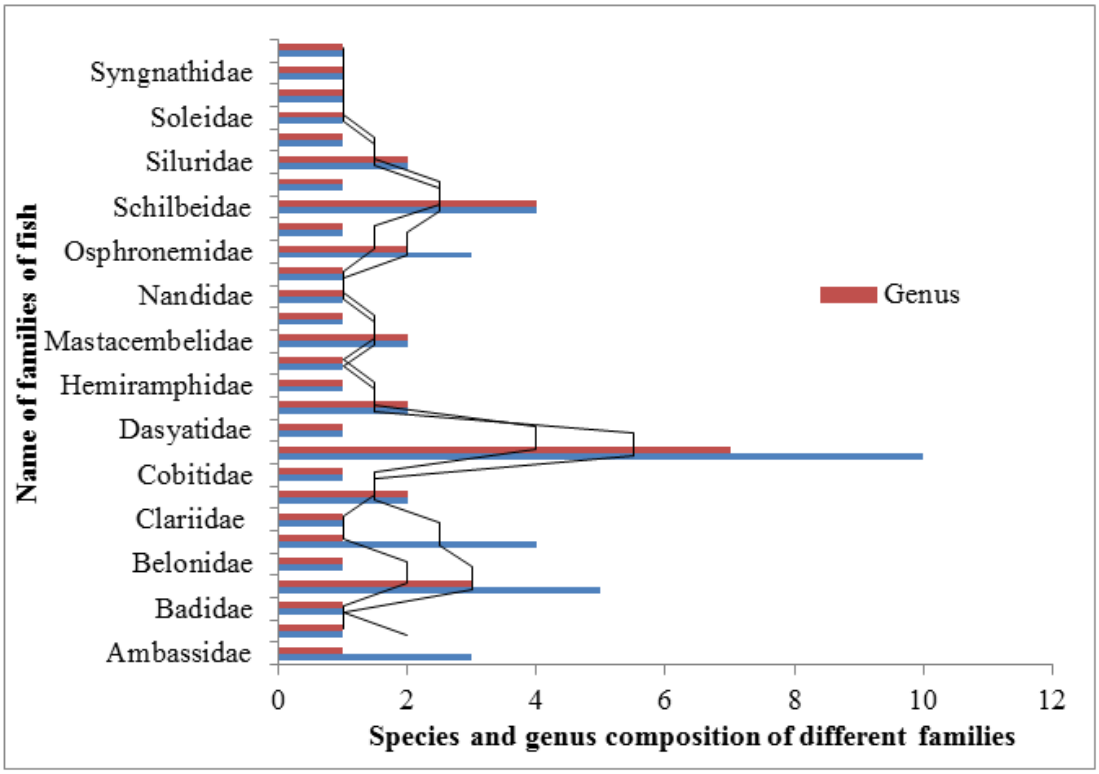

Figure 2. Name of fish families with species and genus composition recorded from Jamuna River

3.4. Socio-demographic Condition of Fisher Community

3.4.1. Age Structure

Depending on age structure, fishermen from this study were categorized under three different group's *viz.*, young, middle and old age fishermen. Among them middle age was composed the highest number (62%) which profession only fishing, whereas only 23% fishermen had age between 10-30 who involved in fishing when got time besides business and rest 15% had age above 50 and their engagement in fishing was recognized as part time and seasonal fishermen (Table 4).

Table 4. Age distribution of Jamuna River fishermen recorded during study period

Age interval	Number of respondents (n=120)	Percent of fishermen (%)	Comments
Young age (10-30)	28	23%	Fishing and other business
Middle age (31-50)	74	62%	Only fishing
Old age (Above 50)	18	15%	Part time and seasonal fishing

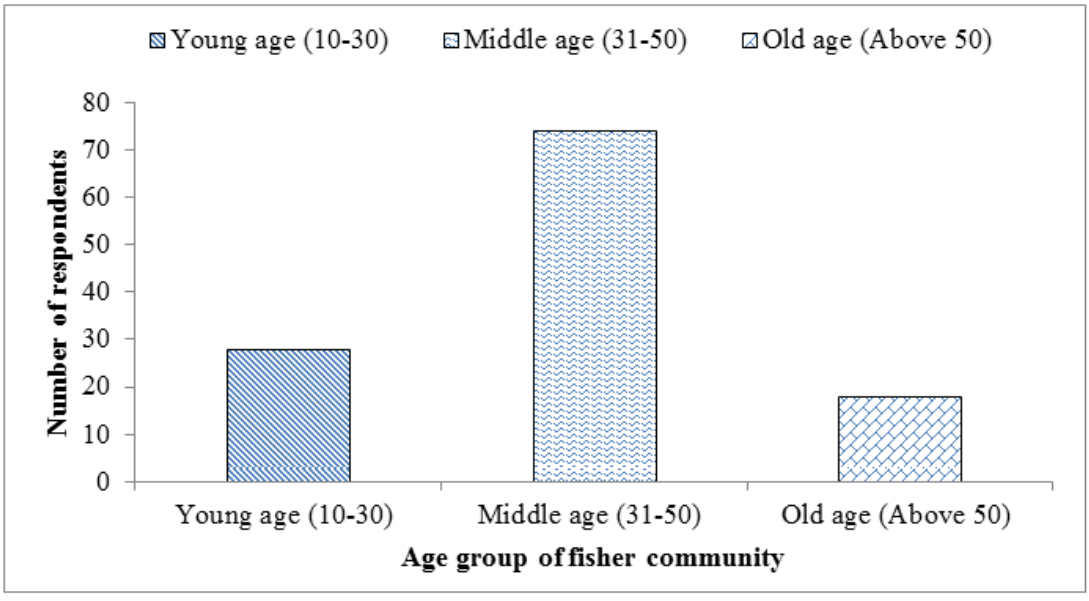

Figure 3. Age distribution of riverine Jamuna fishermen

3.4.2. Religion Status

The study area was dominated by only two religious groups; one group from Muslim and another group from Hindu. The surveyed result indicated that highest number 83 (69%) of fishermen were from Muslim and lowest number about 37 (31%) fishermen from Hindus group engaged in fishing and fish business like activities.

3.4.3. Family Size

In this study, family sizes of fisherman were divided into three categories according to the numbers. Only 18% had members 7-10 as large family. Most families had only (48%) members 5-6 as medium family, 21% had members above 7 as large family and 32% had members 2-4 as small family.

3.4.5. Occupational Status

The present study revealed that about 74 (62%) fishermen were engaged in fishing as their main occupation. Besides, some of them were engaged in fishing where their secondary profession was found as agriculture and their number was 28 (23%) and remaining 18 (15%) fishermen were associated in fishing as a means of recreation purposes (Table 5).

Table 5. Occupational status of Jamuna River fishermen recorded during study period

Occupation categorized	Number of respondents (n=120)	Percent of fishermen (%)	Comments
Fishing	74	62%	Main livelihood occupation
Agriculture	28	23%	Secondary occupation
Others	18	15%	Recreational occupation

3.4.6. Educational Statistics

In the study area it was found that almost all fishers are illiterate. Most of the fishermen (53%) in the study area had no education whereas only small portion of them had primary education level (8%), 16% had class pass certificate and only 23% fishermen can sign (Table 6). From the evaluation it was found that, none of the fishermen had the secondary level education.

Table 6. Educational statistics of Jamuna River fishermen recorded during study period

Educational status	Number of respondents (n=120)	Percent of fishermen (%)	Comments
None	64	53%	Have no education knowledge
Can write name	28	23%	Can sign only
Primary	9	8%	Have educational knowledge
Eight	19	16%	Considerate as literate person

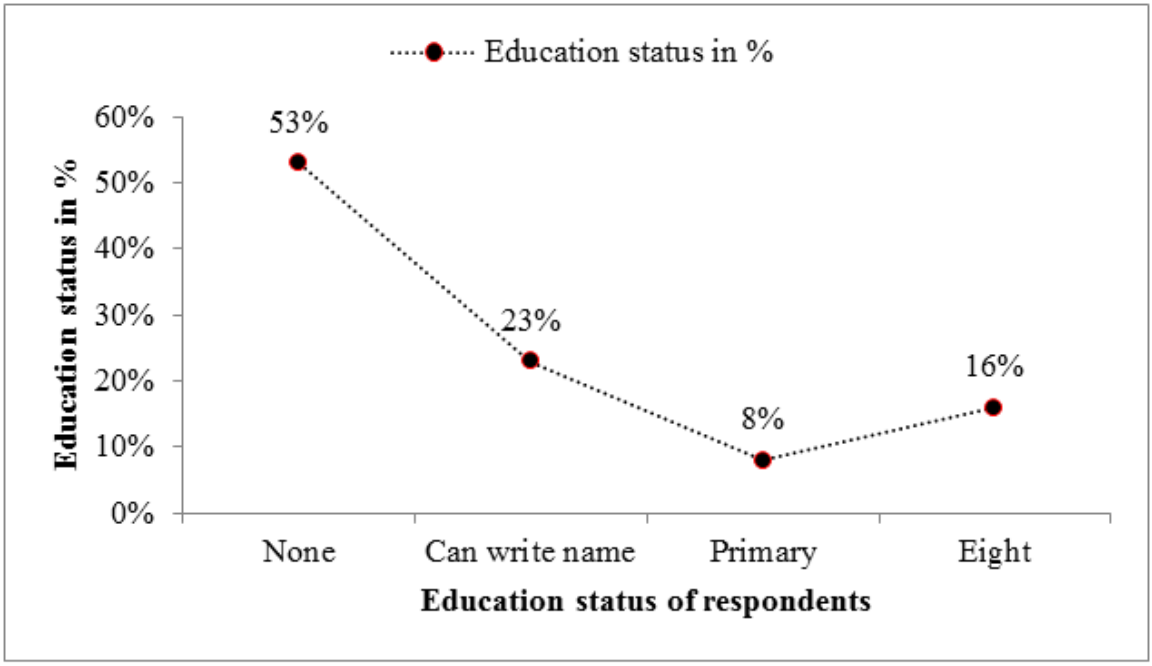

Figure 4. Educational status of riverine Jamuna fishermen

3.4.7. Daily Income

The income of fishermen depends on fishing instruments such as fishing boats, gears, man power, fishing nets, length and mesh size of fishing nets etc. It was identified that 27% fishermen earned approximately 3$ per day classified as very low income level fishers, 33% fishermen earned 3-7$ classified as medium low income level fishers, 20% of fishers earned about 8-12$ classified as low income level fishers, 7% of fishers earned

12- 15$ classified as medium high income level fishers and 13% of fishers earned up to 15-25$ or more where they are owner of fishing boats and nets categorized as high income level fishers.

3.4.8. Sanitary Condition

The fisherman of the study area were facing sanitary problems. It was observed that sanitary conditions of the fisherman were very poor. Only 13% toilets of fisher community were paka (made of brick with cement and well drainage system) and 25% toilets were ring slap and wooden house. 43% fishermen were used normal condition toilets which made from tin, bamboo, straw, coconut leaf etc and rest 18% fishermen had no sanitary facilities (Table 7).

Table 7. Sanitary condition of Jamuna River fishermen recorded during study period

Sanitary status	Number of respondents (n=120)	Percent of fishermen (%)	Comments
Paka	15	13%	Fishers leader and owner
Ring slap and wooden house	30	25%	Low income fishers
Normal	52	43%	Daily income fishers
Open	23	18%	Landless fishers

3.4.9. Electricity Facilities

In the study area it was revealed that only 31% of fishermen had electricity facilities, 8% used solar power to light the house and 61% had no electricity.

3.4.10. Housing Condition

In the investigation area the nature of fishermen house was not good. Because only 7 % house of fishermen was to be found made from brick and cement termed as building house, 27% used tin shade house which known as midlist family of fishermen. Most of the houses were made of wood and tin and it was about 53% and 13% fishermen used normal house which made of straw, bamboo, jute stick etc.

Table 8. Housing condition of Jamuna River fishermen recorded during study period

House condition	Number of respondents (n=120)	Percent of fishermen (%)	Comments
Building	8	7%	Mostly fishers are leader
Tin shade building	32	27%	Middle earning family
Wood and Tin	64	53%	Low income family
Others	16	13%	Lower class family

3.4.11. Health Facilities

The present study revealed that fishermen had been facing severe health problems. It was observed that the highest 48% of fishermen were dependent on upazila health complex, 11% got health service from village doctor, 22% got health service both from upazila health complex and village doctor and rest 19% of the fishermen got health service both from MBBS doctor and upazila health complex.

3.4.12. Refrigerator Facilities

Refrigerator facilities of fishermen were found in very miserable condition. Only 38% fisher family used it in modern era and 62 % of families have no refrigerator.

3.4.13. Electronic Media

There are different types of media elements in these fishing villages. About 23% family used color television, mobile and 16% family used white and black television for recreational purposes and major portion (61%) of fishermen family had no television where they used radio for recreational purpose.

3.4.14. Socio-economic Constraints

Socio economic constraints such as lack of modern fishing gears, fishing vessels, skills of fishing, illiteracy, population pressure, low economic status, exploitation by artistic persons and river pollution are the main problems for the Jamuna River fisher community. Most of the members of fisher family are illiterate and live from hand to mouth. Being very poor their children often go for fishing rather than going school to sustain life. As a result, generation after generation they remain illiterate and not being able to contribute to the betterment of their community. Fishermen live below the poverty line and are struggling to survive with health, nutrition and house buildings materials as their day to day problems.

4. Discussion

4.1. Fishing Gears

Generally fishing gear is one kind of equipment which used for harvesting of aquatic resources especially fish [11]. Fisherman caught fish in the Jamuna River by using different types of gears like Gill net (Current jal, Nagini jal, Chandi jal), Push net (Thela and Moiya jal), Cast net (Jhaki jal), Hook and line (Barshi, Wheel Barshi, Down Barshi/ Hajari Barshi, Daina Borshi, Seine net (Ber jal) etc. Species specificity of fishing net identified that Current jal under the group of Gill net was found to catch fish indiscriminately. Others gears like Ber jal and Chandi jal also responsible for good number of fish species. However, Islam et al. [12] noted only 12 types of fishing gears from Rupsha River which classified into four types: fish net, fish trap, hook and line and wounding gear. Mesh size of the gears varies from net to net, depending on species caught, season and water bodies. This was due to specific gears was constructed to catch specific fish species from an aquatic environment. The present findings of mesh size

of different gears were supported by the study of Rahman et al. [11].

4.2. Fish Assemblages

The river Jamuna is the harbor of plentiful aquatic bio-resources. A total of 55 species under 44 genera and 28 families were identified from River Jamuna. These species of fishes has great influence on the life line of thousands of fisher living around the coast of the river. The present investigation was supported by Rahman et al. [13] whom described total 57 species of fishes under 10 orders and 28 families from Paira River. Another study by Rahman et al. [11] identified 54 species of fishes under 10 orders and 27 families from Rabnabad channel.

4.3. Socio-demographic Condition

Socioeconomic condition of the Jamuna River fishermen were studied in terms of age, religion, education, family size, housing condition, sanitary facilities, health facilities, electricity facilities, occupation, income, recreational facilities etc. Socio economic conditions of the fisher's communities in Jamuna River around Sirajganj district were not satisfactory. The fishermen were deprived of many amenities. Most of the river fishermen (62%) belonged to the age group of 31-50 years (Figure 3). It was found that 83% of the fishermen were Muslims and 31% were Hindus. Bhaumik and Saha [14] reported that age structure of fishermen at Sundarbans was ranged from 20 to 70 years. Religious status of fishermen were studied by Rahmatullah et al. [15] and reported that majority of the fishermen (95%) were the Muslim's and 5% of fishermen were Hindu's with no Buddhist or Christian. The present findings suggested that most of the fishermen had medium size family (4-5 members only). Study on fishermen livelihood from Atrai and Kankra Rivers had 40% families were small (2-4 person), 56% families were medium (5-7 person) and 4% families were large (8 person and above) [16]. Fishing was found as the dominant occupation of riverine fisher community of Jamuna River. The present finding was supported by Alam et al. [17] whom described fishing is the main income source for fishermen. Due to low income level most of the fishermen were found illiterate (Figure 4). Kabir [18] reported that most of the fishermen are illiterate (88%), small portion of them can sign only (2%) and some are primary level of educated (10%). Daily income of fisher community depends on fishing instruments, fishing season, fishing technique as well as fishing effort. For daily income the fisher community in the study area go out of home early in the morning and stay on a day and back home the next day. Das et al. [19] showed that 17 % of the fishermen earn monthly income ranged only 0-25 US$. Sanitary facilities in study area were found unsatisfactory level due to low income and awareness. However, Sharker et al. [20] recorded that, most of the people about 76% are used kacha latrines (Made of bamboo with leaf and inadequate drainage system) and rest of the 17 % used semi pacca (made of tin or wood with inadequate drainage system) and 7% of fisher was used as pacca latrine (made of brick with cement and well drainage system). Majority house of fishermen had no electricity. Hossain et al. [21] point out that about 36% of the fishermen were far away from electricity facilities. The condition of house shows the social status of any family. The total statistical analysis shows that the financial conditions of fishermen are not good forever. Reza et al. [16] reported that about 84% fishermen had kacha house while 16% had semi-paka house and none had paka house [14]. Major portion of fisher family had no recreation facilities. Sumi et al. [22] reported that about 76% of the fishermen had television/ radio and 24% did not use television/ radio for their recreational purpose and also for getting national news.

5. Conclusion

Fisheries sector of Bangladesh are considered as the most profitable business and socio-economic improvement sector. Its role in increasing food supply, generation job opportunities, raising nutritional level and earning foreign exchange has been important. But due to over exploitation, environmental hazards the supply of fish from open water resources are in declining condition which ultimately has a great bad impact on the livelihood of fisher community. The study demonstrated that the economic condition of the fishermen of Jamuna River around Sirajganj Sadar fish landing site was not satisfactory due to lack of education, sanitation, housing condition livelihood facilities etc. Most of fishermen have no enough fishing instruments to capture fish. Moreover, they lack of knowledge about modern fishing gears and technology. They are deprived and dominant by the owner. Due to lack of awareness and qualified doctor their health condition is not good enough. So, government should be awarded to improve their socio economic condition and provide necessary funds during fish banning season which help to increase the fish production and reach the country one step ahead. Besides, NGOs have an important role to improve their livelihood style by giving loan, credits and creating awareness. So, GO and NGO should come forward to take proper steps and assist to improve the socio-economic condition of riverine fisher community.

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Statement of Competing Interests

The authors have no competing interests

References

[1] Kalita, G.J., Sarma P.K., Goswami P., and Rout S., Socio-economic status of fishermen and different fishing gear used in Beki River, Barpeta, Assam, Journal of Entomology and Zoology Studies. 3(1): 193-198. 2015.

[2] Islam, M.S., Fish seed production in Bangladesh. In: Proceeding of the SARRC, Workshop on fish seed production. FRI. Mymensingh. 1-2 pp. 1989.

[3] Hossain, MAR., Wahab M.A., and Belton B., The Checklist of the Riverine Fishes of Bangladesh. Fan Bangladesh. 2: 29-39. 2012.

[4] Department of Fisheries (DoF), Annual report. National fish week compendium. Department of Fisheries, Ministry of Fisheries and Livestock, Government of the People's Republic of Bangladesh. pp: 1-144. July 2015.

[5] Siddiq, M.A., Miah M.I., Ahmed Z.F., and Asadujjaman M., Present Status of Fish, Fishers and Fisheries of Dogger Beel in Hajigonj Upazila, Chandpur, Bangladesh. Journal of Aquatic Science. 1(2): 39-45. 2013.

[6] Chambers, R., and Conway R., Sustainable Rural Livelihoods: Practical and concept for the 21st century, Discussion paper, IDS No. 296. 1992.

[7] Alam, M.F., and Bashar MA., Structure of cost and profitability of small scale riverine fishing in Bangladesh. J Res Prog. 9:235-241. 1995.

[8] Ahmed, N., Government of East Pakistan Directories of Fisheries: Fishing Gear of East Pakistan. East Pakistan Fishery Department, East Pakistan. 1971.

[9] Talwar, P.K., and Jhingran, A.G., Inland Fishes of India and Adjacent Countries, vol. 12. IBH publishing Co. Pvt., Ltd., New Delhi. 1158 p. 1991.

[10] Rahman, A.K.A., Freshwater fishes of Bangladesh, second edition. Zoological Society of Bangladesh, Department of Zoology, University of Dhaka, Dhaka-1000. pp: 263. 2005.

[11] Rahman, M.B., Hoque M.S., and Hasan M.M., Selectivity of Fishing Gears and Their Effects on Fisheries Diversity of Rabnabad Channel of Patuakhali District in Bangladesh, Academic Research International. 6(6) November 2015.

[12] Islam, M.K., Nahid S.A.A., Khan M.S.R., Ahsan M.E., Habib K.A., and Ali M.M., Fishing gears used by the Fishers at Rupsha River in Khulna District, Bangladesh. International Journal of Fisheries and Aquatic Studies. 4(1): 29-33. 2015.

[13] Rahman, M.M., Rahman M.B., Rithu M.N.A., and Hoque M.S., Observation on selectivity of fishing gears and ichthyofaunal diversity in the Paira River of Southern Bangladesh, International Journal of Fisheries and Aquatic Studies. 4(1): 95-100. 2016.

[14] Bhaumik, U., and Saha S.K., Perspective on socio-economic status of the fishermen engaged in fishing in the estuaries of Sundarbans. Environ-Ecol. 12(1): 181-185. 1994.

[15] Rahmatullah, Dr. S.M., Aziz A., Rahman M., Bari M.R., and Alam M.A., Socio-Economic Status of Fishermen of the Jamuna River in Bangladesh. Journal of Humanities and Social Science. 20(10), PP 63-66. 2014.

[16] Reza, S., Hossain M.S., Hossain U., Zafar M.A., Socio-economic and livelihood status of fishermen around the Atrai and Kankra Rivers of Chirirbandar Upazila under Dinajpur District, International Journal of Fisheries and Aquatic Studies. 2(6): 402-408. 2015.

[17] Alam, M.S., Sarker I.C., Salam M.A., Ali H., and Mollah M., Water loading for live fish transportation and socioeconomic status of water loading station owners in three upazilla of Mymensingh district. J Environ Sci & Natural Resources. 2(1): 73-76. 2009.

[18] Kabir, K.M.R., Adhikary R.K., Minar M., Hossain B., and Minar M.H., Livelihood Status of Fishermen of the Old Brahmaputra River, Bangladesh, World Applied Sciences Journal. 16(6): 869-873. 2012.

[19] Das, M.R., Ray S., Kumar U., Begum S., and Tarafdar S.R., Livelihood assessment of the fishermen community in the South west region of Bangladesh. 3(4).353.36. 2015.

[20] Sharker, M.R., Mahmud S., Siddik M.A.B., Alam M.J., and Alam M.R., Livelihood Status of Hilsha Fishers around Mohipur Fish Landing Site, Bangladesh. World Journal of Fish and Marine Sciences. 7(2): 77-81. 2012.

[21] Hossain, F.I., Miah M.I., Hosen M.H.A., Pervin R., and Haque M.R., Study on the Socio-Economic Condition of Fishermen of the Punorvaba River under Sadar Upazila, Dinajpur. Journal of Fisheries. 3(1): 239-244. 2015.

[22] Sumi, K.R., Sharker M.R., Ali M.L., Pattader S.N., Ferdous Z., Ali M.M., Livelihood status of Gher farmers of Beel Dakatia in Khulna district, Bangladesh. International Journal of Aquatic Science. 6(1), 45-53. 2015.