

Socio-Economic Conditions of Atrai River Jolkor Fishermen Community in Naogaon District of Bangladesh

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Abstract: This study was conducted to assess the socio-economic condition of the fishermen community known as Atrai river jolkor located adjacent to Atrai and Raninagar thana of Naogaon district. The fishermen were about 40% young and 30 % middle aged, where the family size of the fishermen varied from 5-11 persons with an average of 6.56. 86 % were Muslims and only one sixth of the fishermen community was Hindus. Among them 46% were illiterate, 34% could sign their name, while 20% were educated. The fishermen in the surveyed area were mostly poor, annual income ranged between 35000-40000 BDT. 78% of their houses were huts made of bamboo with tin shed roof, 20 % were moderate –shacks, and only 2% were brick built buildings. 52% of the fishers families had no adequate sanitation system, where earthen and sanitary latrines at a rate of 40% and 8% respectively. About 70% of the fishermen had little access to pure drinking water. Only 26% of the fishing community had received training on fisheries related activities. The fishing community suffers from various problems such as extortion, lack of fishing gear, inadequate credit facilities, and ineffective marketing system.

Keywords: Socio-economic condition, fishermen community, Atrai River.

Date of Submission: 18-09-2019

Date of acceptance: 03-10-2019

I. Introduction

Bangladesh is one of the densely populated countries of the world [1] and the economy is mainly based on agriculture. The fisheries sector plays an important role in the socio-economic condition, development, nutrition, employment generation and poverty alleviation of large number of people and foreign exchange earnings of Bangladesh. It has been estimated that about 1.28 million peoples are directly related with fisheries activities and fish farmer in Bangladesh are about 3.08 million. Another 12 million indirectly earn their livelihood from fisheries related activities. Bangladesh has the widest spectrum of inland water resources comprising rivers, floodplains, reservoirs, oxbow lakes, ponds, natural depressions and vast coastal and marine water bodies. Bangladesh is rich in fish biodiversity. There are about 260 species of freshwater fish species and 475 marine fish species, 12 exotic fish species, 24 fresh water prawn species and 36 marine species in Bangladesh [2]. Open water inland fisheries play a vital role in production of fish in Bangladesh. According to DoF, 2001 about 13 million people live on the river and floodplain land in Bangladesh. Fishermen are one of the most vulnerable communities in Bangladesh. It was that estimated average per capita annual income of riverine fishermen families was about BDT 2442 which is about 70% lower than the per capita income of the country as whole [3]. Being an isolated community fishermen were deprived of many amenities of life. Actual condition of the fishermen community must be assessed regularly to know the real status of fisheries sector of Bangladesh.

The present study was conducted to know the socio-economic condition of riverine fishermen community known as Atrai river jolkor of the Atrai river of Naogaon district. This study will help to give an idea of their real condition and to take some management measures for the improvement. So the study was undertaken to know the socio-economic condition of the riverine fishermen of the Atrai river of Naogaon district of Bangladesh, to know the existing fish harvest practices of the river, to assess the diversity of fishing gears used in the study area and to make some suggestion for policy making guideline and recommendations for future development of the fishermen of Atrai river.

II. Materials and Methods

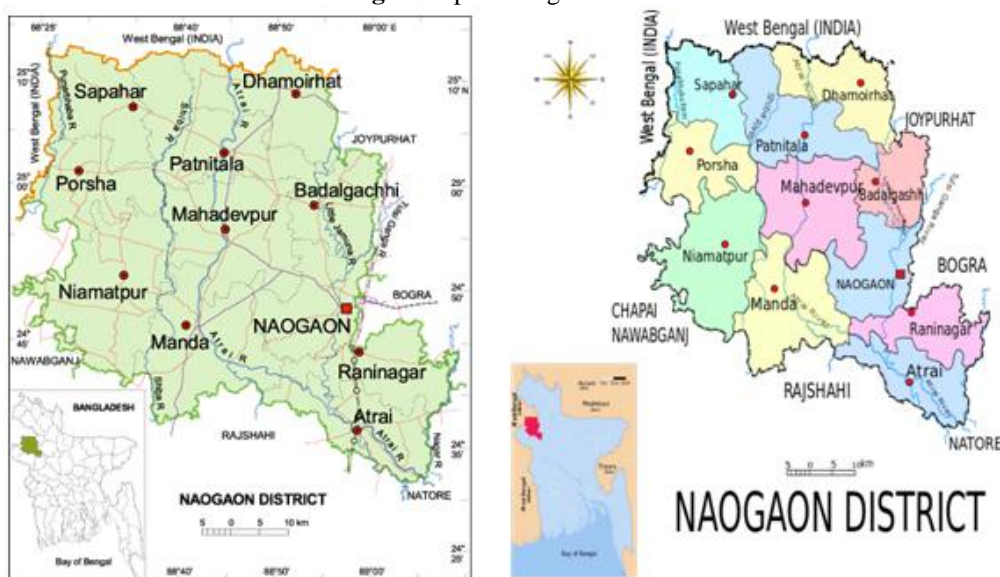
2.1. Study area: The Atrai river jolkor was one of the most important wetlands of fishery resources in Naogaon district. It is famous for its reserve of aquatic life and it is the heart of local fishermen community. It originates in west Bengal, passing through the Dinajpur district, crossed Barind Tract and flows into Chalan beel. The river serves as perennial source of fishing. During monsoon it also causes flooding. The study area included Atrai and Raninagar upazila of Naogaon district. A large number of people lived in the river area whose culture and livelihoods are related with riverine environment. The river also used as irrigation canal for water supply for crop cultivation and fish culture in surrounding area. About 855 professional, 502 occasional fishermen, 663

subsistence fisherman and total fisherman were 2020. There were 8528 number of household within the two sides of the river area.

2.2 Target group: Fishermen: A large number of fishermen were known to be engaged in fish catching in the Atrai river jolkor. Fishing was the main activity of the people. As there are also a number of seasonal fishermen, so the number of fishermen varies in different seasons. Data was collected for 6 months from July 2016 to January 2017. For this study data were collected from 50 randomly selected fishermen.

2.3 Data collection: For data collection from fishermen a questionnaire was prepared in accordance with the objectives set for the study. A draft questionnaire was developed at first and then pretested in the study area. Questions related to socio-demographic condition, income of fishermen, family members and other relevant aspects of river fishing were included in the questionnaire. For the study Participatory Rural Appraisal (PRA) tool such as focus group discussion (FGD) was conducted with fishermen to get an overview of particular issues of socio-economic condition of fishermen. After collecting data through questionnaire interviews and FGD, the information was cross checked for justification. Any contradictory information was recollected from key informants. Cross check interviews were conducted with key persons such as Upazilla Fisheries Officer, AFO and relevant NGO workers for the confirmation of the relevant information which take place in their office. All collected data were edited and coded, summarized, scrutinized and recorded. Finally presented in tabular form, this is simple in calculation, widely used and easy to understand.

Fig. 1 Map of Naogaon district



III. Results and Discussions

Fisherman types: The fishermen depended on fishing for their income and nutrition and their income varied with their capability and quantity of fish catch. They were categorized into three groups on the basis of standard practice. They were: i) Professional fisherman- depended on fishing almost year round for their livelihood; ii) Occasional/Seasonal fisherman- used to catch fish during a particular time of the year as income earning and iii) Subsistence fishermen-used to catch fish for their own consumption only. The distribution of fishermen by category over the study period was shown below in the table 1.

Table 1. Types of Fishermen in the Atrai river jolkor

Types of Fishermen	Number of Fisherman (n=50)	% of Fishermen
Professional	30	60
Occasional	15	30
Subsistence	5	10
Total	50	100

In Tulsiganga river in Joypurhat district 50% professional, 32% seasonal and 18% subsistence fishermen were found [4] whereas 84% full time fishermen and 24% part-time fishermen were found in Tangail district [5]. In the present study, three types of fishermen were found in the Atrai river and on an average 80% of fishermen were involved in daily fishing activities. 60% of the fishermen were professional, 30% were occasional and rest 10% were the subsistence fishermen. With the onset of monsoon fishing activities were increased due to availability of increased number of fish. Participation of increased number of fishermen in the

monsoon period coincides well with the other findings [6,7]. In the Jamuna river fishing community 62 % professional fisherman, 23% seasonal fisherman, and 15% subsistence fisherman were found [8].

Fishing gears: About eight types of fishing gears were operated by the fishermen of Atrai river jolkor. Those gears were mostly of traditional type and some of them were unique for the particular locality and may be classified into three groups such as net, trap and wounding gear (table 2).

Table 2. Fishing gear used by the Atrai river jolkor

Types	Name of the gear
Nets	Ber jal (seine net)
	Current jal (gill net)
	Thela jal (push net)
	Jhaki jal (cast net)
	Dharma jal (lift net)
	Moiya jal
Trap	Bair, Chandi Bair
Wounding gears	Borshi, Konch

Almost all of the above gears were reported to be used in Punorvaba river, Dinajpur [9]. Though some of them are destructive fishing gears and use of current jal (gill net) is banned by the government of Bangladesh but still being used in some wetlands illegally [10]. The fishing gears that were currently being used by the fishermen of Atrai river were similar to those reported [11] where 90 gears under different categories were used by the fishermen in Bangladesh. Fishing gears operated by the fishermen in three floodplains comprised of four groups: fish net (7 types), fish trap (5 types), hook and line (5 types) and spear/harpoon (4 types) [12]. It was observed that the fisherman community of the Jamuna river were lacking appropriate fishing gear and about 25% of them had no appropriate gear in the study area [8].

Socio- economic status of Fishermen:

Occupation: Occupation of fishermen community in the Atrai river jolkor has been presented in table 3. The people of the fishermen community found to be involved in catching fish, many of them were engaged in agriculture and day labor activities as their main occupation and similar findings where some fishermen also involved in mango trading and 26 % in agriculture [13]. It was reported that about 45% income of fishermen come from fishing activities and also from day laboring (28%), agriculture (15%) and livestock and poultry farming (4%) [9]. Fishing as the primary income source of fishermen in Jessore district was also reported [14]. Other than fishing about 50% fishermen of Tulsiganga river involved in agriculture, livestock and poultry, 14%, as day laborer and 24%, others as van puller and business.

Table 3: Occupation of Fishermen community in the Atrai river jolkor

Main Occupation	Number of Fisherman (n=50)	% of total Fishermen
Fishing	30	60
Agriculture	12	24
Day labor	8	16

Religion: Religion plays a very important role in the socio-cultural environmental life of people. In this study it was found that Muslims were absolute majority of the fishermen, about 86% of fishermen were Muslim (table 4). No Buddhist or Christians fishermen were found in the study area. The involvement of Muslims in fishing activities may be understood on the ground of changing socio-economic structure, lack of employment opportunity and realization of river fishing as a potential source of income.

Table 4: Religious status of Fishermen in the Atrai river jolkor

Religion	Number of Fisherman (n=50)	% of Fishermen
Muslim	43	86
Hindu	7	14
Others	0	0

Most of the fishermen communities in Atrai River jolkor were Muslims and only one sixth of the fishers were Hindus. In a study of Padma river in Chapai Nawabganj district 94% fishermen were found to be Muslims and only 6% Hindus. More or less similar results were observed in Tarakanda Upazila of Mymensingh where 85% fish farmers were Muslims and remaining 15% were Hindus and in Jamuna river fishermen community where 95% fishermen were Muslims and the rest was Hindus with no Buddhist or Christian and in Punarvaba river at Dinajpur where 90% fishermen were Muslims and 10% Hindus [15,8,9]. The dominance of Muslims in the fishing community as observed in the present study indicates that Muslims are coming to this

profession in increased number breaking the previous norms and value of the society which once was dominated by the Hindus due to the economic hardship and lack of employment scope in other sectors. But opposite situation were reported where majority (66%) fishermen were Hindus and 34% Muslims [4].

Age structure: Age structure is important in estimating potential productive human resources. In the study it was found that 60% of fishermen were in between 18-30 years of age which indicate an active group participation in fishing (table 5). In several studies, 31-40 years age group were found to be the maximum 50% in Mymensingh, 41.67% in Jamuna, 34% in Joypurhat respectively in and lowest in below 18 years group [15,8,4]. On the other hand fishermen were found to be highest 36% in 21-30 age group and lowest (5%) in above 50 ages among fishermen of Padma river and highest 40% in 36-45 age groups in Punarvaba river in Dinajpur district [13,9].

Table 5: Age structure of Fishermen in the Atrai river jolkor

Age category of Fishermen	Number of Fisherman (n=50)	% of Fishermen
Below 18 years	3	6
18-30 years	30	60
31-40 years	12	24
41-50 years	5	10
51 to above	-	-

The fishermen in the present study were mostly young (60%) and middle-aged (24%) who could afford much energy and labour in catching fish.

Family type: In this fisheries community, families were classified into main types: i) Nuclear family- married couples with children and ii) Joint family- group of people related by blood and/or by law. The family functions as a unit for income generation, consumption, reproduction and social interaction. Here the families were mostly (62%) nuclear type with 1-5 members (table 6). Similar results reported where they found 63% and 60% (1-5 persons) nuclear family in Punarvaba river and Tulsiganga river respectively [9,4] and Low income and high economic pressure is one of the main reason of nuclear family formation [4].

Family size: Family size is the number of persons, either working or not, belonging to the same family. The family size and its composition were related to occupation, income which has an influence on fishing practice. In this study the family size of the fishermen varied from 5 to 11 (average of 6.56) with 62 % have small family (1-5 persons) found in most cases which is similar to the finding (58%) [4]. Similar findings were also observed as 72% family of 4-6 members [13] 60% family of 5-7 members [9] and 45% family of 4-5 members in Mymensingh [2010].

Table 6: Family members of Fishermen family of Atrai river jolkor

Number of Fishermen family members	Number of Fisherman (n=50)	% of Fishermen
1-5 persons	31	62
6-10 persons	17	34
11 to above	2	4

Educational status: There is a close relationship between society and education. Human resource development is largely a function of education. The highest members of fishermen (38%) with primary level education were a remarkable feature of the Atrai river jolkor community (table 7).

Table 7: Educational status of Fishermen in the Atrai river jolkor

Level of education	Number of Fisherman (n=50)	% of Fishermen
No education	10	20
Only can sign	17	34
Primary	19	38
Secondary	4	8

The result of the present study showed that 20% of the fishermen had no formal education at all, 34% could sign their name, while only 8% were educated upto secondary level. The literacy rate as prevailing among the fishermen community of the area is more or less similar to those found elsewhere [6,7]. Among the fishermen of Padma river in Chapai Nawabgonj district, 49% were in primary level of class V and lowest (7%) in secondary level (class VI- X) [13] whereas 50% fishermen were illiterate and only 7% could reach upto secondary level in Punarvaba river fishing community [9]. On the other hand 13.33% had no education, 20% could write their name, 36.67 % were educated upto PSC level, 25% upto JSC level and only 5 % upto SSC

level in Jamuna river fishermen [8]. It might be due to poverty and lack of awareness about education. Similar scenario were observed where 42 % illiterate, 34% can sign, 20% below primary level and 10 % upto secondary level in Tulshiganga river [4].

Income of fishermen: Three types of fishermen were found in the Atrai river jolkor. The average annual income of fishermen ranged from 8000 BDT to 27000 BDT from fishing and from 35000 BDT to 40000 BDT in total (table 8). The income profile is strong economic indicator of national development. The fishermen in the surveyed area were mostly poor, annual income ranged between BDT 30000-38000. Fishermen in Kaliakoir upazila under Gazipur district had annual income ranging from BDT 24000- 40000 [7]. Average annual income of fishermen ranged from BDT 58507- 39131 in Jamuna river area study and only from fishing it was from BDT 7235 for subsistence fishermen to BDT 36542 for professional fishermen [8].

Table 8: Annual income of fishermen in the Atrai river jolkor

Types of Fishermen	Source of income					
	Fishing (BDT)	Agriculture (BDT)	Day labor (BDT)	Small trading (BDT)	Fish selling (BDT)	Total (BDT)
Professional	27000	-	-	-	8000	35000
Occasional	21000	6000	10000	-	-	37000
Subsistence	8000	20000	-	12000	-	40000

Housing condition: Three types of housing conditions were found in the study area; i) Shacks/thatched huts: these were either made of mud using some splits of wood from palm trees on the ceiling or made of straws and some other fibers as thatching materials; ii) Moderate shacks: houses were made of brick walls and tin sheets or straws were supported by bamboos used as a roof; iii) Buildings: brick build houses. The study showed most of the houses (78%) was huts and only 2% were building (table 9).

Table 9: Housing condition of Fishermen family of Atrai river jolkor

Housing condition	Number of Fisherman (n=50)	% of Fishermen
Hut	39	78
Moderate-shack	10	20
Building	1	2

About 78% of the fishermen live in huts having poor sanitation which reflects the deplorable and distress condition of the fishing community and similar scenario were observed in several studies [4,6,7,]. Surprisingly better situation in Jamuna river fishing community was observed where 31.67 % fishermen housing were katcha while 36.67 % were tin shed and 25% were semi-pacca [8]. Fishermen of Padma river in Chapai Nawabgonj district had houses made with mud wall and tin shed, 17 % with tin wall and roof (moderate shacks) [13] whereas 84% fishermen had hut or katcha house while 16% had semi-pucca house in Dinajpur district.

Drinking water facilities: The provision of clean and safe drinking water was considered to be the most valued elements in civilized society. Of the interviewed fishermen, 30 % of the fishermen households used tube-well water for drinking but most of the (70%) fishermen had no tube well water facility and had to depend on other's tube-well for drinking water supply. Better conditions were observed in Jamuna, Punarvaba and Tulshiganga river study area where 53.33%, 100% and 86% fishermen household were dependent on own tubewell respectively [8,9,4].

Sanitary facilities: In the study area the sanitary condition of fishermen community was very poor. Three types of toilets were found to be used by fishermen: i) Katcha- made of bamboo with banana leaf shelter and inadequate drainage disposal, ii) Semi-pucca- made of brick with leaf or tin shelter and inadequate drainage disposal, iii) Pucca- made of brick with good drainage disposal. In this study, only 8 % fishermen household got the Pucca sanitary facilities (table 10). Little better condition in Jamuna river area was observed where 25% toilets were katcha, 60% semi-pucca and 15 % were pucca [8]. More or less similar results were observed where only 12 % fishermen had good hygienic sanitation system[13] and 72% fishermen had katcha sanitation system with only 4 % brick built toilets [4]. The present study oppose to the other findings where 70% of fishers had good sanitary facilities in Brahmaputra river [16].

Table 10: Sanitary facilities of Fishermen community of Atrai river jolkor

Sanitation facilities	Number of Fisherman (n=50)	% of Fishermen
Katcha	26	52
Semi-pucca	20	40
Pucca	4	8

Meal type: Fishermen were found to work hard all the year round to manage their food. In spite of such hard labor they were found to be the poorest community suffering from the scarcity of daily food. During the fishing ban period, the poor fishermen's family suffered food shortage and withstand the situation by reducing the number of meal per day and by consuming less expensive foods as shown in the table below. Though the fishermen used to catch fish but they sold it for money. As a result, most of the time they had very little or no fish to eat and depended on naturally collected vegetables (table 11).

Table 11: Types of food taken by Fishermen family of Atrai river jolkor

Item	Breakfast	Lunch	Dinner	Remarks
Rice / Bread	Daily	Daily	Daily	-
Fish	-	Daily	-	Small quantities
Meat	Once or twice in every two months			-
Milk	Rarely			-
Vegetables	Weekly four/five days			-
Eggs	Rarely			-
Pulses	Occasionally			-

Fish Marketing: In Atrai river jolkor, fish marketing was almost exclusively a preserve of the private sector, where livelihood of a large number of people was associated with fish distribution and marketing systems. The present study indicated that marketing chain from fishermen to consumer passes through a number of intermediaries: local traders, agents/suppliers and retailers. Normally Mola, Dhela, Icha, Rui, Catla, Shingi, Magur, Rani, Tengra, Shorputi, Taki, Baim, Chanda etc were available in local market for sale.

All traders in markets made a considerable amount of profit. However, concerns arise about the sustainable marketing systems due to higher transport costs, poor road and transport facilities, poor supply of ice, lack of money, and poor institutional support. It may be necessary to establish ice factory, improvement of fish transport facilities, provision of governmental, institutional and banking assistance, introduction of fish quality control measures and training of fish traders for sustainable marketing system. Present study indicated that 12% of fishermen directly sold their fish to the consumers, while 28% of them disposed their fish to the retailer and 60% of the fishermen handed over their fish to the wholesalers. Similar observations were found where 10 % directly sold to consumers, 25 % to Retailers and 65 % to wholesalers or Mohajon [9].

Price of the fish: The fishermen received varying amount of price for their captured fishes. The market price varied according to the species, size, quality and season of the year (table 12).

Table 12: Price of fish received by fishermen which were sold at different levels of marketing channels

Local and Scientific name of fish	Price received by fishermen (BDT/Kg)	Price (BDT/Kg) at different levels		
		Arotadar	Wholesaler	Retailer
Rui (<i>Labeo rohita</i>)	61	65	70	82
Catla (<i>Catla catla</i>)	59	64	72	80
Mrigal (<i>Cirrhinus mrigala</i>)	40	46	53	56
Silvercarp (<i>Hypophthalmichthys molitrix</i>)	32	38	43	52
Grass carp (<i>Ctenopharyngodon idella</i>)	38	44	55	64
Bighead carp (<i>Aristichthys nobilis</i>)	37	48	60	68
Common carp (<i>Cyprinus carpio</i>)	53	60	72	75
Sharputi (<i>Barbodes gonnionotus</i>)	48	53	65	72
Chapila (<i>Gudusia chapra</i>)	97	110	120	130
Chela (<i>Chela bacaila</i>)	112	118	130	140
Mola (<i>Amblypharyngodon mola</i>)	160	172	180	192
Tengra (<i>Mystus vittatus</i>)	69	77	85	100
Golsha (<i>Mystus cavasius</i>)	100	110	130	160
Kholisha (<i>Colisa fasciatus</i>)	69	74	80	94
Punti (<i>Puntius ticto</i>)	35	46	54	66
Shoal (<i>Channa striatus</i>)	141	157	170	200
Taki (<i>Channa punctatus</i>)	39	43	48	60
Boal (<i>Wallago attu</i>)	180	200	215	245
Chitol (<i>Notopterus chiltala</i>)	165	185	196	230
Foli (<i>Notopterus notopterus</i>)	70	78	94	100
Ayr (<i>Mystus aor</i>)	205	221	240	272
Bheda (<i>Nandus nandus</i>)	110	116	130	140
Bele (<i>Glossogobius giuris</i>)	80	87	94	98
Rani (<i>Botia Dario</i>)	65	73	80	87
Guchi baim (<i>Macrogathus spp</i>)	63	76	90	115
Chanda (<i>Chanda nama</i>)	50	59	66	75
Kakila (<i>xenentodon cancila</i>)	66	78	85	100
Shing (<i>Heteropneustes fossilis</i>)	151	165	185	240
Magur (<i>Clarias batrachus</i>)	138	152	172	221
Darkina (<i>Esomus darkinus</i>)	49	57	70	82

Average price	86.06	95.73	106.80	123.20
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The price of the small fishes such as tengra, chapila, baim, mola, chela, bheda were much higher than other big sized fishes. Generally price of the above fishes at consumer's level varied between BDT 130-160. Usually the fishermen obtained maximum price when the fishes were directly sold to the consumers. Fish price received by the fishermen were found to be decreased with the length of the marketing channel, shorter is the marketing channel, more the price. Fishermen received comparatively less price when the fishes were sold to the wholesalers. Further fish price varied with the season, the low price was much higher during May to August when they were in short supply and this trend agrees with other report [9].

IV. Conclusion

This fishing community suffered from various problems such as extortion, lack of fishing gear, inadequate credit facilities, ineffective marketing system etc. These problems need immediate attention and solution to improve the socio- economic condition of the Atrai river jolkor fishermen community. Further more elaborate research can be initiated to take the suitable integrated social or economic scheme for the betterment of the fishermen community of the Atrai river.

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Wahida Haque" Socio-Economic Conditions of Atrai River Jolkor Fishermen Community in Naogaon District of Bangladesh" IOSR Journal of Agriculture and Veterinary Science (IOSR-JAVS) 12.10 (2019): PP- 35-41.