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Research Article

Comparative Socio-economic Study with a Review on Fisherman's Livelihood Around Tulsiganga River, Joypurhat, Bangladesh

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Abstract

Background and Objectives: Better livelihood of fisherman bring economic advancement in Fisheries. So, the present research surveyed the socio-economic condition of the fisherman around Tulsiganga river. **Methods:** Data were collected by Questioner review and focus group discussion among 50 fishermen and tabulated for percentage calculation with a comparison to other researchers results. **Result:** There were 50 fishermen categorized into three types engaged in fishing. Among them, majority (50%) were professional. The 50 respondents against some socio-economic criteria, it was found that the maximum fishermen had nuclear family and from hindu caste. Among the total fishermen, the maximum respondents 34% fall in to the age group of 31-40, about 42% of them were illiterate, 72% had hut, only 30% used sanitary latrine, 34% suffered in malnutrition, 82% took disease treatment from nearby pharmaceuticals shops, only 14% had income level above 200 USD/ Month. Great development was found that 72% had electricity connection; 86% had owned tube-wells for drinking water. The educational status, housing and sanitary condition of the fishermen were also found in poor condition. **Conclusion:** Fishermen were changing their livelihood from fishing because of declining capture fisheries. Mostly 50% fishermen have agriculture as alternative occupation. Recommended measures should take by government to improve their livelihood.

Key words: Social status, Tulsiganga river, unemployment, review work, community survey

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Data Availability: All relevant data are within the paper and its supporting information files.

INTRODUCTION

Fisheries resources, specially fish plays a vital role in the socio-economic development of Bangladesh¹. Many Fish such as tilapias are deemed as the source of animal protein in the diet of many people of the world². Alike this, Fisheries sector of Bangladesh creates the opportunity of direct and indirect livelihood of about 12 million people³. But fishermen are one of the most vulnerable communities in Bangladesh. Traditionally, fishing is an olden practice of catching fish in Bangladesh. About 11 million people are directly or indirectly earn their livelihood out of activity related to fisheries. The total number of fishermen according to fiscal year 2012-2013 is 13.16 lakh of which inland fishermen, 8.00 lakh and marine fishermen, 5.16 lakh⁴. Here, the fishermen lead a poor live. It expressed by the socio-economic status (SES) based on income, education and occupation of fishermen in that area.

Fishermen in many parts of Bangladesh catch fish with their hands and by some traditional fishing gear. Due to the rapid growth of population and expansion of agricultural, irrigation, domestic and industrial activities and municipal wastes, an unbalanced heavy pressure has put on the fishery resources of the rivers over the decades⁵.

The rivers, the open water resources of Bangladesh play an important role in the economy of the country. From ancient time, river was the main sources of fish from where people consume and mitigate their demand such as Tulsiganga river.

The life and SAS of the fishermen are deeply associated with the overall fisheries resources of the Tulsiganga river. Until now some researchers such as Karim⁶ and BARC⁷ have studied rural life and socio-economic condition of the rural people in general. But they have not given any extra emphasis on the lifestyle and socio-economic condition of the fisher folk.

So, considering the point above, the present study was conducted on the fishermen community around the Tulsiganga river in Joypurhat, Bangladesh. The river has an area of 121.45 ha. The river flowing from the north to the south, have its ultimate destination to Atrai river linked with Chotto (Small) Jamuna river. This river played a significant role in capture fisheries so that it must have a major influence in nearby fisherman's livelihood. However, no bio diversity work as well as no socio-economic study was done in this area before.

Accounting these facts, the present study was conducted to elaborate the socio-economic status of fishermen near this river and have a moderate comparison with other research.

MATERIALS AND METHODS

Study area: This study was continued from May, 2014 to December, 2014 for a period of 8 months around Tulsiganga river. Four villages (Amira, Mahmudpur, Panisara and Rasulpur) around the river⁸ Tulsiganga of Joypurhat, Bangladesh (Fig. 1) was selected for present survey. However, the river crossed the area as a single stream without any distributary.

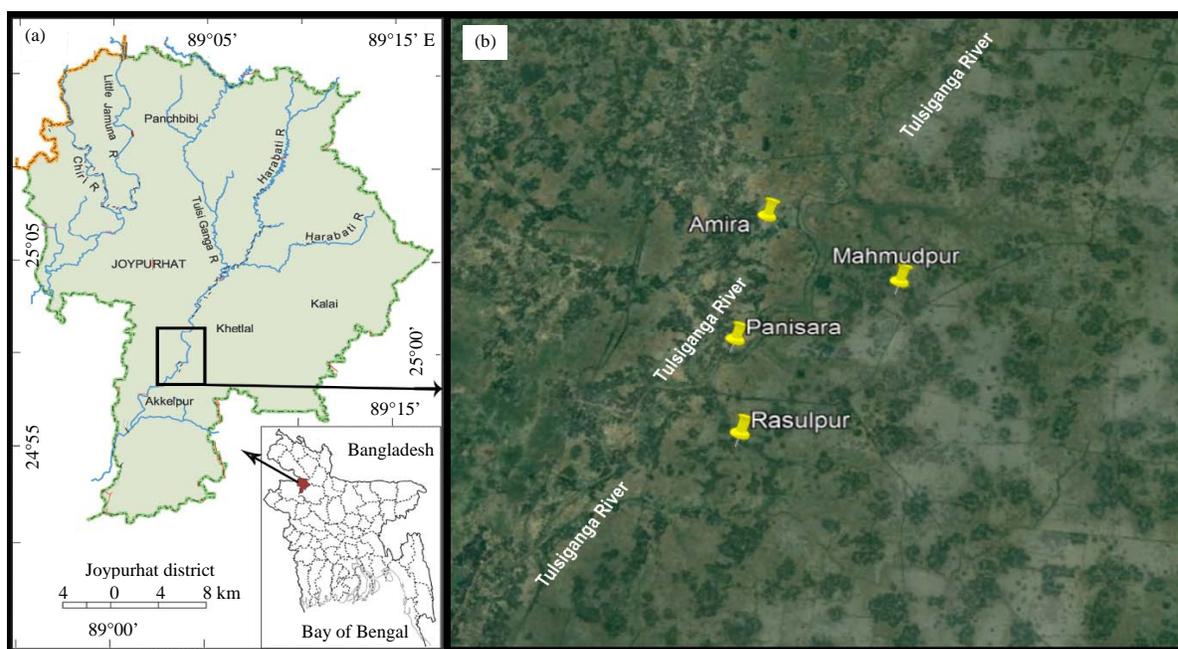


Fig. 1(a-b): Study area, (a) Map of the area and (b) Google earth view⁸ around tulsiganga river

Preparation of questionnaire: For the assessment of socio-economic condition of fishermen interview schedules were prepared to collect information about household demography, literacy, health, sanitation, land ownership, income, savings, credits etc. A structured questionnaire was formed containing socio-economic parameters and the living and survival strategies⁹.

Questionnaire interviews (QI): For questionnaire interviews, random sampling method was followed Henry¹⁰ and Das *et al.*¹¹. In sample size, 50 fishermen were selected randomly from the study area. Fishermen were interviewed at the river sides and at their houses according to their availability. About half an hour interview time was taken from each fisherman.

Focus group discussion (FGD): For the present study, Participatory Rural Appraisal (PRA) tool such as Focus Group Discussion (FGD) was conducted with fishermen¹². FGD was used to get an overview of issues such as existing fishing systems, socio-economic condition of fishermen etc.

Cross-cheek interviews: Cross-cheek interviews (CI) were conducted with key persons such as Upazila Fisheries Officer (UFO) and other fisheries officers.

Secondary data collection method: To fulfill the target, the data which could not be collected through the primary method; was collected by using secondary data collection method.

Data Processing, analysis and presentation: The collected data were summarized and scrutinized carefully before the actual tabulation. The processed data were transferred to a master sheet from which classified tables were prepared revealing the finding of the study. For processing and analysis purpose, MS Excel 2010 had been used. Tables, figures etc. have been used for presentation of results. Preparation of the study report has been done in two phase-draft phases and final phase. Percentage analysis were done to make a clear view of every status.

RESULTS AND DISCUSSION

Human capital

Type of fishermen: The fishermen who catch fish in Tulsiganga river were categorized into three groups. Professional fishermen: The fishermen who depends on fishing almost year round for their livelihoods. Seasonal professional fishermen: The fishermen who catch fish during a particular time of the year for income source. Subsistence fishermen: The fishermen who catch fish for their own consumption. Among 50 fishermen, the highest (50%) was professional fishermen than subsistence (18%) and seasonal (32%) one.

Ahmed¹³ found 84% full time fishermen with 24% part-time in Tangail which indicates that river plays a great role on occupation. Besides these, the present study found another type of fishermen found there, that were categorized into intentional fishermen who catch fish as group basis including very small to adult. So, diversity of fishermen category was found here.

Type of family: The usual definition of family is group of people living together in a particular home. It is consisted of husband wife and with or without children. The family provides economic support for its members. In present study, most of the fishermen families were nuclear family which was similar (Table 1) to Rahman *et al.*¹⁴ and Hossain *et al.*¹⁵ But it was adverse in the report of Islam *et al.*¹⁶, Khatun *et al.*¹² and Ali *et al.*¹⁷. However, Sheikh and Goswami¹⁸ found a higher (Table 1) extended family, which was low in present study.

Dutta¹⁹ classified the family types as nuclear, extended and joint family. Low income and high economic pressure is one of the main reasons of forming nuclear family. So, nuclear family is higher in this area (Table 1).

Family size: Having a better view of family structure and distribution, all families of study area were categorized into three sections on the basis of member numbers of family i.e., small family (members up to 5), medium family (6-10 members) and very large family (10+ members). Similar to Bhuyan *et al.*⁹, Rahman *et al.*¹⁴ and Ali *et al.*¹⁷ small family

Table 1: Family type of the fisherman in the study area

Family type (%)	This study	Hossain <i>et al.</i> ¹⁴	Islam <i>et al.</i> ¹⁶	Khatun <i>et al.</i> ¹²	Ali <i>et al.</i> ¹⁶	Rahman <i>et al.</i> ¹⁴	Sheikh and Goswami ¹⁸
Nuclear	60	62	12	48	35	57.5	47.5
Joint	26	38	72	52	65	42.5	-
Extended	14	-	16	-	-	-	52.5
Area	Joypurhat	Chandpur	Chapai Nawabganj	Noakhali	Patuakhali		Assam, India
Country	Bangladesh						

Table 2: Family size of the fisherman in the study area

Family size (%)	This study	Hossain <i>et al.</i> ¹⁵	Bhuyan <i>et al.</i> ⁹	Rahman <i>et al.</i> ¹⁴	Ali <i>et al.</i> ¹⁷	Goswami <i>et al.</i> ²⁰	Kalita and Deka ²¹
Small family (members up to 5)	58	45	81	62.5	65	14.17	25
Medium family (6-10 members)	28	46	19	32.5	30	85.83	40
Very large family (10+ members)	14	9	-	5	5	-	35
Area	Joypurhat	Chandpur	Narsingdi	Patuakhali		Assam, India	
Country	Bangladesh						

was found in majority cases (Table 2) where medium family was reported higher in Hossain *et al.*¹⁵, Goswami *et al.*²⁰ and Kalita and Deka²¹ (Table 2).

Age distribution: In the present study, the maximum respondents fall in to the age group of 31-40 which was merely similar (Table 3) to Rahman *et al.*¹⁴, Bhuyan *et al.*⁹, Hossain *et al.*²², Hossain *et al.*¹⁵, Khatun *et al.*¹², Sheikh and Goswami¹⁸ and Goswami *et al.*²⁰. Demography of the surveyed population is vitally important for most of the social investigation. The age distribution of the fishermen related to fishing according to various age groups are an important feature in taking decision and maintaining profitable operation of fishing. Lower age range was observed (Table 3) in below 20 (Rahman *et al.*¹⁴ and Islam *et al.*¹⁶ and above 50 (Ali *et al.*¹⁷ and Islam *et al.*¹⁶. While interview with the fishermen, it was found that this happened due to two reasons. At first, 31-40 years age group is considered as the active age group and secondly the young generation is no longer interested in fishing rather in study.

Religious status: Bhuyan *et al.*⁹ in the sampling areas, majority of fishermen were Hindus and no female fisherman was found (Table 4). The religion and caste form an important basis Siddiqui²³ in differentiating individuals in the process of fishing and trading. At the study area, there were no exception found but the number of Muslim fishermen are now increasing in fishing in the study areas of the river Tulsiganga as well as in other regions Khatun *et al.*¹², Islam *et al.*¹⁶, Hossain *et al.*¹⁵, Ali *et al.*¹⁷ and Rahman *et al.*¹⁴.

Literacy level of the fishermen: Nabi²⁴ stated that a minimum educational background is necessary for the success in utilizing natural resources, maintaining of good hygiene and being successful in family planning programme. Roy and Dorairaj²⁵ surveyed literacy rate among the fishing community at 10 localities of Andaman which varied between 19.85-66.0%. In the sampling areas it was found that majority of the fishermen 42% is illiterate (Table 5) which was also reported by Ali *et al.*¹⁷, Bhuyan *et al.*⁹, Kalita and Deka²¹ and Sheikh and Goswami¹⁸. But Khatun *et al.*¹² was reported a higher number (Table 5) of educated fishermen. Rahman²⁶

reported that the fishermen are socially, economically and educationally disadvantaged and lack of their financial resources. In Bangladesh, most of fishermen were illiterate (Table 5) and few have primary level of education in study areas where in Assam of India, the education rate of fisherman is quite low^{17,20,21}. In some village studies, Karim⁷ and BARC⁸ revealed that it is the common feature in our rural life.

Disease: In the study area, majority were suffered from cold and fever (Table 6) which is also reported by Bhuyan *et al.*⁹ and Shamima²⁷. Suffering from malnutrition is also a little high in fishermen community (Table 6).

Earners-dependent ratio: The dependency ratio is determined through dividing the total number of dependent members by the total number of earning members of each family. The percentage of earning members of each family. Bangladesh Bureau of Statistics (BBS)²⁸ reported that fishing households in Bangladesh have higher family size than the national average. So it was obvious that the dependent member is much higher than the average level. In the study area the percentage of earning member and dependent members of the fishermen households was 1:2.46 (Table 7). This ratio was lower comparably than to the national dependency ratio of the rural people. This low dependency ratio was caused due to economic insolvency of the poor fishermen, unsuccessful family planning program and lack of awareness etc.

Occupational status other than fishing: Fishing is the only one profession observed among the fishermen. The subsistence, seasonal fishermen and sometimes professional fishermen are engaged in various professions as a part time basis in few months of the year when it is lowest peak season for fishing. A large number of fishermen engaged in agricultural work (Table 8) which was also supported by Hossain *et al.*²², Rahman *et al.*¹⁴ and Goswami *et al.*²⁰, Islam *et al.*¹⁶ showed a large number of fishermen were also involved in Livestock and poultry farming as well. From Table 8, day labor found as a common occupation in this study as well as from other research.

Table 3: Age distribution of respondents in the study area

Age group (years) (%)	This study	Ali <i>et al.</i> ¹⁶	Rahman <i>et al.</i> ¹⁴	Bhuyan <i>et al.</i> ⁹	Hossain <i>et al.</i> ¹⁵	Hossain <i>et al.</i> ²²	Islam <i>et al.</i> ¹⁶	Khatun <i>et al.</i> ¹²	Kalita and Deka ²¹	Goswami <i>et al.</i> ²⁰	Sheikh and Goswami ¹⁸
Below 20	10	10	5 (18-25)			11	(7-15)	9	28 (20-35)	-	25 (18-30)
21-30	16	60 (21-40)			20 (up to 30)	26 (16-30)	36		18 (approx.)	39.17 (<36)	52.5 (31-50)
31-40	34	-	77.5 (26-45)	45 (24-45)	43.3	54 (31-45)	25	46 (36-50)	32 (approx.)	45 (36-50)	15 (51-60)
41-50	24	25	17.5 (>45)		20	9 (>45)	25		37.5		7.5 (>61)
Above 50	12	5			16.67		5	26 (51-65)	12.5	15.83	
Area	Joypurhat, Bangladesh	Patuakhali	Narsingdi	Chandpur	Chapai Nawabganj	Noakhali	Assam, India				

*(in brackets): Age range of other researchers

Table 4: Religious status of fishermen in the study area

Religion (%)	This study	Khatun <i>et al.</i> ¹²	Islam <i>et al.</i> ¹⁶	Hossain <i>et al.</i> ¹⁵	Bhuyan <i>et al.</i> ⁹	Ali <i>et al.</i> ¹⁷	Rahman <i>et al.</i> ¹⁴
Hindus	66	18	6	10	63	20	0
Muslims	34	82	94	90	27	75	100
Area	Joypurhat, Bangladesh	Noakhali	Chapai Nawabganj	Chandpur	Narsingdi	Patuakhali	

Table 5: Literacy level of the fisherman in the study area

Level of education (%)	This study	Ali <i>et al.</i> ¹⁷	Rahman <i>et al.</i> ¹⁴	Bhuyan <i>et al.</i> ⁹	Hossain <i>et al.</i> ²²	Hossain <i>et al.</i> ¹⁵	Islam <i>et al.</i> ¹⁶	Khatun <i>et al.</i> ¹²	P. Kalita and Deka ²¹	Goswami <i>et al.</i> ²⁰	Sheikh and Goswami ¹⁸
Illiterate	42	60	20	71	33.3	35	12	18	62.5		62.5
Capable to sign	28			4		36	32		12.5		37.5
Below primary level	20	35	32.5	13	50	20	49	16	22.5	75	
Secondary level	10	5	17.5	9	10	9	7	42	2.5	14	
Area	Joypurhat, Bangladesh	Patuakhali		Narsingdi	Chandpur		Chapai Nawabganj	Noakhali			

Table 6: Disease of fishermen in the study area

Name of disease (%)	This study	Bhuyan <i>et al.</i> ⁹	Shamima ²⁷
Colds fever	46	50	52
Diarrhea	14	50	48
Malnutrition	34		
Others	06		
Area	Joypurhat	Narsingdi	Khulna
Country	Bangladesh		

Table 7: Earners-dependent ratio of the fisherman in present study

Family member (%)	Total family number (n = 50)		Ratio (Earner: Dependent)
	No.	This study	
Total earners	75	28.84	1:2.46
Total dependents	185	71.16	

Analyzing the human capital of this area, the status and condition of fishermen in the study area are not adequate as a manageable livelihood up to poverty line.

Physical capital

Housing condition: Alike the observation from other research (Table 9), the majority of the houses of the fishermen are made of mud and the roof is made of tin and straw in study area. In nuclear families, most of them have single living rooms and have no separate kitchen or yard kitchen where in joint families have more than one rooms and shared a common kitchen. DFID²⁹ reported about the fishermen of Bangladesh and stated that they are socially disadvantaged and lack in fulfilling their basic needs. A higher number of semi brick-built houses were reported by Hossain *et al.*²² and Goswami *et al.*²⁰ from India.

Use of electricity: Similarly, as (Bhuyan *et al.*⁹, Khatun *et al.*¹² and Sheikh and Goswami¹⁸) majority of the fishermen have electricity connection (Table 10) in the study areas which is inverse according to Ali *et al.*¹⁷. It is the remarkable development of fishermen of the study area. Shamima²⁷ is also revealed that most of Gallamary fish farmers use electricity.

Sources of drinking water: For collection of drinking water majority of the fishermen family depend on tube-well established by themselves which was also reported by Khatun *et al.*¹² and Bhuyan *et al.*⁹. However, only 14% collected tube well water from neighbors tube-well or established by the local government (Table 11). On the other hand, Hossain *et al.*¹⁵ and Ali *et al.*¹⁷ reported a large number collected water from the neighbors tube-well and government tube-wells in Bangladesh.

Sanitation: In the study area, less fishermen have full brick-built latrine for defecation (Table 12) which was also

Table 8: Occupational status of the fishermen other than fishing in the study area

Occupational status other than fishing (%)	This study	Bhuyan <i>et al.</i> ⁹	Hossain <i>et al.</i> ²²	Hossain <i>et al.</i> ¹⁵	Islam <i>et al.</i> ¹⁶	Khatun <i>et al.</i> ¹²	Rahman <i>et al.</i> ¹⁴	Goswami <i>et al.</i> ²⁰	Kalita and Deka ²¹
Agriculture	50	10	43.3	2	26	38	72.5	57	5
Livestock and poultry	14	-	-	-	54	0	27.5	-	-
Day labor	24	17	3.33	42	-	10	-	12	22.5
Business	04	-	3.33	16	8	26	-	42	10
Van puller	08	-	-	19	-	-	-	-	-
Area	Joypurhat	Narsingdi	Chandpur		Chapai Nawabganj		Noakhali		Assam, India
Country	Bangladesh								

Table 9: Housing condition of the fisherman in the study area

Housing condition (%)	This study	Khatun <i>et al.</i> ¹²	Islam <i>et al.</i> ¹⁶	Bhuyan <i>et al.</i> ⁹	Ali <i>et al.</i> ¹⁷	Hossain <i>et al.</i> ¹⁵	Hossain <i>et al.</i> ²²	Goswami <i>et al.</i> ²⁰	Sheikh and Goswami ¹⁸	Kalita and Deka ²¹
Hut	78	78	88	65	75	89	36.67	42	85	72
Semi-brickbuilt	18	15	8	35	20	11	56.67	52	15	18
Full Brickbuilt	04	7	4	5	5	6.66	6.66	6	6	10
Area	Joypurhat	Noakhali	Chapai Nawabganj	Narsingdi	Patuakhali	Chandpur		Assam, India		
Country	Bangladesh									

Table 10: Use of electricity by the fisherman in the study area

Electricity (%)	This study	Ali <i>et al.</i> ¹⁷	Shamima ²⁷	Bhuyan <i>et al.</i> ⁹	Khatun <i>et al.</i> ¹²	Sheikh and Goswami ¹⁸
Have connection	72	35	70	52	74	77.5
Have no connection	28	65	30	48	26	22.5
Area	Joypurhat	Patuakhali		Narsingdi	Noakhali	Assam, India
Country		Bangladesh				

Table 11: Sources of drinking water of the fisherman in the study area

Sources of drinking water (%)	This study	Khatun <i>et al.</i> ¹²	Hossain <i>et al.</i> ¹⁵	Bhuyan <i>et al.</i> ⁹	Ali <i>et al.</i> ¹⁷
Own tube-well	86	62	5	52	10
Neighbors tube-well	14	38	95	48	70
Area	Joypurhat	Noakhali	Chandpur	Narsingdi	Patuakhali
Country	Bangladesh				

Table 12: Sanitation status of the fisherman in the study area

Sanitation facility (%)	This study	Ali <i>et al.</i> ¹⁷	Bhuyan <i>et al.</i> ⁹	Hossain <i>et al.</i> ²²	Hossain <i>et al.</i> ¹⁵	Islam <i>et al.</i> ¹⁶	Khatun <i>et al.</i> ¹²
Hut	72	20	65	6.7	60	64	6
Semi brick built	24	60	35	30	40	24	68
Full brick built	04	20		63.3	-	12	26
Area	Joypurhat	Patuakhali	Narsingdi	Chandpur	Chapai Nawabganj	Noakhali	
Country	Bangladesh						

Table 13: Nature of disease treatment of the fisherman in the study area

Health service (%)	This study	Ali <i>et al.</i> ¹⁷	Bhuyan <i>et al.</i> ⁹	Khatun <i>et al.</i> ¹²
Village doctors	82	30	80	74
Govt. medical hospitals	14	50	20	22
Private clinic	04	20		4
Area	Joypurhat	Patuakhali	Narsingdi	Noakhali
Country	Bangladesh			

Table 14: Land properties of the fisherman in the study area

Land in decimal (%)	This study	Rahman <i>et al.</i> ¹⁴	Islam <i>et al.</i> ¹⁶	Hossain <i>et al.</i> ¹⁵	Bhuyan <i>et al.</i> ⁹
Landless	08	-	9	43	61
1-5	12	7.5 (0-20)	70	32	39
6-30	40	57.5			
31-50	28	(20-50)		25	
Above 50	12	35	21		
Area	Joypurhat	Patuakhali	Chapai Nawabganj	Chandpur	Narsingdi
Country	Bangladesh				

*(in brackets) = decimal range from other researchers

revealed by Ali *et al.*¹⁷ and Islam *et al.*¹⁶. But it is higher in some other studies Hossain *et al.*²² and Khatun *et al.*¹². According to Rahman²⁶ marine fishermen of Bangladesh live below the poverty line and struggling to survive with health, nutrition and sanitation. They has lack of consciousness about the hygiene and sanitation as a result they suffer from diseases in most of the time.

Nature of disease treatment of the fishermen: A family may be said to be well served in health facilities when all the members have sustainable access to the medical care needed to be free of preventable health problems and to have health debilitating problems addressed by component health care professional Albrecht *et al.*³⁰. Most of the fishermen were dependent on village doctors in study area (Table 13)

which was also reported by Bhuyan *et al.*⁹, Khatun *et al.*¹² and Ali *et al.*¹⁷ showed that the number government hospital treated people were increasing in Patuakhali, Bangladesh.

As a result, the physical capital is not sufficiently structured in the study area to meet the healthy life. More governmental focus is needed here.

Natural capital

Landed properties of the fishermen: According to Hossain *et al.*¹⁵ and Bhuyan *et al.*⁹ the number of landless people was high in fishermen community which found less in present study (Table 14). Rahman *et al.*¹⁴ and Islam *et al.*¹⁶ reported a high number of fishermen who had land more than 50 decimals (Table 14).

Table 15: Income level of the fisherman in the study area (BDT)

Income level (USD, %)	This study	Bhuyan <i>et al.</i> ⁹	Rahman <i>et al.</i> ¹⁴	Islam <i>et al.</i> ¹⁶	Khatun <i>et al.</i> ¹²	Kalita and Deka ²¹	Goswami <i>et al.</i> ²⁰	Sheikh and Goswami ¹⁸
Upto 100	60	72	15	45	46	47.5	93.34	85
101-200	26	28	82.5	50	34	47.5	3.33	15
Above 200	14		2.5	5	20	5	3.33	
Area	Joypurhat	Narsingdi	Patuakhali	Chapai Nawabganj	Noakhali	Assam, India		
Country	Bangladesh							

Table 16: Credit operation of the fisherman in the study area

Sources of borrowing money (%)	This study	Khatun <i>et al.</i> ¹²	Quddus <i>et al.</i> ³²	Sheikh and Goswami ¹⁸
None	22	92	53	80
Neighbors	08	2	13	20
Relative	10			
Local NGO's	44			
Co-operative	16			
Bank		6	34	
Area	Joypurhat	Noakhali	Dhaka	Assam, India
Country	Bangladesh			

Table 17: Recreational accessories of the fisherman in the study area

Source of recreation	No. of family	This study (fishermen, %)
None	06	12
Radio	09	18
Cassette player	15	30
Television	13	26
Radio, cassette player and television	07	14
Total	50	100

Financial capital

Income level of the fishermen: The number of low income (upto 100 USD) ranged people were higher in study area (Table 15). Bailey³¹ noted that fishermen and their families in South and Southeast Asia often are considered to be among the poorest of the poor which was also supported by other researchers (Table 15). It increased a little in range 101-200 USD according to Rahman *et al.*¹⁴ and Islam *et al.*¹⁶ from Bangladesh. The income of fishing community was still lower in Assam, India than others.

Social capital

Credit operation: Credit is crucial for economic development. Possibly very few facilities are being given in the fish business sector rather than other sectors. Therefore, extreme poverty and an extensive scarcity of saving and investments were even persistent in fish trading. It was found that less percentages of fishermen did not take any loan (Table 16) which is higher in number according to Khatun *et al.*¹², Quddus *et al.*³² and Ruddle³³ stated that the persistent indebtedness through the traditional credit system also binds fishers to their communities and occupation. For illiterate fishermen they could not access easily for the bank credit due to ignorance and have to borrow from local NGO's and Mohajon or moneylenders at a high interest. It's a burden to fisheries society.

Recreational accessories of the fishermen: The fishermen and their children usually enjoy various types of traditional games and sports like Ha-do-do, Kadabi, Boat race etc. Besides most of the fishermen (88%) have various modern electronic and non-electronic accessories for their recreation (Table 17). This was only possible due to majority have electricity connection (Table 10).

Possible outcome with overview and recommendations:

Authors observed poor fishing frequency and lower socio-economic status of fishermen in study area which brought a number of significant recommendations such as control of over fishing, prohibition to the indiscriminate fishing gears, river dredging program, establishment of fish sanctuaries, releasing of fish fingerlings and financial help to the fishermen etc. These mitigations will be beneficial for the fisheries of the river and socio-economic conditions of the fishermen around the Tulsiganga River at Joypurhat.

This study discover the main cause behind poor economic status of fishermen that can be beneficial for government to deploy necessary steps for mitigating these unhygienic lifestyle. This study will help the researcher to uncover the critical areas to innovate the suitable way of applying correct development program with proper PRA to mitigate the adverse economic condition of the fishermen around the Tulsiganga River. Thus a new theory of causal effect on social status may be arrived to develop fisheries as well as fishermen community by improving socio-economic status and livelihood condition.

CONCLUSION

This study find that the economic condition of the fishermen was much below the standard level of a developing

country (Bangladesh) and in most of the cases they borrowed money from different NGO's at a high interest to led a smooth livelihood. Some of them wanted to change their profession for better living. So, the present socio-economic status of the fishermen of Tulsigangariver at Joypurhat was not satisfactory. Further research can be introduced to improve those narrated drawbacks of these sectors separately or with proper integration.

SIGNIFICANCE STATEMENT

This study discover the main cause behind poor economic status of fishermen that can be beneficial for government to deploy necessary steps for mitigating these unhygienic lifestyle. This study will help the researcher to uncover the critical areas to innovate the suitable way of applying correct development program with proper PRA to mitigate the adverse economic condition of the fishermen around the Tulsiganga River. Thus a new theory of causal effect on social status may be arrived to develop fisheries as well as fishermen community by improving socio-economic status and livelihood condition.

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