Socio-economic Condition of Fisherman of ShanirHaor: A Case Study on TahirpurUpazila, Sylhet

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Authors' contributions

This work was done with the collaboration among the authors. Author MR designed the study, done all thestatistical analysis, wrote original paper and first draft of the manuscript. Author SAA supervised full paper and helped to carry out the manuscript. Authors MS and MSI processed the final manuscript. All authors read and approved the final manuscript.

Original Research Article

ABSTRACT

Aims: This study tries to know the socio-economic condition of the fisherman of the Hoar area of Bangladesh.
Study Design: This is a cross-sectional study and both descriptive and analytical in nature.
Methodology: To conduct this study 236 sample were selected from three villages adjacent to ShanirHaor and collect primary data through a constructed questionnaire survey. The socio-economic condition of the fisherman is very poor compared to the other professionals.
Results: This study reveals that joint family is much more (93%) than single family and most of the people lives in kacha house. There is a severe problem for pure drinking water, educational

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facilities, lack of loan facilities, and lack of essential instruments for fishing. Most of the fishermen are illiterate (49%) and the rate of dropout children from school is high. Most of them are unaffordable in having personal net and boat which is an essential instrument for fishing because of poverty. About 69% of the respondents have to borrow money from local money lenders with high interest when they are in crisis.

Conclusion: This study also reveals that there is a significant relationship between income and education, use of net, ownership of boat, sanitation system, housing type etc. The high income of the respondent the standard of livelihood pattern is high. The fishermen expect from the Government to arrange certain facilities like short period loans, transportation, set up of more fish markets and processing units open for marketing of fish.

1. INTRODUCTION

Water lands of Bangladesh give social economic and ecological benefits [1] and it is a part of human heritage [2]. Most of the haors are situated in North-East Bangladesh [3]. Theses support aquatic invertebrates and fish [4] and contribute to contribution to gross domestic product (GDP), and create employment [5]. Haors of Bangladesh are important aquatic ecosystems that play an important role in country's economy as well as to livelihoods of inhabitants due to economic, ecological and commercial importance. People living here are of poorest social group and their occupation, income and other livelihood activities depend on natural variation of water depth in these haors. Naturally, haor areas are rich in biodiversity. Different types of flora and fauna including migratory bird are found here. Fisheries sector contributes about 3.00% of the total export earning, 3.74 to GDP and 22.23% to agricultural sector [6]. At present annual fish intake by an individual is 17.52 kg and the annual fish demand is 29.74 metric tons [6]. Fishing can reduce malnutrition problem by increasing the production of fish. It creates 1.4 million full time employment and part time employment of nearly 11 million people [7]. A large number of rural people engaged in full time and part time fishing.. Fisheries resources are one of the largest and diversified natural resource in the world. There are 260 fresh water species [8] and 475 marine fish species [9] available in Bangladesh. And these are very important for a country. The main occupation of this hoar area is fishing. Fishing is the ancient and one of the most important livelihood options of the inhabitants of the haor especially the standpoint of income and employment generation [10]. It is one of the oldest economic activities of the human race and ranks next to agriculture. As the fishermen of the Haor engaged with the primary economic activities, their income is relatively low compared to others. Because of low income, their living standard such as educational qualification, sanitary system, housing type etc is relatively low. Additionally, the income influences their fishing type, boat owning capability, access to haor etc. In the total scenario, it is reflected that the socio-economic condition of the haor's fishermen is low than any other professionals.

This paper tries to explore the socio-economic status of the fisherman in this Hoar area. Further, it examines the relationship between income and livelihood patter of the fishermen. This study might seek the attention of the nationals and internationals communities and policy makers to grow awareness and take initiatives to make aware the people of haor area. It also helps the government to lead the development of the haor by knowing their socio-economic condition and lack of privileges. So this study will help to make proper guidelines, strategies for implementation to the government and policy makers of nationals and internationals.

1.2 Review of Literature

Kabir and Amin [11] found that wetland of Bangladesh is invaluable component of the ecosystem having enormous economic, ecological and commercial importance in terms of of flora, faunal including migratory birds of global and regional significance [11]. Department of Fisheries (1990) conducted a survey on the socio-economic condition of the fishermen in eleven Upazilas of the district of Patuakhali and Barguna under fisheries extension development project and reported that rate of literacy among fishing communities is far less than others area because of lower income. About 70.80% fishermen were labors, do not access latrines and are landless. About 70% of the fishermenhad an average daily income BDT 2025 and the rest 30% had BDT 2040 [12].

Bhaumik and Saha [13] conducted a surveyed the fishermen community of Sundarban and found that age group of the sampled fishermen varied between 20-70 years. About 36.6% had have 21 to 30 years of experience in fishing belonged to scheduled caste community. About 24.0% of them undertook fishing operation for 241-260 days and 39.6% spend 12 hours per day for fishing. On an average 29.0% of them caught 131-150 kg per month. During off-season 23.4% of them undertook the job of net making or mending or repairing and their monthly average income was 10000-15000 Taka [13]. Karuppusamy and Karthikeyan [14] conducted a study in Puducherry region, India. Fishermen venture into sea is aging between 41 and 45 years (43%) and they only have primary level education. Regarding their income it ranges between Rs. 5,000 and Rs.20,000 per month. Only 12% of the respondents earn more than Rs.20,000 per month. Majority of the respondents are living in the Government provided tsunami houses. Rest of them dwells in their own house. Good majority of the fishermen habituated to use latest mobile phones (86%) and accustomed to live with basic necessities such as TVs and other home appliances despite their low income. The fishermen expect the from the Government to arrange certain facilities like short period loans, transportation, set up of more fish markets and processing units open for marketing of fish [14]. Hossain et al. conducted a study in Seasonal Floodplain Beels in Rajshahi District, Bangladesh. It was found that most of the fishermen were at the age group 31-40 years, larger family size (5.6-5.8) belong fishermen. About 46.6% fishermen on both the sites were illiterate with no person above secondary level. Agriculture is the main occupation and aquaculture, fish trade and business are the main secondary occupations for the LO farmers [9]. Khanum [15] found in Bangladesh that about 42% and 68% haorfishermen were below the lower and upper poverty lines respectively. The study suggests that the Government should take haor based policy to reduce poverty level of fishermen [15]. Anisul et al. [16] found most of the fish farmers were Muslims 92% and few of them were Hindus (8%). Most of them had the secondary educational background and some of them with different levels of higher education [16]. M.Y. Ali et al. [17] found that in Bangladesh that30% fishermen had their own boats and nets and 80% of them had no own land. Annual income of hilsafishermen varied from BDT 15,000 to BDT 150,000 and in banning season fishermen's

monthly average income decreased to BDT 21,600 from BDT 50,400. In this study area 48% fishermen involved in labor activities during banning season and more than 21% fishermen took loan during banning season compared with non-banning period. Although 60% fishermen got subsidy (VGF card) from Government during banning period but it was not sufficient to maintain their livelihood [17].Kadam[18] found in India 45.26% of the fishers are literate and the economic status of the people was fairly poor as they are unable to engage work due to many reasons. They used traditional fishing methods instead of modern aquaculture techniques. The Govt. of Maharashtra provides fishermen welfare programs such as Group Accident Insurance Scheme for active fishermen, Development of Model Fishermen Villages etc [18].

2. RESEARCH METHODOLOGY

This study is both descriptive and analytical in nature. To conduct this study, necessary data were collected form questionnaire survey and direct field observation.

2.1 Selection of the Study Area

ShanirHaor is selected purposely because no study was done before to assess the socio-economic conditions and problems facing by the fishermen. The village named Dakshinkul is selected form Balijuri union, Barinagor from Tahirpur union and Thakurhati from Tahirpur union has been chosen to collect the primary data for this study. ShanirHaor has been selected purposely because the fishermen of these villages are more depended on haor resource in comparison to the village located far away from Haor. Form this three-selected area, Dakshinkul, Birinogor,Thakurhati individual household was selected randomly. Because these three village are closely located to ShanirHaor and the village communitymostly dependent on Haor resources.These three villages were selected through purposive sampling procedure. After selection of study area the household selected for survey and the respondent of the survey was selected simple random sampling procedure. These villages are located almost in the haor, most of the people involved in natural fishing for livelihood and all the fishermen catch fish from Shanirhaor.

The study area named Birinagor, Thakurhati and Dakshinkul is situated in TahirpurUpazila in

Sunamgonj district. Tahirpurupazila with an area of 313.7 sq. km is bounded by Megalayas (India) the north, JamalgonjUpazila on the south, Dharmapashaupazila on the east, BishwamberpurUpazila on the west.

There are 52 villages and the number of habitants is about 28000, most of them are engaged in fishing in the Haor and a small portion is engaged in agriculture. Despite large-scale migration into this area, the population density is relatively low compared to the rest of the country. The density of population increases with the increase of distance from Haor.

2.2 Religion and Culture

Most of habitants are Bengali and foster Bengali culture. As a rural and undeveloped area lots of people have belief in several superstitions. In the study area as well most part of area seen cluster religion pattern. Some villages are Hindu dominant and some are Muslim though some have mixed religious village.

Fishing and farming are the primary occupations of people in living in Shanirhaor. In ShanirHaor there are more than 69% of the heads of the household are engaged in fishing directly or indirectly while almost 19% are in agriculture and rest of them associated with other occupations (BBS, 2014) [18]. Women in is area also engaged in agricultural or other jobs but the earning of women is very low compared to men (BBS, 2014) [18].

2.3 Sampling

Simple random sampling procedure was applied to select the sample household from the study area. The total number of the household of three village were 575 where Dakshinkul (139), Birinagor (355) and Thakurhati (81). Assuming 5% significance level, the estimated sample size is 236 out of total 575 household. During the survey, these household were selected by simplerandom sampling procedure.As the research based on the socio-economic condition of the fishermen of Shanirhaor, the households'
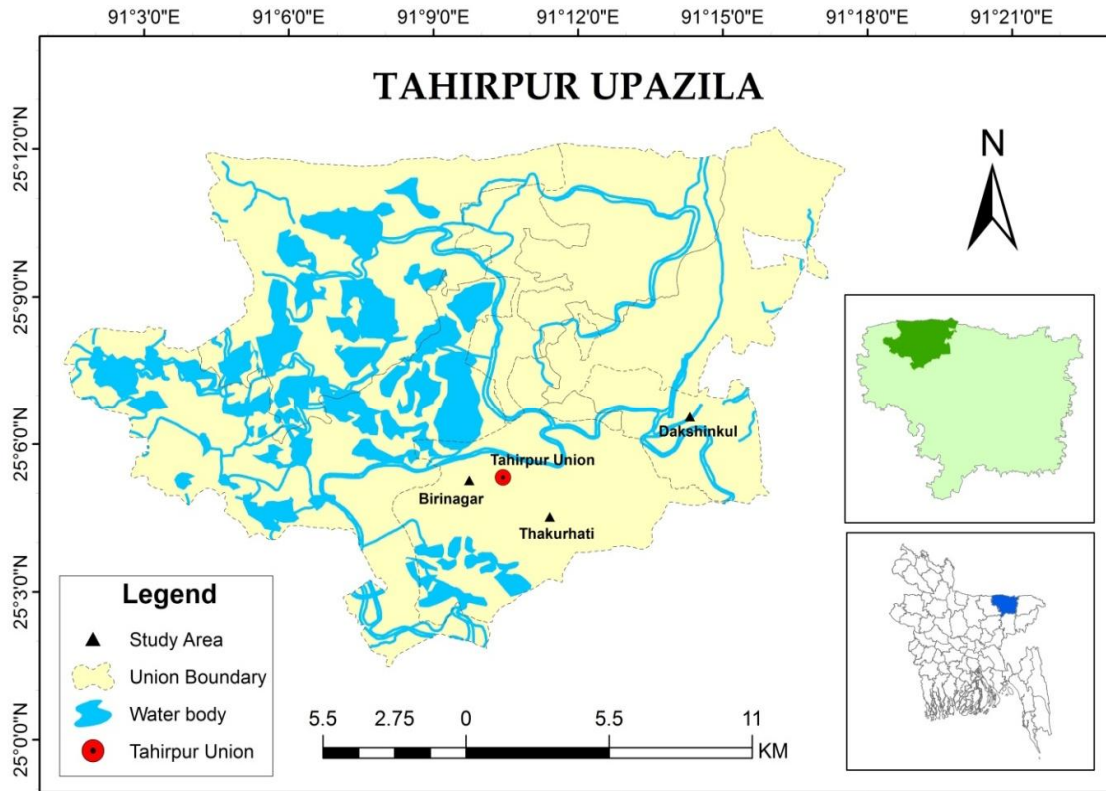

Fig. 1. Survey area
Source: Developed from LGED district map using Arc GIS

member who is involved in fishing, has been selected.

2.4 Data Collection Method

The primary data collected from structured questionnaire, field observation and focus group discussion (FGD) in the study area. This door to door survey conducted in three villages Dakshinkul, Birinagor and Thakurhati. The respondent of the village has been interviewed through a structured questionnaire.

2.5 Data Analysis

Descriptive statistics such as frequency, percentage, average and cross tabulation are used to analyze socio-economic conditions of the community people. The frequency of some specific variables such as gender, housing types, income, education level and different characteristics are tabulated by frequency and percentage distribution techniques. Graphical presentation of data is a technique to presentation the tabulated data by using suitable graphical figures such Bar diagram, Pie chart etc. Chi-square test applied for gender, residency, income, educational qualification, occupation, monthly cost and some other relevant categorical data. Statistical Package for the Social Sciences (SPSS) has been used to analyze the data.

3. RESULTS OF THE STUDY

The table[Table 1] shows that 38.5%, 22.5%, 22%, 8.5% and 8.5% of fishermen were belonged to age group in 21-30, 31-40,41-50,51-60 and above 60 years old respectively. The results show that the higher number of fishermen were between 21-30 age groups, indicating young age groups which was the dominant in fishing due to their physical strength.

Educational qualification influences on individual preferences, behavioral patterns, performance, skill and capability. The literacy levels of the respondent were very low. The majority were illiterate whereas only few fishermen and intermediaries had their education up to primary level and some only can write their name and give a signature. Their children went to school till the primary level and onwards they drop-it for income generation. On the contrary, women were also illiterate who do not even know to read. With regard to the education status of

fishermen, 30 percent of respondents can read and write,15% of respondents at primary level, 6% of respondents at secondary level, Further, it was found that 49 percent of the respondents are illiterate. Poverty, lack of school facilities, frequent natural disaster is responsible for such condition in Shanirhaor area [Table 1].

Among the respondents (94%) were male and (6%) were female. Generally, women were involved in household works and they could not afford to go out for fishing in a large scale due social problems and trafficking where male was free from those barriers and engaged them in fishing [Table 1].

Religion can play a very important role in the socio-cultural and environmental life of people and can act as a notable constraint modifies in social changes. Muslim fishermen were 43%, Hindu fishermen were 47%, and Buddhist fishermen were 10%. No other religious practice was found in the study area. It is Illustrate that the Hindu fishermen made up the major percentage of the people of the study area. From the cultural evidence of Bangladesh, it is seen that fishing profession is dominated by Hindu religious people and the study area is also present same scenario [Table 1].

In rural Bangladesh, families are classified into two types such as nuclear family (married couples with children) and extend family (groups of people related by blood and by law). Nuclear family consists of the members of two generations (Parents and children) and joint family with the members of three or more generations. According to the fishermen community, extended family is good for them because they can share their economic responsibility, a strong family bonding which helps them to get support in the bad time and mostly to get companionship when they are in fishing. Because of these reasons they prefer to live in extended family.

The figure shown above that 93% of the family of the respondents were nuclear and others 7% of the respondent are with extended family type. Family size is defined as the number of persons, either working or not, belonging to the same family. The family size and its composition are related to occupation, income and were likely to have an important influence on fishing practice. The family members include husband, wife, son, daughter, sister and parents. The study revealed that 69% of the fishermen had 5-10 family

members and 31% family had 1-4 members. From the experience, while conducting survey it is found that most of the couples have more than 3 children [Table 1].

The income conditions of the fishermen are not so good. The only source of income of the fishermen is selling fish the market and other place. There are very limited options for non-fishery related activities such as day labor in agricultural field. Moreover, every year many people are getting involved in fishing as a seasonal or part time occupation. As a result, the pressure in fishing profession continuously is increasing in the haor area. The survey results revealed that maximum fishermen sell their fish product, use their funds for household demand and others fish use for their own consumption.

The housing condition is one kind of indicators of economic status. Attempts were made to find out the condition of the fishermen. In the study area houses of the community are mainly two types such as Kacha (houses were made of bamboo and thatched mud flooring) and Semi pucca (made of wood or tin). The study revealed that 64% of the housing structures are Kacha and 36% were semi pucca and pucca [Table 1].

It was found that 61% of the fishermen use tube-well water for drinking, 21% of the fishermen use Kua or indira water for drinking, 4% of the fishermen use pond water for drinking and 14% found river water. It is mentioned that this is scenario in winter and autumn season. As the study area is frequently affected by flush flood in rainy season and most of the drinking water source gone under water, water is contaminated. But they have to drink water from this source as there is no other available source[Table 1].

About 83% of the respondent had the facility of electricity and 17% didn't get facilities to use electricity. It is also found that electricity is comparatively lower. The percentages of fishermen who had facilities of electricity were greater than the fishermen with no facilities. The communities who not yet get electricity claim that the reason behind not getting electricity is corruption. According to them, the PDB (Bangladesh Power Development) authority demand a large amount of money from them for getting electricity and those who fail to manage it, never get electricity. Those who have electricity convict that electric connection fail for long time when any natural disaster such as flush flood occurs [Table 1].

It was observed that the fishermen sanitary condition is good. Types of toilet are used such as kachatoilet which made of bamboo fencing with leaf and inadequate drainage disposal, sanitary latrines, open field and open hole. About 61% of the respondent use sanitary latrines which is provided by local union parishad, 28% used kacha toilet, 3% open field and 8% open hole. It is told by the respondent that situation is good in the summer and autumn season but situation get worst in the rainy season when the entire toilet go under the water [Table].

3.1 Migration Status of the Respondents

It was asked to the respondent are they migrated or not. In response, among 236 respondent 41 percent of them confirmed that they are original habitant of this study area by born and rest 59% were migrant though most of them living here more than 15 years. So it is clear that more people live here are migrant [Table 2].

3.2 Reasons of Migration

Poverty is the most dominants factor for migration. Most (39.5%) of the respondent migrated here only because of poverty. Without it to search for better opportunity, natural calamity and lack of employment is the reason of migration [Table 2].

3.3 School Going and Dropout Children of Fishermen

From the study, it was found that the number of school going children was 1.56 per house. The study showed that number of school going boys were higher than that of girls. It was also observed that about 57% were school dropout boy and 43% were girl[Fig.2].

3.4 Causes of School Dropout

The main causes of the school dropout boys and girls were illiteracy of their parents (36%), unconsciousness of family members (14%), economic problem (17%) , children are involved in income (25%), andsocial or other problems (8%) such as early marriage.

3.5 Money Borrowing During Crisis

In this study, it was found that 69% of the fishermen borrowed money from local money lenders with high interest, 18.5% from the NGO`s

and 6% from the relatives, 4% others sources and 2.5% from local fishing associations with low interest. Most of the fisherman borrowed money from local money lenders[Fig. 3].

3.6 Fishing Net Type

Majority 61.5% of the respondent uses MoynaJal (one kind of net) in their fishing because it

Table 1. Background characteristic

Variable	Frequency	Percentage (%)
Age of the respondents		
21-30	92	38.5
31-40,	53	22.5
41-50	51	22%
51-60	20	8.5
Above 60	20	8.5
Educational qualification		
Illiterate	116	49
Can read and write	71	30
Primary	35	15
Secondary	14	6
Sex of the respondents		
Male	222	94.0
Female	14	6.0
Total	236	100.
Religion of the respondents		
Muslim	101	43
Hindu	111	47
Buddhist	24	10
Family types of the		
Nuclear	219	93
extended	17	7
Household member		
1-4	163	69
5-10	73	31
Household types		
Kacha	123	52
Semi pucca	97	41
and pacca	16	7
Income		
<5000	47	20
5000-10000	68	29
10000-15000	80	34
1500-2000	28	12
>20000	12	5
Source of drinking water		
Kua	50	21
Tubewell	144	61
Pond	9	4
River	33	14
Use of Electricity		
Yes	196	83
No	40	17
Sanitation practice of the fishermen		
Kacha	66	28
Sanitary	144	61
Open field	7	3
Open hole	19	8

Source: Household Survey, 2017

collects all sizes of fish which help them to increase daily income. Rest of the respondent use Current Jal (26.5%),KoiJal (7%) and Cash net (5%) for their fishing. Though the Current Jal is prohibited by the government a large portion of the respondent uses it secretly. Sometimes they are caught by local police and net is burned by them but this cannot prevent them from further use of Current Jal (Source: UP Chairman)[Table 3].

3.7 Ownership of a Boat

Owning a boat is great advantages for the fishermen. It influences the fishermen`s income greatly. The fishermen who have personal boat can earn more than who have not. The boat owners dominate fishermen who have no boat. Some fishermen have more than one boat and it is alleged that fishermen without boat is exploited by them. They get larger portion of fish only because they are the owner of boat though they work same or sometimes even less than the others. From the survey, it is found that 74% of the respondent does not have any boat and 26% of the respondent has one or more than one boat [Fig. 4].

3.8 Credit Access Issues

The national and local Non-Government Organization (NGO) like BRAC, ASHA,UDDIPON provide credit only to the organized poor members for purchasing fishing gears and boats where the interest rate varies from season to season. It is often argued that the amount of credit being provided by the NGOs was insufficient and not commensurate to the poor people's actual need. It was observed that after repayment 34% became self-sufficient (who did not need financial help), whereas 14% borrowed money from their neighbors, 17% from relatives, 24% from NGOs and 11% from co-operatives for their fishing business [Fig. 5].

3.9 Subsidiary Occupation

In the off-season most of the fishermen depend on subsidiary occupation. To fulfill the family demand they have to work. Different people depend of various occupations though they alleged that there is scarcity of job for them. In this time they have to face a difficult time with their family. Some people depend on savings which they save from their income in fishing

Table 2. Reasons of migration

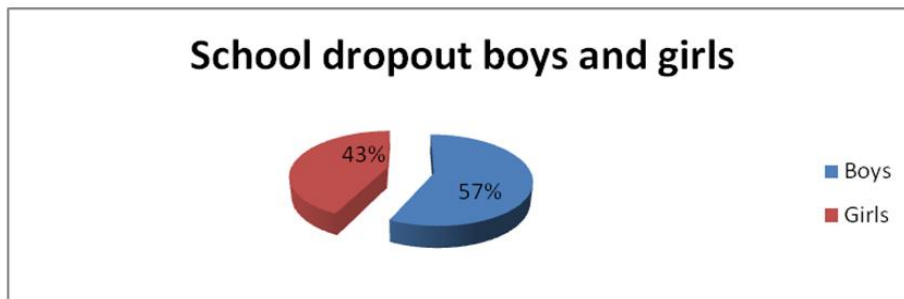| Variable	Percentage (%)	Frequency
Migration status		
No	41	97
Yes	59	139
Reasons		
Poverty	39.5	93
Better Opportunity	31.5	74
Natural Calamity	6	14
Lack of Employment	15	35
Political Harassment	3	7
Others	5	12
Total	100	236

Fig. 2. Percentage of school dropout boys and girls
Source: Household Survey, 2017

seasons. They face very tough time if flood occurs in that year. It is found from the study that 41% percent of the respondent depend agriculture because of low water in the haor. About 6% of the respondents remain unemployed though rest of them involves various jobs in the off-season [Fig. 6].

3.10 Suffering Diseases

About 85% of the fishermen suffered with different types of diseases including Pneumatic

fever, Dysentery, Cholera, Typhoid, Jaundice, Malnutrition, Gastric, Diarrhea, fever etc. for unhygienic environment where they live. It was also found that 15% fishermen did not suffer any types of diseases last year which was near about one sixth of the total fishermen. In the rainy seasons peoples suffers mostly from water related because all source of drinking water get contaminated by different waste and other degradable and non-bio-degradable organism [Fig. 7].
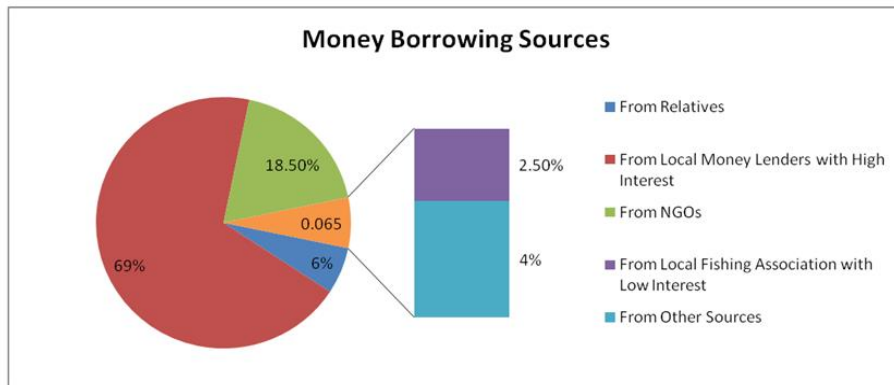

Fig. 3. Money borrowing sources
Sources: Household Survey,2017

Table 3. Fishing net type

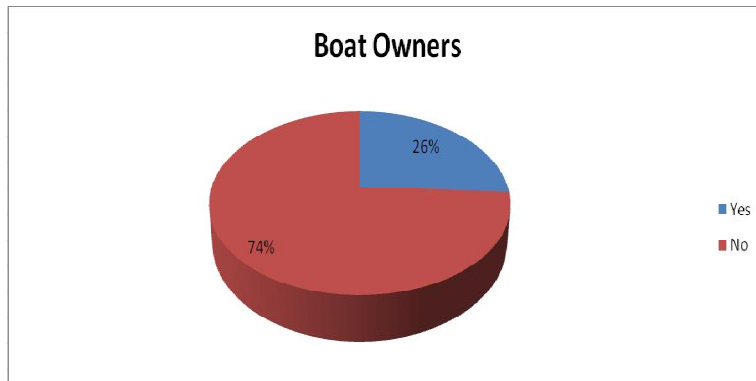| Types of net	Number of respondent	Percentage (%)
Current Jal	63	26.5
MoynaJal	145	61.5
Koi Jal	16	7.0
Cash net	12	5.0
Total	**236**	**100**

Source: Household Survey, 2017

Fig. 4. Percentage of boat owners
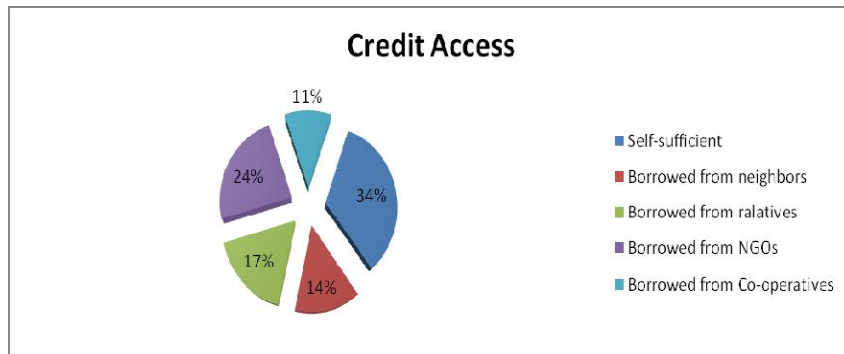*Source: Household Survey,2017*

Fig. 5. Credit access to fishermen
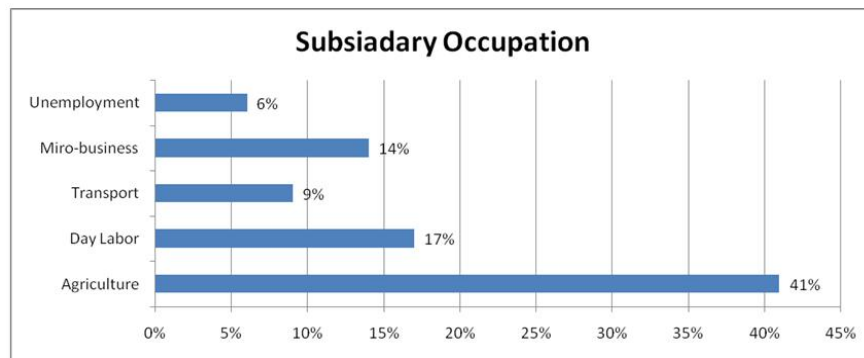*Source: Household Survey, 2017*

Fig. 6. Subsidiary occupation of the respondent
Source: Household Survey, 2017
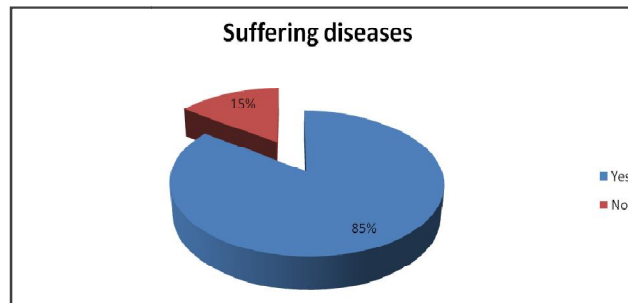
Fig. 7. Diseases suffering respondent
Source: Household Survey,2017

Table 4. Reasons for the diseases

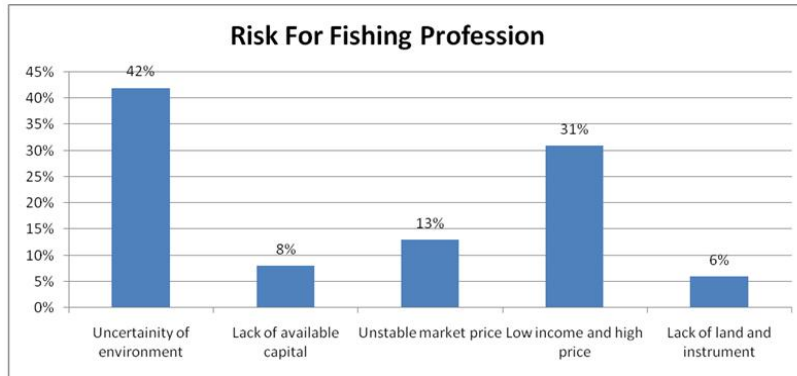| Criteria	Frequency	Percentage (%)
Scarcity of pure drinking water	85	36
Unhealthy Environment	101	43
Seasonal disease	33	14
Odorous smell of rotten crops	12	5
Genetically	5	2
Total	**236**	**100**

Source: Household Survey, 2017

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Fig. 8. Major risk for fishing profession
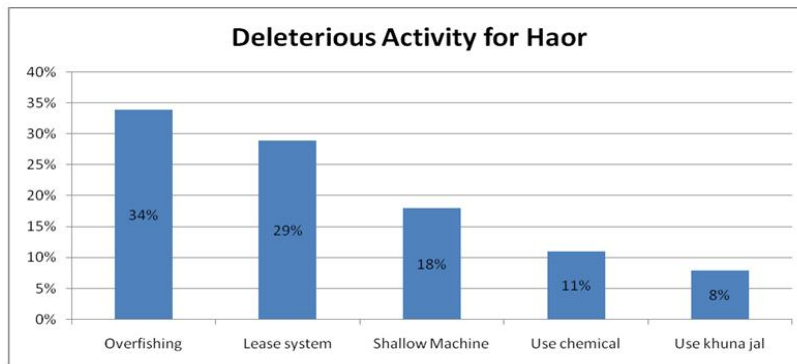*Source: Household Survey, 2017*

Fig. 9. Deleterious activities in Haor
Source:Houseold Survey,2017

Table 5. Initiative for profitable fishing (%)

Initiative for profitable fishing	Birinagor	Dakshinkul	Thakurhati	Total
Modern culture of hybrid fishing	4.65	2.54	1.69	10.16
Development of local fish culture	19.43	7.63	2.97	30.08
Natural Fishing	32.10	11.86	7.63	51.69
Nursing of fishes	5.49	0.42	1.69	8.05
Total	**61.68**	**24.15**	**13.98**	**100**

Source: Household Survey,2017

Table 6. Govt. role for conservation fishing sector of Shanirhaor (%)

Govt. role for conservation fishing sector of shanirhaor	Birinagor	Dakshinkul	Thakurhati	Total
Proper management of Haor and related water bodies	37.59	8.89	5.93	52.54
Subsidy and supply of fishing instrument	2.11	4.66	2.12	8.89
Reduce the illegal role of political leaders	17.32	8.05	5.08	30.50
Ensure the free breeding of fishes	4.65	2.54	0.85	8.05
Total	61.68	24.15	13.98	100

Source: Household Survey,2017

Table 7. Relation between fishing net type and respondent family income

Fishing net type		Respondent income (Tk)					Total
		<5000	5000-10000	10000-15000	15000-20000	>20000	
Use of Drag/Push	n	32	37	36	24	16	**145**
Net(MoynaJal)	%	27.65	43.01	43.62	20.28	10.44	61.5%
Use Current Jal	n	13	33	35	9	1	**91**
	%	17.35	26.99	27.38	12.72	6.56	38.5%
Total		**45**	**70**	**71**	**33**	**17**	**236**

χ^2 = 16.8443, df=4, P value=0.002
Source: Household Survey, 2017

Table 8. Relationship between respondent income and owning boat

Fishing boat ownership		Respondent income (Tk)					Total
		<50000	5000-10000	10000-15000	15000-20000	>20000	
Yes	N	6	9	14	30	12	71
	%	15.34	28.28	9.93	13.54	3.91	
No	N	45	85	19	15	01	165
	%	35.66	65.72	23.07	31.46	9.09	
Total		51	94	33	46	12	236

χ^2 = 33.353, df=12, P value<0.000
Source: Household Survey, 2017

3.11 Major Risk in Fishing Profession

From the respondent of the study it is found that lots of fishermen loss their hope in this profession. They mentioned some factors for this situation. According to them uncertainty of the environment, low income and high price, unstable market price is responsible for this situation. They mentioned that if this situation continues for long time this profession will be at great risk and life of the fishermen community will vulnerable. From this study it is found that 42% of the respondent think, uncertainty of the main reason for this risk and 32% respondent think low income facilities and high price of necessary commodities are responsible for push them in risk [Fig. 8].

3.12 Deleterious Activities for Haor

According to the respondent, surrounding condition of Haor is changing day by day. From the study it is found that 34% of the respondent alleged over fishing is the most deleterious activity for the Haor. About 29% of the respondent mentioned lease system and 18% of the respondent mentioned that use of shallow machine in the dry season is a harmful activity for haor. Because of these activities the amount of natural fish is decreasing day by day in Shanirhaor [Fig. 9].

3.13 Initiatives for Profitable Fishing

From the opinion of the respondent, it is found that haor degrading continuously from the previous year. If this process is going for long time the fishermen community associated haorhave to face very low quality of life standard. So it is high time for taking some initiatives for profitable fishing of Shanirhaor. This study found that 51.69% of the respondents from three villages want natural fishing as the main initiatives for profitable fishing. According to them hybrid fish culture is harmful for fishing though production of fish little increase. They think Haor environment is changing for hybrid fish culture with other deleterious activities. On the other hand 30.08% of the respondent said that local fish culture has been developed for profitable fishing [Table 5].

3.14 Government Role for Conservation of Fishing Sector of ShanirHaor

According to the respondent of this study government have to play vital role for conservation of Shanirhaor otherwise haor will lose its natural environment and it make a negative impact on country`s economy. This study found that proper management of haor such as selecting appropriate guideline and policies for fishermen, implementation of various

development project, building awareness among the fishermen, take measures for stable market price of fish, reduce dominance of political and corrupted people form haor. These measures will ensure a friendly environment of haor for the fishermen of Shanirhaor. A large portion of the respondent alleged that some political leaders illegally dominant fishermen and misuse their political power to take advantages. The respondent expects that government should reduce illegal political role from haor and take steps against them. This will ensure a good haor environment and it definitely positively affects the national economy. The table shows that 52.54% of the respondents from three villages expect to take proper management of haor and related water bodies from government. 30.5% of the respondent expects to reduce illegal political role of the corrupted political leaders, which will make them free from dominance [Table 6].

3.15 Relationship between Fishing Net Type and Income

The type of net used by the fishermen depends on their income. So it keeps an important role in the livelihood pattern of the fishermen. Among the respondent 61.5% of the respondent use drag/push net (MoynaJal) and 38.5% use Entangling (Current Jal). According to the respondent drag/push net can catch all types (small and big). So they can catch large amount of fish. The fishermen who have low income cannot afford this type net because of its cost. So they can`t catch enough fish and their income remain low. Because of low income they lead a low standard livelihood pattern. The Chi-square test shows there is strong relation between income and use of fishing net type [Table 7].

3.16 Relationship between Ownership of Boat and Income

Table shows that the higher income group have own boat, as the income become lower the number of people of boat owner is decreasing. The lower income community of fishermen could not afford boat, but for fishing in Shanirhaor boat is necessary. In this case, the people of lower income (<5000 tk) are more vulnerable. From the people of study area, it is known that the fishermen without boat are exploited by the fishermen who have boat. The boat-owning group get the large portion of collected fish though they work same, sometimes even more than boat owning group. So having boat is a great advantage for the fishermen and hasa

influence in socio-economic condition of the fishermen [Table 8].

3.17 Relationship between Income and Borrowing Money During Crisis

This data table [Table 9] shows that the income groups TK 5000-15000 are more needy than higher income group. From the respondent it is found that they borrow money when fishing is in loss, when area is flooded and especially when any of the family members suffered from disease. In that they have no other way but to borrow money with interest. From the respondent it is found that they have to borrow money from local money lenders with high interest as there is no source from government loan facilities in the village. In some case, to reconcile the borrowed money they need to borrow money from another source. The chi-square test result shows that there is a significant relationship between income and money. Respondent who have higher income most of the time cannot borrow money but if they are in need they borrow money from their relatives without interest. On the other hand those who low income have to borrow money with interest.

3.18 Relationship between Income and Housing Type

From the study it is found that the respondent who has high income have a good housing condition. Most of respondent of the study area have low income and most of them live in kachahouse which is very risk in the time of flush flood. Some who have high income have pucca house. Assuming 5% level of significance, the chi-square test is found that calculated chi-square value is 18.3 with 8 degree of freedom. The critical value is 0.175 which is much higher than P value. The result is not significant because the collected data are not sufficient to make relationship [Table 10].

3.19 Relationship between Income and Sanitary System

According to the respondent (61%), most of the sanitary latrine is given by local UP chairmen though some don't get yet. Some people use kacha which have fence by bamboo and rest of them use open filed and open hole. In the flood time situation goes worst because all thesanitation system flooded by water. They suffer from various diseases by drinking this water. The respondents who have high income

do not expect help for sanitation. They can fill their necessity by themselves. According to the chi-square the relationship is not significant because of sufficient data [Table 11].

Table 9.Relationship between family income and money source of during crisis

Money borrowing source during crisis		Respondent Income (Tk)					Total
		<5000	**5000-10000**	**10000-15000**	**15000-20000**	**>20000**	
From Relatives	N	3	7	3	3	8	24
	%	4.47	7.07	6.92	3.56	2.03	
From Local money lender with high interest	N	22	50	48	14	6	140
	%	26.10	40.93	40.34	20.76	11.86	
From NGO`s	N	14	10	11	16	4	55
	%	10.25	16.08	15.85	8.16	4.66	
From other sources	N	4	1	3	1	1	10
	%	1.86	2.92	2.88	1.48	.85	
From Local Fishing Association with low interest	N	1	1	3	1	1	7
	%	1.31	2.05	2.02	1.04	0.59	
Total		44	69	68	35	20	100

χ^2 = 81.8859, df=4, P value <0.000

Source: Household Survey, 2017

Table 10. Relationship between income and housing type

Criteria		**<5000**	**5000-10000**	**10000-15000**	**15000-20000**	**>20000**	**Total**
Kacha	Observed Frequency	21	19	15	9	5	69
	Expected Frequency	13.449	16.95	19.588	13.156	5.555	
Semi-Kacha	Observed Frequency	22	31	44	24	8	129
	Expected Frequency	25.144	31.703	36.62	24.597	10.385	
Pucca	Observed Frequency	3	8	6	14	6	43
	Expected Frequency	7.016	8.847	10.220	6.86	2.89	
	Total Observed Frequency	46	58	67	45	19	236

χ^2 = 18.3, df=8, P value=0.175; *Source: Household Survey 2017.*

Table 11. Relationship between income and sanitary system

Criteria		**<5000**	**5000-10000**	**10000-15000**	**15000-20000**	**>20000**	**Total**
Sanitary	N	26	33	39	31	15	144
	%	29.28	31.11	39.05	28.67	15.86	
Kacha	N	19	15	22	15	11	82
	%	16.67	17.72	22.237	16.33	9.033	
Open Field	N	2	2	2	1	0	7
	%	1.423	1.512	1.898	.77		
Open Hole	N	1	1	1	0	0	3
	%	0.610	0.648	0813	0.597	0.330	
Total		48	51	64	47	26	236

χ^2= 4.68, df=12, Pvalue=0.925;*Source: Household Survey,2017*

4. CONCLUSION

This study was conducted to assess the socio-economic condition of the fishermen community associated with Shanirhaor. Socio-economic condition of the fishermen is not satisfactory and not improved with the time due to various reasons stated above. Socio-economic condition of the fishermen communities were presented in terms of, age group, religion, family type, condition of house, educational status of the fishermen, number of members in their family, school going children, school dropout children, use of electricity, occupation, sanitation, yearly income, source of drinking water, credit access, deleterious activity and some initiatives. In the present investigation, it was found that the highest (38.5%) of fishermen were between 21-30 age group indicating middle age groups which were the dominant in fishing due to their physical strength. The Hindus are featuring as the absolute majority of the fishermen. About 47 % and 43 % of fishermen were the Hindus and Muslim respectively. About 93% of the fishermen live in joint family which is Bangladeshi culture. This helps them to share economic responsibilities among the family members and get support in the unfavorable situation such as flood, sickness etc. Most of the people have monthly income lower than 15000 Tk. whereas only 34% have 10000-15000 Tk monthly income which insufficient the family with 5-10 members. That is why maximum people lies in low standard living condition. Because of poverty, lack of school facilities, frequent natural calamities 49% of the people is illiterate. 64% have pucca house which has to repair almost every year because during flood house is terribly dilapidated. Because of poverty and to search for better opportunity about 59% of the respondent migrated here though situation is not so favorable. Almost every habitant of the study area lives in below the poverty line and most of the time they have to borrow money from others especially during flood. About 69% of the respondents borrow money from local money lenders with high interest which is a big obstacle for the development of living standard. About 61.5 % and 26.5% fishermen use MoynaJal and Current net respectively as fishing instrument though these are prohibited by Government. Because of lower income most of the fishermen unable to afford boat though boat is a source of higher income. Only 26% of the fisherman has boat and they have higher income than others who have not. About 85% of the respondent suffers from various diseases because of unhealthy environment, lack of pure drinking water, lack of health facilities, lack of sanitation problem etc. Uncertainty of environment, lack of capital, high price and low income is the major risk for fishing profession. About 42% of the respondent opinioned that only because of uncertainty of environment fishermen express unwilling in fishing profession and try to get other occupation like day labor, transport, agriculture micro-business etc. The government should take initiative on proper licensing system for the genuine fishermen, involvement of GO and NGOs for training them to improve their socioeconomic condition and incorporation of lion's share for the fishers in the management process.

5. RECOMMENDATIONS

- Fishing regulation should be strictly implemented.
- In breeding session government should make sanctuary and forbid fishing in the haor.
- Haors should be free from political dominance.
- Government should prohibit Current Jal and KhunaJal for certain time period because it is harmful to haor.
- Sophisticated markets and processing units should be opened for the marketing of the fish products. Hence it will boost up their economy and paves way to change the lifestyle.
- The children from fisheries communities should be provided with more reservation for their higher education and employment
- The Government should arrange regular awareness program against illegal fishing.
- More technical devices should be introduced in the fisheries sector. It will enable the fishermen to catch more fish.
- Government should make necessary arrangements with bankers for easy availability of bank loans for the financial needs of fishermen community for periodical investments and working capital etc.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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