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A comparative study of socioeconomic characteristics between two villages in the Teknaf Peninsula

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Abstract

The Teknaf Peninsula has ecologically important hilly forest. Local people are extremely poor and they depend on the local ecosystem. So it is very important to assess the impact of subsistence activities of the local people on the local ecosystem and develop extension strategies to manage the ecosystem and conserve the biodiversity. Hence, it is very important to know about the life and living of the people of the Teknaf Peninsula. The main focus of this study is to elucidate and compare the socioeconomic characteristics of the two areas (eastern and western side) as well as to identify and describe the factors responsible for the different socioeconomic characteristics of the people of the two sides. We found significant differences between two villages in the aspects of education, settlement year, major income source and fuel wood management. Based on the result, the basic ideas of the strategies have been suggested.

INTRODUCTION

South Asia is the most vulnerable region of the world to climate change and Bangladesh is an important country of this region [1]. The population density is about thousand people per square kilometers and nearly 26 percent live below the poverty line in Bangladesh [2]. Bangladesh has immense scope of development due to fertile land, natural resources and sufficient manpower, but the development is facing threat due to the consequences of climate change. This country is highly vulnerable to climate change, because it is low-lying, located on the Bay of Bengal in the delta of the Ganges, Brahmaputra and Meghna and densely populated [3]. Its national economy sturdily depends on agriculture and natural resources and both of them are highly vulnerable to climate change. The climate change is a threat for sustainable development and the cost to Bangladesh of changes in climate could be more than half of the US$ 58 billion that the country has ever received in foreign aid [4].

The most vulnerable areas of Bangladesh to climate change are the coastal regions. The country has 710 km long coastal line including 11 districts. The South-western coastal areas share border with India, has mangrove forest, estuaries and the main problem of this area is high salinity due to the rise of sea level coupled with plain low lying lands. The South-eastern coastal areas have different scenario. This part of coastal areas share border with Myanmar, has hilly forest areas and the population is extremely poor who depend on the local eco-system. Among the South-eastern coastal areas, Teknaf upazila is critically important in natural, political and administrative aspects. Teknaf Peninsula is one of the longest sandy beach ecosystems (80 km) in the world. It represents a transitional ground for the fauna of the Indo Himalayan and Indo Malayan ecological sub regions. Important habitats at the site include mangrove, mudflats, beaches and sand dunes, canals and lagoons and marine habitat [5]. Teknaf peninsula can be divided into the Western side (sea facing) and the Eastern side (river facing) areas. These two sides comprises Teknaf peninsula, but they have significant difference in the geography, infrastructure and livelihood of the people as well.

Recently the ecosystem of this area is highly degraded due to population pressure and food crisis. Hills and forests are being destroyed at a constant rate by the people [6]. The people of this region are totally dependent on natural resources i.e., cutting woods from forest, catching fish from sea and animals from hills, collecting fruits from the hilly forest areas. Due to the anthropogenic activities, natural disaster and over exploitation of natural resources, the ecosystem of this area is highly degrading [7]. If the ecosystem degrades to a critical stage, the people of this area will face severe problem for their existence because they are poor and highly vulnerable to the climate change. The slightest change in the nature will firstly affect these people. So, it is very important to assess the impact of subsistence activities of people and develop extension strategies to manage the ecosystem and conserve the biodiversity.

For doing these it is very important to know about the life and living of the people of this area. Research on the human activities and characteristic profile analysis has not been reported enough, though characterization of dwellers in the reserve forest [8] is found. The main focus of this study is to elucidate and compare the socioeconomic characteristics of the two areas (eastern and western side) as well as identify and describe the factors responsible for the different socioeconomic characteristics of the people of the two sides.

MATERIALS AND METHODS

The Teknaf Peninsula is situated in the Teknaf upazila, Cox's Bazar district. The Peninsula comprises about 136 villages. Among them, we selected 2 villages purposively as the study area; Jahajpura (JP, western side of the peninsula facing sea) and Moricchagona (MG, eastern side of the Peninsula facing river) (Fig. 1). Jahajpura is facing the sea and major portion of the villagers are going fishing in the sea or cultivating rice on flat land and betel leaf on the slope land nearby the hills and sometimes both; cultivation and fishing also. In case of Jahajpura about half of homesteads are located on the hill inside the TWS (protected forest area) where migrating in is prohibited and subsistence activities are also restricted. The other village Moricchagona in the eastern side of the Peninsula, facing the Naf river. The major income sources are farming and fuel wood selling. All of homesteads are located outside the protected forest area but most of them collect fuel wood from protected forest area.

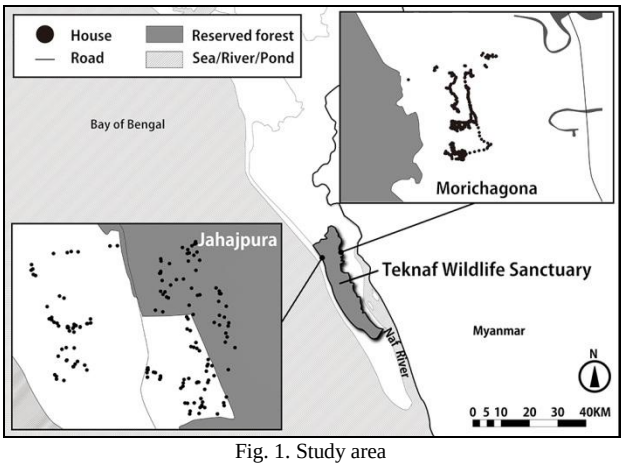

Fig. 1. Study area

To elucidate and compare the socio economic characteristics, the population, age, education level, settlement duration, total income, major income source, farming pattern, and fuel wood management were considered and the above study design

(Fig.2) was followed to complete the study. Household survey was performed in September, 2011 & 12 in Jahajpura and September 2013 in Moricchagona. Several data collection methods including observation, case study, focus group discussion and interviewing were used to collect both qualitative and quantitative data. Totally 271; 165 households in Jahajpura and 106 households in Moricchagona respectively were interviewed.

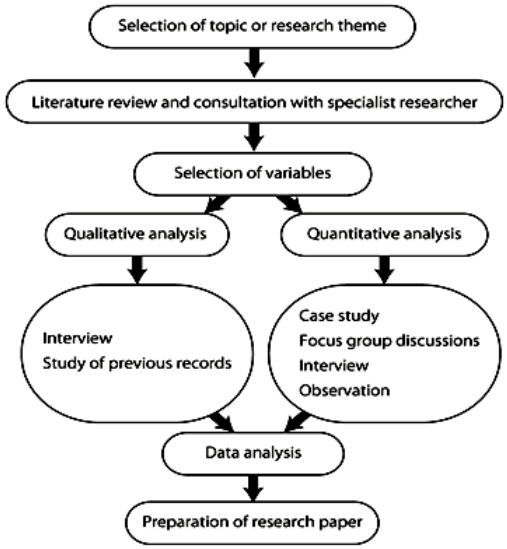

Fig. 2. Research design

In this study; age, education level, total income were treated as quantitative variables, while duration of residence, fuel wood management, farming pattern, major income source were treated as qualitative variables. Generally, duration of residence can be treated as quantitative variable, however, in our survey, most of the respondents couldn't answer specific duration of residence. A lot of answers, such as, "long time ago" or "from birth" were contained in the data. Hence, in this study we treated the duration of residence as a qualitative variable. At first, we calculated the average and did categorization of all variables to elucidate the socioeconomic characteristics of the two villages. Then, two statistic test; independent paired t-test for quantitative variables and chi-square test for qualitative variables were conducted to compare the differences between those two villages. Then, we assumed the factor of the differences based on qualitative data from the observation, case study and focus group discussion.

RESULTS AND DISCUSSION

The main focus of this paper is the comparison between two geographically different locations (villages) in the Teknaf peninsula. Significant difference in various aspects were identified as follows-

The numbers of the samples used in this analsys were 165 households, 1076 persons in Jahajpura and 106 households, 566 persons in Moricchagona. The average family size was higher in Jahajpura (6.5 persons per household) than in Moricchagona (5.3 persons per household). Male to female sex proportion were similar in the 2 villages, roughly 50: 50.

The average age of villager was 21 in Jahajpura, and 19 in Moricchagona (Table 1). There was no significant difference in age between 2 villages (t=1.887, p=n.s). Here, we divided individual by age into 3 categories; young (Up to 30 years), middle (31-60 years), old (Above 61 years). Among the data, age of 4 persons in Jahajpura and 1 person in Moricchagona were unknown. The proportion of each category were as follows; Young was 78% in Jahajpura, 81% in Moricchagona, middle was 19 % in Jahajpura, 18% in Moricchagona, old was 3% in Jahajpura, 2% in Moricchagona (Table 1). The compositions of the 3 categories in the 2 villages were similar. Young were the dominant age group followed by middle and old. The population seems to be increasing since the young age group was dominant.

Table 1. Age (Individual)

Categories	JP		MG	
	No.	%	No.	%
Young (<30)	841	78	456	81
Middle (31-60)	205	19	100	18
Old (61<)	26	3	9	2
Unknown	4	0	1	0
Average	21	-	19	-

Table 2. Education (Individuals above 15 years old)

Categories	JP		MG	
	No.	%	No.	%
No education	289	51	211	79
Primary	206	37	32	12
Secondary	57	10	20	8
Above secondary	10	2	3	1
Average	2.4	-	1.3	-

Table 3. Settlement duration (Household)

Categories	JP		MG	
	No.	%	No.	%
Recent (<30)	55	33	93	88
Intermediate (31-60)	44	27	12	11
Long (61<)	57	35	1	1
Unknown	9	5	0	0

Analysis on education was done for the villagers whose age were above 15 years old. Hence, among the total population (1642 persons) in the study area, 822 person (562 persons in Jahajpura and 266 persons in Moricchagona) were considered in the analysis. Educational situation wasn't good in the study area, since the school attendance rate in the area (40%) was less than the average of rural area in Bangladesh (53%) [9]. Especially in Moricchagona, the rate (21%) is very low compared to Jahajpura (49%). The average school year of the villager was 2.4 in Jahajpura and 1.3 in Moricchagona (Table 2). There was significant difference in education level between 2 villages (t=5.566, p<0.01). Here, we divided individual by education level into 4 categories considering formal schooling year only; no education (0 year), primary (1-5 years, include madrasa and play school), secondary (6-10 years) and above secondary (more than 11 years). The differences between two villages were found in the proportion of no education and primary education. The proportion of no education was lower in Jahajpura (51%) than Moricchagona (79%), while the proportion of primary was higher in Jahajpura (37%) than Moricchagona (12%) (Table 2). The proportion of secondary and above secondary was similar in both villages. According to the observation, we assumed the factor behind the lower education level in Moricchagona could be longer distance to the school and very few number schools than Jahajpura.

Moricchagona contained larger proportion of recent settlers than Jahajpura. Here, we divided household by settlement duration into 3 categories; recent (up to 30 years), intermediate (31-60 years), long (above 61 years, qualitative answers; long time ago, from birth, more than 100). Among the data, the duration of 9 households in Jahajpura were unknown. There was significant difference in the duration of residence between 2 villages (χ^2=75.312, p<0.01). The difference was found in the all categories. The proportion of recent was lower in Jahajpura (33%) than Moricchagona (88%). On the other hand, the proportion of intermediate and long were higher in Jahajpura (intermediate; 27%, long; 35%) than in Moricchagona (intermediate; 11%, long; 1%) respectively (Table 3). In the both villages, the number of new houses seems to be increasing because recent was the dominant category in both villages. In Jahajpura, the number of houses in the reserve forest seems to be still increasing even though the settlement is prohibited. Among the

165 households in Jahajpura, 74 were lived inside of the forest. Among those 74, 26 were categorized as "recent".

Among the total population, the followings were identified as the major income source i.e. farming, fishing, labor, working abroad, business, fuel wood collection, others. There were 3 households; 2 in Jahajpura and 1 in Moricchagona, which didn't get any income. The respondents were asked about their major income source of their family. Among the major income sources labor was identified as the highest (total 40%) followed by farming (total 19%). There was significant difference between Jahajpura and Moricchagona villagers major income source (χ^2=59.643, p<0.01). The major differences were observed in case of fishing, farming, business and fuel wood collection. Because Jahajpura is facing the sea, the percentage of fishermen is significantly more than Moricchagona. Moreover business is high since the category includes whole sellers and middlemen who are distributing farming crops or fishes. On the other hand, people in Moricchagona depend on the fuel wood collection and less depended on the farming, fishing and business. The Jahajpura villagers enjoy the sea and has more farmers and businessmen than Moricchagona. On the other hand, in Moricchagona, more people are working abroad, collecting fuel wood than Jahajpura.

The average household income of the study area was 115000 BDT. The average was lower than the average of rural area in Bangladesh (150000 BDT)[9]. The average household income was 114000 in Jahajpura and 117000 in Moricchagona (Table 5). There wasn't significant difference in household income between 2 villages (t=0.134, n.s.). Based on the household income, the houses were categorized into three groups-low (annual income below 50000 BDT), medium (annual income between 50000 to 100000 BDT and high (annual income above 1000000 BDT). In case of household income, the scenario was slightly different in the both sides of the peninsula. About 28% in Jahajpura and 37% in Moricchagona, households have income above 100000 BDT. Generally, this income comes from various sources such as farming, fishing, business, labor and also working abroad. Almost all of the households which have a person working aboard belong to the high income group. Although Jahajpura has more income opportunity, people of Moricchagona works abroad more than Jahajpura, this is the main factor of having more percentage of high income groups in Moricchagona.

Table 4. Major income sources (Household)

Categories	JP		MG	
	No.	%	No.	%
Farming	38	23	14	13
Fishing	19	12	0	0
Labor	72	44	46	43
Working Abroad	11	7	13	12
Business	18	11	2	2
Fuel wood collection	0	0	17	16
No income	2	1	1	1
Other	5	3	13	12

Table 5. Income (Household)

Categories	JP		MG	
	No.	%	No.	%
Low (<50000)	65	40	20	19
Medium (50001-100000)	53	32	47	44
High (100000<)	47	28	39	37
Average	114000		117000	-

The farming pattern was described based on either the respondents are cultivating major crop in this area or not. As major crops, rice and paan were only considered. Based on this, four categories of farming pattern were found. They are – rice farmer (only rice), paan farmer (only paan), farming both (both paan and rice) and non-farmer. There was significant difference between Jahajpura and Moricchagona in farming pattern (χ^2=29.660, p<0.01). Jahajpura had more farmers than Moricchagona. In Moricchagona, 81% of the total population was not involved farming. In case of rice farmers (rice farmer + farming both), the both villages showed almost same results. But there was difference in the percentage of paan farmers (paan farmer + farming both). In Jahajpura, 38% of the farmers were cultivating paan but in Moricchagona, it was only 12%. The reason might be in the land availability in Jahajpura. Since the land outside of the reserved forest was limited in Jahajpura, farmers have to earn enough money from small land, and some farmers can't grow rice, since their farm land is on the slope. Since paan is capital intensive crop and can be grown on the slope land, it is very adapted in this condition. However, paan cultivation is a factor of forest degradation since large amount of woods are required for the construction of the shelter called paan boroj which is used for paan cultivation [10].

Fuel wood is essential resource in this area, since it is used for cooking. In this study, all household used fuel wood in their daily lives. Fuel wood is managed by purchasing from bazar or individuals, collecting from the local forest. We divided each household into 3 categories according to the way they manage fuel wood.

Table 6. Farming pattern (Household)

Categories	JP		MG	
	No.	%	No.	%
Rice farmer	7	4	7	7
Paan farmer	41	25	1	1
Farming both	21	13	12	11
Non farmer	96	58	86	81

Table 7. Fuel wood management (Household)

Categories	JP		MG	
	No.	%	No.	%
Purchaser	10	6	14	13
Collector	117	71	87	82
Both (purchase and collect)	38	23	5	5

We found significant difference between the fuel wood management of Moricchagona and Jahajpura people (χ^2=18.433, p<0.01). "Collector" was the dominant in the 2 villages and the percentage was more in Moricchagona (82%) than in Jahajpura (71%). "Purchaser" was also more in Moricchagona (13%) than in Jahajpura (6%). On the other hand, "Both" was more in Moricchagona (23%) than Jahajpura (5%). We also found that the people in the category, "Collector" tend to be poorer than the other 2 categories in the study area. Average income of "Collector" was 94000 BDT, while "Purchaser" was 198000BDT and "Both" was 169000BDT. It means that the majority of the people in the study area collect fuel wood and they tend to be poorer than the others. According to the group discussion, fuel wood collection seemed to be very hard work in Moricchagona. Most of fuel wood collectors in Moricchagona told us that they had to go to the Jahajpura's side of the mountain to collect fuel wood since Moricchagona's side had already deforested. Even though the difficulty, the percentage of collector in Moricchagona was higher than in Jahajpura. Since fuel wood is essential for the local people and poor people can't afford to buy fuel wood from the local market, they seems to have to collect fuel wood on their own. Even if they don't get money through fuel wood collection, they can reduce daily expenditure for fuel wood. If one person can't get working opportunity, he can go to the forest and collect fuel wood to minimize their expenditure.

Over all, both of the villages were facing poverty and lack of education in comparison with the other rural area in Bangladesh. The population and houses of both villages seemed to be increasing because the dominant people were young age and the dominant households were recently settled in this area. In Jahajpura, new households were settled inside of the reserved forest since the land outside of the forest has

already occupied by houses or farming lands. As a result, more and more new settlers started entering inside of the reserved forest. Farm land also was being made in the forest by the paan farmers.

According to the major income source and fuel wood management, we found different characteristics between the 2 villages. In Jahajpura, people depended on sea for fishing and forest for paan cultivation, while Moricchagona people depended on forest for fuel wood collection. Fuel wood collections were seen in the both villages, but in Moricchagona, the percentage of fuel wood collectors was higher and the collection was conducted more commercially than in Jahajpura. We assumed the factor behind this difference was the working opportunities. Jahajpura has more labor opportunities than Moricchagona, because paan cultivation and fishing are labor intensive and poor people are working under the boat owners or farmers as labors. However, in Moricchagona, some people have no choice but collect fuel wood to earn money or reduce their expenditures for fuel wood. Paan cultivation was more popular in Jahajpura, since farming land area was limited in this village and paan was capital intensive crop. Even though paan cultivation is a factor of forest degradation, it is difficult to change the trend without alternative annual cash crop since it is a very important income source for the farmers.

Based on the result of this study, we suggest that strategies for the management of the ecosystem and conservation of the biodiversity in this area should consider creating afforestation area for the sustainable fuel wood production and working places for fuel wood collector in Moricchagona (Eastern side), and introducing alternative cash crop of paan in Jahajpura (Western side), improve management of the reserved forest to control collecting activity and illegal settlement. In addition, in aspects of human development, improvement of access to the education facility and increase of education and better income opportunity are desired.

CONCLUSION

This study shows that there were significant differences between Moricchagona and Jahajpura in the aspects of education, duration of residence, major income source and fuel wood management. The factors behind the differences seemed to be basically derived from the different physical environment between two villages, such as accessibility to the school, availability of natural resources, the land form and area. We found the deforestation factors were also different between the two villages. In order to make strategy to manage the ecosystem and conserve the biodiversity, we have to consider the differences of socio economic characteristics of the both side of the peninsula. In this study, creating afforestation area for the sustainable fuel wood production and working places for fuel wood collector in Moricchagona, and introducing alternative cash crop of paan in Jahajpura, improving management of reserved forest to control collecting activities and illegal settlement, increasing of both education and better income opportunities were suggested.

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