

SOCIO-ECONOMIC STATUS OF POPULATION IN FLOOD PRONE AREAS OF CHANCHAL SUB-DIVISION IN MALDA DISTRICT, WEST BENGAL

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ABSTRACT

Flood situation arises in India almost every year and hence it is important to prepare for a disaster in advance. Floods displace a number of people and cause heavy loss of life and property which leads to increase large number of poverty, agricultural deficiency, unemployment, and even starvation death. The economy also gets affected due to damage of crops direct or indirect affecting the agriculture sector. The country needs a better, emergency and effective flood mitigation system to ensure the safety of its people and economy. Floods generally refer to a situation of water accumulation in places that are normally submerged. Heavy rainfall is the main cause of inland flooding. Another hand, natural hazards that cause inland flooding are melting snow, glacial outbursts, and dam break flows. Flood in rivers valley region is a disaster which can destroy the total environmental set up of the area. It causes river bank erosion, depression of land, shifting of river course, river channel widening etc. due to its high discharge, elevation, volume and longer duration. The increase in the frequency of floods has generally been caused to climatic change.

Malda district is one of the important areas that are normally vulnerable to floods. The main objectives of the study are to carry out a socio-economic status of population in flood prone areas of Chanchal sub-division in Malda district and to discuss the social and economical aspects of flood on the flood affected areas, population affected, consequences and their management. Malda is one of the most flood prone district in West Bengal which are caused by the overflow of the rivers Ganga, Mahananda and their tributaries. Due to overflow of rivers, some parts of the district received flood every year, among them Ratua-1 and Harishchandrapur -2 blocks are the most flood prone areas which is located under Chanchal Subdivision of Malda district. The present study is based on both primary as well as secondary data and tries to establish the relation among the different variables which are used for the study.

KEYWORDS: Floods, Impact, Socio-Economic Status, Causes, Management

INTRODUCTION

Flood is one of the most important disasters which can destroy the total physical and socio-economic environmental set up of the area and occurred almost in all part of the world. Flood may be occurred seasonally in same portion in the world and sometimes suddenly occurred in the world due to physical phenomena and human factors. According to Carter, "floods have the following characteristics (1991): Long, short and no warning, depending on the type of floods (for example, flooding within parts of a major river may develop over a number of days or even weeks,), speed or onset may be gradual or sudden; and there may be seasonal patterns of flooding".

It causes by heavy rainfall, cloud burst, smelting of glacier, river bank erosion and siltation of river bed, depression of land, shifting of river course, river channel widening etc. due to its high discharge of water, variation of elevation, volume and longer duration. It leads to create large number of poverty, agricultural deficiency, extensive damage to infrastructure, unemployment, sexual exploitation, starvation death and others. It is very important to remember that the severity of flood disasters is not solely linked to the intensity of the natural hazard but also too many human-driven factors that lead to increasing the risk for flooding and magnifying the impacts, such as construction activities, soil degradation, deforestation, overgrazing, faulty agricultural practices, urbanization, and poor urban drainage. Urbanization is the process which reduces the potential for lands to correctly absorb heavy precipitation and hence strongly contributes to the risk of flooding.

This may also force to the people into unsafe and flood prone areas, notably impoverished people in the context of rural to urban migration. Examples include the unsafe peripheral areas of the cities of Manila, Kolkata, Dhaka, or Rio de Janeiro, where the poorest settle down in urban slums that are located in highly disaster-prone (and especially flood-prone) areas, on unstable slopes or in flood-prone basins. Over the last 30 years, 1 3,119 numbers of floods were occurred worldwide, resulting in the deaths of more than 2,00,000 people and affecting more than 2.8 billion others according to EM-DAT.

Oxfam India conducted an assessment of the flood situation in Malda district of West Bengal during the month of September, 2008. The most affected blocks were found as - Ratua, Kaliachak and Harishchandrapur. The total numbers of affected population was 1, 91,000 in Malda district. Nearly 960 houses fully damaged and 2,200 houses partially damaged. It was estimated that 1,300 families were marooned as swollen by *Fulhar* river alone, flowing over danger mark, flooded vast parts of Malda district on 25th August in 2009.

Several villages under Chanchal sub-division were submerged as water gushed in following a wide breach in the Bhaluka guard wall, which had been built after the concrete embankment over the river gave way, a district official said. Most parts of Harishchandrapur II and Ratua blocks were flooded as Fulhar river continued to submerge nearby areas despite fall in its water level from 'extreme danger' to 'danger' mark along the protected areas.

Vast stretches of paddy fields were also inundated as 500 families near Bhaluka bazar were shifted to safer places. Floods also affected 800 families in 11 villages under the Harishchandrapur block II, the official said. Vehicular movements along Bhaluka-Bajitpur Road were suspended after flood water spilled over certain stretch of the road (Disaster update, Date: 25.08.2009, www.nidm.net Issue No.1524).

LITERATURE REVIEWS

Nott (2006) studied that a flood event is not considered to be a natural hazard unless there is a threat to human life and property. The extent of a flood has a direct relationship for the recovery times of crops, pastures and the social and economical dislocation impact to populations. Floods are the most costly and wide reaching of all natural hazards. They are responsible for up to 50,000 deaths and adversely affect some 75 million people on average worldwide every year.

Disease outbreak is common especially in less developed countries. Malaria and Typhoid outbreak after floods in tropical countries are also common. It has been estimated that in India and Bangladesh 300 million people live in areas that are affected by floods.

Know Risk (2005) observed that the economic impact of natural disasters shows a marked upward trend over the last several decades. The hazards tend to hit communities in developing countries especially the least developed countries, increasing their vulnerability and setting back their economic and social growth, sometimes by decades. The floods have led to loss of human life, destruction of social and economic infrastructure and degradation of already fragile ecosystems.

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Dixit (2003) pointed out that vulnerability are the condition of a person or group in terms of their capacity to anticipate, cope with, resist and recover from the impact of a natural hazard. Even in normal times people live in vulnerable conditions. Vulnerable conditions and families find it hardest to reconstruct their livelihood following a disaster.

Ninno, *et al.* (2003) revealed that the 1998 floods in Bangladesh caused severe damage to the rice crop and threatened the food security of tens of millions of households. Government food transfers to the affected people helped limit the impact of the flood on household access to food. The flood led to major crop losses, losses of other assets and lower employment opportunities and thus affected household income as well as market prices.

Gao. *et al.* (2007) states that although water shortages often grab the headlines, floods continue to be the most serious natural disaster in China. This is despite enormous efforts to construct structural engineering projects for flood control.

According to Office for the Coordination of Humanitarian Affairs (OCHA 2008), the cumulative number of people affected by rains and floods in 2007 in Southern Africa was more than 194,103 persons. This included 60,995 in Malawi (mostly damage to property and crops), 94,760 people in Mozambique (all were evacuated into resettlement camps); more than 16,680 in Zambia (1,890 persons in temporary accommodation, the rest in host families); and 15,168 in Zimbabwe. An estimated additional 4,000 people had been affected in Lesotho and another 2,500 persons in Swaziland.

In 2008, thousands of people were affected after flash floods submerged hundreds of hectares of farmland in the north-eastern region after floods displaced hundreds of families in the region. The farmland which supported some 1,200 farmland had their livelihoods and food security disrupted (IRIN 2008).

Theron (2007) indicated that at least 20 countries in Africa were affected by floods. These countries included Algeria, Berlin, Burkina Faso, Cote d'Ivoire, Ethiopia, Gambia, Ghana, Guinea, Kenya, Liberia, Mali, Mauritania, Nigeria, Rwanda, Senegal, Sierra Leon, Sudan, Togo and Uganda. Reports estimated that approximately 300 people in 20 countries had died in floods during a period of two (2) months, noting that the inaccessibility of the affected areas had made it difficult to accurately access the death toll. Floods had several socio-economic and political implications which caused a wide range of complex issues. Some of the immediate consequences included the displacement of people, the destruction of infrastructure such as houses and roads, damage to forms and crops and loss of cattle and livestock. The destruction of roads and other infrastructure delayed on-going development initiatives and political processes.

Khandlhela and May (2006) argued that while disasters may affect everyone and play an important role in increasing vulnerability, poor people are made more vulnerable from a web of circumstances that make them prone to the effects of disasters. In this study, they also observed that the varying impact of floods on households and the community and large showed that vulnerability to the effects of a flood disaster is indeed an outcome of the interaction between socio, economic and political process.

From the literature reviewed, it's clear that the increasing population of our planet earth is leading to the increasing exposure of people and property to hazards of flooding. This assertion is in line with the findings of the research which has confirmed that the population of people living along the river banks in the study area has increased over the years and has made them susceptible to the flooding.

With the increased population on the earth surface, it may be expected that the effects of climate change will further aggravate this. At present, there are not sufficient and effective measures globally to limit the growing chance and consequence of flooding.

The evidence is that flood risk is increasing and continuing vigilance is needed to ensure that existing systems are maintained and improvements introduced. It is imperative that human society adopts a risk management approach if there is to be harmonious coexistence with floods.

In practical terms, the chance of flooding can never be eliminated entirely. Further, it's clear that most flood studies acknowledge that floods have had negative impact on people. However, the studies have tended to address the subject matter depending on the objective of the study.

Objectives of the Study

- To analyze the socio-economic status of the flood prone areas of Chanchal sub-division in Malda district.
- To traces out the problems of the study areas.
- Try to find out the possible measures for minimizing the problems.

Database and Methodology

The present study is based on a sample of 171 households drawn from the four flood prone villages of Chanchal sub-division in Malda district of West Bengal and most of the information collected among the villages where flood is occurred almost every year. The relevant data were collected through a primary survey, by visiting the households with a suitable questionnaire.

The opportunities given by meeting the households in person provides a great scope for an in depth investigation. Four Gram Panchayat have been taken from the study areas on the basis of frequency of flood occurrence in the Chanchal sub-division of Malda district. These villages have been selected randomly.

Out of them, 171 households have been randomly taken from the total households in the villages (Table 1). All the data were converted into relative number such as percentage and ratio methods used for observed the overall situation of the villages.

The Study Area

Chanchal Sub-division is located in the northern part of Malda District. The area is dominated by sandy soil, which is most fertile and productive for agricultural crops and vegetables. Climatic condition of the study is hot and humid, which is highly favourable for agriculture. The temperature of the study area varies from 24° C to 40° C in summer season and 10° C to 24° C in winter season.

The monsoon extends from the months of June to September, and gives heavy rainfall every year. Annual average rainfall is around 175 centimetres, which is most suitable for rice cultivation.

Nearly two-third of the total land area of the study area is used for cultivation and more than 80 per cent of the total populations of the study area are engaged in agriculture sector. It consists of six community development blocks namely, Chanchal–I, Chanchal–II, Ratua–II, Ratua–II, Harishchandrapur–I and Harishchandrapur–II.

These six blocks having 49 gram Panchayat. The sub-division has its headquarters at Chanchal. Total geographical area of Chanchal Subdivision is about 1160.44 sq.km. and as per 2001 census its total population is 10,78,101 which is 32.76 per cent of the total population of the district Malda.

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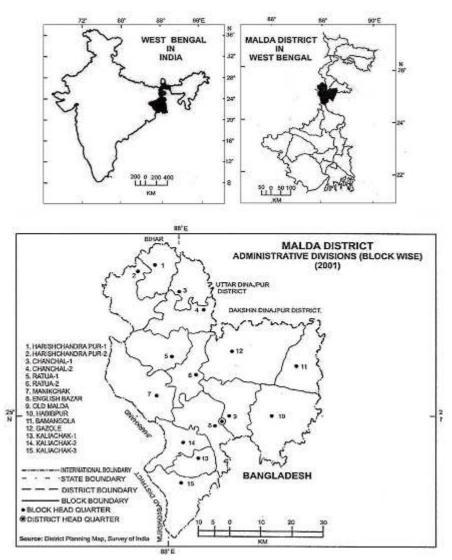


Figure 1

DISCUSSIONS

Family Size

The average family size in India in 1961 was 5.1, it increased to 5.6 in 1981 (Chakravorty and Singh, 1991), and dropped to 5.4 in 1998-99, which is 1.4 times higher than the family size of China in 1995. In China, the average family size in 1995 was 3.7 members per household (Zeng, 2002). The mean family household size in urban areas in India is 5.16 and a rural area is 5.47 members per household. The rural urban differential in the mean family size is quite visible in the data indicating higher fertility in rural areas.

Barring a few states, an almost similar picture is evident in rural urban differences in all the states of India. . Further, the distribution of family size by type of family reveals a mean size of 7.93 in the urban areas and 8.16 in the rural areas among joint families, and 3.35 and 3.24 respectively among broken nuclear families. The nuclear family households have a mean family household size of 4.39 in urban areas and 4.54 members in rural areas. According to primary survey, average size of family members is 6.30. The survey shows 33.33 percentage households have more than 8 members in the family and 48.54 percentage household having members between 5 to 8, where only 18.13 percentage families have less than 5 members in family (Table 2). The size of the family member is the important determinant to measures the status socio-economic conditions of areas.

Housing Condition

Housing condition is another factor which reflects the socio-economic condition of people. According to primary study, nearly 78 per cent households are *Kutcha* made by bamboo, grass, clay etc., followed by 13.45 per cent households are semi-pucca and only7.6 per cent households are pucca in the study area (Table 3). It means the housing condition of population in the study area is very bad.

Educational Status

Education is one of the most important indicators for socio-economic development and educations also improve the occupational structure of the societies. Level of education is determined the level of occupation and level of income. Table 4 reveals that the level of illiteracy among the household heads is very high in Chanchal sub-division. More than 44.44 per cent household heads are uneducated and remaining 55.56 per cent household heads are educated. Nearly 32.63 per cent household heads of the total households are educated up to primary level, followed by middle (18.95 per cent), high school pass (12.63 per cent), 10+2 (9.47 per cent), graduate (18.95 per cent), and Post Graduate and other (7.37 per cent).

Occupational Structure

The unemployment rate in the Chanchal sub-division is quiet high as compare to the district average. Nearly 99.6 per cent of women in Chanchal sub-division are housewife. The percentage of primary workers in Chanchal sub-division is comparatively higher than the other parts of the district. Occupational structure of the study area reflected very clear picture, where farming are the main occupation for maintain their basic needs. According to primary survey, nearly 45.03 per cent of sample household solely depend on farming, followed by 13.45 per cent enjoy service in government sectors and private sectors, third largest occupation in the study areas is daily labourers which is more than 12.28 per cent of the total head of the sample households, and 11.7 per cent households some time partially and some time fully depend on business (Table 5). Agricultural labourer is one of the lowest paid activities in India which is very high (9.36 per cent) as compared to any part in the district and 8.19 per cent households depend on other activities over the year.

Land Ownership

Ownership of land and size of land holding are the important socio-economic determinant for rural societies. Size of land holding reducing the level of poverty and provides self employment opportunities. According to primary survey, more than 43.27 per cent households have not any agricultural land; only they have their land for housing. In case of India, there are 31.12 per cent households have not own cultivated land, whereas, in west Bengal, the corresponding figure is 34.69 per cent (Economic & Political Weekly). Only 56.73 per cent households have own land, among them most of the households having very small and marginal size of land holding which is not sufficient for maintained their livelihood(Table6).

Level of Income

It is very clear that the socio-economic factors determining the sources of earnings and spending pattern associated with the nature of the economic activities which play a most vital role in explaining low level of income causing poverty. Usually the poor with low level of education and other assets, more mouth to feed, traditional life style and families values are risk averse. This mean those who cross certain age are rigid in terms of not trying out any new opportunities open to them until and unless they are fully convinced about the outcomes of the new ventures. Because they live in the same environment of poor achievement and fatalistic attitude they are also slow to adopt any changes. The

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empirical evidence also suggests that the incidence of poverty is very much sensitive to the magnitude as well as method of estimating poverty income line.

Table 7 depicts that more than 42.69 per cent of household's heads having less than rupees 3000 per capita household income per month, presently which is very low and caused by low socio-economic condition of the areas. The second largest income group of household heads earns only rupees 3000-6000 per capita household income per month which is 31.58 per cent household heads of the total number of household. Only 9.94 per cent household heads having income in between rupees 7000-10000, followed by 7.6 per cent from rupees 11000-14000, 4.68 per cent in between rupees 15000-18000 and only 3.51 per cent above rupees of 18000.

Health Status

Health care facilities are also one of the important factors which reflect the socio-economic status of population. In the study area, all the patients are categorized into two types (a) normal condition patients & (b) serious condition patients. According to primary survey, only 21.64 per cent normal condition households' patients checked up their health to the registered doctors and remaining 78.36 per cent depends on non-registered doctors due to their lack of socio-economic condition and not availability of registered doctor in the villages. On the other hand, large numbers of households' population go to the registered doctors when their patients' condition is severe or critical. According to study, more than 58 per cent household depend on registered doctor and remaining 41.52 per cent depends on non registered doctors. Table 8 clearly shows the gram Panchayat level health status of the study area. Among four Gram Panchayat, Mahanandatola is the highest number of households depends on non registered doctor in normal cases due to their lack of transport facilities.

CONCLUSIONS AND SUGGESTIONS

The study revealed that the average size of family members in the study area is 6.30. Maximum (48.54 per cent) household of the study areas having 5 to 8 members in the family. Nearly 78 per cent households are *Kutcha*, 13.45 per cent are semi-pucca and only7.6 per cent households are pucca in the study area. In the study area only 55.56 per cent population are literate and majority (32.63 per cent) of them are educated up to primary level. Major occupation of the study area is farming (45.03 per cent) and agriculture labourers (9.36 per cent).

Only 56.73 per cent households have own land, among them most of the households having very small and marginal size of land holding which is not sufficient for maintained their livelihood. Nearly 43 per cent of household's heads having less than rupees 3000 per capita household income per month.

Only few per cent of the households' head having more than rupees 18000 per capita household incomes per month. Out of four gram Panchayat, Mahanandatola is the highest number of households depends on non registered doctor in normal cases due to their lack of transport facilities.

It is also cleared from the above analyses that floods have adverse impact on the socio-economic status of livelihoods for households in Chanchal sub-division of Malda district of West Bengal. Above discussion has further demonstrated that impacts of floods in one sector can affect other sectors of the society.

The most important issue of water contamination of the river at the pick of floods and the handling of water from the borehole increases the health risk. Actually no health facility was damaged due to floods; problems are creating in case health services accessibility due to damaged of infrastructure (roads and bridges). In case of school going population, attendance was disrupted due to damaged of transport and communication facilities. From the discussion, it is very clear that household in the sample area facing various types of problems due to floods.

However, the consequences of flooding can be mitigated by appropriate behaviors and actions. Successful flood risk management is dependent upon the active support of all on whom the effects of flooding may impact, those directly at risk, the civil authorities and the wider community and its leaders.

Socially vulnerable or disadvantaged households have lower levels of disaster preparedness. Flood risk is expected to increase substantially in coming years as a result of both climate change and continued socio-economic development.

SUGGESTIONS

- There should be a deliberate policy to compel communities especially in rural areas to build houses using durable materials and away from the flood prone areas.
- The relevant authorities should delineate flood affected areas, and temporary shelter should be timely provided to the fold affected people.
- Construction of dams should be considered to trap the excess water. This could also be used for irrigation purposes.
- Construction of canals into the main *Fulhar* River should be considered.
- Government and key stakeholders should be engaged the communities and local authorities in making them aware about flood risk in view of the climate variability.
- In the long term, community based floods early warning system should be developed.
- Multi-sectoral approach to flood mitigation as opposed to single sector should be promoted as there are interlinkages in terms of flood impact on various aspects of society.
- Active participation of the people to minimize losses, e.g. construction of advance flood shelters for people as well as for cattle & properties.
- Storage of sufficient food, drinking water and other essential goods before occurrence of floods.
- Rescue and relief operations should be quickly taken by government, as well as NGO.
- To prevent damage to the embankments and unauthorized construction in flood plain, side slope of embankment etc.
- To assist and co-operate on the maintenance of existing embankments by local people
- People must follow the existing rules and regulations for prevention and mitigation of floods.

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APPENDICES

 Table 1: Flood Prone Gram Panchayats of Chanchal Sub Division in Malda District, 2011

| Sl. No. | Gram Panchayat | Block | Sample Size | |
|---------|----------------|-------------------|-------------|--|
| 1 | Mahanandatola | Ratua-1 | 43 | |
| 2 | Bilaimari | Ratua-1 | 39 | |
| 3 | Islampur | Harischandrapur-2 | 51 | |
| 4 | Bhaluka | Harischandrapur-2 | 38 | |
| | Total | | | |

Source: Field Survey, 2011

| Size of the Family | Percentage | | | |
|-------------------------|------------|--|--|--|
| Small family (5 member) | 18.13 | | | |
| Medium (5-8 member) | 48.54 | | | |
| Large (above 8 member) | 33.33 | | | |
| Total | 100 | | | |

Table 2: Percentage Distribution of Households by Family Size in Chanchal Sub-Division, 2011

Source: Field Survey, 2011

Table 3: Shows the Housing Condition of Sample Households in Chanchal Sub-Division, 2011

| Name of Gram | Kutcha Houses | | Semi-Pu | cca Houses | Pucca Houses | | |
|---------------|---------------|------------|---------|------------|--------------|------------|--|
| Panchayat | Number | Percentage | Number | Percentage | Number | Percentage | |
| Mahanandatola | 36 | 83.72 | 5 | 11.63 | 2 | 4.65 | |
| Bilaimari | 32 | 82.05 | 4 | 10.26 | 3 | 7.69 | |
| Islampur | 42 | 82.35 | 6 | 11.76 | 3 | 5.88 | |
| Bhaluka | 25 | 65.79 | 23 | 21.05 | 5 | 13.16 | |
| Total | 135 | 78.95 | 23 | 13.45 | 13 | 7.60 | |

Source: Primary survey 2011

Table 4: Distribution of Household Heads Based onEducation Level in Chanchal Sub-Division, 2011

| Educational Level | Percentage of Sample Household | | | |
|--------------------------|-----------------------------------|--|--|--|
| Uneducated | 44.44 | | | |
| Educated | 55.56 | | | |
| Total | 100.00 | | | |
| Primary | 32.63 | | | |
| Middle | 18.95 | | | |
| High School | 12.63 | | | |
| 10+2 | 9.47 | | | |
| Graduate | 18.95 | | | |
| Post Graduate and others | 7.37 | | | |
| Total | 100 | | | |

Source: Field Survey, 2011

Table 5: Occupational Structure of Household's Head in Chanchal Sub-Division, 2011

| Occupation | Percentage | | | |
|----------------------|------------|--|--|--|
| Farmer | 45.03 | | | |
| Service | 13.45 | | | |
| Business | 11.7 | | | |
| Agriculture labourer | 9.36 | | | |
| Daily laborers | 12.28 | | | |
| Others | 8.19 | | | |
| Total | 100.00 | | | |

Source: Field Survey, 2011

Table 6: Land Ownership Status of Household'sHead in Chanchal Sub-Division, 2011

| Category | Percentage |
|----------------|------------|
| Landless | 43.27 |
| <5 bigha | 25.15 |
| 6-10 bigha | 9.94 |
| 11-15 bigha | 12.28 |
| 16-20 bigha | 5.26 |
| Above 20 bigha | 4.09 |
| Total | 100.00 |

Source: Field Survey, 2011.Note: 1Bigha =0.13387 Hectare

| Per Capita Household Income (Rupees) | Percentage | | | |
|---|------------|--|--|--|
| < 3000 | 42.69 | | | |
| 3000-6000 | 31.58 | | | |
| 7000-10,000 | 9.94 | | | |
| 11,000-14000 | 7.6 | | | |
| 15,000-18000 | 4.68 | | | |
| >18,000 | 3.51 | | | |
| Total | 100 | | | |
| G E: 11.0 0.04 | | | | |

Table 7: Distribution of Household's Heads Based on per CapitaHousehold Income in Chanchal Sub-Division, 2011

Source: Field Survey, 2011

Table 8: Gram Panchayat Wise Heath Facilities in Chanchal Sub-Division, 2011

| | Normal Condition Patients | | | | Serious Condition Patients | | | |
|---------------------------|---------------------------|------------|--------------------------|------------|----------------------------|------------|--------------------------|------------|
| Name of Gram Panchayat | Registered Doctor | | Non Registered Doctor | | Registered Doctor | | Non Registered Doctor | |
| | No | Percentage | No | Percentage | No | Percentage | No | Percentage |
| Mahanandatola | 4 | 9.30 | 39 | 90.70 | 22 | 51.16 | 21 | 48.84 |
| Bilaimari | 6 | 15.38 | 33 | 84.62 | 27 | 69.23 | 12 | 30.77 |
| Islampur | 12 | 23.53 | 39 | 76.47 | 31 | 60.78 | 20 | 39.22 |
| Bhaluka | 15 | 39.47 | 23 | 60.53 | 20 | 52.63 | 18 | 47.37 |
| Total | 37 | 21.64 | 134 | 78.36 | 100 | 58.48 | 71 | 41.52 |

Source: Primary survey 2011