

Livelihood Assessment of Artisanal Fishermen in and Around Chittagong Coastal area of Bangladesh

Aysha Akhtar, Mahmuda Akter Bhuiyan, Muhammad Moznu Mia,
Md. Shafiqul Islam and Md. Simul Bhuyan*

Abstract

This study was conducted to assess the livelihood of artisanal fishermen in and around Chittagong coastal area of Bangladesh. Structured questionnaire was used during field survey. A total of 45 artisanal fishing labors interviewed from 15 boats. Significant relationships were found in satisfaction of fishermen, children's school, taking risk at work with the fishing income ($p < 0.05$). They were found to spend their income on the rudimentary needs like food, clothing and medicine mainly rather than education. It observed that the average amount of money they spend annually for health care was far below the standard. The most significant risks related to fishing identified by them were piracy (96%) and invasion of industrial trawlers (4%) within their territory of 40 meter depth. The probable solutions came from them were increasing Coast Guard activities, install more buoys to demarcate submerged chars and government support services. Majority agreed that life insurance can reduce their livelihood risks. However, lack of enough money was mentioned as one of the reasons for not having a policy. It was found that the fishermen were facing stumbling blocks of getting legal assistance regarding piracy as the area of jurisdiction for each coastal police station in terms of marine water was not demarcated. Since they lack power to stop the trawlers from fishing within their territory, they just have to compromise with invasion. Ultimately, for the better and meaningful livelihood status of artisanal fishermen strong monitoring of Coast Guards, access to formal credit sources and installation of sufficient buoys to indicate submerged chars are crucially needed.

Introduction

Artisanal fishing is a small scale commercial or subsistence fishing practices to provide food directly on the community table (Timothy *et.al.* 1994) and minimal amount of capital, low-level technologies and household-unit entities may be called small scale fisheries.

* Institute of Marine Sciences and Fisheries, University of Chittagong, Chittagong, Bangladesh.

Small-scale fisheries support the livelihoods over five hundred million people worldwide (Bene *et.al.*, 2007; FAO, 2012a). In Bangladesh an estimated 87% of all households caught fish for some part of the year (Roos *et.al.*, 2003) as a source of income and subsistence (Bene *et.al.*, 2007; Pomeroy and Andrew, 2011) since small scale fisheries has great contribution in terms of food security, poverty alleviation (Kent, 1998; Van der Elst *et.al.*, 2005; Bell *et.al.*, 2009; FAO, 2012b), revenues generation (FAO, 2005) and ultimately sustainable livelihoods (Andrew *et.al.*, 2007). This type of fisheries located in remote areas and decentralized post-harvest and marketing activities that create narrow scope to collect data illustrating their scope, impact, importance and economic value (Salas *et.al.*, 2007) and making less important sector in national policy (Andrew *et.al.*, 2007; World Bank/FAO/World Fish Center, 2010; Mills *et.al.*, 2011). There are mainly two types of marine fisheries in Bangladesh: artisanal or small scale and commercial or large scale. Artisanal coastal fishery represents the bulk of the country's exploitable fisheries extending to the depth of 40 meter. The term particularly applies to coastal or island ethnic groups using traditional technique (Anon, 2009) and this fisheries needed for wealth generation, poverty alleviation and food security (Allison and Ellis, 2001; Satia and Staples, 2003; FAO, 2005; Bene *et.al.*, 2007; Garcia and Rosenberg, 2010). According to World Bank/FAO/World Fish Center (2010), over 90% of people employed globally in capture fisheries and related activities (Pauly, 1997). In Bangladesh, the fisheries sector contributes about 4.9% of the national GDP, 20% to the total agricultural production (Mome, 2007), 3% of the GNP, 8% of export earnings and 6% of total employment (BOBP, 1985) as marine and fresh water (Rahman, 1994). Fish accounts for approximately 63% of the animal protein in people's diet (BBS, 2004). About 95% of our total marine catch comes from small scale sectors (National Fisheries Policy, 1998). Notwithstanding marine fisheries are important but experiencing increasing pressure because of overfishing (Jackson *et.al.*, 2001), habitat destruction (Diaz and Rosenberg, 2008), climate change (Hoegh-Guldberg and Bruno, 2010) and other anthropogenic effects (Halpern *et.al.*, 2008) which can be dreadful for fisheries and subsistence level fishermen who depend on them (Mauthe *et.al.*, 2013).

In Bangladesh this feature is more devastating due to lack of enforcement capabilities, both of which are necessary to design, implement and support effective fishery resource policies (Andrew *et.al.*, 2007; Pomeroy and Andrew, 2011). Some research efforts have collected biological/ecological

small-scale fisheries catch statistics (Pauly and Mines, 1982; Craig *et.al.*, 1993; Stergiou *et.al.*, 1996; Laroche *et.al.*, 1997; Hernandez-Garcia *et.al.*, 1998; Marquette *et.al.*, 2002) to protect the small scale fisheries and fishermen globally. Considering the contribution of artisanal fisheries sector to our national economy and the involvement of huge number of coastal population in this sector, we need to think about the effective ways to enhance or secure their livelihoods. Consequently, present study was conducted (1) to determine the socio-economic status of the artisanal fishing labors (2) to identify the risk factors related to this occupation and (3) To assess the coping strategies adopted to mitigate risks respectively.

Materials and Methods

Study Area

This study was conducted at Fishery ghat of Patharghata, Chittagong (Fig 1).



Figure 1: Map showing the sampling sites

Data Collection

Data were collected through, Focus Group Discussion (FGD), Key Informant Interviews and direct observations. Questionnaire survey was done for this study and interviewees were selected randomly. The survey design was based on expert advice from local NGO staff and guidelines for collecting baseline fisheries data. To get income and demographic data used the design drew on regional guidelines (Malleret-King *et al.*, 2006) and validity

recommendations (Fink, 2003). To get a homogenous group 'Majhi' (team leader) and 'Engine operator' of the boats were excluded purposely and only the fishing labors were interviewed for this study.

Data Analysis

For data analysis, SPSS (The Statistical Package for The social Sciences) and MS Excel were used.

Results and Discussion

Socio-Economic Status of the Artisanal Fishing Labors

84% of the total respondents were found to be married and their family size varied from 6-15 (average 10) indicating that most of them have a big family to maintain. One Way Analysis of Variance show that there was prevalent relationship of satisfaction of fishermen, children's school, taking risk at work with fish income as the significant level $p < 0.05$ analyzed by SPSS. Having land, personal vehicles, boats, electricity and building also has significant relationship with fish income ($p < 0.05$).

Average number of children was found as 5 and all of them go to school according to the interviewees. Though, the quality of education available to them is a question. It was found that 69% of the respondents are sole earning member of the family (Fig. 2) which means that if anything happens to the fishermen, it would increase the vulnerability of these families unless there are some safety nets for them.

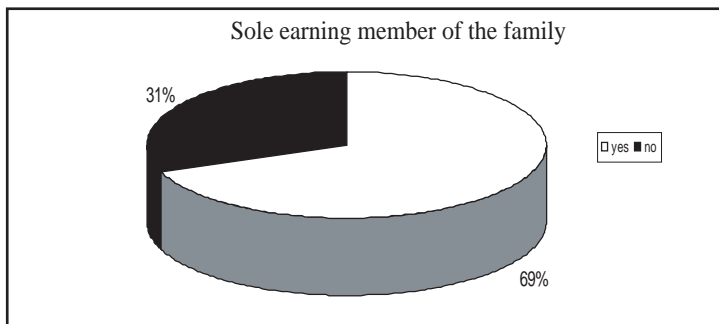


Figure 2: Status of the fishermen as sole earning member

None of the fishing labors were found to possess any boats, nets or vehicles of their own. More than 77% of the interviewees told that they do not have

electricity in their house which is quite common in the remote coastal villages. Assets related to entertainment and communication showed that of the total respondents, 75% possess mobile phone, 71% have radio, 22% have television and only 2% have tape-recorders (Fig. 3).

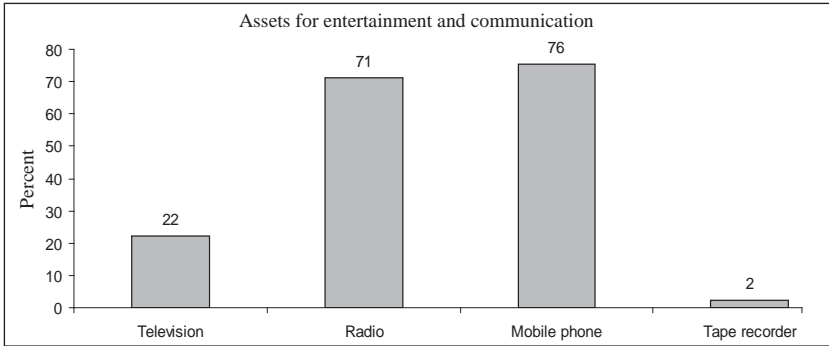


Figure 3: Status of physical assets for entertainment and communication

This result showed that both radio and mobile phone have increased their access to information and improved communication. Land is one of the most important physical assets for marginal people and the result showed that though 60% of the respondents possess agriculture land but 42% of them found to have only 6 decimals of cultivable land which may not be enough to produce sufficient to support the family. While 40% having no land means that they do not have any option to use it either for production or to use as collateral. Condition of housing material is one of the indicators of poverty level and the result showed that 89% of the fishing labors have houses made of bamboo with thatched roof and 9% have clay-made house while only 2% have tin-shed house (Fig. 4).

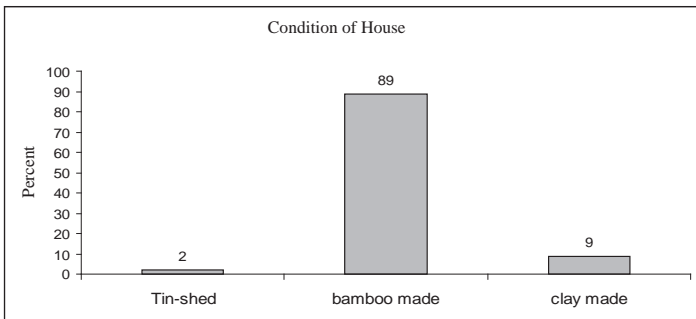


Figure 4: Condition of house infrastructure

So, it showed that majority of the respondents belong to the marginal group. The result showed that all the respondents rear different types of livestock

(Fig. 5) and have homestead garden with range of produces (Fig. 6).

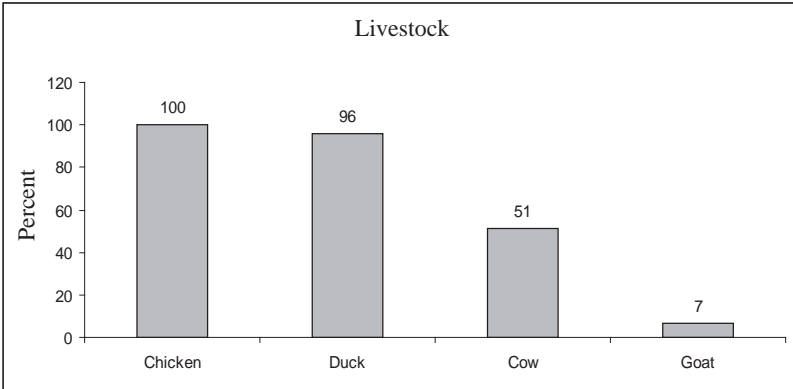


Figure 5: Types of livestock reared by the fishing house

This means that they at least have some sources of earning at the household level which can be further improved to increase income. Household ponds found to be possessed by all the respondents which have the potentials for fish culture though not practiced by them at present.

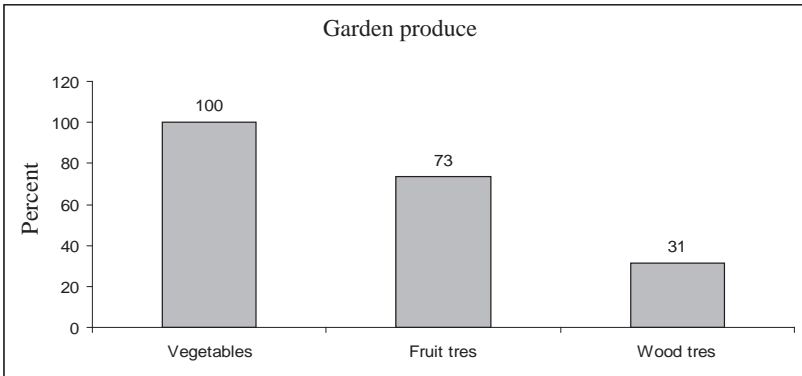


Figure 6: Types of garden produce from homestead garden

Gold or such valuables are usually treated as financial assets which the households keep as savings to meet crisis but the result showed that only 4% of the respondents possess gold ornaments but the amount is just one gram or less than that. Regarding other sources of income, 79% of the respondents said positively and the rest 22% responded negatively though they are having some livestock and garden produces. It may be because they do not consider this income worth to mention.

The types of other income sources are shown in (Fig. 7).

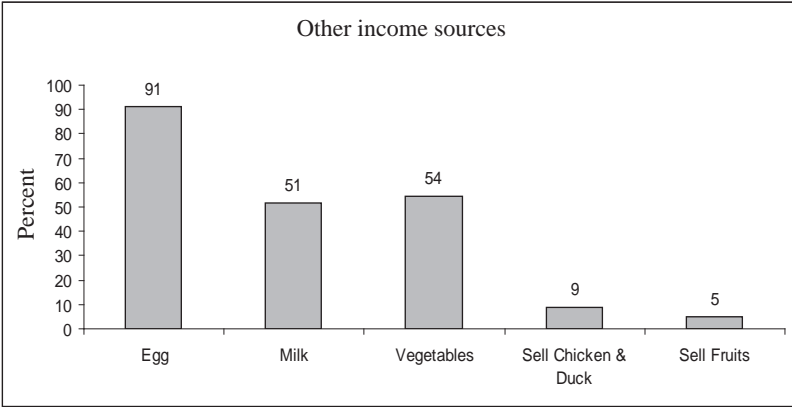


Figure 7: Other sources of income for the fishing household

The annual income from other sources found to be ranged between tk.300 and tk.4700 with average of tk.1849 which can be further improved with appropriate training. The result showed that annual income as fishing labor ranged between tk.40, 000 and tk.70, 000 with average tk.51, 000. While only 2% earn was the maximum amount i.e. tk.70, 000 (Fig. 8).

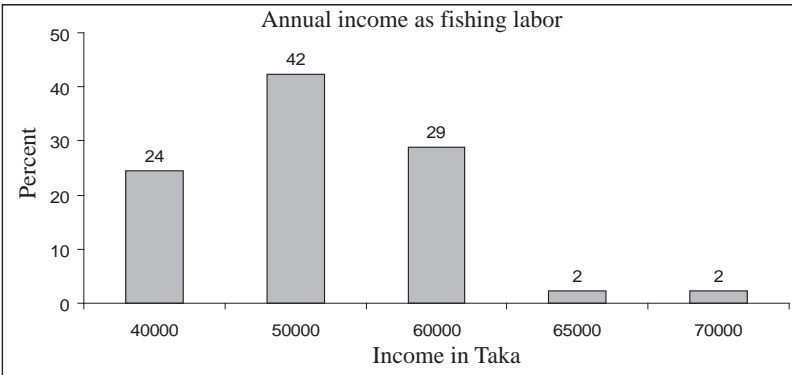


Figure 8: Range of annual income a fishing labor

Of the total respondents 55% said that during off-fishing season they get engaged in some income earning activities like daily labors and net-boat repairing. They usually earn tk.3000- tk.4000 per month from the boat owner for repairing works. The rest 44% respondents just stay at home during the off-season.

Identification of Risk Factors Related to Fishing

The respondents identified their risks involved in fishing at sea in three categories: most, moderate and least which revealed that piracy (96%) and conflicts with industrial trawlers (4%) are the most significant risks to them (Fig. 9).

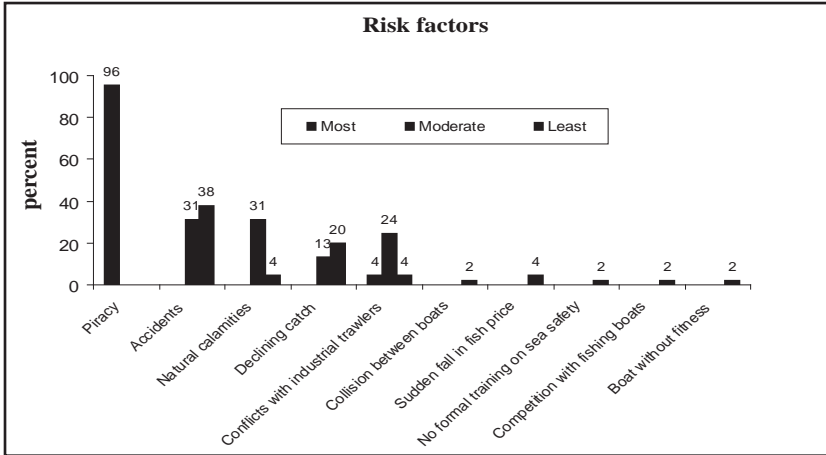


Figure 9: Categories of different risk factors related to fishing at sea

Among moderately significant risks accidents (31%), natural calamities (31%), declining catch (13%) and conflicts with industrial trawlers (25%) were identified. While nine risks were mentioned in the least significant category including accidents (38%), declining catch (20%), natural calamities (4%), conflicts with industrial trawlers (4%), sudden fall in fish price (4%), collision between boats due to fog (2%), no formal training on sea safety (2%), competition with fishing boats (2%) and boat without fitness (2%). In National Fisheries Policy (1998), it is mentioned that special measures will be taken to control sea robbery to secure the lives and resources of small-scale fisher's community. In our maritime area, Bangladesh Navy and Coast guard are mainly responsible to ensure the security of the fishers while fishing. But incidents of sea piracy have been increasing every year at alarming rate which we always see in the news papers during fishing season. So, it is very likely that the interviewees have identified piracy as the most significant threat to their job. The area for fishing with artisanal mechanized boats is determined up to 40 meter depth at its highest high tide while the area for fishing with industrial trawlers is

determined beyond 40 meters of marine waters at its highest high tide (The Marine Fisheries Rule, 1983) but in reality invasion by trawlers within the area of artisanal fishing is common and thereby conflicts between the two stakeholders is mentioned as the most significant risks by the respondents. Though restricting the number of fishing boats and new trawlers are suggested in the National Fisheries Policy (1998), new fishing vessels are being introduced every year leading to increased fishing pressure in the coastal water of Bangladesh. Despite the risks and intensive labor, why the respondents prefer the job as fishing labor was a basic query in this study. In response to this the three main reasons for preference (Fig. 10) were found as high profit (89%), less qualification (82%) and experience in fishing (76%).

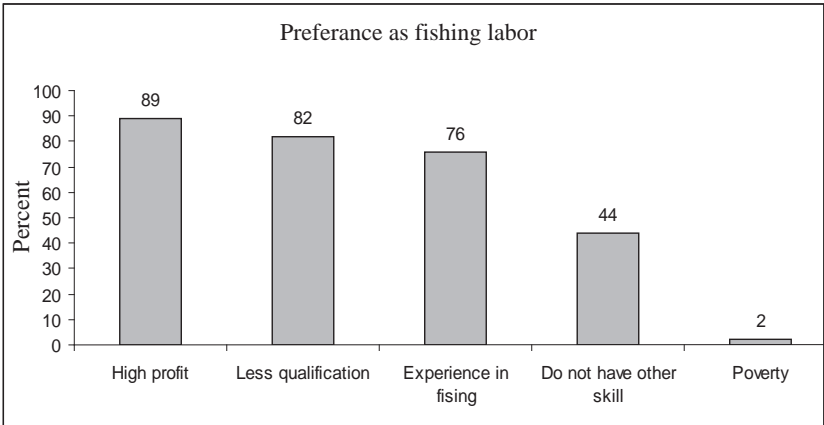


Figure 10: Reasons for preferring fishing profession

It is interesting to find that high profit is the main driving force for majority of the interviewees. Therefore, it is obvious that they would continue to be in fishing profession as long as there is more profit than other options. Besides, we know that the job of a fishing labor requires physical labor rather than educational qualification that is why the coastal people with less or no education at all get easily involved in this profession. In response to the ability to feed their family year round with the income received from fishing, 76% of the respondents replied negatively (Fig. 11) which indicates that to meet the basic requirement of food they have to depend on other economic activities. In other words, fishing alone can not help to sustain their livelihood which is very common among rural marginal people.

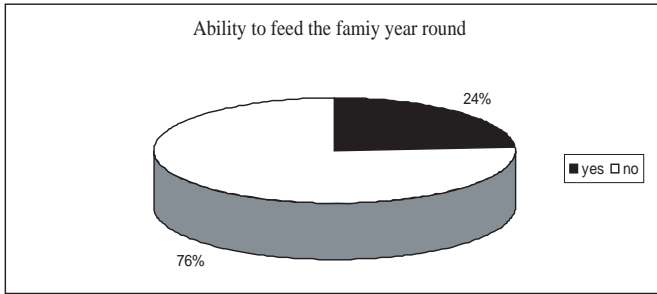


Figure 11: Ability of the fishing labors to feed their family year round

Assessment of Coping Strategies to Minimize Risks

Means to Receive Weather Forecast at Deep Sea

In order to get weather forecast, the artisanal fishermen commonly depend on radio news. Besides, they get information from neighboring fishing boats or trawlers when the sea becomes rough due to approaching cyclones and tidal surges. Long experience of dealing with rough weather also helps them in this regard.

Measures to Face Stormy Weather

When the boat is already in the storm, the fishermen try to save it by reducing the engine speed and spread the fishing net on the water, so that strong wind can not seize the boat. However, if the boat can not be protected from capsize; they try to save lives by pull themselves on to nearby boats or just try to float on water with any object available. According to the rules of fishing license, sufficient life jackets and at least two life buoys are mandatory for each boat. But the respondents expressed that these life saving utilities do not help much in really adverse weather.

Measures for Physical Injury, Illness or Death

In case of any injury on board due to accidents, the owner bears the cost of the treatment for the fishers and also helps to get them admitted in the hospital if become seriously sick. The family usually receives a lump sum amount of tk. 30,000 to tk. 40, 0000 if the fisherman dies on job and the amount varies with boat owners.

Measures for Piracy or Kidnapping

Generally, the boat owner contacts the police station regarding incidents of piracy, kidnapping or any type of violence in his boat. But it is always a problem to file a case since area of jurisdiction for each station in terms of marine water is not demarcated. Therefore, getting legal assistance from police in time is critical for the fishing boats. Moreover, the fishermen complain against the Coast guards for their negligence of duty and ill-treatment which needs to be investigated.

Measures to Prevent Invasion

Though there is specified area for fishing for artisanal mechanized boats and industrial trawlers in the Marine Fisheries Ordinance (1983), invasion of commercial trawlers inside the territory of artisanal fishing is common. According to the respondents, since they have no capacity to stop invasion they just compromised with this situation. This is really a grave problem reflecting the poor implementation of government regulations.

Coping Strategies for Financial Difficulties

The three major coping strategies to meet financial difficulties were mentioned by the fishing labors (Fig. 12) include borrowing money from friends and boat owners (91%), sell valuable items (49%) and take loan with high interest (35%). The results indicate lack of accessibility of the fishing labors to formal credit sources though they are having relationship of trust with friends and boat owners. In National Fisheries Policy (1998), it is mentioned that supervised loan system will be developed against the present mortgage-based loan system for the small-scale fishers but no such system has developed yet. Selling valuable items and loan with high interest may be seen as negative coping mechanism for the fishing labors if they remain vulnerable as before.

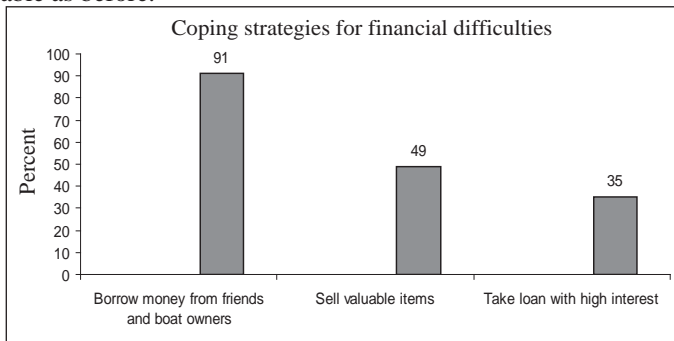


Figure 12: Types of coping strategies to meet financial crisis

Coping Mechanism During Catch Decline

93% of the respondents told that though the catch is declining gradually, they can still cope with fewer amounts of fish as the price has increased from previous times. While 64% of them said that they have to depend on other sources of income to sustain.

Management Initiatives

In response to the management initiatives required to save this age-old profession, 91% of the respondents asked for increasing Coast guard activities (Fig. 13) which again reflects their insecurity at sea. 71% of them expressed that they need access to credit facilities either from GOs or NGOs. While 55% of the fishing labors suggested for increasing the number of buoys so that they can avoid accidents from collision with submerged chars and other boats.

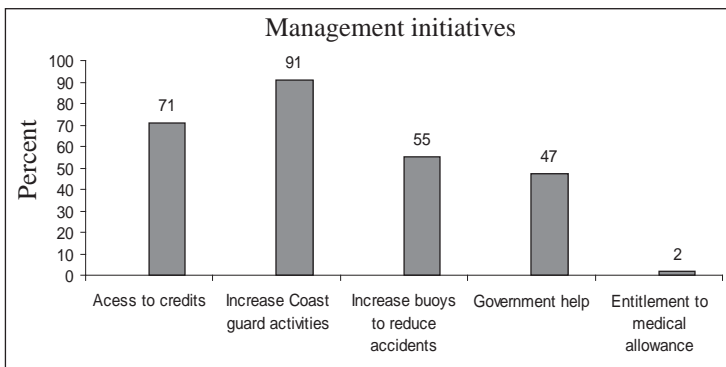


Figure 13: Managements initiatives suggested by the fishermen

However, to reduce casualties, set up buoys at the estuary of the river to indicate submerged chars and establish safe shelter for the fishing boats in the coastal areas were strongly recommended by the working committee for preparing rules and regulation on the exploitation of fisheries resources from the Bay of Bengal (workshop, 2007).

Conclusion and Recommendations

The aim of the present study was to make out the livelihood status of the artisanal fishing labors along the Chittagong coast from different points of view and possible coping strategies. Though the sample size was small but the survey has provided an important insight on this vulnerable group of fishing community. The key findings of the study are summarized below:

The average family size of the fishermen was found to be consist of 10 members and the income from fishing was found not enough to feed the family year round

The average amount of money they can spend for health care per year was found as only tk. 332 which is an important indicator of their poor socio-economic condition

Majority of them were found as the sole earning member of the family and it is obvious that any accident can lead the whole family to more vulnerability

Piracy and conflicts with industrial trawlers were identified by the respondents as the most significant risks to their profession although we assume that natural calamities are the main risk factors for fishing at sea

To mitigate the risk of piracy and invasion they emphasized on increasing Coast guard activities

This survey has drawn a brief picture on the resource status, risk factors, conflicts, coping strategies, livelihood options, institutional support and overall gaps between National Fisheries Policy (1998) and its implementation in the artisanal coastal fisheries sector of Bangladesh. So, it can be recommended that appropriate programs based on the problems and priorities of artisanal fishing labors are crucial to sustain their lives and livelihoods which in turn would help our national development.

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