

**MARKET SURVEY OF FRESH AND MARINE WATER FISHES AND
SOCIOECONOMIC CONDITIONS OF FISH RETAILERS IN THREE MARKETS
OF CHATTAGRAM CITY**

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Abstract: The study was carried out to survey the fresh and marine water fishes sold out in three markets of Chattagram city and socioeconomic condition of the fish retailers. Overall 29 fresh water and 24 marine water fish species were found to be sold in the three markets. Prices of fishes were higher in Kazirdewri Bazar followed by Riazuddin Bazar and Bohaddarhat Bazar. Data of fish retailers were collected through questionnaires in terms of age, income source, living standards, family size, financial facilities, literacy and education. Sole income came from fish business for 97% of the fish retailers, whilst 3% of the retailers did other business as well. Among 45 retailers interviewed, 40% were below 45 years, 53% were between 45-55 years and remaining 7% were above 55 years age. For coping with the business, 15% of the retailers were self-sufficient, 53% took loan from bank, whilst 32% took loan from local money lenders. Of the fish retailers, 34% was illiterate and 66% was literate, where 36% received up to primary level, 16% secondary level, 10% S.S.C and 4% H.S.C levels of education. In comparison with their education status their children were more educated (93%). Although their income was low, they tried to make their children educated, which is a good sign for our education sector. Transport cost, unhygienic market place, lack of sanitary facilities, poor ice-supply, exploitation by the middlemen, lack of proper management, lack of capital and the political disturbances were the common constraints of fish marketing. Necessary measures were recommended to overcome these problems.

Key words: Market survey, freshwater fish, marine water fish, socioeconomic condition, fish retailers.

INTRODUCTION

Marketing is the connecting link between the producers and consumers. An effective marketing system is necessary to make products, being available to consumers at the right time and in the right place. There are many constraints in fish marketing such as lack of modern fish landing center and retail markets

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near the fish landing port, introduction of government fish shops and insulated and refrigerated fish vans and fish carriers, training of all personnel related to fish marketing and about fish handling, quality of fish, hygiene practices, improvement of existing fish market structure, provision for government and private funding assistance for fishers/fish farmers, formulation and enactment of independent act/ordinance for fish landing and marketing (Rahman *et al.*, 2015). The fish market in our country is virtually within a cluster of disorganized activities and always remains in the control of influential persons of the surrounding areas, depending on a wide range of social, economic and political factors (Nayeem *et al.*, 2010).

Importance of fish markets in Bangladesh, in terms of value and employment is enormous. Fish marketing systems are traditional, complex and less competitive, but is said to play a vital role in connecting the fisherman and fish consumers. Domestic fish markets of Bangladesh can be divided into two types i.e. wholesale and retail markets. Wholesale markets should have facilities for carrier vehicle parking, space for loading/unloading, ice plants, wash rooms etc. Retail markets are often crowded places, mostly on pavements or within closed boundaries with poor hygienic condition. Two main categories of fish retailers have been encountered- market based retailers and retailers like fish vendors and haulers. Retail sells are made at stalls in fish markets and door to door to household customers. In the fish marketing system, the auctioneers and suppliers play a crucial role in determining price for fishes.

The socioeconomic aspect illustrates the status, income-expenditure, housing, standard of living, literacy, occupation, health and sanitation, hygiene, food and nutrition, education and economic conditions of the people (Hossain *et al.*, 2015). For planning, decision making, developing and implementation in fisheries sector and fisher's community, it is necessary to gather knowledge regarding the fish marketing system and socioeconomic condition of related people such as the fish retailers. Related works in this aspect are those of Zaman *et al.* (2006), Sultana and Thompson (2007), Ali *et al.* (2008), Asaduzzaman *et al.* (2010), Aktar *et al.* (2010), Ali *et al.* (2014), Sharif *et al.* (2015), Asif and Habib (2017) and Ali *et al.* (2017).

A study of the fish marketing and socioeconomic study of fishing community is a pre-requisite for the good design and successful implementation of effective programs. Considering the financial hardship and other complexities of the fish retailers, it is important to analyze their livelihood status. In view of these considerations, the main objectives of the present study are:

- To make a market survey of the available fishes in the three renowned markets i.e. Kazirdewri Bazar, Riazuddin Bazar and Bohoddarhat Bazar of Chattagram city with a comparison of price values of the fishes.
- To assess the socioeconomic conditions of some fish retailers of the three markets, with constraints to and potentials and opportunities, as a background, to a more in-depth analysis later.

MATERIAL AND METHODS

Study area: The bulk of the survey work for this study took place for a period of six months between February 2014 and July 2014 from the three renowned fish markets namely, Kazirdewri Bazar (22° 20' 53.52" N, 91° 49' 35.08" E), Riazuddin Bazar (22° 20' 12.66" N, 91° 49' 44.04" E) and Bohoddarhat Bazar (22° 22' 6.42" N, 91° 50' 34.19" E) of Chattagram city. The study was based firstly upon survey of fishes and their market price and secondly, the socioeconomic conditions of some of the fish retailers, surveyed with the help of set of questionnaires.

Data collection: The data and information had been collected from both primary and secondary sources. Collection of field data was done fortnightly and was conducted using two methods (structured interview and focus group discussion) (Hasan *et al.*, 2018). Primary data had been collected by interviewing through questionnaires with the fish retailers and secondary sources related information from internet. A total of 45 fish retailers, selected randomly (15 from each market) were interviewed and their responses were recorded in the preset questionnaires. Questionnaire surveys were used to get the idea of availability of different fish species and in different markets along with their monthly selling price and socioeconomic condition of the fish retailers. This technique was implemented because most of the fish retailers were uneducated or had a low level of education (Shamsuddoha, 2007).

Identification of the fishes was done following Quddus and Shafi (1995), Talwar and Jhingran (2001), Rahman (2005) and internet source (Fishbase).

RESULTS AND DISCUSSION

Market survey: During the six months of study period, a total of 29 freshwater fish species and a total of 24 marine water fish species were found in all of the three fish markets. For the freshwater fishes, almost all the fishes were available in all the three markets except *Pygocentrus natterii* and *Hyporhamphus limbatus* in Kazirdewri Bazar; *Pygocentrus natterii*, *Xenotodon cancila*, *Channa striatus*, *Securicula gora*, *Wallago attu* and *Sperata aor* in Riazuddin Bazar and

Table 1. Mean price values \pm SE (Taka per kg) of freshwater fishes in the three studied fish markets

Local name	Scientific name	Kazirdewri Bazar (Taka per kg)	Riazuddin Bazar (Taka per kg)	Bohoddarhat Bazar (Taka per kg)
Silver carp*	<i>Hypophthalmichthys molitrix</i>	228.33 \pm 10.14	185.00 \pm 7.19	163.33 \pm 9.19
Common carp*	<i>Cyprinus carpio</i>	216.67 \pm 11.74	180.00 \pm 5.16	150.00 \pm 8.56
Tilapia*	<i>Oreochromis niloticus</i>	193.33 \pm 6.67	155.00 \pm 5.63	166.67 \pm 13.08
Meni	<i>Nandus nandus</i>	423.33 \pm 9.19	380.00 \pm 10.00	-
Red Piranha*	<i>Pygocentrus natterii</i>	-	-	105.00 \pm 4.99
Kakila	<i>Xenentodon cancila</i>	213.33 \pm 21.86	-	193.33 \pm 4.22
Ekthota	<i>Hyporhamphus limbatus</i>	-	280.00 \pm 10.00	250.00 \pm 6.83
Shol	<i>Channa striatus</i>	380.00 \pm 10.00	-	321.67 \pm 13.02
Taki	<i>Channa punctatus</i>	250.00 \pm 15.06	188.33 \pm 19.05	143.33 \pm 4.22
Ghora chela	<i>Securicula gora</i>	370.00 \pm 10.95	-	-
Kalibaus	<i>Labeo calbasu</i>	480.00 \pm 10.00	438.33 \pm 31.14	305.00 \pm 16.07
Rui	<i>Labeo rohita</i>	371.67 \pm 10.14	200.00 \pm 7.30	196.67 \pm 6.15
Mrigal	<i>Cirrhinus cirrhosis</i>	198.33 \pm 4.77	180.00 \pm 7.30	150.00 \pm 11.25
Sarpunti	<i>Barbodes sarana</i>	320.00 \pm 10.00	358.33 \pm 20.07	268.33 \pm 11.67
Catla	<i>Catla catla</i>	375.00 \pm 21.41	270.00 \pm 10.33	151.67 \pm 3.07
Magur	<i>Clarias batrachus</i>	830.00 \pm 18.26	733.33 \pm 40.14	700.00 \pm 12.91
Pabda	<i>Ompok pabda</i>	775.00 \pm 47.87	591.67 \pm 59.74	-
Boal	<i>Wallago attu</i>	680.00 \pm 10.00	-	618.33 \pm 17.40
Shingi	<i>Heteropneustes fossilis</i>	875.00 \pm 30.96	800.00 \pm 28.87	866.67 \pm 16.67
Pangus	<i>Pangasius pangasius</i>	166.67 \pm 8.43	153.33 \pm 9.55	138.33 \pm 6.01
Ayre	<i>Sperata aor</i>	858.33 \pm 15.36	-	-
Foli	<i>Notopterus notopterus</i>	371.67 \pm 10.14	285.00 \pm 8.06	250.00 \pm 6.83
Tara baim	<i>Macrognathus aculeatus</i>	380.00 \pm 7.75	376.67 \pm 9.19	-
Koi	<i>Anabas testudineus</i>	758.33 \pm 20.07	575.00 \pm 38.19	385.00 \pm 8.06
Mola	<i>Amblypharyngodon mola</i>	198.33 \pm 6.01	263.33 \pm 7.60	245.00 \pm 9.22
Rita	<i>Rita rita</i>	-	-	228.33 \pm 7.49
Bajaritengra	<i>Mystus tengara</i>	430.00 \pm 10.00	325.00 \pm 11.18	326.67 \pm 8.03
Chiring	<i>Apocryptes bato</i>	413.33 \pm 12.02	261.67 \pm 15.15	-
Prawn	<i>Macrobrachium rosenbergii</i>	1116.67 \pm 47.43	841.67 \pm 23.86	858.33 \pm 20.07

*Exotic fish

Nandus nandus, *Securicula gora*, *Ompok pabda*, *Sperata aor*, *Macrognathus aculeatus* and *Apocryptes bato* in Bohoddarhat Bazar.

In all the three markets, for the marine water fishes, it was observed that almost all the fishes were available in all the three markets except *Pomadasys hasta* and *Lepturacanthus savala* in Kazirdewri Bazar; *Colia dussumieri*, *Corica soborna*, *Ilisha megaloptera*, *Rhinomugil corsula*, *Epinephelus megachir* and *Lepturacanthus savala* in Riazuddin Bazar; and *Colia dussumieri*, *Pampus argenteus*, *Rhinomugil corsula*, *Platycephalus indicus*, *Silaginopsis panigus*, *Argyrops spinifer* and *Epinephelus megachir* in Bohoddarhat Bazar. Of the freshwater fishes that were exclusively available in Kazirdewri Bazar were *Securicula gora* and *Sperata aor* and that available in Bohoddarhat Bazar was *Pygocentrus natterii* and *Rita rita*. Amongst the marine water fishes which were solely available in Kazirdewri Bazar were *Colia dussumieri*, *Rhinomugil corsula*

and *Epinephelus megachir*, whilst that available in Bohoddarhat Bazar was *Lepturacanthus savala* only.

In abundance, Kazirdewri Bazar was rich in both freshwater (26 species) and marine water fish (22 species), and Riazuddin Bazar with 22 fresh water and 19 marine water and Bohoddarhat Bazar with 23 fresh water and 17 marine water species were comparatively less abundant with fish. Most of the fishes were common to all the three fish markets. One species of marine water fish, Khorsula (*Rhinomugil corsula*) which is both marine as well as freshwater and Bol koral (*Epinephelus megachir*) were exclusively found in Kazirdewri Bazar which are rare species to Bangladesh.

The price values of the available fish species, both fresh and marine water, in the three markets are given in Tables 1 and 2. The price of fishes, both fresh and marine water, among the three studied markets, were highest in Kazirdewri Bazar due to its location in the center of the city and as well as being besides a well to do residential area. A comparatively lesser fish price was seen in Riazuddin Bazar, which is also a very well known fish market, whereby most of the fishes are collected from fishery ghat. Whereas, in Bohoddarhat Bazar fish prices were observed to be the lowest, which might be due to low cost in transportation of fishes and being a busy commercial area.

Socioeconomic condition of the fish retailers: The socioeconomic condition of fish retailers of the three fish markets surveyed on the following aspects is described. A total of 45 fish retailers were interviewed through preset questionnaire from the three markets.

Accommodation facilities: Accommodation facilities depended on well being of the fish retailers. In the three study areas, the fish retailers used to live in three types of houses such as, semi pacca, pacca and thatched houses. Of them, 49% lived in semi pacca, 22% lived in pacca houses and rest 29% of the fish retailers lived in thatched houses (Fig. 1a). Similar observation was also reported by Sharif *et al.* (2015) where they found the fish retailers to live in three types of houses i.e. earthen, semi-pacca and pacca.

Age distribution of fish retailers: Age indicates at which stage of their life they are engaged in the job. In the three study areas, most of the fish retailers were of age of above 45 years. The percentage of age distribution was as such, 40% of the retailers were below 45 years- the age of prime activity for human beings, 53% traders were 45-55 years of age- an active age category and 7% of the respondents were above 55 years (Fig. 1b). Asif and Habib (2017), Hossain *et al.* (2015) and Sharif *et al.* (2015) had also categorized them into three age groups, whereas Asaduzzaman *et al.* (2010) categorized them into four age groups. For most of the retailers, the occupation was whereas inherited, whereas for others it was a new occupation.

Table 2. Mean price values \pm SE (Taka per kg) of marine fishes in the three studied fish markets

Local name	Scientific name	Kazir dewri	Riazuddin	Bohoddarhat
		Bazar (Taka per kg)	Bazar (Taka per kg)	Bazar (Taka per kg)
Loitta	<i>Harpodon nehereus</i>	181.67 \pm 6.54	110.00 \pm 10.95	93.33 \pm 2.11
Olua	<i>Colia dussumieri</i>	2633.30 \pm 8.43	-	-
Ilish*	<i>Tenualosa ilisha</i>	791.67 \pm 37.45	645.00 \pm 32.53	658.33 \pm 20.07
Kachki*	<i>Corica soborna</i>	226.67 \pm 9.54	-	233.33 \pm 4.22
Choukka	<i>Ilisha megaloptera</i>	360.00 \pm 14.37	-	266.67 \pm 9.55
Kalochanda	<i>Parastrumateus niger</i>	400.00 \pm 12.91	313.33 \pm 12.02	265.00 \pm 6.71
Rup chanda	<i>Pampus chinensis</i>	805.00 \pm 16.07	816.67 \pm 21.08	800.00 \pm 12.91
Folichanda	<i>Pampus argenteus</i>	400.00 \pm 18.26	320.00 \pm 10.00	-
Taposi	<i>Polynemus paradiseus</i>	191.67 \pm 4.01	150.00 \pm 15.05	146.67 \pm 2.11
Tailla	<i>Eleutheronematetra dactylum</i>	433.33 \pm 13.08	340.00 \pm 6.32	235.00 \pm 5.63
Khorsula*	<i>Rhinomugil corsula</i>	466.67 \pm 16.67	-	-
Bata*	<i>Mugil cephalus</i>	450.00 \pm 18.26	310.00 \pm 13.17	240.00 \pm 6.32
Mur baila	<i>Platycephalus indicus</i>	433.33 \pm 8.43	460.00 \pm 15.28	-
Tulardandi	<i>Silaginopsis panijus</i>	313.33 \pm 12.01	193.33 \pm 4.22	-
Poa*	<i>Otolithoides pama</i>	311.67 \pm 15.36	238.33 \pm 9.80	200.00 \pm 4.47
Guti poa	<i>Pterotolithus maculatus</i>	423.33 \pm 9.19	336.67 \pm 8.82	331.67 \pm 8.72
Koitor poa*	<i>Johnius coitor</i>	266.67 \pm 16.67	211.67 \pm 9.80	293.33 \pm 4.22
Bhetki*	<i>Latesc alcarifer</i>	625.00 \pm 38.19	455.00 \pm 16.07	385.00 \pm 8.06
Shurma	<i>Rastrelliger kanagurta</i>	386.67 \pm 16.26	328.33 \pm 10.14	228.33 \pm 10.14
Koi coral	<i>Lobotes surinamensis</i>	441.67 \pm 15.36	441.67 \pm 32.70	290.00 \pm 4.47
Datina coral	<i>Pomadasys hasta</i>	-	525.00 \pm 38.19	293.33 \pm 4.22
Lal coral	<i>Argyrops spinifer</i>	345.00 \pm 18.93	373.33 \pm 8.03	-
Bol coral	<i>Epinephelus megachir</i>	423.33 \pm 9.19	-	-
Churi	<i>Lepturacanthus savala</i>	-	-	196.67 \pm 6.15

*As well as freshwater

Family size and living condition: The study of family size i.e. number of people per family is of great importance and has a great impact on the maintenance and economic condition of the family as well as their social status. Families may be considered in three groups according to their size, viz. small families with 2-4 members, medium families with 5-7 members and large families with 8-10 members or more. Amongst the fish retailers, 13% had large

families, 47% had medium families and 40% had small families (Fig. 1c). Hossain *et al.* (2015) also grouped family size into three categories, whereas Asif and Habib (2017) categorized it into four groups. Obviously living condition of small sized families was best, whilst the large sized families struggled hard for living.

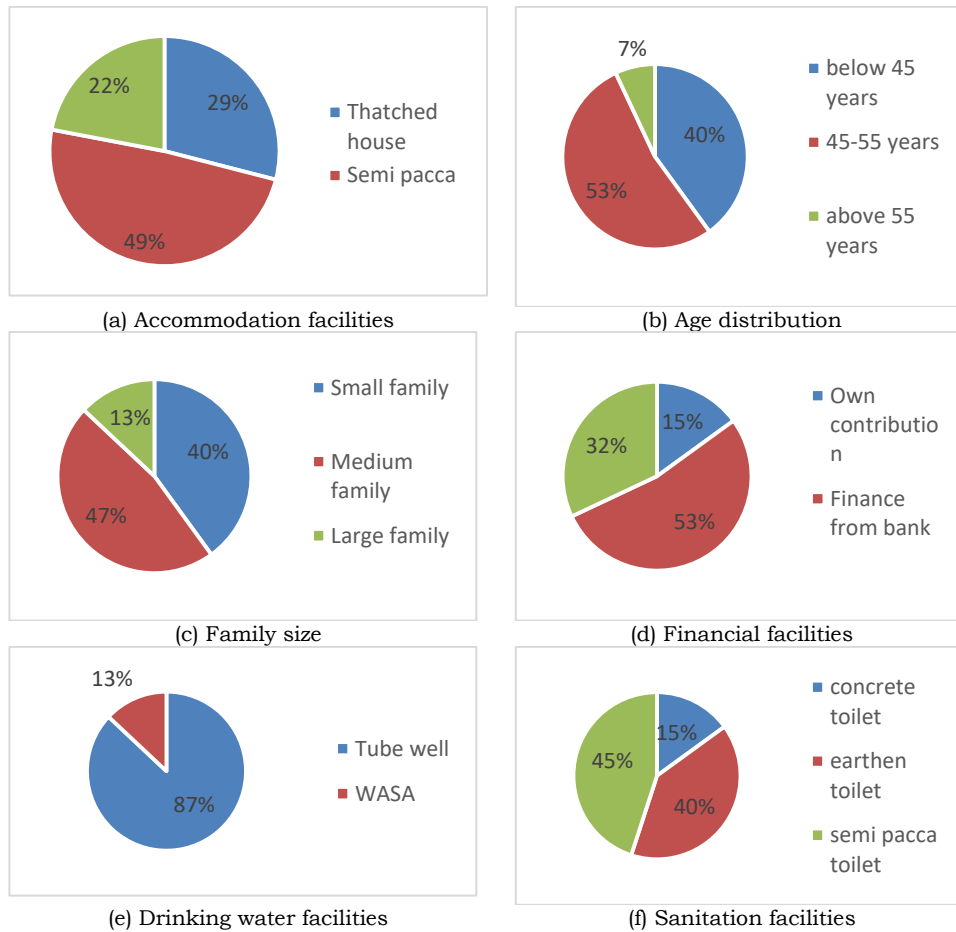


Fig.1. (a) Accommodation facilities, (b) Age distribution, (c), Family size, (d) Financial facilities, (e) Drinking water facilities, and (f) Sanitation facilities of the fish retailers.

Financial facilities and gains: Most of the retailers involved in fish trading were poor and their financial facilities were not so good. In the three study areas, it was observed that 15% of credits were contributed by the retailers themselves, 53% retailers got finance from bank, whereas 32% retailers took loan from local money lenders with a high rate of interest (Fig. 1d). Sharif *et al.*

(2015) also reported same sources of financial support for fish retailers. At the end of the day, financial gains indicated their well being.

Drinking water facilities: As most of the fish retailers were poor and lived in low cost houses, so, they did not get not much facilities for getting pure drinking water. In the study areas, the retailers were mainly dependent on tubewell water for drinking purposes. In the present study, 87% of the fish retailers used

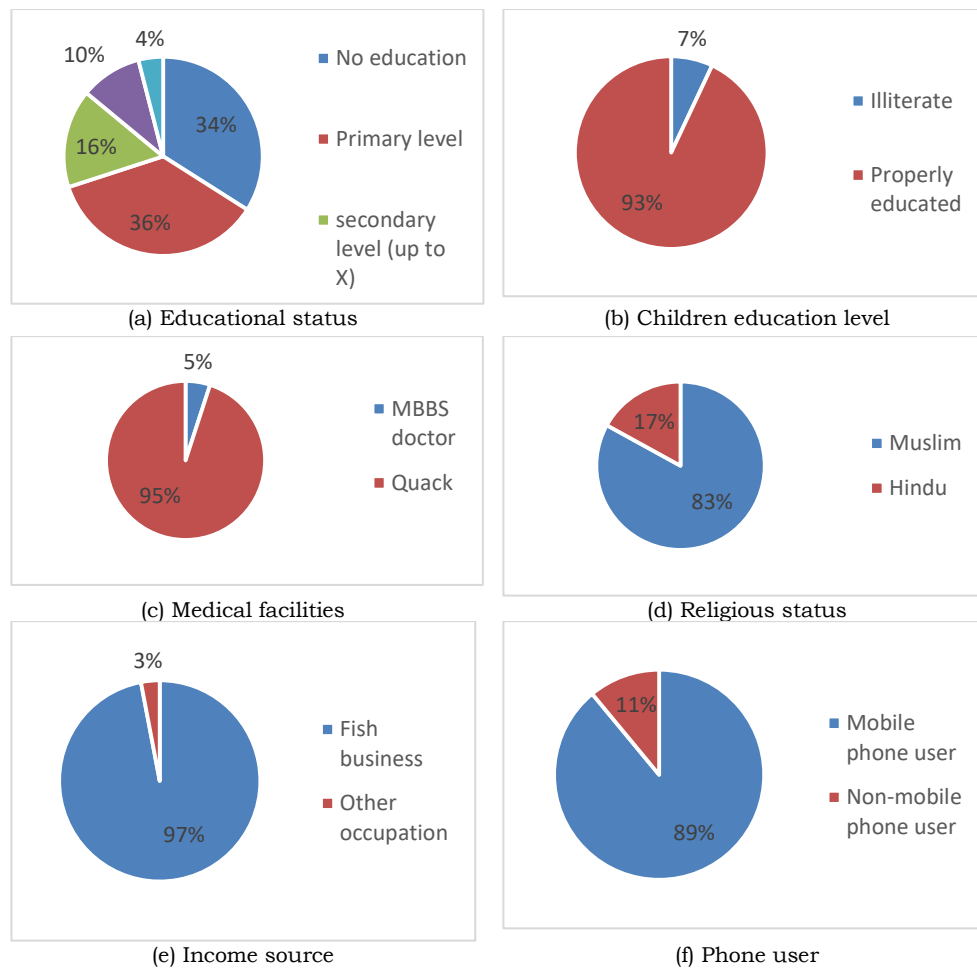


Fig.2. (a) Educational status, (b) Children education level, (c) Medical facilities, (d) Religious status, (e) Income source, and (f) Phone user of the fish retailers.

tubewell water and rest 13% used water supplied by Chattagram WASA for drinking (Fig. 1e). However, Sharif *et al.* (2015) reported two sources (tubewell and pond) of drinking water.

Sanitation facilities: Sanitation facilities are prime requisite of human beings for maintaining hygiene. The sanitation facilities used by the fish retailers were of three types of toilets i.e. concrete toilet, earthen toilet and semi-pacca toilet. It was found that 15% of the fish retailers used concrete toilet, 40% of the retailers used earthen toilet and 45% of them used semi-pacca toilet (Fig. 1f). Similar finding on sanitation was also reported by Sharif *et al.* (2015).

Educational status of fish retailers: Four categories were used to determine the level of education of fish retailers i.e. illiterate, literate up to primary level, up to secondary level and above secondary level. Out of 45 fish retailers, 34% had no education (illiterate), 36% had primary level, 16% had secondary level (up to X), 10% had S.S.C level, 04% received up to H.S.C level of education (Fig. 2a). Four education groups were also reported by Hossain *et al.* (2015). However, Sharif *et al.* (2015) grouped them into two categories only (literate and illiterate), Asaduzzaman *et al.* (2010) grouped them into five education groups and Asif and Habib (2017) grouped the retailers into six education categories.

Level of education of the fish retailers' children: Education is an important factor in changing attitudes, motivation and status of a person. Only 7% of the children of the fish retailers were illiterate due to poverty and had to join their parent for earning livelihood, whereas, the rest 93% had received proper education, from S.S.C. to degree level (Fig. 2b). So, it can be said that, education among majority of fish retailers' children had been given emphasis, although they themselves were not educated enough. Under literacy Asif and Habib (2017) categorized the education of their children into four group i.e. primary, secondary, higher-secondary and bachelor.

Medical facilities: In the three study areas, among the fish retailers, in case of illness, 95% of the retailers and their family members were served by quack doctors for treatment because of financial crisis and only 5% of the retailers took medication from qualified doctors (Fig. 2c). In case of major illness they go to the Chittagong Medical College hospital for treatment. Similarly Sharif *et al.* (2015) reported two sources from where fish retailers got medical facilities, whereas, Hossain *et al.* (2015) reported four sources of medical facilities obtained by them.

Religious status: Both Hindus and Muslims were involved in fish trading in the three study areas. Among 45 fish retailers, 83% were Muslim and rest 17% were Hindu indicating that Muslim caste was the dominating group (Fig. 2d). All the cited literatures reported two above mentioned religious groups except Sharif *et al.* (2015), whereby they reported only 100% Muslim fish farmers in their study area.

Income sources: Most of the fish retailers depended on fish business and their income came mainly from this business only. For 97% of the fish retailers, total income came from fish business and 3% were involved in other occupations as well such as secondary business like vegetable business, agricultural activity, and motorized vehicle operation etc. (Fig. 2e). However, besides fish business, Asif and Habib (2017) and Hossain *et al.* (2015) reported four other occupations of fish traders in their studies.

Phone users: In the three study areas most of the fish retailers used mobile phone. It was observed that 89% of the fish retailers used mobile phone and only 11% were poor enough and could not afford to buy mobile phone for communication (Fig. 2f). None of the fish retailers could access to or operate internet. Asif and Habib (2017) in their study reported 100% mobile users but they did not give any information about usage of internet by fish retailers.

The nature of the occupation pursued by a person determines to a great extent one's status in the community. Closely related with this is the issue of income, as one's income has much to do with one's social status. Education deeply influences individual preferences and behavioral tendencies. In an analysis of socioeconomic characteristics of a community, the study of housing condition and land holdings has also of great significance. In these connections, occupation, income, literacy and education and earner dependency of fisheries associates such as the fish retailers may be brought under focus. Constraints observed in marketing were mainly transport cost, unhygienic market place, lack of sanitary facilities, poor ice supply, exploitation by middleman, lack of proper management, lack of capital and political disturbances. It is presumed that all of the fish retailers were suffering from social conflict and tension as to live in a good society with good environment. Problems encountered in the business included factors as- absence of government control and participation, absence of proper management committee, relatively less buyers, poor parking condition, drainage system and overall improvement of market committee.

CONCLUSION

From the findings of the present study, it can be concluded that proper fish market is necessary for the successful management of fish. Fish are marketed here in fresh and iced condition. But the existing drawbacks of the market in terms of environment and intermediaries system make the fish market challenging. Proper management of the fish market need strict monitoring by both government and the private sectors. From the study following recommendations can be made to improve the market condition:

- Fish retailers should form a co-operative society.
- Need easy loan for financial support.
- Hygienic environment should be ensured.
- Drinking and sanitation system must be available.
- The government should monitor the market on a regular basis.
- The government should give transportation facilities and great infra-structural facilities.

This study discovered the problems and potentials of the three major fish markets of Chattagram city (Kazirdewari Bazar, Riazuddin Bazar and Bohoddarhat Bazar) that can be beneficial for the policy maker, future researchers as well as the government. This study will help the researchers to uncover the critical areas of above mentioned three fish markets that the researchers were not able to explore. At the same time, the socio-economic condition of fish retailers should also be standardized as they are a major part of our society and also play an important role in the country's "Blue economy".

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