

## Original Research Article

# Dry fish market condition and Socio economic status of dry fish retailer: A survey study in Noakhali, Bangladesh

### ABSTRACT

**Background:** Fish drying is very common in the entire coastal areas of Bangladesh and these dried fishes have demand both in domestic and international market though the people involved early in the production chain (fishing and drying) add relatively more value and make little profit. Present investigation gives an idea about the scenario of the dried fish market and livelihood pattern of dry fish seller in the Noakhali region, an important coastal region in southern part of Bangladesh.

**Methodology:** 25 retails shops from 12 markets under five upazilla of Noakhali district were surveyed for the study.

**Results:** 19 species of dried fish and 7 types of semi-fermented and salted fish were found in the dried fish market of study area. Most demanded species of dried fish were *Harpadon* *nehereus*, *Trichiurus lepturus*, *Coilia dussumieri*, and *Apocryptes bato*. Peak marketing season of dried fish was rainy season. The market share of freshwater fishes was found 79% and marine water fishes 21%. Average 40% of the retailer completed only the primary level of education. 48% retailer earn 200-500BDT, 44% earn 500-1000BDT and 8% earn more than 1000BDT daily. Only 4 dried fish retailers have alternative sources of income and 21 have no alternative sources of income. 3 types of marketing channels were found in the dried fish market of Noakhali.

**Conclusion:** Several constraints were found in the dried fish market of Noakhali such as rapid damage of dry fishes, high transaction costs, lack of marketing infrastructure, transportation and storage facilities, etc.

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**Keywords:** Dry fish; Fish retailer; Marketing channel; Livelihood; Noakhali; Bangladesh

## 1. INTRODUCTION

For the maintenance of a healthy body, fish constitute an important protein source and other essential micro-nutrients and Asian people mostly use fish as the main source of animal protein in their diets [1]. Though habitually Bangladeshi people like to take fresh fish, in most towns and cities, chilled and dried fish are also highly popular. It is found that marketing allotment of fish is around 70% fresh fish, 25% dried and the other forms of traditionally processed fish include fermented products and frozen products [2]. Fish drying is a good practice of preserving additional fresh fish. It is a method of food preservation that functions by removing water from the food by hindering the growth of microorganisms. Benefits of drying includes less expensive to produce, use of processing equipment is limited compared

to other processing methods like frizzling, chilling and smoking; less storage area needed [3]. Marine fish drying is very frequent in the entire coastal areas of Bangladesh and these dried fishes have high demand both in domestic and international market. According to the study of Nowsad (2005) [4], fish drying in Bangladesh generally starts in October and continues till March and in some coastal areas, it starts concurrently in early September and lasts till up to May. It is supplied to the foreign market such as Singapore, Hong Kong, Malaysia, United Kingdom, United States of America, United Arab Emirates, etc. [5]. Bangladesh has exported 3143.93 MT of dried fish during the 2017-2018 fiscal year [6].

Noakhali region is one of the important districts located at the southern coastal belt of Bangladesh adjacent to Meghna River. This largest River of the country receives the flow from other rivers and is directly connected to the Bay of Bengal. From different market survey in Noakhali it was found that total 17% of the fish were marine fish, more than 15.7% was Hilsha and more than 4% was prawn [7]. These all are highly demanded dry and processed fish species in the national and international market. But no significant studies have been undertaken to investigate dry fish market condition in this coastal belt region. This study was conducted to evaluate the present status of the dried fish market and availability of dried fish, sources, prices, storage, marketing channel and constraint in the retail dried and also assess hygienic condition and measure the quality of dry fish in the fish market of Noakhali, Bangladesh

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## 2. MATERIAL AND METHODS

### 2.1 Study area

The study was conducted in from August to November 2019. The study was conducted in 5 Upazillas (Sadar, Begumganj, Kaborhat, Sonaimuri and Subarnachar) of Noakhali district (Fig. 1). Total 28 retailers from 12 markets were interviewed for primary data collection (Table 1).

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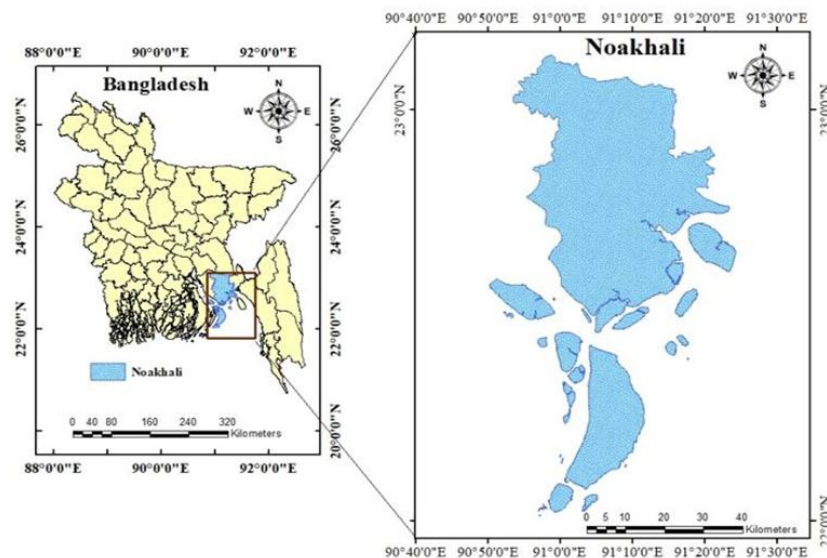


Fig. 1. Map of the Study area

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## 2.2 Data collection methods

A questionnaire was developed, pretested and finally used for the collection of data, which. The data were collected by using questionnaire interview, Focus Group Discussion (FGD) with intermediaries and crosscheck interviews with key informants. Focus group discussion was arranged among the 8 retailer and other intermediaries consisting 10 persons at the Subarnachar upazilla. The specific aim of those discussions were to collect information on fish drying and marketing mechanisms, pricing and value addition on dried fish at different levels, marketing chain, transportation and value addition, and finally credit system in dry fish business. Cross-check interviews were conducted with key informants such as upazilla fisheries officer, president and secretary of the dry fish market association.

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**Table 1. Study area, sample size and data collection tools used during the study period**

SI No.	Upazila	Market	Number of retailers	Data collection methods
1.	Sadar	Sonapur bazar	1	Questionnaire interview, Focus Group Discussion (FGD) with intermediaries and crosscheck interviews with key informants
		Dotterhat bazar	2	
		Poura bazar	2	
		Maijdee bazar	2	
2.	Begumganj	Chowmuhan bazar	4	
		Chowrusta bazar	2	
3.	Kabirhat	Kabirbhat bazar	2	
		Buihyer hat bazar	1	
4.	Sonaimuri	Sonaimuri bazar	3	
		Chatarpaia bazar	1	
5.	Subrnachar	Khaser hat	4	
		Harich Chowdhury bazar	4	
Total		12	28	

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## 2.3 Data analysis

After collection the data were edited for analysis, in order to minimize error, data were collected in local units and later local units were converted into standard units. The collected data were summarized carefully and transferred to the tabulation sheet. Later tabulated sheet transferred to computer. Preliminary data sheets were compared with computer spread sheets to ensure the accuracy of the data. Data were processed and finally analyzed using Microsoft Excel 2010.

### 3. RESULTS AND DISCUSSION

#### 3.1 AVAILABLE DRIED FISH SPECIES IN STUDIED AREA

In the study total 19 species of dried fish and 7 types of semi-fermented and salted fish were found in the dried fish market of Noakhali. Among them most commonly available dried fish was Loitta, Churi, Holufa, Bata, Icha, Chewa, Kachki etc. Haque et al. (2015)[8] found 35 dried fish species in Massimpur dry fish market. Among them 29 species were freshwater species. Flowra et al. (2010)[9] also found 25 dried fish species in the several markets of Rajshahi and Thakurgoan region. Table 2 shows available dried fish species and their prices and table 3 shows others semi-fermented and salted fish product and their prices.

Table 2. List of Available dried fish species and their prices

Local Name	Habitat	Scientific name	Price (Tk/Kg)
Chewa shutki	FW	<i>Odontamblyopus rubicundus</i>	200-250
Surma shutki	MW	<i>Scomberomorus guttatus</i>	400-900
Churi shutki	MW	<i>Trichiurus lepturus</i>	250-800
Loitta shutki	MW	<i>Harpadon nehereus</i>	280-600
Holufa shutki	FW	<i>Coilia dussumieri</i>	280-500
Mola shutki	FW	<i>Amblypharyngodon mola</i>	480-500
Bata shutki	FW	<i>Labeo ariza</i>	250-600
Punti shutki	FW	<i>Puntius spp.</i>	350-550
Cokha shutki	FW	<i>Pellona ditchela</i>	220-450
Chapila shutki	FW	<i>Gudusia chapra</i>	130-350
Dhela shutki	FW	<i>Rohtee cotio</i>	320
Kachki shutki	FW	<i>Corica soborna</i>	350-520
Phasa shutki	FW	<i>Setipinna phasa</i>	180-400
Ilish Shutki	FW	<i>Hilsha ilisha</i>	400-700
Fatra shutki	MW	<i>Raconda russellina</i>	200
Rani shutki	FW	<i>Botia dario</i>	200
Chiring shutki	FW	<i>Apocryptes bato</i>	400
Baspata shutki	FW	<i>Ailia punctata</i>	180
Poa sutki	FW	<i>Pama pama</i>	400-450

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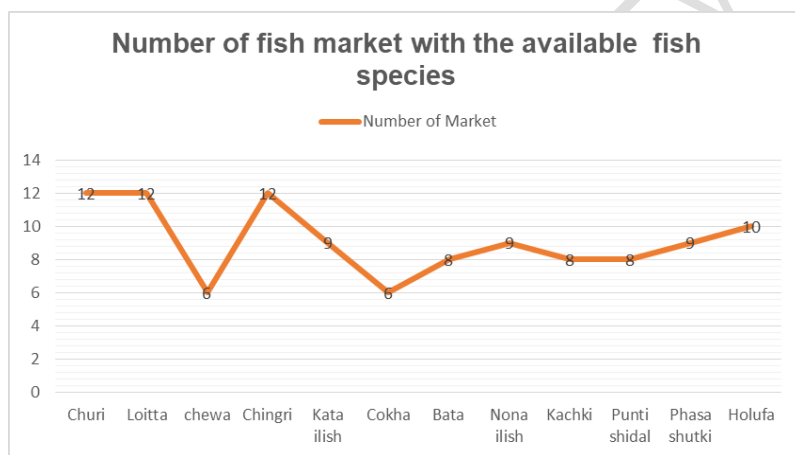
Table 3. Other semi-fermented and salted fish product and their prices

Local Name	Habitat	Scientific name	Price (Tk/kg)
Phasa shidal	FW	<i>Setipinna phasa</i>	180-450

<b>Nona ilish</b>	FW	<i>Hilsha ilisha</i>	400-700
<b>Ilish giil</b>	FW		160
<b>Kata ilish</b>	FW		400-800
<b>Ilish matha</b>	FW		100
<b>Punti shidal</b>	FW	<i>Puntius sp.</i>	250-600
<b>Icha/Cingri</b>	MW	<i>Penaeus sp.</i>	160-600

### 3.2 MOST DEMANDABLE SPECIES OF DRIED FISH AND PEAK MARKETING SEASON

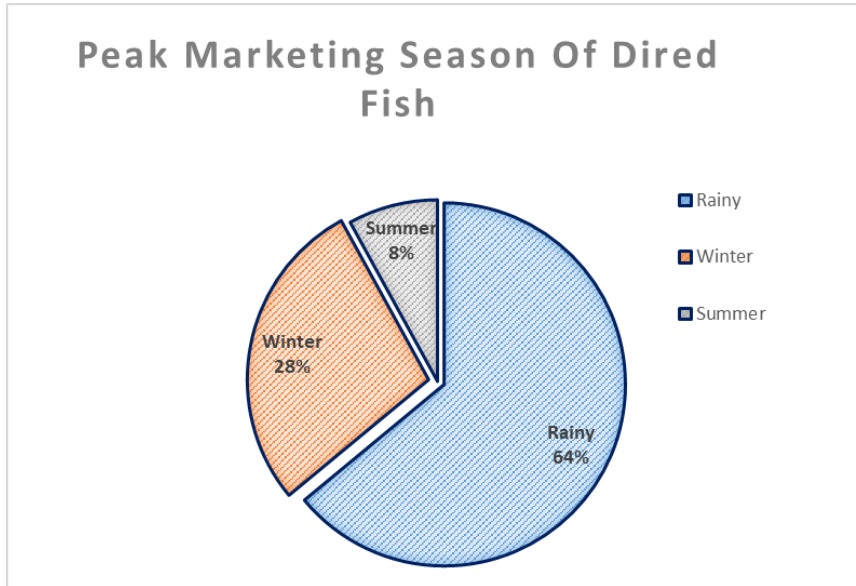
Respondents commented that Loitta, Chewa, Holufa, Bata, Churi, etc., are the most demandable species in studied area. Fig 2 shows the Number of the market with the available fish species.



**Fig. 2. Number of the markets with the available fish species**

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The demand of dried fish remains s high in rainy season because sufficient amount of fresh fish is not available in the market. Some responded that demand of dried fish is high in winter after the cutting of paddy crops. Hossain et al. (2013) [10] conducted a research and described that dried marine fish is consumed year-round, but availability of dried freshwater fish is somewhat more seasonal, and is highest during winter. Fig 3 shows peak marketing season of dried fish.



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**Fig. 3. Peak marketing season of dried fish**

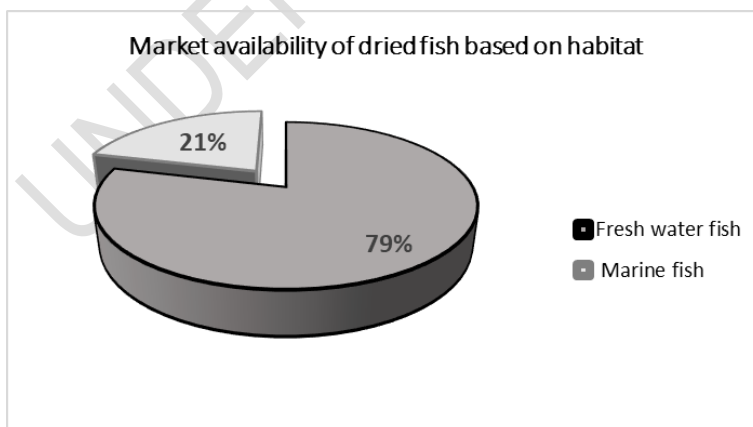
### 3.3 PERCENTAGE OF DRIED FISH IN THE MARKET BASED ON HABITAT IN THE MARKET

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Fig 4 shows Market condition of dried fish based on habitat. Study from Hasan et al. (2016)[11] it is found that in Sylhet based on dried fish size, smaller size dried fish products composed of 77% of the total all freshwater products s in the market.

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**Fig. 4. Percentage of dried fish based on habitat in the market**

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In the present study, a total of 19 species of dried fish were found in the market of Noakhali. Among them, 15 species were from freshwater (79%) and 4 species were from marine water. It was found that most demandable species were Loitta, chewa, Churi, Holufa and etc.

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### 3.4 DRIED FISH DISTRIBUTION CHANNEL

Most of the shops in Noakhali are retailer and few are wholesaler cum retailer and wholesaler. Most of the dried fish in Noakhali district are come from Feni and Chittagong. Some types of dried fish such as Chewa, Loitta are also bought from Hatiya, Noakhali. In the study, it is found that most of the retailer buy dry fish from dried from Feni and Chattogram Aratdar and some buy from Chowmuhani wholesaler in terms of necessity. Flowra et al. (2010) [9] found five distribution channel of dried fish marker in Rajshahi and Thakurgaon city and Marketing channels of dried fishes consist of dry fish processor, several middlemen and consumers. On the other hand, overall three types of marketing channel were found in the studied area (Table 4).

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Table 4. Marketing channel found in Noakhali region

Chain 1	Chain 2	Chain 3
Aratdar ↓ Wholesaler ↓ Retailer ↓ Consumer	Aratdar ↓ Wholesaler ↓ Consumer	Aratdar ↓ Retailer ↓ Consumer

### 3.5 TRANSPORTATION AND STORAGE

In the study it is was found that CNG, Truck, Pickup or Bus are used for dried fish transportation. It takes from 2 hours to 10 hours to transport depending on the place where from they buy dried fish. They store dry fish from 1 week to 2 months depending on selling. Various types of bag and baskets are used for storage, such as plastic bags, jute bag and wooden basket. Ilish derived product is are kept on plastic bowls and buckets. Punti shidal and Faisa shidal are kept on earthen vat. They do not use any fridge to store the dried fish. In the study, 18 shop were as storehouses and 7 shops were not storehouse. They don't use any type of disinfectant or insecticide to preserve dried fish. They only use mustard oil to preserve Ilish derived product such Kata ilish or Nona ilish. Some of the respondent commented that insect, flies attack dried fish and causes economic loss of dried fish. They sell the infected dried fish to fish farmer at low price which used to make fish meal. Though they didn't admit using any preservative, but there is some information that they use preservative to prevent insect infestation, sepsis and color to increase shining.

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Table 5. Socio economic condition of dried fish retailer

Parameter	Number of respondents	Percentage (%)
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<b>Age group (year)</b>	<20	1	4
	21-35	13	52
	35-50	9	36
	>50	2	8
<b>Level of education</b>	Illiterate	3	12
	Sign only	3	12
	Primary	10	40
	Secondary	9	36
<b>Alternative sources of income</b>	Yes	4	16
	No	21	84
<b>Business experience (year)</b>	<5	2	8
	5-10	7	28
	11-20	7	28
	21-30	8	32
	31-40	1	4
<b>Daily average sell (kg)</b>	1-5	11	44
	5-10	8	32
	10-20	4	16
	>20	2	8
<b>Daily average income (BDT)</b>	200-500	12	48
	500-1000	11	44
	>1000	2	8

### 3.6 SOCIO ECONOMIC CONDITION OF DRIED FISH RETAILER

Table 4 shows an overall socio economic view of dried fish retailer. In the study most of the interviewee only completed primary and secondary and few are illiterate. In age old structure, one retailer was below 20 years old, thirteen was ages between 21-35, nine was ages between 36-50 and two was above 50 year. In a Previous study on socio economic status of dried fish retailer and found age distribution of the retailers varied widely from 20 to above 55 years [12]. 20.93% of the retailer belongs to age group 26–30 followed by 18.6 from 20–25 and 36–40 age group and 72% of the retailers had satisfactory levels of formal education. During the study, twenty interviewees responded that they do not have alternative source of income and four have alternative sources of income such as grocery shop,



agriculture, farm etc. In the study it is found that 44% retailer sells 1-5 kg dried fish daily and 32% sell 5-10 kg daily. In a study conducted in Sylhet dried fish market found that the selling of the products varied from market to market and ranged between 4-10 kg per day [11].

### 3.7 KEY CONSTRAINTS OF THE DRIED FISH MARKET

A number of constraints are found in the dried fish market of Noakhali such as rapid damage of dry fishes, low consumer demand, high transaction costs, vand lack of marketing infrastructure, transportation and storage facilities. In the study, 11 interviewees reported that they face lack of capital, 6 interviewee reported higher transportation cost, 5 interviewee reported Lack of storage facility and 3 interviewee reported unhygienic market condition. Monir et al. (2013)[13] conducted a research and described that a number of restrained were revealed by wholesalers and retailers of dried fish, including rapid damage of dried fishes, low consumer demand, high transaction costs, poor management skills, lack of access to credit facilities, lack of marketing infrastructure, transportation and storage facilities. Fig 5 show percentage of constraint of the dried fish market

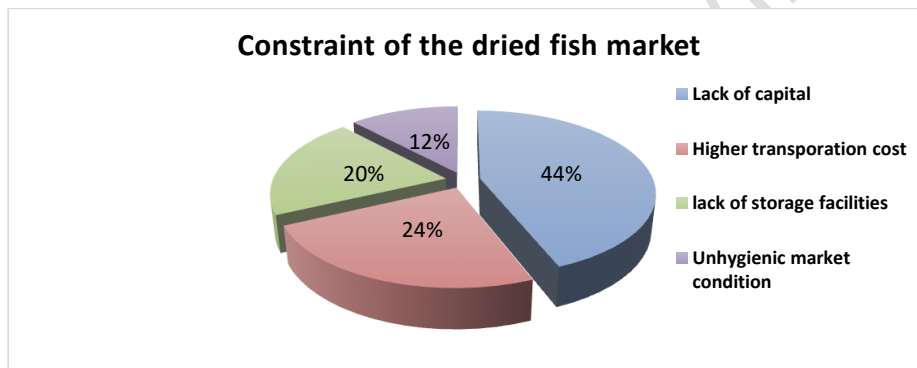


Fig. 5. Various Constraints facing in the dried fish market

### 4. CONCLUSION

Dry fish is considered as an important source of protein and minerals for the people of Bangladesh. Lower income people largely depend on it because poor people cannot buy fresh fish because of due to its higher price. They buy small quantities of dried fish, which is enough for one meal at a times. Dried fish market creates job opportunity of to the people of Bangladesh. Noakhali region could be an important source of dried fish as it has high potential for this sector. Keeping in mind about the constraints and possibilities, this region should be monitored carefully for further development of this sector. Therefore, Hygienic and Quality of fish product need to be developed. Reduction of marketing intermediaries can reduce the price of dried at consumer level.

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## CONSENT

As per international standard or university Standard, participant's written consent has been collected and preserved by the author(s).

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