RESEARCH PAPER

Socio-Economic Determinants of Consumption Pattern of Fish in Urban Area of Tripura

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Abstract

The fish is important food commodity and has an important role in nutritional security of North East region of India. The average per capita consumption of protein in India is 56 gm/day (2005-06) which is below to minimum protein requirement 70 gm/capita/day recommended by the WHO. This study looked into the consumption pattern of fish in urban households of Tripura. This study also examines the socio-economic factors affecting quantity of fish purchase and level of fish consumption by urban households. Simple random technique used to select 120 respondents from four fish markets from the Agartala City of Tripura. Primary data from 120 respondents was collected and analyzed using descriptive statistics and regression analysis. It was found that majority of fish buyers were male and out of those 70% were age below 45 years. The modle class for family size was 3-4 Members/family. The average monthly expenditure on fish purchase was ₹ 1312.16/household. The regression analysis revealed that fish price negatively affect to the quantity of fish purchase, whereas number adult members in a family, quantity of consumption of chicken and mutton (close substitute of fish) were found to have positively effect on quantity of fish purchase. Therefore, to increase the level of fish consumption in urban areas of Tripura, strategies towards household income, sufficient and regular supply this was needed.

Keywords: Consumption, Fish, Household, Expenditure, Nutrition, Tripura

Introduction

Fish and fish products are recommended to take a prominent position in the human diet because of its high nutritional value. Further, health oriented foods are the preferences of

today's consumer. Under the modern marketing concept, consumer is the fulcrum around whom the entire marketing activities revolve (Santhakumar and Sanjeeviji, 2000). The study consumer behavior for fish with respect to consumers' taste, preference, food habits, family income and consumption expenditure on fish and related commodity is essentially important from its production, processing and marketing point of view. The fish is regular and essential food item of more than 90 percent of the families of Tripura. The local fishes are more preferred by the consumers in comparison to outside fishes (Upadhyay and Pandey, 2009). However, only 50 percent of total required fish, is produced in the state remaining 50 percent fish is imported other state Andhra Pradesh and adjoining country Bangladesh. Now the knowledge of fish consumption pattern and purchase behavior will helpful to producer and other intermediaries in supply management of fish. This study aimed to examine the consumption pattern of fish among urban households of Agartala Tripura and also to analyse the factors affecting the quantity of fish purchase.

Theoretical Frame-Work

The Consumer behaviour is the study of what, when, how, how much people buy a commodity. The analysis of consumer behavior aims to explain the buyers' decision-making process both individually as well as in groups. The theory of consumer behaviour assumed that the consumer is rational, and he is always willing to maximize satisfaction given his income and the prevailing market prices. Further, a consumer faces a decision problem like how he allocate his income on the purchase of a bundle of goods that give him maximum satisfaction (McConnell *et al.* 2012).

An individual consumer decision like what range, type and quantities of food he purchases and consumes was influenced by income, prices, necessities and other factors such as social norms. On the consumers' behaviour in relation to rising income, various theories like Milton Friedman's permanent income hypothesis revealed that that the consumption is based on the long run permanent income, The Life Cycle hypothesis held that households or individuals maximize their utilities subject to their wealth, the main determinants of current consumption and that the average long run income would likely determine the total demand for consumer spending, were developed. According to Engel's law, the income elasticity for food and necessary goods is positive but low (<1) as because, increase in income, people's spending on food decreases and a large percentage of additional income is committed to luxuries (Adeniyi *et al.* 2012).

The life-style of people in the urban area is different from that of rural area, and it is also influenced to a considerable extent, their food consumption patterns. The urban consumers in compared to rural consumers generally have better purchasing power and nutritional security. However in North East region of the country, urban peoples are also suffering from

inadequate protein intake because low income, higher price of the animal protein related commodities and poor accessibility of this commodity.

Promoting healthy diets of individuals and population groups in North East Region of the Country, agricultural and allied sectors including fisheries sectors must be given due priority. In North East Region of India, the strategies related to production and supply of food must not merely be directed to ensure food security but also to achieve the consumption of adequate quantities food and animal protein.

Materials and Methods

This study was conducted in the Agartala city of Tripura State of North Eastern Region of India. This distinct study area was chosen because fish is regular and essential food item of more than 90 percent of the families, more representation of tribes in urban areas of Tripura. The people of study area have varied food habit and diverse occupations. Further for the protein requirement, people mainly dependant on animal protein as because in whole North East Region there are very less production of pulses and milk. The Agartala city has an urban population of 3.99 lakh predominantly of Bengalis and tribals. The main occupations of the residents are government service, private service, business and labourers. Major fish markets in the area include Badtala, Golbajar, Lake chaumini, Moth chaumini, GB bajar(GB Market), Durga Chamini and Tulsibati which provide avenues to buyers and sellers for commodities like fish, chicken, meat and vegetables and fruits.

Simple random sampling without replacement was used to select the respondents at different fish market sites such as Badtala, Golbajar, Lake chaumini and Durgas Chaumini which located in different pockets of Agartala city. A sample comprising 120 respondents were selected from these markets to collect the primary data. The data was collected through personal interview method and semi-structured survey schedule was administered to record the information. The interview schedule consisted questions related to the socio-economic background of the respondents, income level expenditure pattern, consumption and purchase behaviors for fish (raw/dry), chicken and mutton etc. Altogether, information from 120 fully completed and reliably cleaned schedules were used to digitize and analysis of data. Statistical tools like frequency, mean, and standard deviation was used to analyze the socio-economic characteristics of the fish consumers while Regression Analysis was applied study the factors affected the quantity of fish purchase and consumption of fish. The dependent variable was the quantity of fish purchase by households at market visit. Whereas price of fish (X_1), Family expenditure (X_2), Expenditure on food (X_3) Monthly consumption of substitutes (X_4) Number of adult in family (X_5) were selected as the explanatory variables. The Statistical Package for Social Sciences (SPSS) Version 15 was used for analysis of data. Based in expenditure the consumers were categorized into Low, medium and High group. The procedure used for categorization is mean (+/-) $^1/_2$ Standard Deviation.

Results

The results obtained on analysis of socio-economic characteristics the fish consumers of study area were presented in Table 1. The result revealed that about 70 percent of the respondents were in the age group below 45 years, and about 61 percent fish buyers were having education level to the Graduate. The educated buyers have a better idea about fish quality and better-decision making ability with respect to quantity. It is revealed from the table that the family size of 3-4 members is model class (frequency=80) which indicates that the fish consumers of study area have medium family size.

### Table 1. Socio-economic characteristics of fish consumers

Characteristics	Frequency distribution			
Age	Upto 30 31(25.83)	31-45 53(44.17)	46-60 33(27.5)	Above 60 3(2.5)
Education	<10th 13(10.83)	12th 25(20.83)	Graduate 73(60.83)	Postgraduate 9(7.5)
Occupation	Housewife 10(8.33)	Pvt service 22(18.83)	Govt Service 49(40.83)	Business 39(32.5)
Family size	1-2 5(4.17)	3-4 80(66.67)	5-6 24(20.0)	>6 11(9.17)

(Figures in parenthesis shows the percentage)

The fish consumers classified into three categories i.e. Low, medium and high expenditure categories, on the basis of monthly expenditure made by them. This categorization was done using criteria (mean (+/-) ½ Standard Deviation). The average expenditure of all categories as well as overall expenditure scenario of the fish consumers of Agartala are given in Table-2. Average monthly expenditure made by fish consumers was recorded ₹ 11,967.57. However,

Table 2: Expenditure pattern of fish consumers

Expenditure on	Low (26)	Medium (25)	High (23)	Overall
Monthly expenditure on food (₹)	2576.92	2954.55	3782.61	3083.33
Monthly expenditure on Health (₹)	1484.62	1916.667	2021.739	1860.94
Monthly expenditure on Education (₹)	1750	3650	5954.55	4459.18
Monthly expenditure on Mutton/chicken etc	888.46	1100	917.39	974.32
Monthly expenditure on fish protein	1176.92	1479.17	1282.609	1312.16
Monthly expenditure on Vegetables	1819.231	1875	2130.435	1929.73
Monthly expenditure (₹)	8350.0	12120.83	15830.43	11967.57
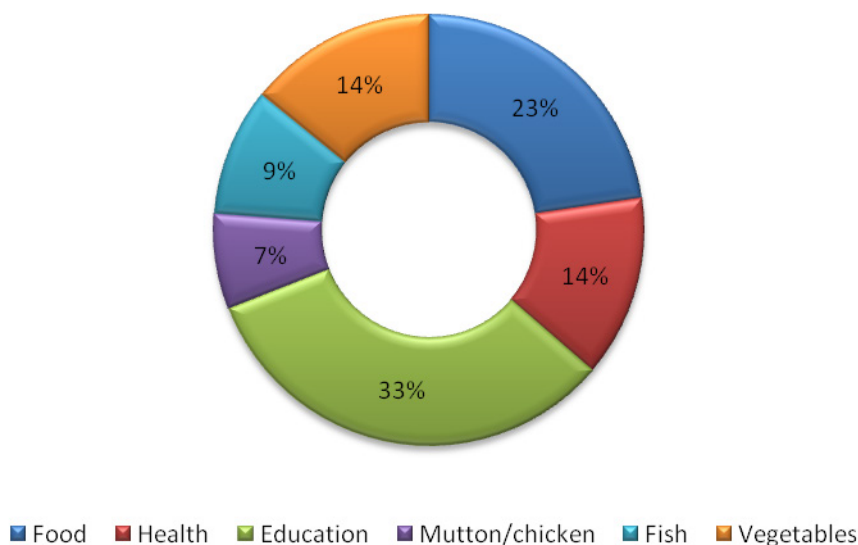
Fig 1. Expenditure pattern of Fish consumers in Agartala

category wise spending were ₹ 8350.0; ₹ 12,120.83 and ₹ 15,830.43 per month in low, medium and high expenditure categories, respectively. It is depicted from figure-1 that the respondents were spending 33 percent of total expenditure on education and 23% on food.

The respondents were spending a significant amount on the animal protein foods like Fish, chicken and mutton. On an average, they spend about ₹ 1312.16 per month on fish and about ₹ 974.32 per month on chicken and mutton.

In order visualize whether on increase in household's expenditure, quantity of fish purchase also increased or not? the consumption pattern of animal protein items were estimated. The consumption pattern of animal based protein items is presented in Table-3. It is evident from the table that purchase the quantity of fish was increased with increase in expenditure. Whereas it was not true in the case of chicken and mutton, as the low expenditure group had higher purchase as compared to the medium and high expenditure groups. The average consumption of fish was recorded 2.24 kg/week/family and chicken/meat/pork, etc. was 2.99 kg/month/family.

The functional form, the linear function was used to estimate the fish consumption function, and the relative importance of independent variables were determined on the basis of the magnitude of regression coefficients. The significance of fish consumption function are indicated by the "t" and "F" values, the magnitude of the coefficient of multiple determinations (R^2) and the appropriateness of the sign of the regression coefficients to the a priori expectations.

Table-3. Consumption pattern of Animal protein by different categories

Particulars	Low	Medium	High	Overall
Average quantity of fish purchase at the time of survey	0.546154	0.679167	0.81087	0.678488
Consumption of fish (week)	1.809615	1.982609	2.114286	2.240625
Consumption of chicken/mutton/ pork etc. (month)	3.269231	3.136364	2.652174	2.99375

The linear equation was found to be significant at 0.01 probability level and the value of co-efficient of determinations (R^2) was 0.437. This shows that 43.7% variation in quantity of fish purchase (Y) was influenced by independent variables price of fish(X_1), Family expenditure(X_2), Expenditure on food(X_3) Monthly consumption of substitutes(X_4) Number of adult in family (X_5). The quantity of fish purchased was determined by factors like fish market price, monthly expenditure, expenditure on food, monthly consumption of substitutes(fish chicken), and the number of adult members in the family. Out of the five explanatory variables included into the regression model, the regression coefficients of the fish price (X_1), monthly consumption of substitutes (X_4) and number of adult in the family(X_5) were turned out to be significant ($P<0.01$). As obvious, the sign coefficient of fish price was negative, whereas sign of coefficients of other variables was positive. The regression analysis revealed that the three independent variables exerted effects on the quantity of fish purchase by fish consumers in the study area. It also implies that an increase in fish prices leads to decrease in quantity of fish purchase whereas the family size and monthly consumption of fish substitutes(chicken/mutton) have positive influence on quantity of fish purchase and fish consumption. The other variables were not statistically significant at any level, though the total monthly expenditure (X_2) and expenditure on food (the lead X_3) had a positive relationship with the quantity of fish purchase. The explicit form of equation is:

$$Y = 0.043 - 0.334 X_1 + 0.188X_2 + 0.129X_3 + 0.280X_4 + 0.301X_5$$

(-.210) (-3.478) (1.796) (1.163) (1.163) (2.752) (2.909)

Discussion

The modal age group (31-45 years) shows that the majority of the fish buyers were in their active stage of working life. Most of them were educated to graduate level and were having occupations like govt service, private service or in business. The age education and occupation of the fish buyers indicate better affordability of the fish consumers in Agartala. The Fish is

considered to the most ideal food for the aged and the growing youth because of its easy digestibility of its soft tissue (Eyo, 2002). The range of monthly expenditure of respondents' was ₹ 8350.0-₹15830.43. The fish consumers of the study area were well aware of the fact that the fish is best sources of animal protein. However, quantity of purchase and consumption of fish appeared to be decreased with the decrease in total expenditure of households. On the contrary in case of chicken/meat and others were decreased with increase in households' expenditure. The implication is that; the families with higher expenditure and income were more health cautious, and they gave more preference to the fish.

Table 4: Regression results on variables affecting quantity of fish purchase by Households

Factors	b value	t-value
Constant)	-0.043	-.210
Fish price(X_1)	-0.334	-3.478**
Family expenditure(X_2)	0.188	1.796
Expenditure on food(X_3)	0.129	1.163
Monthly consumption of substitutes (X_4)	0.280	2.752**
Number of adult in family (X_5)	0.301	2.909**
R^2 value	0 .437	
F value	10.228**	

From the above-mentioned results and discussions it can be assumed that the socio-economic characteristics of the fish consumers have direct relationship with fish consumption pattern as well as quantity of fish purchase. Further, the concept made consumption is dependent mainly on real income. Empirical evidence from this study has shown that while income may be important, but other factors of social and economic importance such as fish price, number of adult in the family, consumption of substitutes, family expenditure and expenditure on food were also observed to have influence on the quantity of fish purchase and quantity of fish consumption in the study area.

Some of the past study have also concluded that apart from total income and total expenditure, certain socio-economic factors such as education level, household size and number of household members working, price of commodity, occupation, age and expenditure on other food and non-food items could influence household consumption behavior (Adeniyi *et al.* 2012; Davis,1982, Izan and KW Clements, 1979).

Conclusion

This survey-based study showed that the animal protein sources like fish, chicken, meat, pork, etc. were popularly consumed in Agartala. However, fish was found to be a preferred food

because of their food habit, variety of fish availability in the market at varied range of prices, affordability of all categories of consumers. The average family size of fish consumers was between 3-4 members. The education and food were the major heads on which fish consumers spend around 55% of their total family monthly expenditure. Results of statistical analysis indicate that the fish price, number of adult members in family, monthly consumption of substitutes items were the significant factors affecting quantity of fish purchase and fish consumption. Therefore, to increase the level of fish consumption in urban areas of Tripura, strategies towards household income, sufficient and regular supply of are needed.

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