Journal of Social Review
Volume 3 (1)
December 2014
Department of
Social Sciences

BEHAVIOR OF HOUSEHOLD DRY FISH CONSUMPTION IN TRINCOMALEE DISTRICT

Krishnal Thirumarpan and H. Dayaani

Abstract

Trincomalee district had abundant fish resources and favourable climatic condition for dry fish production. This study attempted to determine the status and the factors affecting consumption of different types of dry fish in Trincomalee district. The study was done in 3 Divisional secretariat divisions and 90 consumers were used in the study. Results of the study revealed that mean household income of consumers per month was Rs.27200.00. 30% of consumers preferred to eat Thunnus albacores because of its high fleshness. Khuro nemus was mostly consumed once in two weeks due to its higher taste than fresh fish. The average expenditure on purchasing Anchoviella sp. dry fish was Rs.462.50 per month per household. When compared the different type of dry fish, Anchoviella sp. was purchased in highest amount and it was 0.88kg per month. Multiple regression results revealed that family size, income and distance between market and home were significantly and positively influenced expenditure on Anchoviella sp. dry fish consumption. But for Amplicaster sp, only family size and distance significantly and positively influenced the expenditure. But for Khuro nemus species income and distance significantly and positively affected the expenditure while education level of the head of the household negatively affected the expenditure. Majority of the consumers stated price fluctuation as the major problem. Based on results it is expected that demand for dry fish will remain high in the long term and may even increase if product quality is improved. It is suggested that improvement of processing technology would benefit consumers.

Introduction

Fish is one of the most important sources of animal protein and has been widely accepted as a good protein source and other elements for the maintenance of healthy body (Ravichandran *et al.,* 2012). It is an extremely perishable commodity and quality loss can occur very rapidly after catch (Khan and Khan, 2001; Musa *et al.,* 2010; Dewi *et al*., 2011). Dried fish was a major source of animal protein available at cheaper price for the economically weaker sections of the society, especially people residing in coastal areas (Prasad *et al*., 1999).

According to NARA, 2011 dried fish were more popular and consumed by those who were living far away from coast due to lack of fresh fish suppliers. According to Census and Statistics (2008), *Anchoviella sp.* was consumed in highest quantity by a person followed by *Thunnus albacores* and *Khuro nemus.* The availability, price and economy were the reasons for highest consumption level of *Anchoviella sp.* compared to other dried fish varieties (Census and statistics, 2008). NARA (2008) stated that in Sri Lanka, the total quantity of dried fish consumed by person per month was about 326g and expenditure on dried fish was about 86 rupees.

Dry fish production played a significant role in rural areas among small scale fishing community. Profitability is the key factor which decides the long term sustainability of the dry fish production. The availability of dry fish varies from place to place, which was influenced by the price of fresh fish and availability of fresh fish. Trincomalee had abundant fish resources and favorable climatic condition for dry fish production. Within this context this study attempted to determine the behavior of dry fish consumption in Trincomalee district.

The specific objectives were, to determine the preference level of different types of highly consumed dry fish; to determine the factors affecting consumption of different types of dry fish and to determine the constraints faced by dry fish consumers in Trincomalee district.

Methodology

Three Divisional Secretariat divisions were selected in Trincomalee district viz, Kinniya, Trincomalee Town and Gravets and Kuchaveli. In Kinniya D. S. division Faisal Nagar , Annal Nagar, Mancholai chenai Grama Niladhari divisions were selected. In Trinco Town & Gravets D.S. division Kanniya, Palaiyoothu and Uppuveli Grama Niladhari divisions were selected. And from Kuchaveli D.S. division Nilaveli, Irakakandy and Kuchaveli Grama Niladhari divisions were selected. And from each Grama Niladhari division 10 dry fish consumers were selected randomly. Thus the final sample comprised of 90 consumers who were interviewed at the time of purchasing of dry fish. For this purpose structured pre tested questionnaire was used. Frequency distribution and means were used to depict the socio-economic characteristics of the respondents. Multiple regression analysis was done to determine the factors affecting expenditure of dry fish consumption.

Results and Discussion

Socio economic characteristics of consumers

Table 1: Socio economic characteristics of consumers

Variables	Mean	Std. Deviation
Age (Years)	42.4	8.14
Family size(Number)	4.9	1.81
Monthly income(Rs)	27,200.00	12777.19

(Source: Field Survey Data, 2013)

The results revealed that average age of consumers was 42.4. Mean number of household size was 4.9 with the minimum size of 2. The average family income of dry fish consumers was Rs.27, 200.00 per month with the maximum monthly income of Rs.70, 000.00 and minimum of Rs. 8,000.00.

Majority of the respondents (91.7%) were married, while the rest were single. 43.33% of the respondents were males and the rest were females. And 45% of dry fish consumers were Buddhist, 25% were Christians, 16.7% were Hindu and the rest were Muslims.

Table 2: Education level of consumers

Education level	Frequency	Percent
None	01	1.7
Primary	0 9	15
Secondary	43	71.7
Higher education	07	11.6
Total	**60**	**100.0**

(Source: Field Survey Data, 2013)

Majority of the respondents had the primary education and secondary education (71.7% and 15%).

Consumer Preference

Table 3: First preference type of dry fish

Type of dry fish	Percent
Nethali/Hal Messo (*Anchoviella sp*)	25.0
Katta/Katawa (*Khuro nemus*)	28.3
suran/Balaya (*Thunnus albacores*)	25.0
keeri/Hurullo (*Amplicaster sp*)	18.3
Arakula/Thora (*Scomberomorus cavalla*)	3.3
Total	**100.0**

(Source: Field Survey Data, 2013)

28% consumerôs first preference of dry fish was *Khuro nemus*. 30% of consumers preferred to eat *Thunnus albacores* because of its high fleshness. 21.7% of consumerôs second preference was *Khuro nemus*. *Anchoviella sp*. and *Amplicaster sp*. dry fish were selected as second preference by 18.3% and 16.7% of consumers respectively. Only 15% of consumers preferred *Scomberomorus cavalla* and *Carangoides malabaricus* dry fish. *Khuro nemus* was selected as third preference by 33.3% of consumers. Forth preference range of *Amplicaster sp* dry fish select by its taste about 26.75% of consumers.

Availability of dry fish

About 95% of consumers reported highly availability of *Anchoviella sp.* According to NARA (2008), the availability, price and economy were the reasons for highest consumption level of *Anchoviella sp.* compared to other dried fish varieties. 33% of respondents reported *Khuro nemus* dry fish were highly available. The availability of *Scomberomorus cavalla* and *Carangoides malabaricus* were very less, as demand for these type of fish was high on fresh manner rather than dry.

Table 4: Availability of different type of dry fish

Type of dry fish	Highly Available	Avail able	Less available	Non availablity
Nethali/Halmessa (*Anchoviella sp*)	95.0	5.0	-	-
Katta/Kattawa (*Khuro nemus)*	33.0	26.0	1	-
Suran/Balaya (*Thunnus albacores)*	15.0	48.3	33.3	3.4
Keeri/Hurullo (*Amplicaster sp)*	65.0	35.0	-	-
Paarai/Paaraw (*Carangoides malabaricus*)	1.7	18.3	40.0	40.0
Arakula/Thora *(Scomberomorus cavalla*)	-	6.7	23.3	20.0

(Source: Field Survey Data, 2013)

Consumption frequency

Results showed that, 43.3% of consumers consumed *Anchoviella sp.* dry fish once a week. Sample responedents consumed *Anchoviella sp.* dry fish with breakfast or lunch or dinner meals. *Khuro nemus* mostly consumed once in two week due to its higher taste than fresh and 35% of consumers consumed twice a week the *Amplicaster sp*. *Carangoides malabaricus* dry fish were taken once in four week by 48.3% of consumers (Table 5). 38.3% of consumers purchased dry fish in high amount in October to December months because during this rainy period there was higher price for fresh fish and it may be of low quality and taste.

Table 5: Consumption frequency of different dry fish

Local Name (Scientific name)	Not consuming	Once a week	Twice a week	Once in 2 weeks	Once in 4 weeks
Nethali/Hal messa *(Anchoviellasp.)*	-	43.0	30.0	25.0	1.7
Suran/Balaya (*Thunnus albacores)*	20.0	31.7	11.7	16.7	20.0
Keeri/Hurullo *(Amplicaster sp.)*	6.7	25.0	35.0	15.0	18.3
Katta/Katawa (*Khuro nemus*)	1.7	33.3	3.3	36.7	25.0
Paarai/Paraw (*Carangoides malabaricus)*	18.0	20.0	48.3	18.0	-
Arakula/Thora (*Scomberomorus cavlla)*	20.0	-	-	-	80.0

(Source: Field Survey Data, 2013)

Place of purchasing dry fish

Results showed that 30% of consumers bought dry fish from Town market due to easy accessibility and 20% of respondents purchased from Kinniya market. Others purchased from Palaiyoothu area stall, Nilaveli area stall, Irakkakandy area stall and town market. Most of the consumers purchased in Kinniya area due to low price than other area.

Preferable characters of dry fish during purchasing

The following dry fish characters were used to determine the quality of dry fish during purchasing by consumers. 66.67% of consumers considered the colour of dry fish when purchasing. Smell and appearance of dry fish were considered by 58.33% and 70% of consumers respectively.

Table 6: Preferable characters of dry fish during purchasing

Characters of dry fish	Percent (%)
Colour	66.67
Smell	58.33
Appearance	70.00
Tenderness	12.5

(Source: Field Survey Data, 2013)

Expenditure on dry fish

Table 7: Expenditure of dry fish per month per household

Type of dry fish (Rs per month per household)	Expenditure of dry fish		
	Minimum	Maximum	Mean
Nethali/Hal messa *(Anchoviella sp)*	150.00	1500.00	462.25
Suran/Balaya *(Thunnus albacores)*	0.00	1500.00	279.72
Keeri/Hurullo (*Amplicaster sp*)	0.00	1200.00	298.08
Katta/Kattawa (*Khuro nemus*)	0.00	1950.00	409.00
Paarai/Paaraw (*Carangoides malabaricus*)	0.00	900.00	57.25
Arkula/Thora (*Scomberomorus cavalla*)	0.00	650.00	143.00

(Source: Field Survey Data, 2013)

Data revealed that the average expenditure on the consumption of *Khuro nemus* dry fish per month per household was Rs.409.00 and mean expenditure of *Amplicaster sp*. dry fish per month was Rs.298.08 per household. The average expenditure on consumption of *Anchoviella sp*. dry fish was Rs.462.50 per month per household.

Quantity of purchase

Data revealed that the average amount of *Anchoviella sp*. dry fish purchased by consumer was 0.88 kg per month per household. The consumer purchased average amount of *Amplicaster sp.* dry fish 0.73 kg per month. Average amount of *Carangoides malabaricus* and *Scomberomorus cavalla* dry fish purchased were 0.21 kg and 0.07 kg respectively per household.

Table 8: Quantity of purchase dry fish per household per month (kg)

Amount of different type of Dry fish purchased per month per household	Minimum	Maximum	Mean
Nethali/Halmessa (*Anchoviella sp*)	0.25	4.00	0.88
Suran/Balaya (*Thunnus albacores*)	0.00	2.50	0.51
Keeri/Hurullo (*Amplicaster sp*)	0.00	3.00	0.73
Katta/Kattawo (*Khuro nemus*)	0.00	3.00	0.54
Paarai/Paaraw (*Carangoides malabaricus*)	0.00	1.00	0.21
Arakula/Thora (Scomberomorus cavalla)	0.00	1.00	0.07

(Source: Field Survey Data, 2013)

Factors affecting expenditure of different type of dry fish

For *Anchoviella sp.* dry fish the R^2 was 0.43 which implied that about 43% of the variation in the expenditure on consumption was explained by the factors such as education, family size, income, ethnicity, availability of *Anchoviella sp*. and distance.

But expenditure by *Anchoviella sp.* dry fish consumption was significantly affected only by family size, income, distance and availability. The results showed, an increase in household size by one with increase the expenditure by Rs. 44.17 ($p<0.05$). This could be explained by the fact that as household size increases, there is a requirement for dry fish which could create the high expenditure of dry fish. Distance significantly and positively influences the expenditure at 1% level (Table 9). Monthly income of the household significantly and positively influences the expenditure on consumption of dry fish at 5% level. Manurung and Kasryno (1986), using the 1981 census data, concluded that, in general, dry fish consumption increased with increasing income, especially in rural areas, indicating that dry fish is not considered an inferior commodity. This was in agreement with the results of research in East Java carried out by Hermanto and Andriati (1986)

Table 9 : Results of the multiple regression analysis- Factors affecting on expenditure of Nethali/Hal messa (*Anchoviella sp*)

Model	Coefficients	
	B	Std.Error
(Constant)	429.51**	76.45
Monthly income (Rs)	0.01**	0.00
Ethnicity	2.48	34.09
Family size	44.17**	5.12
Distance (Km)	5.06***	0.37
Availability of *Anchoviella sp*	-301.99*	44.21
Education (Year)	-61.61	16.53

(R^2=0.43, F=6.652***)
Dependent variable- Expenditure of *Anchoviella sp.* per month

* Significance at 10% level
**Significance at 5% level
***Significance at 1% level

Expenditure by *Amplicaster sp.* dry fish consumption was significantly affected only by family size, distance and ethnicity. The results showed, an increase in family size by one the expenditure will be increased by Rs. 21.51 ($p<0.05$). This could be explained by the fact that as household size increases, there is a requirement for dry fish which could create the high expenditure of dry fish. Distance significantly and positively influences the expenditure at 1% level

Table 10: Results of the multiple regression analysis- Factors affecting expenditure on Keeri/ Hurullo (*Amplicaster sp*)

Model	Coefficients	
	B	Std.Error
Constant	-187.99	119.29
Income(Rs.)	510.00	0.00
Ethnicity	128.92***	21.05
Family size	21.51**	10.67
Distance(km)	3.28***	0.70
Availability	-24.4	41.46
Education	46.28	37.30

(R^2=0 .573, F-11.86***)
Dependent variable- Expenditure of *Amplicaster sp.*
** Significance at 5% level
***Significance at 1% level

The expenditure on *Khuro nemus* dry fish consumption was significantly affected only by income, education, distance and ethnicity. A unit increase in household income will lead to Rs. 0.02 ($p<0.01$) increase in the expenditure of *Khuro nemus* dry fish consumed (Table 11). This means that the expenditure of dried fish consumed would increase as the income of the household increases.

Table 11: Results of the multiple regression analysis- Factors affecting the expenditure on Katta/Kattawa (*Khuro nemus*)

Model	Coefficients	
	B	Std.Error
Constant	115.82	276.17
Income(Rs)	0.02***	0.00
Ethnicity	86.19*	48.53
Family size	-25.47	21.13
Distance(km)	3.04*	1.37
Availability	-38.53	85.06
Education	-120.4*	69.53

(R^2 =0.49, F-8.42***)
Dependent variable- Expenditure of *Khuro nemus*
* Significance at 10% level
***Significance at 1% level

For *Carangoides malabaricus* dry fish the R^2 was 0.52 which implied that about 52% of the variation in the expenditure on consumption was explained by the factors such as education, family size, income, ethnicity, availability of *Carangoides malabaricus* and distance. But expenditure by *Carangoides malabaricus* dry fish consumption was significantly affected only by income, education, distance and ethnicity (Table 12). The results showed, an increase in distance by one the expenditure will be

increased by Rs. 2.58 ($p<0.01$). This means that the expenditure of dried fish would increase as the distance (from house to dry fish shop) increases. If Availability of *Carangoides malabaricus* will increase by one the expenditure will increase by Rs. 31.51 ($p<0.05$).

Table 12: Results of the multiple regression analysis- Factors affecting expenditure on Paarai/Paraw (*Carangoides malabaricus*)

Model	Coefficients	
	B	Std.Error
Constant	-214.54**	76.54
Income(Rs.)	0.00	0.00
Ethnicity	29.17*	16.65
Family size	15.39*	8.50
Distance(km)	2.58***	0.59
Availability	31.51**	11.66
Education	64.51**	29.37

(R^2 -0.519, F-9.527***)
Dependent variable- Expenditure of *Carangoides malabaricus*
***Significance at 1% level
**Significance at 5%level
*Significance at 10%level

Constraints in dry fish purchasing

76.67% of the dry fish consumers stated that there was a major problem in dry fish purchasing due to price fluctuation. Lack of availability and low market facility were found as minor problems respectively by 1.67 and 10% of consumers. 21.66% of consumers were constrained by the accessibility problem. 10% of consumers stated that dry fish which were sold by traders were of poor quality.

Conclusion

The findings of this study indicated that dry fish consumption differs from each ethnicity in Trincomalee. The average family income of dry fish consumers was Rs.27, 200.00 per month. 28% consumerôs first preference dry fish was *Khuro nemus*. 30% of consumers preferred to eat *Thunnus albacores* because of its high fleshness. *Khuro nemus* mostly consume once in two week due to its higher taste than fresh and 35% of consumers consume twice a week of *Amplicaster sp*. 66.67% of consumers considered the colour of dry fish when purchasing. Smell and appearance of dry fish were considered by 58.33% and 70% of consumers respectively. Average expenditure of *Khuro nemus* dry fish per month was 409.00. Average amount of *Anchoviella sp*. dry fish purchased by consumer was 0.88 kg per month per household. Expenditure by *Anchoviella sp.* dry fish consumption was significantly affected by the income, distance from house to dry fish shop, availability and Family size. Majority of the consumers constrained by price fluctuation. Based on results it is expected that demand for dry fish will remain high in the long term and may even increase if product quality is improved. It is suggested that improvement of processing technology would benefit consumers.

References

Department of Census and Statistics (2008). Annual Report

Department of Census and Statistics (2010). Annual Report

Dewi, R.S., Nurul Huda, G. and Ahmad, R. 2011. Changes in the physicochemical properties, microstructure and sensory characteristics of shark dendeng using different drying methods. American Journal of food Technology 6: 149-157

Hermanto and Andriati 1986. Pola Konsumsi di daerah Pedesaan Jawa Timur.Prosiding.Struktur Pendapatan dan Konsumsi Rumah Tangga Pedesaan di jawa Timur.Bogor, Pusal penelitian Agro Ekonomi.

Khan, M.A.A. and Khan, Y.S.A. 2001. Insect infestation and preventive measures in dry fish storage of Chittagong, Bangladesh. International Journal of Biological Sciences 1: 963 -965.

Manurung, V.T. and F. Kasryno 1986. Profile of salted fish consumption in Indonesia.Presented at Fish Marketing Research Workshop. Asian Fisheries Social Science Research Network, Malaysia, October 1986.

Musa, U., Hati, S.S., Adamu,Y.I. and Mustapha, A. 2010. Pesticides residues in smoked fish samples fromNorth-Eastern Nigeria. Journal of Applied Sciences 10: 975 - 980.

Natural Aquatic Resources Research and Development Agency (NARA) 2008

Natural Aquatic Resources Research and Development Agency (NARA) 2011

Prasad, M.M., Gopakumar, K. and Seenayaa, G. 1999. Major microbial points (MMP) in halobacterial contamination of fish curing environments of Andhra coast, India Indian Journal of Fisheries 46 (3): 227 ï 236

Ravichandran, S., Joseph, F.R.S., Kanagalakshmi, R. and Ramya, M.S. 2012.Variation in nutritive composition of two commercially important marine fin fishes. British Journal of Biomedical Science 8: 43 - 51