International Journal of Farm Sciences **6(1)** : 25-32, 2016

Inequality in consumption of milk and milk products in rural and urban areas of Thiruvananthapuram district of Kerala- an economic analysis

M KRISHNADAS, PK DIXIT and M SIVARAM

Southern Regional Station, ICAR National Dairy Research Institute
Bengaluru 560030 Karnataka, India
Email for correspondence: mkrishnadas@outlook.com

ABSTRACT

The inequality in consumption of milk and milk products in Thiruvananthapuram district of Kerala was marginally higher for rural consumers (0.24) than that of their urban counterparts (0.23) as indicated by the Gini coefficients and Lorenz curves reflecting that the expenditure on milk and milk products was unevenly distributed among the rural population. The urban consumers disbursed 12.10, 42.09, 50.38, 13.52, 57.77 and 18.28 per cent more on liquid milk, curd and butter milk, butter, ghee, other milk products and total milk and milk products respectively. The computed expenditure elasticity of liquid milk, curd and butter milk was found to be lesser than unity inferring that consumers had considered these products as essential goods in both urban and rural areas of Thiruvananthapuram.

Keywords: Milk products; inequality; expenditure elasticity; Lorenz curve

INTRODUCTION

Dairy products have an important role in the nutrition of human beings. Thiruvananthapuram district registered a creditable jump on milk production from 157.49 thousand tonnes in 2008-09 to about 265.29 thousand tonnes in 2013-14. Kerala ranked thirteenth among the states in terms of both milk production (2012-13) and per capita milk availability (2011-12). Thiruvananthapuram district harbours good population of crossbred cattle. However the milk consumption exhibits spatio-temporal variation owing to the differences in the socio-economic aspects, tastes and food habits of people across different agro-climatic regions and variation in milk availability in the area. With growth of the economy, increasing population and enhanced health consciousness among the population the demand for milk and milk products would rise which would lead to more proportion of income to be spent on milk and milk products. As household size and composition, level of income, prices, food habits and social customs and resource endowments vary across the

country, such differences are likely to influence the consumption pattern of milk and milk products significantly. Over the period there are changes in the composition of consumption basket of the households with growing importance for milk and milk products. The present investigation was undertaken to analyse the inequality in consumption of milk and milk products in rural and urban areas of Thiruvananthapuram district of Kerala.

MATERIAL and METHODS

The study was undertaken during 2012-13 in Thiruvananthapuram district of Kerala to analyse the consumption pattern of milk and milk products in rural and urban areas of Thiruvananthapuram. The primary data from 120 households on demographic factors, occupational features, consumption level, expenditure on milk and milk products and other foods and non-food items were collected. From Thiruvananthapuram district two Grama Panchayaths (Kalliyoor and Vakkom) were selected representing the rural area and two localities of a Municipal Corporation (East Fort and Pattom) were selected representing the urban area. Thirty households were randomly selected from each Grama Panchayath and Municipal Corporation locality.

Classification of data was done on the basis of spread of expenditure of the respondent households. To study the consumption pattern of milk and milk products across the rural and urban population of the Kerala in terms of consumption expenditure incurred, tabular analysis was employed. The expenditure elasticities were worked out for milk and milk products by employing Engel functions. The Engel functions were fitted by taking per capita expenditure on individual items as dependent variable and per capita total expenditure as independent variable. Engel functions of various types viz linear (L), semi-logarithmic (SL), double logarithmic (DL) and log-inverse (LI) were fitted by ordinary least square (OLS) technique to choose an appropriate functional relationship between per capita expenditure on an item and per capita total expenditure with other variables held constant. The Gini coefficient (Gini 1921) and Lorenz curve technique were employed to analyse the inequalities in rural and urban areas in the per capita expenditure on milk and milk products. For examining the factors influencing the consumption expenditure on milk and milk products, multiple regression analysis was employed. The linear regression function used is as follows:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, D_{11}, D_{12}, D_{13}, D_{14}, D_{21}, D_{22}, D_{31}, D_{32})$$

where

Y= Per capita monthly expenditure on milk and milk products

X_1= Total Expenditure (Rs)

X_2= Expenditure on cereals and millets (Rs)

X_3= Expenditure on pulse and pulse products (Rs)

X_4= Expenditure on egg, fish and meat (Rs)
X_5= Expenditure on fruits and vegetables (Rs)
X_6= Expenditure on other foods (Rs)
D_{11}= Up to SSLC (dummy variable)
D_{12}= PDC/HSE (dummy variable)
D_{13}= Graduate (dummy variable)
D_{14}= Postgraduate (dummy variable)
D_{21}= Non-vegetarian (dummy variable)
D_{22}= Vegetarian (dummy variable)
D_{31}= Rural (dummy variable)
D_{32}= Urban (dummy variable)

RESULTS and DISCUSSION

The monthly per capita expenditure on food and non-food items in rural and urban areas of Thiruvananthapuram is presented in Table 1. The monthly per capita expenditure on milk and milk products in rural areas of Thiruvananthapuram was found to be Rs 294.94 while the total monthly per capita expenditure was Rs 3649.44. The expenditure on milk and milk products was found to be 8.08 per cent of the total expenditure and 23.90 per cent of the food expenditure. The monthly per capita expenditure on food items was Rs 1233.88 which constituted 33.81 per cent of total monthly expenditure.

The share of liquid milk, curd and butter milk, butter, ghee and other milk products (condensed milk, milk powder, ice cream, Peda, Gulab Jamun, Paneer, baby food and other milk sweets/products) in total food expenditure was 15.91, 2.17, 1.17, 1.92 and 2.17 per cent respectively. The expenditure on egg, fish and meat was Rs 295.61 which was 8.10 per cent of the total expenditure and 23.96 per cent of food expenditure.

The expenditure on cereals and millets was Rs 249.09 which was 20.19 per cent of food expenditure and 6.83 per cent of total expenditure. Rs 181.22 were spent for fruits and vegetables which was 14.69 per cent of the food expenditure and 4.97 per cent of total expenditure. The expenditure on pulse and pulse products was found to be Rs 54.00. The expenditure on other foods (sugar, salt, jaggery, edible oils, spices and beverages) was Rs 159.03 which was 12.89 per cent of the food expenditure and 4.36 per cent of total expenditure. The expenditure on non-food items was Rs 2415.56 which was 66.19 per cent of the total expenditure. The share of non-food items was found to be increasing across the expenditure groups with increase of total expenditure in rural areas of Thiruvananthapuram.

On an average the urban consumer of Thiruvananthapuram spent Rs 348.85 for milk and milk products while his total monthly expenditure was Rs 4401.86. The expenditure on milk and milk products was found to be 7.93 per cent of the total expenditure and 25.21 per cent of the food expenditure. The monthly per capita expenditure on food items in urban

Thiruvananthapuram was Rs 1383.64 which constituted 31.43 per cent of total monthly expenditure.

The share of liquid milk, curd and butter milk, butter, ghee and other milk products in total food expenditure was 15.91, 2.75, 1.56, 1.94 and 3.05 per cent respectively. The expenditure on egg, fish and meat was Rs 317.46 which was 7.21 per cent of the total expenditure and 22.94 per cent of food expenditure.

The expenditure on cereals and millets was Rs 282.26 which was 20.40 per cent of food expenditure and 6.41 per cent of total expenditure. An urban consumer spent Rs 189.85 for purchasing fruits and vegetables which was 13.72 per cent of the food expenditure and 4.31 per cent of total expenditure. The expenditure on pulse and pulse products was found to be Rs 55.01. The expenditure on other foods was Rs 190.21 which was 13.75 per cent of the food expenditure and 4.32 per cent of total expenditure. The expenditure on non-food items was Rs 3018.22 which was 68.57 per cent of the total expenditure. In urban areas of Thiruvananthapuram the share of non-food items was found to be increasing across the expenditure groups with increase of total expenditure. Interestingly in the household expenditure a higher proportion of expenditure was incurred on non-food commodities. This sort of utilisation, attaching prominence to non-food commodities and luxuries resembles the consumption pattern prevalent in advanced economies (Sooryamoorty 1997).

The consumers in urban areas of Thiruvananthapuram spent more on milk and milk products than their rural counterparts. The urban consumers spent 12.10, 42.09, 50.38, 13.52, 57.77 and 18.28 per cent more on liquid milk, curd and butter milk, butter, ghee, other milk products and total milk and milk products respectively. Expenditure on total food items and non-food items was 12.14 per cent and 24.95 per cent respectively higher among urban consumers than their rural counterparts. Total monthly per capita expenditure was 20.62 per cent more in urban areas than rural areas of Thiruvananthapuram.

The inequality in consumption of milk and milk products was slightly higher for rural consumers (0.24) than that of their urban counterparts (0.23) as revealed by the Gini coefficients and Lorenz curves indicating that the expenditure on milk and milk products was a little unevenly distributed among the rural population. Thiruvananthapuram clearly depicts the picture of an urban-rural continuum in Kerala. It is very difficult to demarcate the urban and rural areas in the state since the features in rural and urban areas are almost alike (Anon 2014).

The estimates of Engel elasticities (β) for food and non-food items in the study

Table 1. Per capita monthly expenditure on food and non-food items

Item	Monthly per capita expenditure (Rs)	
	Rural	Urban
Liquid milk	196.36 (5.38)	220.12 (5.00)
Curd & butter milk	26.75 (0.73)	38.01 (0.86)
Butter	14.39 (0.39)	21.64 (0.49)
Ghee	23.66 (0.65)	26.86 (0.61)
Other milk products	26.76 (0.73)	42.22 (0.96)
Total milk & milk products	294.94 (8.08)	348.85 (7.93)
Cereals and millets	249.09 (6.83)	282.26 (6.41)
Pulse and pulse products	54.00 (1.48)	55.01 (1.25)
Egg, fish and meat	295.61 (8.10)	317.46 (7.21)
Fruits and vegetables	181.22 (4.97)	189.85 (4.31)
Other foods	159.03 (4.36)	190.21 (4.32)
Total food	1233.88 (33.81)	1383.64 (31.43)
Non-food	2415.56 (66.19)	3018.22 (68.57)
Total monthly per capita expenditure	3649.44 (100.00)	4401.86 (100.00)

Figures in the parentheses indicate percentages to the total expenditure

Table 2. Expenditure elasticities for food and non-food items

Item	Thiruvananthapuram	
	Rural	Urban
Liquid milk	0.76 L (0.49)	0.69 L (0.60)
Curd and buttermilk	0.90 L (0.67)	0.81 L (0.59)
Butter and ghee	1.11 L (0.67)	1.02 L (0.49)
Other milk products	1.25 SL (0.39)	1.15 SL (0.70)
Total milk and milk products	1.20 L (0.52)	1.08 L (0.62)
Cereals and millets	0.34 L (0.45)	0.30 L (0.48)
Pulse and pulse products	0.56 L (0.51)	0.47 L (0.43)
Egg, fish and meat	1.05 L (0.66)	1.01 L (0.68)
Fruits and vegetables	0.84 L (0.64)	0.76 L (0.51)
Other foods	1.23 SL (0.56)	1.13 SL (0.60)
Total food	0.68 SL (0.39)	0.64 SL (0.56)
Non-food	1.34 DL (0.56)	1.23 DL (0.62)

L= Linear, SL= Semi-logarithmic, DL= Double logarithmic

Figures in the parentheses indicate the value of $\overline{R^2}$ associated with the selected Engel functions

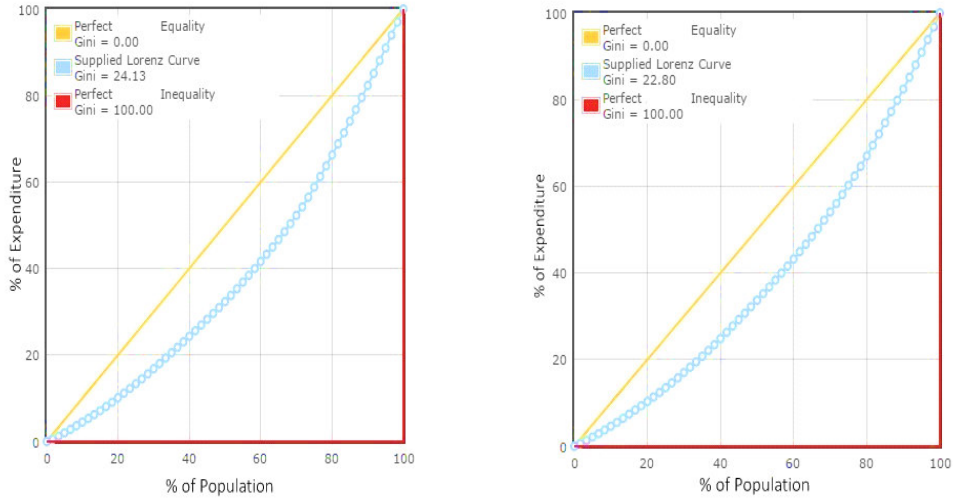

Fig 1. Lorenz curve for expenditure on milk and milk products

Table 3. Factors influencing consumption of milk and milk products

Particulars	Parameter estimates
Constant	23.2624** (3.9045)
Total Expenditure (X_1)	0.0257** (0.0064)
Expenditure on cereals and millets (X_2)	0.0879 (0.0732)
Expenditure on pulse and pulse products (X_3)	2.6775** (0.3624)
Expenditure on egg, fish and meat (X_4)	-0.0769** (0.0099)
Expenditure on fruits and vegetables (X_5)	0.6164** (0.0770)
Expenditure on other foods (X_6)	-0.6535** (0.1078)
PDC/HSE (D_{12})	0.2083 (2.2036)
Graduate (D_{13})	0.6952 (3.3141)
Postgraduate (D_{14})	4.8128 (6.9693)
Vegetarian (D_{22})	15.4294* (7.7840)
Urban (D_{32})	35.3911* (16.9721)
Adjusted R^2	0.6474

**Significance at 1 per cent level, *Significance at 5 per cent level, Figures in the parentheses indicate standard error

area are presented in Table 2. The expenditure elasticities for milk and milk products in the rural Thiruvananthapuram (1.20) were higher than the urban (1.08). The expenditure elasticities for liquid milk, curd and buttermilk, butter and ghee and other milk products were found to be 0.76, 0.90, 1.11 and 1.25 respectively for rural areas and 0.69, 0.81, 1.02 and 1.15 respectively for urban areas. The computed elasticity of liquid milk, curd and butter milk, cereals and millets, pulse and pulse products, fruits and vegetables were found to be lesser than unity reflecting the consumers had deemed these products as necessary goods in both urban and rural areas of the district.

Similar trend was witnessed by Kesavan (1982) in Kerala. The magnitudes of elasticity coefficients in his study were higher than the current study. Liquid milk was a luxury good in his study while it was a necessary good in the current study. It indicates that significant changes had occurred in the consumption pattern over the last three decades.

The expenditure elasticities for cereals and millets, pulses and pulse products, egg, fish and meat, fruits and vegetables and other foods were found to be 0.34, 0.56, 1.05, 0.84 and 1.23 respectively for rural and 0.30, 0.47, 1.01, 0.76 and 1.13 respectively for urban areas. The expenditure elasticities for food and non-food items were 0.68 and 1.34 respectively for rural and 0.64 and 1.23 respectively for urban area. The total food was found to be a necessary good while non-food items were luxury. Similar observations were made by Maithily (2008) and contrary to the finding of Kesavan (1982) that non-food items were necessary goods.

The regression analysis revealed that the effect of total expenditure (0.0257), expenditure on cereals and millets (0.0879), expenditure on pulse and pulse products (2.6775) and expenditure on fruits and vegetables (0.6164) were positive on expenditure on milk and milk products while the expenditure on egg, fish and meat (-0.0769) and expenditure on other foods (-0.6535) were found to have significant negative influence on expenditure on milk and milk products. The dummy variables in the study indicated that the consumers with higher secondary education tend to spend Rs 0.21 more on milk and milk products than below SSLC educated. The graduates and postgraduates tended to spend Rs 0.70 and 4.81 respectively below SSLC educated. The vegetarian may spend Rs 15.43 more on milk and milk products than a non-vegetarian consumer. The urban consumers were found to spend Rs 35.39 more on milk and milk products than rural consumers.. The coefficient of multiple determination indicated that 64.74 per cent of the variations in expenditure on milk and milk products are explained by the variables included in the function. Kesavan (1982)

observed that expenditure on pulses, vegetables and fruits was positive and expenditure on meat was a negative determinant of expenditure on milk and milk products.

CONCLUSION

In the study area inequality in consumption of milk and milk products was marginally higher for rural consumers than that of their urban counterparts. Recent periods witnessed higher expenditure on milk and milk products as compared to cereals and millets. There was a significant shift from food items to the non-food items in the consumption basket with consumption of food items in favour of milk and milk products. The consumers in urban areas spent more on milk and milk products than those in rural areas. The expenditure elasticity of liquid milk, curd and buttermilk was found to be less than unity reflecting that consumers had deemed these products as necessary goods in both urban and rural areas. The disposable income, expenditure on pulses and pulse products and expenditure on fruits and vegetables were found to have positive and significant influence on expenditure on milk and milk products in Thiruvananthapuram.

ACKNOWLEDGEMENTS

Financial support from Indian Council of Agricultural Research in the form of Senior Research Fellowship under which this study was conducted is duly acknowledged.

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Received: 20.7.2015 ***Accepted: 10.9.2015***