# Pakistan Journal of Life and Social Sciences
www.pjlss.edu.pk

**RESEARCH ARTICLE**

# Factors Affecting Consumer Behavior Towards Consumption of Fresh Milk

Ansar Mehmood[1], Khalid Mushtaq[1,*], Asghar Ali[1], Sarfraz Hassan[1], Maqsood Hussain[1] and Farooq Tanveer[2]

[1]Institute of Agricultural & Resource Economics, University of Agriculture, Faisalabad, Pakistan
[2]Department of Sociology, University of Agriculture, Faisalabad

**ABSTRACT**

This study was conducted to explore the effects of various economic and demographic factors on consumer attitudes towards fresh milk. Data were collected from different areas of Faisalabad city by conducting a consumer survey using a well-designed questionnaire. For better reflection of the demographic and socio-economic characteristics of the respondents, the descriptive statistics were employed in the form of frequency distribution. Multiple regression model was employed to investigate the impact of various factors including milk price, family income, household education, number of children in the family and family size on milk consumption. Results indicated that around 92 percent of the respondents were male, and 8 percent were females; most of the respondents were educated as 30 percent were matriculated, 39 percent were graduate, and 23 percent held the master's degree. With respect to the level of income, 36 percent of the respondents had an income ranging from Rs. 15000 to Rs. 25000; whereas 26 percent had income greater than Rs. 55,000. Regression results indicated that milk price had a negative impact on milk demand, i.e., 1 percent increase in milk price reduces demand by 10 percent; 1 unit increase in the family size increase milk consumption by 0.08 percent; 1 unit increase in the education level of households increase the demand for milk by 0.06 percent. Further, respondent age, cost, usage, and nutrition-related attitudinal factor also showed significant impact on milk consumption levels. As the study findings indicate that mostly well-educated people prefer fresh milk, therefore, fresh milk providers should modify their targeting strategies from undifferentiated to differentiated which will enable them to provide a better service and earn a reasonable profit.

## INTRODUCTION

Livestock is an important sector of Pakistan's economy. Its contribution in agricultural value addition and national GDP is approximately 58.9 and 11.10 percent, respectively. Fresh milk makes up an important part of dairy products consumption across the regions. Milk production and consumption show an increasing trend with greater contribution coming from buffalo milk followed by cow, camel and goat milk. Increased demand for dairy products is mainly associated with rapid increase in human population, urbanization, rise in income per capita and export opportunities (GOP, 2018a).

Milk Production and consumption in Pakistan are facing cyclical variations that directly affect the demand for fresh milk. Due to low income and rising inflation, most Pakistani consumers are price conscious. Therefore, the demand for fresh milk consumption varies from area to area as compared to processed milk. The supply of milk to meet domestic demand is not sufficient. Powdered milk imported every year to compensate this shortage (Zia, 2009). The consumption of fresh milk is affected mainly due to low hygienic conditions, health hazards and poor accessibility (Njarui et al., 2011).

Several studies had shown that various socio-economic factors including gender, education, age, occupational status, and ethnicity affect food selection behaviors (Wham and Worsley, 2003). Milk consumers possess a widespread range of preferences. Some consumer prefers unpacked milk whereas other prefers packed

milk due to various reasons. Unpacked milk is preferred because it is cheaper and easy to deliver at door step without any additional cost (De Alwis et al., 2011). The milk seller delivers unpacked fluid milk directly from dairy farms to the residential areas. This delivery channel favors the consumers for tax and sale fees evasion. Unpacked fluid milk delivered to consumers without having any safety controls and without any additional cost of packing. Hence the price of unpacked fluid milk is much lower than processed milk, and this might encourage low income household towards fresh milk. Today in developing countries consumption of packed milk has not peak yet and unpacked fluid milk take a significant share as compared with the developed countries (Vinola et al., 2018; Kilic et al., 2009). Not only socioeconomic and demographic factors affect the consumption of packed and unpacked milk but factors such as increasing consumer awareness about food safety, and advertising has an important bearing (Akbay and Tiryaki, 2008). These factors changed the consumption pattern of the consumers. This study was planned to investigate the consumer behavior towards fresh milk in Pakistan. This study also focused to investigate the supply chain of fresh milk in Faisalabad city, to explore the various factors determining the consumer choice of fresh milk and to suggest guidelines for milk marketing firms and other stake holders.

## MATERIALS AND METHODS

### Empirical Model Specification

The study attempted to quantify factors affecting consumer behavior towards fresh milk which were mostly quantitative in nature. Quantity consumed by household was taken as a dependent variable; while family size of the respondent (i.e. family members), milk price paid (Rs/kg), family income (Rupees), households education (years of schooling) and numbers of children in the family (less than 10 years old) were taken as explanatory variables. The empirical demand function for milk is specified below:

$$C = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + U_i \qquad (1)$$

Where

$C$ = Total quantity of milk consumed (Kg/month) by a household

$B_0$ = Intercept

$B_i$ = Regression Coefficients

$U_i$ = Error Term

$X_1$ = Family Size (Persons)

$X_2$ = Milk Purchase Price (Rupees/ Kg)

$X_3$ = Monthly Household Income (Rupees)

$X_4$ = Education of the Households (Years)

$X_5$ = Number of children per house

### Data and Analytical Technique

This study was carried out in the Faisalabad city of Punjab province. It is third largest city in Pakistan and the second largest city of Punjab Province (GOP, 2018b). Faisalabad is also known to be the main hub of textile industry in Pakistan. Basically, it has an agrarian base and most of the city's fresh milk demand is fulfilled from its vicinities (rural areas). A case study methodology was adopted for this survey and Faisalabad city was chosen to explore the study objectives. Despite the limitations of case study methodology, this approach is able to effectively deal with study's research problem and objectives (Jonker and Pennink, 2010; Saunders et al., 2009; Badar, 2015). Simple random sampling technique was employed to collect data from 120 milk consumers, comprising 40 from each town i.e., Glulam Muhammad Abad, Jinnah Colony and Samna Abad. Well-designed questionnaire was constructed to extract information from consumers and both close- and open-ended questions were asked. To ensure accuracy of questionnaires pre-testing was done by interviewing four milk consumers from each town. Corrections were made according to suggestions of the respondents. After data collection questionnaires were properly checked to ensure that all responses had been recorded properly. After editing the questionnaires data were transferred into computer. Information related to demographic, socio-economic characteristics of milk consumers and their preferences for fresh milk was collected in the survey.

For better reflection of the demographic and socio-economic characteristics of the respondents (like gender of respondent, age, education, family size, number of children, education of family head and monthly income etc.); descriptive statistics was employed in the form of frequency distribution. Multiple regression analysis was used to determine the impact of various factors effecting consumer behavior towards fresh milk; and factor analysis was conducted to study consumer preferences for purchase and consumption of fresh milk.

## RESULTS AND DISCUSSION

### Socio-economic Characteristics of the Respondents

Several studies showed that the socio-economic and demographic characteristics of the household and household head play an important role in fluid milk consumption among the consumer households (Bus and Worsley, 2003; Wham and Worsley, 2003). Socioeconomic characteristics provide useful background information for in-depth understanding of the behavior of consumers (Table 1). In a sample size of 120 consumers, around 92 percent of the respondents were male, and 8 percent were females. This revealed that a clear majority of customers who came to market for purchase of fresh milk were male. However, due to cultural changes, female too make purchases. About 52 percent of respondents were married and 48 percent

were unmarried. Most of the respondents were between the age group of 25-60 years i.e. 84 percent. Majority of the respondents were educated as 30 percent were matriculated, 39 percent were graduate, and 23 percent hold the master's degree. In terms of occupation, respondents were mainly government employees (38 percent), self-business owners (25 percent), private sector employees (22 percent), and laborers (15 percent). As regards income, 36 percent of the respondents were in the income level from Rs. 15000 to Rs. 25000 per month; whereas 26 percent having income greater than Rs. 55,000 per month.

**Consumption pattern of respondents**

Table 2 revealed that consumers prefer fresh milk due to different quality and other attributes; 54 percent of respondents preferred fresh milk due to easy availability and 38 percent preferred because of good taste as compared to packed milk. Around 8 percent respondents preferred it due to its quality. Milk is available in different forms to consumers; 15 percent respondents preferred powder milk, 25 percent respondents use UHT packed milk and 60 percent respondents consume fresh milk. People also change their preferences according to taste; 20 percent respondents like camel milk, 54 percent preferred cow milk, whereas 25 and 8 percent prefer buffalo and goat milk, respectively. Majority of the respondents (60 percent) purchased milk from Gwalas because of convenience factor mainly due to milk delivery at home; whereas 31 percent respondents purchased milk from the retail shops. People consume milk in different way to satisfy their wants; 17 percent of the respondents consume milk in yoghurt form, 42 percent consume milk in the form of milk-shake, 25 percent consume milk in the form of dodh-soda and only 16 percent people consume milk in tea form. Literature also showed that socioeconomic and demographic of the household play an important role in fluid milk consumption (Stavkova et al., 2008; Foret and Prochazka, 2006; Stavkova and Turcinkova, 2005).

**Demand Function for Fresh Milk**

The demand for fresh milk depends on several macroeconomic and microeconomic variables. For the clear understanding of the demand determinants, several studies have been conducted previously. In this study, we used the household consumer data to explore the fresh milk demand and its determinants. Results presented in Table 3 shows that milk price has a negative effect on milk demand i.e. 1 percent increase in milk price reduces demand by 10 percent. These results are according to the basic principle of microeconomics theory of demand and supply (Gans et al., 2011). The other important variable is the size of the family, as the persons increase the demand for fresh milk also increase. Our results show that a unit increase in the family size will increase milk consumption by

**Table 1: Socio-Economic Characteristics of the Sampled Fresh Milk Consumers**

| Characteristics | Categories | Respondents | Percentage |
|---|---|---|---|
| Gender | Male | 110 | 92 |
| | Female | 10 | 08 |
| Marital Status | Married | 62 | 52 |
| | Unmarried | 58 | 48 |
| Age | <25 | 14 | 12 |
| | 25-40 | 40 | 34 |
| | 41-60 | 60 | 50 |
| | >60 | 06 | 05 |
| Education | Primary | 10 | 08 |
| | Matric | 36 | 30 |
| | Graduate | 46 | 39 |
| | Postgraduate | 28 | 23 |
| Occupation | Govt. Employees | 46 | 38 |
| | Pvt. Employees | 26 | 22 |
| | Self-Business | 30 | 25 |
| | Laborer | 18 | 15 |
| Monthly Income (Rupees) | 15000-25000 | 43 | 36 |
| | 26000-35000 | 28 | 23 |
| | 36000-55000 | 18 | 15 |
| | > 55000 | 31 | 26 |

**Table 2: Consumption Pattern of the Sampled Fresh Milk Consumers**

| Characteristics | Categories | Respondents | Percentage |
|---|---|---|---|
| Preference | Easy available | 65 | 54 |
| | Taste | 45 | 38 |
| | Quality | 10 | 08 |
| Type of Milk Purchase | Powder milk | 18 | 15 |
| | UHT packed milk | 30 | 25 |
| | Fresh milk | 72 | 60 |
| Preferred Animal Milk | Camel | 24 | 20 |
| | Cow | 65 | 54 |
| | Buffalo | 30 | 25 |
| | Goat | 01 | 01 |
| Source of Purchase | Direct from dairy farmer | 10 | 09 |
| | Gwala | 72 | 60 |
| | Retail Shops | 38 | 31 |
| Mode of Consumption | Yoghurt | 20 | 17 |
| | Milk shake | 50 | 42 |
| | Dodhsoda | 30 | 25 |
| | Tea | 20 | 16 |

**Table 3: Demand Function Results**

| Variables | Coefficient | Standard Error | T value | Significance |
|---|---|---|---|---|
| (Constant) | 9.18 | 1.87 | 4.90 | 0.00 |
| Price of milk | -0.10 | 0.02 | -4.33 | 0.00 |
| Family size | 0.09 | 0.06 | 1.48 | 0.14 |
| Number of children | 0.26 | 0.08 | 2.81 | 0.01 |
| Family income | 1.85 | 1.20 | 0.15 | 0.88 |
| Education of the household | 0.06 | 0.03 | 1.81 | 0.07 |

0.09 percent. Number of children is very important factor. Households with large number of children consume more milk as compared to families with less number of children; 1 child unit increase will increase milk consumption by 0.26 percent. As expected, fresh milk consumption was positively related with family income. Income parameter is non-significant for fresh milk due to various reasons out of which two were found to be common. First is that most of the people do not show their true income level which produce biased results and the second is, as income increase there is more affinity towards packed milk. Jan et al. (2008) also concluded that nonlinear Engel curve relationship for fresh milk in Pakistan proved to be a valid estimation technique of quantity and expenditure elasticities with respect to consumers' income. Education coefficient has a positive bearing on milk consumption because education creates awareness about the balanced diet and calories intake. Education is another important variable in the fresh milk demand of the household. The results of our study is in line with the similar previous studies (De Alwis et al., 2011).

**Conclusions and Recommendations**

This study was conducted to investigate the impact of various economic and demographic factors on consumer attitudes towards fresh milk. Data were collected from different areas of Faisalabad city by conducting consumer survey. Result indicated that family income, family size and number of children have positive impact on milk consumption while education of the family head also plays an important role in consumption. Further, respondent age, cost, usage and nutrition related attitudinal factor affects the milk consumption levels. As the study findings indicated that mostly well-educated people prefer fresh milk. Therefore, fresh milk providers should modify their targeting strategies from undifferentiated to differentiate which will enable them to provide a better service and earn a reasonable profit. Further, findings also indicated that high milk prices have negative impact on the consumption of fresh milk. So, by increasing the milk supply and maintaining the inflation level can help to increase fresh milk consumption.

**Authors' contributions**

All authors contributed equally in this study.

**REFERENCES**

Akbay C and GY Tiryaki, 2008. Unpacked and packed fluid milk consumption patterns and preferences in Turkey. Agricultural Economics, 38: 9-20.

Badar H, 2015. Value chain performance improvement for sustainable mango industry development in Pakistan. PhD Dissertation, School of Agriculture and Food Sciences, The University of Queensland, Australia.

Bus A and A Worsley, 2003. Consumers' sensory and nutritional perceptions of three types of milk. Public Health Nutrition, 6: 201-208.

De Alwis A, J Edirisinghe and A Athauda, 2011. Analysis of factors affecting fresh milk consumption among the mid-country consumers. Tropical Agricultural Research Extension, pp: 12.

Foret M and P Prochazka, 2006. Behaviour and decision making of Czech consumers when buying beverages. Zemedelska Ekonomika-Praha, 52: 341.

Gans J, S King and NG Mankiw, 2011. Principles of Microeconomics. Cengage Learning, Australia.

GOP, 2018a. Economic Survey of Pakistan 2017-18. Islamabad, Pakistan: Ministry of Finance, Government of Pakistan, Islamabad, Pakistan.

GOP, 2018b. Population Census 2017. Islamabad, Pakistan Pakistan Bureau of Statistics, Government of Pakistan, Islamabad, Pakistan.

Jan A, AF Chishti, D Jan and M Khan, 2008. Milk quality in Pakistan: Do consumers care. Sarhad Journal of Agriculture, 22: 345-347.

Jonker J and B Pennink, 2010. The essence of research methodology: A concise guide for master and PhD students in management science. Springer-Verlag Berlin Heidelberg, Germany.

Kilic O, C Akbay and GY Tiryaki, 2009. Factors affecting packed and unpacked fluid milk consumption. Agricultural Economics, 55: 557-563.

Njarui DM, M Gatheru, JM Wambua, SN Nguluu, DM Mwangi and GA Keya, 2011. Consumption patterns and preference of milk and milk products among rural and urban consumers in semi-arid Kenya. Ecology of Food Nutrition, 50: 240-262.

Saunders M, P Lewis and A Thornhill, 2009. Research methods for business students. Pearson education, New York, USA.

Stavkova J, L Stejskal and Z Toufarova, 2008. Factors influencing consumer behaviour. Zemedelska Ekonomika-Praha, 54: 276.

Stavkova J and J Turcinkova, 2005. Consumer choice process when purchasing the staple food. Zemedelska Ekonomika-Praha, 51: 389.

Vinola R, R Swaminathan and E Jeevithan, 2018. Current status and comparative study on the influences of cattle packed and unpacked milk in Tamil Nadu: A detailed survey. Research and Reviews: Journal of Dairy Science and Techonolgy, 4: 6-11.

Wham CA and A Worsley, 2003. New Zealanders' attitudes to milk: implications for public health. Public Health Nutrition, 6: 73-78.

Zia UE, 2009. Pakistan: A dairy sector at a crossroads: Food and Agriculture Organization. Rome, Italy.