



# Socio-Demographic Factors Affecting Purchase Decision of Milk and Milk Products in Barnala District of Punjab - A Multivariate Logit Analysis

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## Abstract

*The study was conducted to evaluate the consumers' awareness on food (milk and milk products) labelling in Barnala district of Punjab, India. A total of 750 consumers/ respondents (57.33% female) were interviewed while purchasing milk and milk products at various modern format retail stores, shops and food restaurants to evaluate their awareness on food labelling and use of pack information using a questionnaire. Consumers' responses showed moderate to high level of awareness and 60.93% consumers use food labels during purchase. However, only 30.53% consumers perceived labelling information as very much important. Logistic regression results showed that gender, education and occupation were more likely to influence significantly ( $P < 0.001$ ) the purchase decision of consumers. It is concluded that consumers in Barnala district give considerable importance to the food labels and read it before making final purchase decisions. However, this study is conducted in urban and peri-urban areas and only for milk and milk products, hence; the results would not be useful to other pre-packaged foods and in rural areas of district.*

**Keywords:** Consumer Awareness, Food Labels, Logit Analysis, Pre-Packaged Milk and Milk Products, Perception

## Introduction

Consumers have right for good quality and safe milk and milk products. As these food products are largely consumed by people of all age groups, which include sensitive populations like children, pregnant women and aged people too (Palsra *et al.*, 2019), it is important that dairy products available for consumption are safe and of good quality. According to the Food Safety and Standards Regulations (2011) of India, the nutritional information is necessary on food label along with name, manufacturing date, expiry date, and ingredients. The objective of this modification in food regulation is to protect consumer health and maintain consumer dietary quality in India. Food label is a vital public health tool that can be used to promote balance diet (Deshmukh and Goyal, 2017; Vijay kumar *et al.*, 2013). Food labels assist consumers who are on special diet because of health problems like diabetes, obesity, poor nutrition etc. Food label plays multi-dimensional role like, providing nutritional information control food related allergies and expiry date provide food safety (Deshmukh and Goyal, 2017; Sanlier and Karakus, 2010; Mackison *et al.*, 2010; Voordouw *et al.*, 2009; Grunert and Wills, 2007). Considering the importance of consumers awareness about milk and milk products labels in making informed, healthy and safe food choices (FSSAI, 2017). Our study was planned to evaluate the consumers' awareness on food (milk and milk products) labelling and use of pack information with the aim that this study would provide new data which can be used in public health recommendations and health education programmes to enhance public awareness toward better use of these food labels.

## Materials and Methods

This study was carried out by conducting a survey in the Barnala district of Punjab through direct interview with consumers/respondents from August, 2018-June, 2019, with the help of pre-formulated questionnaire and convenience sampling technique [ $n = z^2 p (1 - p) / E^2$ ], where  $n$  = sample size,  $z$  = confidence level 99%,  $p$  = population proportion 25%,  $E$  = margin of error +4]. Questionnaire composed of four parts to capture data about socio-demographic characteristics of consumers, consumer awareness on the basic pre-packaged milk and milk products labelling information, consumers' perception on the importance of pre-packaged milk and milk products labelling information and factors associated with reading pre-packaged milk and milk products labels. The respondents of this study were local households or consumers living in Barnala. A total of 750 consumers whoever was found buying milk and milk products for end consumption interviewed from modern format retail stores, shops, food restaurants and college areas of all three blocks *viz.*, *Sehna*, *Mehalkalan* and *Barnala*. In addition, to increase coverage, few online interviews were carried out (using e-mails and mobile phones) and data were collected from them. Logistic regression was performed to test the influence of socio-demographic factors on purchase decision of milk and milk products using R software (version 3.6.1).

## Results and Discussion

The, females ( $n=430$ ) constituted major part 57.33% of all consumers ( $n=750$ ) studied (Table 1). Large proportion of consumers 24.26% ( $n=182$ : males = 45.60%; females = 54.40%) were in the age group of 36 to 45 years, while the smallest proportion 13.06 % ( $n = 98$ : males = 23.46%; females = 76.54%) was in the age group more than 50 years. Among the consumers, 293 (39.06%), were employed/ pensioner, followed by farmers 262 (34.93%) and 178 (23.73%) housewives. Majority of the consumers 62.66% ( $n=470$ : farmer = 52.79%; student = 1.48%; housewife = 32.76%; employed/ pensioner = 12.97%) had school level education and 37.33% ( $n=280$ : farmer = 5.00%; student = 3.57%; housewife = 8.57%; employed/ pensioner = 82.86%) had college/university education, the outcomes were similar to Kath *et al.* (2019) who reported lower level of farmers' education.

The use of food labels was reported by 60.93% consumers, and 33.86 % consumers claimed to be very much, while 38.66 % moderately and 27.46% minimally aware (Table 2). However, only 30.53% consumers perceived labelling information as very much important, even though 51.06% and 18.4% consumers perceived it as somewhat and minimally important, respectively. This might be owing to the preference for pre-packaged milk and milk products because of modern life style, health consciousness and easy availability of such foods in the study area, the similar results were observed by Jain *et al.* (2018).

**Table 1:** Socio-demographic characteristics of the consumers (respondents)

Particulars	No. of Consumers (n) = 750	
	Gender	
Age (years)	Male	Female
16 -25	87	81
26 – 35	58	120
36 – 45	83	99
46 – 55	69	55
>55	23	75
Occupation	Education level	
	Up to school level	College/ University level
Farmer	248	14
Student	07	10
Housewife	154	24
Employed/ pensioner	61	232

**Table 2:** Consumers awareness and use of pack information for purchase of milk and milk products

S. No.	Particulars	No. of Consumers, n (%)	
		Yes	No
1.	<i>Frequency of using milk and milk products labels</i>		
		457(60.93)	293(39.07)
2.	<i>Awareness on the basic pre-packaged milk and milk products labelling information</i>		
i.	Very much awared	86 (26.88)	168 (39.07)
ii.	Moderately awared	118 (36.87)	172 (40.00)
iii.	Minimally awared	116 (36.25)	90(20.93)
3.	<i>Consumers' perception on the importance of milk and milk products labelling information</i>	Male	Female
i.	Very much important	105 (32.81)	124 (28.83)
ii.	Somewhat important	147 (45.93)	236 (55.58)
iii.	Minimally important	68 (21.25)	70 (16.27)
4.	<i>Factors motivates consumers to read milk and milk products labels</i>	Yes	No
i.	Price of the milk and milk products	617 (82.26)	133 (17.74)
ii.	Appearance /package design	61 (8.13)	689 (91.87)
iii.	Like to know characteristics of the milk and milk products	112 (14.93)	638 (85.07)
iv.	Preference of some ingredients	436 (58.13)	314 (41.87)
v.	Religious belief	13 (1.73)	737 (98.27)
vi.	Convenience of environment	172 (22.93)	578 (77.07)
vii.	Storage condition	378 (50.40)	372 (49.60)
5.	<i>Circumstances in which respondents purchase pre-packaged milk and milk products without reading labels*</i>	Yes	No
i.	When the milk and milk products is sold at low price	281(37.47)	469 (62.53)
ii.	When in a hurry/time constraints	412 (54.93)	338 (45.07)
iii.	Purchase of routine/familiar milk and milk products	130 (17.33)	620 (82.67)
iv.	On streets or journey	217 (28.93)	533 (71.07)
v.	When the language on the label is unfamiliar	417 (55.60)	333 (44.40)
vi.	When I trust the seller	512 (68.26)	238 (31.74)
6.	<i>Difficulties encountered by respondents when reading/using milk and milk products labels*</i>	Yes	No
i.	Small fonts	109 (14.53)	641 (85.47)
ii.	Use of technical/scientific language	230 (30.67)	520 (69.33)
iii.	Incomplete labelling	217 (28.93)	533 (71.07)
iv.	Hidden information	112 (14.93)	638 (85.07)

\*Multiple responses results

The price, ingredients, convenience of environment and storage condition were the major factors which motivated

the consumers to read such food labels while religious belief was the least important factor for the same. The reason for reading labels was health consciousness, Kumar and Ali (2011) reported similar motivational factors for reading food labels.

Majority of the consumers purchase these foods without reading the labels when they trust the seller, sold at low price, in time constraints, purchase routine products and on journey. Unfamiliar and technical language on labels, and incomplete as well as hidden information were the major problems faced by the consumers, while only 14.53% consumers reported the problem of small font size. The study showed that the main cause for not reading food labels was the consumers trust the seller and unfamiliar language followed by when they are in a hurry/time constraints or food sold at low price, purchase of familiar product, while the journey factor was least influencing, which were also reported by Vemula *et al.* (2014).

Our study showed that only 23.85% of consumers said that understanding the milk and milk products labels is not easy due to small font size, use of technical language and incomplete or hidden information. The situation will be worse in rural areas where literacy level is low; and, the population is more, similar observations were reported by Singh and Srivastava (2015).

Consumers suggested to make the food labels in such a way that can be easily read and understand by them for their purchasing decision. The odds ratio for use of food labels was calculated = 180.42 (Table 3), that means males reflects 183 times greater chance to use food labels while purchasing these food products than females in this study area.

**Table 3:** Odds ratio influenced by gender of consumers

Particulars	No	Yes	Total	Odds ratio
Female	278	42	320	183.12
Male	15	415	430	
Total	293	457	750	

The results (Table 4) indicated that estimated coefficients for gender, age, education and occupation were found statistically significant. Gender, education and occupation were more likely to influence the purchase decision of consumers.

Logistic regression results indicates that all the explanatory variables are likely to influence the purchase decision of consumers in the study area. Goodness of fit test (p-value is so small) shows this model is statistically significant.

The confines of this study are that it is conducted in urban and peri-urban areas itself and only for milk and milk products, hence, the results would not be useful to other pre-packaged food products and in rural areas of Barnala Punjab.

**Table 4:** Logit estimates of factors affecting the consumers' purchase decision of milk and milk products

Variables	Dependent variable			
	Y = Read milk and milk products labels = 1, otherwise = 0			
Explanatory variables	Coefficient estimated	Std. Error	z value	Pr (> z )
Gender (Male = 1, female = 0) (X <sub>1</sub> )	2.51459	0.53778	4.676***	0.000002
Age (Years) (X <sub>2</sub> )	-0.09548	0.03445	-2.771**	0.005585
Education (X <sub>3</sub> )	0.38079	0.11465	3.321***	0.000895
Occupation (Farmer = 1, Student = 2, Housewife = 3, Employed/Pensioner = 4) (X <sub>4</sub> )	2.24979	0.29701	7.575***	0.000000
Constant	-7.16853	1.11962	-6.403 ***	0.000000
Goodness of fit test	-	-	-	0.000000

Note: Significance Codes: '\*\*\*' and '\*\*' indicate significant at  $P \leq 0.001$

## Conclusion

Based on the findings of this study, it is concluded that consumers in Barnala district of Punjab give considerable importance to the milk and milk products labels and read it before making final purchase decisions as these have become an important source of such foods information, this indicates the increased concerns for checking quality of these foods for healthy life, since this study is conducted in urban and peri-urban areas and only for milk and milk products, hence, the results would not be useful to other pre-packaged foods and in rural areas of the district. There is a need to come forward various sectors such as MOFPI, FSSAI, public health etc. to help the consumers in having informed choices of the pre-packaged foods with specific health implications.

## Conflict of Interests

There is no conflict of interest.

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