

# Influence of Packed Food Labeling on Shopping Practices: A Cross-Sectional Study

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## Abstract

**Background:** The basic product information, health, safety, and nutritional details, as well as food marketing, advertising, and promotion, are all provided on a packed food label. This study was carried out to assess the knowledge, attitude, and practices of the shoppers regarding food labels as there are few studies done in India and none in Pune. **Methodology:** A cross-sectional study was carried out among 226 participants using a validated semi-structured questionnaire, which consisted of sociodemographic details and questions on their knowledge, attitude, and practice regarding food labels while purchasing a packed food item. Quantitative data are presented in the form of mean, standard deviation, 95% confidence interval (CI) of mean, median, and interquartile range (IQR). Qualitative data are in terms of number (*N*), percentages (%), and 95% CI of percentage. **Results:** Of the 226 participants, 163 (72.12) were aware of the label on packaged foods. One hundred seventy-seven (78.32%) participants in all read the label on the packaged food. The maximum retail price (MRP) and expiration date were the most frequent labels sought. Although 17.7% of consumers did not consider nutrient composition when making a purchase, energy and protein were the most often considered nutrients. The majority (70.35%) falsely believed that juice was healthy. The packed food label's tiny font made it difficult to read for 30.38% of the customers. **Conclusion:** Despite the increased awareness about packed food labeling, a fraction of shoppers were not concerned about nutritional information. In contrast to the prevailing knowledge, the majority believes packed food has a positive effect on health.

**Keywords:** Consumer behavior, decision-making, food labeling, packed food, supermarkets

## INTRODUCTION

Food labels provide details about the identity and composition of the product, as well as instructions on how to handle, prepare, and consume it safely. Any tag, brand, mark, visual representation, or other descriptive information that is written, printed, stenciled, marked, embossed, or impressed on, or connected to, a container of food or food product is considered to be a food label according to the generally recognized definition. To encourage the sale of the food, this information, which covers things like ingredients, quality, and nutritional value, might be placed with the dish or displayed nearby.<sup>[1]</sup> Food packaging is the packaging of the food product to protect from contamination and damage besides conserving taste and quality during the shelf life of a food product.<sup>[2]</sup> All the packed food items that are sold in India have to adhere to the Food and Safety Standards Regulations, 2011, issued by

the Food Safety and Standards Authority of India under the Ministry of Health and Family Welfare. Solely just formulating and regulating the food labeling regulations is not sufficient. Packed food has become an integral part of the modern diet. To be able to make educated food decisions and cook nutritious meals in the kitchen, one must be able to read and accurately interpret the labels on food products. The research carried out in Puducherry and Uttar Pradesh indicated that although there is a good level of awareness regarding packed food labels

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**How to cite this article:** Verma P, Rathod H, Johnson S, Palal D, Sohkhet G, Jadav V, *et al.* Influence of packed food labeling on shopping practices: A cross-sectional study. Indian J Community Med 2024;49:484-8.

**Received:** 10-12-22, **Accepted:** 22-12-23, **Published:** 24-05-24

### Access this article online

Quick Response Code:



Website:  
www.ijcm.org.in

DOI:  
10.4103/ijcm.ijcm\_977\_22

among shoppers, the practical application of consulting these labels during the actual purchasing decision is observed to be low.<sup>[3,4]</sup> Hence, this study was proposed to understand the knowledge, attitude, and practice of packed food labeling and also assess its importance among the shoppers as we have not come across such a study in Pune.

## MATERIALS AND METHODS

This cross-sectional descriptive study was carried out among shoppers aged 15–55 years in Pimpri Chinchwad Municipal Corporation, Pune area, from September 2021 to December 2021. With 92.2% awareness of food labels on prepacked food items from a study conducted in Puducherry,<sup>[3]</sup> with an acceptable difference of 4%, a confidence level of 95%, and a non-response of 10%, the calculated sample size was 192. However, data were collected from 226 participants. The software used to calculate the sample size was WinPepi Version 11.30. Institutional ethical clearance was obtained (IESC/FP/2021/60). All aged between 15 and 55 years who consented to the study were included. A preliminary survey was conducted among shoppers from four different supermarkets using a semi-structured questionnaire to enrich the questionnaire. The questionnaire was modified based on the responses and inputs from the participants. The participants from the pilot study were not included in the final analysis. The data were collected through in-person interviews of the shoppers coming out of the supermarket following their purchase through the semi-structured questionnaire by convenience sampling. Informed written consent was obtained from all the participants. Informed written assent was taken for those aged below 18 years. The questionnaire consisted of the sociodemographic details of the participants, questions based on knowledge about packed food labeling (such as have they heard of the term packed food labeling, from whom did they learn about packed food labeling, etc.), attitude-based questions (such as the importance of each label in the packed food, the effect of packed food on health), and practice-based questions (such as what are the labels the participant looks at while purchasing, how frequently do they check for the labels on a four-point scale [always, often, rarely, and never], etc.). Data entry was done through Google Forms and analyzed using Epi Info v7.4.2.0. Quantitative data are presented in the form of mean, standard deviation, 95% confidence interval (CI) of mean, median, and interquartile range (IQR). Qualitative data are in terms of number (*N*), percentages (%), and 95% CI of percentage. Variables that were measured in terms of multiple-choice are expressed in terms of percentages only.

## RESULTS

A total of 226 shoppers participated in this study belonging to the age 15–55 years, outside various supermarkets in the Pimpri Chinchwad area, of whom 146 (64.60%) were males and 80 (35.40%) were females. The sociodemographic features of the participants are given in Table 1. Among the 226 participants, 7 (3.10%) reported having diabetes,

2 (0.88%) hypertension, and 9 (3.96%) other comorbidities that included arthritis, bronchial asthma, chronic obstructive pulmonary disease, cardiovascular disease, hypothyroidism, varicose vein, and combined diabetes and hypertension. The questions regarding knowledge, practice, and attitude were all direct questions.

### Knowledge component

Out of 226 shoppers, 163 (72.12%) were aware of the packed food label with 60 (75%) females and 103 (70.55%) males, and the source is shown in Figure 1 in the form of multiple answers by shoppers. One hundred ninety-three (85.40%) are satisfied with the health information on packed food, 177 (78.32%) think that consuming packed foods has an impact on health, and 87 (53.37%) believe that advertisements play a major role in the food choices they make.

### Attitude component

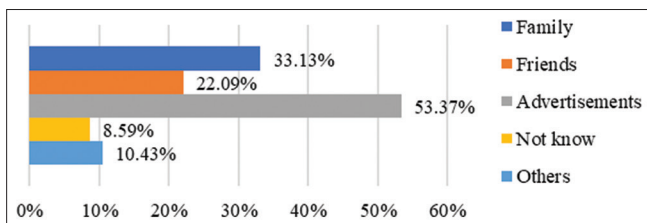
Based on Figure 2, it is clear that the majority (70.35%) of our shoppers have a misperception about juices being healthy. Ready-to-eat products are considered to be healthy by 16.81%, which in contrast are considered to have higher concentrations of preservatives, and acidity regulators to prevent the growth of pathogens. We also do have shoppers who did not wish to comment on the healthiness of packed food items, such as frozen snacks (29.20%), ready-to-eat (25.66%), and baked products (24.34%). On enquiring about the importance of various packed food labels, it came to notice that expiry date (86.73%) and manufacturing date (63.27) are the most important labels for the shoppers and the status of various other labels is shown in Figure 3. After selecting some of the most frequently purchased items by the shoppers, their perception of healthiness (in terms of healthy, unhealthy, and no comments) of ingredients of those food items was taken, as shown in Figure 4, and it was found that spices (51.77%), wheat gluten (48.23%), and iodized salt and salt substitutes (44.25%) were considered healthy, maida (76.55%), palm oil (53.98%), and flavor enhancers (52.65%) were considered unhealthy, and emulsifiers (60.62%) and thickeners (52.21%) were unknown to the shoppers. Of the 226 shoppers, 54 (23.89%) still have a belief that the effect of packed food items on their health is good. Seventy-nine (34.96%) shoppers experience difficulty in reading the packed food label mainly because of font size 24 (30.38%) and ignorance 16 (20.25%) tagged along.

### Practice component

Of the 226 shoppers, 177 (78.32%) read the packed food label, and among these, 71 (40.11%) did so frequently (meaning reading the labels always). Forty-nine (21.68%) shoppers did not read the packed food label, 5 (10.22%) among them never read them, and the rest did answer about the frequency of reading the packed food label clearly indicating that they are unaware as to what they were reading is a packed food label. Juices (9.73%), chocolates and sweets (6.64%), and biscuits, chips, juice, and chocolate and sweets combined accounted for a total of 7.08% of all packaged food purchases, followed by biscuits, chips, and wafers, baked goods, frozen

**Table 1: Sociodemographic features of the participants**

Age	Mean (SD)	95% CI of Mean	Median	IQR	Min value	Max value
Overall	30.64 (8.40)	29.54–31.74	29	24–35	16	55
Male	30.10 (8.19)	28.76–31.44	28	24–35	16	55
Female	31.62 (8.73)	29.68–33.57	30	25–35.5	17	52
Other sociodemographic characteristics		Frequency, n (%)		95% CI of percentage		
Gender	Male	146 (64.60)	64.60–57.99			
	Female	80 (35.40)	29.17–42.01			
Education (completed)	Less than 10 <sup>th</sup>	11 (4.87)	2.45–8.54			
	10 <sup>th</sup>	8 (3.54)	1.54–6.86			
	11 <sup>th</sup> and 12 <sup>th</sup>	27 (11.95)	8.02–16.90			
	Graduate	127 (56.19)	49.46–62.77			
Relationship status	Post Graduate	53 (23.45)	18.09–29.53			
	Single	125 (55.31)	48.57–61.91			
	Married	97 (42.92)	36.38–49.65			
	Widowed	1 (0.44)	0.01–2.44			
Number of family members	Divorced	3 (1.33)	0.27–3.83			
	Up to 2	22 (9.73)	6.20–14.73			
	3 to 5	173 (76.55)	70.47–81.91			
Number of children in the family	>5	31 (13.72)	9.51–18.90			
	No children	140 (61.95)	55.27–68.30			
	Up to 2	74 (32.74)	26.67–39.28			
Type of settlement	≥3	12 (5.31)	2.77–9.09			
	Slum	4 (1.77)	0.48–4.47			
	Tenement	39 (17.26)	12.57–22.83			
	Housing society	173 (76.55)	70.47–81.91			
	Not known	10 (4.42)	2.14–7.99			

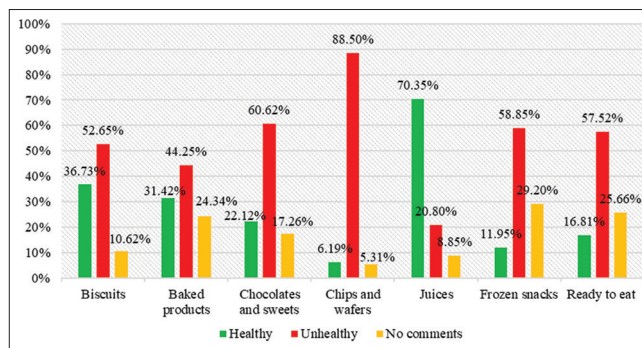


**Figure 1: Source of knowledge of Packed Food Label**

snacks, ready to eat, juice, and chocolate and sweets at 5.31%. Eighty-seven (38.5%) of the 226 shoppers bought these packed food items once a week, which was the same for both men and women. The most commonly looked at packed food labels while purchasing were expiry (32.30%), maximum retail price (5.75%), and 4.42% of shoppers never looked for the same. Energy (10.62%) was the most sought-after nutrient on its own and in combination with protein (7.08%). Nutrient content did not attract the attention of 40 (17.7%) shoppers. Among the shoppers, 99 (43.81%) cared to look at the ingredients list sometimes and 47 (20.80%) never looked. The most common reasons the shoppers bought packed food were because of its taste (56.19%), need (52.65%), and cost (50%).

## DISCUSSION

A majority (72.12%) of the study participants were aware of the packed food labels on the items they purchased, which is found



**Figure 2: Shoppers' perspective of items being healthy or unhealthy**

to be less compared to various other studies.<sup>[3-5]</sup> Reading packed food labels was high in the current study compared to various studies done outside India.<sup>[6-8]</sup> This clearly states that there is a lack of knowledge regarding the components of a packed food label, hence becomes essential to create awareness regarding the same. Expiry date turns out to be the most commonly looked label in studies from Uttar Pradesh, Bahrain, and Tanzania, which is a similar finding in this study.<sup>[4,6]</sup> The choice of looking at nutrient content varied. A study done by Rabab A. Wahab<sup>[6]</sup> stated that fat and sugar were the important items when a product was purchased for the first time, which varied from the study done by Susan Borra<sup>[9]</sup> where the consumers were most aware of calories, etc., which was the similar finding in the current study. The nutrient content being looked into could be an

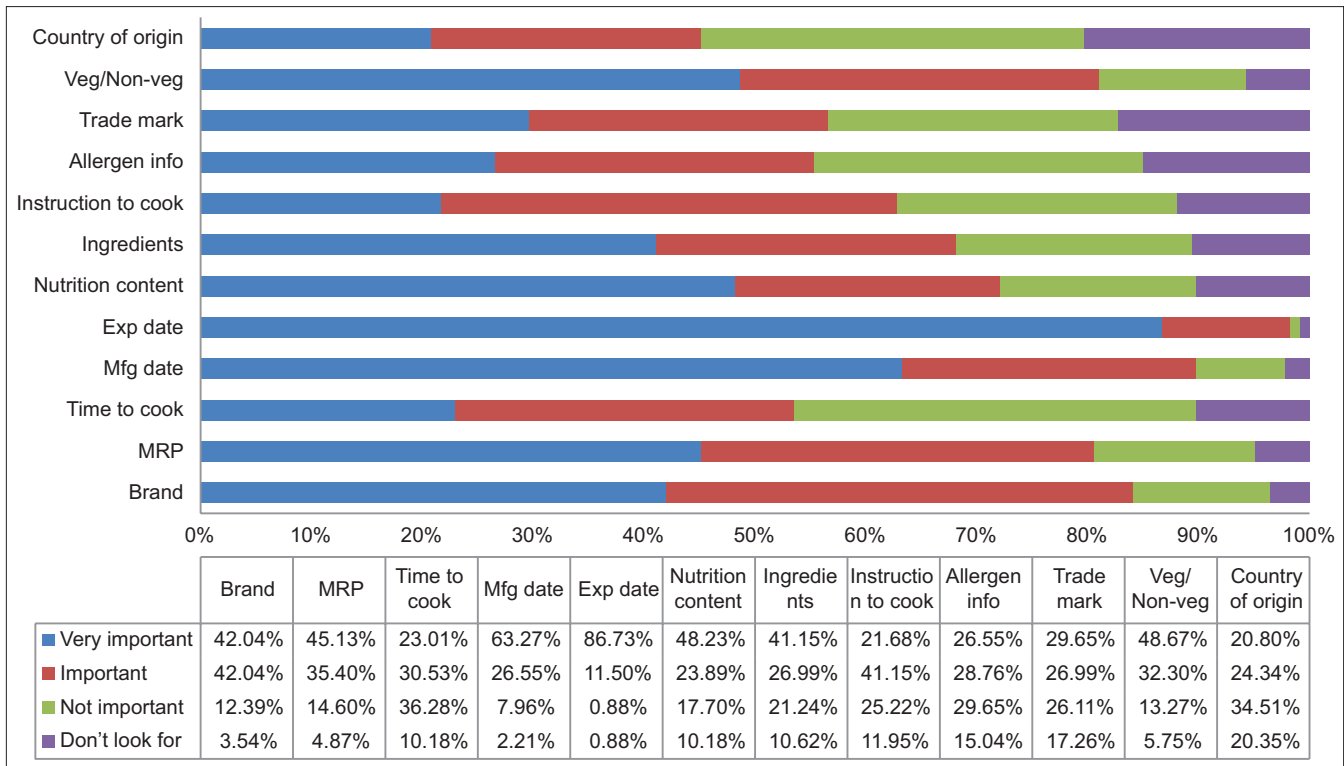


Figure 3: Importance of various labels while purchasing

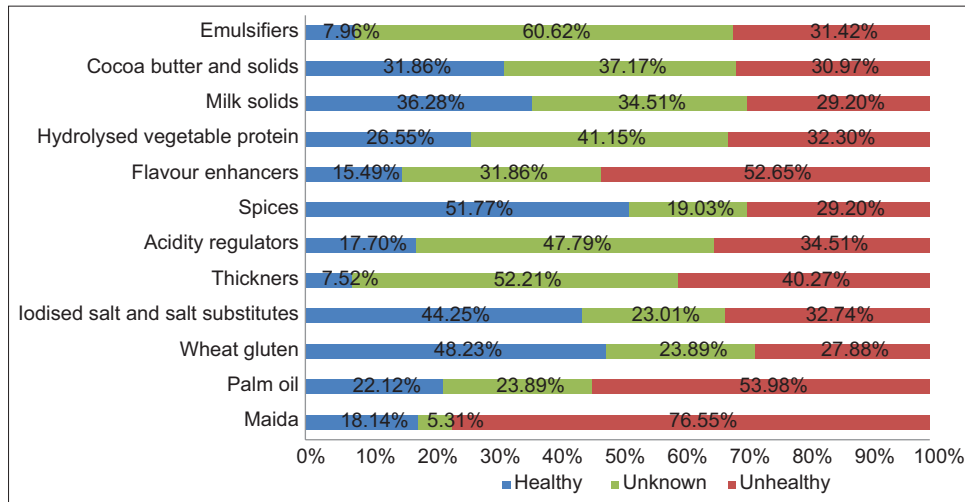


Figure 4: Classifying ingredients of some commonly used packed foods

attempt of the shoppers to move toward improving their health. In a study conducted in India,<sup>[4]</sup> 56.7% of customers placed a high value on nutritional information, while 53.33% valued ingredients and 53.33% usage instructions. In the current study, importance was given to expiry date (86.73%), manufacturing date (63.27%), veg/non-veg mark (48.67%), followed by nutrient content (48.23%). Price was the least important factor while purchasing products probably because the discounted price tags are already displayed in the supermarkets. However, in a study done in Gujrat, the majority of respondents cited the price of food as the element that encouraged them to read

the food label before purchasing the food item.<sup>[10]</sup> Although consumers consider various types of information on food labels to be significant, they rarely use this information when making purchases. Overall, consumer opinions on food labeling are conflicted. While some people think it helps them choose healthier foods, others think it is overly complicated and should be simpler to use.

### CONCLUSION

Despite increased awareness about packed food labeling, the usage of these labels while purchasing was found to be

low. In contrast to the known, some shoppers still believe packed food has a positive effect on health. In conclusion, this study proved critical in educating people about the various packed food labels. Additionally, it has nutritional and health education implications to aid consumers in making wise decisions when purchasing packaged foods. To help customers make the healthiest food selections possible, a lot of work needs to be done to increase consumer understanding of the nutrition-related aspects of reading product labels.

### Strengths and limitations

This study's use of shoppers who had just made a purchase allowed researchers to estimate the unbiased truth. To comprehend the present situation among shoppers, it is also helpful to examine their knowledge, attitude, and practices, as well as the significance of the labels to them. Finally, this study is unique in that it is one of the few of its sort to be conducted in India.

The compliance could be underestimated or overstated in accordance with requirements because the labels for a few frequently purchased items were reviewed. Since this study only included supermarket shoppers, the majority of whom were literate, its findings cannot be applied to small businesses, rural areas, or local shops.

### Future aspects

Studies can be carried out among shop owners to understand the purchasing behavior of shoppers.

### Acknowledgement

The authors thank the Dept. of Community Medicine, Dr. D.Y. Patil Medical College, Pune, for all the support.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.

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