



Impact of Nutritional Education on Consumer Reading and Understanding of Food Labelling

Anu Kaushal¹, Varsha Rani¹, Veenu Sangwan¹ and Vinod Kumar²
Krishi Vigyan Kendra, Faridabad, CCS Haryana Agricultural University, Hisar

ABSTRACT

Food labelling helps consumers make well-informed choices when buying and eating food products. This investigation was carried out to study the consumer knowledge of food labelling, the nutrients they consume through foods and to observe the impact of nutritional education on consumer understanding of food labelling. Data were collected using a well-structured questionnaire containing a set of questions and statements on the awareness of major nutrients and food labelling among 200 consumers from Hisar city. Data were statistically analysed using SPSS software. Results indicated that regarding consumers' knowledge on recommended daily intake (RDI) of food groups, they were aware of the RDI of cereals (67.5%), milk (95.0%), fruits (49.5%), and nuts (31.0%); however, had no idea of the rest of the food groups. Regarding the label reading practice, it was observed that the majority (65.0%) of the respondents never read labels, while 26.5 per cent read labels sometimes. The reading of food labels was significantly associated ($p < 0.05$) with gender and the educational status of the respondents. The majority of them admitted that they refer to food labels while comparing the products (48.6%), during initial purchase (17.1%), and when buying some particular food products, such as infant foods. While regarding reading of labels, they generally read price (83.0%), product net quantity (59.0%), brand name (43.0%), health claim (31.5%), manufacture date (18.0%) best before or expiry date (11.0%), however ingredients panel, nutrition facts panel and standard marks were read by very few of them. Nutritional education on various aspects of food labelling had a high impact in terms of gain in knowledge and change in attitude of the respondents on understanding and reading of various components of the food labels.

Keywords: Awareness, consumer, food-label, food-products, knowledge, nutrients

INTRODUCTION

The consumption of packaged foods has increased rapidly in recent years. Strict food regulations and rising consumer awareness have led companies across the globe to provide more detailed information on product labels. However, in emerging economies, there is limited understanding of how consumers interpret and use this information (Saluja *et al*, 2018; Tadesse *et al*, 2019). The level of awareness and preferences regarding different types of label information, as well as the extent to which consumers utilize it, has become an important area of interest for nutrition experts in developing nations. Moreover, encouraging the intake of fortified foods is essential to address the issue of double malnutrition. Therefore, it is important to educate consumers about reading and understanding food labels carefully and to promote the consumption of fortified foods to help reduce micronutrient deficiencies.

The saying “you are what you eat” reflects the important role that nutrients in food play in maintaining the body's proper functioning. However, encouraging people to adopt healthier eating habits is not simple. Although health is widely valued and acts as a key motivator of human behavior, efforts to improve dietary patterns often rely on educating consumers about the connection between diet and health. One important approach to promoting healthier choices is the use of nutrition labels on food products. These labels are designed to provide information about the nutritional composition of foods at the point of purchase, helping consumers make more informed and appropriate dietary decisions (Simmakya *et al*, 2015; Kaur *et al*, 2016). Nutrition labelling is considered an effective tool for several reasons. It promotes healthier eating while still allowing individuals the freedom to choose, and it simplifies the process of obtaining nutrition information, thereby increasing the likelihood that consumers will use it in their decision-making (Patel and Dutta, 2017; Donga and Patel, 2018).

Corresponding Author's Email - varshadangi@hau.ac.in

¹Dept. of Foods and Nutrition, CCS Haryana Agricultural University, Hisar

²Krishi Vigyan Kendra, Faridabad, CCS Haryana Agricultural University, Hisar

Table 1. Respondents' knowledge of recommended dietary intake of various food groups.

Intake of food group	Male (100)	Female (100)	Total (200)
Cereals & cereal products	60	75	135 (67.5)
Pulses and pulses & products	10	18	28 (14.0)
Milk and milk products	93	97	190 (95.0)
Meat, Fish, Poultry	18	05	23 (11.5)
Fruits	73	26	99 (49.5)
Vegetables	04	03	07 (3.5)
Sugar	10	07	17 (8.5)
Fat	05	06	11 (5.5)
Nuts	29	33	62 (31.0)

Note: Figures in parenthesis indicate percentage

Table 2. Frequency and stage of reading labels while purchasing food products

Frequency of reading labels	Frequency (f)	Percentage (%)
Always	17	8.5
Sometimes	53	26.5
Never	130	65.0
Stage of reading labels		
During initial purchase	12	17.1
When comparing products	34	48.6
When buying a particular food product	24	34.3

Increased health concerns have made consumers more attentive to their nutritional needs. Consequently, food labels increasingly include recommended nutrient intakes and show how much a product contributes to these requirements. In several countries, nutrition labelling is used as a key policy measure to promote healthier eating habits. For example, it is compulsory in the United States and Canada, reflecting both consumers' demand for healthier food options and their right to be informed about product contents. In recent times, food and nutrition labelling has gained considerable importance due to the growing public focus on the link between diet and health. Research from across the world indicates that effective labelling can encourage healthier consumer choices and support the development of better food products, ultimately leading to improved health outcomes (Adesina *et al*, 2022; Bayram and Ozturkcan, 2023; Scapin *et al*, 2022).

Effective nutrition education and a clear understanding of how and why people use food labels play a critical role in shaping food labelling practices, regulations, and public health initiatives. Food labels serve as a practical means of providing nutrition information at the point of purchase, making it essential to understand consumer behavior when designing policies and strategies aimed at improving public

health. The ability of individuals to make healthy dietary choices is partly influenced by the type and quality of information available to them, including details provided on nutrition labels. However, decision-making is not based on information alone. It is also affected by factors such as how individuals perceive, interpret, and engage with that information. These factors are further shaped by the design and content of nutrition labels, a person's level of nutrition knowledge, and their socio-demographic background (Aryee *et al*, 2019; Fatimah *et al*, 2019; Alshukri *et al*, 2020; Shamtsyan *et al*, 2020; Bayram and Ozturkcan, 2023). Keeping in view the above facts, this study was planned to assess the consumer knowledge of food labelling and the essential nutrients for a healthy life, and to study the impact of nutrition education on consumer understanding and reading of food labels.

MATERIALS AND METHODS

The study was conducted in Hisar City. The retail outlets, namely Reliance Fresh, EasyDay, Goyal supermarket, Vishal mega mart, and the shopping complexes (Old campus and new campus) of HAU campus were selected purposively to get the maximum number of respondents. A total of 200 respondents between the age group of 20 to 50 years of age were selected for the study. The same number of female and

Impact of Nutritional Education on Consumer Reading and Understanding of Food Labelling.

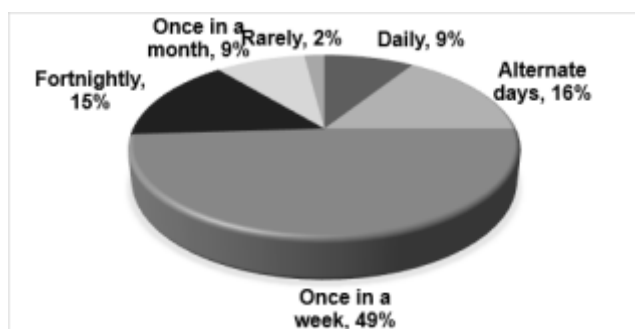


Figure 1. Frequency of shopping of labelled food products by respondents

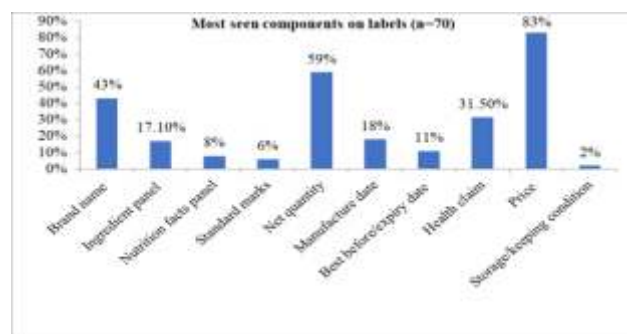


Figure 2. Components of labels mostly checked by the respondents

Table 3. Problems faced by respondents while reading labels and suggestions to improve labels.

Variable		Frequency (f)	Percentage (%)
Problems	Small font	101	50.5
	Overcrowding of information	66	33.0
	Technical terms	126	63.0
	Language problem (English)	57	28.5
	Faulty print	18	9.0
Suggestions	Larger font size	68	34.0
	Better contrast between text and background	42	21.0
	Use of both Hindi and English language	116	58.0
	Technical terms should be simplified	148	74.0

Table 4. Impact status index of nutrition education on knowledge and attitude regarding food labels among respondents.

among respondents:

Attitude	Knowledge			
	High (3)	Medium (2)	Low (1)	
Female				
Favourable (3)	34x3x3	15x3x2	4x3x1	53
Somewhat favourable (2)	30x2x3	8x2x2	3x2x1	41
Unfavourable (1)	3x3x1	1x2x1	2x1x1	6
Total	67	24	9	100
IAI=70.6				
Male				
Favourable (3)	32x3x3	21x3x2	1x3x1	54
Somewhat favourable (2)	28x2x3	8x2x3	2x2x1	38
Unfavourable (1)	5x3x1	2x2x1	1x1x1	8
Total	65	31	4	100
IAI=71.22				

male respondents was selected further. The interview schedule, consisting of a structured and well-designed questionnaire, was used to collect the information on consumers' knowledge of basic nutrients and consumers' knowledge, attitude, and perception about food labelling. A purposive sampling design was used to select the study areas and the respondents.

The information was collected on various aspects such as recommended dietary intake of various food groups, frequency of purchasing of labeled foods, frequency and stages of reading labels while purchasing food products, and components of labels mostly checked by the respondents. Nutrition education was imparted in a group of 10-15 respondents at a time, at an interval of 15 days for a

period of two months, and its impact was analyzed on the knowledge and attitude of consumers. Pre- and post-knowledge scores were calculated and categorized under low, medium, and high.

The Impact status index of nutrition education on knowledge and attitude regarding food labels among respondents was calculated by taking into account two dimensions, *viz.*, knowledge acquired and change in attitude. On a three-continuum scale, their respective frequencies were computed and presented in 3x3 tables. The cell entries depicted the score obtained by taking high knowledge/highly favorable attitude (Yes knowledge/highly favorable attitude), medium knowledge/favorable attitude (Yes knowledge/favorable attitude), and low knowledge/not favorable attitude (No knowledge/not favorable attitude). There were nine main knowledge head statements and seventeen attitude statements, including both positive and negative statements. The category of knowledge score was as follows: low (1-23), medium (24-66), and high (67-100). The data were analyzed statistically using SPSS software for windows.

RESULTS AND DISCUSSION

The results (Table 1) revealed the multiple response of research subjects regarding their knowledge of food groups. It would be better to bring to notice that these responses were re-coded into their raw equivalents as the subjects were able to respond in terms of cooked foods like the number of rotis, glasses of milk, and handfuls of nuts to be taken in a day, etc. It was observed that 67.5 per cent of the respondents were aware of the recommended dietary intake of cereals and cereal products.

The majority (95.0 %) of the respondents were able to tell how much milk they should drink every day followed by (49.5%) those who were aware of the daily intake of fruits. Surprisingly, it was observed that 31.0 per cent of the respondents could tell how many nuts should be consumed every day. Further, it was observed that only 14.0 per cent, 11.0 per cent, and seventeen of the respondents were aware of the daily intake of pulses, flesh foods, and sugars, respectively. Very few *i.e.*, eleven and seven of the respondents, were aware of the daily intake of fat and vegetables, respectively. Overall, it was observed that respondents had low awareness on daily intake of various food groups. Results of present study were corroborated with the earlier findings (Hisam *et al*, 2014; John and Brundha, 2016).

Results presented in Figure 1 disclosed the frequency of buying various labelled food products by the respondents. It can be gauged from the results that only by 9.0 per cent of the respondents bought labelled food products on daily basis. Whereas, nearly half of the respondents (49.0%) bought labelled products on weekly basis.

The frequency of purchase of labelled food products was found to be 2-3 times per week among 16.0 per cent of respondents and fortnightly among 15.0 per cent of the respondents. Labelled food products were purchased once in a month by nine per cent of respondents. A few *i.e.*, two per cent of the respondents bought labelled food products rarely. Results of present study were in close agreement of earlier findings (Kaur *et al*, 2016; Jain *et al*, 2018; Swarnakar and Mogra, 2022).

The data (Table 2) revealed the feedback of respondents that how often they read information given on the labels. Surprisingly, it was observed that majority (65.0%) of the respondents never read labels. Whereas, 26.5 per cent of them read labels sometimes and only few (8.5%) of them read labels always.

When asked about stage of reading of food label, majority of them said they refer food label while comparing the products (48.6%). Product comparison was mainly done for price and ingredients such as refined wheat or whole wheat in case of bread. Further, about 17.1 per cent respondents referred labels during initial purchase (when buying some new product) and about 34.3 per cent of the respondents referred it when buying some particular food products such as products for infants, pregnant or diseased condition. Results regarding label reading practice among respondents observed in present study were corroborated with the earlier studies conducted (Patel and Dutta, 2017; Wahab, 2018; Aryee *et al*, 2019; Alshukri *et al*, 2020).

The bar diagram (Figure 2) showed that majority of the respondent (83.0%) preferred reading price of the product followed by net quantity (59.0%), brand name (43.0%) and the health claim (31.5%) of the product. Further, it was observed that 18.0 and 11.0 per cent of respondents preferred to check the manufacture date and best before or expiry date, respectively. That showed the concern of respondents towards avoiding the purchase of expired items and buying fresh food products. Ingredients panel, nutrition facts panel, and standard marks were also read by the respondents *i.e.*, 17.1 per cent, eight per cent, and six per cent, respectively.

Impact of Nutritional Education on Consumer Reading and Understanding of Food Labelling.

Among standard marks, the majority of respondents preferred checking the vegetarian mark, as most of them were vegetarians. Most of the respondents were unaware that food labels do contain such kind of information, *i.e.*, nutrition facts panel. Very few (2.0%) of them read about the storage/keeping conditions of food products. Similar findings about consumer's perception on understanding of label components were observed by the earlier coworkers (Simmakya *et al*, 2015; Kodali and Telaprolu, 2017; Alshukri *et al*, 2020).

The data (Table 3) have thrown light on the various problems faced by respondents while reading of labels. It was clear from the table that maximum number of respondents (63%) felt that use of technical terms on labels caused difficulty in understanding the information, so these should be simplified; like standard marks should be used along with the text to describe what the mark indicated and terms like trans-fat, dietary-fibre should be explained.

This was particularly in case of the information provided on nutritional facts panel and ingredients panel. Respondents also felt difficulty in reading the labels because of the small font size which was also a major problem faced by about half of the respondents. Other problems faced by respondents were overcrowding of information on labels (33%), language problem *i.e.*, use of entirely English language and faulty print (28.5%). Many respondents reported use of English terms especially caused difficulty in understanding of ingredients of the product. Overcrowding of information used to cause difficulty in reading and also confusion about what information is important to read and what to leave.

As it was presented in Table 3, major suggestion given by the respondents was to simplify the technical terms used in food labels (74%). This was also the major problem faced by respondents while reading the label information. This may be due to the lack of nutrition knowledge among the respondents. More than half of the respondents suggested use of both Hindi and English language (58%) on the labels to facilitate the reading and understanding of information by those also who knew only the Hindi language. Other suggestions given were use of larger font size (34%) and better contrast between the text and background of the labels (21%) to make it easily readable.

Impact of nutrition education on knowledge and attitude was analysed using Impact Assessment Index. It was assessed by calculating knowledge scores and change in attitude. Data presented in Table 4 were categorised in three categorized viz., <33 low

impact, 33 to 66 moderate impact and >66 high impact. Impact assessment index of nutrition education revealed that the calculated index was found to be 71.22 per cent for the male respondents. Nutrition education had high impact on various aspects in term of gain in knowledge and change in attitude of the respondents on understanding of various components of label on food products.

Impact assessment index of nutrition education revealed that the calculated index of female respondents was found to be 70.6 per cent. Impact of nutrition education on consumer understanding and reading of labels observed in present study are in close proximity of previous findings (Darkwa, 2014; Miller and Cassady, 2015; Ukegbu, 2016; Javeed *et al*, 2017; Fatimah *et al*, 2019, Weaver, 2024).

CONCLUSION

The respondents were well aware about the food labelling however, they were not reading and understanding the information given under various components of food labels. Use of technical terms on labels, small font size, overcrowding of information, use of entirely English language and faulty print were found as the major reason for poor understanding of labels. The most referred components were found as price, net quantity and brand name whereas most ignored components were ingredients panel, nutrition fact panel, standard mark and storage and keeping condition. Organizing periodical awareness campaigns and including such information in school curriculum were the suggestions given by consumers to increase understanding and utilization of such important information by them. Respondents had marginal knowledge of major nutrients and poor understanding of food labels reading which was improved enormously after providing nutrition education for two months. The efforts should be done publically through mass media to aware consumer about the importance of reading, understanding and following the food labels on packaged products.

REFERENCES

- Adesina E, Ajayi B, Amoo EO, Adeyeye B, Ajayi MP, Olawande T and Udume ME (2022). Consumers' knowledge and use of nutritional labelling information in Lagos, Nigeria. *Sustainability* **14**(1): 578.
- Alshukri A, Elramli S and Albkoush H (2020). Study of knowledge, attitude and awareness of the information of food labeling among consumers in Tripoli municipality Libya. *Int J Res Anal Rev* **7**:32-42.

- Aryee PA, Helegbe GK, Agordoh PD, Mohammed AJ, Muntala J, Kobla J FA and Kumoji HN (2019). Exploring consumer knowledge, understanding and use of food and nutrition label information in the tamale metropolis of Ghana. *African J Fd, Agric, Nutr Dev* **19**(2):14415-14431.
- Bayram HM and Ozturkcan A (2023). Consumers' opinions, use of food labels and knowledge of food additives. *Nutri Food Sci* **53**:474-485.
- Darkwa S (2014). Knowledge of nutrition facts on food labels and their impact on food choices on consumers in Koforidua, Ghana: a case study. *South African J Clin Nutr* **27**(1):13-17.
- Donga G and Patel N (2018). A review of research studies on factors affecting consumers' use of nutritional labels. *Nutri Food Sci Int J* **7**(3):5557-55513.
- Fatimah S, Ruhaya S, Fatimah S and Zainudin MA (2019). Consumer attitude regarding food labelling and perception of healthier choice logo (HCL). *Biomed J Scientific Tech Res* **17**(1): 12459-12464.
- Hisam A, Rahman MU and Mashhadi SF (2014). Knowledge, attitude and practice regarding folic acid deficiency; A hidden hunger. *Pakistan J Med Sci* **30**(3):583-588.
- Jain S, Gomathi R and Kar SS (2018). Consumer awareness and status of food labeling in selected supermarkets of Puducherry: An exploratory study. *Int J Adv Med Health Res* **5**(1): 36.
- Javeed MA, Mokhtar SS, Othman I and Khan MY (2017). Effect of consumer knowledge on usage of nutritional labels. *Elk Asia Pac J Market Retail Mana* **8**(2): 1-19. DOI: 10.16962/EAPJMRM/issn.
- John DA and Brundha MP (2016). Awareness of vitamin A deficiency among middle aged men-Research. *Vit and Min* **5**(3):1-3.
- Kaur VP, Kaur N and Qumar N (2016). Assessment of consumer awareness about usage of food labels and its impact on food buying behaviour. *Int J Res Grantha* **4**:10-19.
- Kodali S and Telaprolu N (2017). Food label and its influence on consumer buying behavior: A Review of Research Studies. *Int Sci Res* **7**(6):386-390.
- Miller L M S and Cassady D L (2015). The effects of nutrition knowledge on food label use. A review of the literature. *Appetite* **92**: 207-216.
- Patel D and Dutta S (2017). Study of consumer awareness on food labelling and use of pack information for purchase of pre-packaged food products. *The Int J Indian Psycho* **4**(4):63-72.
- Saluja R and Kumar P Changing Pattern of Consumer Buying Behaviour in the Context of Indian Society: A Review. *Int J Manage Stu* **4**(9):1-9.
- Scapina T, Fernandes A C, Shahid M, Pettigrew S, Khandpur N, Bernardo, G L Proença, R P D C (2022). Consumers' response to sugar label formats in packaged foods: A multi-methods study in Brazil. *Front in Nutri* **9**:896784.
- Shamtsyan M, Kolesnikov B, Pushkarev M, Gaceu L, Oprea O B, Iatsco I and Tița O (2020). Study of awareness of food labeling among consumers in North-West Russia. In *E3S Web of Conferences* **215**(2):01002.
- Simmaky S, Madhujith T and Vasantharuba S (2015). *Assessment of Consumer Awareness on Food Labels and the Effect of the Level of Awareness on Buying Behaviour of Consumers in Jaffna District*. Proceedings of 8th International Research Conference, KDU **8**:115-118.
- Swarnakar, S., & Mogra, R. (2022). Consumers perception towards nutrition and health claims on food products and their purchasing behaviour. *The Pharma Innov J* **11**(4):253-258
- Tadesse L (2019). Awareness and Practice of Reading Packed Food Labels and its Associated Factors among Consumers in Addis Ababa, Ethiopia. *EC Nutri* **14**:377-385.
- Ukegbu P O (2016). Consumers' knowledge, attitude, and use of food labels in an urban city in Southeast Nigeria. *Adv in Nutri* **7**(1): 22A-22A.
- Wahab R A (2018). Food label use and awareness of nutritional information among consumers in Bahrain: an exploratory study. *KnE Life Sciences* **11**:26-36
- Weaver C (2024). Understanding Nutrition Labels: Making Informed Food Choices. *J Health Edu Res Dev* **12**:127.

Received on 23/04/2026 Accepted on 15/5/2026