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A Comparative Study on the Understanding of Food Labels Among Young Adults (18–25 Years) in Varanasi and Delhi

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HIGHLIGHTS

- Food labels serve as a crucial source of information regarding the constituents of food products, informing consumers about the contents and quantities of what they consume.
- The importance of understanding food labels has become increasingly critical in the context of rising lifestyle-related disorders.
- The consumption of unhealthy food and lack of physical activity are predominant issues.

ARTICLE INFO

Keywords: Awareness, Food labels, Pre-packed foods, Students, Varanasi, Delhi.

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ABSTRACT

With the rise in processed food consumption and the spread of non-communicable diseases, the importance of food labels has grown to help prevent these issues and inform consumers about their dietary choices and their effects. A food label on pre-packed food products is very significant. It provides information on what we should eat or purchase. Label literacy means a person's ability to understand, comprehend and utilise this information while purchasing pre-packed food items. In the modern world, people are so occupied with their lives that they often lack the time to eat, leading to a growing demand for packaged food products. This research was conducted to assess the level of understanding of food labels among individuals aged 18-25 in Delhi and Varanasi during August 2025. The study employed a survey method, gathering data through purposive sampling techniques. Data analysis was conducted using Excel. Findings reveal that most participants from both locations read nutritional labels easily, indicating understanding. A significant number of respondents say that the lack of time was the main challenge, while most approved nutritional labels are warning labels on food packets.

INTRODUCTION

Consuming nutritious food is vital for preventing non-communicable diseases (NCDs). Yet, in India, dietary habits are shifting due to evolving food preferences, with processed and ultra-processed foods becoming more prevalent in daily meals (Doshi et al., 2025). The growing presence and intake of these foods pose a major public health issue. Excessive consumption of energy-dense, high-fat, sugar, and salt (HFSS) ultra-processed foods can elevate the risk of obesity and associated health issues at a younger age. Thus, it is crucial to oversee the availability of these foods in both home and school settings to prevent them from replacing nutritious home-cooked meals (Jain & Mathur, 2020). Moreover, concerning health trends have emerged among children and adolescents: about one in ten school children is prediabetic, 5% of teenagers have hypertension, and roughly 7% are at risk of developing chronic kidney disease (Gupta & Suchdev, 2022). A 2020 study by the Food Safety and Standards Authority of India (FSSAI) found that only 4.4% of 1300 sampled packaged food products adhered to the World Health Organisation's recommended limits for fat, sugar, and salt. This means that 95.6% of the products surpassed at least one of these critical nutrient thresholds. The WHO's nutrient limits are used to identify products that should feature front-of-pack labelling (FoPL) warnings, aimed at reducing the intake of HFSS

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foods and preventing overweight, obesity, and other diet-related diseases. At the same time, young adults often encounter conflicting or inaccurate nutrition information due to their extensive use of digital media. To effectively interpret and critically assess such information, sufficient nutrition literacy is necessary (Vrinten et al., 2023). In India, the Food Safety and Standards Authority of India (FSSAI) oversee the labelling of pre-packaged foods to ensure safety, protect consumers, and promote transparency (FSSAI, 2025).

Food labels serve as an essential and direct means of conveying information to consumers, hypothetically influencing their purchasing decisions. Such labels enable individuals to avoid products that are high in energy yet deficient in essential nutrients. Food labelling is recognized as a significant public health strategy, offering consumers information that may impact their buying choices. Labels that are comprehensive, accurate, reliable, and precise reflect the true nature and characteristics of food products, thereby empowering consumers to make informed and health-conscious decisions (Kodali & Telaprolu, 2018).

These labels aim to assist consumers in making well-informed dietary decisions and encourage healthier eating practices. Nonetheless, the success of food labels is largely contingent upon the consumer's capability to read, understand, and utilize the information they present, a skill commonly known as label literacy. The study aims to understand the food labels among young adults from Varanasi and Delhi.

METHODOLOGY

Delhi, as a major metropolitan area, exhibits a high availability of packaged snacks, fast-food chains, and sugary beverages, facilitated by the presence of numerous malls, restaurants, and international food brands. This abundance has led to an increased consumption of high-fat, sugar, and salt (HFSS) foods, particularly among adolescents and working professionals. In contrast, while fast food is accessible in Varanasi, traditional home-cooked meals and local street foods predominate. Consequently, the overall exposure to highly processed HFSS foods remains comparatively low.

A cross-sectional study was conducted among consumers of pre-packed foods in Delhi and Varanasi, India, to check the understanding of food labels among respondents from these two cities. The study focused on young adults aged 18–25 years who were pursuing graduation, master's degrees, or preparing for competitive examinations. Participants belonged to different income groups, including high, middle, and low-income categories. A total of 400 respondents participated in the study, consisting of 200 males and 200 females from the two regions. Participants were selected from Delhi and Varanasi using a purposive sampling technique. The sample included individuals who consumed pre-packaged foods several times a week. Data were collected using a self-structured bilingual questionnaire designed to gather information about consumers' understanding of food labelling. The questionnaire was divided into several sections: (a) demographic profile, (b) comprehension of food labels, (c) significance of food labels, and (d) types of food labels preferred by consumers. Before completing the questionnaire, informed consent was obtained from all participants, and they were assured that their responses would remain confidential and that the data would not be accessible to anyone else. The collected data was analysed using Microsoft Excel software. Responses to multiple-choice questions were analysed and presented in terms of frequency and percentage.

RESULTS

The Table 1 represents data on how easily residents from Delhi and Varanasi understand food labels printed on pre-packed foods. Out of a total of 400 respondents, 265 (66.25%) respondents find food labels to be comprehensible. This indicates that for many individuals, the information provided, such as ingredients, nutritional content, and expiration dates, is clear and accessible. Among them, 153 (38.25%) were from Delhi and 112 (28%) from Varanasi. Meanwhile, 39 (9.75%) respondents said they could not understand the labels. The remaining (24%) respondents categorized as Sometimes constitute a moderate segment of the data. This suggests that some individuals occasionally encounter difficulties in understanding food labels. Their confusion may be contingent upon the type of product, the manner in which the information is presented, or the specific terminology employed on the label. Finally, the smallest group of respondents, 'No' represents those who consistently find food labels challenging to comprehend. Although this group is small, it underscores the necessity for clearer labelling formats and enhanced consumer education to facilitate informed food choices for all individuals. Overall, Delhi had 210 respondents, and Varanasi had 190. The majority in both cities reported that they could understand food labels, though a notable portion especially in Varanasi, expressed occasional or no understanding. This suggests that while food labelling is generally effective, there may still be room for improvement in clarity or accessibility, particularly for certain groups. Similar research has been conducted to assess the ability to interpret nutrition labels, revealing that respondents struggle to understand them (Doshi et al., 2025; Aggarwal et al*.,* 2025).

Table 1. Distribution of respondents on the basis of residence and their understanding about food labelling

Understand food labels easily printed on pre-packed foods	Respondents (N=400)		Total
	Delhi (%)	Varanasi (%)	
Yes	38.25	28	66.25
No	4	5.75	9.75
Sometimes	10.25	13.75	24
Total	52.5	47.5	100

Table 2 indicates that more than quarter of the male respondents (35%) said "Yes", indicating they do avoid such purchases, while a significantly higher (45.75%) of females responded "Yes", showing a stronger tendency among women to avoid unlabelled food items. Only 5% of males and 12% of females said "No", which means they do not avoid buying food without labels. A smaller portion, 2.25% of males and 7.25% of females, responded "Sometimes", suggesting occasional caution. Overall, the data suggests that female respondents are more likely than male respondents to consistently avoid purchasing pre-packed food items

Table 2. Distribution of respondents on the basis of gender and their avoidance food item which don't have food labelling

Avoid purchasing pre-packed food items that don't have food labels	Gender of respondents (N=400)		Total
	Male (%)	Female (%)	
Yes	35	45.75	80.75
No	7	5	12
Sometimes	5	2.25	7.25
Total	47	53	100

that lack proper labelling, reflecting perhaps a greater concern for food safety or nutritional information among women. This behaviour might suggest that women have a heightened awareness and concern about food safety, nutritional details, ingredient transparency, and product quality. Given that women frequently play a crucial role in purchasing food for the household and preparing meals, they may be more attentive to labelling information that ensures the safety and health of their family members.

Table 3 illustrates that a substantial proportion of respondents (47.25%) feel they lack sufficient time to read or interpret labels while shopping, suggesting that the shopping environment or consumer behaviour may not facilitate detailed decision-making. over a quarter of the respondents (43%) expressed concerns regarding font size. Nearly half of the participants perceive the font as too small, which impedes their ability to read the information effectively. This underscores the necessity for more consumer-friendly packaging standards featuring legible print. A notable percentage of individuals (14%) question the credibility or accuracy of the data presented on labels because they agreed that they don't trust the information printed on the food labels. This scepticism may stem from misleading marketing, confusing claims, or previous experiences. A smaller yet significant percentage of consumers (5%) encounter challenges due to language barriers, particularly among multilingual or immigrant populations, where labels may not be in a familiar language. A lesser number of respondents continue to struggle with understanding food labels due to a lack of nutrition knowledge or overly technical information. Moreira et al. (2019) conducted a similar study, finding that consumers acknowledged both a lack of time to read nutritional labels and difficulty in understanding them. Study conduced by Patel & Nagar (2025) explains that consumers don't understand food labels and agreed that they don't have time to read because of a language barrier.

Table 3. Distribution of respondents based on residence and their challenges while reading nutritional labels

Challenges faced while reading nutritional labels	Residents of the respondents (N=400)		Total
	Delhi (%)	Varanasi (%)	
Lack of time	29.5	14.25	47.25
Font size	18	16	42.5
Don't trust the information	6	8	14
Language-related barrier	1.5	3.5	5
Unable to understand food labels	1.5	1.75	3.25
Total	56.5	43.5	100

The Table 4 depicts that more than a quarter of the respondents (38%) consider food labels "very important," reflecting that approximately more than a quarter of the population is highly conscious of checking label information before buying food products. Additionally, less than quarter of the participants (27%) view labels as "important," showing that a sizable portion still values this information, though perhaps with slightly less intensity. Meanwhile, 26% of participants remain neutral, neither actively valuing nor disregarding food labels. This segment could be influenced through targeted education and awareness campaigns to better understand the relevance of food labelling. On the other end of the spectrum, only 2% of respondents believe food labels are "unimportant," and 7% consider them "very unimportant." Combined, this 9% represents a small minority of consumers; maybe they are uninformed or indifferent to the role of food labels in guiding healthy choices. Overall, the table reflects a strongly positive consumer attitude, with a total of 65% (38% + 27%) acknowledging the importance of food labels. This reinforces the idea that food labelling is a vital part of consumer decision-making and health consciousness. Hassan and Dimassi (2017) explored the use and comprehension of food labels among Lebanese shoppers, with respondents agreeing on the importance of food labels.

Table 4. Distribution of participants on the basis of their gender and the importance of nutrition labels

The importance of the nutritional label	Gender of the respondents (N=400)		Total
	Male (%)	Female (%)	
Very unimportant	3	4	7
Unimportant	1.25	1	2.25
Neutral	16.5	9.5	26
Important	15	11.75	26.75
Very important	15.75	22.25	38
Total	51.5	48.5	100

Figure 1 depicts that Warning labels are the most supported, with approximately 65% of respondents preferring them. This suggests that consumers want clear, direct indicators of potentially harmful ingredients (e.g., high sugar, salt, or fat content). Health Star Rating System is supported by about 50%, indicating moderate Favor toward simplified summary formats that quickly inform

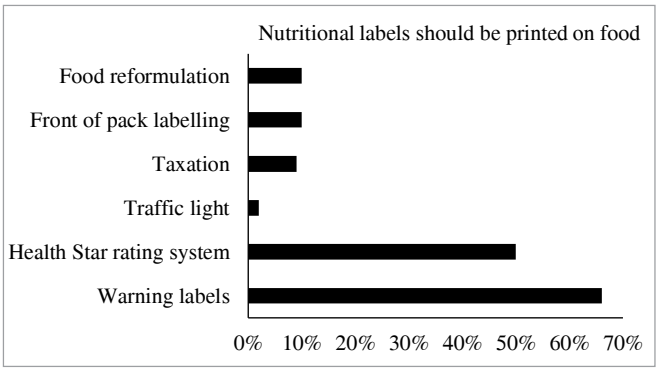

Figure 1. Distribution of respondents on the basis of their perception about kind of food labels printed on pre-packed items

buyers about the overall healthiness of the food. Support for the Traffic Light system (which uses red, amber, and green colour codes) is very low, below 5%, indicating it may be confusing or less trusted by consumers. Other options like Taxation, Front-of-pack labelling, and Food reformulation each receive around 10% or slightly more. These have minimal support compared to warning labels, possibly because they are indirect or harder for consumers to understand or control. Consumers strongly prefer simple, clear, and direct labelling formats like warning labels, while more technical or indirect methods (e.g., food reformulation or taxation) are less favoured. The low support for the traffic light system may point to a need for better education or a shift toward more intuitive labelling systems.

DISCUSSION

This study aimed to assess the comprehension of food labels on pre-packaged food items among individuals aged 18–25 years residing in Delhi and Varanasi. India is currently witnessing an increase in noncommunicable diseases, with young adults being particularly susceptible. This susceptibility is attributed to their relocation for educational purposes, often residing in hostels or as paying guests, where they encounter nutritional deficiencies due to factors such as time constraints, the unavailability of affordable, healthy foods, and a lack of awareness regarding health and nutrition. Compared to Varanasi, most respondents from Delhi reported greater ease in understanding food labels. Notably, over a quarter of female respondents indicated that they avoided purchasing food items lacking labels, suggesting an awareness of the significance of nutritional information. However, the majority of respondents from Delhi cited a lack of time to read nutritional labels, while participants from both Delhi and Varanasi acknowledged difficulties in reading labels due to font size. More than a quarter of respondents (38%), comprising both males and females, recognized the importance of nutritional labels when purchasing pre-packaged food items. Additionally, more than half of the respondents advocated for the inclusion of warning labels on food products. A similar study was conducted to determine the perception and practices of food labels among students in Bangalore; the study showed that although students have knowledge that food labels are helpful while purchasing food items, they were not reading them adequately (Kaviya et al., 2025). In contrast, in this study, respondents agreed that food labels are very important, but they did not have time to read them and faced many challenges in doing so. A study conducted to explore the influence of food labels among students found that nearly half of the students did not understand the food labels, and more than half of the students stated that they never changed their eating behaviour because of food labels (Verma et al., 2023). A similar study to the current study by Bhattacharya et al. (2022) stated that warning labels were the most preferred food label, followed by the traffic light system. Individuals with lifestyle diseases employed a two-day dietary record method. The findings indicated that the participants were experiencing lifestyle disorders due to poor dietary habits and a sedentary lifestyle. Additionally, the study revealed that these individuals were overconsuming nutrients, largely due to a lack of awareness regarding the detrimental effects of such consumption. (Yadav & Singh, 2022). A similar study about nutritional status and requirements was conducted in rural Tamil Nadu, finding deficiencies like underweight children (28% boys, 21.66% girls) and anaemia. Extension approaches improved knowledge (53.37%) and skills (56.67%) on balanced diets, iron-rich foods, and millet-based products among women and children. This study focuses on creating nutrition awareness among rural children (including potential adolescents) to address deficiencies (Rani, 2018). Analysed food patterns and nutritional status in Uttar Pradesh villages, noting medium awareness levels about food nutrition among school children (58.34%) and farm women (65%). Low prevalence of underweight/obesity, with emphasis on promoting nutritious food for security. Relevance: Directly addresses awareness about food nutrition among school children in rural India (Kumbhare et al., 2023). The study was conducted among a limited sample of young adults from only two cities, Delhi and Varanasi, which may limit the generalizability of the results to other regions of India. The study focused only on individuals aged 18–25 years, and therefore the findings may not represent the perceptions and practices of other age groups. Future study suggests with larger and more diverse populations, as well as longitudinal research designs, would provide a more comprehensive understanding of food label usage and its influence on dietary behaviour

CONCLUSION

This research examines understanding of food labels among young adults aged 18–25 living in Delhi and Varanasi. The results show that while many participants acknowledge the significance of food labels on packaged foods, their actual use is limited. Respondents from Delhi found it somewhat easier to comprehend food labels compared to those from Varanasi; however, a lack of time was cited as a primary obstacle to reading nutritional information. Additionally, participants from both cities reported that small font sizes made reading labels difficult, diminishing the effectiveness of food labelling. The study also found that a significant number of female participants refrained from buying products without labels, indicating a higher level of understanding and concern about nutritional details. Despite this understanding, fewer than half of the respondents actively considered nutritional labels when purchasing food. Moreover, more than half of the participants favoured the addition of warning labels on food products, reflecting a desire for clearer and more accessible labelling systems.

DECLARATIONS

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Research ethics statement(s): Informed consent of the participants

Conflict of interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest. The authors declare that during the preparation of this work, they thoroughly reviewed, revised, and edited the content as needed. The authors take full responsibility for the final content of this publication.

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