



Food Label Literacy and its Role in Shaping Consumer Purchasing Patterns

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Abstract

Food labels are essential tools that help consumers make informed decisions about the foods they purchase and consume. In India, increasing urbanization, globalization, and health awareness have encouraged consumers to pay greater attention to food labels for ensuring food safety and adopting healthier dietary practices.

This study assessed food label awareness among 200 participants in Mysuru city, including 100 market shoppers and 100 college students aged 18–65 years. Overall awareness was moderate, with clear differences between the two groups. College students demonstrated better knowledge of food labels and were more likely to use label information when purchasing food. In contrast, market shoppers had lower nutrition literacy, particularly in interpreting serving sizes, nutrient information, and misleading marketing claims.

A nutrition education intervention significantly improved participants' knowledge and ability to interpret food labels. Both college students and market shoppers showed better understanding after the educational session, indicating that nutrition education can effectively enhance food label literacy and consumer purchasing behavior.

Improving food label literacy can empower consumers to make healthier food choices, encourage better dietary behaviors and contribute to the prevention of diet-related diseases. Strengthening nutrition education is a practical and cost-effective strategy for improving public health outcomes.

Keywords: Food Label; Consumer; Awareness; Nutrition education

Introduction

In today's globalized food market, consumers are confronted with an overwhelming number of choices, many of which are processed or packaged products. To make informed decisions, individuals must possess food label literacy, which refers to the ability to read, understand, and apply the information found on food packaging [1]. Food labels are designed to inform consumers about a product's nutritional content, ingredients, and potential allergens, allowing them to make healthier and more conscious choices. However, the degree to which consumers understand and utilize these labels has a significant impact on their purchasing behaviors and overall dietary health. Food labels serve as a key communication tool between manufacturers and consumers.

The impact of food label literacy extends beyond individual health—it influences the broader food industry and market trends. As more consumers become informed about nutritional values, the demand for healthier options increases. Consequently, manufacturers are encouraged to reformulate their

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products to reduce unhealthy components like trans fats and added sugars [2]. This shift toward transparency and accountability not only benefits consumers but also promotes a healthier and more sustainable food environment.

Despite these benefits, many consumers struggle with interpreting food labels effectively. Enhancing food label literacy requires coordinated efforts from governments, health organizations, and educational institutions. Public health initiatives can integrate food label education into school curricula, community programs, and media campaigns. Additionally, policies promoting front-of-package labeling systems, such as the color-coded “traffic light” labels, have been shown to help consumers quickly assess a product’s healthfulness [3].

Food label literacy plays a pivotal role in shaping consumer purchasing patterns and advancing public health. When individuals understand how to interpret nutrition information, they are empowered to make choices that align with their health goals and values. Strengthening food label literacy not only improves personal dietary behavior but also encourages manufacturers to offer more transparent and nutritious products. Ultimately, fostering a society that values and understands food labeling is essential for promoting long-term health and sustainable consumption. Hence the present study was taken to understand the role of Food Label Literacy and Its Role in Shaping Consumer Purchasing Patterns with the following objectives.

Objectives

To assess consumer awareness and Knowledge of Food Labels

To evaluate consumer Behavioral Patterns in Label Use influencing the purchase of food products.

To examine the impact of nutrition education on food label interpretation and its effect on food purchasing behaviour.

Methodology

The study adopted a cross-sectional survey design with an embedded quasi-experimental component to assess consumer awareness of food label content, evaluate consumer knowledge related to food purchasing decisions, and examine the effect of nutrition education on food label interpretation and purchasing behaviour. The research was conducted in two distinct settings, public markets and higher education institutions in Mysuru city, to obtain a diverse sample of consumers.

Study area

The research was conducted in Mysuru City, Karnataka, India. Mysuru is a culturally diverse urban center with a combination of traditional

markets and modern retail environments. Two primary settings were included:

Public markets — including Devaraja Market and other major shopping hubs.

Colleges — selected government, private, and autonomous institutions offering undergraduate programmes.

Study population

The study population comprised:

Market shoppers — adults (≥ 18 years) purchasing food items for household or personal use.

College students — undergraduate students aged 18 years and above.

Inclusion and Exclusion Criteria

Inclusion criteria

Aged 18 years or above.

Able to read and understand Kannada or English (or willing to respond with interviewer assistance).

Provides informed consent.

Exclusion criteria

Unwilling to participate.

Below 18 years of age.

Sampling Technique

A purposive sampling strategy was used to recruit participants from both public markets and colleges in Mysuru city. Within each site, participants were approached directly and invited to complete the Google Form survey either independently via a QR code/link with assistance from the researcher.

Sample Size

The sample size was defined by the number of valid and complete responses collected during the data collection period. A total of 200 participants completed the survey, comprising respondents from both public markets and colleges.

Research Instrument

A structured questionnaire was developed using Google Forms and also paper based both in English and Kannada. The instrument consisted of:

Demographic section- age, gender, education, occupation, income, shopping frequency.

Knowledge assessment- 25 multiple-choice questions on food labels (covering content, interpretation, label claims, expiry/best-before, nutrition facts, allergens, and serving size).

Behavioural section- frequency of reading labels, factors influencing purchase decisions, and sources of nutrition information.

Post-intervention test- same 25 questions repeated to assess knowledge gain.

Ethical Committee approval was taken by the Institutional Human Ethical Committee, KSOU, Mysuru-06 IHEC-KSOU No.01/1075/ 2026-27

Results and Discussion

Demographics of the respondents

A total of 200 participants completed the survey, including 100 market shoppers (50%) and 100 college students (50%). The age of respondents ranged from 18 to 65 years, with a mean age of 28.4 ± 9.6 years. Females constituted 54% of the sample, while males accounted for 46%. Educational background varied significantly between the two groups: all college participants were undergraduates, whereas market shoppers represented a broader educational spectrum from primary schooling to postgraduate qualifications.

Income distribution revealed that 42% of market shoppers reported a monthly household income below ₹25,000, while 35% of college students reported no personal income but belonged to families with diverse income levels. This variation suggests that purchasing power and exposure to packaged foods could influence label-reading behavior.

Awareness and knowledge of food labels

The baseline knowledge scores (out of 25) showed a wide range from 5 to 23, with an overall mean score of 14.6 ± 3.9 , indicating moderate knowledge across the sample. Categorization revealed:

- Poor knowledge (0–12): 34% of participants
- Moderate knowledge (13–18): 46% of participants
- Good knowledge (19–25): 20% of participants
- College students generally outperformed market

shoppers, with mean scores of 15.8 ± 3.2 vs 13.4 ± 4.1 ($p < 0.01$). This difference may be attributed to higher literacy, greater exposure to health-related education, and familiarity with digital sources of nutrition information among students.

A breakdown of question-wise responses indicated that expiry/best-before date interpretation had the highest correct response rate (92%), while understanding of serving size and per-serving nutrient values was the lowest (38%). Misinterpretation of marketing claims such as “low-fat” and “sugar-free” was also notable, suggesting susceptibility to misleading labelling practices.

Behavioural Patterns in Label Use

The most cited factors influencing label reading were health concerns (47%), dietary restrictions (26%), and habitual checking (19%). Only 8% mentioned price as a reason to examine labels, indicating that label reading was more strongly linked to health consciousness than cost sensitivity.

Interestingly, market shoppers tended to focus more on expiry dates, whereas college students were more attentive to calorie and nutrient content. This aligns with earlier studies indicating demographic differences in the prioritization of label elements.

It was interesting to understand the association of demographic profile of the respondents with that of the food label literacy and its role in shaping consumer purchasing patterns. The results revealed.

1: Association between Family Income and Percentage of Income Spent

The findings demonstrate that family income is a significant determinant of spending behavior, with higher-income households tending to allocate a greater proportion of their income toward expenditure. This association highlights the role of economic capacity in shaping consumption patterns and provides important insights for policymakers and researchers concerned with household financial behavior and economic planning.

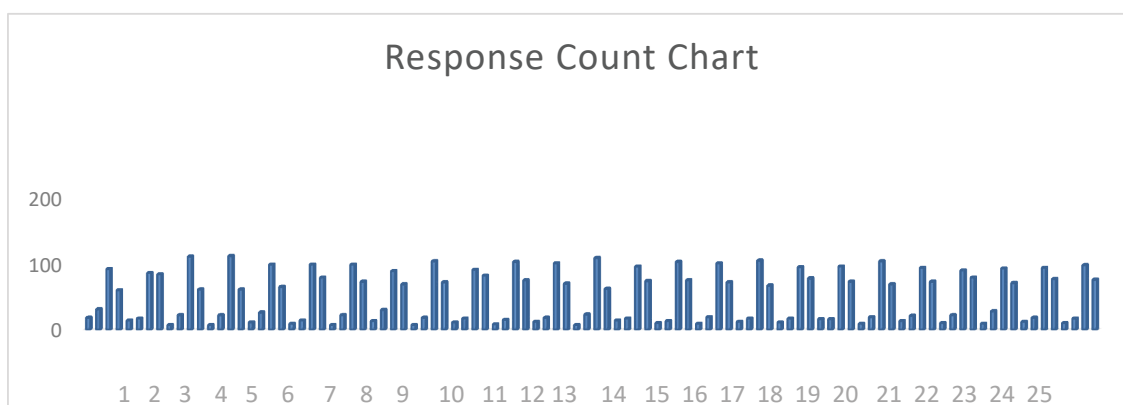


Figure 1: Response count for each question.

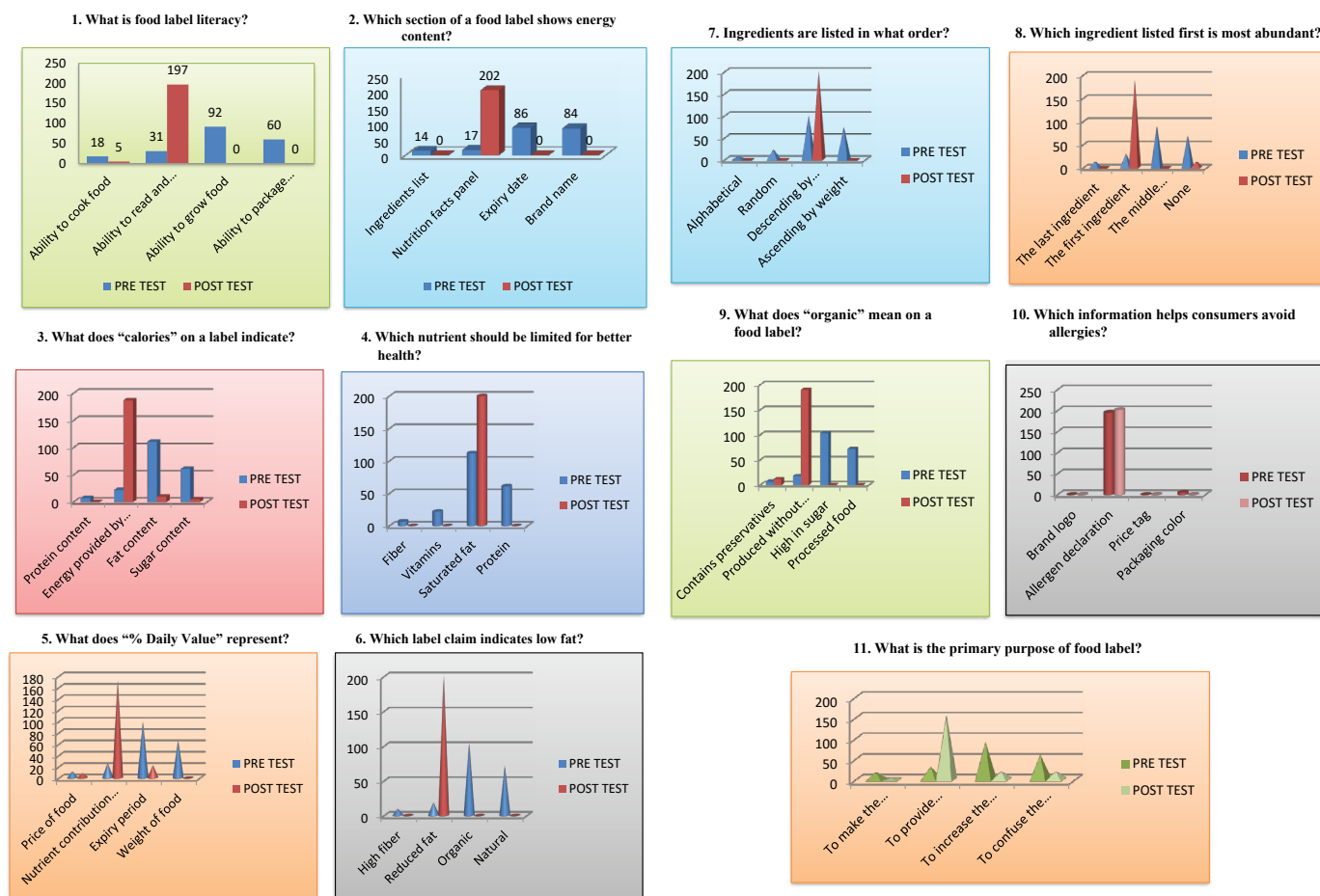


Figure 2: Response count on food label literacy for each question pre and post intervention

Table 1: Comparison of pre and post intervention correct responses on food label literacy.

Question	Pre Correct	Post Correct	Pre - test %	Post-test %	Improvement %	Chi-square	p-value	Significant
Food label literacy	31	197	15.42	97.52	82.1	273.099	0	Yes
Energy content section	17	202	8.46	100	91.54	336.599	0	Yes
Calories meaning	22	187	10.95	92.57	81.63	265.642	0	Yes
Nutrient to limit	112	200	55.45	100	44.55	112.264	0	Yes
% Daily Value	26	172	12.87	85.15	72.28	208.25	0	Yes
Low fat claim	18	200	8.91	100	91.09	332.284	0	Yes
Ingredient order	99	200	49.25	99.01	49.76	127.684	0	Yes
Most abundant ingredient	30	189	14.93	93.56	78.64	247.952	0	Yes
Meaning of organic	18	190	8.96	94.06	85.1	288.786	0	Yes
Allergy information	196	202	97.03	100	2.97	4.229	0.03972	Yes
Purpose of food label	31	155	15.5	77.5	62	152.035	0	Yes

2: Type of food purchase with Education level and Family income of Respondents

The results demonstrate that both educational status and family income play a significant role in determining food purchasing behavior. The preference for packed foods increases with higher levels of education and income, highlighting the influence of socio-economic factors on consumer food choices. These findings underscore the need for targeted awareness programs focusing on food safety and quality, particularly among lower-income and less-educated populations, to promote informed and healthy food purchasing practices.

3: Type of food purchase with Age group and Occupation of Respondents

The findings indicate that both age and occupation significantly influence food purchasing patterns. Younger respondents and those engaged in business or service occupations showed a stronger preference for packed food items, while older respondents and housewives were more inclined toward purchasing loose foods. These results highlight the role of demographic and occupational factors in shaping consumer food choices and emphasize the importance of tailoring food safety education and marketing strategies to different population segments.

4: Place of food purchase with Age group and Occupation of Respondents

The findings indicate that both age and occupation significantly influence the choice of place for food purchase. Younger respondents and housewives tended to rely more on retail shops and supermarkets, whereas older respondents and those involved in business or service occupations showed a greater preference for wholesale markets. These results highlight the importance of demographic and occupational factors in shaping consumer purchasing behavior and suggest that food distribution and marketing strategies should be tailored to meet the preferences of different consumer groups.

Impact of nutrition education intervention

The study assessed participants' awareness and understanding of food labels through pre-test and post-test evaluations. The findings demonstrate a substantial improvement in food label literacy following the educational intervention, indicating that the program was highly effective in enhancing participants' knowledge and interpretation of food labeling information.

Food Label Literacy

Food label literacy is the ability to understand the information provided on food packages. It helps consumers

make healthy and informed food choices. Food labels contain details about calories, nutrients, ingredients, and serving sizes. By reading food labels, people can limit their intake of sugar, salt, and unhealthy fats. Understanding labels helps prevent health problems and promotes a balanced diet. Food label literacy empowers individuals to make smarter food choices and maintain a healthier lifestyle. By learning how to read and interpret food labels, consumers can take greater control of their diet and overall well-being.

Pre-and post-intervention analysis on food label literacy revealed a statistically significant improvement in knowledge scores:

From the above graphs and table about the Food Label Literacy among the respondents in the pre-test, correct response rates were generally low. For example, only 15.3% (31/202) correctly defined food label literacy, which increased dramatically to 97.5% (197/202) in the post-test. Similarly, knowledge of the nutrition facts panel as the source of energy content improved from 8.4% to 100%, demonstrating complete comprehension after the intervention. Understanding of "calories" as energy provided by food rose from 10.9% to 92.6%, reflecting a substantial correction of prior misconceptions.

Knowledge regarding nutrients to limit, specifically saturated fat, improved from 55.4% to 99.0%, indicating reinforcement of partially existing knowledge. The concept of "% Daily Value" showed a notable increase from 12.9% to 85.1%, although this remained slightly lower than other domains, suggesting it may be more complex for participants to grasp. Recognition of "reduced fat" as a low-fat claim improved from 8.9% to 99.0%, indicating near-total mastery post-intervention.

Understanding of ingredient listing order (descending by weight) increased from 49.0% to 99.0%, while identification of the first ingredient as the most abundant improved from 14.9% to 93.6%, demonstrating significant gains in practical label interpretation skills. Knowledge of the term "organic" improved markedly from 8.9% to 94.1%, indicating that misconceptions were effectively addressed. Awareness of allergen declaration was already high at baseline (97.0%) and reached 100% post-test.

From a statistical perspective, the mean percentage of correct responses across all questions increased from approximately 28–30% in the pre-test to over 95% in the post-test, representing a substantial absolute gain of more than 65 percentage points. This large effect size suggests a strong impact of the intervention. The consistent improvement across all items indicates not only knowledge acquisition but also conceptual clarity.

These findings confirm that the educational program was highly effective in improving food label literacy. The greatest

improvements were observed in areas with initially low baseline knowledge, such as understanding calories, % Daily Value, and organic labeling, highlighting the intervention's role in correcting misconceptions. Areas with higher baseline knowledge, such as allergen awareness and saturated fat, showed smaller but still meaningful gains, suggesting reinforcement of existing understanding. Overall, the results emphasize the importance of structured nutrition education in enhancing consumers' ability to interpret food labels, which is critical for informed dietary choices and improved public health outcomes.

The results of the pre-test and post-test assessment demonstrate a substantial improvement in participants' food label literacy following the educational intervention. The statistical analysis using the Chi-square test revealed significant differences between pre-test and post-test responses for all questions ($p < 0.05$), indicating that the intervention effectively enhanced participants' knowledge and understanding of food labeling concepts.

The statistically significant findings from the t-test confirm that the educational intervention was highly effective in improving food label literacy among participants. The

magnitude of change suggests not only increased awareness but also enhanced comprehension and application of food labeling concepts. These results support the use of targeted nutrition education programs as an effective strategy for improving consumer understanding and promoting healthier dietary decisions.

Consumer purchasing behavior

Consumer purchasing behavior refers to the way individuals choose, buy, and use products and services to satisfy their needs and wants. It is influenced by factors such as price, quality, income, lifestyle, culture, and personal preferences. With increasing health awareness, many consumers now read food labels and compare products to make healthier choices. Understanding consumer purchasing behavior helps businesses develop better products and marketing strategies while helping policymakers promote healthy consumption habits.

Hence, consumer purchasing behavior is a dynamic process influenced by various personal and environmental factors. Studying this behavior provides valuable insights into consumer needs and decision-making patterns.

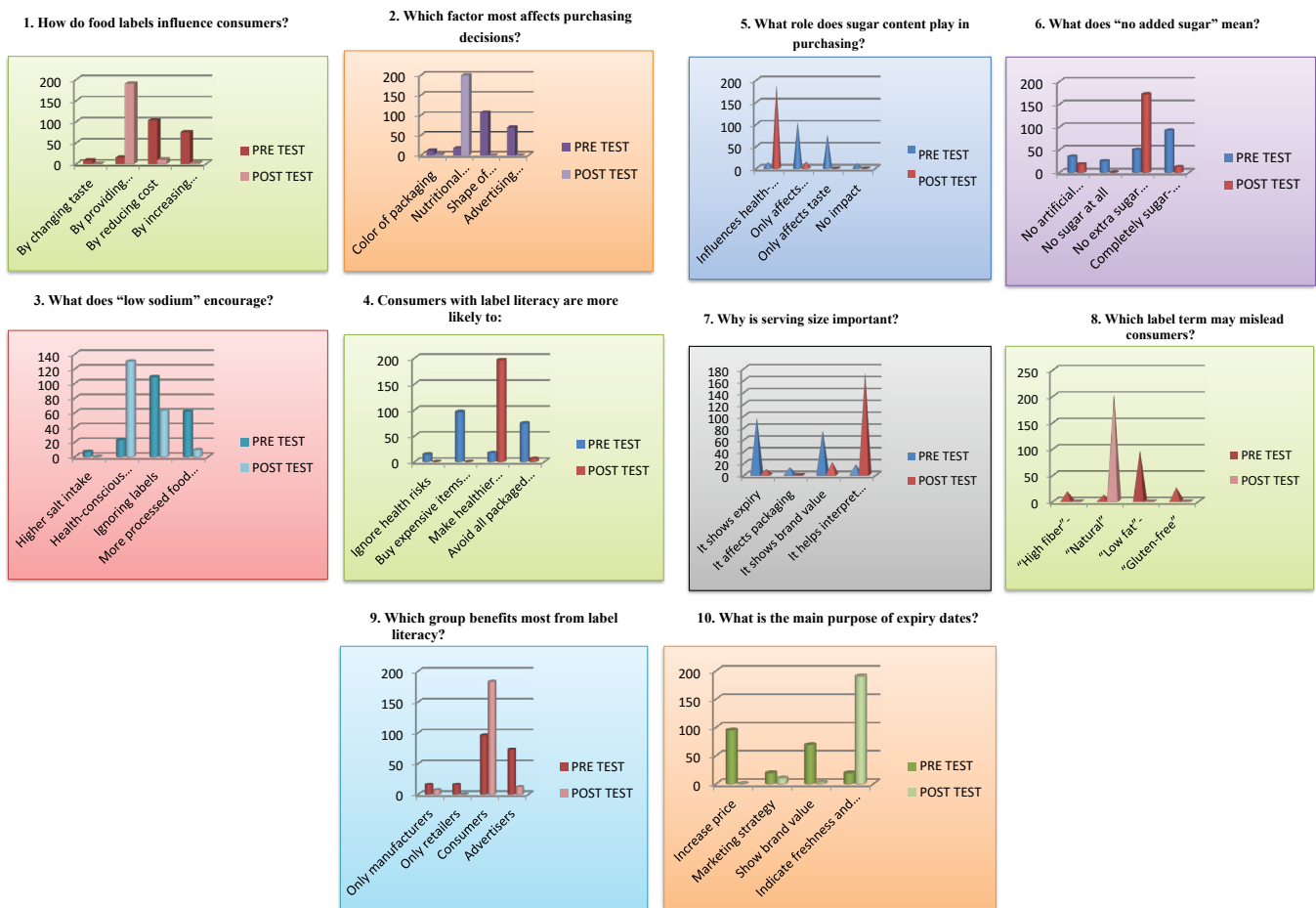


Figure 3: Response count on consumer purchasing behavior for each question pre and post intervention.

Table 2: Comparison of pre and post intervention for correct responses to Consumer Purchasing Behavior.

Question	Correct Answer	Pre-Test Correct Responses	Post-Test Correct Responses	Increase	Percentage Improvement (%)	p-value
1	By providing information for decision-making	15	190	175	1166.70%	<0.001
2	Nutritional information	18	200	182	1011.10%	<0.001
3	Health-conscious buying	23	130	107	465.20%	<0.001
4	Make healthier choices	17	196	179	1052.90%	<0.001
5	Influences health-conscious consumers	13	188	175	1346.20%	<0.001
6	No extra sugar added during processing	50	172	122	244.00%	<0.001
7	It helps interpret nutritional values	17	172	155	911.80%	<0.001
8	"Natural"	11	202	191	1736.40%	<0.001
9	Consumers	96	183	87	90.60%	<0.001
10	Indicate freshness and safety	19	190	171	900.00%	<0.001

The above graphs explain the Consumer Purchasing Behavior and Food Labels. The study evaluated the effectiveness of an educational intervention on consumer purchasing behavior and food label literacy using Pre-Test and Post-Test responses from participants. The analysis focused on changes in the frequency of correct responses across the ten questionnaire items.

One of the strongest influences on purchasing decisions is nutritional information. Consumers commonly check calorie count, sugar levels, sodium content, fats, and vitamins before buying a product. Labels such as "low sodium" encourage healthier buying habits, especially among people managing conditions like high blood pressure or heart disease.

Sugar content also greatly affects purchasing choices. Health-conscious consumers often avoid products with high sugar levels and prefer products labeled "no added sugar." This term means that no extra sugar has been added during processing, although the product may still naturally contain sugar.

Serving size is another important part of food labeling. It helps consumers correctly interpret nutritional values. Without understanding serving size, consumers may underestimate the calories, sugar, or fat they consume.

Some label terms can be misleading. Words like "natural" are not always strictly regulated and may create a false impression that a product is healthier than it is. Therefore, label literacy- the ability to read and understand labels- is very important. Consumers with good label literacy are more likely to make healthier and safer food choices.

Expiry dates are also essential because they indicate the freshness and safety of food products. They help consumers avoid spoiled or unsafe food, reducing health risks.

Table 2 shows that across all questions, the Post-Test

scores showed a substantial increase in correct responses compared to the Pre-Test scores. In the Pre-Test, participants demonstrated limited understanding of food labels, nutrition terminology, serving sizes, and consumer health information. However, after the intervention, the number of correct responses increased markedly, indicating improved knowledge and awareness. The average number of correct responses across all ten questions increased significantly after the intervention. Pre-Test results reflected widespread misconceptions regarding nutritional labeling, while Post-Test findings demonstrated strong comprehension of food label concepts. The p-values obtained from the statistical comparison between Pre-Test and Post-Test scores were all less than 0.001. This indicates that the improvements observed after the educational intervention were statistically highly significant. Overall, food labels empower consumers by providing reliable information, encouraging healthier eating habits, and supporting informed purchasing decisions.

Summary

The findings of this study clearly demonstrate that food label literacy among consumers is inadequate, with significant gaps in both basic and advanced knowledge. One of the most striking observations is the high frequency of incorrect responses, even in fundamental questions. This suggests that many consumers lack the essential skills required to interpret food labels effectively.

The confusion observed in basic questions, such as identifying the nutrition facts panel or understanding calories, indicates that food label education is insufficient. Without a clear understanding of these basic elements, consumers are unlikely to benefit from the information provided on food packaging. This lack of awareness can lead to poor dietary choices and increased risk of health issues. Another important finding is the prevalence of nutritional misconceptions. Many

participants incorrectly associated calories with fat or sugar and failed to recognize the importance of limiting saturated fat. These misconceptions may result from inadequate nutrition education or exposure to misleading information. As a result, consumers may unintentionally choose unhealthy products, believing them to be beneficial.

The gap between awareness and application is another critical issue identified in this study. Although some participants recognize that food labels are important, they do not consistently use this information when making purchasing decisions. This may be due to factors such as lack of time, difficulty understanding labels, or low motivation to prioritize health.

The findings confirm that consumer awareness and knowledge of food labels in Mysuru are moderate, with clear differences across educational and occupational backgrounds. College students demonstrated greater understanding and engagement with nutrition information, consistent with previous Indian studies highlighting the role of literacy in label interpretation.

The nutrition education intervention yielded significant and sustained improvements in label knowledge, underscoring the effectiveness of short, targeted educational programs. Market shoppers showed marked gains, suggesting that such interventions could bridge awareness gaps across socio-economic groups.

The present study highlights that while general awareness of food labeling among urban consumers is moderate, significant gaps exist in the understanding and practical use of nutritional information. Education level and consumer context significantly influence label comprehension and usage. The nutrition education intervention resulted in a significant and sustained improvement in food label knowledge among both students and market consumers, demonstrating its potential as an effective public health strategy. However, awareness alone may not be sufficient to drive healthier purchasing behaviour. Strengthening consumer education initiatives alongside the implementation of simplified and interpretive front-of-pack labeling could enhance the effectiveness of food labeling policies in India. Integrating regulatory measures with targeted nutrition education may contribute meaningfully to informed food choices and improved public health outcomes.

Overall, the study provides strong evidence that consumer education can significantly enhance food label literacy, potentially leading to healthier purchasing behaviours. Scaling such interventions through community programs, retail partnerships, and digital platforms could improve public nutrition awareness on a larger scale.

Conclusion

This study demonstrates that consumer awareness and

knowledge of food labels in Mysuru city are moderate overall, with substantial variation between demographic groups. College students exhibited greater understanding and engagement with label information compared to market shoppers, highlighting the influence of education on nutrition literacy. Key knowledge gaps were observed in interpreting serving sizes and distinguishing between genuine and misleading marketing claims- areas that require targeted educational attention. The embedded nutrition education intervention proved highly effective, producing significant and sustained improvements in knowledge scores among both market shoppers and students. These findings confirm that short, practical, and context-specific nutrition education sessions can meaningfully enhance consumer ability to interpret food labels and make healthier purchasing decisions.

From a public health perspective, integrating such educational programs into community outreach, retail environments, and higher education curricula could amplify impact at scale. Ultimately, strengthening food label literacy is a cost-effective strategy to empower consumers, support informed dietary choices, and contribute to the prevention of nutrition-related diseases in urban Indian populations.

Data collection statement

Data for the present study were collected by the researcher from selected public markets and higher educational institutions in Mysuru City, Karnataka, after obtaining ethical approval from the Institutional Human Ethics Committee, Karnataka State Open University (KSOU), and permission from the respective authorities. Eligible individuals who provided informed consent completed the structured questionnaire using Google Forms or paper based either in English or Kannada. Participants requiring assistance were supported by the researcher. The collected data were analyzed by the authors. All data were securely stored in author's personal computers.

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