

Evaluation of Consumers' Ability to Use and Understand Food Labels*

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Abstract

Aim: This study aimed to examine consumers' ability to use and understand food labeling.

Method: This cross-sectional study was conducted in April 2024 with 403 consumers aged 18-64 years living in Kırklareli, who volunteered to participate. Data were collected face-to-face using the Personal Information Form and Food Label Understanding and Use Skills Questionnaire (FLUUSQ).

Results: The mean age was 36.32 ± 12.25 years (range: 18-64) and 50.1% of the participants were male. The mean FLUUSQ score of the participants was 6.20 ± 2.81 (Range: 0-10). Participants younger than 35 years of age ($p=0.005$), single ($p=0.001$), with an associate's degree or higher ($p=0.000$), and with previous nutrition education ($p=0.000$) had statistically significantly higher mean FLUUSQ scores. There was a statistically significant difference between the mean FLUUSQ scores and participants' shopping preferences, frequency of food label use, and time of reading food label information ($p<0.05$). The mean FLUUSQ scores were significantly higher among those who use food labels for nutritional ($p=0.000$) and health ($p=0.012$) needs, those who used the nutritional claim ($p=0.001$) and those who understood the information on the food label ($p=0.002$) were significantly higher. Consumers demonstrated an intermediate ability to use and understand food labels.

Conclusion: Consumers' ability to use and understand food labeling was significantly influenced by factors such as age, education, nutrition knowledge, and label usage habits. It is recommended to strengthen nutrition education and promote awareness about food labeling to enhance consumers' ability to make informed dietary choices.

Keywords: Food label, nutrition information, consumer research.

Tüketicilerin Besin Etiketlerini Kullanma ve Anlama Becerilerinin Değerlendirilmesi

Öz

Amaç: Bu çalışma, tüketicilerin besin etiketlerini kullanma ve anlama becerilerini incelemeyi amaçlamıştır.

Yöntem: Kesitsel bir çalışmadır. Bu kesitsel çalışma Nisan 2024'te Kırklareli'nde yaşayan ve çalışmaya katılmaya gönüllü olan 18-64 yaş arası 403 tüketici ile yürütülmüştür. Veriler Kişisel Bilgi Formu ve Besin Etiketleri Anlama ve Kullanma Becerileri Anketi (FLUUSQ) kullanılarak yüz yüze toplanmıştır.

Bulgular: Yaş ortalaması $36,32 \pm 12,25$ yıl (Aralık: 18-64) olan katılımcıların %50,1'i erkektir. Katılımcıların ortalama FLUUSQ puanı $6,20 \pm 2,81$ 'dir (Aralık: 0-10). Yaşı 35'ten küçük ($p=0,005$), bekâr ($p=0,001$), ön lisans ve üzeri eğitim almış ($p=0,000$) ve daha önce beslenme eğitimi almış ($p=0,000$) katılımcıların ortalama FLUUSQ puanları istatistiksel olarak anlamlı derecede daha yüksektir. FLUUSQ puanları ile

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ETHICAL STATEMENT: The study received approval from the Kırklareli University Institute of Health Sciences Ethics Committee (Protocol No: PRO506R1, 18.03.2024). A signed subject consent form in accordance with the Declaration of Helsinki was obtained from each participant.

katılımcıların alışveriş tercihleri, besin etiketi kullanma sıklıkları ve besin etiketi bilgilerini okuma süreleri arasında istatistiksel olarak anlamlı bir fark vardı ($p < 0,05$). Besin etiketlerini beslenme ($p = 0,000$) ve sağlık ($p = 0,012$) ihtiyaçları için kullananların, beslenme iddiasını kullananların ($p = 0,001$) ve besin etiketindeki bilgileri anlayanların ($p = 0,002$) ortalama FLUUSQ puanları anlamlı derecede daha yüksektir. Tüketicilerin besin etiketini kullanma ve anlama becerisi orta düzeyin üzerinde bulunmuştur.

Sonuç: Tüketicilerin besin etiketlerini kullanma ve anlama becerileri yaş, eğitim, beslenme bilgisi ve etiket kullanım alışkanlıkları gibi faktörlerden önemli ölçüde etkilenmiştir. Tüketicilerin bilinçli beslenme tercihleri yapabilmelerini sağlamak için beslenme eğitiminin güçlendirilmesi ve besin etiketleme konusunda farkındalığın artırılması önerilmektedir.

Anahtar Sözcükler: Besin etiketi, beslenme bilgisi, tüketici araştırması.

Introduction

Non-communicable diseases (NCDs) are one of the leading causes of death in Türkiye, as they are globally. It is reported that 87% of deaths between the ages of 30-70 in Türkiye are due to NCDs¹. Poor diet quality is a key risk factor for the development of NCDs, with the intake of certain nutrients linked to chronic conditions directly associated with the consumption of processed and packaged foods². Accordingly, food labels play a key role in guiding individuals to improve diet quality and make healthy food choices. Consumers base their food choices on underlying factors such as motivations, sensory attributes, and abstract information provided by food labels³. Food labels constitute a significant public health instrument for promoting healthy dietary choices, and consumers' utilization of these labels facilitates healthier decision-making⁴.

The availability of food labels does not imply their effective use or understanding, as healthier choices depend on how individuals engage with this information^{5,6}, which is shaped by various determinants, including socioeconomic and demographic factors, health-related behaviors, attitudes, and nutritional knowledge⁷⁻⁹. Promoting healthy food choices, rather than discouraging unhealthy ones, is regarded as a more effective strategy, highlighting the importance of reading and accurately interpreting food labels¹⁰. However, consumers often report not using or understanding food labels due to difficulties in reading, comparing products, and determining energy content, caring only about price, and not knowing how to use the label^{8,11}.

Considering the increasing consumption of packaged foods and the impact of food labels on healthy food choices, studies on consumers' interactions with food labels are gaining importance¹²⁻¹⁴. In Türkiye, studies have examined consumers' use of food labels, their habits, and attitudes, with findings indicating a tendency among participants to self-report an ability to understand the content of nutrition labels¹⁵⁻¹⁹. However, to our knowledge, no research has evaluated Turkish consumers' ability to understand and use food labels. Therefore, this study aims to assess consumers' awareness of food labels, their usage habits, comparison skills, and the impact of labels on healthy food choices.

Material and Methods

Study Design

This cross-sectional study was conducted in April 2024 with adults aged 18-64 living in Kırklareli, Türkiye. The population of Kırklareli in 2023 was reported as 377,156 with 246,256 individuals aged 18-64 by the Turkish Statistical Institute (TÜİK)²⁰. The

minimum sampling size of the study was calculated as $\alpha=0.05$ with 85% power ($1-\beta$ err probe= 0.85) 392 for the correlation analysis according to the 0.15 effect size ($d = 0.15$) in the G*Power 3.1.9.4 program^{21,22}. The study's inclusion criteria were adults aged 18 and 64 who have no reading and writing difficulties. In total, 403 participants were included in the study.

Ethical Statement

The study received approval from the Kırklareli University Institute of Health Sciences Ethics Committee (Protocol No: PR0506R1, 18.03.2024). A signed subject consent form in accordance with the Declaration of Helsinki was obtained from each participant.

Data Collection Instruments

Data were collected face-to-face using a questionnaire. The Questionnaire Form consisted of a Personal Information Form and a Food Label Understanding and Use Skills Questionnaire (FLUUSQ). The Personal Information Form consisted of questions about demographic and food label use (place of shopping, frequency of use, timing of reading food label information, nutritional claims used, information used, whether or not used for nutrition and health needs, and self-report of understanding). Body Mass Index (BMI) was calculated using self-reported height and weight measurements provided by participants, dividing weight by the square of height in meters, and classified according to World Health Organization (WHO) standards²³. The FLUUSQ was created by researchers based on the literature^{5,6,24-26}. The FLUUSQ consisted of 10 questions which are given in Table 1 aimed to reveal participants' competencies in understanding, using, and evaluating food labels by assessing their ability to use food labels. The questions required participants to calculate, compare, and interpret information from these food labels. Each question had one correct answer, scored as 1 for correct and 0 for incorrect, with a total scale of 0 to 10. The Cronbach's Alpha value of the FLUUSQ was calculated as 0.821.

Statistical Analysis

Descriptive statistics (n, %, mean±standard deviation (SD), min-max) were used. The normality of distribution was investigated by the Kolmogorov-Smirnov test. Mann-Whitney U test was used to compare the means of two independent groups while the Kruskal Wallis H test was used for the comparison of three or more group means. Tamhane's T2 test was used as a post hoc test. Data were analyzed in Statistical Package for the Social Sciences 23.0 (SPSS 23.0) (IBM Corp. Armonk, NY: USA. Released 2012) with $p<0.05$ considered statistically significant.

Results

The distribution of participants' correct responses to the FLUUSQ is presented in Table 1. The mean FLUUSQ score was 6.20 ± 2.81 (median: 7.0; range: 0–10). Among the questions related to nutritional content and values, the most correctly answered was “How many grams of protein are in 100 grams of the product?” (75.7%), while the least correctly answered was “Which ingredient is the highest in the product?” (22.6%). Regarding label comparison, the most correctly answered question was “Which labeled product contains less fiber in one serving (30 g)?” (77.4%), while the least correctly answered was “According to the labels, which labeled product should a person with

sesame allergy not consume?” (57.3%). Furthermore, 76.7% of participants correctly answered the question related to storage and consumption.

Table 1. Distribution of participants' correct answers to the FLUUSQ

LABEL 1	LABEL 2	LABEL 3	LABEL 4
NUTRITION FACTS	NUTRITION FACTS	NUTRITION FACTS	NUTRITION FACTS
5 servings per package Serving size 4 pieces (30g)	4 servings per package Serving size 2 pieces (30g)	6 servings per package Serving size 5 pieces (30g)	3 servings per can Serving size 60 g
Energy and Nutrients 100 g %Daily Value*	Energy and Nutrients 100 g %Daily Value*	Energy and Nutrients 100 g %Daily Value*	Energy and Nutrients 100 g %Daily Value*
Energy (kj/kcal) 2016/482 24%	Energy (kj/kcal) 1836/436 %22	Energy (kj/kcal) 1889/450 22%	Energy (kj/kcal) 807/193 %10
Fat (g) 20,8 30%	Fat (g) 13 %18	Fat (g) 17 24%	Fat (g) 10,3 %15
Saturated fat (g) 10,4 52%	Saturated fat (g) 5,9 %30	Saturated fat (g) 9,4 47%	Saturated fat (g) 0,9 %4
Carbohydrates (g) 68,0 26%	Trans fat (g) 0	Trans fat (g) 0,8	Carbohydrates (g) 0 %0
Total sugar (g) 35,0 39%	Carbohydrates (g) 70 %27	Carbohydrates (g) 72 28%	Total sugar (g) 0 %0
Fiber (g) 3,2 13%	Total sugar (g) 21 %23	Total sugar (g) 21 23%	Fiber (g) 0 %0
Protein (g) 4,0 8%	Fiber (g) 5,1 %20	Fiber (g) 1,8 7%	Protein (g) 23,7 %47
Salt (g) 0,1 2%	Protein (g) 6,1 %12	Protein (g) 5,9 11%	Salt (g) 1,7 %3
*Indicates the reference intake (RA) value (8400 kJ/2000 kcal) of an average adult.	*Indicates the reference intake (RA) value (8400 kJ/2000 kcal) of an average adult.	*Indicates the reference intake (RA) value (8400 kJ/2000 kcal) of an average adult.	*Indicates the reference intake (RA) value (8400 kJ/2000 kcal) of an average adult.
Ingredients: Wheat flour, sugar, vegetable oils (palm, sunflower), corn starch, cocoa powder (6,3%), egg, hazelnut puree, salt, baking agents, whole milk powder, whey powder.	Ingredients: Wheat flour, whole wheat flour 24%, vegetable oil (palm, sunflower, cotton, canola), sugar, pasteurised egg, malt extract (barley product), raising agents (ammonium hydrogen carbonate, sodium hydrogen carbonate, sodium acid pyrophosphate), invert sugar syrup, whey powder (dairy product), skimmed milk powder, bran, salt, flavourings, emulsifier (sodium stearyl-2-lactylate), colouring (caramel).	Ingredients: Wheat flour, sugar, vegetable oil (palm), whole fat pasteurised milk (3,3%), invert sugar syrup, raising agents (ammonium hydrogen carbonate, sodium hydrogen carbonate, disodium diphosphate), molasses, caramel (sugar, milk cream), salt, flavourings (milk), egg, nuts, emulsifier (soya lecithin), flour treatment agent (sodium metabisulphite).	Ingredients: Tuna, sunflower oil, salt.
May contain traces of sesame and other nuts.	Contains Gluten, Dairy and Egg . May contain traces of Soya product and Sesame .	Contains Wheat, Gluten, Milk, Eggs, Nuts, Soya, Sulphites .	After opening the packaging, the product should be stored in the refrigerator in a sealed manner by adding oil to cover the product. It is recommended to consume within 2 days after opening. The recommended consumption date (T.E.T.T) is on the packaging. (T.E.T.T:15.01.2025)
Questionnaire			n %
Nutrient content and values			
Which ingredient is the highest in the product?			91 22.6
How many grams of protein are in 100 grams of the product?			305 75.7
What is the energy value of 1 serving (30 g) of the product?			171 42.4
How many grams of fiber does 1 serving (30 g) of the product contain?			225 55.8
If you want to meet 34 grams of your daily carbohydrate needs from this product, how many grams should you consume?			253 62.8
Label comparison			
A person who has already met about 80% of their daily fat requirement would exceed their daily requirement if they consumed 100 g of which labeled product?			305 75.7
Which labeled product contains less fiber in one serving (30 g)?			312 77.4
Which labeled product would you prefer to reduce saturated fat consumption?			297 73.7
According to the labeling, which labeled product should a person with sesame allergy not consume?			231 57.3
Storage and consumption information			
How soon after opening should canned tuna be consumed?			309 76.7

Table 2 presents the descriptive characteristics and comparison of FLUUSQ total scores with participants' descriptive characteristics. The mean age was 36.32±12.25 years (median: 34, range: 18–65). Among them, 50.1% were male, 51.1% single and 64.7% had at least an associate degree. The results showed that 70.7% of the participants were employed and 46.7% of them reported that their income was equal to their expenses. Among the participants, 25.6% had at least one physician-diagnosed chronic disease, and

52.3% had a BMI within the normal range. Only 25.1% of the participants had prior nutrition education. Participants who were younger than 35 ($p=0.005$), single ($p=0.001$), had an associate's degree or higher ($p<0.001$), and had previous nutrition education ($p<0.001$) had significantly higher FLUUSQ scores.

Table 2. Comparison of the total scores of the FLUUSQ and the descriptive characteristics of the participants

	n(%)	X±SS	Test value	p
Gender				
Female	201(50.1)	6.40±2.71	-1.320 ¹	0.187
Male	202(49.9)	6.00±2.90		
Age				
< 35	204(50.6)	6.65±2.55	-2.790 ¹	0.005 ^{**}
≥ 35	199(49.4)	5.74±3.00		
Marital Status				
Married	197(48.9)	5.62±3.11	-3.318 ¹	0.001 ^{**}
Single	206(51.1)	6.75±2.37		
Education status				
High school and below	142(35.2)	5.18±3.06	-5.023 ¹	0.000 ^{***}
Associate's degree and above	261(64.8)	6.76±2.50		
Income status				
Income < expense	114(28.3)	6.17±2.73	0.198 ²	0.906
Income = expense	188(46.6)	6.23±2.82		
Income > expense	101(25.1)	6.19±2.90		
Employment status				
Working	285(70.7)	6.32±2.71	-0.897 ¹	0.370
Not working	118(29.3)	5.92±3.03		
Nutrition education status				
Yes	101(25.1)	7.21±2.41	-4.269 ¹	0.000 ^{***}
No	302(74.9)	5.86±2.86		
Chronic disease				
Yes	103(25.6)	6.10±2.86	-0.362 ¹	0.718
No	300(74.4)	6.24±2.80		
BMI				
Underweight	16(4.1)	6.87±1.96	3.431 ²	0.330
Normal weight	211(52.3)	6.37±2.74		
Overweight	134(33.2)	5.95±2.85		
Obese	42(10.4)	5.88±3.25		

* $p<0.05$, ** $p<0.01$, *** $p<0.001$, ¹Mann Whitney U test, ²Kruskal Wallis H test

Table 3 shows nutrition claims and food label information checked by participants. The most read claims were 'trans-fat-free' (48.9%), 'rich in fiber' (39.1%), and 'vitamin and

mineral source' (33.3%), while expiration date (82.3%), ingredients (60.7%), and shelf life (54.2%) were the most checked label details.

Table 3. Nutrition claims and food label information checked by participants

	n	%
Nutrition claims read on food labels (n=302)*		
Trans-fat-free	186	48.4
Rich in fiber/ Source of fiber	150	39.1
Source of vitamins and minerals	128	33.3
Sugar-free	120	31.3
Protein source	109	28.4
Lactose-free	65	16.9
Gluten-free	56	14.6
Other	3	0.8
Information checked on food labels (n=302)*		
Expiration date	316	82.3
Ingredients	233	60.7
Shelf life	208	54.2
Additives	181	47.1
Sugars	145	37.8
Fats	138	35.9
Calories	132	34.4
Origin	119	31.0
Protein	108	28.1
Vitamin/mineral	87	22.7
Carbohydrate	79	20.6
Servings	70	18.2
Sodium/salt	63	16.4
Allergens	65	16.9
Cholesterol	58	15.1

* Indicates the number of participants who selected any option in a multiple-choice question.

Table 4 compares FLUUSQ scores with food label use. Most participants (86.8%) preferred grocery stores, 24.6% consistently checked labels, and 52.4% read them when purchasing. Additionally, 47.1% checked labels for nutrition, 46.2% for health, and 89.6% reported understanding label information. Supermarket shoppers had lower FLUUSQ scores than those using local groceries ($p=0.044$) or online shopping ($p=0.038$). Higher scores were observed among participants who sometimes ($p=0.002$) or always/most of the time ($p<0.001$) used food labels, checked for nutrition ($p<0.001$) and health reasons ($p=0.012$), used nutrition statements ($p=0.001$), and reported understanding label information ($p=0.002$). Participants who read nutrition labels both

during and after purchase had higher scores than those who did not ($p=0.004$), read only after purchase ($p=0.013$), or only while purchasing ($p=0.017$).

Table 4. Comparison of participants' FLUUSQ score and food label use characteristics

	n	X±SS	Test value	p
Shopping place preference				
Market ^a	350(86.8)	6.31±2.73	7.762 ¹	0.021*
Weekly street markets ^b	43(10.7)	5.00±3.27		
Internet ^c	10 (2.5)	7.40±2.27		
Frequency of checking food labels in shopping				
Always or most of the time ^d	215(53.3)	6.86±2.42	32.262 ¹	0.000***
Sometimes ^e	108(26.8)	6.11±2.74		
Rarely or never ^f	80(19.9)	4.55±3.19		
Timing of reading food label information				
I don't read ^g	19(4.7)	3.53±3.41	23.133 ¹	0.000***
While purchasing the product ^h	211(52.4)	6.26±2.76		
After purchasing the product ⁱ	31(7.7)	5.00±2.72		
Both while purchasing and after purchasing ^j	142(35.2)	6.74±2.55		
Use of food labels for nutritional needs				
No	213(52.9)	5.57±2.98	-4.569 ²	0.000***
Yes	190(47.1)	6.91±2.42		
Use of nutrition labels for health needs				
No	217(53.8)	5.80±3.08	-2.506 ²	0.012*
Yes	186(46.2)	6.67±2.39		
Using any nutritional claim				
No	101(25.1)	5.35±3.11	-3.248 ²	0.001**
Yes	302(74.9)	6.49±2.64		
Understanding the information on the food labels				
No	42(10.4)	4.79±3.14	-3.121 ²	0.002**
Yes	361(89.6)	6.37±2.73		

* $p<0.05$, ** $p<0.01$, *** $p<0.001$, ¹Kruskal Wallis H test, ²Mann Whitney U test, Tamhane T2 was used to Post-Hoc Comparisons: $b<a,c$; $f<d,e$; $g<h,j$; $i<j$

Discussion

This study examined consumers' ability to use and understand food labels and the factors affecting this ability. About one-quarter of participants had prior nutrition education, and their mean FLUUSQ scores were significantly higher than those without such education. Consistent with the literature, individuals with nutrition knowledge are more successful in reading, understanding, and interpreting food labels¹²⁻¹⁴. Additionally, food labeling and nutrition education interventions have been shown to improve label use and

comprehension^{17,27}, and consumers who have better nutrition knowledge use food labels more frequently than those with moderate or limited knowledge²⁸.

Influence of Demographic Characteristics

Younger individuals, those with higher levels of education, higher income, literacy, and numeracy skills are more likely to understand food labels^{8,14,16,29}. Demographic factors such as age, education, and income also influenced FLUUSQ scores. In addition, education level was found to increase the likelihood of correct answers in food content and label comparison tasks²⁵. Similarly, Sinclair et al. found that participants with higher levels of education were more successful in tasks requiring calorie calculation³⁰. Consistent with prior research, participants younger than 35 years of age and those with at least an associate degree had significantly higher FLUUSQ scores, highlighting the influence of education and age on nutritional label comprehension^{6,8,25,28-30}. Higher social class and income levels have a positive impact on consumers' knowledge, comprehension, and interpretation skills regarding food labels^{25,28-31}. In contrast, mean FLUUSQ scores did not differ by income or employment status. This may be due to differences in how income status is classified in the literature compared to our study. Although no significant difference was observed between gender and mean FLUUSQ scores, previous studies have reported mixed results. Some suggest that women may better understand nutrition labels than men^{14,29}, while other show no significant gender differences in the judgment of the amount of a particular nutrient²⁵. Additionally, some studies in the literature reported that gender did not affect calculation, and interpretation questions on labels^{13,28,30}. Notably, Aryee et al. Found that men understood the food label better³². This difference may be attributed to variables such as education and gender roles that can influence men's and women's understanding of food labels^{9,32}. Marital status also appeared to influence food choices and health outcomes, married men and women are less likely to purchase unhealthy foods³³. Singles had significantly higher mean FLUUSQ scores, which may be influenced by age, given the regional average marriage ages of 26.1 for women and 29 for men²⁰.

Presence of Chronic Disease and Body Mass Index

Individuals who pay attention to health and healthy eating are more likely to use food labels³⁴.

Some studies report that consumers with chronic diseases, such as diabetes and cholesterol issues, are more aware of food labels and have a better understanding of reference intake^{9,35}, while Rothman et al. found higher food label comprehension among individuals without chronic diseases²⁹. In contrast, the present study did not find a significant association between the presence of chronic disease and FLUUSQ scores. Similarly, no significant relationship was observed between BMI and FLUUSQ scores. Some studies align with our findings^{28,30,36}, while Kim et al. found that obesity influenced food label reading skills¹³. These inconsistencies may be due to factors that affect health motivation and health behaviors independent of BMI, such as weight satisfaction³⁷.

Food Label Use and Shopping Habits

Participants most frequently read nutritional claims on food labels were trans-fat-free (48.9%), rich in fiber/fiber sources (39.1%), and vitamin and mineral sources (33.3%).

Similarly, Gezmen-Karadağ and Türközü reported that the most frequently read claim was trans-fat-free¹⁶. Claims of trans fats appear to be important for consumers⁷. Consistent with prior research conducted in Türkiye, the most important information for consumers is the expiration date^{16,18}.

Numeracy skills are reported to be the strongest inhibiting factor for label use, and people who dislike numbers and report that they are not good at using numbers are less likely to use food labels³⁴. In our study, calculation-based questions had lower correct response rates, consistent with literature showing that consumers often struggle with interpreting reference intake values and portion sizes^{8,27}. Previous studies also report difficulties in calculating nutrient content, emphasizing the importance of arithmetic and interpretive skills^{29,31}.

Participants who preferred supermarkets had significantly higher FLUUSQ scores than those shopping at weekly street markets or online. This may explain the difference, as lower exposure to food labels among weekly street market shoppers could reduce their motivation to engage with nutritional information and hinder label comprehension skills³⁸. Participants who used food labels sometimes or always/most of the time had significantly higher FLUUSQ scores compared to those who rarely or never used them. Also, participants who read labels both while purchasing and after purchasing demonstrated the highest FLUUSQ scores. Similarly, Sinclair et al. found that participants who reviewed nutrition labels were more accurate in calorie estimation tasks³⁰. Moreover, González-Vallejo et al found that participants who reported frequent use of the nutrition facts table made more accurate judgments using the label³⁹. Health and nutrition are among the most frequently reported reasons for reading food labels¹⁷. In our study, participants who checked food labels for nutrition and health needs used nutritional claims and understood the information on food labels had significantly higher FLUUSQ scores. Similarly, Gomes et al. found that more than half of the participants who thought it was important to look for information on food labels answered the food choice question correctly¹².

A primary limitation of our study is that the FLUUSQ has not undergone any formal validation. Moreover, reliance on self-reported data introduces potential response bias. Additionally, data collection was restricted to Kırklareli, motivations underlying food label use were not explored, and selection bias may limit the generalizability of the findings. Despite these limitations, the FLUUSQ demonstrated good reliability, and the large sample size collected through face-to-face data collection enhances the study's robustness. Furthermore, this study is expected to contribute to the development of policies and educational programs aimed at promoting healthier food choices by highlighting the critical role of consumer understanding and use of food labels in fostering healthy eating habits.

Conclusion

Consumers' ability to use and understand food labels was above the intermediate level and influenced by demographic factors such as age, education, marital status, and prior nutrition education. Higher FLUUSQ scores were observed in participants under 35, single, with an associate's degree or higher, and those with nutrition education. Frequent label users, supermarket or online shoppers, and those checking labels for health reasons

also scored higher. Given the link between healthy food choices and chronic diseases, food labeling is a key strategy. Promoting its effective use requires enhancing nutrition education and improving label accessibility, especially for vulnerable groups like the elderly and those with low education levels.

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