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ORIGINAL ARTICLE

DOES GENERATION Z READ FOOD LABELS? A CASE STUDY OF POLISH UNIVERSITY STUDENTS: A PILOT STUDY

Katarzyna Tarnowska[1], Katarzyna Stachowicz[1], Eliza Gruczyńska-Sękowska[1], Dorota Kowalska[1], Mariola Kozłowska[1], Renata Winkler[2]

[1]Department of Chemistry, Faculty of Bioeconomy and Food Systems, Warsaw University of Life Sciences – SGGW, Poland
[2]Department of Organizational Behaviour, College of Management and Quality Sciences, Krakow University of Economics, Poland

ABSTRACT

Background. Food labels are an important source of information that supports informed consumer and health-related decisions. The ability to interpret the information provided on food packaging may contribute to the prevention of diet-related diseases and the promotion of healthy lifestyles, particularly among young adults, as dietary habits established during this stage of life may influence eating behaviors throughout adulthood.

Objective. The aim of the pilot study was to assess the frequency of food label reading among young consumers and to examine their perceptions and interpretation of the information provided on food packaging.

Material and Methods. The study was conducted in November and December 2024 among 200 university students in Poland. A CAWI survey method was used, with a proprietary questionnaire. Participants were recruited using snowball and voluntary sampling. Descriptive statistics were used to summarize the data, while associations between categorical variables were assessed using the chi-square (χ^2) test, with statistical significance set at $p < 0.05$.

Results. The study shows that over half of the respondents reported regularly reading food product labels. More frequent use of labels was observed among individuals with higher self-assessed nutrition knowledge, students enrolled in food-related fields of study, and those who were physically active. The ingredient list was identified as the most important element of the label. At the same time, many respondents reported difficulties in interpreting the information provided and expressed a need for a clearer presentation of label information.

Conclusions. Nutrition knowledge and lifestyle influence the way students use food labels. The findings highlight the need for consumer education on food labelling, particularly among young people, to improve their ability to understand and effectively use nutrition information when making food choices. Educational initiatives should also be incorporated into the education of medical and health-related groups, who can play an important role in promoting informed food choices and healthy lifestyles.

Keywords: *students, lifestyle, young adults, nutrition knowledge, food labels*

INTRODUCTION

In recent years, substantial changes have been observed in dietary patterns across populations, particularly among young adults. Lifestyle factors, the increasing pace of daily life, and the widespread availability of a diverse range of food products significantly influence consumers' purchasing decisions. In response to the growing prevalence of nutrition-related health problems, including obesity, diet-related diseases, and metabolic disorders, increasing emphasis has been placed on promoting conscious and rational approach to nutrition [1]. One of the key components of this process is reading food labels and being able to interpret the information provided on them. .

Food labelling serves not only an informational purpose, but also educational and consumer protection functions. Food labels provide essential information on product composition, nutritional value, allergens, expiry dates, country of origin, and storage conditions. Food labelling in the European Union is regulated by Regulation (EU) No. 1169/2011 on the provision of food information to consumers, which establishes requirements for the presentation and legibility of mandatory food information [2]. In addition, consumers may also encounter voluntary nutrition and health claims on food labels, which are regulated

Corresponding author: Katarzyna Tarnowska, Department of Chemistry, Faculty of Bioeconomy and Food Systems, Warsaw University of Life Sciences – SGGW, Nowoursynowska, 02-776, Warsaw, Poland; email: katarzyna_tarnowska@sggw.edu.pl

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by Regulation (EC) No. 1924/2006 [3]. The conscious use and interpretation of such information may facilitate better purchasing decisions and encourage healthier dietary choices [4]. Despite existing legal regulations requiring food manufacturers to provide clear, accurate, and transparent food labelling, the effectiveness of labels as a consumer information tool largely depends on consumers' willingness and ability to engage with the information provided [5].

In the context of the growing importance of conscious consumption, university students represent a particularly relevant population for research. As young adults transitioning into adulthood, they often assume independent responsibility for managing their budgets, daily schedules, and food choices for the first time. The transition from school to university poses challenges for many young adults and is characterized by the development of routines, habits, and preferences, many of which may persist for years. Adopting healthy dietary practices during this period may influence eating behaviors throughout adulthood, thereby reducing the risk of chronic diseases later in life [6, 7]. Making aware choices, however, is not always straightforward. On the one hand, advances in digital technologies and education have provided students with greater access to information; on the other hand, they frequently encounter barriers such as financial constraints, lack of time, and low motivation [8].

Recent studies indicate that food label use varies among consumers and may be influenced by a wide range of factors, including sex, age, educational attainment, economic status, nutritional knowledge, individual health motivation, personality traits, label content, and product type [9-11]. Despite increasing consumer awareness, a proportion of consumers still disregard food labels when making purchasing decisions or do not have sufficient knowledge to correctly interpret the information provided on food packaging which could be exploited by dishonest marketing practices [12, 13].

The aim of this pilot study was to assess the frequency of food label reading among university students and to examine their perceptions and interpretation of the information provided on food packaging. The findings may serve as a basis for further educational initiatives and campaigns aimed at promoting healthier food choices.

MATERIALS AND METHODS

The pilot study was conducted in November and December 2024. The survey was aimed at university students in Poland. The inclusion criterion for the study group was the status of being a student of a higher education institution in Poland, while non-students were excluded from the study. A CAWI survey method was used, with a proprietary questionnaire consisted of three sections. The first section concerned the characteristics of the respondents and included questions on sociodemographic characteristics, field of study, physical activity, and self-assessed nutritional knowledge. The second section addressed consumer practices related to food labelling, including the frequency of reading food labels, trust in the information provided on labels, the influence of label information on purchasing decisions, and the assessment of the clarity of the language used on food labels. The third section focused on consumers' perceptions of the quality of food label information and their preferences regarding food labelling, including preferred ways of presenting ingredient information, the perceived importance of selected label elements, and attitudes towards using mobile applications for scanning food labels.

The questionnaire included a variety of question formats, including closed-ended single- and multiple-choice questions and closed-ended questions with an open-ended response option. Depending on the nature of the question, appropriate response categories or rating scales were used. A 5-point Likert scale was used to determine respondents' opinions on the reliability of food label information, where 5 meant "I definitely trust" and 1 meant "I definitely don't trust." Respondents were also able to select "I have no opinion". The sample was selected using the snowball method and voluntary sampling. The invitation to participate in the survey was made available via email, social media and online platforms. 213 questionnaires were collected, 13 of which did not meet the inclusion criteria, therefore 200 questionnaires were qualified for further analysis. Descriptive statistics were used to analyze and present the survey results. Statistical analyses were performed using the C*hi*-square (χ^2) test in Statistica 13.3, with the level of statistical significance set at $p < 0.05$.

The survey included 200 respondents (Table 1), more than 70% of whom were women. Most of the respondents were between the ages of 18 and 25 (82%). Nearly half of the respondents lived in large cities, and 24% in rural areas. Most of the surveyed students were enrolled in first-cycle engineering or bachelor's degree programs, representing 39 different fields of study. Due to the wide variety, the respondents were divided into four groups: students of food science-related fields, students of natural sciences, students of medical sciences, as well as those studying technical, economic or humanities disciplines, referred to as others.

Considering the self-assessment of financial conditions, more than half of the respondents said their financial situation was very good or good, more than

Table 1. Participant characteristics

Socio-demographic characteristics		Number of respondents (n = 200)	%
Gender	women	147	73.5
	men	49	24.5
	other	4	2
Age (years)	18-20	83	41.5
	21-25	81	40.5
	26-54	36	18
Place of residence	village	48	24
	town up to 50,000 inhabitants	36	18
	city with 50,001-100,000 inhabitants	19	9.5
	city over 100,000 inhabitants	97	48.5
Financial situation	very good	35	17.5
	good	85	42.5
	average	55	27.5
	poor	13	6.5
	no declaration	12	6
Field of study	food-related	70	35
	natural sciences	64	32
	medical	30	15
	other	36	18
Physical activity	daily	19	9.5
	several times per week	106	53
	rarely	75	37.5
Self-assessment of knowledge about proper nutrition	very good	35	17.5
	good	91	45.5
	average	69	34.5
	poor	5	2.5

The "other" gender category refers to respondents who selected the option "Prefer not to answer."

a quarter described it as moderately satisfactory. Over 60% of respondents engage in physical activity daily or frequently, while more than 37% do so rarely. The respondents were asked to self-assess their knowledge of food and nutrition. The largest group consisted of students who rated their nutritional knowledge as good, more than one-third of the participants considered their nutritional knowledge to be at an average level, while over 17% rated it as very good. Only five respondents assessed their knowledge in this area as insufficient.

Ethical considerations

The study protocol was approved by the University Ethics Committee for Scientific Research Krakow University of Economics (No KEBN/71/0044/D67/2025).

RESULTS

Food labels provide essential information about product composition, nutritional value, quality indicators, and certifications, which may be important in the process of product evaluation and its perception. Labels enable consumers to make informed food choices. An important question is whether consumers actually use this tool when purchasing food products.

More than half of the respondents (55.5%) declared that they always or often read food product labels before purchase, whereas 44.5% did so only sometimes or rarely (Table 2). The frequency of label reading differed significantly according to the field of study ($p = 0.00048$), self-assessed nutritional knowledge ($p < 0.001$), and physical activity ($p = 0.00014$). Students enrolled in food-related programs reported the highest frequency of label reading, with over three-quarters declaring that they always or often read labels before purchase. Similarly, respondents with

Table 2. Frequency of reading food product labels among respondents

How often do you read product labels before purchase? (%)				
Total n = 200	Always	Often	Sometimes	Rarely
	14	41.5	33	11.5
Gender	p = 0.360			
women n = 147	10.9	42.2	35.4	11.6
men n = 49	22.4	38.8	28.6	10.2
other n = 4	25	50	0	25
Age (years)	p = 0.320			
18-20 n = 83	8.4	38.6	39.8	13.2
21-25 n = 81	17.3	42	28.4	12.3
26-54 n = 36	19.4	47.2	27.7	5.6
Place of residence	p = 0.570			
village n = 48	10.4	52.1	25	12.5
town up to 50,000 inhabitants n = 36	13.9	36.1	44,4	5.6
city with 50,001-100,000 inhabitants n = 19	15.8	47.4	31.6	5.3
city over 100,000 inhabitants n = 97	15.5	37.1	33	14.4
Financial situation	p = 0.290			
very good n = 35	25.7	37.1	31.4	5.7
good n = 85	12.9	37.6	38.8	10.6
average n = 55	12.7	47.3	25.4	14.5
poor n = 13	7.7	30.8	46.2	15.4
no declaration n = 12	0	66.7	16.7	16.7
Field of study *	p = 0.00048			
food-related n = 70	21.4	55.7	18.6	4.3
natural sciences n = 64	12.5	39.1	39.1	9.3
medical n = 30	3.3	23.3	53.3	20
other n = 36	11.1	33.3	33.3	22.2
Physical activity *	p = 0.00014			
daily n = 19	26.3	57.9	15.8	0
several times per week n = 106	17	48.1	28.3	6.6
rarely n = 75	7	28	44	21.3
Self-assessment of knowledge about proper nutrition *	p < 0.001			
very good n = 35	31.4	57.1	11.4	0
good n = 91	18.7	42.9	31.9	6.6
average n = 69	0	34.8	44.9	20.3
poor n = 5	0	0	40	60

Statistically significant differences: * $p < 0.05$
The "other" gender category refers to respondents who selected the option "Prefer not to answer."

very good nutritional knowledge and those engaging in daily physical activity were the most frequent label readers. In contrast, no statistically significant differences were found according to gender, place of residence, financial situation, or age (Table 2).

In addition to its informational role, a product label is an important marketing tool that allows manufacturers to differentiate their products, build consumer trust, and adapt their offer to changing market preferences. The surveyed students were asked whether they considered the information provided on labels to be reliable. More than half of the respondents (61.5%) declared that they definitely or rather trusted the information provided on food product labels (Table 3). Trust in label information differed significantly according to gender ($p = 0.005$), self-assessed nutritional knowledge ($p = 0.033$), and physical activity ($p = 0.049$). Men expressed more polarized opinions than women, whereas women more frequently reported moderate trust or neutral

attitudes. Respondents with very good or good nutritional knowledge showed greater trust in food labels than those with lower self-assessed knowledge. Similarly, higher levels of trust were observed among respondents who engaged in regular physical activity. No statistically significant differences in trust were found according to age, place of residence, financial situation, or the frequency of reading food labels. Although students enrolled in food-related programs reported higher trust in label information, the differences were not statistically significant ($p = 0.052$).

Table 3. Assessment of respondents' level of trust in information on food labels

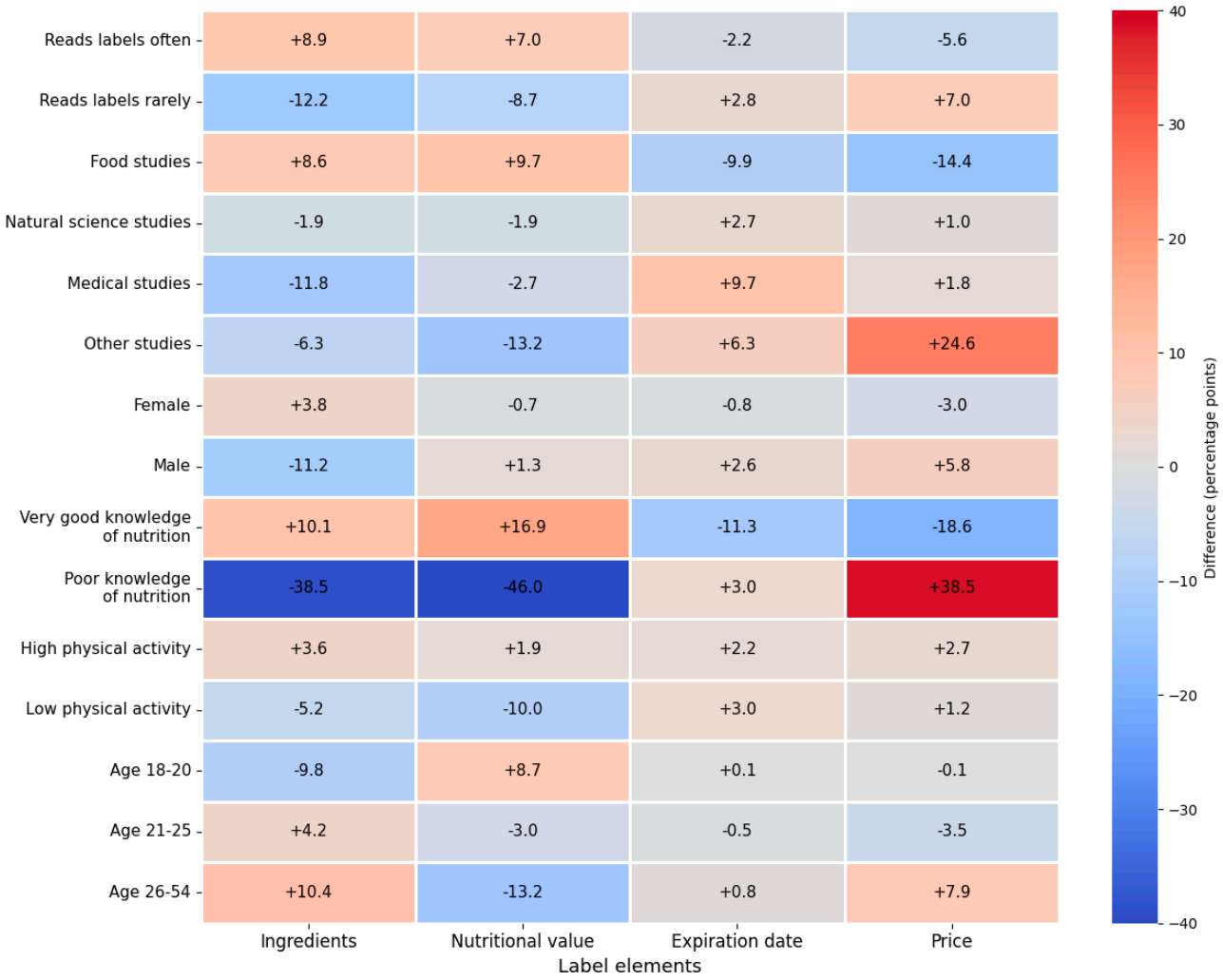
How do you assess the credibility of the information provided on food product labels? (%)					
Total n = 200	Definitely trust	Rather trust	Neutral	Rather distrust	Definitely distrust
	6.5	55	31.5	6	2
Gender *	p = 0.005				
women n = 147	4.1	57.8	34	2.7	1.4
men n = 49	12.2	46.9	26.5	14.3	0
Age (years)	p = 0.334				
18-20 n = 83	4.8	57.8	28.9	6	2.4
21-25 n = 81	9.9	55.6	30.9	3.7	0
26-54 n = 36	2.8	47.2	38.9	11,1	0
Place of residence	p = 0.138				
village n = 48	6.2	50	29.2	12.5	2.1
town up to 50,000 inhabitants n = 36	0	50	50	0	0
city with 50,001-100,000 inhabitants n = 19	10.5	47.4	31.6	10.5	0
city over 100,000 inhabitants n = 97	8.2	60.8	25.8	4.1	1.0
Financial situation	p = 0.469				
very good n = 35	5.7	62.9	20	11.4	0
good n = 85	4.7	52.9	35.3	4.7	1.2
average n = 55	7.3	54.5	32.7	5.4	0
poor n = 13	7.7	61.5	30.8	0	0
no declaration n = 12	16.7	41.7	25	8.3	8.3
Field of study	p = 0.052				
food-related n = 70	7.1	67.1	24.3	1.4	0
natural sciences n = 64	3.1	43.8	39.1	10.9	3.1
medical n = 30	3.3	60	33.3	3.3	0
other n = 36	13.9	47.2	30.6	8.3	0
Physical activity *	p = 0.049				
daily n = 19	5.3	57.9	26.3	10.5	0
several times per week n = 106	10.4	53.8	25.5	8.5	1.9
rarely n = 75	1.3	56	41.3	1.3	0
Self-assessment of knowledge about proper nutrition *	p = 0.033				
very good n = 35	5.7	62.8	17.1	8.6	5.7
good n = 91	9.9	58.2	26.4	5.5	0
average n = 69	2.9	47.8	43.5	5.8	0
poor n = 5	0	40	60	0	0
Reads labels	p > 0.05				
always/often	9	56.8	26.1	6.3	1.8
sometimes/rarely	3.4	52.8	38.2	5.6	0

Statistically significant differences: * $p < 0.05$

The "other" gender category was not included because the small sample size (n = 4) was insufficient to support statistical analysis.

An important issue is which information consumers consider relevant on food product labels. The ingredient list was the most frequently indicated label element (78.5%), followed by the expiration date (77.0%), nutritional value (66.0%), and price (61.5%). Other elements, including allergen information, country of origin, and certifications, were selected considerably less frequently (7.5%, 17.5%, and 14.0%, respectively), with no statistically significant differences observed between the analyzed groups. Moreover, 90.5% of students reported that they had previously decided not to purchase a product because of its ingredients. The importance assigned to selected label elements differed according to respondents' characteristics (Figure 1). The ingredient list was more frequently considered important by regular label readers, women, older respondents and with higher nutrition knowledge ($p < 0.001$, $p = 0.044$, $p = 0.021$ and $p = 0.007$, respectively). Nutritional value was particularly important for students with very good nutrition knowledge and those with higher physical activity levels ($p = 0.019$ and $p = 0.005$). In contrast, price was more frequently indicated by students from technical, economic, and humanities-related fields (other studies), respondents with lower nutrition knowledge, and those who rarely read labels ($p = 0.0015$, $p = 0.031$, and $p = 0.0015$, respectively).

Overall, 67% of respondents believed that information about product ingredients should be presented in a simpler and more understandable way (Table 4). The need for clearer explanations and simplified language increased among consumers who read food labels less frequently and among those who reported lower levels of nutrition knowledge. For both variables, the differences in responses were statistically significant. With regard to the field of study, students of life sciences and medical sciences were slightly more likely to perceive a need for additional explanations of ingredient information on food labels; however, these differences were not statistically significant in the present sample. The surveyed students were open to expanding their knowledge, as evidenced by the fact



The "other" gender category was not included because the small sample size (n = 4) was insufficient to support statistical analysis.

Figure 1. Differences in the perceived importance of selected elements of food labels

Table 4. Respondents' opinions on the comprehensibility of the language used on food labels

Should ingredient information be presented in a clearer and more understandable way (e.g., using simpler language or explanatory notes)? (%)				
Total n=200	Yes, definitely	Yes, it would be helpful	No, the current information is sufficient	No opinion
	26	41	20	13
Field of study	p = 0.443			
food-related n = 70	21.4	34.3	25.7	18.6
natural sciences n = 64	29.7	45.3	14.1	10.9
medical n = 30	26.7	46.7	23.3	3.3
other n = 36	27.7	41.7	16.7	13.9
Self-assessment of knowledge about proper nutrition *	p = 0.007			
very good n = 35	11.4	28.6	45.7	14.3
good n = 91	29.7	39.6	15.4	15.4
average n = 69	27.5	49.3	14.5	8.7
poor n = 5	40	40	0	20
Reads labels *	p = 0.042			
always/often n = 111	27.9	32.4	24.3	15.3
sometimes/rarely n = 89	23.6	51.7	14.6	10.1

Statistically significant differences: * $p < 0.05$

Table 5. Respondents' attitudes toward using a mobile application for scanning food product labels

Would you use a mobile application for scanning product labels in order to obtain additional information? (%)				
Total n = 200	Yes, definitely	Yes, if it were easy to use	Probably not	No, it is not important to me
	44	41	12.5	2.5
Field of study	p = 0.469			
food-related n = 70	52.8	37.1	8.6	1.4
natural sciences n = 64	40.6	39.1	17.2	3.1
medical n = 30	33.3	50	16.7	0
other n = 36	41.7	44.4	8.3	5.6
Self-assessment of knowledge about proper nutrition	p = 0.304			
very good n = 35	37.1	51.4	11.4	0
good n = 91	49.4	36.3	12.1	2.2
average n = 69	40.6	42	14.5	2.9
poor n = 5	40	40	0	20
Reads labels	p = 0.605			
always/often n = 111	47.7	36.9	12.6	2.7
sometimes/rarely n = 89	39.3	46.1	12.4	2.2

that 85% expressed interest in a mobile application for scanning food labels (Table 5). The main condition was that the application should be simple and easy to use. In contrast to the question regarding the simplification of ingredient information, none of the analyzed factors, including frequency of label reading, level of nutrition knowledge, or field of study, significantly influenced respondents' opinions on this issue.

DISCUSSION

The study concerned the frequency of food label reading among students and their perceptions and interpretation of the information provided on food packaging. The results indicate that food labels constitute an important source of nutritional information; however, the way they are used varies and

is influenced by demographic, social, and cognitive factors. More than half of the respondents declared that they fairly regularly read the information provided on food product labels. The remaining participants (44.5%) did so occasionally or rarely. This distribution indicates a moderate level of consumer awareness within the studied group. In contrast, Javier et al. [14], in a study involving more than 165,000 Filipino adults, reported a lower frequency of food label use: fewer than 20% of respondents always read food labels, whereas nearly 45% did not read them at all. The main reasons for not using information provided on packaging included lack of interest, insufficient time, difficulties in understanding label information, and small font size. Similar factors have also been reported in studies conducted among consumers in Saudi Arabia, Iran, and Portugal [11, 15-17]. Consistent with the findings of the present study, a relatively high frequency of food label use was observed among Turkish students, with nearly 55% of respondents reporting that they always read product information before purchase [7]. Similarly, in the study by Rakuła and Kiciak [18], a relatively large proportion of Polish consumers reported reading food labels (71.2%), although fewer than half of them read only selected pieces of information.

One of the most important factors differentiating the frequency of label reading was the level of nutrition knowledge. Respondents who rated their competence in this area as high were significantly more likely to use food labels during shopping compared with other groups. Students enrolled in food science-related programs were particularly notable, as many as 80% of them reported using labels regularly. Surprisingly low rates were observed among medical students (26.6%), which may suggest an insufficient presence of nutrition-related topics in medical curricula, as previously indicated by Crowley et al. [19], whose review included 24 eligible studies from the USA (n = 11), Europe (n = 4), the Middle East (n = 1), Africa (n = 1), and Australasia (n = 7). Additionally, more than 70% of this group consisted of first-year students, i.e., individuals at the beginning of their university education; therefore, a larger sample of medical students should be examined before drawing general conclusions.

Similarly, a study involving a large nationwide sample of Polish consumers found that only one predictor was significant across all measures of label-reading behavior – self-assessed knowledge about a healthy diet [20]. The systematic review by Miller and Cassady [21] also confirmed the influence of knowledge on the frequency and accuracy of interpreting nutrition information.

Although many studies, including those conducted in the USA, Iran, Singapore, South Korea, and Croatia, indicate that women are more interested in information provided on food product packaging than men [15, 22-26], in the present study men were slightly more likely than women to report regularly reading labels. However, this comparison should be interpreted with caution due to the substantial difference in the size of the two groups, as the number of women was approximately three times higher than the number of men. This imbalance may have affected the observed result and limits the strength of conclusions regarding gender differences. The finding may also reflect changing trend in men's interest in health and appearance. Twenty-five years ago, Nayga [27] reported that many American men did not believe in the usefulness of nutrition information for food choices or health-related decisions. Some evidence of changing patterns may be provided by the results of a study conducted among respondents from Nebraska [26], in which women were indeed characterized by a higher frequency of label reading; however, men were more likely to consult product information when they had a chronic disease. No such relationship was observed among women. In a study by Bryła [20], involving 1,051 Polish consumers, women were more likely than men to read information on food labels; however, the difference was observed only in selected situations: reading information placed on the back of the package (BOP) before purchase or information displayed on the front of the label (FOP) after purchase, at home.

A significant relationship was also observed between self-reported physical activity and the use of food label. Individuals who engaged in sports on a daily basis were considerably more likely to read label information compared with less active respondents. These findings are consistent with previous reports from a European study indicating that food labelling may be particularly useful for specific consumer groups, such as athletes, individuals with health conditions, or people interested in a healthy lifestyle [17].

It was found that older students and individuals who rated their financial situation as very good were more likely to regularly read food labels than younger consumers and those with a more limited budget. People with higher incomes may have greater motivation to make conscious choices and better access to healthier products. Studies conducted among American, Iranian, and Croatian respondents [15, 23, 24, 28] showed that older consumers were more likely to read labels, particularly nutritional information, which O'Neil and colleagues associated with greater concern for health and quality of life. In contrast, the study conducted in South Korea by Jo and Jung [25] found that older individuals belonged to a group of consumers who rarely used labels;

however, this finding concerned people of a more advanced age, namely those aged 70 years.

The study also analyzed students' level of trust in the information provided on food labels. More than half of the respondents expressed trust in the presented content. The highest level of trust was observed among individuals who rated their nutrition knowledge as good and among students enrolled in nutrition-related programs. Findings from other research teams indicate that consumer trust in food labels depends on the quality and clarity of the information provided, as well as on the credibility of its source. For example, studies conducted across different countries and in international samples have shown that detailed information on product quality, nutritional value, and production processes [29, 30] has been associated with greater trust and more frequent use of labels, as have expert-based claims and quality certifications displayed on labels [31, 32]. Some authors directly associate demographic characteristics with the development of trust, suggesting that younger, more highly educated, or higher-income consumers tend to place greater trust in information provided on food labels [29, 33, 34]. Nevertheless, several studies have reported only weak or mixed effects of demographic factors [31], highlighting the additional importance of cultural or regional influences.

The study indicates that consumers assign different levels of importance to individual elements of food labels. According to respondents, the most important component of a label was the product composition, which was identified as relevant by the largest proportion of participants across all analyzed groups. Considerable importance was also attributed to the expiry date, nutritional value, and product price. The higher the declared nutrition competence, whether related to self-assessed knowledge, field of study, or regular physical activity, the more strongly respondents focused on qualitative food attributes (composition and nutritional value), while paying less attention to price and shelf life. Conversely, among individuals with low self-assessed nutrition knowledge, price became the primary selection criterion, while the substantive sections of the label were considered less important. In the studies by Rakuła and Kiciak [18] and Niewczas [35], Polish respondents also identified product composition, nutritional value, and expiry date as important elements; however, they ranked product shelf life as the most important factor. In a study of British consumers, Grunert et al. [36] pointed out an additional aspect of consumers' perception of nutritional information. Consumers pay more attention to nutritional information when purchasing products perceived as "healthy", whereas they are more likely to disregard such information when buying products intended for "indulgence", such as confectionery items. In the present study, elements such as allergens, country of origin, and certifications were considered important by only a minority of respondents. Similarly, in previous Polish studies, product brand, manufacturer information, and quality marks were taken into account by only 5-7% of respondents [18]. In contrast, higher rates were reported by Riley's research team, in a study conducted in Australia, in which country of origin was considered the most important factor by more than one-third of adults [37]. Information regarding allergens, as well as certain certifications, is particularly relevant for a narrow group of consumers with specific dietary needs, which is confirmed by studies involving individuals Polish respondents diagnosed with coeliac disease, among whom the frequency of regular label reading reached 96% [38].

An important aspect of label evaluation was also their comprehensibility. Approximately two-thirds of respondents indicated that information regarding product composition should be presented in a simpler and more accessible way. This need was particularly evident among individuals who rarely read labels and those reporting a low level of nutrition knowledge. These findings are particularly relevant in light of Regulation (EU) No. 1169/2011, which requires food information to be accurate, clear and easy to understand for consumers and establishes requirements for the visibility and legibility of mandatory information [2]. However, the present findings indicate that the existence of formal requirements does not necessarily ensure that consumers perceive information on product composition as sufficiently simple and accessible. Similar observations were reported by Persoskie et al. [39], who highlighted the difficulties experienced by many consumers, including those with higher education, in interpreting basic information provided on food labels. It is worth emphasizing that a higher level of understanding was associated with more favorable dietary behaviors among consumers. Regulation No. 1169/2011 applies not only to food labeling but also to advertising. Wierzejska et al. [13] raise an important issue affecting Polish consumers: respondents' low level of knowledge about dietary supplements makes them susceptible to unfair marketing practices by manufacturers and may lead to inappropriate nutritional and health practices.

An important implication of these findings concerns the role of nutrition and health education in developing the ability to understand and interpret food label information. In Poland, the introduction of health education as a new school subject in September 2025 provides an opportunity to address topics related to healthy nutrition, including the development of skills needed to understand and critically evaluate food information. Such education may contribute

to developing these competencies at an early stage of life and could complement broader educational initiatives aimed at improving consumers' ability to use food labels effectively. At the same time, the present study suggests that food label literacy should not be considered exclusively a school-related issue, as difficulties in interpreting label information may also affect young adults and other consumer groups.

Nevertheless, it should be acknowledged that nutrition information is complex and challenging to communicate in a clear and simple manner. One possible solution may be the development of mobile applications enabling consumers to scan and interpret food product labels. The consumers surveyed demonstrated considerable openness to new technologies supporting food choices, creating potential for the development of educational and technological tools promoting healthy eating.

CONCLUSIONS

The study shows that students perceive food product labels as an important source of information; however, their use varies within the study group and depends largely on nutritional knowledge, field of study, and level of physical activity. Product composition was the most frequently indicated and most influential element of food labelling, and the majority of respondents reported having rejected a product because of its ingredients. Despite the declared trust in the information provided on food packaging, many respondents indicated a need for information to be presented in a more accessible and understandable manner.

This need was particularly evident among respondents who read food labels less frequently and those with lower self-assessed nutritional knowledge. These findings suggest that improving the effectiveness of food labelling should not rely solely on the availability of mandatory information, but should also take into account its comprehensibility and consumers' ability to interpret it. Educational initiatives aimed at improving knowledge and understanding of food labels and nutrition may therefore support consumers in using label information more effectively and making more informed food choices. Such education may be relevant both to the general population and to specific groups, including young adults and future healthcare professionals, for whom the ability to interpret food and nutrition information may be particularly important in promoting healthy dietary habits and lifestyles. Further research involving larger and more diverse populations is needed to determine whether the observed patterns can be generalized to groups other than university students.

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