

# Food Labels. Consumer Understanding of the Information Contained – A Pilot Study

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**Abstract.** *Background and aim:* Food labels are very important when choosing healthy foods. Another important element that is found on the food label are alimentary additives that are added to the food to increase the shelf life or taste. The aim of our study is to identify how respondents understand and are aware of the information found on food labels. It is very important to be able to choose products that meet the consumers' needs and that do not affect their health. *Methods:* In order to carry out this pilot study, cross-sectional descriptive, an online evaluation questionnaire was developed and disseminated between December 2016 and February 2017. *Results:* Out of the total of 476 participants in the study, the persons with higher or higher education represent over 80% of the respondents. Women are the most representative in this study almost 80% as well as people in urban areas. We can identify the association between the age of the participants and their residence ( $p = 0.0038$ ), the education of the participants ( $p < 0.001$ ), the people who decide upon the products purchased ( $p = 0.039$ ), reading the labels before purchasing ( $p < 0.001$ ). *Conclusions:* According to our study, the perception of information on food labels is very low. Information on the elements that allow the correct choice for buyers, both about food additives and about nutritional values could be beneficial for the health of the buyer.

**Key words:** food label, buying decisions, food safety, knowledge, additives

## Introduction

Overeating unhealthy foods has become a problem among nutrition experts, the solution has come with a number of innovations that have been implemented over the last decade to improve the choice of healthy foods (1). Labeling has become a means of communication between food producers and the consumer and is a factor in product purchasing decisions (2).

Food labels are very important when choosing healthy foods. This is regulated in many countries: the United States, Canada, Australia and Europe (1). The

European Regulation (No. 1169/2011) on food information to buyers was accepted in 2014 and became mandatory in December 2016 (3).

The introduction of nutrition labeling (4) as the only element for improving nutritional health is insufficient due to its limited distribution -it does not appear on vegetables or fruits. A lack of nutritional knowledge can affect the consumer's ability to understand the information provided but unfortunately this is the only objective source of food information (5).

A recent development to improve food labels is the warning label, these labels are only found on foods

having a high content of elements that can affect our health, such as sugar, salt, etc. (6).

Most shoppers in a supermarket will not wait more than a few seconds to examine a food label before choosing a product (7). That is why a label must be very well designed and allow the buyer to be able to choose foods for a healthy diet. (6)

There are studies confirming the existence of consumers wishing to pay a premium for redundant food labels containing additional information for an informed consumer (8). This leads to the emergence of food labels that produce gains but also labels that produce losses (9).

Food labels are difficult to understand by a consumer without knowledge of the food industry: the description of the ingredients or the small size of the characters used, but also the consumer positively assesses the existence of the label as well as the nutrition chart on the package (3).

Confidence is a key issue when buying and consuming food (10). The buyer perceives the information on the label differently depending on several variables. Thus, some of the most important variables are: the level of education, the socio-economic status, the age, the gender, the individual knowledge of nutrition, and the awareness of the importance of their own health. In many cases the products are chosen according to price or brand and less according to the information found on the label (11,12).

Globally, we find that consumers in Australia and New Zealand have a high degree of confidence in the information they find on labels. In the European Union, consumers in Italy, Slovakia and Portugal have the most reliable level of information on the label. (3).

Another important element that is found on the food label are alimentary additives that are added to the food to increase the shelf life or taste. The names and role of these elements in food must be written on the food label (13,14).

The aim of our study is to identify how respondents understand and are aware of the information found on food labels. It is very important to be able to choose products that meet the consumers' needs and that do not affect their health.

## Material and Method

### *Design, sampling and data collection*

In order to carry out this pilot study, cross-sectional descriptive, an online evaluation questionnaire was developed and disseminated between December 2016 and February 2017. The age of the respondents had to be over 18 and this was a criterion for elimination from the survey.

The questionnaire has 27 questions structured in 3 sections. The first section comprises the questions on demographic information, the second section refers to the data on the food labels purchased by the respondent, the third section refers to the awareness of the respondent regarding the food additives found in food. Participants were asked: "Do you know the meaning of the 'E's 'on the package?"; "Do you know that the role of 'e-numbers' is to identify additives as easily as possible and to reduce the space on the label."; "Do you know that additives are not consumed as food, they are added to food for their technological role"; "that preservatives are food additives"; "That each additive can be assigned an E-number". Participants were asked: "Do you read the information on the product labels before you purchase them?", Participants were also asked whether the nutrition information influenced their purchasing decision.

The average length of completing a questionnaire was about 10 minutes and the participants needed an internet connection.

The voluntary individuals who completed the questionnaire were informed about the objective of the study and were assured of the anonymity of the answers provided. The study was conducted according to the principles stated in the declaration of Helsinki.

### *Statistical Analysis*

The statistical analysis was performed using SPSS V 20 (IBM, Chicago, IL). Qualitative data were presented as counts and percentages, and the 95% confidence intervals (95% CI) were calculated for all the estimations. The association between qualitative variables was assessed using the Chi-square test or the Fisher exact test. Statistical analyses were performed in terms of age groups and employment status. We used

four age groups to capture different segments of the population: the young adult (18–25 years), the middle classes (26–35 and 36–49 years) and the third-age people (>50 years). The statistical significance threshold was set at  $p \leq 0.05$

## Result

Out of the total of 476 participants in the study, the persons with higher or higher education represent over 80% of the respondents. Women are the most representative in this study almost 80% as well as people in urban areas (Tab. 1).

In our study, 45% of respondents go shopping for three. The person who goes shopping is the one who decides which products will be bought in most cases (52.9%) and the information about the purchased products is done by reading the labels (95.4%). (Tab. 2)

Table 3 can identify the respondents' awareness as regards food additives, 60.9% of respondents believe that the role of "E-numbers" is to identify the additives as easily as possible and reduce the space on the package. The amount of food additives used in industry is not dangerous, according to 73.5%.

According to table 4, we can identify the association between the age of the participants and their residence ( $p = 0.0038$ ), the education of the participants ( $p < 0.001$ ), the people who decide upon the products purchased ( $p = 0.039$ ), reading the labels before purchasing ( $p < 0.001$ ). Identifying the association between the employment status and education, the income of the buyer, the person who decides upon the purchase but also the amount of food additives used in the industry as not being dangerous.

## Discussions

This study aims to identify how the consumer reads and understands the information found on food labels. Correctly understood information contributes to the choice of healthy products that are suitable for the consumer. We can see that studies, personal income and even the number of purchases per week are important elements for the consumer surveyed.

**Table 1.** Socio-demographic data of study participants

	N	%	95% CI
Education			
• Medium level	92	19.3	15.8-23.1
• Faculty	246	51.7	47.1-56.1
• Postgraduate studies	138	29.0	24.6-33.0
Income			
• under 900 Ron*	148	31.1	26.9-35.5
• 900-1500 Ron*	86	18.1	14.7-21.4
• 1600-2500 Ron*	106	22.3	18.3-26.1
• > 2500 Ron*	136	28.6	24.8-32.8
Gender			
• Women	380	79.8	76.3-83.2
• Men	96	20.2	16.8-23.7
Residence			
• Rural	90	18.9	15.3-22.7
• Urban	386	81.1	77.3-84.7

\*1 Euro= 4,9 Ron

**Table 2.** Need for Food Information

	N	%	95% CI
Q7. How often do you go shopping?			
• Daily	86	18.1	14.7-21.4
• 3 times a week	214	45.0	40.3-49.8
• Once a week	158	33.2	29.0-37.8
• Less than once a week	18	3.8	2.1-5.7
Q9. Who decides what food to buy in the household?			
• Me	252	52.9	48.3-57.4
• Someone else	10	2.1	0.8-3.4
• Me and someone else	214	45.0	40.3-49.8
Q13. Do you only read the label when you first purchase a product?			
• Yes	292	61.3	56.9-66.0
• No	184	38.7	34.0-43.1
Q14. Do you only read the expiration date on the label?			
• Yes	138	29.0	25.0-33.2
• No	338	71.0	66.8-75.0
Q15. Do you trust the information on the product packaging?			
• Yes	368	77.3	73.5-80.9
• No	108	22.7	19.1-26.5
Q16. Do you read product label information before you purchase it?			
• Yes	454	95.4	93.5-97.3
• No	22	4.6	2.7-6.5

**Table 3.** Degree of knowledge of food additives

	N	%	95% CI
Q24. Do you know the meaning of the “E’s” on the package?			
• Yes	334	70.2	65.8-74.2
• No	142	29.8	25.8-34.2
Q25_1. The role of “e-numbers” is to identify the additives as easily as possible and to reduce the space on the packaging.			
• True	290	60.9	56.7-65.5
• False	108	22.7	18.7-26.7
• I do not know	72	15.1	11.8-18.5
Q25_2. Additives are not consumed as food, they are added to food for their technological role.			
• True	372	78.2	74.2-81.5
• False	72	15.1	12.0-18.1
• I do not know	30	6.3	4.2-8.8
Q25_3. Preservatives are food additives.			
• True	328	68.9	64.7-73.1
• False	80	16.8	13.4-20.2
• I do not know	66	13.9	10.9-16.8
Q25_4. Each additive can be assigned an “E-number”			
• True	342	71.8	67.9-76.3
• False	56	11.8	9.0-14.7
• I do not know	76	16.0	12.6-19.3
Q27. The amount of food additives used in the industry is not dangerous.			
• Yes	126	26.5	22.9-30.7
• No	350	73.5	69.3-77.1

**Table 4.** The association between age and employment status and the degree of awareness as regards food labels

	Age Groups				P value	Employee status		
	18-25 (N=156)	26-35 (N=118)	36-49 (N=164)	>50 (N=38)		Employee (N=338)	Without a job (N=138)	P value
Q2. Residence								
• Urban	121	101	127	36	0.038*	278	108	0.313
• Rural	34	17	37	2		60	30	
Q3. Education								
• Medium level	28	14	34	16	<0.001*	58	34	<0.001*
• Faculty	106	70	60	10		156	90	
• Postgraduate studies	22	34	70	12		124	14	
Q6. Income								
• under 900 Ron	98	16	24	10	<0.001*	54	94	<0.001*
• 900-1500 Ron	28	26	22	10		66	20	
• 1600-2500 Ron	16	34	54	2		92	14	
• >2500 Ron	14	42	64	16		126	10	
Q7. How often do you go shopping?								
• Daily	30	14	36	6	<0.001*	70	16	<0.001*
• 3 times a week	54	62	82	16		164	50	
• Once a week	70	36	36	16		90	68	
• Less than once a week	2	6	10	0		14	4	

Table 4 (Continued)

	Age Groups					Employee status		
	18-25 (N=156)	26-35 (N=118)	36-49 (N=164)	>50 (N=38)	P value	Employee (N=338)	Without a job (N=138)	P value
Q9. Who decides what food to buy in the household? • Me • Someone else • Me and someone else	76 72 8	64 52 2	94 70 0	18 20 0	0.039*	188 146 4	64 68 6	0.029*
Q12. Do you think that when you read food labels, you make better decisions about what to buy? • Yes • No	134 22	98 20	142 16	32 6	<0.001*	286 46	120 18	0.135
Q13. Do you only read the label when you first purchase a product? • Yes • No	106 50	60 58	96 68	30 8	0.003*	206 132	86 52	0.780
Q24. Do you know the meaning of the “E’s” on the package? • Yes • No	118 38	88 30	102 62	26 12	0.039*	234 104	100 38	0.484
Q25_1. The role of “e-numbers” is to identify the additives as easily as possible and to reduce the space on the packaging. • True • False • I do not know	102 32 20	78 26 14	94 36 30	16 14 8	0.107	216 70 50	74 38 22	0.047*
Q25_2. Additives are not consumed as food, they are added to food for their technological role • True • False • I do not know	132 16 6	92 20 6	122 24 18	26 12 0	0.003*	262 56 20	110 16 10	0.077
Q25_3. Preservatives are food additives • True • False • I do not know	104 24 26	82 24 12	120 16 28	22 16 0	<0.001*	234 54 50	94 26 16	0.106
Q25_4. Each additive can be assigned an “E-number” • True • False • I do not know	108 20 26	78 16 24	130 14 20	26 6 6	0.224	252 40 46	90 16 30	0.017
Q27. The amount of food additives used in the industry is not dangerous. • Yes • No • I do not know	56 64 36	26 64 28	38 90 36	6 22 10	0.045*	78 186 74	48 54 36	0.005*

\* p&lt;0.05

Most studies have shown that some people with low incomes and a lower level of education are less interested in the information on the food labels because they do not understand this information (15).

There are associations between different types of labels and the choice of food (16), this is due to the fact that a large part of consumers read food labels only when preparing these foods for consumption. (17).

Several studies have found that consumers have difficulty understanding the information on food labels (18). The most common reasons for not reading the food label were: lack of time, size of the text on the labels, misunderstanding of the terms found on the label (1).

There are studies that identify the need to provide even more information on these labels, even for a fee, but will this information be properly understood by consumers? It could be information because of which certain products will no longer be bought or, on the contrary, there will be a higher demand, it is possible that this additional information will benefit the consumer (19).

Other studies confirm that food buyers do not want to waste too much time studying unclassified and often confusing information on product labels. In the opinion of the purchaser, the price guarantees the quality of the products, but this is not always true. The quality of the products is constantly improving but the use of food additives is also increasing (20).

Given the way the consumer understands food label information, a useful way to improve the consumption of healthy foods or products that are good for health would be to include quality labels (20,21).

Several studies have confirmed that people with higher incomes and a higher level of education have an appropriate behavior (study labels) when looking for information on the label (22;23).

Food safety and confidence are more important factors for women, people over the age of 45 and with high incomes (24). People with various negative attitudes (smokers, people who do not exercise) correlated with a study of food labels and the lack of confidence in the information on the label (3).

As in other studies (3), our respondents did not give too much importance to the expiration date, leading to the conclusion that they may be based on

the correctness of the sellers who have the obligation to withdraw from the market the products that are outdated.

Our study shows that about 30% of respondents do not know the significance of food additives. This should be a problem for decision makers, in other countries an information campaign has reduced the number of people who were unaware of food additives (13).

A formal approach to how consumers read and understand labels would be a beneficial approach for everyone. People who are in the food trading system but also the consumer would provide some information that would lead to the improvement of this process (25,26).

## Conclusions

According to our study, knowledge of the information on food labels is limited. Information on the elements that allow the correct choice for buyers, both about food additives and about nutritional values could be beneficial for the health of the buyer. National programs to raise awareness of the importance of the information on the label would be useful and beneficial for the population.

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