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# CONSUMER PROFILE REGARDING KNOWLEDGE OF FOOD ADDITIVES AND READING FOOD LABELS

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Keywords: food label, reading frequency, consumer profile, knowledge Abstract: It is known that food labelling could significantly affect consumer purchasing behaviour. Aim: To identify the profile of the consumer regarding the knowledge about food additives and reading food labels. Materials and methods: Prospective cross-sectional study for a period of 7 months (September 2020- March 2021), using convenience sampling. The research was based on the application of a structured online questionnaire developed on the basis of questionnaires used (successfully) in other similar studies. This questionnaire was designed online using the Google Forms platform, and was distributed through applications and social networks such as: (WhatsApp groups, Facebook groups). Results: The total number who met the inclusion criteria in this study was n = 611 respondents, of whom 12% (n=75) were males and 88% (n=536) were females. Respondents with a low educational level do not know enough information about food additives (OR = 2.9, 95%) CI: 1.12-3.9, p < .05), read the label only when buying a product for the first time (OR = 0.41, 95IC: 0.26 -9.82, p < .01), when reading the label to check only the expiration date (OR = 6.43, 95% CI: 2.74-15.02, p < .001) and for these people the information on the label is difficult to understand (OR =2.52, 95% CI: 1.6-468, p <.01). For respondents with income <1500 lei, the information on the label is difficult to understand (OR = 2.89, 95% CI: 1.24-3.16, p < .05), and they also do not read the food label (OR = 11.39, 95% CI: 2.44-47.3, p <.001). Conclusion: The profile of the consumer who does not read the food label is: people with low educational level, low monthly income and age under 35 years.

# INTRODUCTION

Nutrition labelling is an important method of informing consumers about the composition of food, which helps them making an informed choice.

The nutrition label is any statement that states, suggests or insinuates that a food has special nutritional characteristics due to its energy value and/or the nutrients it contains. According to the FDA, the label of a food product must include mandatory characteristics such as: nutritional information, net weight, product name, contact and identification details of the manufacturer.(1,2)

Nutritional information can help and simplify the idea of healthy eating; the nutritional panel plays an important role in monitoring the amount of lipids, sugars, sodium, fibre, protein and complex carbohydrates. In addition, it allows consumers to make informed decisions about the quality of a food product.

Therefore, the nutrition panel is a guide to a more balanced diet and a healthier lifestyle.(2) Food labels are usually made in accordance with dietary guidelines developed by health and nutrition experts, which emphasize the importance of a well-balanced diet, so that the population can use the nutrition label to make food choices in accordance with current nutritional regulations.

Nutrition labelling is found to significantly affect consumers' buying behaviour. There is some evidence that the

provision of nutritional information can facilitate the transition of consumers from "unhealthy" to "healthy" food products.(1) Improving and balancing the nutrient intake of consumers depends on the interaction between offer and demand in the food market sector. In terms of demand, consumer interest in purchasing foods and products with an enhanced nutritional profile has an explicit effect on nutrient intake.

Labels educate and inform consumers to make appropriate nutritional choices by promoting healthy eating behaviour. It is therefore important for consumers to have sufficient knowledge and interpretation of the information on the label to make healthy food choices, as limited nutritional knowledge could cause consumers to have difficulty reading labels and prevent them from receiving information on the label.(3)

#### AIM

The aim of this research was to identify the profile of the consumer regarding the knowledge about food additives and reading food labels. Identify food buying practices and consumer behaviour regarding packaged foods.

# MATERIALS AND METHODS

To conduct this research, we used a cross-sectional study for a period of 7 months (September 2020 - March 2021),

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using convenience sampling. Due to the restrictions imposed by COVID-19, this research could not be performed by direct interaction with consumers, and we chose the online interaction option.

The research was based on the application of a structured online questionnaire developed based on the questionnaires used (successfully) in other similar studies.

Google Forms platform, and the questionnaire link was distributed through applications and social networks such as: (WhatsApp groups, Facebook group, called Târgoviște etc.).

The questionnaire was divided into 3 sections that included questions about:

- Socio-demographic characteristics
- Questions about respondents' knowledge of food additives
- Questions about the frequency, information of interest and how to read/use food labels.

The inclusion criteria were: age over 18 years, and both gender.

The respondents were informed about the participation criteria, as well as about the anonymity of the answers (information) provided; also the completion and participation to the survey was voluntary.

#### RESULTS

The total number who met the inclusion criteria in this study was n = 611 respondents, of whom 12% (n = 75) were males and 88% (n = 536) were females. The average age of the entire sample was 28.89 +/- 11.32 years.

# Table no. 1. Factors associated with reading the food label

Statements OR/Confidence Interval	Respondents with income <1500 lei (n=319) vs. Respondents with income> 1500 lei (n=292)	Low educational level (n=126) vs. High educational level (n=485)
I don't know enough information about additives	0.70 (0.42-1.25)	*2.9 (1.12-3.9)
I only read the label when I buy a product for the first time	0.89 (0.60-1.31)	**0.41 (0.26-9.82)
When I read the label I only check the expiration date	1.30 (0.60-2.80)	***6.43 (2.74- 15.02)
The information on the label is difficult to understand	*2.89 (1.24-3.16)	**2.52 (1.6-468)
I don't read the food label	**11.39 (2.44-47.3)	1.37 (0.42-4.56)
Frequency of purchases <1x week	**4.25 (1.2 – 5.2)	1.18 (0.54 – 1.72)
Low educational level	*1.68 (1.01-2.85)	

\*p<.05, \*\*p<.01, \*\*\*p<.001

Table no. 2. Respondents' knowledge, opinion and behaviour regarding food label

Statement	Answer options	Frequency	Percent
Which of the following do you think is very important in a food label?	Price	188	30.8
	Expiration date	567	92.8
	ingredients	477	78.1
	Nutritional	511	83.6
	information		
	All of the above	591	96.7
Which of the following do you follow on the food label?	Portion size	44	7.2
	Nutritional	138	22.6
	content		
	price	433	70.9
	Expiration date	321	52.5
	ingredients	223	36.5

	All of the above	298	48.8
Which of the following do you follow on the list of ingredients?	Additives	88	14.4
	Allergens	126	20.6
	Sugar	189	30.9
	The type of fat	109	17.8
	Salt	121	19.8
	Other	35	5.7
	Additives	89	14.6
	The cultivation	100	16.4
	process		
East which of the	contaminate	167	27.3
For which of the	ingredients	211	34.5
like more information	Nutritional	66	10.8
on the label?	content		
on the laber:	How to care for	103	16.9
	/ feed animals		
	Country of	163	26.7
	origin		
	Other	23	3.8
	Contains a wide	462	75.6
	variety		
	Avoid saturated	333	54.5
	fat		
	Contains fresh	578	94.6
	food		
In your opinion, a healthy diet is one that:	Contains	344	56.3
	homemade food		
	Avoid additives	278	45.5
	Avoid salty	177	29.0
	foods		
	Avoid sweet	164	26.8
	foods		
	Contains few	89	14.6
	grilled foods		10.0
<b>D</b>	Other	112	18.3
Do you follow the	Yes	212	34.7
caloric content on the $f_{-} = \frac{1}{2} \frac{1}{1} \frac{1}{1} \frac{1}{2} \frac{1}{2} \frac{1}{2}$	Not	144	23.6
TOOD ISPAL/	Nometimec		

Respondents with a low educational level do not know enough information about food additives (OR = 2.9, 95% CI: 1.12-3.9, p <.05), read the label only when buying a product for the first time (OR = 0.41, 95% IC: 0.26 -9.82, p <.01), when reading the label only checks the expiration date (OR = 6.43, 95% CI: 2.74-15.02, p <.001) and for these people the information on the label is difficult to understand (OR = 2.52, 95% CI: 1.6-468, p <.01) (table no. 1).

For respondents with income <1500 lei, the information on the label is difficult to understand (OR = 2.89, 95% CI: 1.24-3.16, p <.05), and they also do not read the food label (OR = 11.39, 95% CI: 2.44-47.3, p <.001) (table no. 1).

Table no. 3. Age comparison for responses to certain statements that express the level of agreement with those statements

Statements	Age> 35	Age between 18-	Р
	years, $n = 231$	35 years, n = 380	value
I have adequate	2.69+/-1.09	2.94+/-1.24	0.01
knowledge about			
food additives			
I buy food with as	3.74+/-1.17	3.43+/-1.33	0.007
few additives as			
possible			
I am willing to pay	4.02+/-1.11	3.57+/-1.34	<
more for products			0.0001
without additives			
There are E's that I	3.58+/-1.34	3.14+/-1.43	0.0002
deliberately avoid			
I try to eat healthy	4.20+/-1.02	4.04+/-1.04	0.03
food			

Respondents over the age of 35 believe having a lower level of adequate knowledge about additives p = 0.01, although

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they also try to buy food with as few additives as possible p = 0.007, avoid products that contain certain E's, and are willing to pay more for products without additives p < 0.0001, and also try to eat healthier food, p = 0.03.

## DISCUSSIONS

This pilot survey was conducted to collect information on sociodemographic variables, knowledge about food additives, awareness of food labelling information, frequency of label reading, frequency of reading nutritional information and product attributes, such as price, shelf life, content in additives, and the appearance of the packaging. The level of awareness of food labelling was achieved by asking respondents about their familiarity with information on labels and whether or not they read food labels, and by asking about the circumstances in which they omit reading labels and the difficulties they face in understanding food labels.

Consumers in industrialized countries are now much more interested in information about the production methods and components of the food they consume than they were 50 years ago. Some production methods are perceived as less "natural" (i.e. conventional agriculture) while some food components are seen as "unhealthy" and "unfamiliar" (i.e. artificial additives).

At present, consumers in developed countries tend to show a much higher interest than 50 years ago, for information on how to process and manufacture as well as information on the raw material and components of the food they consume daily. Several manufacture processes are considered less "natural" (e.g. conventional agriculture), while other food components are assessed as being "unhealthy" (e.g. artificial additives).

This manifestation, often highlighted as the "clean label" trend, has provoked the major food industry producers to specify if a particular ingredient or additive is not added or whether the food product was made by means of a more "natural" manufacture method (e.g. organic farming).(4-6)

Despite this phenomenon, a common and objective definition of "clean label" does not exist and has not been regulated so far.

The results show that, although 'health is a major reason for consumers, a wide variety of factors influence the trend of clean label, with a particular relevance of intrinsic or extrinsic product characteristics and socio-cultural factors.

The results of the studies show that a wide variety of factors influence the tendency to buy a "clean labelled" food product, with a special significance of the structural or visible features of the product and their socio-cultural aspects, although "health" is a major reason for consumers.

For policy makers, it is important to work for a more homogeneous understanding and application of the term clean label and to identify a uniform definition or regulation for "without" artificial additives/food ingredients, as well as to work to the decrease of consumers' misconceptions. Finally, several future avenues of research are discussed.(7)

Manufacturers in the food industry should take into account the variety of these factors in the process of developing new foods. Therefore, we consider it important for decisionmakers to work on more explicit methods for a more homogeneous understanding and use of the term "clean label" as well as to identify an invariable definition or regulation for "without" artificial additives/food ingredients, as well as working to reduce the occurrence of misconceptions on the part of the consumer. Finally, several future research avenues are discussed.(7)

In two similar researches conducted in our country in 2020 on a group of 476 people from Mureş County, the authors

reported the majority of respondents as females, and highlighted that the level of awareness and the level of reading/use of information on the pre-packaged food label is low.(8,9) In the first survey, the results showed that only one third of the respondents had a high level of awareness of food labelling.(8) It was also concluded that factors such as: the workplace and the level of education of the respondents proved to be significantly associated with the awareness and use/reading of the information provided on the pre-packaged food labels. In the second research, the results indicate that the study population has an average level of knowledge about food additives, highlighting that the environment of residence and sex could be factors associated with lack of knowledge.(9) The results of the present study discovering aspects very similar to the results of these two studies (8,9), namely the respondents with a low educational level do not know enough information about food additives (OR = 2.9, 95% CI: 1.12-3.9, p <.05 ), read the label only when buying a product for the first time (OR = 0.41, 95IC: 0.26-9.82, p <.01), when reading the label only to check the expiration date (OR = 6.43, 95% CI: 2.74-15.02, p <.001) and for these people the information on the label is difficult to understand (OR = 2.52, 95% CI: 1.6-468, p <.01).

In addition, in the study conducted by us, people's income seems to be a factor associated with the degree of knowledge about the information on food label (for respondents with income <1500 lei the information on the label is difficult to understand (OR = 2.89, 95% CI: 1.24-3.16, p <.05), and they also do not read the food label (OR = 11.39, 95% CI: 2.44-47.3, p <.001).

A study by Szucs et al. in 2012 (10), on a sample from Hungary reported that more than half of the study population (61.8%) were aware that each additive could be assigned an E number, this being similar to the results obtained in this study, in which 70% of respondents agreed that "Each food additive can be assigned the letter E-number".

Also, in a 2019 survey (11) in the EU, it was concluded that Europeans in Sweden (90%), the population from Netherland (81%) and population from Denmark (77%) had an increased degree of awareness on food safety topics, including: additives such as dyes, preservatives or flavourings used in food or beverages; allergic response to food or beverages; genetically modified ingredients from food or drink, but on the other hand, respondents from Romania (30%), from Hungary (33%) and from Italy (25%) were the least likely to have a very increased degree of awareness. Countries such as Italy (17%) and Romania (16%) had the highest share of respondents with a very low degree of awareness (i.e. they knew about one or none of the topics).(11)

We believe that, in theory, the use/reading of food labels as the only strategy to improve and/or promote nutritional health is insufficient due to their limited distribution (it exists on pre-packaged foods, but not on fresh fruits or vegetables).(12) In addition, limited nutritional knowledge may diminish the consumer's ability to understand the nutritional information provided. However, in practice, nutrition information is often the only source of objective information about foods available on the market (13), which underlines why it is so important to understand how the consumer uses this information.

### CONCLUSIONS

The profile of the consumer who has the habit to read and understand the information on the food label outlined by the results of this study is: female person over 35 years of age, belonging to the urban residence environment, having a high level of education, and being the only forum decisional when shopping. And the profile of the consumer who does not read the food label is: people with a low level of education, low monthly income and age under 35 years.

This study found that knowledge about food labelling information was low among consumers with a low level of education who also reported low monthly incomes.

This study highlights a general knowledge gap among questionnaire respondents, who have a low level of knowledge about the functions/role of additives commonly used in processed foods. This was highlighted in their answers to the various questions about the characteristics of food additives. We believe that when the provision of scientific information through reliable sources is not limited to consumers, the level of awareness of the food content of the population will increase.

From the results of this research, the food industry manufacturers can benefit in meeting consumer requirements and provide suggestions to relevant authorities for a more effective strategy for disseminating information to people with disabilities who need healthy eating to prevent chronic and nonchronic diseases.

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