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Original article

Consumer profile in terms of food label reading in Mures county, Romania– a pilot study

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Abstract. *Introduction.* Food labeling is a very important public health tool aiming at providing consumers with information that could influence their purchasing decisions. *Aim.* Analyzing the frequency of consultation of the food label, the degree of understanding of the information content on the label and the importance of the functional characteristics of the labels in making purchasing decisions in acquaintance with a group of people from Mures County. *Material and method.* This is a cross-sectional study, in which we developed an assessment questionnaire on-line . The questionnaire included 27 items. *Results.* 476 people agreed to participate in this study, the majority of participants being women (79.83%). People with low incomes do not trust the information on the packaging (OR = 1.89, 95% CI: 1.15-3.12) and do not read information from the product labels before purchasing them (OR = 10.39, 95% CI: 2.24-48.11). People with lower level of education read the label only when they buy a product for the first time (OR = 0.41, 95% CI: 0.23-0.71) and do not trust the information on the product packaging (OR = 3.02, 95% CI: 1.70-5.38). *Conclusions.* This study has shown that awareness and use of pre-packaged food labeling information is low among consumers in Mureş County. The results showed that only a quarter of survey respondents had a high awareness of food labeling. The place of work, level of education and age of the respondents have proven to be significantly associated with the awareness and use of pre-packaged food labeling information.

Keywords: food label, packaging, buying decisions, additives

Introduction

The food and agricultural sectors in developing countries have significantly changed in the production, processing, marketing and consumption of food over the last 20 years (1,2). Once with the globalization and widening of the food industry, nutrition-related health problems such as obesity, high blood pressure, diabetes, various types of cancer, osteoporosis and cardiovascular disease have grown dramatically, all of which have a significant impact on the developing and developed societies (3,4). The population of these societies

is becoming more sedentary, adopting unhealthy lifestyles with nutritional imbalances, promoting excess and emphasizing quantity and not quality of food (5).

Changes in food consumption patterns are largely determined by socio-economic and demographic factors such as income growth, increased stress levels, increased urbanization, changing lifestyles, increasing willingness to experience new products and flavors, the desire for comfort and the increase in the number of women working, all leading to a strong increase in the consumption of semi-prepared products (packaged) and processed food (6,7).

Due to this factors, nutrition labeling has emerged as an important aspect of consumers' purchasing decisions. Food labeling is a very important public health tool aiming at providing consumers with information that could influence their purchasing decisions (8). For example, consumers may want to know which are the ingredients of the food product, how it is prepared, how it should be kept as safe as possible, or what needs to be done before use, and its fat content or other nutritional properties. Detailed, correct and accurate labeling is essential to inform the consumer about the exact nature and characteristics of the food, allowing them to make a more informed choice.

According to the literature, food labeling is a support that contains product information. Label information and the level of consumer education make an important contribution to ensuring consumer protection against the dangers associated with food consumption (9). Creating supportive environments to help people choose healthy is an important principle in promoting health.

Nutrition labels have become mandatory in Europe on pre-packaged products since December 13, 2011, when the 1169/2011 EU Regulation was adopted. Thus, it is decided to standardize labels in form and content, and with regard to nutritional values, it is established that the producer should declare the energy value of the product as well as the energy value of the six nutrients present: fats, saturated fats, carbohydrates, sugar, salt, expressed as 100 g or 100 ml of product. Subsequently, the starch and fiber level, the list of preservatives, dyes, additives and allergens were also introduced on the label (10).

In this way, the consumer has been provided, in a practical and accessible way, with the information needed to make a fair choice of food. However, the real problem occurs when the consumer is not interested in reading the label, or simply does not understand what he or she is reading (11).

Recent international studies have shown how many variables influence the consumer's approach to food labels. Of great importance is the level of education, socio-economic status, age, gender, individual nutrition knowledge, and awareness of the importance of one's own health. In many cases, products are chosen by price or brand and less by the information on the label (12).

Some chemicals found on food labels should be of concern for people who do not read information on the food label (e.g. people with allergies, people with cancer, etc.) (13).

In order to maximize the benefits of food labeling, it is imperative to assess the awareness of Romanian consumers about such information on food labels and how much this information influences their purchasing behavior in shopping centers or on the market.

As far as we know, in Romania, no such study has been carried out, therefore the present research proposes to analyze the frequency of consultation of the food label, the degree of understanding of the information content on the label and the importance of the functional characteristics of the labels in making purchasing decisions in acquaintance with a group of people from Mures County. The study aims to provide practical implications and guidelines based on consumer perspectives, not only for food processors, retailers, but also for designing effective labels to win consumer confidence and to identify the consumer's risk profile so that educational community interventions on healthy eating and the informed choice of quality food to be directed to less informed consumers.

Experimental Part

Overall design, sampling and data collection

To achieve this cross-sectional study, an assessment questionnaire has been developed and

disseminated on-line between December 2016-February 2017. Age >18 years was the criteria that limited participation to the survey.

The questionnaire included 27 items, comprising 2 sections. In the first section, questions about demographic information included gender, age, living environment (urban/rural area) education level (primary school and high school are - lower level of education, college, university degree or higher are high level of education), employment status (unemployed, employed, student, freelancer, pensioner, other/not stated) and monthly income (under 300 Euro - small income, over 300 Euro - big income). The second section refers to the participant's surveyed information about the data found on the food labels they buy and the knowledge level about food additives.

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 was performed using SPSS V 20 (IBM, Chicago, IL). Categorical variables were expressed as frequency and percentages. The multivariate logistic regression was applied to determine the potential correlations between the socio-demographic factors that determine the consumer's profile in terms of food label reading. The statistical significance threshold was set at $p \leq 0.05$, and all statistical tests were 2-sided.

Results

A total number of 476 people agreed to participate in this study, the majority of participants being women (79.83%). 383 (71.01%) of the participants who answered the questionnaire were employed persons and 138 (28.99%) were unemployed or students. Respondents from urban areas (81.09%) were the majority (Table 1). When asked "how often you go shopping", most of them responded (214) that they went 3 times a week (44.96%), once a week, 158 people (33.19%) and 86 (18.07%) of subjects were shopping daily. Most of the buyers do shopping at the supermarket/hypermarket (348 respondents, 73.11%), followed by shopping at the market (76 people, 15.97%) and district stores (46 people, 9.66%). Online shopping was almost non-existent (4 subjects 0.84%). Regarding the person who does the grocery shopping list, we have observed that the majority of the respondents (52.94%) decide

Table 1. Socio-demographic characteristics of the study sample

Variables	Total n=476	Income		Studies	
		Under 300 Euro (n=234)	Over 300 Euro (n=242)	Lower level of education (n=92)	Higher level of education (n=384)
Gender					
➢ Female	380 (79.83%)	191 (81.62%)	189 (78.10%)	74 (80.43%)	306 (79.69%)
➢ Male	96 (20.17%)	43 (18.38%)	53 (21.90%)	18 (19.57%)	78 (20.31%)
Ocupation					
➢ Student	114 (23.95%)	98 (41.88%)	16 (6.61%)	20 (21.74%)	94 (24.48%)
➢ Self imployed	100 (21.01%)	34 (14.53%)	66 (27.27%)	20 (21.74%)	80 (20.83%)
➢ Unemployed	24 (5.04%)	16 (6.84%)	8 (3.31%)	14 (15.22%)	10 (2.60%)
➢ Employed	238 (50.00%)	86 (36.75%)	152 (62.81%)	38 (41.30%)	200 (52.08%)
Residency					
➢ Urban	386 (81.09%)	180(76.92%)	206 (85.12%)	71 (77.17%)	315 (82.03%)
➢ Rural	90 (18.91%)	54(23.08%)	36 (14.88%)	21 (22.83%)	69 (17.97%)

alone the type of foods that are bought in their family, and a share of 44.96% declared that they consult with another person when deciding the grocery shopping list (Table 2).

When we talk about reading food labels, 50 of the respondents with higher education (13.02%) reported that they have not made a good decision about buying the product (Table 2). The label was read by 168 (43.75%) subjects with higher education only when purchasing the product for the first time. For 24 people with a low level of education (26.09%) the expiration date of the food was the only information which was read from the label. People with a low level of education do not trust the information on the product packaging (40 respondents, that is 43.48%). People with low-income 20 (8.55%) do not read the information on the product labels before purchasing products. Information on the label was hard to understand for all categories of people participating in our study (Table 3).

Table 4 presents the results of two logistical regressions: people with income below 300 Euro (n = 234) than those with income higher than 300 Euro (n = 242); and those with a lower level of education (n = 92) than those with higher level of education (n = 384). People with low incomes do not trust the information on the packaging (OR = 1.89, 95% CI: 1.15-3.12) and do not read information from

Table 2. Grocery shopping behavior of the study sample

Variables	Total n=476	Income		Studies	
		Under 300 Euro (n=234)	Over 300 Euro (n=242)	Lower level of education (n=92)	Higher level of education (n=384)
How often do you go shopping?					
➢ Daily	86 (18.07%)	46 (19.66%)	40 (16.53%)	28 (30.43%)	58 (15.10%)
➢ Once a week	158 (33.19%)	82 (35.04%)	76 (31.40%)	28 (30.43%)	130 (33.85%)
➢ 3 times a week	214 (44.96%)	98 (41.88%)	116 (47.93%)	32 (34.78%)	182 (47.40%)
➢ Less than once a week	18 (3.78%)	8 (3.42%)	10 (4.13%)	4 (4.35%)	14 (3.65%)
Where do you do shopping?					
➢ Local stores	46 (9.66%)	26 (11.11%)	20 (8.26%)	12 (13.04%)	34 (8.85%)
➢ Online	4 (0.84%)	-	4 (1.65%)	2 (2.17%)	2 (0.52%)
➢ Supermarket/ hypermarket	348 (73.11%)	178 (76.07%)	170 (70.25%)	66 (71.74%)	282 (73.44%)
➢ Market	76 (15.97%)	30 (12.82%)	46 (19.01%)	10 (10.87%)	66 (17.19%)
Who is the person that decides who does the shopping in the household?					
➢ Me	252 (52.94%)	130 (55.56%)	122 (50.41%)	46 (50.00%)	206 (53.65%)
➢ Someone else	10 (2.10%)	8 (3.42%)	2 (0.83%)	2 (2.17%)	8 (2.08%)
➢ Me with somebody else	214 (44.96%)	96 (41.03%)	118 (48.76%)	44 (47.83%)	170 (44.27%)
By reading the food labels, you consider that you DO NOT make better decisions about purchasing the product	64 (13.45%)	34 (14.53%)	30 (12.40%)	14 (15.22%)	50 (13.02%)

Table 3. Level of knowledge about food label and additives

Variables	Total n=476	Income		Studies	
		Under 300 Euro (n=234)	Over 300 Euro (n=242)	Lower level of education (n=92)	Higher level of education (n=384)
I read the label only when I buy a product for the first time	192 (40.34%)	90 (38.46%)	102 (42.15%)	24 (26.09%)	168 (43.75%)
When I look at the label I only read the expiration date	44 (9.24%)	30 (12.82%)	14 (5.79%)	24 (26.09%)	20 (5.21%)
I do not trust the information on the product packaging	108 (22.69%)	72 (30.77%)	36 (14.88%)	40 (43.48%)	68 (17.71%)
I do not read the information on the product labels before I purchase them	22 (4.62%)	20 (8.55%)	2 (0.83%)	8 (8.70%)	14 (3.65%)
The information on the label is hard to understand	304 (63.87%)	160 (68.38%)	144 (59.50%)	62 (67.39%)	242 (63.02%)

Table 4. Factors associated with label reading

Variables / OR and CI	People with incomes less than 300 Euro (n = 234) vs. People with incomes over 300 Euro (n = 242)	Confidence intervals 95%	People with a lower level of education (n = 92) vs. People with a higher level education (n = 384)	Confidence intervals 95%
By reading the food labels, you consider that you do not make better decisions about purchasing the product	0.60	0.32 – 1.15	0.41	0.16 – 1.03
I read the label only when I buy a product the first time	0.89	0.60 – 1.31	0.41**	0.23 – 0.71
When I look at the label I just read the expiration date	1.30	0.60 – 2.80	6.43***	2.94 – 14.06
I do not trust the information on the product packaging	1.89*	1.15 – 3.12	3.02**	1.70 – 5.38
I do not read the information on the product labels before I purchase them	10.39**	2.24 – 48.11	1.37	0.41 – 4.58
Is difficult to understand information on the label	0.73	0.49 – 1.09	1.12	0.65 – 1.92
Low education level	1.68*	1.01 – 2.85		

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

the product labels before purchasing them (OR = 10.39, 95% CI: 2.24-48.11). People with a lower level of education read the label only when they buy a product for the first time (OR = 0.41, 95% CI: 0.23-0.71) and do not trust the information on the product packaging (OR = 3.02, 95% CI: 1.70-5.38). People with lower level of education have lower incomes (OR = 1.68, 95% CI: 1.01-2.85).

Discussion

Through this study, we intended to identify the risk profiles of the consumer profile regarding the frequency of consultation of the food label, the degree of understanding of the informational content of the label and the importance of the functional features of the labels in making informed purchasing decisions. Thus, we identify low income individuals with an average level of education who do not trust the information on the packaging of food, do not read the information on the packaging.

In a study conducted in 2004 by Hawkes, it was found that labeling has an impact on diet (14), and increased use of food labels has been associated with healthier food behavior patterns, as well as motivating food choices (15).

Bender and Derby (16) reported that in the 1990 Diet and Health Survey, one-third of consumers said they had changed their decision to buy a product after consulting information on the nutrition label. The same authors note that in another 1995 study, nearly 48% of consumers reported having changed their purchasing behavior due to reading information from nutritional labels.

In a study led by Ababio et al. (17) the results showed that the most important factors influencing the choice of respondents with regard to packaged foods were the expiry date (4.88), the nutritional information (4.45), the ingredients (4.35), taste (4.33), aspect (4.10), similar results obtained by Mahgoub (18) reporting that nutrition information was the main criterion in the food purchase decision.

Goyal et al. (19) in a study conducted in 2018 on a sample of 838 respondents, reported that only 9.3% of consumers claimed to use label information when shopping, also in the same study reported that while consumers check the labels, they do not necessarily understand what they are reading. Half of the world's consumers said they were only partially aware of nutrition labels on food, and 60% of Asian-Pacific citizens are leading the world in this lack of understanding, followed by Europeans (50%) and American Latins (45%). In the study conducted by Goyal (19), 57.7% of consumers "do not understand" food labels, while 39.7% "partially understand" information on food labels.

In our study 4.62% of the surveyed population do not read the information on the product labels before purchasing them. However, 95.38% of the subjects read the labels, these do not contain all health-related information. There are still products in Romania e.g. mineral waters which label do not show the fluoride content, a mineral extremely important regarding human teeth and bones strength (20).

The main purpose of nutrition labeling information is to help consumers identify and choose food products that contribute to a healthy diet. Consequently, the nutrition labeling education strategy should be integrated into wider nutrition and health education change strategies to help consumers overcome the gap between current dietary practices and dietary recommendations. Information does not lead to behavioral changes unless it can overcome the counterbalance of psycho-social, behavioral and environmental barriers. The underlying problems include lack of adequate nutrition and knowledge education and inappropriate communication to final users. This can be a behavioral risk factor along with other lifestyle factors, especially for at-risk groups such as women in pregnancy or chronic illness (21).

The most commonly mentioned labeling information was the list of ingredients, expiry date and nutritional information. Consumers have been motivated to read information on labeling through the need to know the characteristics of the food products in question, health awareness, the preference of some food ingredients, the appearance or design of the packaging, etc. It was also found that there were circumstances where consumers did not read food labels because they were hurrying (time constraints), bought routine / known food, or food that was sold at lower prices. The study also highlighted some consumer difficulties in reading and using information on food labeling, including the reduced font size and technical / scientific language.

One solution to the non-specialist understanding of labeling of food products would be to use traffic light food labeling. This solution of labeling would ensure the understanding of highly specialised information

usually provided by the label and help buyers choose healthy products (22).

The labeling process can be formalized (23, 24) in order to be understood by other people who have no interaction with this very important process for our health.

Conclusions

This study has shown that awareness and use of pre-packaged food labeling information is low among consumers in Mures County. The results showed that only a quarter of surveyed respondents had a high awareness of food labeling. The workplace, level of education of the respondents have proven to be significantly associated with the awareness and use of information provided on pre-packaged food labels.

Conflict of Interest

The authors have no conflicts of interest to declare.

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