

## Safety of dairy products in the light of consumer surveys

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### Abstract

The aim of the reported study was to determine the level of knowledge and awareness of consumers regarding the safety of dairy products. The perception of dairy products safety was evaluated through diagnostic survey among 206 respondents from the Warmia and Mazury Province and the Mazowieckie Province selected for the survey with the convenient sampling method. Obtained results demonstrate that consumers' knowledge about safety of these products is scanty, but show also that the safety level perceived by consumers is unsatisfactory. It would, therefore, be advisable to undertake actions aimed at increasing consumer awareness concerning the safety of dairy products.

**Keywords:** dairy products, safety

### Introduction

There are many definitions and interpretations of food safety and food security (Leśkiewicz, 2012). Pursuant to the Act of 2006, food safety is defined as “*all conditions that need to be met regarding in particular: additives and aroma compounds, levels of*

*contaminating substances, pesticide residues, conditions of food irradiation, organoleptic properties, and actions which need to be undertaken at all stages of food production and turnover – to assure the health and life of man” (Dz.U. z 2006 r. nr 171 poz.1225).*

In turn, food security is defined as creating possibilities and ensuring supplies of food products of appropriate quality and in appropriate quantity to the population of a given territorial unit (Leśkiewicz, 2012).

According to Schejtman and Małysz (2009), however, food security may only be assured by meeting conditions linked with:

- physical availability of food – defined as satisfying the physical demands by the state food economy and by additional import of foods;
- economic availability of food – defined as the access to staple food by the poorest households;
- wholesome correctness of each food product and food ration consumed, which is tantamount with food being free of any contaminants and providing the basic caloric value and appropriate ratios of nutrients.

Apart from the aforementioned definition, worthy of notice is also the nutritional safety denoting the appropriate level of nourishment through providing adequate levels of energy, protein, vitamins, minerals, and other dietary constituents to all members of households (Weingärtner, 2004).

## **Aim**

The aim of this study was to determine the level of knowledge and awareness of consumers regarding the safety of dairy products. Specific objectives included determinations of:

- the level of knowledge of consumers regarding the quality and safety of dairy products,
- consumer satisfaction of the current safety level of dairy products,
- sources of consumer information about the safety of dairy products,
- observations of consumers concerning safety claims provided on food package,
- consumer opinion on the quality assurance systems implemented in dairy processing plants,
- consumer opinion on the control over dairy products manufacture and turnover.

## Methodology

The survey was conducted in 2015 among 206 respondents (150 women and 56 men) originating from the Warmia and Mazury Province and Mazowieckie Province, selected with the convenient sampling method. It was carried out with the method of diagnostic survey based on a questionnaire available in the Internet and presented in the paper form to the respondents. The internet version of the questionnaire was completed by 142 and the paper one by 64 respondents.

Collected data was analyzed with descriptive statistics and Chi<sup>2</sup> test using Microsoft Excel calculation sheets.

## Results

Respondents had to express their opinions on various issues addressed in the questionnaire. In the first question, they were asked to estimate the level of their knowledge about the safety and quality of dairy products.

Table 1 Self-perceived knowledge of respondents concerning the safety and quality of dairy products

Self-perceived knowledge of respondents about:		n	%
Safety of dairy products	I know a lot, I am interested in this subject	13	6.3%
	I know much	70	34.0%
	I know a little	111	53.9%
	I do not know anything, I am not interested in this subject	12	5.8%
Total		206	100.0%
Quality of dairy products	I know a lot, I am interested in this subject	87	42.2%
	I know much	95	46.1%
	I know little	15	7.3%
	I do not know anything, I am not interested in this subject	9	4.4%
Total		206	100.0%

*Source: own study*

It may be concluded from Table 1 that respondents perceived their knowledge about the quality of dairy products as advanced. As many as 42.2% of the surveyed persons claimed to have significant knowledge about it as a result of their special interest in this issue. In contrast, in the case of dairy products safety, such a high level of knowledge resulting from special interest in the subject was declared by only 6.3% of the respondents. The statistical

analysis of results confirmed differences in the level of respondents knowledge about safety and quality of dairy products. The empirical value of  $\chi^2$  reached 132.1 and was higher from the tabular  $\chi^2$  (7.78) read out at  $df=3$ .

Opposite observations were made regarding the low estimation of own knowledge about the discussed issues. Subjective opinions on little knowledge about the safety of dairy products were expressed by as many as 53.9% of the respondents, whereas about the quality of these products – by only 7.3% of the respondents.

Another question concerned satisfaction of the respondents from the level of safety of dairy products available on the market. Replies collected should force the Polish dairy industry to undertake actions regarding discussed products or to introduce widely-understood education in this respect, because most of the respondents (87.4%) provided negative answer to this question. Barely 12.6% of the surveyed persons were satisfied with the safety level of Polish dairy products.

In the third question, the researchers asked about sources of information on dairy products safety. The respondents could choose maximally two from the six available answers. The percentage of particular variants answered was presented in Figure 1. The most significant source of information turned out to be the Internet (29.6%), followed by tv and radio (22.0%). The other sources were less significant in this respect. It may, thus, be concluded that no other means but media should be used to disseminate knowledge about the safety of dairy products.

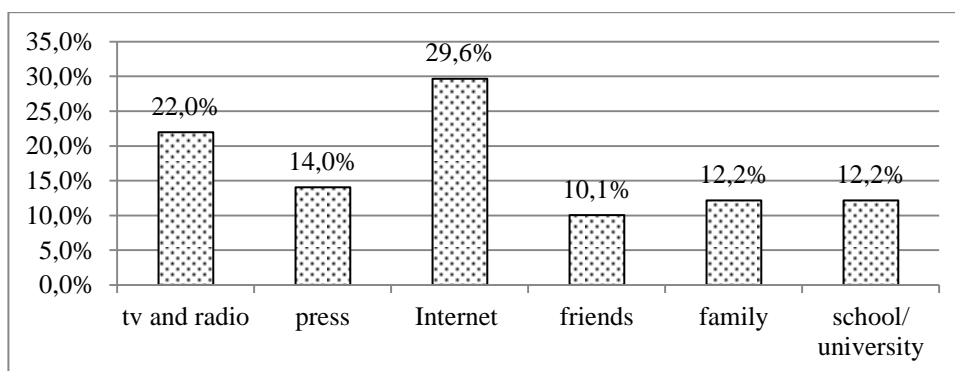


Figure 1 Sources of information about the safety of dairy products

*Source: own study*

Furthermore, persons connected with food sciences were distinguished from the study group. These were 63 respondents whose answers differed significantly from the answers given by the other surveyed persons (fig 2).

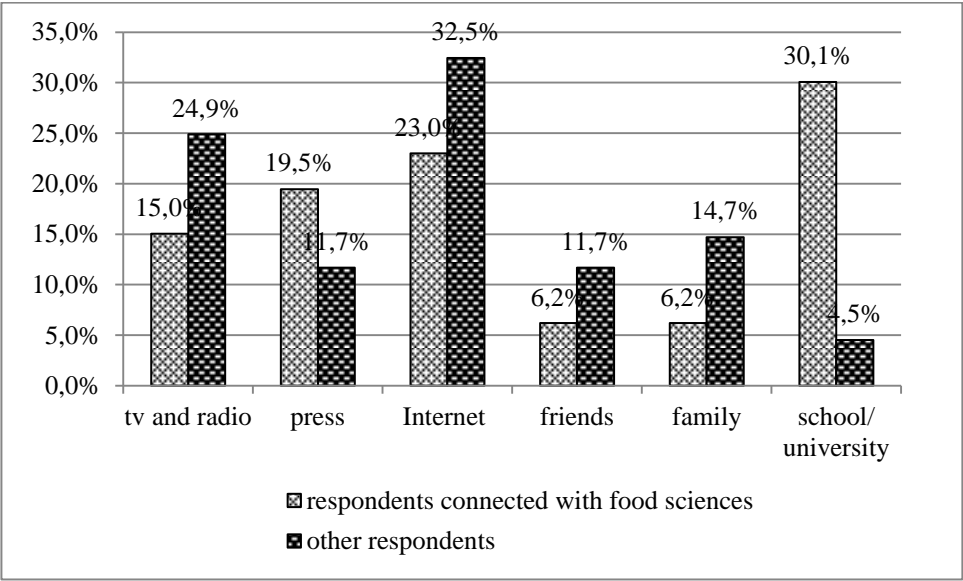


Figure 2 Sources of information about the safety of dairy products depending on respondents connection with food sciences

Source: own study

As expected, persons connected with food sciences indicated school/university to be the main sources of information about the discussed issues (30.1% of answers), while the Internet was only the second source in this respect (23.0%). This confirmed findings reported from the study conducted by Ziarno et al. (2014) in which persons specialized in the issues of food and human nutrition indicated school and Internet as the main sources of their knowledge. Likewise, as claimed by Byrd-Bredbenner et al. (2007) and Sanlier et al. (2011), the level of education has a significant effect on consumer awareness and knowledge, but they are also determined by other sociological factors. In turn, respondents not connected with food sciences indicated mainly the Internet (32.5%) as well as tv and radio (24.9%) as the main sources of their knowledge about dairy products safety.

Another question concerned paying attention to safety claims regarding dairy products displayed on their packages. Answers of the respondents varied. Over half of them (52.4%) expressed concern over safety claims on packages, whereas 47.6% of the surveyed group declared to pay no attention to them while doing shopping. In addition, more attention to information displayed on food packages was paid by the respondents connected with food sciences (68.6% of the studied group).

In consumers opinion, a very important premise indicating the safety of a food product is its best-before date. Results of our study confirm findings reported by Tworko (2005), according to which also half of the respondents (59%) were always checking the best-before date during shopping. Even greater significance of the best-before date in food safety assessment was confirmed by Krasnowska and Salejda (2008), because as many as 79% of the respondents surveyed in their research declared to pay attention to it.

Almost one third of the respondents (29.6%) claimed the obligatory systems (GHP/GMP and HACCP) implemented in dairy processing plants in the whole country to be a sufficient form of safety control. The other respondents had no definite opinion about that. The study showed that 14.1% of the respondents strongly questioned the sufficiency of these systems, and over half of the respondents (56.3%) stated they were unsure whether these systems are satisfactory. Most likely, they had insufficient knowledge about food safety assurance systems and their functioning in practice.

Afterwards, the respondents were asked whether non-obligatory systems for quality assurance, like e.g. ISO 14000 (System for environment management), ISO 22000 (System for food safety management) and other implemented systems contribute to:

- improved quality,
- increased safety,
- increased competitiveness of a food product,
- positive reception of the marketing offer.

Data collected in this part of the questionnaire indicate that, in the opinion of respondents, the non-obligatory systems for quality assurance had the greatest effect upon product safety increase (69.4%) and product quality improvement (61.7%). Almost 62% of the respondents claimed such systems like ISO 14000, ISO 22000 and others to have a significant effect on product quality increase. Over a half of the respondents (53.4%) declared that they are elements of an encouraging marketing offer and promotion. In turn, according to 43.7% of the surveyed persons, the non-obligatory systems contribute to increased competitiveness of a food product on the market.

At the end, the respondents were asked whether increasing the number of controls of particular stages of production and turnover by specialized institution may assure the safety of

dairy products. The answer was explicitly positive (73.3%). Of opposite opinion were only 14.1% of the surveyed persons, whereas 12.6% of the respondents had no opinion about that.

## Conclusions

Results of this survey enable concluding that the self-perceived knowledge of the respondents about the safety of dairy products was unsatisfactory and definitely insufficient, whereas their knowledge about the quality of these products was perceived as high.

In addition, respondents were unsatisfied with the current safety level of dairy products.

The respondents declared the Internet followed by tv and radio as the main sources of information about safety, whereas persons connected with food sciences indicated university to be the main source of information in this respect.

Only slightly over a half of the respondents paid attention to safety claims provided on packages of dairy products.

Only one third of the respondents found the obligatory systems for safety assurance functioning in dairy processing plants to be a sufficient form of control. In contrast, in their opinion, of considerably greater significance were the non-obligatory systems.

Finally, almost three fourth of the respondents claimed that increasing the frequency of controls by specialized institutions might improve the safety of dairy products.

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