Risk Communication in Food Products: Case of Milk in Adana

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Abstract: In this study, it is aimed to carry out research into people living in Adana province about risk communication in milk consumption. For this reason, randomly 384 people were selected for face to face interview to collect data about their main information sources at milk consumption. As a result, it is found out that the majority of respondent trust information about risks in milk consumption when provided from doctors and scientist. About 58% of the respondents stated that they consume street milk because it is cheaper than pasteurized, home delivery and better taste. The survey results showed that the respondents considered food poisoning, bowel infection, digestive problems and additives as the most possible health problems when consuming milk. Unfortunately, 18 % of participants did not complaint anywhere when they had problems after milk consumption. Only 6% of them made call "ALO 174 Food Line" to inform the Ministry of Food, Agriculture and Livestock about problems with milk. There was no relation between amount of milk consumed with number of children.
Keywords: Milk, Adana, Risk, Risk Communication.

INTRODUCTION

Nutrition is one of the main needs of human beings and they have a right to have safe food to continue their life. Food safety is a strategic problem all over the world. Nowadays, to feed the increasing world population, unfortunately producers use hormones, pesticides and additives in their products. Many risks are invisible and sometimes consumers have no idea what they consume.

The public has become increasingly concerned about the risks associated with food [1]. Many different psychological factors, ethical concerns, trust and distrust (in scientific institutions, risk regulators and information providers) and perceptions of social exclusion from risk management processes, influence public risk perceptions [1-3].

Two major dimensions have emerged as being important in determining trust. The first is that of competence, the expertise held by the communicator and the extent to which they are able to pass on information about a particular subject area. The second is honesty, the extent to which a communicator will be truthful in communication of information [1,4]. Trust appears to be linked to perceptions of accuracy, knowledge and concern with public welfare. Distrust is associated with perceptions of deliberate distortion of information, bias, and having been proven wrong in the past. Sources that are perceived to be over-accountable, or protecting a vested interest, are unlikely to be trusted [1,5].

Most recently, researchers are interested in risk communication [1,6-20]. It is defined as a process of communicating responsibly and effectively about the risk factors associated with industrial technologies, natural hazards, and human activities [21,22]. Effective risk communications require authoritative and trustworthy sources [23,24]. Trust and credibility in risk communications are determined by knowledge and expertise, openness and honesty, and concern and care [25]. The efficacy of risk information depends on several factors, including the level of receivers' trust in the sender, prior knowledge about risk information, clarity of information, and the role of unofficial risk information messengers such as unofficial local opinion leaders, the media, networks of family members, and neighbors [26,27]. Risk communication can be broadly understood as an iterative exchange of information among individuals, groups, and institutions related to the assessment, characterization, and management of risk [28].

The European Food Safety Authority (EFSA) has recommended that the risks associated with drinking raw milk should be better communicated to consumers. Also stated that there was a clear link between the consumption of unpasteurized milk and a long list of illnesses with potential severe health consequences in some individual patients [29].

Milk and milk products are excellent sources of daily nutrition [30]. Unfortunately, Turkish consumers do not consume enough milk when compare to most developed countries. There have been many studies conducted about consumer preferences, behavior and factors effecting the consumption of milk in Turkey [30-39]. However, consumers' risk perception and the information sources about milk safety and illnesses do not studied in deeply. Thus, the aim of this paper is to provide information of consumers' perceived risks and information sources about risks and illnesses about milk they consume. Also their purchasing behavior toward milk consumption analysed.

MATERIALS AND METHODS

Data came from a pre-tested consumer survey conducted by researchers in Adana, the largest province on the Mediterranean region of Turkey. The questionnaire was pretested with 30 consumers. In this study, a 8 page questionnaire was used to collect information from households. Questions were related to regarding the respondents' milk consumption, health concerns, information sources about milk risks, factors' affecting purchasing behavior and demographics. By using a simple random sampling method, adequate sample size was determined as 384 households who live in city center of Adana province. The questionnaire was consisted of 4 parts. The first part of the questionnaire was related about demographic variables. The second part was related to the importance of milk attributes on purchase behavior. In this part, the respondents were asked to rate, on a 5-point Likert-type where one represents unimportant and five very important. The third part was related to the probability of illnesses when consume milk. In this part, data were also collected with 5-point Likert-type scale where one very probably not, four very probably and five no idea. The fourth part of the survey was dealing with the information sources about risks and illnesses about milk. Also 5-point Likert-type scale was used in this part, where one never and five always.

$$n = \frac{p.(1-p)}{(e/Z)^2}$$

Where;
n = the sample size
p = the frequency of the opinion of the examined event
e = the margin of error rate
z = the confidence intervals

The sample size, which is calculated with a 95% of confidence interval, is 384 consumers.

RESULTS AND DISCUSSION
Consumers' Characteristics and Purchasing Behavior

Respondents consisted of 53% women and 47% men. Sixty one percent of the respondents were married and 35% had a high school diploma. Only 18% had a university degree and 86.2% had at least one child. The age was ranging from a low of 18 years to a high of 62. Mother is the primary food shopper (68%) and milk shopper (75%) in the households. More than half of the respondents (52%) had no job, mainly housewife. According to results, 37% households devoted approximately 201-350 TL of their total income to total food consumption. About 37% of the respondents stated that main reason for purchasing milk was to drink, 38% to make yoghurt, 16% to bake cake and only 9% to prepare baby food. About 58% of the respondents stated that they consume street milk because it is cheaper than pasteurized, home delivery and better taste. In addition, 30% of the respondents who bought street or open-air market milk mentioned that they are getting from parents (probably free) from farms. Even though respondents' mentioned that they consume milk every season, winter season is higher (25%) that the other seasons. Respondents' main package preference was paper (58%) because it is easy to find and healthy. No relation was found between number of child and the amount of milk consumed. However, income level, education level and presence of child were the biggest influencing factors when purchasing flavored UHT milk.

So many attributes of product has an affect on consumers' purchasing behavior. For this reason, in this study respondents were asked to rate the importance of the milk attributes on their purchase behavior. According to survey respondents, hygiene, production and expiration date, freshness, reliability and inartificiality were considered to be five most important factors affecting purchase decisions of milk (Figure-1). Even though more than half of our respondents (58%) consume street milk, these results show that actually they give more attention to safety of milk instead of price. As seen from the Figure 1, advertisement and promotion had found the least important attributes when it comes to milk consumption.

Table-1: Respondents' monthly household income, monthly food expenditure, monthly milk consumption, milk price and number of child

|	Definition	Percentage in (n=384)
Household monthly income		
Low	846 TL ≥	10,3
	847-1500 TL	54,9
Medium	1501-2500 TL	22,1
	2501-4000 TL	9,1
High	4001 TL ≤	3,6
Household monthly food expenditure		
Low	100 TL ≥	5,5
	101-200 TL	24,2
Medium	201-350 TL	37,0
	351-500	17,2
High	501 TL ≤	16,1
Average milk consumption		
Street or open-air market milk	16 kg	
Pasteurized milk	9 kg	
Flavored UHT milk	6 kg	
Average milk price		
Street or open-air market milk	1,50 TL	
Pasteurized milk	2,50 TL	
Flavored UHT milk	5,00 TL	
Number of child		
None child		13,8
1 child		36,7
More than 1 childs		49,5
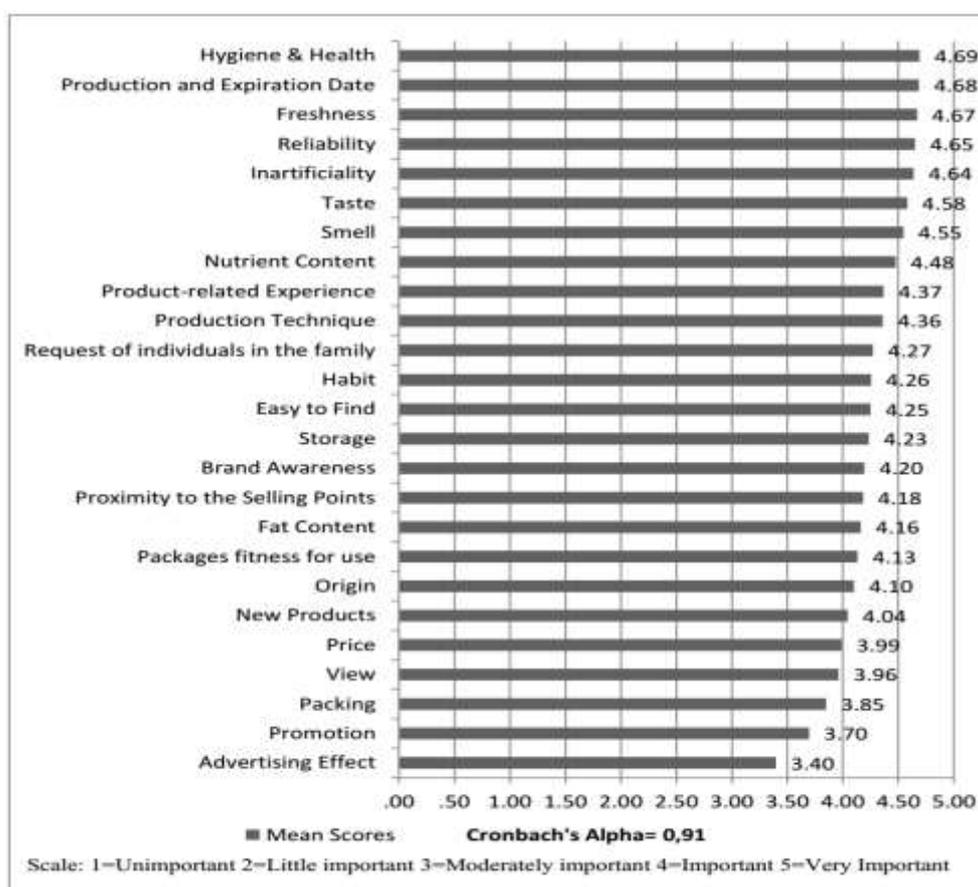
Fig-1: The importance of milk attributes on purchase behavior

People can face a wide variety of illness when consume milk and milk products, especially raw milk. People are more concern about milk and milk products after milk scandal in China, in 2008. Also, in 2013 China has halted imports of some New Zealand milk powders. The survey results showed that the respondents considered food poisoning, bowel infection, digestive problems and additives as the most possible health problems when consuming milk

(Figure-2). Bozoglu *et al.* [30] also found that food poisoning, spoilage and additives as the most important hazards to dairy products. For 6 years Ministry of Agriculture and Livestock provides a service, which is called "Alo 174 Food Line" for consumer to complain damaged or unhealthy food to the government, in Turkey. In this study it is found out that the use of this line was very low, only %6.
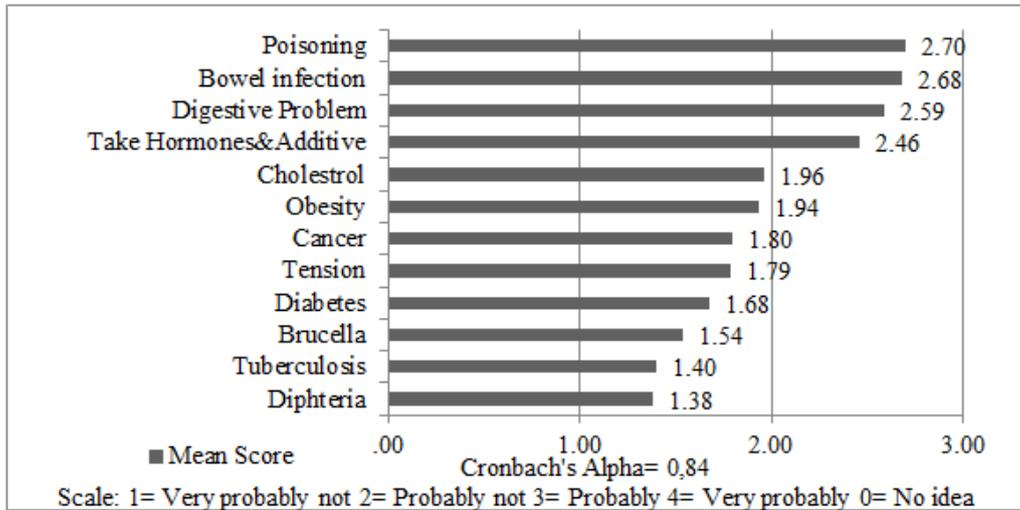

Fig-2: The possibility of health problems of milk

People require correct information about what they consume and their risks. Nowadays, false and inaccurate information (disinformation) is a very big problem not only in Turkey but also in all over the world. Turkish Food Safety Association [40] declared that unfortunately misinformation has been disseminated by persons that hold no expertise in food. At this part of the research respondents were asked to rate trust of their information sources when they face health risks about milk consumption (Figure-3). As seen from the Figure 3, luckily our respondents obtained

information mainly from the doctors and scientists. Consumer organizations also rated as an important information source. Eventhough mass media and internet use very high in our decade at this point respondents indicated that they did not trust when it comes to health risks about milk. There was no relationship between education level and the trust to doctors and scientists. For each educational level doctors and scientists were the most trustworthy sources.
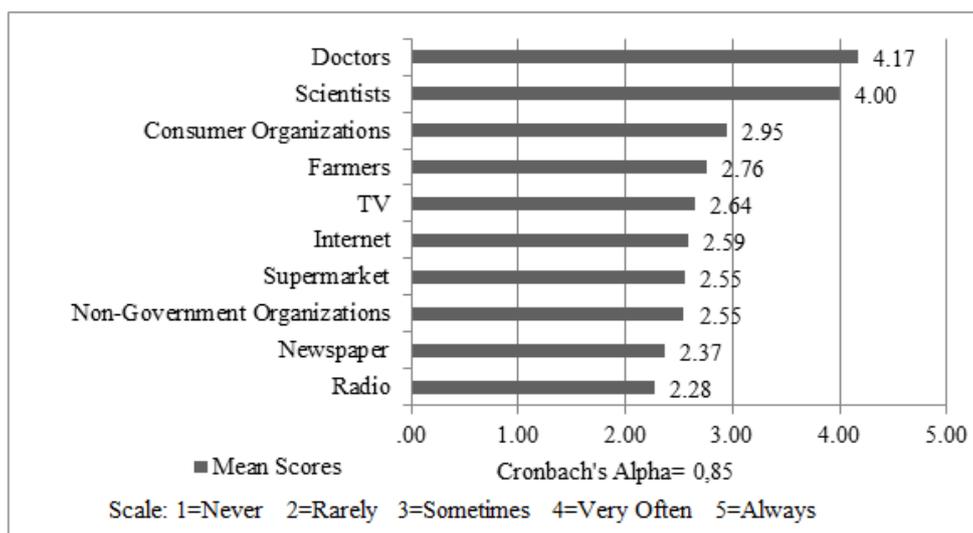

Fig-3: Use of information sources about health risks of milk

Consumers are looking for more and more information about food and require reliable advice from information sources. They do not know which information to trust. They can face false and misleading information with every source. When they battle with misinformation, they use different sources at the same time. The questionnaire also included questions to use of information sources depend on milk process, market conditions and also curiosity. As seen from the Figure-4, respondents use five different sources depend on topic. Internet, television, radio, newspaper and scientific meetings have been used at different frequency level based on topic. Fortunately, respondents' prefer to get information mainly from scientific meetings. They also use other sources. When we looked at the relationship between the use of information sources and some demographics, we found that women were using internet more than men about milk illness. Negative correlation was found between education level and use of internet about the type of milk. When education level increased the level of use was decreased.
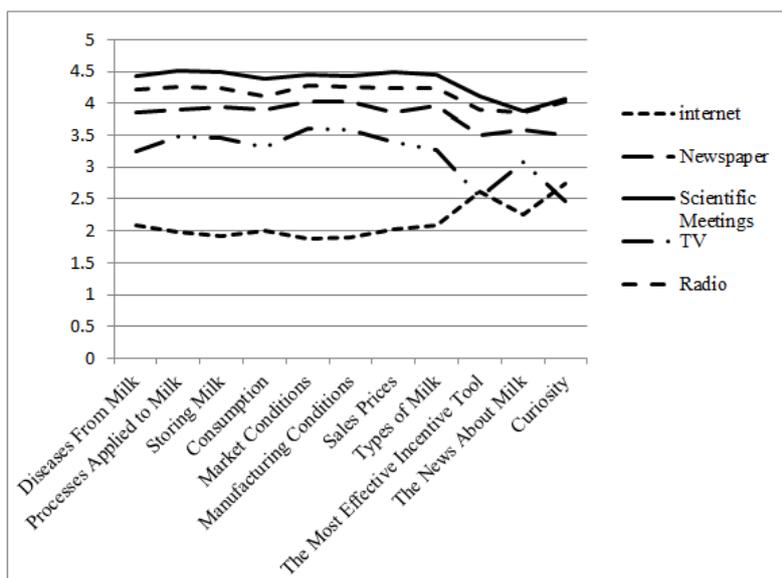

Fig-4: The Use of Communication Tools

CONCLUSION

According to Bozoglu *et al.* [30 about half of Turkey's milk production is marketed unprocessed or under unsafe conditions by street vendors and majority of respondents' (%70) in their research, mainly purchased milk and milk products directly from farmers or at open-air markets. In this study we found that also our respondents' had mainly purchase from street or open-air markets because it is cheaper (1.50 TL) than processed fluid milk (2.50 TL). Not only street milk but also pasteurized milk can cause a variety of illness. Public should be informed about safety, nutrition and health attributes of milk. Every information source has a different effect on public. Greater volumes of information can often help people to understand issues and increase awareness about milk and milk production. But it can also expose people to misinformation.

Food is an indispensable part of human life and therefore, negative and inaccurate news disseminated in this regard create a negative influence on consumers and irrational changes in their behaviors. Combating misinformation requires the enactment of scientifically oriented legal arrangements [40]. False and misinformation can cause unnecessary anxiety among people. Also food sector can be affect negatively because of wrong news served by information sources.

Information sources have a great effect on people behavior change. So this power should be used to educate people and behavior change on a positive way. Risk communication for consumers should be developed to provide true, accurate and timely information.

People are encouraged to use "ALO 174 Food Line" to complain damaged, unhealthy food and also disinformation. The information about the risks and treats about foods which provided by mass media should be control heavily and punishments should be given if they provide wrong or incomplete information. More studies should be conduct about the trustworthiness food and health news which provided by mass media.

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