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Consumers concern about food safety parameters: A health perspective

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Abstract

Globally, the incidence of food borne diseases is increasing and international food trade is disrupted by frequent disputes over food safety and quality requirements. Many food control systems need to be revised and strengthened if improvements are to be realized. It has never been more important for developing countries to implement and enforce a food control system based on the modern concept of risk assessment. Primary data was collected by interviewing 200 consumers (NDRI, Karnal and GADVASU, Ludhiana milk parlor), who were the regular consumers of the milk products in the two distinct areas of northern India to find out their food safety concerns. The results revealed that consumers are concerned about different food safety parameters like hygiene, safety, freshness, assertiveness etc. Different food safety parameters are further subdivided into different categories to find out the consumers concern regarding food safety in purview of their health perspective. The data proposed the inclusion of food safety parameters wisely in the food value chain system.

Keywords: Concern, quality, safety, parameters, perspective

Introduction

Chemical residues in/on foods have become a growing concern for consumers [Food Marketing Institute (FMI) 1990^[2]; National Restaurant Association (NRA); Zind]. With the improvement of living standards, consumers have become increasingly concerned about health and general physical well-being. Moreover, the increased use of chemicals in agriculture (Taylor, 1994; Runge *et al.*, 1990)^[6, 4] has heightened consumers' concerns regarding the health hazards of chemical residues in/on foods. The general public ranks pesticides and other chemical residues as the most serious food health hazard to society (FMI, 1994)^[2]. Risk information provided by the media and the enhanced ability to detect residues in food also have contributed to these deepening concerns. Past studies have shown that concerns about pesticides and nutrition have affected consumers' preferences and food consumption patterns, but little research has been conducted to quantify the effects of these concerns on the consumption of fresh produce items.

Food safety is everybody's concern, and it is difficult to find anyone who has not encountered an unpleasant moment of food borne illness at least once in the past year. Food borne illnesses may result from the consumption of food contaminated by microbial pathogens, toxic chemicals or radioactive materials. Food allergy is another emerging problem. While many food borne diseases may be self-limiting, some can be very serious and even result in death. Ensuring food safety is becoming increasingly important in the context of changing food habits, popularization of mass catering establishments and the globalization of our food supply. As our food supply becomes increasingly globalized, the need to strengthen food safety systems in and between all countries is becoming more and more evident.

The growth of the population worldwide and awareness of cleanliness of food production has risen and are forcing public and private sector to practice hygienic food production. This is where the food safety standard plays their roles in order for the food industrial to obey the rules. Consumers concern on the quality and safety of food occurs from the illness increment reported every year. World Health Organization (WHO, 2014)^[8] reported that more than 90% of human exposure is through food, mainly meat and dairy products, fish and shellfish. Moreover, studies conducted by Hartman (2005) showed that consumers concern for the safety food; especially in animal proteins are high. Besides the diseases and illness, consumers' perceptions on food safety have decreased due to many quality control programs (Trienekens and Zuurbier, 2008)^[7]. Trienekens and Zuurbier, 2008^[7] claimed that the USA quality assurance systems had many approached programs. For example, safe production methods and physical health of animals on the farm has been emphasized besides traceability and animal welfare, while in European Union (EU) has many food safety legislation differences between countries and making trade complicated.

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Materials and Methods

The ex-post facto research design was used in conducting the present investigation. The present study was carried out in ICAR-NDRI, Karnal and GADVASU, Ludhiana milk parlor of Northern India as the people visiting these institutes were regular consumers of dairy products. The study population comprised 100 consumers from each milk parlor of the institute who have visited regularly for purchase of food products. Thus a total of 200 respondents were selected for the investigation. A structured and pre-tested interview schedule was used to collect the information from respondents regarding food safety parameters. Most important food safety parameters were selected on the basis of primary investigation. These parameters were further sub-divided into different categories based on consumers concern. Consumers food habit pattern were also given importance as the data has shown variations regarding food habit pattern. Data collected were statistically analyzed with the help of frequency, percentage and mean.

Results and Discussion

Data in the Table - 1 indicated that majority (89.74%) of the Young respondents were vegetarian (89.74%) followed by 72.71 percent Adult respondents and 50.00 percent of Old respondents. Overall consumers were divided into three categories i.e. Young (up to 35 yrs), Adult (35-50yrs) and Old (>50 yrs.). Food habit change is generally the changing of food intake pattern of the respondents in the last five years. The data level in the table indicated that majority of the Young respondents (80.76%) have no change in their food habit. Highest percentage (12.82%) of change is observed in case of Eggetarian categories followed by Non -veg to veg (3.84%) category. Majority of the respondents are changing into Eggetarian (22.72%) as well as Vegetarian in the Adult category. Majority of the Old respondents have no change in their food habit in the last five years.

Table 1: Distribution of respondents according to food habit and food habit change (last five years)

Particulars	Categories	Respondent categories (n=200)		
		Young (n=156)	Adult (n=36)	Old (n=8)
Food habit	Vegetarian	89.74	72.71	50.00
	Non-vegetarian	10.26	27.29	50.00
Food habit change	Vegetarian to Non-Vegetarian	2.56	13.63	0.00
	Non-vegetarian to Vegetarian	3.84	9.09	0.00
	Eggetarian	12.82	22.72	0.00
	No Change	80.76	54.54	100.00

Table - 2 indicated different food safety parameters and their sub-division base on the consumer's response. We have taken eleven most relevant parameters as indicated by the consumers. We have divided each safety parameters into three

categories. Sub categories of the food safety parameters were taken based on the consumer's primary response. Data were taken base on the different subcategories of the food safety parameters.

Table 2: Sub-division of food safety parameters based on consumer's response.

Food safety Parameters	Consumers Response Categories (n=200)		
Hygiene	Appearance	Shelf life	Clean
Risks in agriculture	Disease	Pests	Chemicals
Risks in Animal	Mastitis	Antibiotics	Heat stress
Biological Hazards	Bacteria	Virus	Molds/Parasites
Chemical Hazards	Pesticide Residues	Veterinary Drugs	Preservatives
Freshness	Surface clean	Better nutrition	GMO free
Risky Foods	Junk foods	Expired foods	Fermented foods
Symptoms	Allergy	Headache	Vomiting
Responsibility	Traceability	Ethics	Reduce wastage of food
Organic Production	Fewer Pesticides	Better Nutrition	GMO free
Assertiveness	Originality	Quality	Raw Materials

Results revealed that Table - 3 majority of the consumers identified shelf life (51.50%) as the main indicator of safety parameter. Different chemicals (36.00%) used in agriculture are rated as the most limiting factor in judging food safety. In animals majority of the risk associated with food safety were basically due to the excessive use of the antibiotics (39.50%). in terms of biological and chemical hazards, Viruses (53.00%) and pesticide residues (39.00%) were given the most importance. Freshness of the food was judged by its nutritional quality (43.00%) by the consumers whereas consumers have identified expired foods (44.50%) as the most

risky foods. Symptoms like headache (43.00%) were mostly identified by the consumers as a hazard of food safety whereas ethics (41.50%) during purchasing were mostly identified by the consumers as a responsibility measure. Organic production generally demands better nutrition (51.50%) by the consumers whereas assertiveness solely focuses on the quality (47.50%) of the food product. These findings were in line of Sabbe *et al.*, (2009) [5] who found that expiry date is commonly used by consumers as an indication of freshness, shelf life and food safety across a range of foods.

Table 3: Sub-division of food safety parameters based on consumer's response.

Food safety Parameters	Consumers Response (Frequency & Percentage) (n=200)		
Hygiene	43(21.50%)	103(51.50%)	54(27.00%)
Risks in agriculture	62(31.00%)	66(33.00%)	72(36.00%)
Risks in Animal	72(36.00%)	79(39.50%)	49(24.50%)
Biological Hazards	48(24.00%)	106(53.00%)	46(23.00%)
Chemical Hazards	78(39.00%)	52(26.00%)	70(35.00%)
Freshness	69(34.50%)	86(43.00%)	45(22.50%)
Risky Foods	68(34.00%)	89(44.50%)	43(21.50%)
Symptoms	60(30.00%)	86(43.00%)	54(27.00%)
Responsibility	74(37.00%)	83(41.50%)	43(21.50%)
Organic Production	51(25.50%)	103(51.50%)	46(23.00%)
Assertiveness	59(29.50%)	95(47.50%)	46(23.00%)

Conclusion: A number of food control issues are currently being debated at the national and international levels, regarding for example pathogenic microorganisms, allergens, genetically modified foods, contaminants (including pesticides), irradiation and nutrition labeling. These are important and complicated matters that require attention. The control issues are at various stages of resolution and considerable effort will be required to resolve them in a scientific, practical and uniform manner. Industry recognizes that consumers play an active, important role in the food control process through their participation in the standard-setting process and discussions on scientific and technical issues. International bodies such as the Codex Alimentarius Commission can contribute to understanding the issues and to achieving rational standards. The food industry has an essential role in the resolution of these food control issues because of its vested interest in the safety and marketing of foods. Further, because of its extensive scientific and technical resources and experience with these issues, the food industry can make important contributions towards their understanding and resolution. Lastly, for the same reasons, the food industry's communications capabilities can benefit public understanding of the complex nature of the many issues that arise.

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