

# *Food Safety Satisfaction and Influencing Factors among Residents in Wuhan, China*

Xiaosheng Lei\*  
Hubei University of Chinese Medicine  
Wuhan, China  
xslei@hbtcem.edu.cn

Fang Wang  
Hubei University of Chinese Medicine  
Wuhan, China

**Abstract—Objectives:** Ensuring food safety is an important precaution against food-borne disease. In this study, we aim to assess satisfaction of food safety and its influencing factors among residents in Wuhan, China. **Methods:** Questionnaire survey was conducted among residents randomly selected from 4 districts of Wuhan city from November to December, 2017. The total questionnaires were 301, of which 300 were valid with the effective rate of 99.7%. SPSS 19.0 software was used for data input and descriptive statistics were applied for data analysis. **Results:** It showed that the overall satisfaction of food safety among residents in Wuhan was 67.3% for basic satisfaction, 16.4% of satisfaction and 16.3% of dissatisfaction. The satisfaction of food safety supervision among residents was 67.7% for basic satisfaction, 10% satisfied and 22.3% unsatisfied. Fifty-three percent of respondents occasionally bought unsafe food. Respondent's most worried food problems were use of inferior raw materials (70.7%), food poisoning (65.7%), sanitation problems during production (65.3%), illegal use of additives (61.7%), pesticide and antibiotic residue in food (59.7%). The main reasons of food safety issues were illegal actions of food manufactures, and relevant laws and regulations were not strict enough. **Conclusions:** The overall satisfaction of food safety among residents in Wuhan is in medium level. It's necessary to strengthen the food management and improve the relevant laws and regulations to protect resident's health from food-borne diseases and enhance public's confidence and satisfaction in food safety.

**Keywords—***Food safety, Satisfaction, Influencing factor*

## I. INTRODUCTION

Food is the first necessity of the people. Food safety not only reflects the situation of "eating", but also indicates the public's confidence in the social governance. Resident's satisfaction on food safety and supervision are important indicators of food security system. According to WHO, each year about 2 million people around the world die of food-borne diseases [1]. In the United States, about 48 million people were affected by food-borne illness which resulted in 3000 deaths and 128,000 hospitalizations [2]. Africa and southeast Asia are believed to be the highest area of death rates associated with food-borne disease [1]. Thus, it is of great significance to assess satisfaction of food safety and analyze existing problems in China by survey of the public to improve the food security system and protect resident's health from food-borne diseases.

Research results of food safety satisfaction in different area of China were different. For example, according to the report of Guangzhou Social and Public Opinion Research Center in

2012, the satisfaction rate of food safety in Guangzhou was 11%, the general rate was 43%, and the dissatisfaction rate was 46% [3]. A survey in 2011 in Nanjing city revealed that the satisfaction of food safety was 11.7%, 64.6% dissatisfied and 14.7% had no concern [4]. A random survey of Shanghai and Wuxi city in 2013 showed that consumers' satisfaction with food safety was not ideal, some even pessimistic with the status of food safety [5]. In the United States, more than 80% of consumers had confidence in grocery store purchases in the past, it was down to 66% in 2007 [6]. Brewer (2008) found that as public's concern with food safety increased, so did concern with regulatory and chemical issues [7].

The study believes that there were many factors affecting food safety, including backward processing technology of agricultural products, environmental pollution in agricultural production, food additives (preservatives), food-borne diseases caused by microorganisms, genetically modified food [8]. Residues of antibiotics and other harmful substances, inferior food raw materials, deteriorating food were also threats to domestic food safety [9].

To our knowledge, no study was undertaken on the public's food safety satisfaction in Wuhan city. Therefore, this study was designed to assess resident's satisfaction of food safety and affecting factors in Wuhan. The finding of this study may provide references for regional policy makers and implementers to improve food safety supervision and prevent food-borne diseases.

## II. METHODS

### A. Study Design and Study Population

The study was a community based cross-sectional study, conducted from November, 2017 to December, 2017. The study area was 4 communities adopted in cluster sampling from Wuchang District in Wuhan city. The study population was randomly selected from residents in these 4 communities.

### B. Study Contents and Methods

In this study, we used self-designed questionnaire to collect data from the study subjects. There were two parts in the questionnaire which were personal basic situation and food safety information. The survey content of food safety information included degree of satisfaction, influencing factors, issues of food safety and countermeasures of food security management. The total questionnaires were 301, of which 300 were valid with the effective rate of 99.7%. Excel and SPSS

---

This study is supported by the teaching research project 2017355 in Hubei Province.

19.0 software were used for data input and descriptive statistics were used for data analysis.

III. RESULTS

A. Basic Situation of the Respondents

TABLE I. BASIC CHARACTERISTICS OF RESPONDENTS

Survey classified		Number of People	Percentage(%)
Gender	Male	140	46.7
	Female	160	53.3
Age	<25	133	44.4
	25-35	76	25.3
	36-45	43	14.3
	46-55	28	9.3
	>55	20	6.7
Education	Junior high school and below	45	15.0
	High school and secondary school	73	24.3
	College and undergraduate	165	55.0
	Master and above	17	5.7
Professional	Student	108	36.0
	Enterprise staff	45	15.0
	Government, institutions employees	22	7.3
	Self-employed, freelancer	91	30.3
	Other	34	11.4
Monthly income	<3000	142	47.3
	3000-5000	92	30.7
	5001-8000	48	16.0
	8001-10000	10	3.3
	>10000	8	2.7

Among the participants, 46.7% were male and 53.3% were female. 69.7% of respondents were under 35 years of age, 55% of them were college or undergraduate students. 36% of respondents were students, and 30.3% were freelancer or self-employed, which was correspondent to the personnel structure of community in survey areas (university town and business area). 78% of respondents earned less than 5,000 Yuan per month and 16% of them between 5001- 8,000 Yuan (see Table I).

B. Overall Satisfaction on Food Safety

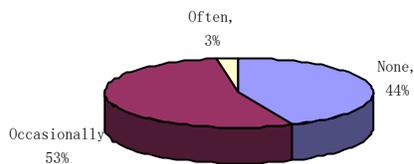


Fig. 1. Do customers buy unsafety food?

In this study, food safety refers to the fact that food consumption has no direct or potential harm to human health. Of the 300 respondents, 67.3% were basic satisfaction, 16.4% expressed satisfaction, 16.3% were dissatisfied with food safety. It showed that participant’s satisfaction of food safety was at a moderate level, which was slightly higher than the research results of Nanjing, Shandong and Guangzhou city [10-12].

Participants bought food mainly from the supermarket (79.7%), stores (47.7%), the farmer's market (41.3%), internet (33.3%), restaurants (32.3%), and food stores (29.3%). As for unsafe food, such as inferior, expired, poisonous and harmful food, 53% of respondents occasionally bought unsafe food, 44% of them hadn’t purchased unsafe food, 3% often bought unsafe food. Respondents held that the most likely food problem were from meat and meat products (59.7%), oil (40.3%), fast food and seasoning (36.3%), dairy (30.7) and rice (22.7%) . According to the survey, more than half of the participants occasionally bought unsafe food (see Fig. 1), thus strict inspection should be conducted to control potential food issues at shopping spot.

C. Satisfaction on Food Safety Supervision

67.7% of respondents were basically satisfied with food safety supervision, 22.3% of them were dissatisfied and 10%

were satisfied. The result revealed that respondent's satisfaction of food safety supervision was in the average level, and there was still room to improve food safety supervision.

When purchasing food, 90.3% (271) focused on the date of production and the guarantee period, 56% (168) paid attention to price; 53% (159) focused on the brand; 35% (106) concerned about the test certificate; 35.7% (107) concerned with ingredients and additives; only 29% (87) gave attention to the appearance of packaging (see Table II). It showed that consumer's focus on food safety factors were freshness of food, qualification, additives and ingredients, etc.

**D. Factors Influencing Food Safety Satisfaction**

1) *Major issues and causes of food safety:* Respondents were concerned about the food safety issues such as inferior raw materials (70.7%), food poisoning (65.7%), sanitation issues of production (65.3%), illegal additives (61.7%), pesticide and antibiotic residue (59.7%), and others (7.3%) (see Fig. 2). The main issues of food safety were related to human factors and technical factors.

Respondents held that the main reason for food safety issues were due to illegal acts of manufacture, relevant laws and regulations were not strict enough to offenders, lack of powerful food safety supervision, and consumers had low safety consciousness (see Table III). Based on survey results, regulation and management should be strengthened to solve the problem.

TABLE II. ISSUES OF CONCERN IN THE PURCHASE OF FOOD

Issues of concern	Number of People	Percentage(%)
Production date and expiration	271	90.3
Price	168	56.0
Brand	159	53.0
Ingredients and additives	107	35.7
Test certificate	106	35.3
Packaging	87	29.0
Others	54	18.0

TABLE III. THE MAIN REASONS OF FOOD SAFETY ISSUE

Causes	Number of People	Percentage(%)
Illegal acts of manufacture	254	84.7
Laws and regulations were not strict enough to offenders	197	65.7
Deficiency of powerful supervision	182	60.7
Consumer's poor recognition	164	54.7

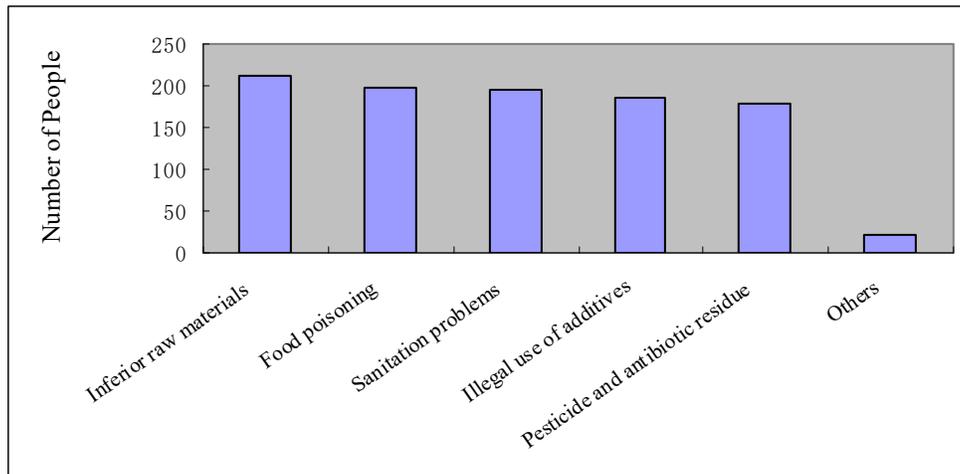


Fig. 2. Main issues in food safety

2) *Sources of information on food safety:* The participants acquired food safety knowledge from the way of television and radio (81%), internet and newspaper (69.3%), friends and relatives (57.7%), community propaganda (35%). In order to avoid food issues, the majority of respondents (68.7%) chose to eat at home instead of dining out. Half of them (50%) paid attention to media reports, selected recommended brands, and avoided buying blacklisted products. Some respondents (44.3%) purchased food from several fixed enterprises or brands. In order to ensure food safety, 43.3% of respondents avoided buying food at street

retailers and night markets.

3) *Measures to strengthen food safety management:* 86.7% (260) believed that strict supervision and inspection should be carried out. 59.7% (179) held that producers and operators must insist the principle of integrity. 65.3% (196) thought that scientific knowledge of consumption should be popularized to improve consumer's safety consciousness. 62.3% (187) believed that a public supervision system should be strengthened; 54% (162) held that typical illegal cases should be exposed to the public.

#### IV. DISCUSSION

Through the questionnaire survey, the research studied the satisfaction degree of Wuhan residents on food safety and supervision. The result showed that the overall satisfaction of food safety and supervision among residents in Wuhan was in medium level.

Based on Maslow's hierarchy of needs theory, food is the basic need of human beings and people cannot survive without food. With the development of social economy and the improvement of people's living standard, people's demand for "eating" is not only feeding the hungry, but also pursuing the safety and healthy food. The survey revealed that respondents' satisfaction on food safety in Wuhan city was in middle level, 67.3% of the respondents were basically satisfied, 16.4% was satisfied, and 16.3% was unsatisfied with food safety. The satisfaction rate in this study was slightly higher than the national average level in 2011 Chinese food safety survey [12], and higher than the research result in other city such as Nanjing, Shandong and Guangzhou [10-12]. Though food safety management has made great progress in Wuhan city, but there is still room for improvement.

In terms influencing factors of food safety, respondents concerned with issues of substandard raw materials, food poisoning, sanitation problems in production, illegal additives, pesticide and antibiotic residue. 53% of respondents occasionally bought unsafe food. Meat and cooking oil were the most concerned food safety hazard. The main causes of food safety issues are illegal acts of production, laws and regulations do not strict enough for offenders, and the deficiency of strong supervision. The ways of respondents to acquire food safety information are TV and broadcast, Internet and newspaper, friends and relatives, and community propaganda. Based on above results, correspondent measures should be taken to improve food safety management.

Food safety is a comprehensive social project, involving kinds of factors, could not be accomplished overnight. Because of large consumption of food, different specifications, many ways of supply, these increase the difficulty of regulation. So it is necessary to further deepening the reform of food security system, improve the legal construction of food safety, strengthen food safety education through various forms, set up

illegal enterprise blacklist, and implement comprehensive management of technology, environment, norms and laws.

#### V. CONCLUSIONS

The overall satisfaction of food safety among residents in Wuhan is in medium level. It's necessary to strengthen the management and improve the laws and regulations. There are multiple links of food supply chain including production, circulation and consumption. It's necessary to strengthen the management of the whole process from farm to table, control the key link, strictly set up food safety standard, improve the detection technology, strengthen the regulation of market access, and treat illegal behaviors strictly to enhance public's confidence and satisfaction in food safety.

#### REFERENCES

- [1] WHO. Report on global burden of foodborne disease. 2015. <http://www.ianphi.org/news/2015/foodborneillness.html>.
- [2] CDC. Estimates of Foodborne Illness in the United States. <https://www.cdc.gov/foodborneburden/pdfs>.
- [3] Guangzhou social and public opinion research center. Food safety situation in 2012 Guangzhou public opinion evaluation report. [http://www.zdwmw.cn/xinwen/index.php/finance\\_13303c3x1a4a.html](http://www.zdwmw.cn/xinwen/index.php/finance_13303c3x1a4a.html)
- [4] Tang Jin-bao, "Study on Public Participation in Food Safety Control," *Jiangsu Science & Technology Information*, no. 4, pp. 29-30, 2011.
- [5] Wang Chang-wei, Gu Hai-ying, "Consumer perception of food safety, regulatory satisfaction and willingness to pay," *Journal of South China Agricultural University (Social Science Edition)*, vol. 12, no. 2, pp. 89-95, 2013.
- [6] Kinsley J, Harrison R W, et al, "Index of consumer's confidence in the safe of the U.S. food system," *American Journal of Agriculture Economic*, vol. 91, no. 5, pp. 1470-1476, 2009.
- [7] Brewer M S, Rojas M, "Consumer attitudes towards issues in food safety," *Journal of food safety*, vol. 28, no. 1, pp. 1-22, 2008.
- [8] Zheng Yu-peng, Xia Ying, "A summary of food safety research," *Food and Nutrition in China*, no. 7, pp. 15-17, 2006.
- [9] Yang Tian-bao, Wang Fa-yun, "The present situation of food safety in China," *Modern Commerce and Industry*, no. 12, pp. 34-36, 2003.
- [10] Tang Jin-bao, "Study on Public Participation in Food Safety Control," *Jiangsu Sci. and Tech. Information*, 2011(4).
- [11] Zhao Yuan-yuan, Li Ying, "Satisfaction of Urban Customers to Present Situation of Food Safety and Influencing Factors," *Journal of Anhui Agri. Sci.*, vol. 44, no. 19, pp. 231-234, 2016.
- [12] Wang Jun-xiu, "Investigation of Food Safety Satisfaction of Chinese Residents," *Jiangsu Social Sciences*, no. 5, pp. 66-71, 2012.