



## CONSUMERS' FOOD SAFETY PERCEPTION AND WILLINGNESS TO PAY: SAMPLE OF CHICKEN MEAT IN ADANA PROVINCE

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### ABSTRACT

Food safety has become an important issue for more consumers. This study aims to reveal consumers' food safety perception of chicken meat and willingness to pay for labelled chicken meat in Adana province. The material of the study was primary data obtained from face to face interview with 384 consumers in Adana province. The data was presented by frequencies, ratios and averages. In the study, it is found that 42.4% of the interviewed persons have changed their consumption of chicken meat within the last 10 years. Moreover, the consumers perceived, from production to consumption, slaughtering, feeding and using of antibiotic hormones etc. during the growing were the least reliable stages. More than half of consumers (61.2%) are willing to pay more for food safety certified chickens, 39.1% of whom said they can pay between 1-10% more. To regain consumer confidence, food safety applications have to be implemented strictly. The production and distribution systems in the supply chain should also be compatible with issues such as consumer demand and food safety.

**KEYWORDS** : Food safety, chicken meat, willing to pay, Adana, Turkey.

### Introduction

Food safety has been discussed and taken into consideration by a growing public concern since 1990. This subject has different reasons that public interest has increased by some foodborne diseases such as Salmonella, Avian Influenza and Campylobacter in chicken and bovine spongiform encephalopathy (BSE), together with, perceptions of the risks of intensive farming methods and incidents of food contamination along the food supply chain. In this period, foods that are most frequently associated with foodborne illness include meat, fish and poultry (FSA, 2017).

There is a tendency to ensure food safety practices in Turkey since foodborne disease has been a major cause of illnesses and imposes a significant burden on both infected individuals and the economy. In this manner, one of the most controversial farm product is chicken for a long time, as some other countries. Kutbay (2010) stated that chicken has been one of the most risky products in the food sector. In the media, there are lots of news about emerging diseases and using hormones and antibiotics in broiler production. Information published in the media may generally reveal great risk perception towards these products.

In the literature, there are many studies to reveal consumers' food safety perception and knowledge. Lobb et al. (2006) stressed the most important factor affected of consumers' food safety perception was mass media (television, gazette, internet, radio and magazines) in five EU countries (France, Germany, Italy, Netherlands and the United Kingdom). However, the study implies that different consumers respond to food risk communication in different ways and in a situation of increased perceived risk – hence increased levels of involvement – households across the EU are likely to respond in culturally specific ways which suggest a need for country level policy design. Muladno and Thieme (2009) revealed that the most important factors on purchasing chicken meat were freshness (24.6%), food safety (21.7%), easy cooking (19.9%) and cheap price (19.6%). Onyango et al., (2009) found that consumers perceived the safest poultry meat product was home cooked and familiar brands and the most trustable information source was government in U.S. Kher et al. (2013), attempted to understand consumer perceptions associated with chemical and microbiological contaminants in chicken marketing chains in five countries (Poland, Ireland, the Netherlands, France and Brazil). Consumers expressed higher concerns about chemical, as compared with microbial, contaminants since chemical contaminants were more strongly associated with the potential for severe consequences. Participants

from different countries perceived that slaughter, processing in factories and product transport were the most vulnerable stages in the product chain. Koppel et al. (2014) defined that consumers made some wrong practices while cooking red meat, chicken meat and fish and need to be informed about food safety in India, Korea and Thailand.

Furthermore, in Turkey, there are lots of researches to reveal consumers' chicken meat consumption preferences and purchasing behavior (Sengul et al., 2002; Armagan and Ozdogan, 2005; Buyuknisan, 2008; Dokuzlu et al., 2013; Iskender et al., 2015). The literature review in the field reveals very little, if not none, attention on revealing food safety perception towards chicken meat and willingness to pay for food safety labelled chicken meat. This study aimed to reveal consumers' food safety perception towards chicken meat and willingness to pay for food safety labelled chicken meat in urban area of Adana.

### Material and Method

#### Material

The main material of the study was primary data obtained from face to face interview with consumers in urban area of Adana. Standardized questionnaire was used for interviews. The development of the questionnaire derived from existing literature to attain an understanding of the most important practices related to the incidence of foodborne illnesses and previous researches on consumers' food safety perception and willingness to pay towards certain food products such as chicken, fish, organic products (Yeung and Yee, 2005; Gilbert and Cressy, 2008; Onyango et al., 2009; Muladno and Thieme, 2009; Kher et al., 2013). Questionnaires were completely structured through getting suggestions after pretest with 40 people. Survey was conducted between January and March in 2016.

The questionnaire was designed as three parts. Questions were asked to define consumers' demographic characteristics (age, gender, education, occupation and so on) in first part and consumers' food safety perception in second part. In the third part, chicken meat were evaluated by consumers from the food safety point of view and willingness to pay for food safety labelled chicken meat.

#### Method

Adana province was selected as survey area. Adana is one of the major provinces in southern Turkey. The sample size was calculated by "One Stage Simple Random Sampling Learning against

Population Rates” method (Malhotra, 2004). This sampling method is usually preferred in consumption studies related with households according to this method. Number of samples is obtained as follows:

$$n = (z^2)(p*q) / d$$

n = Sample size

z = Standardized value corresponding to the confidence level (1.96 for 95% confidence level)

p = Estimating observed attribute variable in the community (it is accepted as 50% to get highest sample size)

q = Estimation of different objects that are not observed

d = Allowable error in the measurement range of observations (0.05%)

The data on consumers' demographic characteristics, food safety perception and willing to pay was presented by frequencies, ratios and averages.

**Results and Discussion**

**Consumers' Demographics Characteristics**

Of the 384 consumers interviewed, 54.2% were woman, %35.7 were between 21 and 30 years old (35.0 years old averagely) and 55.2% were married. In the research area, 37.8% of the consumers were high school graduates and 22.9% of them were university graduates, while 17.2% of them were primary school and 9.1% of them were secondary school graduates. Most of these consumers were private sector employee (32.6%), self-employed (21.7%) and public staff (12.7). Family size was 3-4 persons for almost half of the participants, while more than 5 persons for 33.1% of them (average: 4.1 persons) (Table 1)

**Table 1. Consumers' Socio-demographic Characteristics**

Characteristics	f	%	Characteristic	f	%
<b>Gender</b>					
Woman	208	54.2	Not literature	18	4.7
Man	176	45.8	Literature	23	6.0
Total	384	100.0	Primary School	66	17.2
<b>Age</b>					
-20	35	9.1	Secondary School	35	9.1
21-30	137	35.7	High School	145	37.8
31-40	94	24.5	University	88	22.9
41-50	70	18.2	Master	6	1.6
51-	48	12.5	Doctorate	3	0.8
Total	384	100.0	Total	384	100.0
<b>Marital Status</b>					
Average	35.0		Married	212	55.2
<b>Occupations</b>					
Private Sector employee	72	32.6	Single	157	40.9
Self-employed	48	21.7	Divorced	15	3.9
Public staff	28	12.7	Total	384	100.0
<b>Family Size</b>					
Unemployed	22	10.0	1-2	68	17.7
Retired	21	9.5	3-4	89	49.2
Academisian	4	1.8	5-	127	33.1
Other	26	11.8	Total	384	100.0
Total	221	100.0	Average	4.1	

Housewives (88 persons) and students (163 persons) were not calculated since occupation is defined as a person's usual or principal work or business, especially as a means of earning a living.

**Consumers' Food Safety Perception**

In the interviews, 88.8% of consumers mentioned that they had heard statement of food safety. Some definitions about this statement were presented and asked to these persons which option they participated. 63.7% of the 341 consumers defined these foods as “foods are controlled and certificated by various organizations”. Whilst, rest of them agreed the statements of halal food (26.1%),

packaged food (7.9%) and certificated foods with HACCP or ISO 22000 (2.3%) (Table 2).

**Table 2. Consumers' Food Safety Definition**

Definitions	f	%
Foods are controlled and certificated by various organizations	217	63.7
Halal food	89	26.1
Packaged food	27	7.9
Certificated foods with HACCP or ISO 22000	8	2.3
Total	341	100.0

In the study, consumers evaluated food product groups in terms of food safety. Consumer stated that fish and seafood (ave: 3.8) were the most reliable products in some food product groups. This product group was followed by red meat (ave: 3.2) and poultry meat (ave: 3.1). In these products, red meat products (salam, sausage etc.) were evaluated as the least reliable foods (Table 3).

**Table 3. Consumers' Evaluation of Some Food Product Groups**

Products		No idea	1	2	3	4	5	Ave.
Fish and Seafood	f	10	14	28	100	124	108	3.8
	%	2.6	3.6	7.3	26.0	32.3	28.1	
Red meat	f	10	38	50	127	104	55	3.2
	%	2.6	9.9	13.0	33.1	27.1	14.3	
Poultry Meat	f	17	35	48	155	88	41	3.1
	%	4.4	9.1	12.5	40.4	22.9	10.7	
Proceed meat products	f	11	184	107	57	14	11	1.8
	%	2.9	47.9	27.9	14.8	3.6	2.9	

Consumers evaluated chicken meat in all stages from production to consumption in terms of food safety. However, some of consumers were not able to evaluate stages of chicken breeding from production to consumption. In other words, between 57 and 62 of the persons were stated that they did not have any idea about food safety levels of chicken meat in some stages. Consumers, who evaluated the stages, perceived that the most reliable stages in the supply chain were distribution to end-users (ave: 2.7), transportation of chicken meat (ave: 2.5), production phase (ave: 2.5). On the other hand, Slaughtering (ave: 2.2), feeding (ave: 2.1) and using of antibiotics, hormones etc (ave: 2.0). During the growing were marked by these consumers as the least risky stages in terms of food safety (Table 4).

**Table 4. Consumers Evaluation of Chicken Meat From Production to Consumption in Terms of Food Safety**

Stages		No idea	1	2	3	4	5	Ave.
Distribution to end-users	f	57	78	78	87	40	44	2.7
	%	14.8	20.3	20.3	22.7	10.4	11.5	
Transportation of chicks meat	f	62	89	77	95	35	26	2.5
	%	16.1	23.2	20.1	24.7	9.1	6.8	
Egg production phase	f	62	63	94	126	27	12	2.5
	%	16.1	16.4	24.5	32.8	7.0	3.1	
Storage chicken meat in the sell units	f	62	98	81	83	26	34	2.4
	%	16.1	25.5	21.1	21.6	6.8	8.9	
Packaging	f	63	92	84	90	25	30	2.4
	%	16.4	24.0	21.9	23.4	6.5	7.8	
Processing in the factory	f	61	97	81	93	23	29	2.4
	%	15.9	25.3	21.1	24.2	6.0	7.6	
Transportation of live chicks	f	66	104	86	79	31	18	2.3
	%	17.2	27.1	22.4	20.6	8.1	4.7	
Slaughtering	f	63	122	70	83	23	23	2.2
	%	16.4	31.8	18.2	21.6	6.0	6.0	
Feeding (feed content)	f	64	133	81	67	16	23	2.1
	%	16.7	34.6	21.1	17.4	4.2	6.0	
Using of antibiotic hormones etc. during the growing	f	56	159	76	54	17	22	2.0
	%	14.6	41.4	19.8	14.1	4.4	5.7	

Food safety concept has paid attention since especially in last three decades and some serious discussions about practices were emerged. Lastly, these discussions have become serious issue for many people. The consumer evaluated chicken meat with comparing 10 years ago in terms of food safety and almost half of them (43.2) perceived that this food is less reliable. On the other hand, chicken meat was evaluated reliable at the same level by 22.7% of them of participants and not reliable at all by 16.9% of them.

**Table 5. Reliability of Chicken Meat with comparing to 10 Years Ago**

Reliability Level	f	%
Less reliable	166	43.2
Same level reliable	87	22.7
Not reliable at all	66	17.2
More reliable	65	16.9
Total	384	100.0

In this period (in last 10 years), 42.4% of participants changed consumption quantity of chicken meat and 57.1% of these persons decreased it in last 10 years (42.9% of them increased). Reasons for the decrease were antibiotics hormones etc. during the growth of chickens (ave: 4.6), risks of animal diseases (ave: 4.6) and low meat quality for human consumption (Table 5)

**Table 6. Reasons of decrease consumption quantity of chicken in last 10 years**

Reasons	f	1	2	3	4	5	Ort.
Antibiotics, hormones etc. during the growth of chickens	f	1	3	8	23	91	4.6
	%	0.3	0.8	2.1	6.0	23.7	
Risks of animal diseases	f	1	3	7	28	87	4.6
	%	0.3	0.8	1.8	7.3	22.7	
Low meat quality for human consumption	f	0	5	9	28	84	4.5
	%	0.0	1.3	2.3	7.3	21.9	
Low taste	f	2	5	13	28	78	4.4
	%	0.5	1.3	3.4	7.3	20.3	
Consumers' health problems	f	7	9	11	31	68	4.1
	%	1.8	2.3	2.9	8.1	17.7	
High prices of chicken meat	f	15	14	19	30	48	3.7
	%	3.9	3.6	4.9	7.8	12.5	

**Willingness to Pay for Food Safety Labelled Chicken Meat**

61.2% of consumers were willing to pay more for food safety labelled chicken meat. Of 235 consumers, 39.1% agreed to pay more 1% and 10%, while 23.0% agreed to pay more 11-20% and 23.0% agreed to pay more 21-30%. In other words, 85.1% of them would like to pay more till 30%.

**Table 7: Willingness to Pay for Food Safety Labelled Chicken Meat**

	f	%
Between 1-10%	92	39.1
Between 11-20%	54	23.0
Between 21-30%	54	23.0
Between 31-40%	20	8.5
More than 40%	15	6.4
Total	235	100.0

**CONCLUSION**

Food safety is becoming a more important issue for consumers and shaping their consumption habits day by day. Among the food products, chicken meat has been frequently discussed in recent years with respect to certain diseases (such as avian influenza) and conditions of supply (use of additives such as hormones and antibiotics). In this study, consumers' food safety perception of chicken meat and willingness to pay for labelled chicken meat in Adana province were revealed.

As conclusion, most of the consumers have already heard the food safety statement (88.8%) and more than half of them correctly defined. Chicken meat was evaluated by consumer as one of the

most risky product groups. 42.4% of the interviewed persons have changed their consumption of chicken meat within the last 10 years; more than half of them (57.1%) have decreased their consumption due to the use of hormones and antibiotics and the risk of animal diseases in the breeding of chickens. Moreover, the consumers perceived, from production to consumption, slaughtering, feeding (feed content) and using of antibiotic hormones etc. during the growing were the least reliable stages. More than half of consumers (61.2%) are willing to pay more for food safety certified chickens, 39.1% of whom said they can pay between 1-10% more.

Research findings suggest that most of the consumers had serious concerns on chicken meat in terms of food safety. Most of consumers preferred to decrease chicken consumption quantity in last 10 years. The consumers have changed their consumption habits according to information gathering from media.To regain consumer confidence, food safety applications (HACCP, ISO 22000 etc.) have to be implemented strictly. Certifying of Food safety and labeling of product characteristics are marketing strategies that can be a significant influence in informing the consumer correctly.

The food industry is a system in which a large number of businesses are related. For this reason, marketing strategies should focus not only on the technological and economic aspects of food claims, but also on the health and reliability of food ingredients. The results of this study are not only concerned with food retailers but also with other units in the food supply chain (producers, processors, distributors, etc.). The production and distribution systems in the supply chain should also be compatible with issues such as consumer demand and food safety. Increasing informative and conscious activities towards consumers at every stage of the production and distribution process will be useful.

**References**

1. Armagan, G., Ozdogan, M. (2005), "Ekolojik Yumurta ve Tavuk Etinin Tüketim Eğilimleri ve Tüketici Özelliklerinin Belirlenmesi." Hayvansal Üretim. 46(2), 14-21.
2. Büyüknisan, O. (2008). Adana İli Kentsel Alanda Tavuk Eti Tüketim Yapısı. Cukurova Üniversitesi, Ziraat Fakültesi, Tarım Ekonomisi Anabilim Dalı. Yüksek Lisans Tezi.
3. Dokuzlu, S., Baris, O., Hecec, C., Guldas, M. (2013), "Türkiye'de Tavuk Eti Tüketim Alışkanlıkları ve Marka Tercihleri." U.Ü. Ziraat Fakültesi Dergisi, 2013, 27 (2), 83-92
4. Gilbert and Cressy, (2008), "Consumer Knowledge, Attitudes And Beliefs With Respect To Campylobacter, Campylobacteriosis And Poultry." Client Report FW0875. A report for the New Zealand Food Safety Authority. [http://www.foodsafety.govt.nz/elibrary/industry/Consumer\\_Knowledge\\_AttitudesScience\\_Research.pdf](http://www.foodsafety.govt.nz/elibrary/industry/Consumer_Knowledge_AttitudesScience_Research.pdf).ESR. (Available at: 25.12.2017)
5. Iskender, H., Kanbay, Y., Ozcelik, E. (2015), "Artvin Coruh Üniversitesi Öğrencilerinin Tavuk Eti Tüketim Tercihleri." F.U.Sağ.Bil.Vet.Derg. 29(1), 09- 13
6. FSA (2017), Foodborne Disease Strategy 2010-15. "An FSA Programme For The Reduction Of Foodborne Disease In The Uk." (Erişim tarihi: 20.03.2017)
7. Kher, S. V., De Jonge, J., Wentholt, M. T.A., Deliza, R., de Andrade, J. C., Gnossen, H. J., Luijckx, N. B. L. and Frewer, L. J. (2013), "Consumer perceptions of risks of chemical and microbiological contaminants associated with food chains: a cross-national study. International Journal of Consumer Studies." 37, 73-83.
8. Koppel, K., Suwonsichon, S., Chitra, U., Lee, J., Chambers, E. (2014), "Eggs and Poultry Purchase, Storage, and Preparation Practices of Consumers in Selected Asian Countries." Foods.3: 110-127.
9. Kutbay, Y. Ş. (2010), "Besin zehirlenmesi, güncel sağlık konuları." <http://www.acibadem.com.tr/Hayat/Bilgi/besin-zehirlenmesine-yol-acan-gidalar> (Available at: 27.12.2017)
10. Lobb, A., Mazzocchi, M., and Traill, W. B. (2006), "Risk perception and chicken consumption in the avian flu age – a consumer behaviour study on food safety information." [http://www.francoangeli.it/riviste/inglese\\_download\\_credit.asp](http://www.francoangeli.it/riviste/inglese_download_credit.asp) (Available at: 15.01.2017)
11. Malhotra, N. K. (2004), "Marketing Research (An Applied Orientation)." Pearson Prentice Hall. Fourth Edition. 713s.
12. Muladno, M., Thieme, O. (2009), "Consumer preferences for poultry products in Indonesia." GCP/RAS/228/GER Working Paper No. 12. <http://www.fao.org/docrep/013/al700e/al700e00.pdf> (Available at: 22.12. 2017)
13. Onyango, B., Rimal, A., Miljkovic, D. ve Hallman, W.K., (2009), "Food Safety Risk Perceptions as a Tool for Market Segmentation: The U.S. Poultry Meat Market." Journal of Food Distribution Research 40 (3), 79-90
14. Sengul, T., Celik, Y., Doğan, Z., (2002), "Şanlıurfa İli Kentsel Alanda Tüketicilerin Tavuk Eti Tüketim Düzeyleri ve Tüketim Alışkanlıklarının Belirlenmesi." GOU. Ziraat Fakültesi Dergisi. 19 (1), 145-150.
15. Yeung, R. M. W. ve Yee, W. M. S. (2005), "Consumer Perception of Food Safety Related Risk." Journal of International Food & Agribusiness Marketing, 17 (2), 195-212,