

Impact of socio-cultural and economic factors on vegetable consumption behaviours: case of Giresun Province, Turkey

Atnan UGUR^{1*}, Yasar GOK¹, Hacer GOK UGUR²

Abstract

Many factors impact on food consumption behaviours. The aim of the study is to determine the impact of socio-demographic and ecological factors on vegetable consumption. A 14-question questionnaire was applied on a voluntary basis to 200 individuals who accepted to participate in the study. Their socio-demographic attributes and the vegetable consumption habits of their families were determined. Their average monthly budget for vegetables is € 31.82±12.72. The two attributes of purchased vegetables with most demand are cleanliness (61.5%) and freshness (22%). The maximum price per 1 kg of vegetables, which individuals with an income of € 301–450 can afford, is € 0.96, but for individuals with an income of > € 450, it is € 1.25. It was observed that the amount of purchased vegetables increased with the increase in the budget allocated for vegetables.

Keywords: budget; culture; food; habit; vegetables.

1 Introduction

Vegetables play a crucial role in human diet due to the amount of vitamin, carbohydrate, fat, protein, and mineral substances they contain. Their nutritional advantage is that they offer a high concentration of micronutrients and low contents of calories and fat. Each region grows and consumes different types of vegetables because of ecological and geographical differences, the impact of national consumption culture, and social dimensions associated with the habits the society gained over time. Assessing food consumption is complex due to the various factors involved (Maciel et al., 2013). A healthy and balanced diet is one of the main factors for a peaceful and happy life. Correspondingly, with the development of social life, people's eating habits has begun to change, and consequently the consumption of traditional products has decreased, while the consumption of fast food products has been increasing steadily. Fast-food type nutrition is popular especially among children and teenagers (Kayisoğlu & Icoz, 2014). It is indicated that over time this type of diet may cause cancer and chronic diseases in humans. It is stated that in these cases, the regular consumption of vegetables is highly beneficial to health and effective in reducing the risk of heart diseases, cancers, and chronic diseases (Robertson et al., 2004; Dauchet et al., 2006; He et al., 2006, 2007; Kavanaugh et al., 2007; Dauchet et al., 2009; Hardin et al., 2011). Owing to their low calories and fat content, and high contents of fibre, antioxidants, carotenoids, flavonoids, vitamins and photochemical substances, vegetables are remarkable in terms of health effects (Marowa-Wilkerson et al., 2007). Most vegetables contain substantial amounts of minerals, particularly calcium, iron, and potassium. On the grounds of these features, in recent years vegetable consumption has been frequently discussed in healthy and balanced diet programs on television and other means of communication.

By virtue of its ecological advantages, Turkey is a country rich in vegetables, where more than 50 different types of vegetables are grown and wild herbs are vastly consumed. Turkey has gained competitive advantage worldwide in the sector of fruit and vegetable-based products (Crescimanno et al., 2014). The Eastern Black Sea Region is in northeast of Turkey on the coast of Black Sea. In this region, the typical "temperate marine climate" prevails, with multi-annual average rainfall of 1286.1 mm, during all seasons. It is cool in the summer and has mild winters; the annual average temperature is about 13-14 °C. In January and February, months in which the weather is the coldest, the average temperature is 6-7 °C, while in July and August, the hottest period of the year, the average temperature is between 22-23 °C (Turkey, 2014). Because land structure is steep-rugged and mountains extend parallel to the sea, the vegetable production areas in the region have always been rather limited. Due to the fact that every season is rainy, the production of the edible vegetables, especially tomatoes, peppers, eggplant, melon and watermelon is constrained. On the other hand, the humid, rainy, and cool summer season is seen as an advantage in terms of greens' production. The demand for vegetable production is met in the plains of Çarşamba and Bafra, which are located very close to the Eastern Black Sea Region. During the cold seasons, greenhouse vegetables produced in the Southern part of the country and are sold in the markets. Although a great deal of vegetables is consumed, the variety is rather limited. Ecological factors and food consumption culture have negatively affected vegetable production. In food consumption individuals are mostly influenced by cultural factors. Therefore, knowledge of consumer habits is essential in increasing and diversifying vegetable consumption.

Received 01 July, 2014

Accepted 22 Sept., 2014 (006401)

¹Department of Horticulture, Faculty of Agriculture, Ordu University, Cumhuriyet Campus Ordu, Turkey

²Nursing School, School of Health, Ordu University, Cumhuriyet Campus Ordu, Turkey

*Corresponding author: atnanugur@gmail.com

This study, aims to determine vegetable consumption habits of people living in Giresun Province as well as investigating certain economic and sociological factors effecting these behaviours.

2 Materials and methods

This is a descriptive study conducted in the central district of Giresun. According to data from 2013, the total population in the Province of Giresun is 419,555. In the central district, where the study was conducted, the population is 123,129, and the average number of people per household is 4.82.

No particular sampling method was used in the study. Overall, 240 individuals living in Giresun city centre were approached randomly and asked to take part in the study. Only 200 of them agreed to participate. Data were collected applying a questionnaire consisting of 14 questions regarding participants' socio-demographic background, their vegetable consumption habits and behaviours, and the factors affecting them.

The data were analysed using the SPSS software. Percentage distribution was used to analyse the socio-demographic features of the participants. One-Way ANOVA Test was used to compare participants' income with monthly budget for vegetables, i.e., the maximum amount that can be paid for one kilo of vegetable and the amount of vegetable bought according to the monthly vegetable budget. The level of significance used for all analyses was $p < 0.05$.

3 Results

This study investigated vegetable consumption habits of people living in Giresun and how these habits are affected by factors such as participant's age, education level, profession, income level, expenses, places where vegetables are bought, and attributes of vegetables that are sought after.

The socio-demographic details of the participants are given in Table 1; 59% of the participants are women and 41% are male. A total of 11% of participants belong to the < 25 age group, while the other age groups are almost equally represented. Nearly half of participants (47%) are high school graduates. However, the ratio of primary school graduates is 35%, and of college graduates is 17%. In terms of occupation, most of the participants are self-employed (36%) and housewives (27%). As for income levels, 40.5% have a monthly income of > € 450, while 35% have an average income of € 301–450. Participants' average monthly budget for vegetable consumption is 31.82 ± 12.72 . The lowest budget allocated to vegetables is € 6.17, while the highest is € 92.59. Daily vegetable consumption is 328.52 ± 129.59 g on average. The lowest and the highest daily consumption of vegetables among the participants is 59 g and 652 g, respectively.

Information on the stores that participants regularly bought vegetables is given in Table 2. More than half of the participants (52.5%) purchase vegetables only from local street markets. However, the rate of those who buy vegetables these

Table 1. Socio-demographic profile of participants.

	Characteristics	Frequency	Percent (%)
Gender	Male	118	59.0
	Female	82	41.0
	Total	200	100
Ages group (years)	<25	22	11.0
	25-35	61	30.5
	36-45	55	27.5
	>45	62	31.0
	Total	200	100
Education level	First school	70	35.0
	High school	94	47.0
	Graduate	34	17.0
	MSc	2	1.0
	Total	200	100
Employment status	Housewife	54	27.0
	Government employee	39	19.5
	Worker/employee	7	3.5
	Self-employed	72	36.0
	Retired	28	14.0
	Total	200	100
Monthly Expenditure	0-150 €	4	2.0
	151-300 €	45	22.5
	301-450 €	70	35.0
	>450 €	81	40.5
	Total	200	100
Monthly budget for vegetables	Mean: 31.82 ± 12.72 €; Minimum: 6.17 €; Maximum: 92.59 €		
Daily veg. intake (g / person)	Mean: 328.52 ± 129.59 g; Minimum: 59 g; Maximum: 652 g		

markets along with other types of stores and shopping areas is 95.5%. The ratio of individuals purchasing vegetables from food stores (supermarkets or grocery stores) is only 1%, while that of individuals shopping from greengrocer's shops only is 2%. The ratio of individuals using all three types of shopping places (local street markets, supermarkets and greengrocers) is 15%, while that of individuals purchasing from local street markets and greengrocers is 16%.

The attributes that the respondents normally pay attention while buying vegetables (demanded attributes), are presented in Table 3 in order of priority. This table shows that the first most important attribute considered by the respondents is the cleanliness of the vegetables purchased. Of the 200 participants, 123 pay attention primarily to cleanliness. Of the desired attributes of the vegetables purchased, cleanliness ranked 1st receiving a score of 865, followed by freshness with a score of 763. On the other hand, those who have cleanliness of vegetables as their first three choices represent 94% of the participants. The second most significant attribute selected was freshness of the vegetables, which was indicated as the first three preference choices with the rate of 92.5%. Along with cleanliness and freshness, seasonality, cheapness, and attractiveness are respectively listed as desired attributes. Among the demanded attributes for the purchased vegetables, cheapness and seasonality are indicated among the first three choices with the ratio of 7.5%. In addition, seasonality received

twice as much score than cheapness. In terms of the preferred vegetable attributes, attractiveness, which ranked last, had a ratio of only 13.5% in the first three choices.

Table 4 shows the comparison of the monthly budget allocated to vegetables, according to their monthly income, which indicates a statistically significant difference ($p < 0.001$). The increase in monthly vegetable budget is positively associated with the increase in the income level. That is, individuals with a monthly income range of 0 to € 150 have a vegetable consumption budget of € 20.06 per month, while for individuals with an income range from € 151 to 300; this amount rises to € 25.51, with an increase by approximately 27.16%. Similarly, participants with an income range of € 301-450 per month have a budget of € 31.22 for vegetables while, for people with income of > € 450, the vegetable budget increases by 16.68% and reaches € 36.43 per month. The average monthly amount of the budget allocated to vegetables is € 31.82. This table demonstrates that there is a difference of 81.60% in the rate of the vegetable budgets between the highest and the lowest income groups.

The present study also investigated the relationship between the monthly income and the maximum price allocated for 1 kg of vegetables (Table 5). There is a statistically significant difference ($p < 0.001$) between the maximum price per 1 kg of vegetables according to monthly income groups. That is to say, the increase in monthly budget per 1 kg of vegetable is positively associated with the increase in the income level. Individuals with a monthly income range of € 0-150 stated that they could pay an average of € 0.77 as a maximum price of € 1 kg of vegetables, while those with an income of > € 450 expressed their commitment to € 1.25. There is also a difference of 62.34% between the highest and the lowest income groups. The average maximum price per 1 kg of vegetables for individuals with a monthly income range of € 301-450 is € 0.96, while it increases by 30.21% and reaches € 1.25 for individuals with a monthly income of > € 450. Overall, the average maximum price per 1 kg of vegetable is € 1.07.

A comparison regarding the total amount of vegetables purchased according to their monthly vegetable budget is

Table 2. Information about different types of vegetable shops.

Shopping places of vegetables	Frequency	Percent
Local street market	105	52.5
Greengrocer	4	2.0
Food store	2	1.0
Local street market + Greengrocer	32	16.0
Local street market + Supermarket	24	12.0
Greengrocer + Supermarket	3	1.5
Local street market + Greengrocer + Supermarket	30	15.0

Table 3. Demanded Attributes and priorities (people) of purchased vegetables.

Demanded Attributes		1 st choice	2 nd choice	3 rd choice	4 th choice	5 th choice	Score*
Cleanliness	Frequency	123	32	33	11	1	865
	Percent	61.5	16	16.5	5.5	0.5	
	Cum. Percent	61.5	77.5	94	99.5	100	
Freshness	Frequency	44	93	48	12	3	763
	Percent	22	46.5	24	6	1.5	
	Cum. Percent	22	68.5	92.5	98.5	100	
Seasonality	Frequency	15	44	46	70	25	554
	Percent	7.5	22	23	35	12.5	
	Cum. Percent	7.5	29.5	52.5	87.5	100	
Cheapness	Frequency	15	22	57	45	61	485
	Percent	7.5	11	28.5	22.5	30.5	
	Cum. Percent	7.5	18.5	47	69.5	100	
Attractiveness	Frequency	1	8	18	62	111	326
	Percent	0.5	4	9	31	55.5	
	Cum. Percent	0.5	4.5	13.5	44.5	100	

*Score: (1st choice frequency*5+ 2nd choice frequency*4 + 3rd choice frequency*3 + 4th choice frequency*2 + 5th choice frequency*1).

Table 4. Comparison of monthly budget of vegetable consumption according to income levels.

Income Level (€)	Frequency	Mean	Std. Dev.	F	p [*]
0-150	4	20.06	8.17	9.495	0.000
151-300	45	25.51	11.63		
301-450	70	31.22	12.35		
>450	81	36.43	11.96		
Total	200	31.82	12.72		

*p<0.05.

Table 5. Comparison of the maximum price per 1 kg of vegetables according to monthly income.

Income Level (€)	Frequency	Mean	Std. Dev.	F	P [*]
0-150	4	0.77	0.31	12.562	0.000
151-300	45	0.93	0.34		
301-450	70	0.96	0.39		
>450	81	1.25	0.32		
Total	200	1.07	0.38		

*p<0.05.

presented in Table 6, which shows a statistically significant difference ($p < 0.001$) between the groups of monthly budget allocated to vegetables in terms of the amount of vegetables purchased. The order of preference of vegetables is as follows: Tomatoes > Pepper > Cucumber > Castles > Aubergine > Lettuce > Onion > Fresh bean > Potatoes. The number of people who reported a regular purchase of tomatoes is 189 (94.5%), while that of potatoes is limited to only 45 (22.5%) people. There is a positive relationship between the increase in the monthly budget and the amount of vegetable purchased. The amount of the monthly budget allocated to vegetables is positively associated with the purchased amount of Tomatoes, Pepper, Cucumber, Kale, Aubergine, Lettuce, Onion and Fresh Beans. Potatoes are the only vegetables that did not exhibit type of behaviour; data analysis indicates a negative relationship between the amount of potatoes purchased and monthly income. For instance, while the budget group of € 37.86 buys an average of 12 kg potatoes, the budget group of € 28.81 buys an average of 20 kg potatoes. Another interesting aspect of the data presented in Table 6 is the significance of changes in the purchase of eggplant. The monthly average vegetable budget of individuals who purchase 4 kg of eggplant monthly is € 28.79 while that of individuals who purchase 16 kg is € 51.44, which shows a 78% difference between these two groups' monthly vegetable budgets.

4 Discussion

This study evaluated vegetable consumption behaviours of individuals living in the Giresun Province of Turkey and the socio-economic factors affecting these behaviours. It was found that food shopping is mostly done by women. This is in line with Turkey's social cultural structure, in which women have the responsibility of buying the food. The average daily vegetable consumption among the participants is 328.52 ± 129.59 g, which seems to be a regional characteristic. For instance, in a research study conducted at a university in Ankara, located in central

Anatolia, vegetable consumption of individuals was found to be lower, with male consumption of 260.0 ± 136.74 g and female consumption of 251.6 ± 137.61 g (Akis, 2005).

Local street markets are the most preferred places for vegetable shopping; 95.5% of the participants stated that they buy their vegetables from local street markets and greengrocer's shops and supermarkets. The fact that there is an opportunity to find a variety of vegetables in desired amounts and a high expectation of cheapness and freshness in local street markets has a considerable effect on street market's preferences (Bektas & Davran, 2011). Another factor influencing participants' vegetable consumption habits is cleanliness of the products bought and desire towards hygienic practices. The analysis of the data suggests that the awareness of food hygiene is significantly high, which is in agreement with the findings of Sarikaya (2007), who found that the most important factors affecting store choice when buying organic products are cleanliness and hygiene. Indeed, it is found that even if people have a low income, there is a 73% motivation regarding their perception of health in the vegetables consumed (Dibsdall et al., 2003). Attractiveness and cheapness have not been considered as a priority, which could be due to low public awareness. Vegetable accessibility in terms their place of residence, which affects the price of the vegetables, has also proved influential on vegetable consumption (Kamphuis et al., 2006).

This study has also found a positive relationship between the money spent on vegetables and income. In low-income populations, affordability is the most important inhibitory factor preventing fruit and vegetable consumption (Drewnowski & Darmon, 2005). However, the price paid for fruits and vegetables increases in higher income groups (Estaquio et al., 2008). In terms of the maximum price that can be paid for one kilo of vegetables, there is a difference of 62.34% between the lowest and the highest income groups. It can be argued that the more money people earn, the more willing they become to pay more for both the amount and the variety of vegetables. It is a generally accepted fact that a healthy diet consists of generous quantity and choices of vegetables. Similarly, in their study, Shahar et al. (2005) associate a healthy diet with high social status and other lifestyle habits.

It is observed that the amount of vegetables consumed changes according to the monthly budget allocated to purchase vegetables. People have mostly chosen to purchase tomatoes, cucumbers, peppers, kale, and onions for vegetable consumption. The reason tomatoes come in first in vegetable consumption is that they are widely used in salads and vegetable dishes. Currently, tomato is the most commonly produced (11,350 thousand tons/year) and consumed (117.2 kg/per capita) vegetable in Turkey (Turkey, 2013). The habit of eating salads every day also increases the consumption of cucumber and pepper. Another important vegetable in the region is the kale. Kale consumption is culturally higher in the region. Although white cabbage production in Turkey is about 5 times higher than that of kale (Turkey, 2013), monthly consumption of white cabbage is 1.94 kg, while the monthly average kale consumption is 4 kg. It is important to mention that most results of the standard deviation were observed in the

Table 6. Comparison of the amount of vegetables purchased according to monthly budget.

Vegetables	Amount (kg)	N	Budget Mean (€)	Std. Dev.	F	Sig. [*]
Tomatoes	0	11	36.19	28.42	4.506	0.001
	4	28	23.48	4.55		
	8	135	32.10	10.72		
	12	16	34.72	15.23		
	16	5	40.74	12.80		
Pepper	0	39	33.24	17.54	4.514	0.004
	4	56	28.82	10.65		
	8	94	31.65	10.82		
	12	11	43.49	11.42		
Cucumber	0	50	38.02	17.07	7.565	0.000
	4	35	26.54	7.57		
	8	98	29.41	9.83		
	12	15	37.24	12.70		
	16	2	46.30	4.36		
Kale	0	88	32.76	14.04	3.286	0.022
	4	33	26.28	9.30		
	8	70	32.36	11.92		
	12	9	38.75	10.82		
Eggplant	0	104	31.90	12.89	3.920	0.004
	4	55	28.79	9.67		
	8	34	33.22	14.48		
	12	4	44.75	13.69		
	16	3	51.44	9.43		
Lettuce	0	133	32.70	12.38	5.362	0.001
	4	49	27.02	9.69		
	8	13	35.37	19.42		
	12	5	46.30	11.13		
Onion	0	126	30.57	12.43	3.023	0.031
	4	13	29.44	13.13		
	8	37	32.45	12.61		
	12	24	38.71	12.64		
Fresh bean	0	134	31.05	13.55	3.750	0.012
	4	17	25.78	4.62		
	8	43	35.31	10.44		
	12	6	41.15	14.95		
Potatoes	0	155	31.16	11.79	0.930	0.462
	4	5	33.95	9.26		
	8	10	34.26	15.97		
	12	15	37.86	20.62		
	16	9	31.21	10.96		
Total	20	6	28.81	9.89		
		200	31.82	12.72		

*p<0.05.

consumption of potatoes. In families with low income, potato is seen as a staple food. As the number of the family members increases, potato consumption also increases. However, potato consumption is negatively associated with the increase in the income. It would not be correct to state that less vegetable consumption is a sign of a low income because low vegetable consumption is considered as a more complex problem with the combined effect of several factors such as motivation, psychology, or lifestyle. Therefore, providing consumers with information about the energy, vitamin, and mineral content and

recommended intake of vegetables is considered to be highly beneficial (Steptoe et al., 2003). Moreover, people should be motivated to increase their intake of vegetables for a healthier diet (Dibsdall et al., 2003).

5 Conclusions

This study investigated how the vegetable consumption habits of individuals are shaped by their socio-cultural and economic background. Vegetable consumption and cultural

and economic status affect the overall consumer behaviours. The increase in purchasing power is positively associated with the increase in the monthly budget of vegetables and variety of places vegetables are bought. People with higher income tend to shop from greengrocer shops and supermarkets rather than local street markets. The high level of attention paid to cleanliness and freshness of vegetables indicates that individuals care a lot about what goes into their body and how it tastes.

It is necessary to benefit from the diversity of today's communication and marketing channels in order to inform the community of the health benefits of eating more vegetables. Providing people with the nutritional value and the recommended portion size of vegetables starting from a particular school age might help increase consumer awareness. The increase in vegetable consumption will eventually create a healthier community. Future studies including larger samples and different populations and regions may bring a different perspective to the issue in terms of both the production chain of vegetables and the consumption habits, taking consumer opinion into account.

References

- Akis, C. (2005). *Dietary pattern, diet quality index and healthy eating index of academic staff in Middle East Technical University*. (Master's thesis). Institute of Health Sciences, Nutrition Science, Hacettepe University, Ankara.
- Bektas, F., & Davran, M. K. (2011). Changes in food consumption behaviour and the countryside. In M. Akdag & F. Artar (Eds.), *Proceedings Book of the 6th National Congress of Sociology* (pp.763-786). Ankara: Library of Sociology Association.
- Crescimanno, M., Galati, A., & Bal, T. (2014). The role of the economic crisis on the competitiveness of the agri-food sector in the main Mediterranean countries. *Agricultural Economics*, 60(2), 49-64.
- Dauchet, L., Amouyel, P., & Dallongeville, J. (2009). Fruits, vegetables and coronary heart disease. *Nature Reviews. Cardiology*, 6(9), 599-608. <http://dx.doi.org/10.1038/nrcardio.2009.131>. PMID:19652655
- Dauchet, L., Amouyel, P., Hercberg, S., & Dallongeville, J. (2006). Fruit and vegetable consumption and risk of coronary heart disease: a meta-analysis of cohort studies. *The Journal of Nutrition*, 136(10), 2588-2593. PMID:16988131.
- Dibsdall, L. A., Lambert, N., Bobbin, R. F., & Frewer, L. J. (2003). Low-income consumers' attitudes and behaviour towards access, availability and motivation to eat fruit and vegetables. *Public Health Nutrition*, 6(2), 159-168. <http://dx.doi.org/10.1079/PHN2002412>. PMID:12675958
- Drewnowski, A., & Darmon, N. (2005). Food choices and diet costs: an economic analysis. *The Journal of Nutrition*, 135(4), 900-904. PMID:15795456.
- Estaquio, C., Druesne-Pecollo, N., Latino-Martel, P., Dauchet, L., Hercberg, S., & Bertrais, S. (2008). Socioeconomic differences in fruit and vegetable consumption among middle-aged French adults: adherence to the 5 A Day recommendation. *Journal of the American Dietetic Association*, 108(12), 2021-2030. <http://dx.doi.org/10.1016/j.jada.2008.09.011>. PMID:19027405
- Hardin, J., Cheng, L., & Witte, J. S. (2011). Impact of consumption of vegetable, fruit, grain, and high glycemic index foods on aggressive prostate cancer risk. *Nutrition and Cancer*, 63(6), 860-872. <http://dx.doi.org/10.1080/01635581.2011.582224>. PMID:21774611
- He, F. J., Nowson, C. A., & MacGregor, G. A. (2006). Fruit and vegetable consumption and stroke: meta-analysis of cohort studies. *Lancet*, 367(9507), 320-326. [http://dx.doi.org/10.1016/S0140-6736\(06\)68069-0](http://dx.doi.org/10.1016/S0140-6736(06)68069-0). PMID:16443039
- He, F. J., Nowson, C. A., Lucas, M., & MacGregor, G. A. (2007). Increased consumption of fruit and vegetables is related to a reduced risk of coronary heart disease: meta-analysis of cohort studies. *Journal of Human Hypertension*, 21(9), 717-728. <http://dx.doi.org/10.1038/sj.jhh.1002212>. PMID:17443205
- Kamphuis, C. B., Giskes, K., de Bruijn, G. J., Wendel-Vos, W., Brug, J., & van Lenthe, F. J. (2006). Environmental determinants of fruit and vegetable consumption among adults: a systematic review. *The British Journal of Nutrition*, 96(4), 620-635. PMID:17010219.
- Kavanaugh, C. J., Trumbo, P. R., & Ellwood, K. C. (2007). The U.S. Food and Drug Administration's evidence-based review for qualified health claims: tomatoes, lycopene, and cancer. *Journal of the National Cancer Institute*, 99(14), 1074-1085. <http://dx.doi.org/10.1093/jnci/djm037>. PMID:17623802
- Kayisoğlu, S., & Icoz, A. (2014). Effect of gender on fast-food consumption habits of high school and university students in Tekirdag, Turkey. *Acta Alimentaria*, 43(1), 53-60. <http://dx.doi.org/10.1556/AAlim.43.2014.1.6>.
- Maciel, E. S., Savay-da-Silva, L. K., Vasconcelos, J. S., Galvão, J. A., Sonati, J. G., da Silva, D., & Oetterer, M. (2013). Application of exploratory factor analysis to assess fish consumption in a university community. *Food Science and Technology*, 33(1), 99-106.
- Marowa-Wilkerson, T. L., Weaver, L., Hovius, C., & Zandstra, J. W. (2007). *Nutritional and health benefits of fresh vegetables-past, present and future: a literature review* (CORD IV Project # 9021). Ridgeway: Fresh Vegetable Growers of Ontario. Final Report.
- Robertson, A., Tirado, C., Lobstein, T., Jermini, M., Knai, C., Jensen, J. H., Ferro-Luzzi, A., & James, W. P. T. (2004). *Food and health in Europe: a new basis for action* (WHO Regional Publications. European Series, 96). Denmark: WHO. 385 p.
- Sarikaya, N. (2007). A field study on factors affecting consumption and attitudes of organic products and attitudes. *Kocaeli University Journal of the Institute of Social Sciences*, 14(2), 110-125.
- Shahar, D., Shai, I., Vardi, H., Shahar, A., & Fraser, D. (2005). Diet and eating habits in high and low socioeconomic groups. *Nutrition*, 21(5), 559-566. <http://dx.doi.org/10.1016/j.nut.2004.09.018>. PMID:15850961
- Stephoe, A., Perkins-Porras, L., McKay, C., Rink, E., Hilton, S., & Cappuccio, F. P. (2003). Psychological factors associated with fruit and vegetable intake and with biomarkers in adults from a low-income neighborhood. *Health Psychology*, 22(2), 148-155. <http://dx.doi.org/10.1037/0278-6133.22.2.148>. PMID:12683735
- Turkey, (2013). *TurkStat Crop Products Balance Sheets. "Vegetables", 2012-2013*. Ankara: Ministry of Food, Agriculture and Livestock.
- Turkey, (2014). *Meteorological datas of Giresun Province*. Tumas, Ankara.