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Change of Elders' Diets in Rural Regions of Southeastern Anatolia Following Economical Development

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Abstract: Less information is known on the nutrition status of elderly people living in rural zones of Southeastern Anatolia, a developing region of Turkey with the huge irrigation project initiated in 1990s that are generally obtained from hospital or nursing homes. Thus, data for real life situation is not sufficient for evaluating nutrition of elders. Data on elderly people's living in rural areas nutrition attributes living at home in Southeastern Anatolia Project Region is needed for preventing problems arising from nutrition following economical development. The study was conducted with 80 participants of equal number of man and women at the age 65 years and over living in relatively well-off Arikok, Sanliurfa (irrigated zone) and low income Yukaridaglica, Adiyaman (unirrigated zone) in the Southeastern Anatolian Project Area (Turkish acronym GAP). SPSS 17.0 software along with Independent T, Chi square and multi response tests were employed for data evaluation. The elderly men and women in rural areas of Southeastern Anatolian mostly consume foods with high carbohydrate and fat content. Family members who prepare food for the family found to be careless for elders' diet priorities since traditional eating pattern in the region, independent of income level, primarily caused obesity. Economic development in terms of income increase cannot always bring positive effects to the society if not coupled with interdisciplinary studies alike health issues. In this regard, increasing awareness among young and middle aged family members on healthy food preparation are crucial for elders' health in GAP Region independent to economic status.

Key words: Elderly nutrition, health, tradition, rural Adiyaman, Sanliurfa

INTRODUCTION

The aging World population of 21st century is one of the important demographic risks for global prosperity (Haub, 2007). The number of people over 65 years, being primarily in developed countries, is sharply increasing all around the world because of decreasing infant mortality, better health services and increasing income level of societies. The age prediction in European countries revealed the number of people at 65 and more will be 32% of the total population and 11% will be over 80 in 2050 (Eurodiet, 2000). This assumption is also valid for Turkey, which was 7% in 2008 and will be projected to be 17.5% in 2050, mostly living in rural areas (Tuik, 2012). The increase of elderly people will be crucial to maintain health and socioeconomic status of society (Kinsella and Philips, 2005) such as malnutrition and developing obesity. The common nutrition disorders of old people are related to unbalanced diet mainly for their decreasing physical activity and loss of teeth (Saka *et al.*, 2010). Fat free body mass and distribution of fat significantly changes by age. The decrease of subcutaneous fat tissue of arm and legs, the increase of intra-abdominal fat tissue causes changes distribution of fat within the body (WHO, 2002). An integrated solution for elders comprising physical activity, nutrition and health controls is a must for mitigation and preventing decrease of life quality (Amella, 2007). For increasing

length and quality of life, meeting sufficient and balanced nutrition is indispensable at elder ages (Rakicioglu, 2007). Malnutrition of elders in Turkey along with hypertension, diabetes, cardiovascular and kidney diseases are widespread (Bilir, 2012) which may be avoided and reduced by proper nutrition. However, changing nutrition habits of 65 years and over is not easy (Runciman *et al.*, 2006). But, with well-planned (time and location) nutrition information the nutrition habits and health parameters have changed positively (Young *et al.*, 2011). Socio-economic structure is known to have high impact on nutrition habits with higher obesity in high income countries and serious malnutrition in low income countries (Ruger *et al.*, 2012). On the other hand some studies showed traditions being more effective than income for old people nutrition (Tourlouki *et al.*, 2009). The GAP Project (Southeastern Anatolia Region Irrigation Project) sought to irrigate 1.8 M ha land for increasing welfare of locals in Southeastern Anatolia initiated in late 1980s. Thus, detailed studies on old people's nutrition habits will yield crucial information for healthier society structure. However, hypertension, diabetes and muscle bone diseases are common within Turkey (Erkin *et al.*, 2004) which is also valid at rural areas of Adiyaman and Sanliurfa. Thus, the study aimed to determine measures for avoiding negative effects of malnutrition at 60-80

years old people living at home in irrigated and unirrigated areas of Southeastern Anatolia and increase current insufficient knowledge on subject matter.

MATERIALS AND METHODS

The study was carried with the participation of equal number of man and women at 65 years and over, totaling 80 subjects living in irrigated (Arikok, Sanliurfa) and unirrigated (Yukaridaglica/Adiyaman) areas within the GAP. Participants, 44 from Arikok and 36 from Yukaridaglica were randomly selected along volunteers. The sample sites were selected based on their relatively differences of income as irrigated areas income is two to three-fold higher than unirrigated areas in GAP. Interview questions were derived from previous scientific studies by adapting regional conditions and undertaken at participants' homes via direct conversations (Erkin *et al.*, 2004). Questions were basically on demographic properties, health issues, nutrition habits and types of consumed food. Also, comments of participants were recorded by interviewers. A calibrated precision balance and a stadiometer were used for weight and height measurement which were undertaken with removed shoes and light clothing. Data were employed for classifying Body Mass Index (BMI) of participants (WHO, 1998). BMI ranges are classified as follows: underweight for <18.5 kg/m², normal for 18.5-24.9 kg/m², overweight for 25-29.9 kg/m², obese for >30 kg/m². BMI evaluation analyses were performed with SPSS 17.0 statistical software. Chi-square test (X²) is used to determine for any significant differences between observed and expected frequencies. P-values of <0.05 were evaluated as significant. Multiple response test was also used within the survey for validation of responses to the questions.

RESULTS

The average age of participants in irrigated area were 69.7±2.7 years for men and 67.5±3.6 years for women with BMI of 26.9±3.5 and 27.6±2.9, respectively. The number of family members in a household was 6.60±1.9 person at men's house whereas slightly higher with 8.0±2.5 person at women's houses. The employed person at men and women household was 1.55±0.7 and 1.68±0.7, respectively (Table 1).

The average age in Yukaridaglica was 67.3±4.5 years for men and was 69.6±4.8 years for women with BMI of 26.1±3.1 for the former and 27.3±2.9 for the latter. In contrast to Arikok, the families are more crowded at men's houses with 7.11±2.30 person than women's houses of 6.89±2.9 person which is tied to patriarchal traditions. However, the number of employed person is higher at women's house than men's house which was 1.77±0.9 for the former and 1.72±0.9 for the latter (Table 1). The average ages of 65 years at both sites (67.3 to 67.9 years) are lower than country's life length which is 73.8 years (Tuik, 2012) also shows the need of health studies at study sites. The rate of illiteracy among women, 59.1% in Arikok and 88.1% in Yukaridaglica, is significantly higher than men's rate of 22.7% in Arikok and 11.1% in Yukaridaglica. While majority of men were per diem employee, women were housewives which may be another factor for the relatively less BMI of men than women. Most of the participants complain for health problems at both sites. The common health problem in Arikok, for men was mainly hypertension followed by diabetes and muscle bone diseases, women were suffering mostly from muscle bone diseases, hypertension and diabetes (Table 2).

Similar health problems also recorded in Yukaridaglica, hypertension being the main ailment among men followed by diabetes, muscle-bone diseases while women suffered from hypertension and muscle bone diseases (Table 2). However, detailed health surveys are needed as health problems are based on participants' statements, for example smoking is common among men and medical consequences of smoking are not known. Participants at both sites stated that they had their meals, mostly three times a day, together with family members. Arikok participants have their meals from individual plates but in Yukaridaglica meal is shared from same plate (Table 3) owing to the lack of sufficient kitchenware in the former site. Women tend to drink more water than men which may be most probably men's excess tea consumption, more than 10 glasses/day meet most of their daily water intake. But, as tea is mainly consumed with sugar (Table 3).

The majority of food consumption is based on carbohydrate rich wheat bread, rice, pasta, cracked wheat and baked products. Wheat bread is consumed

Table 1: Demography of Participants (65 years and more)

	Means±sd (standard deviation)			
	Arikok, Sanliurfa		Yukaridaglica, Adiyaman	
	M	F	M	F
Age	69.7±2.7	67.5±3.6	67.3±4.5	69.6±4.8
Height (cm)	1.66±9.4	1.65±9.5	1.67±5.9	1.59±5.55
Weight (kg)	73.7±7.9	71.9±7.7	73.0±8.1	68.9±5.69
BMI	26.9±3.5	27.6±2.9	26.1±3.1	27.3±2.9
Number of family members	6.60±1.9	8.0±2.5	7.11±2.3	6.89±2.9
Number of employees	1.55±0.7	1.68±0.7	1.72±0.9	1.77±0.9
Number of children	3.86±1.4	4.40±1.4	4.56±1.4	4.78±1.2
Daily field work (hr)	4.45±0.7	3.31±0.7	4.28±0.9	3.50±0.6
Monthly household income	USD540±52		USD384±35	
Total	22	22	18	18

sd: standard deviation

Table 2: Education, employment and Health Status of elders in the study Area

	Arikok			Yukaridaglica		
	M (%)	F (%)	p	M (%)	F (%)	p
Education						
Illiterate	23	59	0.002	11	89	0.191
Literate	32	41	-	72	11	-
Primary	45	-	-	17	-	-
Occupation						
Farmer	14	14	0.001	28	17	0.002
Share cropper	18	9	-	11	11	-
Employee	50	23	-	44	6	-
Housewife	-	54	-	6	66	-
Self-employed	18	-	-	11	-	-
Family type						
Extended family	54	59	0.761	61	56	0.738
Nuclear family	46	41	-	39	44	-
Smoking	73	23	0.001	67	33	1.00
Not smoking	27	77	-	33	67	-
Health problems						
Yes	64	73	0.517	83	72	0.423
No	36	27	-	17	28	-
Major health problems						
Hypertension	40	60	-	58	42	-
Muscle bone diseases	50	50	-	80	20	-
Diabetes	37	62	-	88	12	-
Cardiovascular disease	33	67	-	50	50	-
Upper respiratory infections	1	-	-	50	50	-
Lower respiratory diseases	-	1	-	-	-	-
Psychiatric disease	1	-	-	-	-	-
Anemia	-	-	-	-	1	-
Joint diseases	25	75	-	55	44	-

Table 3: Eating habits of participants in arikok and yukaridaglica

	Arikok			Yukaridaglica		
	M (%)	F (%)	p	M (%)	F (%)	p
Food consumption habits						
Always together	68	54	0.35	78	56	0.157
Frequently together	32	46	-	22	44	-
Always alone	-	-	-	-	-	-
Use of plate						
Own plate	54	36	0.39	27	17	0.675
Shared-plate	32	37	-	39	39	-
Own plate when there is a visitor	14	27	-	34	44	-
Number of meals/day						
Two	36	41	0.95	4	6	0.400
Three	55	50	-	16	13	-
Four	9	9	-	-	1	-
Five	-	-	-	-	-	-
Main meal consumption						
Breakfast always	59	87	0.131	83	83	0.717
Never	26	13	-	6	11	-
Frequently skipped	-	-	-	-	-	-
Sometimes	5	-	-	11	6	-
Lunch always	91	77	0.455	83	78	0.832
Never	4	14	-	6	11	-
Frequently skipped	5	9	-	11	11	-
Sometimes	-	-	-	-	-	-
Dinner always	100	100	-	100	100	-
Never	-	-	-	-	-	-
Frequently skipped	-	-	-	-	-	-
Sometimes	-	-	-	-	-	-
Water consumption	1775±481.2	1981±294.6		1836±436.8	1955±364.1	

at every meal in Arikok, with cracked wheat pilaf, pastry, pasta and nuts on every two days. Men prefer stew, beans, chickpea and vegetable foods with meat at once or twice a week, women tended to consume same food

at lesser amounts. However, women prefer fried stuff every two days which was once a week for men. Meat balls and milk puddings are served every two weeks in Arikok diet (Table 4).

Table 4: Type of food consumption frequencies of elders in Arikok (%)

	--- Every day ---		--- Once a week ---		Once two week		Rare		None	
	M	F	M	F	M	F	M	F	M	F
Bread	100	100	-	-	-	-	-	-	-	-
Cracked wheat pilaf	23	13	23	41	-	-	-	-	-	-
Pilaf with rice	14	-	27	9	23	27	23	27	9	32
Dry bean	-	-	23	23	23	32	18	36	-	4
Chick pea	-	-	27	32	27	4	18	41	4	18
Green peas	-	-	14	13	23	4	4	14	59	68
Lentil	18	14	18	55	-	-	9	9	-	9
Casserole	9	4	18	4	14	23	36	41	23	23
Vegetable dishes	-	-	41	50	18	32	9	32	9	9
Fired vegetable	-	-	36	23	32	27	27	41	4	9
Meat and vegetable dishes	-	-	23	23	64	46	14	23	-	9
Frying	23	36	41	18	9	4	9	-	-	-
Meatballs	4	19	21	14	18	41	50	18	-	-
Pastry	27	36	23	13	4	4	-	4	-	-
Milk puddings	14	23	32	32	46	27	4	9	-	-
Fish	-	-	-	9	9	4	18	18	59	46
Canned foods	4	9	27	18	13	9	-	-	-	7
Pasta	9	27	41	54	18	45	5	45	4	-
Soups	9	27	41	36	5	23	14	18	4	-
Nuts	-	-	36	41	5	23	14	18	4	-

Table 5: Type of food consumption frequencies of elders in Yukaridaglica

	--- Every day ---		--- Once a week ---		Once two week		Rare		None	
	M	F	M	F	M	F	M	F	M	F
Bread	100	100	-	-	-	-	-	-	-	-
Cracked wheat pilaf	-	6	39	44	-	-	-	-	-	-
Pilaf with rice	-	-	28	22	22	17	22	28	17	33
Dry bean	-	-	39	28	17	22	17	22	5	11
Chick pea	-	-	22	17	33	11	22	28	22	22
Green peas	-	-	28	28	22	5	-	5	50	61
Lentil	-	22	78	56	-	-	11	11	-	-
Casserole	-	6	17	5	22	39	28	33	-	-
Vegetable dishes	-	-	50	39	5	5	33	33	11	11
Fired vegetable	-	-	50	39	22	17	28	44	-	-
Meat and vegetable dishes	-	-	11	11	67	50	22	33	-	-
Frying	11	28	33	11	11	22	-	-	-	5
Meatballs	6	-	44	44	28	28	28	33	-	-
Pastry	61	67	5	5	-	-	-	-	-	-
Milk puddings	6	5	17	28	22	28	33	33	17	5
Fish	61	28	5	17	11	17	17	-	-	39
Canned foods	-	-	-	-	5	22	28	22	67	56
Pasta	-	44	50	50	17	5	-	-	-	-
Soups	11	11	28	39	33	33	5	-	11	5
Nuts	-	-	39	28	11	6	17	22	22	-

The food consumption pattern in Yukaridaglica, is also dominated by wheat bread followed by cracked wheat pilaf, pastry, pasta. Soup, lentil, chickpea, vegetables without meat and nuts are consumed once a week. Stew, vegetables with meat and milk puddings are eaten every two weeks. Men preferred rice pilaf, dry beans and baked vegetables every week which is more frequent than women. Similar to Arikok, women like to have fried food more than men by eating every two days. Canned food and fish consumption is very low in Yukaridaglica (Table 5). Participants informed that foods are prepared with butter and tail fat in Arikok and Yukaridaglica which is a common traditional food preparation. Moreover, high amounts of oil (butter and tail fat) are used in cooking.

DISCUSSION

The GAP Project is not only seeking irrigation of agricultural area but also focuses on increasing welfare of locals. However, the positive effects of the GAP Project on income are not same for all areas which caused imbalanced economic structure within the region. This study attempt to evaluate nutrition dynamics between relatively high income and low income region within GAP Project area.

The study involved to determine any differences in food consumption and its relation to health for old people between relatively high (USD540 in Arikok) and low income sites (USD384 in Yukaridaglica) within GAP area. The average BMI classification of 25-30 kg/m² at both sites increases the rate of mortality (Stevens and Nowicki, 2003). Although BMI did not show significant differences between regions for men and women population. Women's BMI was slightly higher than men most probably more active life of men somewhat keep them to have low weight than women. Aged women in general stays at home but men at similar ages daily go for work, to local coffee houses and mosque. But at coffee houses the high consumption rate of tea with sugar has a negative effect on their BMI. The immobile life style of elders particularly women, consumption of high energy bearing foods causes obesity that riggers hypertension and muscle-bone problems. The average life expectancy in Turkey is 73.8 years (Tuik, 2012) but the average ages of 65 years at both sites (67.3 to 67.9 years) are lower than country's life length which revealed the necessity of determination of the low life period in the region. Bread and cereal based foods are consumed in large amount by the people living in Turkey. The 44% of daily energy is obtained only from bread and 58% is obtained from bread and cereal based foods (National Food and Nutrition Strategy Task Group Report, 2003). Fish consumption, although is in an increasing trend due to the sprawl of aquaculture following construction of Atatürk Hydropower Dam in late 1990s, is still not at a significant rate. The high carbohydrate containing food consumption in the study sites are attributed to

traditional nutrition habits and the low socioeconomic status of rural women, which were increasing prevalence of overweight/obesity (Sabbag, 2012). Therefore traditional high energy bearing food consumption negatively affect elders' health conditions. Hoffman (2001) and Sabbag (2012) reported the causes of high overweight/obesity in the World and in Turkey as better access to food, decreased physical activity and the consumption of relatively inexpensive but high energy bearing foods alike in study sites. Although irrigation opportunity increased cultivation of more vegetables varieties that may diversify food pattern in Arikok, locals still continue to eat traditional carbohydrate rich foods but consumption of vegetable based foods is a must for meeting elders' mineral needs (Johnson *et al.*, 2004). Parents in rural southeastern Turkey generally live with their oldest son who secures their nursing. Thus, household foods are prepared by younger family members and high energy bearing foods are prepared for meeting high energy demanding younger members of the households. Elders are obliged to consume same food that increases BMI value. The study revealed the urgency of changing elders' nutrition habits. So, along with providing healthy food preparation techniques to young members of the household that are responsible for cooking, the physical activity of elders should be maintained particularly women who tend to have immobile life style than men. This may be achieved via visual media programs with the corporation of public health services in the region since old people spend several hours by watching TV. Otherwise health expenses against diseases caused by obesity and related disorders for elders will exceed family income.

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