

Nutritional Status and Problems of School Age Children in Turkey

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Introduction

Turkey is a democratic republic country located in the middle of Asia and Europe with a population of 72 million (2006 estimation). The percentage of 0-14 year old children is about 29, and the school age children (7-14 age) are 15.4 % of the total population ⁽¹⁾. The number of school existing for school age children is 34.990. Some schools have education whole day (starts at 8³⁰ or 9⁰⁰ am and ends at 3³⁰ or 4⁰⁰ pm with an hour lunch break) and some have half day program for two shifts a day (mostly 7⁴⁵ to 12⁴⁵ am and 12⁴⁵ to 5⁴⁵ pm). There are 582 boarding schools for 287.000 students. About 700.000 students are carried to neighboring village schools from small habitats by vehicles where day stay whole day and receive their lunch packages ⁽²⁾. There are two groups of schools in Turkey, ie. governmental and private. Each has different policy and problems related to school nutrition programs.

School Nutrition Programs

School Nutrition Programs differ depending on the socioeconomic conditions of the countries. In Turkey, in the year of 1956, milk powder was distributed to the schools to be prepared as milk and a small amount of flour to the families. In 1960 supplementary food program started and some foods like, dried fruits, nuts, egg were given to the schools located in the poorest areas. This program did not reach its aim therefore it was abrogated in 1975. Milk supply program was carried out with intervals and total 2.138.867 children took milk supply between 1984 to 1988. Last milk supply program was started in 2001 and called as "School Milk Program". It was carried on only in 3 big cities (Ankara, İstanbul, Diyarbakır) and ended in 2003. As it is seen the school nutrition programs were carried out in Turkey from time to time but the continuity and the coordination have not been yet achieved ⁽³⁾.

Fast foods consumption is increasing year by year in all schools. As most of the students are skipping breakfast, the school meal becomes very important being the first meal of the day. Most of the governmental schools have part day programs; therefore no lunch is

served in those schools but there is a nutrition hour where students eat the foods they brought from their homes. Since bringing the food from home created problem among rich and poor children, foods became standardized and a list showing which foods to be sent to school was prepared by teachers and given to the mothers ⁽⁴⁾. An example of such a list is shown in Table 1 from two different schools, Rize and Ankara Kavaklıdere Primary schools.

Table 1. Samples of a Food List Prepared by the Teachers for nutrition hours

Days	Rize* Primary School	Ankara** Kavaklıdere*** Primary School
Monday	Cookies	Sandwich with cheese
	Milk or Ayran****	Canned fruit juice
Tuesday	Cheese	Bread with chocolate paste spread
	Olives	Canned fruit juice
	Fruit	
	Bread	
Wednesday	Bread with chocolate paste spread	Bread with tahin helva*****
	Milk	Canned fruit juice
Thursday	French fries	Bread with white cheese
	Ayran	Canned fruit juice
Friday	Free	Bread with Gruyere Cheese
		Canned fruit juice

* city in northeast of Turkey

***a district in Ankara

** the capital city of Turkey

***** Tahin halva is a dessert prepared by sesame seeds paste, cacao and sugar

*** Watery yogurt

Canteen is available for many of the schools and the students are allowed to buy foods. There is no regulation for the school canteens and mostly carbohydrate rich foods and drinks are sold in most of the school canteens. If the school has full day program students go either to their homes to eat lunch or eat the food brought from home. Studies related with food consumption show that students are consuming protein, calcium, iron, riboflavin and niacin lower than the recommended amount. There is difference in nutrient consumption of students going to governmental or private schools (Table 2) ⁽⁵⁾.

Table 2. The Rate of Children Consuming Inadequate Energy and Nutrient in Governmental and Private Schools ⁽⁵⁾

Nutrients	Governmental School (%)	Private School (%)
Energy	22.7	2.0
Protein	8.7	0.7
Animal Protein	8.7	0.7
Calcium	34.7	18.7
Iron	38.7	8.7
Zinc	83.3	39.3
Vitamin A	68.6	52.0
Thiamin	52.0	12.7
Riboflavin	63.3	27.3
Niacin	84.0	37.3
Vitamin C	23.3	16.7

All boarding schools are governmental where the food is prepared and served at school kitchens with a limited budget and inadequate conditions. Students who are carried to neighboring village schools are staying whole day and they receive their lunch packages. But the lunch package budget is limited and schools have not kitchen for preparing or cooking. Table 3 shows Bingöl Young Boarding school one week menus and table 4 shows carried school one week menu. As it is seen menus is very monotonous, inadequate in vegetable and fruit groups.

Table 3. Bingöl* Young Boarding School Menu (June) **

Breakfast	Lunch	Dinner
Tea	Chick Peas with minced meat	Chick Peas with minced meat
Olives	Bulgur Pilaf	Bulgur Pilaf
Cheese	Pickles	
Tea	Dry beans with minced meat	Dry beans with minced meat
Olives	Bulgur Pilaf	Bulgur Pilaf
Jam	Pickles	
Lentil Soup	Chicken	Potato Pure
	Rice Pilaf	Yogurt
	Dry Fruit Komposto***	
Tea	Eggplant with minced meat	Potato Pure
Olives	Bulgur pilaf	Yogurt
Egg	Salad	
Lentil Soup	Potato with minced meat	Dry beans with minced meat
	Rice pilaf	Bulgur Pilaf
	Caciki	

* a city in the east part of Turkey

**Bread is served ample amount at each meal

*** Watery sweet

Table 4. Carried School One Week Menu

Monday	Tuesday	Wednesday	Thursday	Friday
Bread	Bread	Bread	Pastry with	Bread
Cheese	Chocolate paste spread	Butter	cheese filling	Tahin-Pekmez*
Tahin Halva	Biscuit	Honey	Ayran	Cream biscuits
Canned fruit juice	Canned fruit juice	Milk with fruit	Cake	

* Sesame seeds paste mixed with grape molases

All of the private primary schools have full day programs where lunch is served. All private schools have cafeterias where the food is either prepared and cooked in the cafeteria kitchens or brought by the food companies vehicles prepared at the company kitchens. In private school meals are planned by school administration, families or food service companies. Table 5 shows a sample of one week menu from one of the private primary schools in Ankara.

Table 5. Menus used in Bilkent Private Primary School in Ankara (June)

Days	Morning Snack	Lunch	Afternoon Snack
Monday	Fruit juice	Lentil soup	Kruasan
		Meat saute with pilaf	Milk
		Rich dessert	
		Bread	
Tuesday	Milk	Spinach with meat and yogurt	Pastry with cheese filling
		Macaroni	Fruit juice
		Apple	
		Bread	
Wednesday	Apple	Tomato soup	Simit**
		Meat balls	Milk
		Potato Salad	
		Semolina Halva*	
		Bread	
Thursday	Orange	Chick peas with meat	Baton sale
		Rice pilaf	Milk
		Caciki	
		Bread	
Friday	Milk	Vermicelli soup	Cokies
		Chicken with pilaf	Fruit juice
		Mandarin	
		Bread	

*dessert made with semolina, sugar and butter

** Turkish pretzels with sesame seeds on

Nutritional Problems of School Age Children in Turkey

In Turkey, nutritional problems of school age children can be listed as, iron deficiency, iodine deficiency, vitamin deficiency, undernutrition, obesity, dental caries, irregular feeding habits, bad food choice and, inadequate activity. Iron deficiency is the most common micronutrient deficiency in Turkey, with prevalence ranging from 14.7% to 30% and it is specifically seen among low income families (Table 6) ⁽⁶⁻¹¹⁾. The habitual diet of the low income families is rich in carbohydrates and fat. Wheat is a staple food for the Turkish people. The major percentage of energy comes from bread (44%) and bread with other cereals (58%). Yogurt is the most frequently used milk product. Fresh fruits and vegetables are available throughout the year, and widely consumed. Oil and fat consumption show regional variations, as olive oil is mostly consumed in western and southern parts ⁽¹²⁾. Dry peas, beans, lentils, chick peas and vegetables used to be cooked in fat with meat. However, now meat can rarely be afforded. For breakfast, even the children drink tea ⁽⁷⁾.

Table 6. Studies Showing Iron Deficiency (ID) and Iron Deficiency Anemia (IDA) Prevalence

Researcher	Age Groups	Prevalence
Koç et al. 2000	6-11 Şanlıurfa	ID 14.7 %
		IDA 5.4 %
Kılınç et al. 2002	6-12 Kahramanmaraş	ID 24.7 %
		IDA 12.5 %
Ulukanlıgil et al. 2004	9-10 Şanlıurfa	ID 30 %
Keskin et al. 2005	12-13 Ank, İst, İzmir	ID 19.1 %
		IDA 3.9 %
Gür et al. 2005	6-10 İstanbul	ID 28.9 %
Küçükerdönmez et al. 2006	6-13 Ankara	ID 15.7 %
		IDA 1.7 %

ID: Iron deficiency (serum ferritin <15 mcg/L)

IDA: Iron deficiency anemia (Serum ferritin <15 mcg/L and Hgb <12g/dL)

Turkey has documented mild-to-severe iodine deficiency disorders (IDD) (13-15). The overall prevalence was found as 30.3% of the population in a national survey conducted in 1995 ⁽¹³⁾. In 1994, the Ministry of Health initiated measures aiming at improvement of the

iodine intake nationwide. In 1968, a salt iodization program was started in Turkey; however, its use is not yet widespread. In 1998, the salt iodization program became mandatory ⁽¹⁴⁾. However, iodization of industrial salt is not enforced. According to the Turkey Demographic and Health Survey (TDHS, 2003) iodized salt consumption ratio is % 69.5⁽¹⁾. Iodine deficiency disorders prevalence can be seen in Table 7. IDD is still an important public health problem in Turkey ⁽¹⁵⁻²²⁾.

Table 7. Iodine Deficiency Disorders Prevalence

Researcher	Age Groups	Prevalence
Semiz et al. 2000	6-11 Antalya	35 %
Erdoğan et al. 2000	9-11 Ankara	26.7 %
	Bayburt	44.8 %
	Trabzon	51.7 %
	Kastamonu	40.3 %
Divrikli et al. 2000	7-12 Kayseri	38.2 %
Şimşek et al. 2003	8-12 Bolu, Düzce, Zonguldak	52 %
Demirel et al. 2004	7-12 Zonguldak	19.4 %
Cinaz et al. 2004	6-12 Ankara	12.6 %
Özkan et al. 2004	7-12 Erzurum	47.6 %
Darcan et al. 2005	6-12 Batı Anadolu (7 il)	12.1 %

From nutrition point of view Turkey seems to have both developing and developed countries problems. Riboflavin deficiency is given as 82.9 % and vitamin B₆ deficiency is 60.7 % ⁽²³⁾. And according to the Turkey Demographic and Health Survey (TDHS, 2003)⁽¹⁾ the figure for underweight children below -2SD in 0-5 age group is 3.9 %. This figure is 12.2% for the same age group for stunted children (1). Underweight and stunted is more common nutritional problem in Turkey. But the prevalence of obesity and overweight among children is also increasing epidemically (Table 8) ^(8, 10, 22, 24-27).

Cardiovascular diseases are the most common cause of death in adults ⁽²⁸⁾. Metabolic syndrome is started to be seen in children also. One study showed that among 131 obese children (age 2- 18) 20 % had metabolic syndrome ⁽²⁹⁾. Many studies also showed that the level of HDL_C is low among Turkish children ^(24, 25, 30).

Table 8. Undernutrition, Stunting and Obesity in School age Children

Researcher	Age Groups	Prevalence
Uçar et al. 2000	7-18 Eskişehir	O 1.5 %
Soylu et al. 2000	9-11 İzmir	U 17.2 % O 1.4 %
Ulukanlıgil et al. 2004	9-10 Şanlıurfa	U 11.5 % S 10.1 %
Krassas et al. 2004	6-17 Kayseri	RO 10.6 % O 1.6 %
Gür et al. 2005	9-12 İstanbul	U 4.7 % S 5.8 %
Darcan et al. 2005	6-12 Batı Anadolu	U 4.9 % S 6.5 %
Sur et al. 2005	12-13 Ank-İst-izmir	U 12.0 % RO 12.0 % O 2.0 %

U: Underweight RO: Risk of obesity O: Obesity S: Stunted

Studies show that cognitive abilities and school performance have been affected negatively with skipping meals. The average percentage is 21.1 for skipping meals. One of the main skipped meals is breakfast (43.8 %) among school-age children. Snacking with junk foods (biscuits, crisps, cake and kinds of different pastry, soft drinks) is very common (87.4 %) ⁽³¹⁾.

The average diet is adequate to meet recommended daily intake of energy and most of the nutrients while animal protein, calcium, vitamin A and riboflavin are lower than the recommended daily allowances. Usually three meals are eaten in the country. The results of regional surveys indicate that there are differences among families, sub-groups and seasons in terms of energy and nutrient intakes. The most important parameter influencing food consumption pattern is income level and lack of knowledge. The problem is not the availability of food but its misdistribution ⁽¹²⁾.

Attitudes and behaviors to food and eating are formed early in life but may be modified. There are so many factors influencing eating habits of Turkish school age children.

Economic status of the family, education of the parents, ethnic origin, living in different regions, social attitudes and behaviors, media influence, personal preferences and personal behaviors, heavy school curriculums are all contributing factors ⁽⁴⁾.

National income per capita is given as 3000 dollars in Turkey. Most of the parents' education level is very low. Children are watching television starting the age of 2.7 ⁽³²⁾. Many children have dental problems. One study carried out at the age of 12 year old children showed that 61.1 % of the children have dental caries ⁽³¹⁾.

Nutrition Education for School-age Children

Basic nutrition topics are found in life science course at 3rd grades. During 8 grades nutrition is thought as one of the chapters in science and technology course. The percentage of the nutritional topics in total courses is 3 % ⁽³³⁾.

There is a project running by the Ministry of Education with a collaboration of Hacettepe University, Department of Nutrition and Dietetics, where 700 nutrition teachers are being educated by nutrition experts for the nutrition courses to be thought at schools.

Nutrition is very common media topic for the last 5 years. Therefore, there are numerous programs giving nutrition messages. There is no regulation to control these programs, consequently consumers are very confused. Recently a national body called Food and Nutrition Council is formed in the Ministry of Health where two of our department professors are in the council. The council formed sub expert groups for different nutrition problems. One of them is school nutrition program expert group. There are some leaflets, booklets for school age children prepared by Ministry of Health and our department..

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