REPUBLIC OF TURKEY
MINISTRY OF HEALTH

REPUBLIC OF TURKEY
MINISTRY OF NATIONAL
EDUCATION

HACETTEPE
UNIVERSITY

TURKEY CHILDHOOD (AGES 7-8) OBESITY SURVEILLANCE INITIATIVE (COSI-TUR) 2013

ANKARA - 2014

Childhood Obesity Surveillance Initiative, 2013 (COSI-TR-2013) is conducted by Republic of Turkey Ministry of Health. The project which is collaborated with World Health Organization European Regional Office and member countries has been designed in accordance with WHO European COSI protocol. This project was at first initiated with the partnership of 13 member countries and WHO European Reigonal Office in 2006. Turkey joined the third phase of the surveillance initiative run by World Health Organization European Office in 21 countries. Support from Ministry of National Education and Hacette University has been obtained throughout the project. Financial support for the project has been provided by Republic of Turkey Ministry of Health.

Print : MAY, 2014, Ankara, Turkey, 500 Copy

ISBN : 978-975-590-496-2

Publication Number : 922

Production : Sistem Ofset Bas. Yay. San ve Tic. Ltd. Şti.
Srazburg Cad. No: 31/17 Sıhhiye ANKARA
Tel: 0 (312) 229 18 81

www.beslenme.gov.tr

This publication is prepared and printed by Republic of Turkey Ministry of Health Turkish Public Health Institution, Department of Obesity, Diabetes and Metabolic Diseases.

We want to express our thanks to Elif Saygı, Umut Çınar Ülger and Ömer Alp Yardım who take part in the photograps on front cover of the book.

EDITORS

Seçil ÖZKAN, MD, Prof.
President, Turkish Public Health Institution

Hilal ÖZCEBE, MD, PhD, Prof.
Director Institute of Public Health
Universty of Hacettepe

Nazan YARDIM, MD Assoc. Prof
Turkish Public Health Institution
Director of Obesity, Diabetes and methabolic
Disease Department,

Ayşe Tülay BAĞCI BOSİ, MSc, PhD, MSc
University of Hacettepe
Institute of Public Health

AUTHORS

Hilal ÖZCEBE, MD, PhD, Prof.
Director Institute of Public Health
Universty of Hacettepe

Ayşe Tülay BAĞCI BOSİ, MSc, PhD, MSc
University of Hacettepe
Institute of Public Health

PUBLICATION BOARD

PUBLİCATION COORDINATOR

PREFACE

Obesity is an important public health problem at global level as it increases both in developed countries and developing countries. Innovations revealing with technology are presented for humanity, thus having people move less due to the opportunities provided. When certain negative conditions collide such as differences in nutrition type and physical inactivity, obesity prevalance frequency world around rises.

2.8 million of people in the world lost their lives due to overweight and obesity, while 3.2 millions of people lost their lives because of physical inactivity. In WHO European region, half of the whole adults and 1 out of five of the children are overweight. One out of three of these children are obese, while this figure is increasing rapidly. Being overweight and obesity contributes increase in non-communicable disease rates, contributes to phenomenon of life time shortening, while it affects life quality in negative way.

Main objective of national health policies is to reach for a healthy society, combined by healthy individuals. Within this scope "Healthy Nutrition and Active Life Program in Turkey", initiated in 2010 encompasses issues on precautions for enabling sufficient and balanced nutrition for fighting against obesity as well as promoting regular physical activity in society.

While there is no national research on monitoring of child and adolescent grow up available, there are various studies at local and regional level. Dwelling on the studies conducted, it is observed that frequency for being overweight and obesity is increasing gradually. Our children are going through a swift growing up and improving period. In this period having them gain habits for sufficient balanced nutrition and regular physical activity contributes to their growing up and plays an important role in raising their school success. This year Turkey has joined "European Childhood Obesity Surviallance Initiative" affiliated to World Health Organization and implemented in 21 countries, is applied in collaboration with Republic of Turkey Ministry of National Education and Ministry of Health.

The target of this study is to participate in an international research and monitor growing of school age children in comparison with the other countries. In scope of this Project, information concerning gathered through surveys for student, parents and school environment the child is in. As the research is repeated in two years, it is aimed to monitor difference in school age children's' growing.

I would like to extend my gratitude for field workers having effort and our consultants, Ministry of National Education, Prof. Seçil ÖZKAN, MD, President of Turkish Public Health Institution, Prof. Hilal ÖZCEBE, MD and Ayşe Tülay BAĞCI BOSİ, PhD, Institute of Health, University of Hacettepe, Principal Investigator and Assoc. Prof. Nazan YARDIM, MD, Director of the Department Obesity, Diabetes and Metabolic Diseases, for their contribution to the research to Dr. Joao BREDA, WHO Programme Manager, Nutrition, Physical Activity and Obesity, to Trudy WIJNHOVEN, WHO European Region COSI International Coordinator, to Maria HASSAPIDOU, Greece COSI Principal Investigator and personnel working the department for planning, completing for and preparing the results of this research which sets up profile for malnutrition, being overweight and fat in school age children in our country and I wish this study would be a beneficial one for raising healthy generations.

Mehmet MÜEZZİNOĞLU, MD
Republic of Turkey, Minister of Health

CONTENTS

INDEX OF TABLES AND DIAGRAMS

APPENDIX TABLES

INDEX OF DIAGRAMS

ABBREVIATIONS

BAZ : BMI-for- age Z-Score
BMI : Body Mass Index
CDC : Centre for Disease Control
CI : Confidense Interval
COSI : Childhood Obesity Surveillance Initiative
HAZ : Height-forage Z-Score
MoNE : Ministry of National Education
NUTS : The Nomenclature of Territorial Units for Statistics
OR : Odds Ratio
MoH : Ministry of Health
SE : Standart Error
SD : Standart Deviation
TOÇBİ : Surveillance on Growth Monitoring in School Aged Children in Turkey (Türkiye Okul Çağı Çocuklarında Büyümenin İzlenmesi Projesi)
TUIK : Turkish Statistics Institution
WAZ : Weight-for-age Z-Score
WHO : World Health Organization

1. INTRODUCTION

Nutrition is defined as consumption of food to sustain life and to preserve and improve health. "Adequate and balanced nutrition" is the first of the basic behavior affecting the state of health. Healthy nutrition directly provides an important support for improving the health potential of the individual, family and society, and their wellbeing (WHO, 2012).

Although many factors come into play in determining healthy nutrition behavior, socio-economic status is known to be the most significant ones. Social and economic indicators such as educational status, income level and occupation have effects on nutrition opportunities and behavior, thereby also on health status. Over-nutrition and malnutrition, and inadequate physical activity are listed at the top reasons for obesity; however, genetic, neurological, physiological, bio-chemical, psychological factors, as well as socio-cultural and environmental factors are also important factors for obesity (Peterson, Hughey, Lowe, et all, 2007).

Properties of the inhabited environment and individuals' life styles are effective in forming noncommunicable diseases that are becoming more frequent in the world. Smoking, alcohol and substance consumption, malnutrition and inadequate nutrition, sedentary life style, living and working under adverse environmental conditions, problematic social surroundings are influential in forming such noncommunicable diseases.(Lowrence and Potvin, 2002) Overweight and obesity that cause noncommunicable diseases are defined as "an increase in the amount of body fat to a degree that would comprise health risks". Cardiovascular diseases, diabetes, hyper-tension, certain cancer types and muscular-skeletal system diseases are among the major problems caused by obesity. According to data from World Health Organization, nearly three million people worldwide die due to being overweight or obese. Overweight or obesity not only doubles the burden of disease every year, but it also leads to deaths caused by an illness due to obesity. Furthermore, obesity also decreases the quality of life (WHO, 2012).

The most important one of the childhood public health problems is obesity. Childhood obesity increases all around the world, including low and middle income countries (WHO, 2012). It is acknowledged that environmental factors, along with genetic factors, play a major role in the increase of the frequency of obesity occurrences, especially during childhood. The generally accepted view is that obesity epidemic is caused by an environment that encourages excessive food intake and inhibits physical activity. Growing wealth and social conditions such as the increase in the marketing of premade food called "fast food" which is consumed outside home and easy access to such foods, increasingly popular sedentary forms of recreation like watching television and videos or using computers are listed as factors that come into play in the increase of obesity (French, Story, and Robert, 2009).

Behavioral subheadings such as pleasure from eating, response to offers to eat, duration of eating, desire to drink, and cognitive, involuntary and emotional eating habits are among those that are influential in the origination of obesity (Webber, Hill, Saxton et al, 2009; Cappelleri, Bushmakin, Gerber, et al, 2009). Duration of sleep is also stated to have an impact on the origination of obesity. As the duration of sleep increases, both the amount of calories burnt decrease and there isn't enough time left for physical exercise. On the other hand, short durations of sleep is also a factor on origination of obesity (Must and Parisi, 2009).

Today, innovations that emerge with the rapid advances in technology are at humanity's service. In daily life, mechanization is increasing and becoming wide spread, even short distances are covered

by cars and people move much less due to the facilities provided by the modern life styles. Advancing technology may also impact people's eating habits in a negative way. When lack of physical activity is added to changes in nutrition habits, they increase obesity further (WHO, 2012).

Growth is a very good indicator of children's general health conditions. Under-nutrition and malnutrition affect a child's growth and are among the first and most important indicators that a child's general health is deteriorating. Evaluation of children's individual nutritional status can be ensured by growth monitoring. In our country, children's growth within the children periodic examination are monitored by family physicians. From schooling on, a collaborated monitoring programme is run by the family physician and the school. However, in order to evaluate children's growth status nationwide, results from researches on a sampling representing the society are utilized to make a general assessment of the situation (MoH, 2013a). Monitoring of the indicators concerning nutrition was made possible in our country with the Surveillance on Growth Monitoring in School Aged Children in Turkey (Türkiye Okul Çağı Çocuklarında Büyümenin İzlenmesi Projesi "TOÇBİ") in 2009. Among children at the age group of 6-9 which was TOÇBİ Study's target group, being overweight was assessed as 14.3% and obesity as 6.5%. The results of the TOÇBİ (2009) study show that one out of every five children in our country is under risk regarding diseases associated with being overweight (MoH, 2011).

Upon the evaluation of the results from the status analysis conducted in our country, Ministry of Health has prepared "Turkish Healthy Nutrition and Active Life Programme (2010-2014)" in order to reach the goals set to prevent obesity by monitoring growth in adults, children and youth, to speed up the activities, to determine new goals and strategies according to needs, and to ensure the proceeding of activities within a given framework. Within the scope of this programme, obesity is defined as an important health problem in our country. By including the subject of campaigning against obesity in formal and common educational curricula at schools as a part of the struggle against obesity in the context of the programme, it is aimed to introduce the habit of balanced nutrition and regular physical activity to preschool and school aged children, adolescents and young people and to contribute to bringing up of healthy and productive generations (MoH, 2013b).

World Health Organization European Region member countries run Childhood Obesity Surveillance to monitor school aged children's obesity status every two years. In 2010, 40% of school-aged children had a body weight over normal standards and 15% was obese in the World Health Organization European Region. Being overweight and obese causes problems like cardiovascular diseases, diabetes, mobility problems, psychological problems, failure at school and lack of self- confidence (WHO, 2013). World Health Organization European Region Childhood Obesity Surveillance protocol was followed in this study which aims to assess childhood obesity status. As such, it is aimed to compare the frequency of obesity in childhood in our country with that of the WHO European Region countries, as well as to give data support to Turkish Healthy Nutrition and Active Life Programme conducted nationwide.

2. OBJECTIVES

Among second grade school students in Turkey (7-8 year-olds) :

- To evaluate the anthropometric measurements (height and body weight) of their nutritional status and to determine their growth indicators (Severe underweight, underweight, normal weight, overweight and obesity, stunting and severe stunting),
- To define children's eating habits and physical activity levels as declared by themselves and their families,
- To gather information concerning schools' nutrition and physical activity practices,

Based on the obtained results;

- To assess the success of programs conducted for "healthy nutrition and growth" of children,
- To enable determining new strategies and planning interventions to ensure that children gain healthy living behavior,
- To follow up on children's growth by biannually repeating the same study nationwide,
- To obtain internationally comparable data by utilizing research methods and questionnaires prescribed by WHO.

3. BACKGROUND

Three main notions regarding the survey will be stressed in this chapter. First one of these is "healthy nutrition and its importance", second is "obesity, its reasons and problems it causes" and the third is "anthropometric measurements and assessment methods".

3.1. Healthy Nutrition and Its Importance

The basis of being alive is taking in nourishment, digestion, carrying nutrients to cells, transforming to energy, mending of worn out cells and forming of new ones. When all nutrients are taken together, the body sustains its normal development, its healthy and strong functioning (MoH, 2013a).

Taking of nutrients necessary for humans to grow and develop, to renew and function their tissues, to live healthy and productively; and consuming them appropriately for the body is defined as "adequate and a balanced nutrition". It is scientifically proven that growth and development is inhibited and health deteriorates when any one of these agents is not taken or taken excessively or inadequately. Therefore adequate and balanced nutrition is the bare bone of health. Thus humans need certain nutrients to grow and develop, for the body to function productively and to be resilient against external factors and diseases (MoH, 2013a).

More than 40 nutrients that humans need and that are found in foods are categorized in six groups. These are proteins, fats, carbohydrates, minerals, vitamins and water. (Attila, 2012)

- Proteins constitute the main structure of cells and are the first nutrients for growth and development. Proteins are also used as energy sources of the body.
- Fats are the most energy generating nutrients. Sub dermal fat prevents rapid body heat loss. Fats are also crucial for the construction of certain hormones necessary for the body to function regularly.
- Carbohydrates are basically sources of energy. Most of our daily energy is supplied by carbohydrates
- Minerals carry out significant functions within the working of the body. Minerals known to be important for the body to grow healthily and to sustain its life are calcium, phosphorus, potassium, magnesium, manganese, iron, copper, zinc, fluorine, chrome and selenium.
- Vitamins play a role in the forming of cells. Certain vitamins help inorganic materials like calcium and phosphorus to root in bones and teeth. Other vitamins come into play in sustaining the functions of nutrients crucial for the body and reducing the effects of certain harmful materials.
- Water is necessary for digesting foods, transferring nutrients to cells, and discarding harmful residue resulting from the use of nutrients within the cells as well as excessive heat in the body. It is imperative for life that the body contains adequate amounts of water.

Foods differ in terms of the type and amount of nutrients they contain. Foods are divided into four groups according to their respective nutritional values. In a daily diet it is recommended to consume nutrients of every group and that they be appropriate to meet the needs of the body. (Attila, 2012)

Group 1: Milk and Diary Products: This group is the best source for calcium that is important in bone development. Milk, yoghurt, cheese, skim-milk and milk containing desserts are included in this group. One or more of these foods must be consumed in one or two portions a day. A large glass of milk or yoghurt, two matchbox sized cheese cubes, a small bowl of milk or rice pudding is considered a portion.

Group 2: Meat, chicken, fish, eggs, legumes: This group of foods are rich in proteins, vitamin B and iron, and they generate energy. Any one or more of these foods must be consumed in two portions daily. One egg in the morning is considered half a portion of proteins. Our daily protein need is met when we have legumes for one meal and a dish of vegetables with meat for the other.

Group 3: Fresh vegetables and fruits: Potatoes, cauliflowers, celery, zucchini, tomatoes, cucumbers, peppers, green leaved vegetables, carrots and all types of fruits are included in this group. 3 to 5 portions of any one or combination of these foods must be consumed every day. One average sized fruit such as an orange, apple, pear or banana, 3 to 6 of fruits like apricots or plums; half a glass of fruits like strawberries or cherries are considered a portion. 2 to 3 glassful of chopped green leaved vegetables, an average sized potato, one small carrot, one small zucchini is again considered a portion.

Group 4: Bread and Cereals: This group constitutes our main energy source. Bread, pasta, vermicelli, rice, bulghur, couscous, pastry and flour and semolina containing desserts are included in this group. One or two average sized slices of bread per meal is sufficient for an adult. Physically active people may eat 2-3 times that amount whereas individuals who work seated need not eat more than a single portion. 3 to 5 spoonfuls of pasta or rice is considered a portion. Portions of desserts are asserted according their types. 3 to 4 leveled spoonfuls of semolina dessert, 5 or 6 yeast fritters, 3 to 4 spring rolls, a normal slice of pastry is considered a portion.

Fat, sugar and spices that are not listed in these groups are used to season foods. Since sugar only provides energy for the body, excessive consumption would lead one to malnutrition. Foods like honey, molasses and jam can substitute sugar. The amount of fat appropriate for an individual's consumption per day is 2 to 3 leveled spoonfuls, half of this amount must be from vegetable oil. (MoH, 2013a)

3.2. Definition of Obesity, Frequency, Causes and Related Health Issues

Being overweight and obese is defined as "an increase in the amount of fat to a degree that would comprise health risks"

According to data from 2008, one third of people over the age of 20 are overweight or obese across the world. Childhood obesity is among the most important public health problems of the last century. Childhood obesity is on the increase all over the world, including many low and average income countries. It is estimated that the global number of obese children under the age of five is over 42 million, with around 35 million of it living in developing countries (WHO, 2012). A study conducted between 1995 and 2005 in the European Region portrays an increase in obesity for both sexes. Discoveries show that perinatal, family based and environmental factors stand out among factors affecting obesity. It is also found out that blood pressure levels rise along with increasing obesity. (Must and Parisi, 2009)

Results of Health survey of Turkey (2008) also show that one third of people over the age of 15 in Turkey's population are overweight, one seventh of them are obese (TUIK, 2009). The Ministry of Health, Hacettepe University and the Ministry of National Education conducted surveillance on Growth Monitoring in School Aged Children in Turkey (TOÇBİ) project survey in order to assess the frequency of obesity in the country's children in 2009. This survey was conducted on the age group of 6 to 9, and revealed that the frequency of obesity was 6.5% and overweight was 14.3%. This survey shows that one out of every five children is under the risk of diseases related to overweight (MoH, 2011).

Over-nutrition and malnutrition, and inadequate physical activity are listed at the top rows; however, the effects of genetic, neurological, physiological, bio-chemical, psychological factors and socio-cultural and environmental factors are also important. It is acknowledged that environmental factors along with genetic ones play an important role in the increase of frequency of global obesity, especially among children. The generally accepted view is that obesity epidemic is caused by an environment that encourages excessive food intake and inhibits physical activity. Growing wealth and social conditions like the increase in the marketing of premade foods called "fast food" which is consumed outside home and the easy access to such foods, increasingly popular sedentary forms of recreation like watching television and videos or using computers, the dramatic increase in the number of working women lead to reshaping of family dynamics (French SA, Story M, and Jeffrey RW, 2009).

Duration of sleep is also stated to impact the forming of obesity. As the duration of sleep increases, both the amount of calories burnt decrease, and there isn't enough time left for physical exercise. On the other hand, short durations of sleep is also a factor in the forming of obesity (Must and Parisi, 2009).

Another major factor in forming obesity is the eating habits. Behavioral subheadings like pleasure from eating, response to offers to eat, duration of eating, desire to drink, and cognitive, involuntary and emotional eating habits are among eating habits that have a part in forming of obesity (Webber, Hill, Soxton, et all. 2009; Cappelleri, Bushmakin, Gerber, et all, 2009).

Thus today, innovations that emerge with the rapid advances in technology are at humanity's service and people lead a life style that changes constantly. Advancing technology may also impact people's eating habits in a negative way. When lack of physical activity is added to changes in nutrition habits, they together broaden obesity (WHO, 2013)

Obesity is among the noncommunicable health problems and main reasons of early age deaths. According to data from World Health Organization, nearly three million people worldwide die due to overweight or obese. Cardiovascular diseases, diabetes, hyper tension, certain cancer types, muscular-skeletal system diseases, declining quality of life and finally death are among problems caused by obesity (WHO, 2013).

Every year overweight or obese not only leads to deaths caused by an illness due to obesity, but it also doubles the burden of disease. This leads obesity to be defined as a problem impacting the national economy as well. Prevention of obesity is one of the first precautions towards prevention of types of cancer and chronic diseases (WHO, 2012).

3.3. Anthropometric Measurement Techniques and Evaluation Methods

It is rather difficult to assess overweight and obesity in children and adolescent groups. Since they are in development phases, their body structures change in a rapid fashion. It is suggested to use different indicators depending on the age. (WHO 2007 2013, WHO 2013)

There is no distinct classification in children and adolescents like the case with adults and different approaches are used to assess obesity. One of the most common methods is the use of percentile and/or Z-Score values on an individual or social level. World Health Organization has defined growth standards for children from age 5 to 9 in 2006, and growth reference values for children and adolescents from age 5 to 19 in 2007. Therefore BMI Z-Score – Body mass Z-Score values have begun to be used to categorize overweight-obese, thinness and severe thinness, and Height Z-Score to categorize stunting, severe stunting, and tallness beyond normal, depending on age and sex of children and adolescents today. During evaluations, students' clothing tare is subtracted from values obtained by body mass measurements allowing for their net body weights and the body weight is corrected adjusted to the clothing. Z-Score evaluations are conducted with ANTHRO Plus 2007 program and according to suggestions from WHO, extreme values are excluded from analysis (Detailed information concerning this section is included in method chapter). (WHO, 2009, 2013)

4. METHODS

The fact that only 15 countries had national data sets and 19 countries had a surveillance policy for obesity in children of 6 to 9 age group at the "WHO European Ministerial Conference on Counteracting Obesity" held in Istanbul between November 15th and 17th has led WHO European Region to assemble a standardized childhood surveillance initiative. WHO European Childhood Obesity Surveillance Initiative –COSI was realized with collaboration of 13 members of WHO European Region during 2007-2008 school term. COSI protocol was developed with cooperation of member countries and the protocol was finalized by WHO European Region finalized the protocol by 2008 (TM Wijnhoven et all, 2012).

WHO European Childhood Obesity Surveillance Initiative (COSI) protocol was used in this survey.

4.1. Type of survey

This study is a ***Cross-Sectional Epidemiologic Study*** survey conducted with the collaboration of Republic of Turkey Ministry of Health, WHO European Region, Republic of Turkey Ministry of National Education and Hacettepe University.

4.2. Variables of survey

Independent Variables;

2nd Grade students' (7-8 year-olds);

Gender
Some eating habits at home and at school
Physical activity status at home and at school
Time they spare to watch TV, do homework, play

Families' social-demographic characteristics

Geographical region their schools are located at
Environmental properties of their schools
Opportunities and practices regarding nutrition and physical activities at their school

Dependent Variables ;

In 2nd grade students (7-8 year-olds);

Severe Underweight
Underweight
Thinness
Overweight
Obese
Stunting
Sever Stunting

4.3. Population/Sample

According to the protocol between Ministry of Health Turkish Public Health Institution Head of Department of Obesity and Metabolic Diseases and WHO European Region, size of population was realized by WHO COSI group.

2nd grade students from across Turkey were included within the survey. According to Republic of Turkey Ministry of National Education's 2012-2013 school year's first term 2nd grade classroom and student numbers; total number of elementary schools (including private schools) that have a 2nd grade is 29,730 with a total of 55,160 2nd grade classrooms and 1,229,965 2nd grade students.

By evaluating the number of students at these schools, those with fewer than 5 girls and 5 boys in their classroom were excluded from the sample. Before the phase of determining sample, 11,026 urban and 8,691 rural elementary schools were assessed within the population. A total of 955,250 2nd grade students from 33,923 2nd grade classes in urban regions and a total of 223,593 2nd grade students from 11,159 2nd grade classes were in the population. As a result, a total of 1,178,843 students from 45,082 2nd grade classes at 19,717 schools constituted the target group.

According to the standards determined by World Health Organization, in order to assess childhood obesity, at least 2,800 seven-year-old children's height and body weight should be measured in an appropriate way to represent the nation.

While determining the size of sample for this survey, the possibility that there may be children within the sample group who wouldn't volunteer or whose data would not be evaluated was taken into consideration. It was estimated that 70% of the target population would be reached due to various reasons that may arise during survey and its analysis. Furthermore, in the light of data from the Ministry of National Education, it was calculated that 40% of 2nd grade students would be outside the desired age range. As a result, sample was increased by 40% and 5,600 students were agreed upon to include in the sample group.

By stratified according to the urban and rural areas, it was calculated that "(955,250/1,178,843) x 5,600" = **4,538** second graders would have to be from urban regions and "(223,593/1,178,843) x 5,600" = **1,062** second graders would have to be from rural regions. According to MoNE records, average numbers of students in seconds grade class 27,8 in urban schools and 20,2 in rural seconds. Number of schools in the sample was determined by dividing the number of schools by the average number of students per classroom. Sample consisted of (4,538/27.8)= 163 elementary schools from urban regions and (1,062/20.2)= 53 elementary schools from rural regions.

Random classrooms were picked by stratified the list of Turkey obtained from MEB (Ministry of National Education) according to regions. Sample was determined with rural-urban layered random systematic method, and sample interval was reached when dividing the total of elementary schools in Turkey by the determined number of elementary schools in the sample, elementary schools were coded according to their provinces' license plate numbers, after the first elementary school to enter the sample was assessed, number of elementary schools and classrooms appearing in the sample were listed systematically in accordance with the sample interval. List of provinces, elementary schools and classroom are shown on Table 1 and distribution of sample according to NUTS region is on Table 2.

Table 1. Sample Distribution of Number of Classes by Rural and Urban Regions of Provinces, Turkey 2013

Province Name	Rural	Urban	Total	Province Name	Rural	Urban	Total
Adana	1	6	7	Kars	1	1	2
Adıyaman	1	1	2	Kastamonu		1	1
Afyonkarahisar	1	1	2	Kayseri		3	3
Ağrı	1	2	3	Kırıkkale	1	1	2
Aksaray	1		1	Kırşehir		1	1
Amasya		1	1	Kocaeli		4	4
Ankara		12	12	Konya	2	5	7
Antalya	2	4	6	Kütahya		1	1
Aydın	1	2	3	Malatya	1	2	3
Balıkesir	1	2	3	Manisa	1	3	4
Batman	1	2	3	Mardin	2	1	3
Bingöl	1	1	2	Mersin	1	5	6
Bolu		1	1	Muğla	1	1	2
Burdur	1	1	2	Muş	1	1	2
Bursa		6	6	Nevşehir	1		1
Çanakkale	1		1	Niğde		1	1
Çankırı		1	1	Ordu	1	1	2
Çorum		1	1	Osmaniye		1	1
Denizli	1	2	3	Rize		1	1
Diyarbakır	2	4	6	Sakarya	1	2	3
Edirne		1	1	Samsun	1	2	3
Elazığ	1	1	2	Siirt	1	1	2
Erzincan		1	1	Sivas		2	2
Erzurum	1	2	3	Şanlıurfa	4	3	7
Eskişehir		1	1	Şırnak	1	1	2
Gaziantep	1	6	7	Tekirdağ	1	2	3
Giresun		1	1	Tokat		1	1
Hakkari	1		1	Trabzon	1	1	2
Hatay	2	3	5	Tunceli		1	1
Iğdır	1	1	2	Van	3	2	5
İstanbul		30	30	Yalova		1	1
İzmir	1	8	9	Yozgat	1	1	2
Kahramanmaraş	2	2	4	Zonguldak		1	1
Karabük		1	1	Total	53	163	216

Table 2. Sample Distribution of Students Number of Schools by NUTS Regions, Turkey 2013

NUTS Area	n	%
İstanbul	814	16.4
West Marmara	187	3.8
East Marmara	442	8.9
Aegean	536	10.8
Mediterranean	710	14.3
West Anatolia	428	8.6
Central Anatolia	243	4.9
West Black Sea	208	4.2
East Black Sea	126	2.5
Northeast Anatolia	223	4.5
East Anatolia	312	6.3
Southeast Anatolia	729	14.7
Total	**4958**	**100.0**

During the survey, greatest number of interviews were held in Istanbul with a rate of 16.4%, with Southeast Anatolian Region in second place with a 14.7% rate, Mediterranean Region in third place with a %14.3 rate, Aegean Region with 10.8%. All remaining interviews were below 10%. Fewest interviews were held in Eastern Black Sea Region, with a rate of 2.5%.

Of the 216 elementary schools nationwide, weight and height of every 2nd grade student in each of the schools that appeared in the sample were measured and students' families and the schools were subjected to a survey. Information concerning the answers of the given number of students from MB's 2nd grade students list of the 216 elementary schools listed in the sample, and analyzed data are presented in Table 1. In this survey, the frequency of answering and analysis is 100%. With a frequency of 92.9% in family response, 96.7% eligibility in answered survey forms and 91.1% of children that were reached in surveyor forms, a total of 88.5% of the 5,101 students who were subjected to anthropometric measurements were included in the analysis. Those outside the child age survey group margins and who had insufficient data were excluded during the analysis.

Table 3. Distribution of the Numbers of Forms of School, Family and Surveyor Responded and Analyzed in the Study, Turkey 2013

Questionnaires	Number of Sample	Response		Analyzed	
		n	%	n	%
School	216	216	100.0	216	100.0
Family	5600	5017	89.6	4856	86.7
Surveyor	5600	5101	91.1	4958	88.5

4.4. Data Gathering Phase-Questionnaires

4.4.1. Data Gathering Forms

Questionnaires have been standardized to enable international analogy in COSI studies run by World Health Organization European Region. Surveyor, Family and School questionnaires standardized by WHO consist of two parts, one mandatory and one voluntary. During "Turkey Childhood Obesity survey" it was decided by Turkish study group to use the mandatory and voluntary parts of the questionnaires together. (WHO European Childhood Obesity Surveillance Initiative manual Of Data Collection Procedures, Version October 2012). Questionnaires were translated into "Turkish", adapted to the society through preliminary testing, and the number of questions and options were left without modification to compare with international data sets. Questionnaires prepared for Turkey were designed in a compatible manner with optical encoding and data gathering directives were prescribed for each form.

- ***Surveyor Registry Form:*** This is the form used by the surveyor to take anthropometric measurements of the students at schools and to process data. A separate form is used for each student. Information was filled in the forms concerning the students by trained province project teams (Doctor, Dietician, Nurse/Midwife and Health Technician) within the planned time line in accordance with the survey programme, and students' anthropometric measurements were taken and recorded in "surveyor Registry Form".

- ***School Information Form****:* This is the form that aims to evaluate nutrition and physical activity opportunities at schools. The surveyor and a school manager and/or school official at the first interview have filled these, or when the school was visited for anthropometric measurements.

- ***Family Registry Form****:* Filled by families of the students in the sample. When a school was visited for the first time, family registry forms were sent to families along with a filling directive, in an enclosed envelope and before gathering of data. On the front of the envelope, a consent form was included stating whether or not the family would participate in the survey. Forms were filled by the families and given to students, who in turn delivered them to the surveyor when he visited for anthropometric measurements.

4.4.2. Province Survey Teams

Public Health Institution of Turkey, Division of Obesity, Diabetes and Metabolic Diseases has assembled province survey teams for the provinces that were listed in the sample. In accordance with the number of schools and students listed in the sample, it was required that survey teams consist profession groups of especially doctors, dieticians, nurses/midwifes and/or health technicians. Following their own training, "province survey teams" that were determined in each province have passed on their training to a medical assistant and assigned them as "Assistant surveyors". Consultants and "Trained survey team" realized whole survey and anthropometric measurements. Assistant surveyors have helped surveyors in the work environment by admitting students to classes for measurements, undressing and dressing.

Distribution of medical staff in province survey Teams according to their professions is as follows:

- MD / Medical Specialist 6
- Dietician 46
- Nurse / Midwife 20
- Health Technician 6

A total of 78 people were trained by consultants to take part in the survey team.

4.5. Standardization

4.5.1. Training of Province Survey Teams and Data Gathering Standardization

Surveyors chosen from provinces have received an in-service training at the training meeting held in Ankara between April 28th and 30th, 2013.

Training of the surveyors was realized by consultants in the format determined by World Health Organization with supervision and support from WHO representative, and it was completed in three full days with standardization practices performed under supervision.

Teams assembled by consultants were trained on questionnaires and methods. Training was supported with directives prepared for filling out the forms. Project team was trained on weight and height measurement techniques both theoretically and applicative. Surveyors practiced on questionnaire application and encoding, sources of mistake made were assessed, corrected and applications were repeated.

Measuring equipment for student's anthropometric measurements to be used throughout the survey were introduced, calibration methods were taught and uniformity of measurement equipment and calibration materials for each survey group to be used during the application was ensured.

During training, spadework was done concerning height and weight measurements for adults and children, and training for correct and delicate standardized measuring was provided.

4.5.2. Measurement Standardization

Each surveyor has practiced anthropometric measurements after his theoretical anthropometric measurement training, same measurement was repeated by the expert, possible differences between anthropometric measurements of the surveyor and the expert were assessed, if there were any, source of the difference was determined and measurements were practiced until no difference between the expert and researcher remained.

To ensure a maximum delicacy and precision of anthropometric measurements by all surveyors, height and weight measurement practices were made at schools where there were students in the age margin of the survey group. This spadework was conducted with the collaboration of Ministry of Health and Ministry of National Education at two schools that were not in the sample. Every surveyor repeated the measurements of five students in the age group of 7 to 8 twice, under the supervision of an expert.

1st and 2nd measurements during this practice were recorded on separate forms, an expert consultant evaluated measurements after all application practices were completed, and correlation between the measurements were calculated. Correlation index between the first and second measurements of the surveyors was assessed as 98. Probability of surveyors measuring the same person at different times with the same results was found to be 0.98-1.

Weight scales and height measurement tools were often checked, surveyors were trained on calibration techniques. All examinations-calibrations were dated and recorded by surveyors on calibration forms, applied by checking the calibration section.

- *Calibration of weight scale;* after a maximum of one minute following weight scale activation, a value of 0,0 was read on the solar screen and the calibration form was checked. Calibration of weight scale was done using a five-liter water bottle of the same brand by the entire study group. Calibration was repeated before every measurement and the results were recorded in the calibration form.

- *Calibration of height board;* When foot and head rods were brought to the minimum value, it was checked that height board indicates the minimum value on the meter. A tailor's ruler with a known length (100cm) was placed from top, head rod was adjusted in a way to touch the ruler and the calculated height was read and written on the calibration form as the height value.

Calibration Form

Instrument	Date						
Weighing Scale							
Zero Value							
5 kg							
Height Board							
Minimum Value							
100 cm							

4.5.3. Standardization of Conditions

This study was completed between May 15th and June 11th, 2013. Measurements were taken in an empty classroom or a private room in all schools. As much as possible, measurements were taken between morning and noon, however if the class in the sample is placed in the afternoon school aged group, measurements were taken following the first class.

Weights were measured in kilograms and recorded with a sensitivity interval of 100 grams. Scale was placed in a horizontal, level and solid ground, heavy clothing (jacket, cardigan, coat etc) and wallets, cell phones, key chains, belts and all kinds of objects that may weigh down were taken prior to measurements of children's weights, children's sensitivities were considered, measurement process was explained to the children, they were made to stand straight on the scale and measurements were taken.

As for height measurements, height board was mounted where a level ground and a vertical plane intersected forming a right triangle, utilizing the vertical plane. Vertical and horizontal parts were assembled in a right angle, the mobile part was used as head rod and heights were measured and recorded with a sensitivity interval of 0.1cm.

4.6. Equipment Used in the survey

As per recommendation from WHO, WHO COSI standard questionnaires, SECA 813 weight scales and portable SECA 213 the project group of Turkey used height boards in all survey groups.

4.7. Data Analysis

Surveyors filling the forms carefully and supervisors checking whether the forms were encoded fully and correctly initiated quality assurance of data. Interval and consistency checks were conducted in the structure of data entry system for confirmation. Controls, data cleanup, confirmation (anomalous and extreme data, data entry errors and out of context data etc.) and backup for inconsistent and incomplete data has been conducted by the consultant who is the data administrator. Questions 28, 29 and 31 were excluded from the analysis due to many errors in questions and data sets.

4.7.1. Data Processing

Upon completion of data gathering, the surveyors in the provinces have securely sent all data gathering-recording forms to the central team within 10 days following the completion of data gathering. Optical encoding of questionnaires, which are delivered to the central team, have been transferred to electronic environment with the use of optical character reading technologies. Data sets transferred to electronic environment have been separately sent to consultants in the form of Excel files. Archiving of questionnaires was conducted by Ministry of Health study group, and data set-variable origination, cleaning up of data sets, execution of checks, structuring the encoding and backups of data sets were conducted by the consultant who is the data administrator.

4.7.2. Data set

A database was formed on SPSS 18.0 and data cleanup was conducted for every Excel data set transferred to consultants by Ministry of Health Study group. After data cleanup children's ages were assessed and students younger than 84 months (7.00) and older than 107 months (8.99) were not included in the analysis. Students whose age fit the study group but whose **weight-for-age Z-Score was < -6 SD and/or > + 5 SD, height-for-age Z-Score was <-6 SD and /or > +6SD, BMI-for-age Z-Score was <-5 SD and /or > +5SD** were excluded from the analysis. Cut-off point has been set at 0.05 in the analysis.

- ***School Data Form (n=216)****:* There has been no loss during optical encoding and transferring to electronic environment of data derived from school forms. Distribution tables according to site have been obtained.

- ***Family Registry Form (n=4.856):*** Family forms have been filled by families and are encoded, thus most encoding errors were found in these forms. Forms with inconsistent answers and those outside the children age group were excluded from the analysis. Number of answers differs for every question. Distribution tables according to site have been obtained for the acquired variables. Questions 28, 29 and 31 were excluded from the analysis due to many errors in questions and data sets.

- ***Surveyor Registry Form (n=4.958):*** In the analysis of data set derived from surveyor forms, those younger than 84 months and older than 107 months were excluded from the analysis. Variables were analyzed according to urban-rural, gender and NUTS regions, distribution criteria and averages have been used for evaluation.

The 95% confidence interval for prevalence was calculated with the Wald normal approximation formula. [1]

Formula is $\hat{p} \pm z\sqrt{\frac{1}{n}\hat{p}\,(1-\hat{p})}$ z=1,96 (1- ½ α)

Prior to anthropometric measurements' analysis, measuring tare of children's clothing determined **net weights**. At the date of survey, the clothes which students wore during the measurements were encoded by a surveyor and weight of these clothes was calculated by the survey team, on average, underpants have been accepted to weigh 120 gr, sportswear (sweatpants-t shirt) 260 gr, thin clothing (school uniform) 275 gr, thick clothing (jeans, sweaters and the like) 560 gr, and analysis has been made on the **net weights**.

Weight-for-age (WAZ), height-for-age (HAZ) and body mass index-for-age (BAZ) scores have been calculated, WHO Anthro Plus (WHO 2009 2013) program has been used to calculate the scores, and categorization has been done as severely thin, thin, normal, overweight and obese. With regards to height, severely short, short, normal, tall and severely tall have been the determined groups.

Classification and cut-off points of weight-for-age, height and body mass index Z-Scores in the evaluation of children's growth is presented in Table 4.

1 http://www.statlect.com/Wald_test.htm,
http://www.stats.gla.ac.uk/glossary/?q=node/525,
http://support.sas.com/documentation/cdl/en/statug/65328/HTML/default/viewer.htm#statug_surveyfreq_details32.htm,
http://courses.ttu.edu/isqs5347-westfall/images/5347/Wald_Approximation.pdf, http://support.sas.com/documentation/cdl/en/procstat/63104/HTML/default/viewer.htm#procstat_freq_a0000000660.htm, STAT 528: Data Analysisi I (Autumn 2011)-p.1/23
Base SAS(R) 9.2 Procedures Guide: Statistical Procedures, Third Edition,
http://www.math.wpi.edu/Course_Materials/SAS/new_bici.pdf
A Comparison of Binomial Proportion Interval Estimation Methods, John Ulicny, Precision Metrics Inc., Valley Forge PA http://www.nesug.org/proceedings/nesug01/ps/ps8021.pdf
Ana M. Pires, Department of Mathematics and CEMAT, Instituto Superior T´ecnico, Technical University of Lisbon (TULisbon), Portugal apires@math.ist.utl.pt

Table 4. Z-Score Classification of Anthropometric Measurements (WHO 2007)

Z -score	Weight	Height	Body Mass Index
> + 3 SD		VERY TALL	OBESITY
> +2 SD		TALL	
>+ 1 SD	NORMAL	NORMAL	OVERWEIGHT
MEDIAN			NORMAL
< - 1 SD			
< - 2 SD	UNDERWEIGHT	STUNTING	THINNESS
< - 3 SD	SEVERE UNDERWEIGHT	SEVERE STUNTING	SEVERE THINNESS

http://www.who.int/growthref/tools/who_anthroplus_manual.pdf

4.8. Ethical Issues

Approval from Ministry of National Education and survey ethical approval have been obtained to conduct the study in schools. (Appendix 4, Appendix 5).

During data gathering phase of the survey, surveyor has:

- Explained the goals of survey, briefed about the survey application,
- Learned and recorded the reasons of families who didn't allow their children to participate,
- Taken anthropometric measurements of the children one by one, in a separate place where his friends weren't present,
- Included a two person medical staff consisting of surveyor and Assistant surveyor in the room during measurements,
- Taken students' anthropometric measurements with the lightest possible clothing,
- Taken the names of children solely to gather children's forms, with no optical reading and no transfer to electronic environment,
- Obtained a form of consent from the families.

5. RESULTS

Findings of the study will be presented in three sections of school properties, family properties and children's life styles, and evaluation of children's anthropometric measurements.

5.1. Schools

5.1.1. Person filled school questionnaire, numbers of student

This study has been conducted in 216 schools of which 163 (75.5%) are in urban and 53 (24.5%) are in rural areas.

Table 5. Person Filled School Questionnaire at Schools, Turkey 2013

Person Filled School Questionnaire	n	%
Principal/Vice Principal	180	83.3
Teacher	33	15.3
Other*	3	1.4
Total	216	100.0

*Survey forms filled by civil servant in two schools, nurse in one school.

School forms which contain information regarding the schools have been filled out by the principal/vice principal in 88.3% of the schools and by a teacher in 15.3%. During the survey, in two out of a total of three schools, a civil servant, and the remaining by a school nurse filled survey forms. (Table 5)

Table 6. The Distribution of Numbers of Boys and Girls Reached and Participated in the Study, Turkey 2013

Number of Students	Girls		Boys		Total	
	n	%	n	%	n	%
Students participated in the study	2541	88,8	2560	88.9	5101	88,8
Students, absent in the school	239	8,3	233	8.1	472	8,2
Students with no permission from parents	82	2,8	78	2.7	160	2,8
Students unwilling to participate	3	0,1	7	0.3	10	0,2
Total	**2862**	**100,0**	**2878**	**100.0**	**5743**	**100,0**

During the survey, 2862 girl students have been reached, 2.8% of whose families didn't permit participation in the study, whereas 0.1% refused to participate they. During the survey, 2.878 boy students have been reached, 2.7% of whose parents didn't permit participation in the study, whereas 0.3% refused to participate they. (Table 6)

5.1.2. Nutrition Policies and Nutrition Facilities of Schools

Findings regarding children's access to food and beverages, types of accessible food and beverages, their nutrition education and food and beverage advertisements in this section.

Table 7. The Distribution of Nutritional Facilities at Schools by Residence (%), Turkey 2013

	Urban		Rural		Total	
	n	%	n	%	n	%
Vending machine	2	1.2	-	-	2	0.9
Canteen	150	92.0	14	26.4	164	78.5
Cafeteria	29	17.8	14	26.4	43	20.6

* Percentage are taken out for urban areas (n=163) and rural areas (n=53). Total percentage is calculated from total number (n=216).

At two schools, officials stated to have vending machines (0,9%). 78.5% of schools has a canteen whereas 20.6% has a cafeteria. 92.0% of urban schools and 26.4% rural schools posses a canteen whereas frequency of cafeteria has been 17.8% in urban areas and 26.4% in rural areas. (Table 7)

Compliance with national nutrition regulations is 66.3% in provinces and 30.2% in rural areas. However, some of people interviewed were not able to answer this question. (13.5% in urban schools and 9.4% in rural schools)

Table 8. The Distribution of Beverage and Food Paid or Free of Charge at Schools by Residence, Turkey 2013

	Urban		Rural		Total	
	n	% *	n	%*	n	%*
Beverage						
Water	150	92.0	21	39.6	171	79.2
Milk	132	81.0	32	60.4	164	75.9
Ayran	140	85.9	15	28.3	155	71.7
Sweetened Fruit Juice	133	81.6	15	28.3	148	68.5
Natural Soda (Without Sugar)	85	52.1	11	20.8	96	44.4
Fruit Juice (With Sugar)	89	54.6	6	11.3	95	43.9
Flavored Milk	77	47.2	4	7.5	81	37.5
Hot Drink (With Sugar)	72	44.2	6	11.3	78	36.1
Hot Drink (Without Sugar)	68	41.7	5	9.4	73	33.8
Fruit juice (Process) (100%)	40	24.5	3	5.7	43	19.9
Fresh Squeezed Fruit Juice	16	9.8	-	-	16	7.4
Diet or light beverage	9	5.5	-	-	9	4.2
Food						
Candies, wafers, chocolate, cake, etc	146	89.6	17	32.1	163	75.5
Fresh fruit	46	28.2	7	13.2	53	24.5
Yogurt	35	21.5	3	5.7	38	17.6
Chips, pop corn, etc	26	16.0	5	9.4	31	14.3
Vegetable	21	12.9	3	5.7	24	11.1
Other	29	17.8	10	18.9	39	18.1

* Percentages are taken out for urban areas (n=163) and rural areas (n=53). Total percentage is calculated from total number (n=216).

Most common beverages found at schools are water (79.2%), milk (75.9%), and ayran (71.7%). Most common beverages at schools in urban areas are water (92.0%), ayran (85.9%), sweetened fruit juice (81.6%) and milk (81.0%). Most common beverages at rural schools are milk (60.4%), water (39.6%), sweetened fruit juice (28.3%) and ayran (28.3%). There is greater access to all beverages at schools in urban areas compared to schools in rural areas. (Table 8)

One third of schools (75.5%) carry candies, wafers, chocolate and cake and 24.5% carry fruits. 89.6% of schools in urban areas sell candies, wafers, chocolate and cake while it is much lower in rural areas (32.1%). Foods that provide healthy nutrition like fresh fruit and yoghurt are found in 28.2% and 21.5% of schools in urban areas whereas it is much scarcer in rural areas (13.2% and 5.7% respectively). Food is more accessible at schools in urban areas compared to those in rural areas. (Table 8)

Table 9. The Distribution of Food and Drink Provided Free of Charge or Low Price at Schools by Residence, Turkey 2013

	Urban		Rural		Total	
	n	%*	n	%*	n	%*
Free Fresh Fruit						
Yes, all students	19	11.7	2	3.8	21	9.7
Some classes	4	2.5	3	5.7	7	3.2
No, not provided	140	85.9	48	90.5	188	87.1
Free Fresh Vegetables						
Yes, all students	16	9.8	2	3.8	18	8.3
Some classes	1	0.6	2	3.8	3	1.4
No, not provided	146	89.6	49	92.5	195	90.3
Free Milk**						
Yes, all students	95	58.6	37	69.8	132	61.4
Some classes	65	40.1	15	28.3	80	37.2
No, not provided	2	1.3	1	1.9	3	1.4
Milk with Low Price**						
Yes, all students	17	10.6	1	1.9	18	8.4
Some classes	-	-	-	-	-	-
No, not provided	144	89.4	52	98.1	196	91.6

* Percentages are taken out for urban areas (n=163) and rural areas (n=53). Total percentage is calculated from total number (n=216).
** The question related to free milk was not answered by one school and the question related to low price milk by two schools.

The rate of providing students with free fresh fruit and vegetables at schools is rather low. At 9.7% of the schools, all students are provided fresh fruit and at 8.3% they are provided fresh vegetables. The rate of providing all students with free milk is at 61.4% whereas providing low price milk is at 8.4%. (Table 9)

Accessibility of fresh fruit and vegetables is at 11.7% and 9.8% in urban areas and much lower at rural areas (%3.8 and %3.8). Accessibility of free milk is at 58.6% in provinces while it is at 69.8% in rural areas. Low price milk is accessible at 10.6% of the schools in provinces and 1.9% of them in rural areas. (Table 9)

Table 10. The Distribution of Education on Nutrition and Prohibition of Sales and Advertising of High Calorie/Low Nutritional Value Food and Beverages at Schools by Residence (%), Turkey 2013

	Urban		Rural		Total	
	n	%	n	%	n	%
Education on Nutrition*						
Yes, all students	131	81.4	37	69.8	168	78.5
Yes, some classes	20	12.4	9	17.0	29	13.6
No, not at all	10	6.2	7	13.2	17	7.9
Total	161	100.0	53	100.0	214	100.0
Prohibition of Sales and Advertising						
Yes	131	80.4	36	67.9	167	77.3
No	32	19.6	17	32.1	49	22.7
Total	163	100.0	53	100.0	216	100.0

*The question related to nutritional education at school is not answered in two schools.

78.5% of the schools provide education on nutrition 81.4% of the schools in urban areas give all students education on nutrition while the figure is 69.8% in rural regions. In a certain portion of the schools which provide education on nutrition in in provinces and rural areas alike, this service is not available (6.2% and 13.2%). (Table 10)

It has been reported at 77.3% of the schools that sale and advertising of high energy, low nutritional value foods and beverages are prohibited. Sales and advertisements are prevented at 80.4% of the schools in urban areas and 67.9% of the schools in rural areas. However, the rate of prohibition of sales and advertisements is rather high (19.6% in urban, 32.1% in rural). (Table 10)

5.1.3. Physical Activity Opportunities and Practices

This section presents findings concerning physical activity opportunities, organizations, gym class durations at schools and how children reach school.

Table 11. The Distribution of Having of Playground Facility, Practice of Physical Education Classes, Perform of Healthy Life Style Activities and Sportive Activities by Residence (%),Turkey 2013

	Urban		Rural		Total	
	n	%	n	%	n	%
Playground Facility						
Yes	158	96.9	50	94.3	208	96.3
No	5	3.1	3	5.7	8	3.7
Physical Education Class						
Yes, for all students	158	96.9	52	98.1	210	97.2
For some classes	4	2.5	-	-	4	1.9
No, there is not	1	0.6	1	1.9	2	0.9
Sportive Activities						
Yes, for all students	112	68.7	25	47.2	137	63.4
For some classes	22	13.5	9	17.0	31	14.4
No, there is not	29	17.8	19	35.8	48	22.2
Healthy Life Style Activities						
Yes	116	71.2	27	50.9	143	66.2
No	47	28.8	26	49.1	73	33.8
Total (Number)	**163**	**100.0**	**53**	**100.0**	**216**	**100.0**

66.2% of the schools organize healthy living activities and 96.3% have playgrounds. Almost all the schools in urban and rural areas have playgrounds and gym classes. Still, it has been pointed out that more healthy living activities have been held at schools in urban areas than those in rural areas (71,2% and 50,9%). (Table 11)

At 63.4% of the schools sporting activities are available to all students whereas at 14.4% of them they are available only to certain classes. There aren't sports clubs activities/sporting activities at 22.2% of the schools. The rate of organizing sports clubs organizations/sporting activities at schools in urban areas is 68.7% while it is 47.2% in rural areas. The rate of schools with no sports clubs / sporting activities is 17.8% in urban areas and 35.8% in rural areas. (Table 11)

Table 12. The Average Duration of Gym Class at Schools by Residence (min), Turkey 2013

Duration of Gym Class	n*	Mean ± SE (min)	95 % Confidence Interval
Urban	161	89.87 ± 2.65	84.9-95.12
Rural	53	81.51 ± 2.40	76.7-86.33
Total	**214**	**87.80 ± 2.09**	**83.7-91.94**

*This question was not answered by 2 schools.

Total duration of gym class per week is 87.80 ± 2,09 minutes, with urban settlements 89.87 minutes (±2,65) and rural areas 81.51 minutes (±2,40). It is pointed out that gym class durations are longer at schools in urban settlements than schools in rural areas. (Table 12)

Table 13. The Average Duration of Gym Class by Having Healthy Life Style Activities at Schools (min), Turkey 2013

Healthy Life Activities	n*	Duration of Gym Class Mean ± SE (min)	95 % Confidence Interval
Yes	142	89.78 ± 2.71	84.4-95.1
No	72	83.89 ± 3.18	77.5-90.2

*This question was not answered by 2 schools.

Gym class duration per week is 89.78 minutes where healthy living activities are held (± 2.71) while it is 83.89 minutes where they aren't (± 3.18). It was concluded that presence of healthy living activities has not affected gym class durations at schools. (Table 13)

Table 14. The Distribution of Providing School Service and Safety School Way by Residence. Turkey 2013

	Urban		Rural		Total	
	n	%	n	%	n	%
School Service*						
Yes, all students	68	42.5	29	55.8	97	45.8
Some classes	6	3.8	2	3.8	8	3.8
Only for students from rural areas	4	2.5	4	7.7	8	3.8
Only for students living far away	16	10.0	13	6.1	29	13.7
Not provided	-	-	-	-	-	-
Optional	66	41.3	4	7.7	70	33.0
Total	160	100.0	52	100.0	212	100.0
Safety School Way for walking and bcycling						
Yes	58	35.8	29	54.7	87	40.5
No	104	64.2	24	45.3	128	59.5
Total	162	100.0	53	100.0	215	100.0

*The question related to school service was not answered by 4 school, question related to safe school way way by one school.

45.8% of schools provide school buses to all students while at 33.0% of the schools it is optional. Schools interviewed in rural areas have a 55.8% rate of deploying school buses for all students whereas it is 42.5% in urban regions. In rural areas, percentage of students who live distant from school and who use school buses in the countryside is 32.7% while this is 12.5% in urban areas. School bus using patterns are different in urban and rural areas. Frequency of the response that a school bus is provided when needed is 16.3% in urban areas, and this percentage is 36.5% in rural areas. (Table 14)

40.5% of schools announce that the road to their school is safe for walking or cycling. This percentage is 35.8% in urban areas and 54.7% in rural ones. Safety of the road to school also differs between areas. (Table 14)

5.2. Families and Children's Life Styles

Data from families of the children who are included in the survey are presented in this section. Findings concerning families' social-demographic characterisctics and whether they have certain diseases, eating habits of children, their physical activity behavior and the time they spend sedentarily are included.

5.2.1. Social-demographic Characteristics of Families and Having Some Certain Diseases in Family Members

This section presents findings concerning certain social-demographic properties of the families of children.

During the study, 4,002 families in urban areas and 854 in rural areas, with a total of 4,856 families, have filled interview forms. 82.4% of families live in urban areas and 17.6% live in rural areas.

Table 15. The Distribution of Interviewed Family Members, Turkey 2013

Interviewed Person	n*	%
Mother	3180	68.1
Father	1233	26.4
Other	254	5.4
Total	**4667**	**100.0**

*1 people did not answer this question.

68.1% of people interviewed are the children's mothers and 26.4% are fathers while only 5.4% of people interviewed are neither. (Table 15)

Table 16. The Distribution of Children by Age, Gender and Residence According to Families' Answers, Turkey 2013

	Urban		Rural		Total		
	n	%	n	%	n	%	p
Gender*							
Girls	1996	81.8	445	18.2	2441	50.3	0.23
Boys	2005	83.1	409	16.9	2414	49.7	
							OR= 1.09
Total	4001	82.4	854	17.6	4865	100.0	CI=0.94-12.26
Age							
7 Year-olds	2126	83.2	428	16.8	2554	52.6	0.11
8 Year-olds	1876	81.5	426	18.5	2302	47.4	
							OR= 0.12
Total	4002	82.4	854	17,6	4856	100,0	CI= 0.97-1.30

*This question was not answered by 1 people.

50.3% of the children whose families have been interviewed are girls and 49.7% are boys. 81.8% of girls and 83.1% of boys live in urban areas. 83.2% of seven-year-olds and 81.5% of eight year olds who have been interviewed live in provinces. Gender and age distribution of interviewed children according to where they live is similar. (Table 16)

Table 17. The Age and Gender Distribution of Children by Residence According to Families Answers Turkey 2013

	Urban		Rural		Total		p
	n	%	n	%	n	%	
Girls							
7 Year-olds	1101	55.2	227	51.0	1328	54.4	0.12
8 Year-olds	895	44.8	218	49.0	1113	45.6	
							OR= 1.18
Total	1996	81.8	445	18.1	2441	100.0	GA= 0.96-1.45
Boys							
7 Year-olds	102	51.1	201	49.1	1226	50.8	0.46
8 Year-olds	980	48.9	208	50.9	1188	49.2	
							OR= 1.08
Total	2005	83.1	409	16.9	2414	100,0	GA= 0.87-1.33

*1 people did not answer this question.

In urban areas, 55.2% of interviewed girls are “7” years old and 44.8% are “8” years old. Same percentages are 51.1% and 48.9% respectively for boys. Age distribution of interviewed children in urban areas is similar. (Table 17)

Age distribution of girls and boys who have been interviewed is also found to be similar. 51.0% of girls and 49.1% of boys who have been interviewed in rural areas are “7” years old (Table 17)

The mean age of children who had anthropometric measurement was the same in urban and rural areas, which was 7.94±0.34 year-olds. (Table 17)

Table 18. The Distribution of Educational Level of Mothers and Fathers by Residence, Turkey 2013

Education	Urban		Rural		Total	
	n	%	n	%	n	%
Mother*						
Illiterate	343	8.7	216	26.1	559	11.8
Literate	117	3.0	73	8.8	190	3.9
Graduated from primary school (5 years)	1586	40.4	411	49.7	1997	42.0
Graduated from secondary school	447	11.4	40	4.8	487	10.2
Graduated from primary school (8 years)	110	2.8	24	2.9	134	2.8
Graduated from high school	838	21.3	48	5.8	886	18.7
Graduated from university	487	12.4	15	1.8	502	10.6
Total	3928	100.0	827	100.0	4755	100.0
Father*						
Illiterate	75	1.9	45	5.4	120	2.5
Literate	79	2.0	72	8.7	151	3.2
Graduated from primary school (5 years)	1203	31.0	448	54.0	1651	35.0
Graduated from secondary school	596	15.3	101	12.2	697	14.8
Graduated from primary school (8 years)	92	2.4	30	3.6	122	2.6
Graduated from high school	1083	27.9	113	13.6	1196	25.4
Graduated from university	757	19.5	20	2.4	777	16.5
Total	3885	100.0	829	100.0	4714	100.0

*The question related to mother's 101 families did not answer education, the question related to father's question by 142 families.

11.8% of mothers whose children have been reached are illiterate and 3.9% are only literate. Education levels of mothers differ in urban and rural surroundings. While 33.7% of mothers who have been interviewed in urban areas have finished high school or above, this rate is at 7.6% in rural areas. Percentage of being illiterate or just literate is 11.7% in urban areas and 34.9% in rural areas. (Table 18)

25.4% of children's fathers are high school graduates and 16.5% are university graduates. Education levels of children's fathers also differ depending on the area. While 34.9% of fathers who have been interviewed have finished elementary school or less, this ratio is much higher in rural areas (68.1%). Fathers with a high school degree and above make are at 47.4% in urban areas and 16.0% in rural areas. (Table 18)

Table 19. The Distribution of Working Status of Mothers and Fathers by Residence, Turkey 2013

Occupation	Urban		Rural		Total	
	n	%	n	%	n	%
Mother						
House Wife	3097	79.3	721	86.8	3818	80.6
Public Servant	251	6.4	5	0.6	256	5.5
Private Sector	222	5.7	33	4.0	255	5.5
Own Business	123	3.2	18	2.2	141	2.9
Work on Salary	78	2.0	23	2.8	101	2.1
Retired	25	0.6	1	0.1	26	0.5
Student	13	0.3	1	0.1	14	0.3
Unemployment	94	2.4	29	3.5	123	2.6
Total*	3903	100.0	831	100.0	4734	100.0
Father						
Private Sector	1221	31.6	123	15.5	1344	28.8
Own Business	987	25.6	292	36.7	1279	27.5
Work on Salary	672	17.4	180	22.6	852	18.3
Public Servant	580	15.0	45	5.7	625	13.4
Retired	123	3.2	20	2.5	143	3.1
Student	2	0.1	1	0.1	3	0.1
Unemployment	277	7.2	134	16.9	411	8.8
Total*	3862	100.0	795	100.0	4657	100.0

*122 families, related to father's question by 199 families, did not answer the question related to mothers working status.

80,6% of mothers is housewives and 16,0% is actively working. Occupational status of children's mothers who have been interviewed differs according to residential status. 79,3% of mothers in urban areas is housewives whereas this is 86,8% in rural areas. There are more working mothers in urban areas. (Table 19)

8.8% of children's fathers who have been interviewed are unemployed and 3,1% are retired. Fathers' occupations also differ according to residence. In urban areas, 31.6% of fathers work for the private sector, 25.6% run their own businesses, 17.4% work on a salary and %15.0 are public servants. Fathers in rural areas have a different distribution of occupations. 36.7% of fathers run their businesses, 22.6% work on a salary and 15.5% work for the private sector. The ratio of unemployment is 7.2% in urban areas and 16.9% in rural ones. (Table 19)

Table 20. The Distribution of Properties of Houses by Residence, Turkey 2013

	Urban		Rural		Total	
	n	%	n	%	n	%
Home Structure*						
Apartment	2580	65.3	115	13.7	2695	56.3
Private House	1150	29.1	644	76.6	1794	37.4
Shanty	221	5.6	82	9.1	303	6.3
Total	3951	100.0	841	841	4792	100.0
Home Property*						
Home Owner	2111	54.0	632	75.9	2743	57.8
Tenant	1452	37.1	114	13.7	1566	33.0
Other	349	8.9	87	10.4	436	9.2
Total	3912	100.0	833	100.0	4745	100.0

*64 families did not answer the question related to home structure, question related to home property by 111 families.

56.3% of families who have been interviewed during the survey stated that they live in apartments, 37.4% in single-family houses and 6.3% in shanties. Of the children living in urban areas who have been interviewed, 65.3% live in apartments, 29.1% in single-family houses and 5.6% in shanties. In rural areas these percentages are 13.7%, 76.6% and 9.1% respectively. (Table 20)

57.8% of families which have been interviewed state to be homeowners, and 33.0% tenants. Urban and rural areas differ in terms of home ownership. While 54.0% of families in urban areas are homeowners, this ratio is higher in rural areas (75.9%). Tenant ship is at 37.1% in urban areas, higher than its rural counterpart (13.7%). (Table 20)

Table 21. The Distribution of History of Some Chronical Diseases in Families for the Last 12 Months by Residence, Turkey 2013.

Family History	Urban		Rural		Total	
	n	%	n	%	n	%
Hypertension*						
Yes	535	13.5	168	20.0	703	14.7
No	3164	80.1	598	71.2	3762	78.5
Not Known	253	6.4	74	8.8	327	6.8
Total	3952	100.0	840	100.0	4792	100.0
Diabetes*						
Yes	362	9.2	109	13.0	471	9.8
No	3440	87.2	676	80.9	4116	86.1
Not Known	143	3.6	51	6.1	194	4.1
Total	3944	100.0	836	100.0	4781	100.0
High Cholesterol *						
Yes	515	13.1	105	12.5	620	12.9
No	3218	81.5	650	77.7	3868	80.9
Not Known	213	5.4	82	9.8	295	6.2
Total	3946	100.0	837	100.0	4783	100.0

*The question related to hypertension was not answered by 64 families, diabetes by 75 and high cholesterol by 73 families.

History of hypertension in the past twelve months in the families of children who are included in the sampling are 14.7%, with 13.5% in urban areas and 20.0% in rural areas. History of diabetes in the past twelve months in these families is 9.8% of the total, with 9.2% in urban areas and 13.0% in rural areas. History of high cholesterol in the family is at 13.1% in provinces, 12.5% in rural areas and 12.9% total average. History of hypertension and diabetes has been reported to be more common among families in rural areas whereas high cholesterol is more common in urban areas. (Table 21)

5.2.2. Gestational Age, Birth Weight and Breast Feeding

Findings concerning certain properties that affect children's state of health during pregnancy and following birth are presented in this section.

Table 22. The Distribution of Birth Weeks of Children According to Families' Answers by Residence, Turkey 2013

Pregnancy week	Urban		Rural		Total	
	n	%	n	%	n	%
Gestational week before 37th	287	7.4	39	4.7	326	6.9
Gestational week after 37th	3288	84.5	627	79.1	3915	83.5
Not known	317	8.1	135	16.2	452	9.6
Total	**3892**	**82.9**	**831**	**17.1**	**4693**	**100.0**

When gestational age is evaluated according to families' accounts during the interviews, it has been revealed that 83.5% of the children were born after 37 weeks and 6.9% were born before 37 weeks. 16.2% of families who have been interviewed in rural areas and 8.1% of them in urban areas said they did not remember at their child gestational week. (Table 22)

Table 23. The Distribution of Birth Average Weights of Children According to Families' Answers by Residence, Turkey 2013

	n*	X ± SE (gram)	95 % Confidence Interval
Urban	3115	3189.7± 11.96	3166.3-3212.2
Rural	573	3105.7 ± 29.87	3047.2-3164.3
Total	**3688**	**3176.7 ± 11.23**	**3154.9-3198.5**

*1168 families did not answer the question.

According to families of children included in the survey, in urban areas, the average weight at birth is 3189.7 grams (± 11.96), and in rural areas it is 3105.7 grams (± 29.87). Birth weight of children in urban areas is higher than those in rural areas. (Table 23)

95.9% of families that have been interviewed during the survey state that their children have been breastfest whereas 4.1% say they didn't. According to families' accounts, 96.0% of children in urban areas and 96.2% of them in rural areas have been breastfed. The average breast feeding periods are 7.15 ± 1.70 months.

5.2.3. Nutritional Behavior of Children

Findings concerning children's eating habits are presented as declared by their families' in this section.

Table 24. The Distribution of Children Having Breakfast According to Families' Answers by Residence (%), Turkey 2013

Frequency of Having a Breakfast*	Urban		Rural		Total	
	n	%	n	%	n	%
Every Day	3363	85.1	691	82.2	4053	84.6
4-6 Days a Week	208	5.3	58	6.8	266	5.6
1-3 Days a Week	302	7.6	77	9.2	379	7.9
No Breakfast	80	2.0	15	1.8	95	1.9
Total	**3953**	**100.0**	**841**	**100.0**	**4794**	**100.0**

*This question was not answered by 62 families.

84.6% of children have breakfast every day. Percentage of those who have breakfast 1-3 times a week or none at all are 9.8%. No breakfast is 2.0% in urban and 1.8% in rural areas. Frequency of having breakfast is similar for children in urban and rural areas. (Table 24)

Table 25. Distribution of Children's Food and Beverage Consumption Frequencies According to Families' Answers by Residence (%), Turkey 2013

Beverage/Food	Residence	Every day	4-6 days a week	1-3 days a week	Never	Total (n)
Fresh Fruit	Urban	44.2	23.9	30.6	1.3	3805
	Rural	36.0	20.4	41.5	2.1	805
	Total	42.8	23.3	32.5	1.4	4610
Fresh Vegetables	Urban	17.5	26.5	47.9	8.1	3689
	Rural	22.1	25.3	43.7	8.9	764
	Total	18.3	26.3	47.2	8.3	4453
100% Processed Fruit Juice	Urban	14.5	14.6	50.7	20.1	3652
	Rural	12.6	10.4	47.9	29.1	777
	Total	14.2	13.9	50.2	21.7	4429
Fresh Squeezed Fruit Juice	Urban	5.7	11.5	49.3	33.5	3666
	Rural	6.5	11.3	36.2	45.9	767
	Total	5.8	11.5	47.0	35.6	4433
Beverage with sugar and gas	Urban	4.0	7.4	50.3	38.3	3718
	Rural	5.2	14.1	49.9	30.7	787
	Total	4.2	8.5	50.3	37.0	4505
Diet Sodas	Urban	1.5	1.8	10.1	86.7	3648
	Rural	2.7	4.2	13.6	79.5	766
	Total	1.7	2.2	10.7	85.4	4414
Semi Skimmed Milk	Urban	24.4	16.3	29.3	30.0	3722
	Rural	19.5	11.5	27.3	41.7	768
	Total	23.6	15.4	29.0	32.0	4490
Whole Fat Milk	Urban	28.0	18.3	30.5	23.2	3713
	Rural	27.4	17.3	32.7	22.7	781
	Total	27.9	18.1	30.9	23.1	4494
Flavored Milk	Urban	8.5	9.3	38.6	43.6	3679
	Rural	7.4	6.1	21.2	65.4	760
	Total	8.3	8.8	35.6	47.3	4439
Cheese	Urban	50.0	16.3	23.0	10.7	3828
	Rural	55.8	17.0	17.9	9.4	812
	Total	51.0	16.5	22.1	10.5	4640
Ayran	Urban	25.2	26.0	44.4	4.3	3818
	Rural	45.4	23.9	26.3	4.4	802
	Total	28.7	25.7	41.2	4.3	4620
Yogurt	Urban	33.4	27.7	33.5	5.4	3797
	Rural	53.9	22.8	18.9	4.4	790
	Total	36.9	26.9	31.0	5.2	4587
Milk Puding	Urban	5.9	11.9	61.8	20.5	3723
	Rural	6.1	10.4	46.3	37.1	766
	Total	5.9	11.6	59.2	23.3	4489
Red Meat, Chicken, Turkey	Urban	9.9	31.9	53.4	4.8	3826
	Rural	9.2	21.3	62.8	6.7	790
	Total	9.8	30.1	55.0	5.1	4616

Fish	Urban	3.8	9.7	68.3	18.3	3767
	Rural	5.5	7.1	60.9	26.5	788
	Total	4.1	9.2	67.0	19.7	4555
Egg	Urban	42.0	28.5	25.4	4.1	3797
	Rural	44.0	26.1	25.6	4.3	805
	Total	42.4	28.1	25.4	4.1	4602
Legumes	Urban	8.1	28.4	57.3	6.1	3811
	Rural	11.8	29.6	51.7	6.8	803
	Total	8.8	28.6	56.4	6.2	4614
Dried Nuts	Urban	13.7	24.6	56.1	5.6	3798
	Rural	13.3	19.3	59.0	8.5	792
	Total	13.8	23.7	56.6	6.1	4590
Cereal, Bread	Urban	41.1	31.9	26.1	1.0	3777
	Rural	52.6	23.2	21.8	2.4	794
	Total	43.1	30.4	25.3	1.2	4571
Chips, Pop Corn	Urban	8.1	12.9	60.5	18.5	3795
	Rural	11.5	16.2	54.8	17.4	788
	Total	8.7	13.4	59.6	18.3	4583
Candy Bars and Chocolate	Urban	14.3	22.1	56.9	6.8	3791
	Rural	14.9	21.4	50.6	13.0	790
	Total	14.4	22.0	55.8	7.8	4581
Biscuits, Muffins, Cookies, Cakes Etc.	Urban	16.1	26.9	54.2	2.8	3808
	Rural	18.7	22.5	50.8	8.0	797
	Total	16.5	26.2	53.6	3.7	4605
Pizza, Turkish Pizza, Pitta, French-fries, Hamburgers Etc.	Urban	4.2	12.8	68.5	14.5	3848
	Rural	4.4	11.3	54.2	30.0	802
	Total	4.2	12.6	66.1	17.2	4650

It is recommended to eat fresh fruit and vegetables daily; of the families that have been interviewed, 42.8% state their children have fresh fruit and 18.3% state they have fresh vegetables (not including potatoes) daily. As declared by families living in urban areas, 44.2% of their children eat fresh fruit and 17.5% of them eat vegetables every day. Frequency of eating fresh fruit daily decreases (36.0%) and that of vegetables increases (22.1%) in children of families who live in rural areas. While 31.9% of children in urban areas eat three or fewer fruits per week, this percentage goes up in rural areas (43.6%). 8.1% of families in urban places report that their children eat no vegetables, and this figure is 8.9% in rural areas. (Table 25)

14.2% of families that have been interviewed stated that their children have 100% manufactured fruit juices every day. 29.1% of families in urban areas have said their children drink 100% manufactured fruit juices four or more times a week, 20.1% have said theirs have none. On the other hand, while percentage of consuming 4 or more 100% manufactured fruit juices a week decreases (23.0%), ratio of having no artificial fruit juice increases (29.1%) in rural areas. (Table 25)

Fresh squeezed fruit juice percentage has been reported to be much less than that of 100% manufactured fruit juices. 17.2% of families in urban areas have stated that their children drink fresh squeezed fruit juices 4 or more times a week and 33.5% said theirs drink none. In rural areas these percentages are 17.8% and 45.9% respectively. (Table 25)

Total frequency of sugary carbonated beverage (non-alcolic beverage) consumption of four or more times a week is 12.7%. In urban areas, frequency of consumption of four or more of them a week is 11.4%, consumption of 1-3 is 50.3%, and no consumption is 38.3%. A similar distribution is also the case for rural areas (19.3%, 49.9% and 30.7%). (Table 25)

Consumption rate of carbonated diet beverages is much lower than that of sugary carbonated beverages among children. The frequency of drinking four or more carbonated diet beverages a week is 3.3% in urban areas whereas it is 6.9% in rural areas. Percentage of no consumption of such beverages is 86.7% for urban and 79.5% for rural areas. Nationwide 85.4% of families claimed to consume none of this type of beverages. (Table 25)

32.0% of children have stated that they never consume low/half fat milk, 23.1% never whole fat milk, 47.3% never flavored milk. 24.4% of families in urban areas have stated that their children drink low/half fat milk every day while this figure is 19,5% in rural areas. Percentage of no consumption whole milk has been reported as 30.0% for urban and 41.7% for rural areas. Frequency of children consuming flavored milks every day is determined to be 8.3%. In urban areas, frequency of consuming 1-3 flavored milks a week is 38.6%, and that of no consumption is 43.6%. These percentages for rural areas are 21.2% and 65.4%. (Table 25)

Families have pointed out that their children frequently consume cheese, ayran and yoghurt. As declared by families, frequency of eating cheese is 51.0%, drinking ayran is 28.7% and eating yoghurt is 36.9% daily. 10.5% never consume cheese, 4.3% never consume ayran, and 5.2% never consume yoghurt. As declared by families living in urban areas, 50% of their children eat cheese every day, 41.2% have at least 4 ayrans a week and 61.1% have at least four servings of yoghurt a week. These percentages are higher for rural areas: 55.8%, 69.3% and 76.7%. Ratio of no cheese consumption is higher than that of ayran or yoghurt. Children who have been reported to eat no cheese are 10.7% of the total in urban areas and 9.4% in rural ones. In urban areas, frequency of no ayran consumption is 4.3% and that of yoghurt is 5.4% while these figures are 4.4% and 4.4% for rural areas. Frequency of consumption of milk pudding which is a sweet dairy dessert is much lower than other types of dairy products. 61.8% of families in urban areas state that their children have pudding 1-3 times a week, it is 46.3% for rural areas. Percentage of children who never eat pudding is 20.5% for urban and 37.1% for rural areas. (Table 25)

Consumption of meat products is less than that of dairy products. 9.8% of families who have been interviewed stated that their children eat red meat, chicken or turkey every day. Frequency of having meat products 1-3 times a week is 53.4% and 4-6 times a week is 31.9% in urban areas. In rural areas, frequency of 1-3 times a week is higher (62.8%) and that of 4-6 times a week is lower (%21.3). (Table 25)

Consumption of fish is higher than that of red meat and chicken. Frequency of having fish 1-3 times a week is 67% total, with 68.3% in urban and 60.9% in rural areas. Percentages of no fish consumption are 19.7% on average, with 18.3% in urban and 26.5% in rural areas. (Table 25)

Consumption of eggs is much higher than other foods of animal origin among children. 42.4% have eggs every day nationwide. In urban areas 42.0% have eggs every day and frequency of having eggs

4-6 times a week is 28.5%; that means 7 out of 10 children eat eggs frequently. Similar answers have been obtained for rural areas; again, 7 out of 10 children have eggs regularly (%70.1). (Table 25)

Frequency of consuming legumes which are a vegetable source of proteins 1-3 times a week is 56.4% total, with 57.3% in urban and 51.7% in rural areas. Children who never eat legumes have also been reported, and it is 6.2% in total, 6.1% in urban areas and 6.8% in rural areas. (Table 25)

13.7% of families living in urban and 13.3% of families living in rural areas have reported that their children eat dried nuts every day which constitutes a total average of 13.8%. Consumption frequency of 4-6 times a week is 24.6% in urban and 19.3% in rural areas. Thus three out of 10 children eat dried nuts at least four times a week. In general, more than half the children (56.6%) eat nuts 1-3 times a week. (Table 25)

About four thirds (73.5%) of families who have been interviewed stated that their children eat bread and cereals more than four times a week. This percentage is 75.8% in urban areas while it is 73.0% in rural areas. Ratio of no cereal consumption is 1.2% total. (Table 25)

Greatest frequency of chips and popcorn consumption is 1-3 times a week (59.6%) which is in turn 60.5% in urban and 54.8% in rural areas. Frequency of consumption of foods like chips and popcorn in rural areas is reported to be lower than it is in urban areas (27.7% and 21.0%). It is pointed out that about one fifth of the children never consume such foods (%18.3) (Table 25).

Consumption of snacks like candy bars and chocolate everyday is at 14.4% and 4-6 times a week is at 22.0%. This consumption is slightly higher in urban areas than in rural ones. While the frequency of having four or more candy bars and chocolate in urban areas is 36.4%, it is 36.3% in rural areas. General average of those who never consume foods of this kind is 7.8%, with 6.8% in urban and 13.0% in rural areas. (Table 25)

Consumption of fat and carbohydrate rich foods like biscuits, cakes and cookies is also rather high. While 42.7% of children consume these foods at least four times a week, consumption is higher in urban areas than rural ones. 43% of children in urban areas and 41.2% of children in rural areas have biscuits, cakes, cookies and the like at least four times a week. No consumption of these snacks is at 8.0% in rural and 2.8% in urban areas. (Table 25)

Types of food like pizza, pitta and Turkish pizza, French fries are also consumed more in urban areas. 68.5% of children in urban areas and 54.2% of children in rural areas have stated that they eat such food 1-3 times a week. Frequency of no consumption of such food is 14.5% in urban areas and 30.0% in rural areas. (Table 25)

5.4. Sleep, Physical Activity and Sedentary Life Style Behavior

Findings concerning sleep duration, physical activity habits and sedentary life styles of children are presented in this section.

Table 26. The Distribution of Average Daily Sleeping Time (hours) According to Families' Answers by Residence, Turkey 2013

	n	X ± SE	95 % Confidence Interval
Urban			
Girls	1920	9,30 ± 0.03	9,24-9,36
Boys	1951	9,28 ± 0.03	9,23-9,34
Rural			
Girls	410	9,32 ± 0.06	9,20-9,44
Boys	403	9,37 ± 0.07	9,23-9,50
Total*			
Urban	3.797	9,29 ± 0.02	9,25-9,30
Rural	829	9,34 ± 0.05	9,25-9,43
TOTAL	**4626***	**9,30 ± 0.02**	**9,26-9,34**

* 238 families did not answer this question.

Sleep duration of girls who have been interviewed in urban areas is on average 9.30 (± 0.03) hours and that of boys is 9.28 (± 0.03) hours. In rural parts, average sleep duration is 9.32 (± 0.06) for girls and 9.37 (± 0.07) for boys. (Table 26)

Table 27. The Distribution of Attendance of Children at Sport or Dance Club According to Families' Answers by Residence (attendance/week); Turkey 2013

Sportive Activity/Week	Urban		Rural		Total	
	n	%	n	%	n	%
None	1305	71.2	283	91.9	1588	74.2
Once	210	11.5	9	2.9	219	10.2
Twice	224	12.2	9	2.9	233	10.9
3 Times	60	3.3	1	0.3	61	2.8
4 Times	12	0.7	1	0.3	13	0.6
5 Times	5	0.3	1	0.3	6	0.3
6 Times	6	0.3	-	-	6	0.3
Everyday	11	0.6	4	1.3	15	0.7
Total*	**1833**	**100.0**	**308**	**100.0**	**2141**	**100.0**

* 2715 families did not answer this question

74.2% of families who have been interviewed in the context of the survey have answered the question of their children attending a sports or dance club activity weekly. Regular attendance of once or more per week is at 25.8%, however, frequency of attending more than three times a week is 4.7%. (Table 27)

As declared by families in urban areas, 28.8% of their children have a regular attendance while this figure is 8.1% for rural areas. 23.7% of children in urban areas do not attend a sports or dance club 1-2 times weekly, and 5.2% do so three or more times a week. (Table 27)

91.9% of families who have been interviewed in rural areas have stated that their children do not attend sports or dance activities. Frequencies of children in rural areas who attend a sports or dance club three or more times a week is 1.9%. (Table 27)

Table 28. The Distribution of Attendance of Children at Sport or Dance Club According to Families' Answers by Gender (attendance/week); Turkey 2013

Sportive Activity/Week	Boys		Girls		Total	
	n	%	n	%	n	%
None	742	70.9	845	77.3	1587	74.2
Once	93	8.9	126	11.5	219	10.2
Twice	146	13.9	87	8.0	233	10.9
3 Times	39	3.7	22	2.0	61	2.9
4 Times	10	1.0	3	0.3	13	0.6
5 Times	4	0.4	2	0.2	6	0.3
6 Times	4	0.4	2	0.2	6	0.3
Everyday	9	0.9	6	0.6	15	0.7
Total	**1047**	**100.0**	**1093**	**100.0**	**2140***	**100.0**

* 2716 families did not answer this question.

70.9% of boys and 77.3% of girls don't attend sports or dance clubs. 6.4% of boys and 3.2% of girls attend sports or dance three or more times a week. (Table 28)

Table 29. The Distribution of Time Children Spend Playing at Weekdays and Weekends According to Families Answers by Gender and Residence (%), Turkey 2013

	Don't Play	Less Than an Hour / Every Day	An Hour / Every Day	2 Hours / Every Day	Longer Than 3 Hours /Every Day	Total (n)
Urban*						
Weekdays						
Girls	3.3	14.4	30.0	38.3	14.1	1963
Boys	2.1	11.2	26.0	40.6	20.1	1963
Total	2.7	12.8	28.0	39.5	17.1	3926
Weekends						
Girls	0.7	4.6	8.7	28.3	57.7	1943
Boys	0.5	3.5	6.4	23.1	66.6	1920
Total	0.6	4.0	7.6	25.7	62.1	3851
Rural*						
Weekdays						
Girls	2.4	11.1	20.1	37.0	29.4	422
Boys	2.0	5.3	18.6	35.7	38.4	398
Total	2.2	8.3	19.4	36.3	33.8	820
Weekends						
Girls	1.7	4.3	8.8	23.5	61.8	421
Boys	0.8	3.6	6.2	17.7	71.8	390
Total	1.2	3.9	7.5	20.4	66.6	811
Total						
Weekdays	**2.6**	**12.1**	**26.5**	**38.8**	**20.0**	**4761**
Weekends	**0.7**	**4.0**	**7.7**	**24.8**	**62.8**	**4703**

*102 families did not answer the question related to playing at weekdays and 151 families in urban schools did not answer playing at weekends. 34 families did not answer the question related to playing at weekdays and 43 families in rural schools did not answer playing at weekends.

2.7% of children who have been reached within the survey don't play on weekdays and 0.6% don't play on weekends. 12.8% of children play for less than an hour, and this figure drops to 4.0% and they play more on weekends (Table 29).

Ratio of girls playing for one hour or less on weekends is lower that that of boys. On the other hand, ratio of boys who play for more than 2 and 3 hours is higher than that of girls. (Table 29)

Playing every day is common among children in rural areas. 2.2% of children don't play on weekdays and 1.2% don't play on weekends. While playing frequencies of girls is higher in categories of less than an hour, one hour and two hours of playing on week days and weekends, frequency of boys who play for more than three hours on week days and weekends is higher.(Table 29)

Table 30. The Distribution of Safety of School Road and Distance between School and Home According to Families' Answers by Residence, Turkey 2013.

	Urban		Rural		Total	
	n	%	n	%	n	%
School Road*						
Safe	1065	27.0	383	45.7	1448	30.3
Unsafe	2876	73.0	455	54.3	3331	69.7
Total	3941	100.0	838	100.0	4779	100.0
Distance between School and Home*						
Shorter than 1 km	2129	54.9	419	50.1	2548	54.0
1-2 km	943	24.3	213	25.5	1156	24.5
3-4 km	355	9.1	87	10.4	442	9.4
5-6 km	172	4.4	42	5.0	214	4.5
Longer than 6 km	282	7.3	75	9.0	357	7.6
Total	**3881**	**100.0**	**836**	**100.0**	**4717**	**100.0**

*The question related to safety of school road was not answered by 77 families and the the question related to distance between school and home was answered by 139 families.

30.3% of families who have been interviewed during the survey state that the road to their children's school is safe. Two out of every three families declare to find school roads unsafe. Of the families who have been interviewed in urban areas, 73.0% are of the opinion that the road to their children's school is not safe, this opinion is at 54.3%. The opinion that the road to school is safe is more common in rural areas. (Table 30)

Homes of 54.0% of families are closer than one kilometer to schools. 24.5% live 1-2 kilometers to school. Frequency of those who live farther than five kilometers to school is 12.1%. (Table 30)

54.9% families who have been interviewed in urban areas say their homes are closer than one kilometer to school. This frequency is 50.1% for rural areas. School of one out of every five children in urban areas is farther than three kilometers from home; the ratio is one out of four children for rural areas (24.4%). Distribution of school distance from home is similar for urban and rural areas. (Table 30)

Table 31. The Distribution of Transportation Way to School According to Families' Answers by Residence (%), Turkey 2013

	School Service	Bus	Private Car	Bicycle	Walking	Other	Total (n)
Urban*							
Going to School							
Girls	20.3	0.8	6.7	0.2	71.4	0.6	1974
Boys	20.1	0.3	6.9	0.5	71.5	0.8	1973
Total	20.2	0.5	6.8	0.3	71.4	0.7	3947
Coming from School							
Girls	20.3	0.7	6.0	0.1	72.2	0.7	1968
Boys	20.3	0.2	5.4	0.5	73.0	0.7	1973
Total	20.3	0.5	5.7	0.3	72.6	0.7	3941
Rural*							
Going to School							
Girls	27.8	0.2	2.7	0.5	68.8	0.2	436
Boys	22.6	-	2.5	0.7	73.7	0.2	407
Total	25.3	0.1	2.6	0.6	71.2	0.2	843
Coming from School							
Girls	27.6	0.1	1.6	0.5	69.7	0.5	435
Boys	22.4	-	2.2	0.7	74.4	0.2	406
Total	25.1	0.1	1.9	0.6	71.9	0.4	841
Total							
Going to School	**21.1**	**0.4**	**6.1**	**0.4**	**71.4**	**0.6**	**4790**
Coming from School	**21.1**	**0.4**	**5.0**	**0.3**	**72.5**	**0.6**	**4782**

*55 families did not answer the question related to transportation way to school and 61 families in urban areas answered the question related to transportation way to home. 11 families did not answer the question related to transportation way to school and the question related to transportation way to home was answered by13 families in rural areas.

71.4% of children in urban areas walk to, and 72.6% of them walk from school. These figures are 71.2% and 71.9% for rural areas. School buses are the second preferred method for both areas. While it is 20.2% for urban areas, it is slightly higher in rural areas (25,3%). Families also drive their children to school (6.8% to school and 5.7% from school). (Table 31)

Table 32. The Distribution of Time Children Spend Doing Homework and Reading Book According to Families' Answers by Gender and Residence (%), Turkey 2013

	Don't Do	Less Than An Hour / Every Day	An Hour / Every Day	2 Hours / Every Day	Longer Than 3 Hours /Every Day	Total (n)
Urban*						
Week Days						
Girls	0.9	13.5	30.6	41.9	13.0	1.955
Boys	1.2	17.5	36.6	35.2	9.5	1.950
Total	1.1	15.5	33.6	38.6	11.3	3.905
Weekends						
Girls	1.0	11.0	24.6	38.3	25.0	1.931
Boys	1.6	14.9	26.9	37.8	18.9	1.936
Total	1.3	13.0	25.7	38.1	21.9	3.867
RURAL*						
Week Days						
Girls	1.2	23.1	34.7	31.9	9.0	432
Boys	1.5	26.3	35.9	28.5	7.9	407
Total	1.3	24.7	35.3	30.3	8.5	839
Weekends						
Girls	1.6	16.7	23.2	37.8	20.7	426
Boys	1.3	23.6	25.9	32.7	16.6	398
Total	1.5	20.0	24.5	35.3	18.7	824
Total						
Week Days	**1.1**	**17.2**	**33.9**	**37.1**	**10.8**	**4744**
Weekends	**1.3**	**14.2**	**25.5**	**37.6**	**21.3**	**4691**

*The question related to doing homework and reading book at weekdays was not answered by 97 families and the same question was not answered for weekends by 135 families in urban schools. The question related to doing homework and reading book at weekdays was not answered by 15 families and the same question was not answered for weekends by 30 families in rural schools.

Of the families of children included in the survey in urban areas, 72.2% state that their children spend 1-2 hours doing homework / reading on week days and 63.8% state theirs do so on weekends. While the frequency of spending more than three hours on homework / reading is 11.3% for week days, it goes up to 21.9% for weekends. With the group which does no homework excluded, it has been observed that boys rate higher in groups that spend less than an hour and one hour, whereas girls have higher percentages in groups which spend 2 and 3 hours doing homework. (Table 32)

60.0% of families in urban areas state that their children spend one hour or less studying on week days and 44.5% say so for weekends. Frequency of studying for longer than two hours in rural areas is 38.8% for week days and 54.0% for weekends. (Table 32)

Table 33. The Distribution of Having Computer at Home According to Families' Answers by Gender and Residence (%), Turkey 2013

	Computer at Home		Total (n)
	Yes	No	
Urban*			
Girls	58.3	41.7	1972
Boys	60.8	39.2	1974
Total	59.6	40.5	3946
Rural*			
Girls	17.7	82.3	431
Boys	20.8	79.3	407
Total	19.2	80.8	838
Total	**52.5**	**47.5**	**4784**

*56 families in urban schools and 16 families in rural schools did not answer the question related to having computer at home.

Likelihood of having a computer at homes of children who have been included in the survey differs significantly in urban and rural areas. While 59.6% of urban children in the survey have a computer at home, 19.2% have the same in rural areas. (Table 33)

Table 34. The Distribution of Time Children Spend Playing Computer Games According to Families' Answers by Gender and Residence (%), Turkey 2013

	Don't Play	Less Than An Hour / Every Day	An Hour / Every Day	2 Hours / Every Day	Longer Than 3 Hours /Every Day	Total (n)
Urban						
Weekdays						
Girls	57,6	24,5	10,6	5,7	1,7	1922
Boys	48,5	23,9	16,3	7,8	3,5	1922
Total	53,1	24,2	13,4	6,8	2,6	3844
Weekends						
Girls	41,7	23,8	17,1	11,8	5,6	1902
Boys	32,6	20,3	18,1	18,1	11,0	1916
Total	37,1	22,0	17,6	14,9	8,3	3818
Rural						
Weekdays						
Girls	75,7	12,5	5,5	4,1	2,2	415
Boys	71,4	15,4	5,3	5,3	2,5	395
Total	73,6	14,0	5,4	4,7	2,3	810
Weekends						
Girls	76,1	6,6	5,1	7,6	4,6	410
Boys	68,0	11,1	7,2	6,7	7,0	388
Total	72,2	8,8	6,1	7,1	5,8	798
Total						
Weekdays	**56,6**	**22,4**	**12,0**	**6,4**	**2,5**	**4654**
Weekends	**43,2**	**19,7**	**15,6**	**13,6**	**7,9**	**4616**

*158 families did not answer the question related to playing computer games at weekdays and 184 families in urban schools did not answer the same question for weekends. 46 families did not answer the question related to playing computer games at weekdays and 58 families in rural schools did not answer the same question for weekends.

Time spent playing computer games are higher in urban areas than rural ones. While 53.1% do not play computer games during weekdays in urban areas, this percentage is higher in rural areas (73.6%). these figures are respectively 37.1% and 72.2% for weekends. Percentages of children who play computer games is higher in urban areas. (Table 34)

In rural areas, there isn't much difference in frequencies of playing computer games during week days between girls and boys. However, it has been observed that boys generally play more computer games on weekends. (Table 34)

Table 35. The Distribution of Time Children Spend Watching TV According to Families' Answers by Gender and Residence (%), Turkey 2013

	Don't Watch	Less Than An Hour / Every Day	An Hour / Every Day	2 Hours / Every Day	Longer Than 3 Hours /Every Day	Total (n)
Urban*						
Weekdays						
Girls	3,3	22,0	28,2	35,0	11,6	1965
Boys	3,0	23,4	28,3	32,1	13,2	1973
Total	3,1	22,7	28,3	33,5	12,4	3938
Weekends						
Girls	1,9	9,7	14,0	37,6	36,9	1948
Boys	2,5	11,4	14,0	34,9	37,3	1954
Total	2,2	10,5	14,0	36,2	37,1	3902
Rural*						
Weekdays						
Girls	2,8	21,5	24,3	34,0	17,7	432
Boys	4,4	19,5	29,1	30,4	16,8	405
Total	3,6	20,5	26,6	32,2	17,3	837
Weekends						
Girls	2,1	13,3	15,7	29,7	39,1	427
Boys	3,7	9,7	16,7	33,4	36,4	401
Total	2,9	11,7	16,2	31,5	37,8	828
Total						
Weekdays	**3,2**	**22,3**	**28,0**	**33,3**	**13,2**	**4775**
Weekends	**2,3**	**10,7**	**14,4**	**35,4**	**37,2**	**4730**

*64 families did not answer the question related to watching TV at weekdays and 100 families in urban schools did not answer the same question for weekends. 17 families did not answer the question related to watching TV at weekdays and 26 families in rural schools did not answer the same question for weekends.

Habit of watching television every day is common among children who have been reached within the context of the survey. In urban areas, 3.1% of children don't watch television on week days and 2.2% on weekends whereas these figures are 3.6% and 2.9% for rural areas. Frequency of watching television for less than an hour a day on week days is 22.7% for urban and 20.5% for rural areas. It has been shown that duration of watching television increases during weekends. Frequency of watching television for two hours or longer is 73.3% for urban and 69.3% for rural areas. Duration of watching television among girls and boys is similar for urban and rural areas on weekdays and weekends. (Table 35)

5.3. Assessment of Children's Anthropometric Measurements

Conditions and results of children's anthropometric measurements are presented in this section.

Table 36. The Distrubition by Child Residence, Turkey 2013

	n	%
Local Authority Register		
Urban	4104	82.8
Rural	854	17.2
Total	4958	100.0
Current Address		
Urban	3882	78.3
Suburbs	446	9.0
Rural	630	12.7
Total	4958	100.0

According to provincial special administration records, 82.8% of schools which have been visited within the context of the survey are in urban areas and 17.2% are in rural areas. Residence addresses of students are; 78.3% in urban areas, 12.7% in rural areas and 9.0% in suburbs. (Table 36)

Table 37. The Distribution of Children' Age and Gender with Anthropometric Measurements by Residence, Turkey 2013

	Urban		Rural		Total		
	n	%	n	%	n	%	p
Gender							
Girls	2028	49.4	447	52.3	2475	49.9	0.95
Boys	2076	50.6	407	47.7	2483	50.1	CI= 1.124
Total	4104	82.7	854	17.3	4958	100.0	GA= 0.97-1.30
Age							
7-year-olds	2184	53.2	429	50.2	2613	52.7	0.11
8-year-olds	1920	46.8	425	49.8	2345	47.3	CI= 0.12
Total	4104	82.7	854	17.3	4958	100.0	GA= 0.97-1.30

A total of 4,598 children have been anthropometrically measured at schools. Of the children who have been measured anthropometrically, 49.9% are girls and 50.1% are boys. Frequency of girls are 49.4% for urban areas and 52.3% for rural ones. (Table 37)

Of the children who have been measured anthropometrically at schools, 52.7% are 7 years old and 47.3% are 8 years old. 53.2% of children in urban areas and 50.2% of children in rural areas who have been subjected to anthropometric measurements are seven years old. (Table 37)

Age average of children who have taken anthropometric measurements in urban and rural areas is the same, which is 7.94 ± 0.34 years.

Table 38. The Distribution of Child Having Breakfast by Residence, Turkey 2013

Breakfast *	Urban		Rural		Total	
	n	%	n	%	n	%
Yes	3860	94,4	777	91,4	4637	93,8
No	231	5,6	73	8,6	304	6,2
Total	**4091**	**82,7**	**850**	**17,3**	**4941**	**100,0**

*The question was not answered by 17 family non-response=17.

93.8% of children who have been measured anthropometrically have had breakfast. This figure is 94.4% in urban areas and 91.4% in rural areas. On the day of the survey, frequency of having breakfast has been assessed to be higher among children in urban areas compared to rural ones. (Table 38)

Table 39. The Distribution of Measurements by School Time, Measuring Time, Clothing and Child Residence, Turkey 2013

	Urban		Rural		Total	
	n	%	n	%	n	%
School Time						
Full-time Schooling	1232	30.0	486	56.9	1718	34.6
Part-time Schooling	2872	70.0	368	43.1	3240	65.4
Total	4104	82.8	854	17.2	4958	100.0
Anthropometric Measurements						
Before Lunch	1183	28.8	540	63.2	1723	34.7
After Lunch	2921	71.2	314	36.8	3235	65.3
Total	4104	82.8	854	17.2	4958	100.0
Clothing						
Underwear only	3	0.1	-	-	3	0.01
Gym clothes	96	2.3	12	1.4	108	2.3
Light clothing	3919	95.5	783	91.7	4702	94.8
Heavy clothing	86	2.1	59	6.9	145	2.9
Total	4104	82.8	854	17.2	4958	100.0

Of the schools at which anthropometric measurements have been held, 34.6% offer full time schooling and 65.4% offer part time schooling. School hours of schools within the survey differ between urban and rural areas. Full time schooling is at 30.0% in urban areas whereas it is at 56.9% in rural areas. (Table 39)

Anthropometric measurement taking times are morning and afternoon. Measurements have been taken at 34.7% of schools in the morning and at 65.3% of schools in the afternoon. 28.8% of schools in urban areas and 63.2% of schools in rural areas have been visited in the morning, and the rest have been visited in the afternoon (71.2% in urban and 36.8% in rural areas). (Table 39)

Since the survey was realized in May, children's clothing were mostly light. 95.5% of the children in urban areas and 91.7% of children in rural parts have participated in the survey with light clothing. However, children who have participated with thick clothing exist in urban (2.1%) and rural (6.9%) areas alike. (Table 39)

Table 40. The Distribution of Weight-for-age Z-Score (WAZ-Score), Height-for-age Z-Score (HAZ-Score) and BMI-for-age Z-Score (BAZ-Score) by Gender, Turkey 2013

	Boys			Girls			Total		
	n	%± SE	95% CI*	n	%± SE	95% CI	n	%± SE	95% CI
WAZ-Score	(n=2479)			(n=2474)			(n=4953)		
Severe Underweight	4	0.2±0.08	0.024-0.37	4	0.2±0.08	0.02-0.37	8	0.2±0.06	0.07-0.32
Underweight	51	2.1±0.28	1.53-2.66	53	2.1±0.28	1.53-2.66	104	2.1±0.20	1.70-2.49
Normal	2197	88.6±0.63	87.3-89.9	2273	91.9±0.55	90.8-92.9	4470	90.2±0.42	89.4-91.0
Heavy	162	6.5±0.49	5.53-7.47	120	4.9±0.43	4.04-5.75	282	5.7±0.33	5.05-6.34
Very heavy	65	2.6±0.32	1.97-3.22	24	1.0±0.20	0.61-1.39	89	1.8±0.19	1.43-2.17
HAZ-Score	(n=2483)			(n=2474)			(n=4957)		
Severe Stunting	3	0.1±0.06	-0.02-0.22	4	0.2±0.09	0.02-0.37	7	0.1±0.04	0.01-0.18
Stunting	53	2.1±0.28	1.53-2.66	60	2.4±0.31	1.79-3.00	113	2.3±0.21	1.89-2.71
Normal	2354	94.8±0.44	93.9-95.6	2370	95.8±0.40	95.0-96.6	4724	95.3±0.30	94.7-95.9
Tall	66	2.7±0.32	2.06-3.33	35	1.4±0.23	0.94-1.86	101	2.0±0.19	1.61-2.39
Very Tall	7	0.3±0.11	0.08-0.51	5	0.2±0.09	0.02-0.37	12	0.2±0.06	0.07-0.32
BAZ–score	(n=2479)			(n=2473)			(n=4952)		
Severe Thinness	8	0.3±0.11	0.08-0.51	5	0.2±0.09	0.02-0.37	13	0.3±0.07	0.15-0.45
Thinness	47	1.9±0.27	1.36-2.43	41	1.7±0.25	1.19-2.21	88	1.8±0.19	1.42-2.17
Normal	1847	74.5±0.87	72.7-76.2	1892	76.5±0.85	74.8-78.2	3739	75.5±0.61	74.3-76.7
Overweight	330	13.3±0.68	11.9-14.6	372	15.0±0.71	13.6-16.4	702	14.2±0.49	13.2-15.2
Obesity	427	10.0±0.60	8.82-11.2	163	6.6±0.49	5.62-7.57	410	8.3±0.39	7.53-9.06

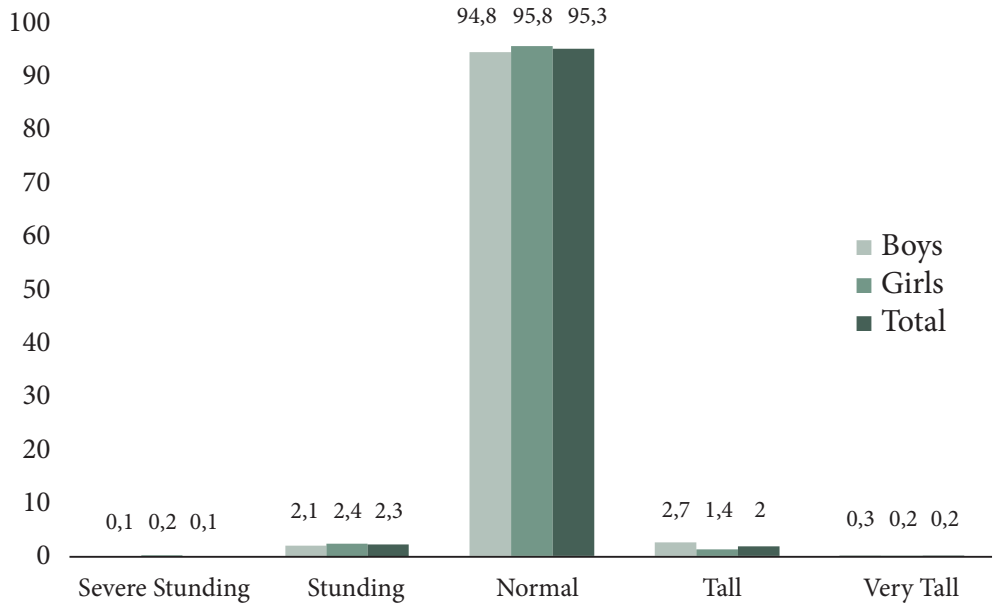
*CI Confidence Interval

Evaluation of body weight Z-Score of children has revealed that nine out of every 10 children has a normal body weight, whereas 0.2% is severe underweight and 2.1% underweight. (Table 40)

Evaluation of height Z-Score of children has revealed that 95.3% of children are of normal height whereas these frequencies are 94.8% for boys and 95.8% for girls. Stunting is 2.3% and severe stunting is 0.1% among the children. Tall children are 2.0% and severe tall children are 0.2% of the total. Frequency of tallness and over tall is 3.0% among boys and 1.6% among girls. (Table 40)

It has been assessed during BMI Z-Score evaluation of children that 7 to 8 out of every ten children is within normal margins. However, while severe thinness is seen in 0.3% and thinness in 1.8% of children, overweight is 14.2% and obesity is 8.3%. (Table 40)

Graphic 1 Height for Age Z-Score by Genger



Graphic 2 BMI for Age Z-Score by Genger

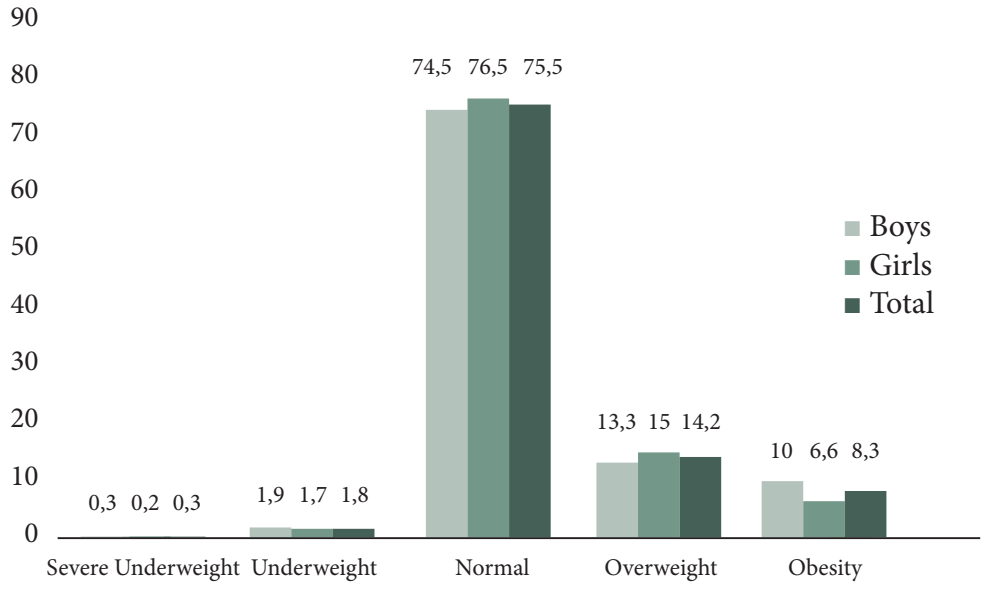


Table 41. The Distribution in Boys of Weight-for-age Z-Score (WAZ-Score), Height-for-age Z-Score (HAZ-Score) and BMI-for-age Z-Score (BAZ-Score) by Child Residence, Turkey 2013

Boys	Urban			Rural			Total		
	n	%± S.Error	95% CI	n	%± S.Error	95% CI	n	%± S.Error	95% CI
WAZ-Score	(n=2072)			(n=407)			(n=2479)		
Severe Underweight	-	--	-	4	1.0±0.49	0.03-1.96	4	0.2±0.08	0.02-0.37
Underweight	38	1.8±0.29	1.22-2.37	13	3.2±0.87	1.49-4.90	51	2.1±0.28	1.53-2.66
Normal	1819	87.8±0.72	86.3-89.2	378	92.9±1.27	90.4-95.4	2197	88.6±0.63	87.3-89.8
Heavy	156	7.5±0.57	6.39-8.63	6	1.5±0.60	0.31-2.68	162	6.5±0.49	5.52-7.47
Very heavy	59	2.8±0.36	2.08-3.51	6	1.5±0.60	0.31-2.68	65	2.6±0.31	1.97-3.22
HAZ-Score	(n=2076)			(n=407)			(n=2483)		
Severe Stunting	2	0.1±0.07	-0.04-0.23	1	0.2±0.22	-0.23-0.63	3	0.1±0.06	-0.02-0.22
Stunting	31	1.5±0.26	0.97-2.02	22	5.4±1.12	3.20-7.59	53	2.1±0.28	1.53-2.66
Normal	1972	95.0±0.47	94.1-95.9	382	93.9±1.18	91.6-96.2	2354	94.8±0.44	93.9-95.7
Tall	64	3.1±0.38	0.06-0.53	2	0.5±0.34	-0.18-1.18	66	2.7±0.32	2.06-3.34
Very Tall	7	0.3±0.22	-0.23-0.63	-	-	-	7	0.3±0.11	0.08-0.51
BAZ–score	(n=2073)			(n=406)			(n=2479)		
Severe Thinness	7	0.3±0.12	0.06-0.53	1	0.2±0.22	-0.23-0.63	8	0,3±0.11	0.08-0.51
Thinness	38	1.8±0.29	1.22-2.37	9	2.2±0.73	0.77-3.63	47	1,9±0.27	1.36-2.43
Normal	1511	72.9±0.97	70.9-74.8	336	82.8±1.87	79.1-86.5	1847	74,5±0.87	72.7-76.2
Overweight	285	13.7±0.75	12.2-15.1	45	11.1±1.55	7.95-14.0	330	13,3±0.68	11.9-14.6
Obesity	232	11.2±0.69	9.84-12.6	15	3.7±0.93	1.86-5.53	247	10,0±0.60	8.82-11.2

WAZ-Score values of 87.8% of boys in urban areas are within normal margins, and the same is the case for 92.9% of rural areas. Frequency of underweight and severe underweight is 1.8% in urban areas and 4.2% in rural ones. (Table 41)

There is also a difference between the distributions of boys' HAZ-Score values according to areas. 1.5% of boys in urban areas are stunting and 0.1% are severely stunting. Same is true for 5.4% and 0.2% respectively in rural areas. In urban areas, 3.1% of boys are tall and 0.3% are over tall. In rural areas, 0.5% is tall and there aren't any severe tall cases. (Table 41)

Boys' BAZ-Score distribution also differs according to residing area. In urban areas 72.9% of boys are within normal margins whereas same is true for 82.8% of them in rural areas. While frequency of obesity among boys in urban areas is 11.2%, it is 3.7% in rural parts. According on residence, percentage of normal margins is higher in rural areas than it is in urban parts, and obesity percentages are lower. (Table 41)

Table 42. The Distribution in Girls of Weight-for-age Z-Score (WAZ-Score), Height-for-age Z-Score (HAZ-Score) and BMI-for-age Z-Score (BAZ-Score) by Child Residence, Turkey -2013

Girls	Urban			Rural			Total		
	n	%± S.Error	95% CI	n	%± S.Error	95% CI	n	%± S.Error	95% CI
WAZ-Score	(n=2027)			(n=447)			(n=2474)		
Severe Underweight	3	0.1±0.07	-0.04-0.23	1	0.2±0.21	-0.21-0.61	4	0,2±0.08	0.02-0.37
Underweight	39	1.9±0.30	1.31-2.49	14	3.1±0.82	1.49-4.70	53	2,1±0.28	1.53-2.66
Normal	1854	91.5±0.61	90.2-92.7	419	93.7±1.14	91.4-95.9	2273	91,9±0.55	90.8-92.9
Heavy	109	5.4±0.50	4.41-6.38	11	2.5±0.73	1.05-3.94	120	4,9±0.43	4.04-5.75
Very heavy	22	1.1±0.23	0.64-1.55	2	0.4±0.29	-0.18-0.98	24	1,0±0.20	0.61-1.39
HAZ-Score	(n=2027)			(n=447)			(n=2474)		
Severe Stunting	2	0.1±0.07	-0.04-0.23	2	0.4±0.29	-0.18-0.98	4	0,2±0.09	0.02-0.37
Stunting	35	1.7±0.28	1.13-2.26	25	5.6±1.08	3.46-7.73	60	2,4±0.31	1.79-3.00
Normal	1951	96.3±0.42	95.5-97.1	419	93.7±1.15	91.4-95.9	2370	95,8±0.40	95.0-96.6
Tall	34	1.7±0.28	1.13-2.26	1	0.2±0.21	-0.21-0.61	35	1,4±0.23	0.94-1.86
Very Tall	5	0.2±0.09	0.01-0.39	-	-	-	5	0,2±0.09	0.02-0.37
BAZ–score	(n=2026)			(n=447)			(n=2473)		
Severe Thinness	5	0.2±0.09	0.01-0.39	-	-	-	5	0,2±0.09	0.02-0.37
Thinness	35	1.7±0.28	1.13-2.26	6	1.3±0.53	0.25-2.35	41	1,7±0.25	1.19-2.21
Normal	1512	74.6±0.96	72.7-76.5	380	85.0±1.68	81.7-88.3	1892	76,5±0.85	74.8-78.2
Overweight	325	16.0±0.81	14.4-17.6	47	10.5±1.44	7.66-13.3	372	15,0±0.71	13.6-16.4
Obesity	149	7.4±0.58	6.26-8.54	14	3.1±0.81	1.49-4.71	163	6,6±0.49	5.62-7.57

There is difference between anthropometric measurements of girls according to residing areas. In the distribution of body weight Z-Score values, 91.5% of urban girls and 93.7% of rural girls are within normal margins. Frequencies of severe thinness are similar as well. Thinness is seen in 1.9% of urban and %3.1% rural areas. (Table 42)

96.3% of girls in urban areas and 93.7% of girls in rural areas are within normal height margins. Frequency of being tall and over tall is 1.9% in urban and 0.2% in rural areas. (Table 42)

Obesity is rather common among girls, about one out of every seven girls is overweight and seven out of every 100 girls is obese. Frequencies of overweight and obesity are higher in urban areas than rural ones (23.4% and 13.6%). (Table 42)

Table 43. The Distribution in Boys of Weight-for-age Z-Score(WAZ-Score), Height-for-age Z-Score (HAZ-Score) and BMI-for-age Z-Score(BAZ-Score) by Age,Turkey 2013

Boys	7-year-olds			8-year-olds		
	n	%± S.Error	95% CI	n	%± S.Error	95% CI
WAZ-Score	(n=1268)			(n=1211)		
Severe Underweight	1	0.1±0.08	-0.07-0.27	3	0.2±0.13	-0.05-0.45
Underweight	22	1.7±0.36	0.98-2.41	29	2.4±0.44	1.54-3.26
Normal	1120	88.3±0.90	86.5-90.1	1077	88.9±0.90	87.1-90.7
Heavy	82	6.5±0.69	5.14-7.85	80	6.6±0.71	5.20-7.99
Very heavy	43	3.4±0.51	2.40-4.39	22	1.8±0.38	1.05-2.54
HAZ-Score	(n=1270)			(n=1213)		
Severe Stunting	1	0.1±0.09	-0.07-0.27	2	0.2±0.13	-0.05-0.45
Stunting	24	1.9±0.38	1.15-2.65	29	2.4±0.44	1.54-3.26
Normal	1207	95.0±0.61	93.8-96.2	1147	94.6±0.65	93.3-95.9
Tall	35	2.8±0.46	1.89-3.71	31	2.6±0.46	1.70-3.49
Very Tall	3	0.2±0.12	-0.05-0.44	4	0.3±0.15	-0.01-0.61
BAZ–score	(n=1267)			(n=1212)		
Severe Thinness	2	0.2±0.13	0.05-0.44	6	0.5±0.20	0.10-0.89
Thinness	27	2.1±0.40	1.31-2.89	20	1.7±0.37	0.97-2.42
Normal	938	74.0±1.23	71.6-76.4	909	75.0±1.24	72.6-77.4
Overweight	157	12.4±0.92	10.6-14.2	173	14.3±1.01	12.3-16.3
Obesity	143	11.3±0.88	9.56-13.0	104	8.6±0.81	7.02-10.2

According to BAZ-Score evaluation of boys, 88.3% is within normal range in the group of seven-year-olds and 88.9% is normal in the group of eight-year-olds. Underweight is seen in 1.7% of seven-year-olds and 2.4% of eight-year-olds. Severe underweight is 0.1% and 0.2% respectively. (Table 43)

95.0% of seven-year-old boys are within normal height range whereas 2.0% are in stunting or severe stunting category. In the group of eight-year-olds, 94.6% are normal, 2.6% are stunting or severely stunting. Tallness is at 3.0% for seven-year-olds and 2.9% in eight-year-olds. (Table 43)

Frequency of obesity is 11.3% in age group of seven and 8.6% in that of eight, whereas overweight frequencies are 12.4% and 14.3% respectively. Thinness and severe thinness frequency is 2.3% for seven-year-olds and 2.2% for eight-year-olds. (Table 43)

Table 44. The Distribution in Girls of Weight-for-age Z-Score (WAZ-Score), Height-for-age Z-Score (HAZ-Score) and BMI-for-age Z-Score (BAZ-Score) by Age,Turkey 2013

Girls	7-year-olds			8-year-olds		
	n	%± S.Error	95% CI	n	%± S.Error	95% CI
WAZ-Score	(n=1342)			(n=1132)		
Severe Underweight	3	0.2±0.12	-0.04-0.44	1	0.1±0.09	-0.08-0.28
Underweight	27	2.0±0.38	1.25-2.75	26	2.3±0.44	1.43-3.17
Normal	1236	92.1±0.74	90.5-93.4	1037	91.6±0.82	89.9-93.2
Heavy	66	4.9±0.59	3.74-6.05	54	4.8±0.63	3.55-6.04
Very heavy	10	0.7±0.22	0.25-1.15	14	1.2±0.32	0.56-1.83
HAZ-Score	(n=1342)			(n=1132)		
Severe Stunting	1	0.1±0.09	-0.07-0.27	3	0.3±0.16	-0.02-0.62
Stunting	32	2.4±0.42	1.58-3.22	28	2.5±0.46	1.59-3.41
Normal	1284	95.7±0.55	94.6-96.8	1086	95.9±0.59	94.7-97.1
Tall	23	1.7±0.35	1.04-2.39	12	1.1±0.31	0.49-1.71
Very Tall	2	0.1±0.08	-0.07-0.27	3	0.3±0.16	-0.02-0.62
BAZ–score	(n=1341)			(n=1132)		
Severe Thinness	2	0.1±0.08	-0.07-0.27	3	0.3±0.16	-0.0.2-0.62
Thinness	20	1.5±0.33	0.85-2.15	21	1.9±0.41	1.10-2.69
Normal	1019	76.0±1.17	73.7-78.3	373	77.1±1.25	74.6-79.5
Overweight	220	16.4±1.01	14.4-18.4	152	13.4±1.01	11.4-15.4
Obesity	80	6.0±0.65	4.73-7.27	83	7.3±0.77	5.78-8.81

According to BAZ-Score evaluation, 92.1% of girls in the group of seven-year-olds and 91.6% of the group of eight-year-olds are within normal margins. Among girls, 2.5% is categorized as underweight in seven-year-olds and 2.3% in eight-year-olds. Frequencies of severe underweight are 0.2% and 0.1% respectively. (Table 44)

95.7% of girls in seven-year-old group have a normal height while 2.5% is in the stunting or severe stunting category. Of the eight-year-old group, 95.9% is normal, 2.8% is stunting or severely stunting. Frequencies of tallness is 1.8% in seven-year-old group and 1.4% in eight-year-old group. (Table 44)

Obesity is seen in 6.0% of seven-year-old group and in 7.3% of eight-year-old group, whereas overweight is 16.4% and 13.4% respectively. Thinness and severe thinness among girls is seen in 1.6% of seven-year-old group and in 2.2% of eight-year-old group. (Table 44)

Table 45. The Distribution in Girls of BMI-for-age Z-Score (BAZ-Score) by Age, Child Residence and Gender Turkey 2013

Age/ Child Residence		Severe Thinness*	Thinness	Normal	Overweight	Obesity	Total	
							n	%**
7-year-olds								
Urban	Girls	2(0.2)	18(1.6)	825(74.2)	193(17.4)	74(6.7)	1112	51.1
	Boys	2(0.2)	21(2.0)	777(72.8)	133(12.5)	135(12.6)	1068	49.9
	Total	**4(0.2)**	**39(1.8)**	**1602(73.5)**	**326(15.0)**	**209(9.6)**	**2180**	**100.0**
Rural	Girls	-	2(0.9)	194(84.7)	27(11.8)	6(2.6)	229	53.5
	Boys	-	6(3.0)	161(80.9)	24(12.1)	8(4.0)	199	46.5
	Total	**-**	**8(1.9)**	**355(82.9)**	**51(11.9)**	**14(3.3)**	**428**	**100.0**
8-year-olds								
Urban	Girls	3(0.3)	17(1.9)	687(75.2)	132(14.4)	75(8.2)	914	47.6
	Boys	5(0.5)	17(1.7)	734(73.0)	152(15.1)	97(9.7)	1005	52.4
	Total	**8(0.4)**	**34(1.8)**	**1421(74.0)**	**284(14.8)**	**172(9.0)**	**1919**	**100.0**
Rural	Girls	-	4(1.8)	186(85.3)	20(9.2)	8(3.7)	218	51.3
	Boys	1(0.5)	3(1.8)	175(84.5)	21(10.1)	7(3.4)	207	48.7
	Total	**1(0.2)**	**7(1.6)**	**361(84.9)**	**41(9.6)**	**15(3.5)**	**425**	**100.0**

* Percentage of row
** Percentage of colon

According to evaluation of BAZ-Scores, 9.6% of children are obese in urban areas and 3.3% in rural areas. In urban areas, 12.6% of boys and 6.7% of girls are obese. These figures are 4.0% and 2.6% respectively for rural areas. (Table 45)

9.0 % of children in eight-year-old group are overweight in urban areas. In cities, 9.7% of eight-year-old boys and 8.2% of eight-year-old girls are obese. These figures are 3.5%, 3.4%, and 3.7% respectively for rural areas. (Table 45)

Table 46. The Mean Distribution of Body Weight, Height, BMI, Weight-for-age Z-Score (WAZ-Score), Height-for-age Z-Score (HAZ-Score) and BMI-for-age Z-Score (BAZ-Score) by Gender and Age, Turkey 2013

	7 Year-olds (n=2606)		8 Year-olds (n=2342)		Total	
	Mean ±S.E	**95 % C.I**	**Mean ±S.E**	**95 % C.I**	**Mean ±S.E**	**95 % C.I**
Boys (n=2476)*						
Body Weight (kg)	26.2 ± 0.15	25.9-26.5	27.4 ± 0.16	27.1-27.7	26.8 ± 0.11	26.57-27.00
Height (cm)	126.1 ± 0.15	125.7-126.3	128.6 ± 0.17	128.3-128.9	127.3 ± 0.12	127.06-127.53
Body Mass Index	16.4 ± 0.07	16.23-16.52	16.5 ± 0.07	16.36-16.63	16.4 ± 0.05	16.32-16.51
WAZ-Score *	0.21 ± 0.04	0.14-0.28	0.14 ± 0.04	0.07-.021	0.17 ± 0.02	0.12-0.22
HAZ-Score*	0.05 ±0.03	-0.005-0.105	-0.02 ± 0.03	-0.081-0.036	0.02 ± 0.02	-0.025-0.055
BAZ-Score *	0.23 ± 0.03	0.157-0.302	0.19 ± 0.03	0.118-0.258	0.21 ±0.025	0.159-0.260
Girls (n=2472)*						
Body Weight (kg)	25.4±0.14	25.11-25.67	26.9±0.17	26.59-27.28	26.1±0.11	25.88-26.32
Height (cm)	124.6±0.15	124.3-124.9	127.5±0.17	127.15-127.83	125.9±0.11	125.71-126.18
Body Mass Index	16.22 ± 0.06	16.10-16.5	16.45±0.07	16.30-16.61	16.33±0.05	16.23-16.43
WAZ-Score *	0.11±0.03	0.05-0.17	0.07±0.03	0.001-0.136	0.09±0.02	0.047-0.137
HAZ-Score*	-0.05±0.02	-0.107-(-0.003)	-0.10±0.03	-0.164- (-0.046)	-0.07±0.01	-0.117- (-0.039)
BAZ-Score *	0.16±0.03	0.108-0.226	0.14±0.03	0.075-0.210	0.15±0.02	0.112-0.201
Total (n=4948)						
Body Weight (kg)	25.7±0.10	25.57-25.98	27.2±0.12	26.9-27.4	26.4±0.08	26.3-26.6
Height (cm)	125.3±0.11	125.1-125.5	128.1±0.12	127.8-128.3	126.6±0.08	126.5-126.8
Body Mass Index	16.3±0.05	16.2-16.4	16.5±0.05	16.4-16.6	16.4±0.03	16.3-16.4
WAZ-Score *	0.16±0.02	0.11-0.20	0.11±0.02	0.06-0.15	0.13±0.02	0.10-0.17
HAZ-Score*	-0.04±0.01	-0.04-0.03	-0.06±0.02	-0.10-(-0.02)	-0.03±0.01	-0.05-(-0.00)
BAZ-Score *	0.19±0.02	0.15-0.24	0.16±0.02	0.11-0.21	0.18±0.02	0.15-0.22

*WAZ-Score < -6 or > + 5, HAZ-Score <-6 or >+6, BAZ-Score <-5 or > + 5 were excluded

Of the children measured during the survey, average weight of boys is 26.8 ± 0.11kg and that of girls is 26.1 ± 0.11 kg. Average height of boys is 127.3 ± 0.12 cm and that of girls is 125.9 ± 0.11cm. Body mass index of children has been assessed at 16.4 ± 0.05 for boys and 16.3 ± 0.05 for girls. Body mass and height average increase with age in boys and girls alike. (Table 46)

Table 47. The Mean Distribution of Body Weight, Height, BMI, Weight-for-age Z-Score (WAZ-Score), Height-for-age Z-Score (HAZ-Score) and BMI-for-age Z-Score (BAZ-Score) According to Child Residence and Gender, Turkey 2013

	Boys		Girls		Total (Boys-Girls)	
	Mean ±S.E	95 % C.I	Mean ±S.E	95 % C.I	Mean ±S.E	95 % C.I
Urban (n=4095)*						
Body Weight (kg)	27.1±0.12	26.9-27.4	26.5±0.12	26.2-26.7	26.8±0.08	26.6-26.9
Height (cm)	127.7±0.12	127.5-127.9	126.4±0.12	126.2-126.7	127.1±0.09	126.9-127.3
Body Mass Index	16.5±0.55	16.41-16.63	16.4±0.05	16.32-16.55	16.5±0.04	16.4-16.6
WAZ-Score *	0.26±0.03	0.21-0.32	0.17±0.02	0.12-0.22	0.22±0.02	0.18-0.25
HAZ-Score*	0.09±0.02	0.05-0.13	0.01±0.02	-0.03-0.05	0.05±0.01	0.02-0.08
BAZ-Score *	0.26±0.03	0.21-0.32	0.20±0.03	0.15-0.25	0.23±0.02	0.19-0.27
Rural (n=853)*						
Body Weight (kg)	24.9±0.21	24.5-25.3	24.4±0.22	23.9-24.8	24.6±0.15	24.3-24.9
Height (cm)	125.0±0.28	124.5-125.6	123.6±0.27	123.1-124.2	124.3±0.20	123.9-124.7
Body Mass Index	15.8±0.08	15.6-16.0	15.8±0.10	15.6-16.0	15.8±0.06	15.7-15.9
WAZ-Score *	-0.27±0.05	-0.38-(-0.16)	-0.28±0.04	-0.38- (-0.19)	-0.28±0.03	-0.35-(-0.21)
HAZ-Score*	-0.39±0.05	-0.49- (-0.29)	-0.46±0.05	-0.55-(-0.37)	-0.43±0.03	-0.49 –(-0.36)
BAZ-Score *	-0.07±0.05	-0.17-(-0.02)	-0.05±0.05	-0.14-0.04	-0.06±0.03	-0.13-0.01
Total (n=4948)						
Body Weight (kg)	26.8±0.11	26.6-27.0	26.1±0.11	25.9-26.3	26.4±0.08	26.2-26.6
Height (cm)	127.3±0.11	127.1-127.5	125.9±0.12	125.7-126.2	126.6±0.08	126.4-126.7
Body Mass Index	16.4±0.04	16.3-16.5	16.3±0.05	16.2-16.4	16.3±0.03	16.3-16.4
WAZ-Score *	0.17±0.02	0.12-0.22	0.09±0.02	0.04-0.13	0.13±0.02	0.10-0.17
HAZ-Score*	0.01±0.02	-0.02-0.05	-0.07±0.02	-0.12-(-0.04)	-0.03±0.01	-0.05-(--0.00)
BAZ-Score *	0.21±0.02	0.15-0.26	0.15±0.02	0.11-0.20	0.18±0.02	0.15-0.22

*WAZ-Score < -6 or > + 5, HAZ-Score <-6 or >+6, BAZ-Score <-5 or > + 5 were excluded

Of the children who have been lived in urban area and measured anthropometrically during the survey, average weight of boys is 27.1± 0.12 kg and that of girls is 26.5 ± 0.12 kg. Average height of boys is 127.7 ± 0.12 cm and that of girls is 126.4 ± 0.12 cm. Average body mass index of children is 16.5 ± 0.55 for boys and 16.4 ± 0.05 for girls. (Table 47)

Of the children who have been lived in rural area and measured anthropometrically during the survey, average weight of boys is 24.9 ± 0.21 kg and that of girls is 24.4 ± 0.22 kg. Average height of boys is 125.0 ± 0.28 cm and that of girls is 123.6 ± 0.27 cm. Body mass index of children has been assessed at 15.8 ± 0.08 for boys and 15.8 ± 0.10 for girls. (Table 47)

Average body mass as well as average height is higher for boys and girls alike in urban areas than rural ones. (Table 47)

Table 48. The Median and Interquartile (Q1-Q3) Distribution of Body Weight and Body Mass Index According to Gender and Age, Turkey 2013

	Boys (n=2483) Median-Interquartile (Q1-Q3)		Girls (n=2475) Median-Interquartile (Q1-Q3)	
	Weight (kg)	BMI (kg/m²)	Weight (kg)	BMI (kg/m²)
7-year-olds	25.0 (22.5-28.4)	15.7 (14.8-17.2)	24.2 (21.9-27.7)	15.7 (14.7-17.3)
8-year-olds	26.2 (23.6-29.7)	15.9 (14.8-17.3)	25.5 (23.1-29.5)	15.8 (14.8-17.4)

Median body weight value for seven-year-old group boys is 25.0 with 25-75% values between 22.5 and 28.4. In eight-year-old group these figures are 26.2, 23.9 and 29.7 respectively. Median for body mass index is 15.7 at seven and 15.9 at eight-year-old.

Median body weight value for seven-year-old group girls is 24.2 with 25-75% values between 21.9 and 27.7. In eight-year-old group these figures are 25.5, 23.1 and 29.5 respectively. Median for body mass index is 15.7 at seven and 15.8 at eight-year-old.

Table 49. The Distribution of Weight-for-age Z-Score (WAZ-Score) Acccording to Gender by NUTS, Turkey 2013

	< -3.0 SD S. Underweight		< -2.0 SD Underweight		≥ -2.0 SD - ≤ +2.0SDNormal		> + 2.0SD Heavy		>+3.0 SD Very heavy		Total	
	n	%	n	%	n	%	n	%	n	%	n	%
Boys (n=2579)												
Istanbul	-	-	8	1.9	351	84.2	45	10.8	13	3.1	417	16.2
West Marmara	-	-	1	1.0	92	88.5	7	6.7	4	3.8	104	4.0
East Marmara	-	-	6	2.6	199	87.3	16	7.0	7	3.1	228	8.8
Aegean	-	-	4	1.5	227	87.0	22	8.4	8	3.1	261	10.1
Mediterranean	-	-	4	1.1	318	88.8	23	6.4	13	3.6	358	13.9
West Anatolia	-	-	4	1.8	194	87.4	18	8.1	6	2.7	222	8.6
Central Anatolia	-	-	1	0.8	112	88.9	9	7.1	4	3.2	126	4.9
West Black Sea	-	-	4	3.7	102	93.6	2	1.8	1	0.9	109	4.2
East Black Sea	-	-	-	-	52	86.7	4	6.7	4	6.7	60	2.3
Northeast Anatolia	-	-	1	1.1	88	95.7	2	2.2	1	1.1	92	3.6
East Anatolia	2	1.3	6	3.9	141	91.6	4	2.6	1	0.6	154	5.9
Southeast Anatolia	2	0.6	12	3.4	321	92.2	10	2.9	3	0.9	348	13.5
Girls (n=2474)												
Istanbul	1	0.3	5	1.3	353	89.1	32	8.1	5	1.3	396	16.0
West Marmara	-	-	1	1.2	77	92.8	3	3.6	2	2.4	83	3.4
East Marmara	-	-	7	3.3	198	93.0	6	2.8	2	0.9	213	8.6
Aegean	-	-	3	1.1	248	90.2	22	8.0	2	0.7	275	11.1
Mediterranean	1	0.3	5	1.4	325	92.6	15	4.3	5	1.4	351	14.2
West Anatolia	-	-	4	2.0	190	92.7	11	5.4	-	-	205	8.3
Central Anatolia	-	-	1	0.9	112	95.7	3	2.6	1	0.9	117	4.7
West Black Sea	1	1.0	3	3.0	88	88.9	6	6.1	1	1.0	99	4.0
East Black Sea	-	-	1	1.5	51	77.3	8	12.1	6	9.1	66	2.7
Northeast Anatolia	-	-	3	2.3	126	96.2	2	1.5	-	-	131	5.3
East Anatolia	1	0.6	8	5.1	146	93.0	2	1.3	-	-	157	6.3
Southeast Anatolia	-	-	12	3.1	359	94.2	10	2.6	-	-	381	15.4
Turkey (n=4853)												
Istanbul	1	0.1	13	1.6	704	86.6	77	9.5	18	2.2	813	16.7
West Marmara	-	-	2	1.1	169	90.4	10	5.3	6	3.2	187	3.8
East Marmara	-	-	13	2.9	397	90.0	22	5.0	9	2.0	441	9.1
Aegean	-	-	7	1.3	475	88.6	44	8.2	10	1.9	436	8.9
Mediterranean	1	0.1	9	1.3	643	90.7	38	5.4	18	2.5	709	14.6
West Anatolia	-	-	8	1.9	384	89.9	29	6.8	6	1.4	427	8.8
Central Anatolia	-	-	2	0.8	224	92.i2	12	4.9	5	2.1	243	5.0
West Black Sea	1	0.5	7	3.4	190	91.3	8	3.8	2	1.0	208	4.3
East Black Sea	-	-	1	0.8	103	81.7	12	9.5	10	7.9	126	2.6
Northeast Anatolia	-	-	4	1.8	214	96.0	4	1.8	1	0.4	223	4.6
East Anatolia	3	1.0	14	4.5	287	92.3	6	1.9	1	0.3	311	6.4
Southeast Anatolia	2	0.3	24	3.3	680	93.3	20	2.7	3	0.4	729	15.0

According to NUTS Regions, highest frequencies of underweight among boys have been observed in Eastern Anatolia (3.9%), Western Black Sea (3.7%), and Southeastern Anatolia (3.4%). A similar tendency has been observed for girls. Highest underweight frequencies for girls have been in Eastern Anatolia (5.1%), Eastern Marmara (3.3%) and Southeastern Anatolia (3.1%). (Table 49)

Table 50. The Distribution of Height-for-age Z-Score(HAZ-Score) Acccording to Gender and NUTS, Turkey 2013

	< -3.0 SD S.Stunting		< -2.0SD Stunting		≥-2.0 SD -≤+2.0 SD Normal		>+ 2.0 SD Tall		>+ 3.0 SD Very Tall		TOTAL	
	n	%	n	%	n	%	n	%	n	%	n	%
Boys (n=2483)												
Istanbul	-	-	4	1.0	400	95.7	13	3.1	1	0.2	418	16.8
West Marmara	-	-	-	-	103	99.0	1	1.0	-	-	104	4.2
East Marmara	-	-	4	1.8	212	93.0	10	4.4	2	0.9	228	9.2
Aegean	2	0.8	5	1.9	240	92.0	11	4.2	3	1.1	261	10.5
Mediterranean	-	-	5	1.4	344	95.8	10	2.8	-	-	359	14.5
West Anatolia	-	-	5	2.2	212	95.1	6	2.7	-	-	223	8.9
Central Anatolia	-	-	-	-	123	97.6	3	2.4	-	-	126	5.1
West Black Sea	1	0.9	5	4.6	103	94.5	-	-	-	-	109	4.4
East Black Sea	-	-	-	-	58	96.7	1	1.7	1	1.7	60	2.4
Northeast Anatolia	-	-	1	1.1	89	96.7	2	2.2	-	-	92	3.7
East Anatolia	-	-	6	3.9	147	94.8	2	1.3	-	-	155	6.2
Southeast Anatolia	-	-	18	5.2	323	92.8	7	2.0	-	-	348	14.1
Girls (n=2474)												
Istanbul	-	-	7	1.8	382	96.5	5	1.3	2	0.5	396	16.0
West Marmara	-	-	1	1.2	80	96.4	1	1.2	1	1.2	83	3.4
East Marmara	2	0.9	2	0.9	205	95.8	5	2.3	-	-	214	8.6
Aegean	-	-	5	1.8	266	96.7	4	1.5	-	-	275	11.1
Mediterranean	1	0.3	11	3.1	332	94.6	6	1.7	1	0.3	351	14.2
West Anatolia	-	-	2	1.0	199	97.1	3	1.5	1	0.5	205	8.3
Central Anatolia	-		6	5.1	108	92.3	3	2.6	-	-	117	4.7
West Black Sea	-	-	3	3.1	95	96.9	-	-	-	-	98	4.0
East Black Sea	-	-	3	4.5	61	92.4	2	3.0	-	-	66	2.7
Northeast Anatolia	-	-	4	3.1	126	96.2	1	0.8	-	-	131	5.3
East Anatolia	1	0.6	8	5.1	147	93.6	1	0.6	-	-	157	6.3
Southeast Anatolia	4	0.2	8	2.1	369	96.9	4	1.0	-	-	381	15.4
Turkey (n=4957)												
Istanbul	-	-	11	1.4	782	96.1	18	2.2	3	0.4	814	16.4
West Marmara	-	-	1	0.5	183	97.9	2	1.1	1	0.5	187	3.8
East Marmara	2	0.5	6	1.4	417	94.3	15	3.4	2	0.5	442	8.9
Aegean	2	0.4	10	1.9	506	94.4	15	2.8	3	0.6	536	10.8
Mediterranean	1	0.1	16	2.3	676	95.2	16	2.3	1	0.1	710	14.3
West Anatolia	-	-	7	1.6	411	96.0	9	2.1	1	0.2	428	8.6
Central Anatolia	-	-	6	2.5	231	95.1	6	2.5	-	-	243	4.9
West Black Sea	1	0.5	8	3.9	198	95.7	-	-	-	-	207	4.2
East Black Sea	-	-	3	2.4	119	94.4	3	2.4	1	0.8	126	2.5
Northeast Anatolia	-	-	5	2.2	215	96.4	3	1.3	-	-	223	4.5
East Anatolia	1	0.3	14	4.5	294	94.2	3	1.0	-	-	312	6.3
Southeast Anatolia	-	-	26	3.6	692	94.9	11	1.5	-	-	729	14.7

According to NUTS Regions, two highest frequencies of severe stunting and stunting have been reported in Western Black Sea Region with 5.5% and Eastern Anatolian Region with 5.2%. In girls, highest stunting frequencies have been in Eastern Anatolia Region (5.7%), and Central Anatolia Region (5.1%).(Table 50)

Regions with highest frequency of tall/over tall in boys are Eastern Marmara (5.3%) and Aegean (5.3%) regions. Region with the highest frequency of tall/over tall in girls is Eastern Black Sea with 3.0%. (Table 50)

Table 51. The Distribution of Body Mass Index-for-age Z-Score (BAZ-Score) Acccording to Gender and NUTS, Turkey 2013

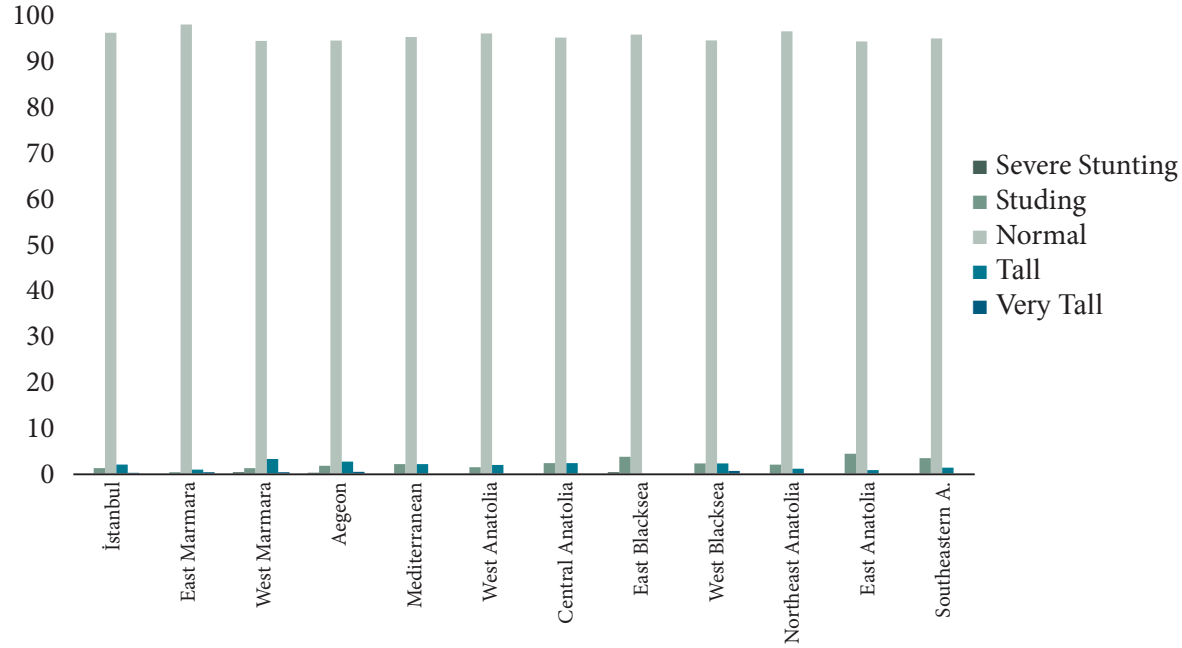
	< -3.0 SD Severe Thinness		< -2.0SD Thinness		≥-2.0 SD -≤+1.0 SD Normal		>+ 1.0 SD Overweight		>+ 2.0 SD Obesity		TOTAL	
	n	%	n	%	n	%	n	%	n	%	n	%
Boys (n=2496)												
Istanbul	1	0.2	9	2.2	277	66.4	68	16.3	62	14.9	417	16.6
West Marmara	-	-	2	1.9	80	76.9	12	11.5	10	9.6	104	4.2
East Marmara	3	1.3	7	3.1	167	73.2	25	11.0	26	11.4	228	9.1
Aegean	2	0.8	4	1.5	183	70.4	38	14.6	33	12.7	260	10.4
Mediterranean	1	0.3	8	2.2	261	72.9	54	15.1	34	9.5	358	14.3
West Anatolia	-	-	2	0.9	165	74.0	30	13.5	26	11.7	223	8.9
Central Anatolia	-	-	1	0.8	92	73.0	18	14.3	15	11.9	126	5.0
West Black Sea	-	-	-	-	89	81.7	16	14.7	4	3.7	109	4.4
East Black Sea	-	-	-	-	42	70.0	10	16.7	8	13.3	60	2.4
Northeast Anatolia	-	-	2	2.2	75	81.5	12	13.0	3	3.3	92	3.6
East Anatolia	-	-	3	1.9	129	83.8	12	7.8	10	6.5	154	6.2
Southeast Anatolia	1	0.3	9	2.6	287	82.5	35	10.1	16	4.6	348	13.9
Girls (n=2473)												
Istanbul	1	0.3	7	1.8	287	72.7	61	15.4	39	9.9	395	15.9
West Marmara	-	-	1	1.2	65	78.3	12	14.5	5	6.0	83	3.4
East Marmara	2	0.9	6	2.8	159	74.6	35	16.4	11	5.2	213	8.6
Aegean	1	0.4	3	1.1	201	73.1	45	16.4	25	9.1	275	11.1
Mediterranean	-	-	9	2.6	253	72.1	60	17.1	29	8.3	351	14.2
West Anatolia	-	-	3	1.5	161	78.5	32	15.6	9	4.4	205	8.3
Central Anatolia	-	-	1	0.9	97	82.9	15	12.8	4	3.4	117	4.7
West Black Sea	-	-	1	1.0	76	76.8	14	14.1	8	8.1	99	4.0
East Black Sea	-	-	-	-	32	48.5	19	28.8	15	22.7	66	2.6
Northeast Anatolia	-	-	2	1.5	111	84.7	13	9.9	5	3.8	131	5.3
East Anatolia	-	-	1	0.6	139	88.5	14	8.9	3	1.9	157	6.3
Southeast Anatolia	1	0.3	7	1.8	311	81.6	52	13.6	10	2.6	381	15.4
Turkey (n=4952)												
Istanbul	2	0.2	16	2.0	564	69.5	129	15.9	101	12.4	812	16.4
West Marmara	-	-	3	1.6	145	77.5	24	12.8	15	8.0	187	3.8
East Marmara	5	1.1	13	2.9	326	73.9	60	13.6	37	8.4	441	8.9
Aegean	3	0.6	7	1.3	384	71.8	83	15.5	58	10.8	535	10.8
Mediterranean	1	0.1	17	2.4	514	72.5	114	16.1	63	8.9	709	14.3
West Anatolia	-	-	5	1.2	326	76.2	62	14.5	35	8.2	428	8.6
Central Anatolia	-	-	2	0.8	189	77.8	33	13.6	19	7.8	243	4.9
West Black Sea	-	-	1	0.5	165	79.3	30	14.4	12	5.8	208	4.2
East Black Sea	-	-	-	-	74	58.7	29	23.0	23	18.3	126	2.5
Northeast Anatolia	-	-	4	1.8	186	83.4	25	11.2	8	3.6	223	4.5
East Anatolia	-	-	4	1.3	268	86.2	26	8.4	13	4.2	311	6.3
Southeast Anatolia	2	0.3	16	2.2	598	82.0	87	11.9	26	3.6	729	14.7

Regions where obesity is most common among boys according to regional distribution are Istanbul with 14.9%, Aegean Region with 12.7% and Central Anatolia Region with 11.9%. Regions where overweight is most common among boys is Eastern Black Sea with 16.7%, Istanbul with 16.3% and Mediterranean Region with 15.1%.

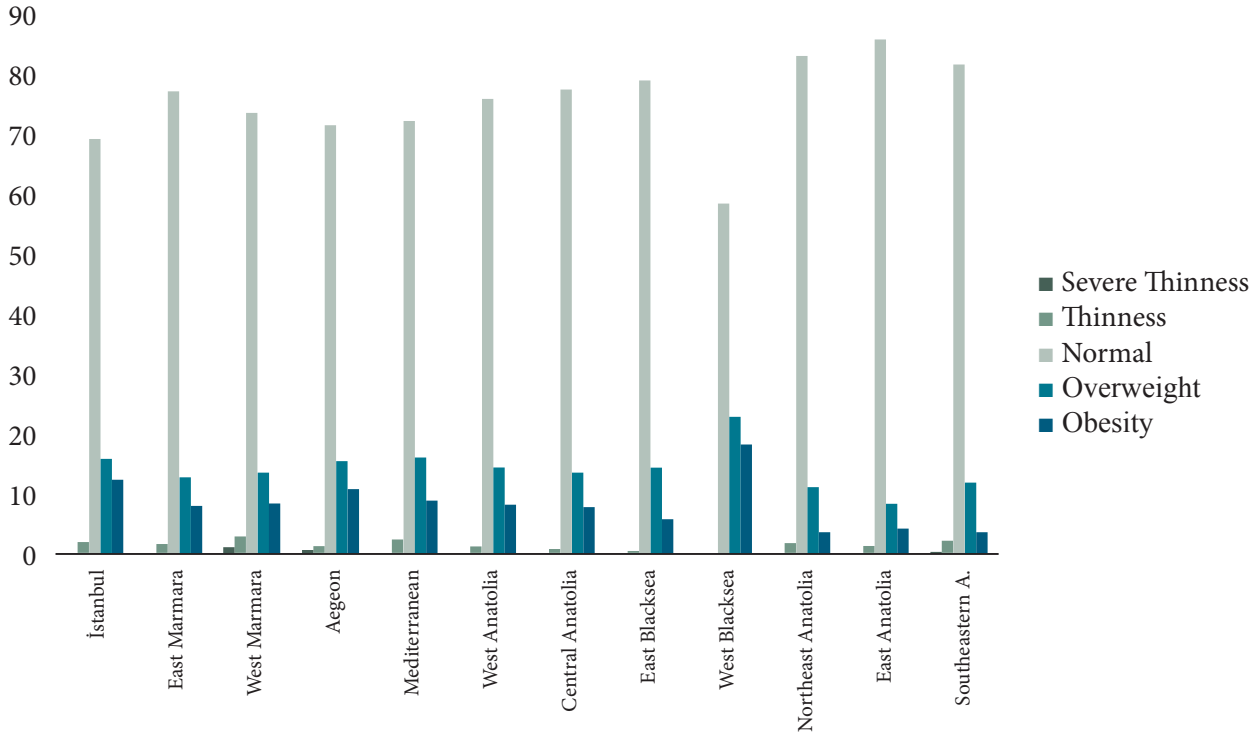
Regions where obesity is most common among girls are Eastern Black Sea with 22.7%, Istanbul with 9.9% and Aegean Region with 9.1%. Regions where overweight is most common among girls is Eastern Black Sea with 28.8%, Mediterranean Region with 17.1%, Eastern Marmara with 16.4% and Aegean Region with 16.4%.

The values of confidence intervals of thinness, stunting and obesity by NUTS Regions are given in Appendex tables.

Graphic 3 Height for Age Z-Score by NUTS province



Graphic 4 BMI for Age Z-Score by NUTS province



6. Discussion

6.1. Schools

6.1.1. Nutritional Policies and Nutritional Facilities of Schools

Schools provide facilities like vending machines and canteens in order to enable children to access food and beverages on their own during the time they spend at school. 92% of schools in urban areas and 26.4% of schools in rural areas have canteens in our country. Canteens are leased through school parent association to provide income for schools. List of foods and beverages which will be sold at canteens are determined with the collaboration of Ministry of Health, Ministry of National Education and Ministry of Agriculture and Livestock. Canteens which are leased to provide additional resources to schools sell food and beverages in accordance with the lists determined by the ministries (TGHB, 2013). Canteens are common in schools.

The fact that vending machines have been found in two schools although they are prohibited in our country indicates a breach of the law, be it on purpose or unknowingly.

The preferred means of food and beverages should be cafeterias at schools. Healthy nutrition for children can be ensured by menus which will be prepared by nutrition experts according to children's ages (MoH, 2013c). Still, the fact that one out of every six schools in urban areas and one out of every four in rural areas offers cafeterias shows that this is not a common practice nation wide yet.

6.1.1.1. Accessible Food and Beverages in Canteens/Cafeterias

Accessibility opportunities of children to foods and beverages available at schools determine their eating habits. Unhealthy choices of food and beverages may be made from canteens/ cafeterias between classes at school. Children's choices are affected by several factors like influence of each other. Food and beverages at school canteens/cafeterias must ensure children's healthy nutrition (MoH, 2013b). Upon evaluation of food and beverages found in canteens/cafeterias, it has been found that three out of every four schools offer healthy beverages.

TOÇBİ study has shown that frequency of beverage sales in school canteens/cafeterias were as: fruit juices (100%) 25.9%, fruit nectar (sweetened) 55.2%, fruit juices (sweetened) 46.6% and fruit flavored beverages (sweetened) 67.2%. However most common beverages have been determined as water (79.2%), milk (75.9%) and ayran (71.7%) in this survey whereas they were fruit juice (sweetened) (68.5%) and ayran (85.9%) in TOÇBİ study. Results of the two studies indicate that variety of beverages sold at schools hasn't changed. (SB, HU and MEB, 2011)

TOÇBİ study has revealed that hot beverage sales are at 53.4%. 36.1% sweetened hot beverage sales and a 33.8% no sugar hot beverage sales frequency in this study. Although it appears that there has been a decrease in sale frequency of hot beverages according to the two surveys, conclusions are hard to deduct because the type of questions in two surveys are not the same.(SB, HU and MEB, 2011).

Frequency of hot beverage sales was 25.9% in TOÇBİ study whereas in the current study it has been 4.2% (SB, HU and MEB, 2011).

As a result of comparison of TOÇBİ with results of this survey, it has been revealed that there has been an increase in the availability of milk, sweetened and flavored fruit juices, and sweetened nectar while a decrease has occurred in certain ones (fresh squeezed fruit juices, diet/light drinks, mineral water and water), and frequencies of some have remained the same (flavored milk, ayran). In rural areas, accessibility to milk has increased while accessibility of all other beverages has dropped significantly. (SB, HU and MEB, 2011).

Wafers and chocolate are available in three out of every four schools whereas snacks like chips or nuts are in available in one out of seven schools. Availability is much higher at schools in urban areas. This result shows that possibility of access to unhealthy foods is higher.

While accessibility of candies, wafers, chocolate and cakes was at 93.1% in TOÇBİ study, this survey has revealed them to be lower (75.5%). Another point of debate is that availability of chips, popcorn and nuts was layed out in two questions in TOÇBİ study; and it showed a frequency of 48.3% for chips and popcorn, and 12.1% for nuts and dried fruits. In this survey these foods have been asked in a single question, and the answer is 14.3%. Although a standard question has not been used, the frequency can still be considered to have dropped. Accessibility of fresh fruit in canteens/cafeterias was 17.2% in TOÇBİ study, whereas it has been assessed higher in this survey (24.5%); these figures are 5.2% and 11.1% for vegetables which again indicates an increase. An increase has also been observed in availability of yoghurt (%12,1 and %17,6). (SB, HU and MEB, 2011).

There has been a change in frequencies of food availability as well in urban and rural areas over the years. Candy, wafer, chocolate and cake availability percentages have been similar in 2009 and 2013 studies (90% and 89.6%), whereas in rural areas, same products have gone to 32.1% in 2013 from no sales in 2009. The increase in percentages indicates a tendency in rural areas toward sales of such food. Frequencies of chips, popcorn and nuts which constitute another group of high calorie low nutrition foods were 47.5% and 10% in 2009, and is 16.0% in 2013 in urban areas. These figures are 50%, 15.7% and 9.4% for rural areas. Despite the difficulty of comparison because of the difference of questions asked, percentages from 2013 show that this type of foods is commonly accessible at schools. While accessibility was 15.0% for fruit, 5.0% for vegetables and 12.5% for yoghurt in 2009, same figures for 2013 are 28.2%, 12.9% and 21.5% respectively. In rural areas, fresh vegetable frequencies are similar (5.6% and 5.7%), and that of fresh fruit is 22.2% and 13.2%, and that of yoghurt is 11.1% and 5.7%. (SB, HU and MEB, 2011)

While no major shift has been observed in sales of unhealthy food in urban areas, an increase has occurred in sale percentages of healthy food. However, sale percentages of unhealthy food have gone up and that of healthy food has gone down in rural areas.

The shift in the healthy food accessible in school canteens or cafeterias is thought to occur due to public messages in the last year. Increase in the unhealthy food can be interpreted as a success of food industry in their attempts to reach children.

6.1.1.2. Providing Free Fruit, Vegetables and Milk

While the percentage of providing free fruit and vegetables to students at schools is very low, that of free milk is much higher. It is highly probable that this is due to the recent school milk project in Turkey. (MoNE, 2013).

6.1.1.3. Education on Nutrition and Prevention of Advertisements

One of the main duties of schools is to ensure that children are informed on healthy living behavior. In the curriculum of Ministry of National Education for second grades, topic of healthy nutrition is included. (MEB, 2012). It has been reported that 78.5% of schools provide education on nutrition to all students and 13.6% of schools provide it to certain classes. This percentage is higher in urban areas than rural ones, although distributions are similar. Considering that all second grade students are subject to the same curriculum, all children should be expected to have received education on nutrition. However, this problem may stem from lack of awareness of administrators or those responsible to run the surveys.

The purpose of an advertisement is to promote a product. The industry aims to realize sales by introducing its products to the public. Placement of food and beverage advertisements at schools is done with the goal of children learning about and consuming these products. 22.7% of schools have reported to allow food and beverage advertisements; percentages are higher in rural areas than urban ones in this respect. TOÇBİ study has assessed frequency of advertising to be 7.1% (12.0% in urban and 3.9% in rural areas). There appears to be an increase of access to schools by food and beverage industry in the last two years. Although these results fail to clearly define the contents of advertised foods and beverages toward children, it does show that the industry is able to reach schools and advertise its products to its defined target group. (SB, HU and MEB, 2011)

6.1.2. Physical Activity Practices and Opportunities

Physical activity opportunities and held practices provided for the children by schools increase the physical activeness of children.

96.3% of schools state that they have a playground for children and 97.2% state that they deploy gym classes. In spite of the common curriculum in all schools nationwide (MoNE, 2012), it has been reported that some schools don't have a gym class; on the other hand, gym class durations differ in urban and rural areas, which indicates inconsistent applications at certain schools.

Healthy living activities are held at 66.2%, and sports activities are held at 63.4% of the schools for all children. Frequencies of holding healthy living or sports activities are higher in urban areas than rural ones. Mandatory gym classes are only 1.5 hours (two 40 minute classes) per week, lengthening physical activity durations can be achieved by orienting children toward organized activities. However, two thirds of schools have reported to provide such activities to all their students. Frequency of such activities in urban areas is higher than it is in rural areas. This may result from student and guardian demands, school administrations approach or resources of schools.

In order to increase physical activity durations of children, policies for encouraging children to walk to and from school are becoming common practice in many developed countries today (WHO 2013). Evaluation of school bus availability has revealed that 45.8% of all children have access to school buses Frequency of providing school buses when necessary is 17.5%, and of providing school buses upon demand from students is 33.0%. While children in rural parts use school buses, this demand

from students is also high in urban parts. However, 64.2% of schools in urban areas are of the opinion that it is not safe to walk or cycle to school. According to schools' standpoint, "in transportation to school, it is rather difficult for children to walk to school, and school buses are a recommended form of transportation".

6.2. Family Related Properties and Children's Life Styles

6.2.1. Social-Demographic Properties of Families and Carrying of Certain Diseases

4002 families in urban and 854 families in rural areas, with a total of 4856 families, have been interviewed during the study. In the context of the study, in 94.1% of families, information has been obtained from a first degree relative of the child.

Of the children whose families have been used to gather information, 50.3% are girls and 49.7% are boys. Distribution of gender and age of children are similar according to their settlements.

Education level of mothers who have been contacted within the context of the survey is lower than that of fathers. On the other hand, education levels of both mothers and fathers in rural areas are lower that that of mothers and fathers in urban areas.

16.0% of mothers are actively working. Working mothers are more common in urban areas.

Occupations of children's fathers also differ according to settlement. While percentages of fathers who work in the private sector or who are civil servants are higher in urban areas, own business and working on a salary is higher in rural areas. Unemployment is also higher in rural areas.

More than half the families live in apartments; percentages of living in apartments in urban areas and in single family houses in rural areas are higher. A greater percentage owns their homes in rural areas.

These variations between family structures can be considered an indicator of their social-economical status as well as a basic determinant affecting awareness on healthy nutrition.

It has been reported that one out of every seven families has had a history of hypertension, one out of every ten families diabetes and one out of every eight families high cholesterol. Percentages of these diaseses' history is higher in rural areas. Although reporting frequency of these diseases is below their occurrence frequency in society, it is highly probable that families are young. Thereby it is possible they have not yet had these diseases.

6.2.2. Number of Weeks Children Were Born At, Weight At Birth and Access to Mother's Milk

It is acknowledged that health status of mothers during pregnancy-babies' health after birth; affect children's health and growth throughout childhood. Therefore number of weeks at birth, and babies' weight at birth are important for evaluation of their growth.

It has been reported that 83.5% of children were duly born and the average weight at birth is 3.182 ± 680.18gr. Frequency of early births was lower in rural areas, but refusal to answer this question was higher too. On the other hand average weight of babies born in rural areas is lower than that of babies born in urban ones. There may be certain errors due to misremembering, but findings indicate that children begin life with a lower body weight in rural areas.

95.9% of children have been reported to have taken mother's milk, without difference in urban and rural areas. This shows that children in urban as well as rural areas have access to postnatal healthy nutrition.

6.2.3. Nutritional Behavior of Children

Breakfast is defined as one of the most important meals in children's nutrition (MoH, 2013c). 84.6% of children have breakfast every day. TOÇBİ has found the frequency of having breakfast every day to be 64.4%. while breakfast frequencies are 85.1% for urban and 82.2% for rural areas in this survey, same figures were respectively 62.8% and 66.2% in TOÇBİ study (SB; HU and MEB, 2011).This comparison supports the finding that frequency of having breakfast is increasing among children. Information is provided to the public through the local and national media on this topic, with Ministry of Health offering many publications (MoH; 2013a). It is pleasing that there is a positive behavioral change.

Information on children's consumption frequencies of certain types of food has been obtained from their families. Data from this survey and TOÇBİ Study are compared below. (SB, HU and MEB, 2011).

- It is recommended to have fresh fruit and vegetable every day; 42.8% of families who have been interviewed state that their children eat fresh fruit and 18.3% state theirs eat fresh vegetables every day. Consumption of fresh fruit was at 25.8% and vegetables were at 31.1% in TOÇBİ study.
- Daily consumption of who fat milk is at 27.9% and half/low fat milk is 23.6%. only whole fat milk was inquired in TOÇBİ study and its frequency was 30.0%
- Daily consumption of cheese is at 51.0%, ayran is at 28.7% and yoghurt is at 36.9%. In TOÇBİ study cheese was at 35.9%, ayran was at 14.5% and yoghurt was at 51.7%.
- Consumption of red meat, chicken and turkey 1-3 times a week is at 55.0% whereas in TOÇBİ study it was at 53.6% for red meat and at 52.9% for chicken.
- Consumption of fish 1-3 times a week is at 67.0% whereas it was at 54.0% in TOÇBİ study.
- Consumption of legumes is at 56.4% whereas it was at 26.4% in TOÇBİ study.
- Daily consumption of cereals is at 43,1% and it was at 26.4% in TOÇBİ study.

It is recommended that children have fruit/vegetables, cereals, dairy products, meat and meat products every day to grow healthily. According to results of this survey, children don't prefer fruit and vegetables. While dairy products are recommended for daily consumption they too aren't a preferred means of nutrition. Consumption of meat and legumes should ideally be higher as well. In general, it can be said that children don't consume enough ideal nutrients. Based on TOÇBİ study results, it could be assumed that consumption of fruit, cheese, ayran, fish, eggs, legumes frequencies are increasing and thus healthy nutrition is developing. However, decreases in milk, red meat, chicken and turkey and yoghurt have also been observed.

Children's behavior toward consumption of other foods and beverages is as below:

- Daily consumption of dried nuts is at 13.8%, was at 15.5% in TOÇBİ study.[2]
- Daily consumption of flavored milk is at 8,3%, was at 25.6% in TOÇBİ study.
- Daily consumption of fresh squeezed fruit juice is at 5.8%, 100% fruit juice is at 14.2%, sugary carbonated beverages is at4.2% and diet/light beverages is at 1.7%. These figures were 14.9%, 11.8%, 11.5% and 3.6% in TOÇBİ study.
- Daily consumption of chips, popcorn is at 8.7%, was at 19.0% in TOÇBİ study.
- Daily consumption of snacks like candy bars and chocolate is at 14.4%, was at 25.4% in TOÇBİ study.
- Daily consumption of snacks like biscuits, cakes, cookies, pies is at 16.5%, was at 14.0% in TOÇBİ study.
- Daily consumption of pizza, pitta, Turkish pizza, French-fries, hamburgers, hot dogs are at 4.2%, in TOÇBİ study pizza, pitta and Turkish pizza was at 8.9%, French-fries was at 8.6%, Turkish bagels, pastries was at 15.9% and sandwiches like hamburgers or hot dogs was at 15.8%

It is recommended to have certain limits for children in consumption of foods and beverages daily consumption frequencies of which are listed above. There is a distinct decrease in daily consumption of all foods and beverages except for biscuits, cakes, cookies and pies. It can be said that informational campaigns toward families have especially been influential in this shift. The decrease in at least the daily consumption frequencies of children should be assessed under an optimistic light.

6.2.4. Sleep, Physical Activity and Sedentary Life Behaviors

The survey has revealed that average sleep duration is 9.29 ± 1.27 hours in urban and 9.32 ± 1.31 hours in rural. There isn't a noteworthy difference between average sleep durations of boys and girls, as well as between children in urban and rural areas. In TOÇBİ study, boys' average sleep duration was 9.65 ± 1.15 hours and that of girls was 9.67 ± 1.23 hours (SB, HU and MEB 2011). A decrease of about 20 minutes is detected in children's sleep duration. It is argued that short sleep durations may cause obesity as well as long durations. Various factors like a change in one's hormonal structure and long eating durations are considered to be among reasons behind obesity. (Must and Parisi,.2009).

25.8% of families that have been interviewed during the survey have declared that their children attend sport activities one or more times per week. In TOÇBİ study it was found as 16.9% (SB, HU and MEB, 2011). However, while 28.8% of families in urban areas and 8.1% in rural areas have stated that their children attend sporting activities, in TOÇBİ study, frequency of attending an activity in a sports club was 15.9% for urban areas and 18.0% in rural ones. The substantial difference in urban and rural areas may be due to differences in question types. Nevertheless, one out of every four children attends sporting activities.

In urban areas, frequency of children who play for longer than an hour a day is 84.6% for week days and 94.9% for weekends. There is an increase in playing durations on weekends. Boys have been detected to play for longer durations; this is significantly true for all four categories. It is recommended by World Health Organization that children play for at least an hour a day (WHO, 2013). This survey shows that a great majority of children carry out physical activities, although not all.

2 Since contents and consumed amount of dried nuts are undetermined, a recommendation of daily consumption isn't encouraged

The fact that children go to school every day makes another physical activity possible. It is accepted to be a regular physical activity when children walk or cycle to school every day (WHO, 2013). However, this activity is only possible when the road to school is safe and within walking distance. Only 27.0% of families in urban areas and 45.7% in rural areas find roads to school safe; furthermore, 79.2% of schools in urban and 75.6% of schools in rural areas are within 2 km distance to families' homes. Seven out of every 10 children in urban and rural areas alike walk to school. Propositions on defining the reasons behind remoteness of schools and possible actions to bring them closer are called for discussion.

Children also spend time doing homework and reading in after school hours. Respective for week days and weekends, 8 children out of every 10 in urban areas and 7 children out of every 10 in rural areas spend an hour or longer doing homework or reading every day. This is a long duration for children and constitute at least one seventh of the day. In a period of 1-3 hours spent sitting down, not only is there a deceleration in children's metabolisms, consumption of foods and beverages that fall into the category of snacks is also probable during this time.

Another recent activity which children engage while sitting down is computer games. When children have computers at home, it may cause them to spend longer times sitting down. (Must and Parisi, 2009).

Six out of every 10 children in urban areas and two out of 10 in rural areas have computers at home, of children in urban areas, 22.8% spend one hour or longer behind the computer on week days and 40.8% do so on weekends; in rural areas these are 12.4% and 19.0% respectively. Boys seem to spend longer durations using computers than girls. In TOÇBİ study durations spent by the computer were 1.17 ± 0.71 hours on week days and 0.54 ± 1.04 hours on weekends for boys, while it was 1.13 ± 0.57 and 0.41 ± 0.87 hours for girls (SB; HU and MEB, 2011). While this survey portrays an increase in the number of students who spend time behind computers on weekends, TOÇBİ study had showed that they spend more time behind computers on weekends. Differences in the type of questions and analysis make interpretation of results difficult.

Another sedentary life habit is to spend time watching television. There is evidence that a positive correlation exists between durations of watching television and obesity. Of the children in urban areas, 61.8% spend 1-2 hours on week days watching television and 50.2% do so on weekends, these figures are 58.8% and 47.7% for children in rural areas. This shows that one out of every two to three children spend 1-2 hours sitting behind the television on week days and weekends, whereas this ratio is one out of two children in rural areas. Considering that televisions are in almost every house, they are a major part of the time children spend sitting. In TOÇBİ study durations of watching television were 1.63 ± 1.54 hours on week days and 2.89 ± 1.61 on weekends for boys, and 1.55 ± 1.53 and 2.84 ± 1.65 hours for girls (SB; HU and MEB, 2011). SCPGT study indicated longer durations on weekends. This calls for diversification in weekend activities.

6.3. Evaluation of Children's Anthropometric Measurements

82.8% of the visited schools are in urban areas and 17.2% are in rural areas. As observed by researchers, 78.3% of schools are in urban areas, 12.7% are in rural areas and 9.0% are in suburban areas.

A total of 4,958 children have been anthropometrically measured at schools. 49.9% of the children who were anthropometrically tested were girls and 50.1% were boys. 52.7% of the children who were tested anthropometrically at schools were 7 years old while 47.3% were 8. Age average of anthropometrically tested children was the same in urban and rural areas at 7.94 ± 0,34 years. There is no statistical difference between age and gender ratio of children according to where they live, meaning that the results represent residence, age and gender.

93.8% of anthropometrically tested children have breakfast. Anthropometric measurement times at schools were morning and afternoon. At 34.7% of schools measurements were taken in the morning and at 65.3% they were taken in the afternoon. Since the research was conducted in May, children were usually lightly clothed.

According to body weight Z-Score of children, nine out of every 10 children have an average body weight while two out of 100 children are thin and two out of 1000 children are severely thin. These frequencies have been assessed to be similar for girls and boys.

According to body height Z-Score assessment, 7 to 8 out of every 10 children have been found normal. Two out of every 100 children were short and two were tall while one out of 1000 children were extremely short and one extremely tall. Tallness and severe tallness rates among boys is higher than that of girls. (3.0% in boys and 1.6% in girls).

During BMI Z-Score assessment of children, around 7 to 8 out of every 10 children have been found to be within normal margins. 14 out of every 100 children were overweight and 8 were obese. Among boys, 13 out of every 100 children were overweight and 10 were obese, these figures are 15 and 7 respectively among girls. Overweight and obesity is found to be an important problem among both boys and girls.

In SCGPT Research rates of slightly overweight is 17.9% and that of obese is 6.2% among boys in the age group seven. These figures are 12.4% and 5.4% respectively among girls in the age group seven. SCGPT Research shows rates of overweight in boys of the age group eight to be at 14.4% and rate of obese at 7.4% whereas these figures are 14.4% and 7.4% among girls of the same age. When we analyze the results of this research with the same method, a general assessment may be made that the sum of slightly overweight and that of obese are similar. Thus it may be interpreted that there is neither an increase nor a decrease in frequencies of slightly overweight and obese among children. However, the fact that SCGPT has a different sampling method must be taken into consideration.

Table 52. Comparison of TOCBİ and COSI Results for Being Overweight and Obese According to BMI

	TOÇBİ			COSI-2013		
	Overweight	**Obese**	**n**	**Overweight***	**Obese****	**n**
Girls						
Age 7	12,4	5,4	1.285	16,3	6,2	1.343
Age 8	14,4	4,8	1.430	13,5	7,3	1.132
Boys						
Age 7	17,9	6,2	1.411	12,8	11,4	1.270
Age 8	14,4	7,4	1.551	14,6	8,7	1.213

* Overweight: (BMI Z-Score ≥+1.0 SD ->+2.0 SD)
** Obese: (BMI Z-Score ≥+ 2.0 SD)

It can be observed that there is a difference between the anthropometric measurements according to the resided area. While the rate of being thin or severely thin is at 1.8% in the cities, this is at 4.2% in the countryside. The rate of being thin and severely thin among girls is at 2.0% in urban areas and at 3.3% in rural areas. The rates of being thin and severely thin are higher among both boys and girls in rural areas than they are in urban areas.

There is also a difference between the distribution of body height Z-Scores among boys and girls according to resided areas. While 1.6% of boys in urban areas are stunting and severely stunting, this rate is at 5.6% in rural areas. 1.8% of girls in urban areas are stunting and 6.0% are severely stunting. On the other hand frequency of tallness is higher among both boys and girls in urban areas. There are 3.4% tall boys in the cities and 0.5% tall boys in rural areas. A similar ratio can be seen among girls (1.9% and 0.2%). Tallness rate is higher in urban areas and that of stunting is higher in rural ones.

Distribution rates of BMI Z-Scores of boys differ according to residential area as well. The frequency of obesity among boys is 11.2% in urban and 3.7% in rural areas. A similar percentage exists for girls. Rates of obesity and overweight is higher in the cities than rural areas (23+% and 13.6%). based on resided area, percentage of being within normal margins is higher in rural areas than urban ones, and percentage of obesity is lower.

Percentages of thinness, stunting and obesity according to age are similar among boys and girls. This leads to the suggestion that there is not a significant change in anthropometric measurements.

- Frequencies of thinness among boys are 1.7% for age groups seven and 2.4% for age group eight. Percentages of severe stunting are 0.1% and 0.2% respectively.
- 2.0% of boys in the age group seven are in either stunting or severely stunting category. 2.6% of boys in the age group eight are either stunting or severely stunting. Percentages of tallness are 3.0% in the age group seven and 2.9% in the age group of eight.
- Percentages of obesity are 11.3% in the age group seven and 8.6% in the age group eight while these figures are 12.4% and 14.3% respectively for being overweight.
- Thinness among girls has a frequency of 2.0% in the age group seven and 2.3% in the age group eight. Percentages of severe thinness are 0.2% and 0.1% respectively.
- In the age group seven, 2.5% of girls are in stunting or severely stunting category. Percentage of stunting or severe stunting is 2.8% in the age group eight. Percentage of tallness is 1.8% for seven and 1.4% for eight-year-olds.
- Percentage of obesity among girls is 6.0% in age seven and 7.3% in age eight while the percentages for overweight are 16.4% and 13.4% respectively.

Body weight average of boys whose anthropometric measurements were taken during the research is 26.8 ± 5.7 kg. In the girls' case, it is 26.1 ± 5.6kg. The average body height of boys is 127.3 ± 5.9cm and that of girls is 125.9 ± 5.9cm. The average body mass index of the children is 16.4 ± 2.5 for boys and 16.3 ± 2.5 for girls. Average body weight and height increase with age in boys and girls alike. In the urban areas body weight and height avareages of both boys and girls are higher than those of children in rural areas.

Table 53. Comparison with Results of Body Weight-for-age COSI Research (2008) in Certain Countries of the European Region

	Boys		Girls	
	Body Weight (kg) (Median, %25-75)	Body Weight Z-skor (Mean Standard Deviation)	Body Weight(kg) (Median, %25-75)	Body Weight Z-skor (Mean Standard Deviation)
Age 7				
Belgium	25.1 (22.7-28.3)	0.38 (1.18)	25.0 (22.3-28.6)	0.42 (1.11)
Bulgaria	25.2 (22.5-29.3)	0.39 (1.36)	25.1 (22.1-29.4)	0.40 (1.32)
Czech Republic	24.9 (22.5-28.0)	0.57 (1.22)	24.0 (21.9-27.2)	0.42 (1.00)
Irland	25.9 (23.6-29.2)	0.57 (1.18)	25.6 (23.0-28.6)	0.54 (1.02)
Lithuania	26.4 (23.8-29.4)	0.61 (1.12)	25.5 (23.0-28.7)	0.45 (1.03)
Lethonia	26.6 (24.3-30.1)	0.66 (1.14)	25.9 (23.5-29.4)	0.56 (1.06)
Portugal	26.9 (24.1-31.0)	0.70 (1.28)	25.8 (22.8-29.6)	0.64 (1.17)
Slovenia	26.9 (24.1-31.0)	0.87 (1.25)	26.1 (23.5-30.0)	0.70 (1.11)
Sweden	26.5 (24.4-29.6)	0.63 (1.04)	26.1 (23.5-29.3)	0.53 (0.98)
Turkey-2013	**25,0 (22,5-28,4)**	**0,21 ±1,29**	**24,2 (21,9-27,7)**	**0,16 ±1,12**
Age 8				
Belgium	28.4 (25.7-31.9)	0.46 (1.10)	28.1 (25.2-32.1)	0.40 (1.05)
Italy	31.3 (27.3-37.2)	1.00 (1.33)	30.4 (26.2-35.5)	0.71 (1.22)
Norway	28.7 (26.1-32.0	0.59 (1.07)	28.3 (25.3-32.0)	0.48 (1.01)
Slovenia	30.0 (26.8-34.9)	0.89 (1.26)	29.8 (26.1-34.1)	0.73 (1.12)
Sweden	29.5 (26.4-33.4)	0.67 (1.12)	28.7 (25.8-32.7)	0.52 (1.04)
Turkey-2013	**26.2 (23.6-29.7)**	**0.17 ±1.29**	**25.5 (23.1-29.5)**	**0.08 ±1.10**

When we compare weight-for-age values of children in our country with the results of other countries we see that they have the lowest averages of body weight among boys and girls alike. Apart from body weight averages, they are also observed to have the lowest body weight Z-Score values. (TM Wijnhoven et all, 2012)

Table 54. Comparison with Results of Body Height-for-age COSI Research (2008) in Certain Countries of the European Region

	Boys		Girls	
	Body Height (cm) (Median, %25-75)	Body Weight Z-skor (Mean Standard Deviation)	Body Height (cm) (Median, %25-75)	Body Weight Z-skor (Mean Standard Deviation)
Age 7				
Belgium	125.9 (6.0)	0.29 (1.03)	125.3 (6.2)	0.29 (1.02)
Bulgaria	126.5 (6.8)	0.24 (1.20)	125.7 (6.5)	0.24 (1.12)
Czech Republic	126.2 (5.8)	0.67 (1.05)	125.0 (5.2)	0.57 (0.91)
Irland	125.9 (5.7)	0.23 (1.05)	125.4 (5.5)	0.30 (0.98)
Lithuania	128.5 (5.8)	0.59 (1.03)	127.4 (5.7)	0.57 (0.99)
Lethonia	129.2 (5.6)	0.69 (1.01)	128.6 (5.5)	0.72 (0.95)
Portugal	125.8 (6.0)	0.24 (1.06)	125.1 (6.2)	0.27 (0.95)
Slovenia	129.0 (5.8)	0.81 (1.00)	128.1 (6.2)	0.77 (0.95)
Sweden	129.2 (5.5)	0.67 (0.97)	128.0 (5.7)	0.58 (0.98)
Turkey-2013	**126,1 (5,6)**	**0,05 (0,01)**	**124,6 (5,7)**	**-0,06 (0,97)**
Age 8				
Belgium	132.8 (5.9)	0.48 (0.99)	131.9 (6.0)	0.40 (0.97)
Italy	133.0 (6.0)	0.39 (1.01)	131.7 (6.0)	0.25 (0.99)
Norway	133.2 (5.9)	0.65 (0.99)	131.7 (5.7)	0.47 (0.94)
Slovenia	134.1 (6.0	0.77 (1.00)	133.4 (5.8)	0.71 (0.96)
Sweden	134.1 (6.0)	0.70 (1.01)	132.8 (6.2)	0.55 (1.00)
Turkey-2013	**128.6 (6.1)**	**-0.02 (1.05)**	**127.5 (5.9)**	**-0.11 (1.02)**

When compared to the results from certain countries conducting the COSI Research in the European Region, body weight-for-age values from our research appear to be lower than most of the other countries. While Turkey has the fourth lowest average of body height among boys at the age of seven, it has the lowest average in the age group eight. Average height of girls in Turkey has the lowest figures in both age groups of seven and eight. A similar layout can be observed in body height Z-Score values. (TM Wijnhoven et all, 2012)

Table 55. Comparison with Results of Body Mass Index COSI Research (2008) in Certain Countries of the European Region

	Boys		Girls	
	BMI (Median, %25-75)	BMI Z-Score (Mean Standard Deviation)	BMI (Median, %25-75)	BMI Z-Score (Mean Standard Deviation)
Age 7				
Belgium	15.8 (14.9-17.1)	0.28 (1.21)	15.9 (14.8-17.4)	0.32 (1.11)
Bulgaria	15.8 (14.8-17.6)	0.31 (1.41)	16.0 (14.6-18.0)	0.34 (1.33)
Czech Republic	15.7 (14.8-16.9)	0.22 (1.31)	15.4 (14.4-16.9)	0.09 (1.09)
Irland	16.3 (15.4-17.8)	0.61 (1.18)	16.2 (15.3-17.7)	0.50 (1.00)
Lithuania	16.0 (15.1-17.2)	0.35 (1.16)	15.7 (14.7-17.0)	0.16 (1.02)
Lethonia	16.0 (15.0-17.3)	0.36 (1.20)	15.8 (14.7-17.2)	0.20 (1.12)
Portugal	16.6 (15.4-18.4)	0.77 (1.28)	16.5 (15.3-18.4)	0.66 (1.14)
Slovenia	16.2 (15.1-18.1)	0.54 (1.38)	16.0 (14.8-17.7)	0.35 (1.19)
Sweden	16.0 (15.1-17.2)	0.31 (1.08)	16.0 (14.9-17.4)	0.26 (0.99)
Turkey-2013	**15,7 (14,8-17,2)**	**0,23 (1,32)**	**15,7 (14,7-17,3)**	**0,17 (1,10)**
Age 8				
Belgium	16.0 (15.1-17.4)	0.22 (1.16)	16.1 (15.0-17.8)	0.23 (1.07)
Italy	17.6 (16.0-20.4)	1.05 (1.39)	17.5 (15.7-19.9)	0.75 (1.24)
Norway	16.2 (15.2-17.5)	0.29 (1.14)	16.3 (15.1-17.8)	0.28 (1.05)
Slovenia	16.8 (15.5-8.7)	0.63 (1.35)	16.6 (15.2-18.7)	0.46 (1.18)
Sweden	16.3 (15.3-17.8)	0.35 (1.18)	16.3 (15.1-17.9)	0.29 (1.04)
Turkey-2013	**15.9 (14.8-17.3)**	**0.19 (1.25)**	**15.8 (14.8-17.4)**	**0.14 (1.16)**

When the figures from our country are compared to those of the other countries, BMI values of both boys and girls are close to those of children from the European Region. Turkey's average BMI average for boys in the age group seven is the same as that of the Czech Republic. Other countries have higher average values than Turkey. Among the eight-year-old boys, values for Turkey is lower than the values of all countries which conducted the research. Likewise, while only two countries have lower averages than Turkey among girls in the age group seven, there is no country with a lower average than Turkey in the age group eight. Childhood obesity is less common in Turkey compared to the other countries. A similar layout can be observed in body weight Z-Score average values. (TM Wijnhoven et all, 2012)

Percentage of thinness for both boys and girls are higher in Eastern Anatolia and Southeastern Anatolia Regions. Boys in Western Black Sea and girls in Eastern Marmara Regions also display high percentages of thinness.

While Eastern Anatolia Region has the highest frequency of stunting among girls, percentage of stunting among boys is higher than the rest of the regions in Southeastern Anatolia Region. Stunting is a serious issue among boys in Western Black Sea and girls in Central Anatolia Regions as well.

In contrast to thinness and stunting, obesity is seen more frequently in the western parts of the nation. Boys in Eastern Marmara and Aegean Regions and girls in Eastern Black Sea Region have the highest tallness percentages. Obesity is most common in Istanbul, Aegean, Central Anatolia Regions whereas in girls frequency of obesity is higher in Eastern Black Sea, Istanbul and Aegean Regions.

7. CONCLUSIONS AND SUGGESTIONS

”Adequate and balanced nutrition” is the first of basic behaviors that affect the state of health. From early childhood on, one of the most important factors in remaining healthy is “healthy nutrition”. Healthy nutrition directly contributes to ensuring health potential and improving the level of well being of the individual, family and society.

7.1. Schools

This survey has been conducted in 216 schools, 163 of which (75.5%) are in urban and 53 (24.5%) are in rural areas. 2,541 girls and 2,560 boys have been reached during the survey.

- 75.8% of schools have canteens and 20.6% have cafeterias. Percentages of schools with canteens are higher in urban areas than in rural areas.
- 9.7% of schools provide fresh fruit and 8.3% provide fresh vegetables to all students. Providing free milk to students is at 61.4%.
- 78.5% of schools give education on nutrition to all students.
- 22.7% of schools do not filter advertisements.

Our schools need to be supported in terms of nutrition and physical activity sources and practices.

7.2. Children’s Life Styles As Declared by Families

A total of 4,856 families, of which 4,002 are from urban and 854 are from rural areas have filled interview forms during the survey. 82.4% of families live in urban areas and 17.6% live in rural areas. 68.1% of interviewed people are mothers, 26.4% are fathers, and only 5.4% of people who information has been taken from are relatives of children other than parents.

- Five out of every six children (84.6%) has breakfast every day.
- It has been deducted that the goal of daily consumption of fruit, vegetables and protein rich foods has not been achieved and consumption of low nutrition high calorie food and beverages remains.
- Sleep durations of children are at desired levels.
- Three out of every four children (74.2%) engages in no sports activities.
- There is a group of children who never plays (about 2%)
- Three out of every four children walk to and from school.
- 22.4% of children play computer games for at least one hour on week days and 19.7% do so on weekends. 43.4% and 56.8% of children play computer games among other daily activities on weekdays.
- Watching television is one of children’s main activities. It is among daily activities of 96.8% of children on weekdays and 97.7% of them on weekends.

Our children need to increase their physical activities as well as change their behaviors regarding healthy and balanced nutrition. Accordingly, a change of perspective of families and utilization and improvement of environmental opportunities of the habitat is called for.

7.3. Evaluation of Children's Anthropometric Measurements

A total of 4.958 children have been anthropometrically measured at schools. While residing areas, gender and age distributions of children are similar; sampling enables evaluation based on residing area, gender and age.

- According to body weight Z-Score evaluations, nine out of every 10 children are within normal margins. 0.2% of the total are severely severe underweight and 2.1% are underweight.
- According to height Z-Score evaluations, 95 out of every 100 children are within normal margins while two are severely stunting. 0.1% of the total is severely stunting, 2.3% are stunting and 2.3% and 2.2% are tall and severely tall.
- According BMI score evaluations, 7-8 out of every 10 children are within normal margins. Frequency of overweight and obesity is 23.3% for boys and 21.6% for girls. 8.3% of the total is obese and 14.2% are overweight. Total of thinness and sever thinness is at 2.1%.
- Tallness and obesity percentages are higher in urban areas and stunting and thinness percentages are higher in rural areas.
- There isn't a difference between boys' and girls' thinness, obesity and tallness frequencies in terms of age groups.
- Percentages of thinness and obesity vary according to regions.

According to BMI Z-Scores from Turkey, prevalence of obesity (including overweight) is assessed at 21.6% among girls aged 7 and 8, while prevalence of obesity (including overweight) among boys is 23.3%. According to body height Z-Scores, prevalence of stunting-severe stunting is calculated as 2.2% among boys and stunting-severe stunting prevalence among girls is 1.9%. Thinness and obesity problems display differences depending on resided areas, structure of the residential area and gender. Prevalence of thinness is higher in rural areas and prevalence of obesity is higher in urban areas. It is imperative to strengthen policies toward ensuring that children get healthy nutrition and engage in physical activities and to grant such policies immediate priority for implementation.

8. REFERENCES

Attila S. (2012). Toplumda Enerji ve Besin Elementleri Gereksinimleri. Halk Sağlığı Temel Bilgiler III. Cilt (Editörler Güler Ç ve Akın L). Hacettepe Üniversitesi yayınları, 1214-1225

Cappelleri JC, Bushmakin AG, Gerber RA, Leidy NK, Sexton CC, Lowe MR, and Karlsson J. (2009). Psychometrci anaysis of the Three-Factor Eating Questionnaire-R21: results from a large diverse sample of obese and non-obese participants. International Journal of Obesity. 33: 611-620.

French SA, Story M, and Robert WJ. (2009). Environmental influences on eating and physical activity. Annual Review of Public Health. 22: 309-335.

Lawrence G and Potvin L. (2002). Education, Health Promotion, and Social and Lifestyle Determinants of Health and Disease, Oxford Texbook of Public Health içinde Deteles R, McEwen J, Beaglehole R, and Tanaka H.USA: Oxford University Press.

(MEB, 2013). Milli Eğitim Bakanlığı Temel Eğitim Müdürlüğü. Okul Sütü Uygulaması. http://tegm.meb.gov.tr/www/okul-sutu-programi-basladi/icerik/94. Erişim tarihi: Ekim 2013.

MEB 2012. Milli Eğitim Bakanlığı Talim ve Terbiye Kurulu Başkanlığı, http://ttkb.meb.gov.tr/program2.aspx, Erişim tarihi: Ekim 2013.

Must A and Parisi SM. (2009). Sedentary behavior and sleep: paradozial effects in association with childhood obesity. International Journal of Obesity. 33: 582-586.

Peterson NA, Hughey J, Lowe JB, Timmer AD, Scheider JE, Peterson JJ. (2008). Health Disparities and Community-Based Participatory survey: Issues and Illustrations. RB Wallace, N Kohatsu (Ed). Public Health& Preventive Medicine içinde. USA: McGraw Hill Medical.

Ministry of Health, Hacettepe University Faculty of Health Units Nutrition and Diabetes Department, Republic of Turkey Ministry of Health. (2011). Surveillance on School Aged (age group 6-10) Children's Growth Patterns in Turkey (TOÇBİ). Kuban Matbaacılık, Ministry of Health Publication No: 834, ISBN: 978-975-590-370-5. Ankara.

MoH (2013a). Beslenme İle İlgili Sağlık Bakanlığı Bilgilendirme sayfası, http://www.beslenme.gov.tr/. Erişim tarihi: 10 Aralık 2013.

Gıda Tarım ve Hayvancılık Bakanlığı (2013). Okul Kantinlerine Dair Özel Hijyen Kuralları Yönetmeliği, Resmi Gazete, 5 Şubat 2013, 28550.

MoH (2013b). Action Plan for Healthy Nutrition and Active Life in Turkey (2010-2014). ISBN: 978-975-590-311-8, Ministry of Health Publication No:773.

MoH (2013c). Okul Öncesi ve Okul Çağı Çocuklara Yönelik Beslenme Önerileri Ve Menü Programları, Ankara. http://www.beslenme.gov.tr/content/files/basin_materyal/ okul_oncesi_ve_okul_cagi_cocuklara_yonelik_beslenme_onerileri_ve_menu_programlar_.pdf

TM Wijnhoven et all. (2012). WHO European Childhood Obesity Surveillance Initiative 2008: weight, height and body mass index in 6-9 years old children, pediatric Obesity;8,79-97.

Webber L, Hill, C, Saxton J, Van Jaarsveld CHM, and Wardle J. (2009). Eating behaviour and weight in children. International Journal of Obesity. 33:21-28.

WHO, Obesity, http://www.who.int/topics/obesity/en/, Erişim Tarihi: Ekim 2013.

WHO. (2012) Global Strategy on Diet, Physical Activity and Health. http://www.who.int/dietphysicalactivity/childhood/en/index.html, Erişim Tarihi: 16 Mayıs 2013.

WHO2009. AnthroPlus for Personal Computers manual: Software for assessing growth of the world's children and adolescents, Geneva: WHO, 2009, http://www.who.int/growthref/tools/en/, erişim tarihi: 24.July.2013

WHO2007.http://www.who.int/growthref/who2007_bmi_for_age/en/index.html), http://www.who.int/growthref/growthref_who_bull.pdf. Erişim Tarihi: 12 Kasım 2013

9. ANNEXES

Questionnaires are not shown here due to WHO resolutions.

Annex 9.1: Examiner's Record Form
Annex 9.2: School Return Form
Annex 9.3: Family Record Form

Annex 9.4: Ministry of National Education Approval

T.C.
MİLLÎ EĞİTİM BAKANLIĞI
Temel Eğitim Genel Müdürlüğü

Sayı : 70297673/100/493833 05/04/2013
Konu: Araştırma İzni

SAĞLIK BAKANLIĞINA

İlgi: 02/04/2013 tarihli ve B.10.1.HSK.0.20.00.00/324 sayılı yazı.

Sağlık Bakanlığı Türkiye Halk Sağlığı Kurumu Başkanlığınca ***"Dünya Sağlık Örgütü-Avrupa Çocukluk Çağı Obezite Sürveyans Girişimi Araştırması (COSI)"*** kapsamında 6, 7, 8 ve 9 yaş grubunda belirli sayıda öğrencinin boy uzunluğu, vücut ağırlığı, bel ve kalça çevreleri ölçülerek ve ölçümler her iki yılda bir yenilenerek, Avrupa bölgesi çocuklarının ve ülkemizin çocuklarının büyüme durumları ile ilgili veriler elde etmek amacıyla araştırma yapılacaktır.

Araştırma 67 ilde 216 okulda yaklaşık 5700 2. sınıf öğrencilerine belirlenen şubelerde uygulanacaktır. Örneklem çalışması sonucu seçilen okulların listesi Ek-1'dedir.

Sözkonusu okul yöneticilerine Ek-2'de yer alan bilgi notunun iletilmesi ve eğitim öğretimi aksatmayacak şekilde, ***gönüllülük esasına*** dayalı olarak araştırmayı yapacak ekiplere yardımcı olunmasının sağlanması hususunda gereğini rica ederim.

Dr. Şule ERŞAN
Bakan a.
Grup Başkanı

EKLER:
1. Okul Listesi (6 sayfa)
2. Okul Bilgi Notu (1 sayfa)

T.C. SAĞLIK BAKANLIĞI
TÜRKİYE HALK SAĞLIĞI KURUMU - THSK
GENEL EVRAK GELEN SERVİSİ
11.04.2013 - 15:47:40 - 2013/51042
01267540

DAĞITIM:
Gereği:
Ek Listedeki İller

Güvenli Elektronik İmzalı
Aslı İle Aynıdır.
8/4/2013

Bilgi:
Sağlık Bakanlığı Türkiye Halk Sağlığı Kurumu Başkanlığı

Mehmet CANLI
Şef

Bu belge, 5070 sayılı Elektronik İmza Kanununun 5 inci maddesi gereğince güvenli elektronik imza ile imzalanmıştır
Evrak teyidi http://evraksorgu.meb.gov.tr adresinden d979-b4bc-31e1-b1e9-3aee kodu ile yapılabilir.

Atatürk Blv. 06648 Kızılay/ANKARA
Elektronik Ağ: www.meb.gov.tr
e-posta:tegm_izlemedegerlendirme@meb.gov.tr

Ayrıntılı bilgi için: Dr. Süheyla BOZKURT
Tel: (0 312) 413 16 19
Faks: (0 312) 417 71 05

Annex 9.5: Ethics Committee Approval

T.C SAĞLIK BAKANLIĞI ZEKAİ TAHİR BURAK KADIN SAĞLIĞI EĞİTİM VE ARAŞTIRMA HASTANESİ KLİNİK ARAŞTIRMALAR ETİK KURULU KARAR FORMU

ETİK KURULUNUN ADI	**T.C SAĞLIK BAKANLIĞI ZEKAİ TAHİR BURAK KADIN SAĞLIĞI EĞİTİM VE ARAŞTIRMA HASTANESİ KLİNİK ARAŞTIRMALAR ETİK KURULU**
AÇIK ADRES	**T.C. Sağlık Bakanlığı Zekai Tahir Burak Kadın Sağlığı Eğitim ve Araştırma Hastanesi Talatpaşa Bulvarı Samanpazarı/ANKARA**
TELEFON	**0 312 306 5685**
FAKS	**0 312 312 5069**
E-POSTA	**etk_kurul@yahoo.com.tr**

BAŞVURU BİLGİLERİ	ARAŞTIRMANIN AÇIK ADI	Çocukluk çağı büyüme araştırması			
	ARAŞTIRMA PROTOKOLÜNÜN KODU				
	KOORDİNATÖR/SORUMLU ARAŞTIRMACI ÜNVANI/ADI/SOYADI	Doç. Dr. Nazan YARDIM			
	KOORDİNATÖR/SORUMLU ARAŞTIRMACININ UZMANLIK ALANI	Çocuk Sağlığı ve Hastalıkları			
	KOORDİNATÖR/SORUMLU ARAŞTIRMACININ BULUNDUĞU MERKEZ	T. C. Sağlık Bakanlığı Türkiye Halk Sağlığı Kurumu			
	DESTEKLEYİCİ	Üniversite, TÜBİTAK, DPT (Devlet Planlama Teşkilatı), Dünya Bankası, DSÖ Avrupa Bölgesi, Copenhag (teknik destek)			
	DESTEKLEYİCİNİN YASAL TEMSİLCİSİ	T. C. Sağlık Bakanlığı Türkiye Halk Sağlığı Kurumu			
	ARAŞTIRMA FAZI	FAZ 1 ☐			
		FAZ 2 ☐			
		FAZ 3 ☐			
		FAZ 4 ☐			
	ARAŞTIRMANIN TÜRÜ	Yeni bir endikasyon ☐			
		Yüksek Doz Araştırması ☐			
		Diğer ise Belirtiniz ☒ Kesitsel tipte epidemiyolojik çalışma			
	ARAŞTIRMAYA KATILAN MERKEZLER	TEKMERKEZ ☐	ÇOK MERKEZ ☒	ULUSAL ☐	ULUSLARARASI ☐

	Belge Adı	Tarihi	Versiyon Numarası	Dili
DEĞERLENDİRİLEN BELGELER	ARAŞTIRMA PROTOKOLÜ			Türkçe ☐ İngilizce ☐ Diğer ☐
	BİLGİLENDİRİLMİŞ GÖNÜLLÜ OLUR FORMU			Türkçe ☒ İngilizce ☐ Diğer ☐
	OLGU RAPOR FORMU			Türkçe ☒ İngilizce ☐ Diğer ☐
	ARAŞTIRMA BROŞÜRÜ			Türkçe ☐ İngilizce ☐ Diğer ☐

	Belge Adı		Açıklama
DEĞERLENDİRİLEN DİĞER BELGELER	TÜRKÇE ETİKET ÖRNEĞİ	☐	
	SİGORTA	☐	
	ARAŞTIRMA BÜTÇESİ	☒	
	BİYOLOJİK MATERYAL TRANSFER FORMU	☐	
	HASTA KARTI/GÜNLÜKLERİ	☐	
	İLAN	☐	
	YILLIK BİLDİRİM	☐	
	SONUÇ RAPORU	☐	
	GÜVENLİLİK BİLDİRİMLERİ	☐	
	DİĞER	☐	

KARAR BİLGİLERİ	**Karar No: 13/2013**	**Karar Tarihi: 14.05.2012**
	Yukarıda bilgileri verilen klinik araştırma başvurusu dosyası ile ilgili belgeler araştırmanın gerekçe, amaç, yaklaşım ve yöntemleri dikkate alınarak incelenmiş, çalışmanın başvuru dosyasında belirtilen merkezlerde gerçekleştirilmesinde etik ve bilimsel sakınca bulunmadığına toplantıya katılan Etik Kurul üye tam sayısının salt çoğunluğu ile karar verilmiştir.	

Sayfa 1 / 2

T.C SAĞLIK BAKANLIĞI ZEKAİ TAHİR BURAK KADIN SAĞLIĞI EĞİTİM VE ARAŞTIRMA HASTANESİ KLİNİK ARAŞTIRMALAR ETİK KURULU	
ÇALIŞMA ESASI	Klinik Araştırmalar Hakkında Yönetmelik, İyi Klinik Uygulamalar Kılavuzu
ETİK KURUL BAŞKANI UNVANI/ADI/SOYADI: Doç.Dr.Sema ZERGEROĞLU	

ETİK KURUL ÜYELERİ

Unvanı/Adı/Soyadı Ek Üyeliği	Uzmanlık Dalı	Kurumu	Cinsiyeti		İlişki (*)		Katılım (**)		İmza
Av.Murat CANGÜL	Hukuk	Serbest Avukat	E ☒	K ☐	E ☐	H ☒	E ☒	H ☐	
Doç.Dr.Eyüp HORASANLI	Anesteziloji	Zekai Tahir Burak EAH	E ☒	K ☐	E ☐	H ☒	E ☒	H ☐	
Doç. Dr.Fırat HARDALAÇ	Biomedikal	Gazi Üniv. Elek. Elektronik Müh.	E ☒	K ☐	E ☐	H ☒	E ☒	H ☐	
Yük Müh.Fatih DULKAN	Metalurji Y. Müh.	Sanayi Bakanlığı	E ☒	K ☐	E ☐	H ☒	E ☒	H ☐	
Prof. Dr.M.Ali BUMİN	Halk Sağlığı	Gazi Üni. Tıp Fak	E ☒	K ☐	E ☐	H ☒	E ☒	H ☐	
Uzm. Dr.Ece GÜL TUNCER	Biyokimya	Zekai Tahir Burak EAH	E ☐	K ☒	E ☐	H ☒	E ☒	H ☐	
Uzm Dr.Pelin ZORLU	Çocuk Sağ. Ve Hast.	Sami Ulus Çocuk Hast.	E ☐	K ☒	E ☐	H ☒	E ☒	H ☐	
Prof. Dr.Uğur DİLMEN	Çocuk Hast. (Neonatoloji)	Zekai Tahir Burak EAH	E ☒	K ☐	E ☐	H ☒	E ☒	H ☐	
Prof. Dr.H.Zafer GÜNEY	Farmakoloji	Gazi Üni. Tıp Fak	E ☒	K ☐	E ☐	H ☒	E ☒	H ☐	
Prof. Dr.Zehra AYCAN	Çocuk Sağ. Ve Hast.	Sami Ulus Çocuk Hast.	E ☐	K ☒	E ☐	H ☒	E ☒	H ☐	
Doç. Dr.Elif Gül YAPAR EYİ	Kadın Doğum Hast.	Zekai Tahir Burak EAH	E ☐	K ☒	E ☐	H ☒	E ☒	H ☐	
Doç. Dr.Sema ZERGEROGLU	Patoloji	Zekai Tahir Burak EAH	E ☐	K ☒	E ☐	H ☒	E ☒	H ☐	

Annex 9.6: Ministry of Health Working Committee

9.6.1: Central Working Group

Name	Occupation
NAZAN YARDIM, MD, Assoc. Prof. (Princable Investigator)	Director
ERTUĞRUL ÇELİKCAN	Food Engineer
NERMİN ÇELİKAY	Dietician
ŞENİZ ILGAZ, PhD	Dietician
MERAL ÇARKÇI	Dietician
CEYHAN VARDAR	Dietician
BEYTÜL YILMAZ, MSc	Dietician
BAŞAK KİŞİ	Dietician
DUYGU ÜNAL	Dietician

9.6.2: Province Examiners List

Province	Name	Occupation	Code
ADANA	RALE HATİPOĞLU	Dietician	101
ADANA	SEHER TÜFEKÇİ	Dietician	201
ADIYAMAN	SEYDA DEĞİRMENCİ	Dietician	301
AFYONKARAHİSAR	YAŞAR TUNÇ	Nurse	401
AĞRI	MELİK VAROL	Doctor	501
AKSARAY	BELMA UYAR	Dietician	601
AMASYA	SALİHA IŞIK	Dietician	701
ANKARA	ELA HAYTAOĞLU	Dietician	801
ANKARA	GÜLCAN BALTA	Dietician	901
ANTALYA	TUĞBA ÖZDEMİR ERDAL	Dietician	1001
AYDIN	MAHMUT ÇERİ	Dietician	1101
BALIKESİR	ASLI KANBUR	Dietician	1201
BATMAN	TAHSİN SEVGİLİ	Health Technician	1301
BİNGÖL	RUŞEN ALINCA	Midwife	1401
BOLU	GAMZE KARAKAYA	Dietician	1501
BURDUR	GAMZE BOLAÇ	Dietician	1601
BURSA	CANAN TANRIÖVER	Dietician	1701
ÇANAKKALE	ARMAĞAN ÇELEBİ	Dietician	1801
ÇANKIRI	ESRA KOCAMIŞ BAŞ	Dietician	1901
ÇORUM	FATMA TAYHAN	Dietician	2001
DENİZLİ	ŞAZİYE KUZOLUK	Dietician	2101
DİYARBAKIR	ASİYE İLHAN	Dietician	2201
EDİRNE	NURŞEN ÜÇKAN	Nurse	2301
ELAZIĞ	MERAL KİRİZ	Midwife	2401
ERZİNCAN	FADİME FİGEN KARAHAN	Dietician	2501
ERZURUM	NESLİHAN KERTİK	Nurse	2601
ESKİŞEHİR	NURİ CANER ARIBAKIR	Dietician	2701
GAZİANTEP	MERVE EYİNACAR	Dietician	2801
GAZİANTEP	KEMAL CEM YILDIZ	Dietician	2901
GİRESUN	EMİN CİHAN KINCI	Doctor	3001
HAKKARİ	MÜSLİME GÜN	Midwife	3101
HATAY	TÜLAY ÇEKİÇ KUTLULAR	Midwife	3201
IĞDIR	BURCU AVCI BAYGIN	Dietician	3301
İSTANBUL	BÜŞRA AYDIN	Dietician	3401
İSTANBUL	ESENGÜL ÖZKAN	Dietician	3501
İSTANBUL	BENGÜL DEMİR	Nurse	3601
İSTANBUL	HÜLYA AYAR	Nurse	3701
İSTANBUL	LEYLA VAROL TAŞDELEN	Nurse	3801
İSTANBUL	PINAR AKKUZU	Dietician	3901

İZMİR	HİLAL YENİCE	Doctor	4001
İZMİR	ASYA BANU TOPUZOĞLU	Specialist	4101
KAHRAMANMARAŞ	OLCAY ÖZER	Dietician	4201
KARABÜK	ARZU BALCI YILDIRIM	Nurse	7801
KARS	MÜZEYYEN YAMAN	Midwife	4301
KASTAMONU	TUNA ERASLAN	Food Engineer	4401
KAYSERİ	TUĞBA AKINOL	Dietician	4501
KIRIKKALE	MEHMET EMİN ERDURAN	Health Technician	4601
KIRŞEHİR	FATMA KORKMAZ	Nurse	4701
KOCAELİ	SEDANUR MACİT	Dietician	4801
KONYA	AYŞEGÜL KOCADEMİR	Dietician	4901
KONYA	AYNUR AKDENIZ	Dietician	5001
KÜTAHYA	AYLİN SAYAN	Dietician	5101
MALATYA	EDA ŞAHAN	Dietician	5201
MANİSA	EDA ÇİÇEK AÇIKGÖZ	Dietician	5301
MARDİN	TUĞSAL TURHAN	Doctor	5401
MERSİN	NACİYE DURMAZ	Dietician	5501
MUĞLA	MUSTAFA YILDIZ	Dietician	5601
MUŞ	ESRA ÖZKAN ASAN	Dietician	5701
NEVŞEHİR	BURÇİN DURMUŞ	Midwife	5801
NİĞDE	HALİT BAŞOĞUL	Health Technician	5901
ORDU	AYFER TURAN	Dietician	6001
OSMANİYE	ESİN KESKİN	Dietician	6101
RİZE	ŞEYDA YALÇIN	Nurse	6201
SAKARYA	BÜŞRA ŞAHİN	Dietician	6301
SAMSUN	SİNEM ŞAHİN	Dietician	6401
SİİRT	ABDÜLKADIR PALALI	Dietician	6501
SİVAS	SÜMERYA ÜZÜM	Dietician	6601
ŞANLIURFA	GÜLCAN YAVUZ	Doctor	6701
ŞANLIURFA	SÜMEYYE GÜRCÜ	Dietician	6801
ŞIRNAK	CANER CEYLAN	Psychologist	6901
TEKİRDAĞ	FEDAİ ÇORAL	Health Technician	7001
TOKAT	EMEL DEMİRCİ	Dietician	7101
TRABZON	NESRİN BOSTANOĞLU	Nurse	7201
TUNCELİ	NİHAL TEKER	Nurse	7301
VAN	LEYLA HELVACI	Nurse	7401
YALOVA	FATMA MELEKİS	Nurse	7501
YOZGAT	ÇIĞDEM AKSOY	Dietician	7601
ZONGULDAK	SEVGİ GÜNAY	Midwife	7701

9.6.3: Province Examiner Assistants List

Province	Name	occupation	Code
ADANA	FİLİZ YARICI ATIŞ	Midwife	102
ADANA	AYŞE AYVAZ	Nurse	202
ADIYAMAN	AYŞE BOZLAK	Midwife	302
ADIYAMAN	ŞERİFE GÜLKURUSU	Nurse	303
ADIYAMAN	MERAL UĞUR BEYAZ	Nurse	304
AFYONKARAHİSAR	GÖNÜL SAKA	Nurse	402
AĞRI	KEZBAN ŞAHİN	Midwife	502
AĞRI	GÜLÇİN BATURAY	Dietician	503
AKSARAY	SEVİL SAYAR	Nurse	602
AMASYA	HATICE DERELİ	Midwife	702
AMASYA	NİLÜFER ÇÖLLÜ	Nurse	703
ANKARA	DERYA KESKİNKILIÇ	Midwife	802
ANKARA	NERMİN GÖKTAŞ	Nurse	803
ANKARA	KÜBRA ÇINAR	Midwife	902
ANKARA	ELİF ÇAKMAK	Midwife	903
ANTALYA	NURAL UYANIK	Nurse	1002
ANTALYA	SONGÜL YILMAZ	Midwife	1003
AYDIN	BANU ANDAÇ	Nurse	1102
AYDIN	NURHAN ÇAKIR	Midwife	1103
BALIKESİR	FATMAGÜL ALTOK	Nurse	1202
BALIKESİR	GÜLBAHAR GÖKDOĞAN	Midwife	1203
BATMAN	YASEMİN SEVİM	Midwife	1302
BATMAN	SAİME VARIŞ	Nurse	1303
BİNGÖL	SELMA AZAK	Nurse	1402
BİNGÖL	SEMRA SAV	Nurse	1403
BOLU	HİLAL İLTER	Health Technician	1502
BURDUR	SELMA KALKAN	Midwife	1602
BURDUR	TESLİME CENGİZ	Midwife	1603
BURSA	ÖZEN YAMAN, MSc	Dietician	1702
BURSA	DİLARA KASİL, MSc	Food Engineer	1703
ÇANAKKALE	ÜMMÜHAN KAHYAOĞLU	Doctor	1802
ÇANAKKALE	GÜLŞEN GÜRSU	Nurse	1803
ÇANAKKALE	FADİME KORKMAZ	Nurse	1804
ÇANAKKALE	NAZAN AYDEMİR	Midwife	1805
ÇANKIRI	AYNUR ÖZKAN	Midwife	1902
ÇANKIRI	EMİNE ACAR	Midwife	1903
ÇORUM	BUKET TEMİZ	Midwife	2002
ÇORUM	MEHTAP CAYGIN	Medical Secretary	2003
ÇORUM	İBRAHİM TUNUS	Health Technician	2004
DENİZLİ	BANU YILDIR	Nurse	2102

DENİZLİ	FATMA KIVRAK	Nurse	2103
DİYARBAKIR	KÜBRA SINIR	Nurse	2202
DİYARBAKIR	SÜLEYMAN ÇEÇEN	Doctor	2203
EDİRNE	SEYHAN ÖZDEMİR	Midwife	2302
EDİRNE	AYŞE SELVİ	Midwife	2303
ELAZIĞ	FATMAHAN ŞANVER	Nurse	2402
ELAZIĞ	HATİCE YILDIZ		2403
ERZİNCAN	NİLGÜN SAY HİRİK	Midwife	2502
ESKİŞEHİR	ELİF ÖNCÜ	Nurse	2702
ESKİŞEHİR	ALİME YÜKSEL	Midwife	2703
GAZİANTEP	AZİZE YALÇIN	Midwife	2802
GAZİANTEP	FATMA YUMURTAOĞLU	Nurse	2902
GİRESUN	PINAR YİĞİT	Midwife	3002
GİRESUN	ÖZGE GENÇ	Midwife	3003
HAKKARİ	NURİYE ÇİÇEK	Midwife	3102
HATAY	YESİRE DORAN	Nurse	3202
İSTANBUL	FATOŞ BERİHAN	Nurse	3402
İSTANBUL	İSMİHAN ŞENOCAK	Nurse	3403
İSTANBUL	FATOŞ TUĞÇE BİRİHAN	Nurse	3502
İSTANBUL	FATMA AYVAZ	Nurse	3503
İSTANBUL	FUNDA ÖZAY	Nurse	3602
İSTANBUL	DİLEK TOKLU	Nurse	3702
İSTANBUL	EMİNE SOYLU	Officer	3703
İSTANBUL	ETHEM KIRIŞ	Health Technician	3704
İSTANBUL	ESMA KAPLAN	Nurse	3705
İSTANBUL	SEDA BIYIKLI	Nurse	3802
İZMİR	NEVAL BEKTAŞ	Nurse	4002
İZMİR	NİLÜFER KAYHAN	Midwife	4102
İZMİR	GÜLTEN KARAKUŞ	Midwife	4103
K.MARAŞ	HÜLYA PAKSOY NAR	Midwife	4202
K.MARAŞ	TÜLİN YANIK	Midwife	4203
KARS	HANİFE ÖZDEMIR	Nurse	4302
KASTAMONU	ELİF KARAKAŞ	Dietician	4402
KASTAMONU	ÇAĞNUR KISA	Nurse	4403
KIRIKKALE	ESENGÜL TEKEL	Health Technician	4602
KOCAELİ	GÜLLÜ ATILGAN	Midwife	4802
KOCAELİ	ŞAKİR COŞKUNER	Health Technician	4803
KONYA	MÜŞERREF ŞAHİNGERİ	Midwife	4902
KONYA	BETÜL BAYRAM	Midwife	4903
KONYA	GÜLSÜM GÜLPERİ	Nurse	5002
KONYA	AYNUR BAYRAM	Midwife	5003
KÜTAHYA	TÜLAY ERTAŞ	Officer	5102
KÜTAHYA	YILDIZ ŞAHİN	Nurse	5103

MALATYA	CANAN YILMAZ	Nurse	5202
MALATYA	AVNİ YAVUZ	Officer	5203
MANİSA	GÜLSÜM KAÇMAZ	Midwife	5302
MARDİN	ESMA ESKİOCAK	Dietician	5402
MARDİN	ZEYNEP GÜNERİ	Medical Secretary	5403
MERSİN	ZÜLEYHA KAPLAN	Dietician	5502
MERSİN	BESİME PEKER	Nurse	5503
MUĞLA	EMEL FAK	Midwife	5602
MUŞ	AYLİN EROĞLU	Nurse	5702
MUŞ	AHMET ÖZYAŞAR	Health Technician	5703
NEVŞEHİR	BAHAR ŞAHİN	Nurse	5802
NEVŞEHİR	TUĞBA YALÇIN	Midwife	5803
NİĞDE	TUĞBA ÖZSOY	Dietician	5902
NİĞDE	KEZİBAN BADEMLİ	Midwife	5903
ORDU	İLHAN TOPÇU	Health Technician	6002
ORDU	SAADET AKALIN	Nurse	6003
OSMANİYE	EMEL SOLAK	Nurse	6102
SAKARYA	YASEMİN TUNCER, MSc	Dietician	6302
SAMSUN	LEYLA KAYA	Psychologist	6402
SİİRT	NAZLI KAYRA	Nurse	6502
SİVAS	OĞUZ TANRIVERDİ	Health Technician	6602
SİVAS	NURGÜL DİVRİK	Nurse	6603
ŞANLIURFA	İLKAY TATLI BUCAK	Midwife	6702
ŞANLIURFA	HÜSNIYE ÇULLU	Midwife	6703
ŞANLIURFA	ZEHRA ARIÖZ DAĞ	Nurse	6802
ŞANLIURFA	ŞÜKRAN TER	Nurse	6803
ŞIRNAK	CEYLAN İSLAMOĞLU	Nurse	6902
ŞIRNAK	ONUR ALP OĞUZOĞLU	Doctor	6903
TEKİRDAĞ	GÜLCAN ÖZDİLEK	Midwife	7002
TOKAT	NERMAN CEVİZ	Midwife	7102
TRABZON	AYÇA ÇAVUŞOĞLU	Psychologist	7202
TUNCELİ	SERTAÇ HALİSÇELİK	Health Technician	7302
TUNCELİ	SEDA TURHAN	Dietician	7303
VAN	NURAN YILDIZ	Nurse	7402
YALOVA	MİNE AKGÜL	Nurse	7502
YOZGAT	ZÜBEYDE UYAR	Nurse	7602
YOZGAT	MİHRİCAN HAVUÇCU	Midwife	7603
YOZGAT	EBRU YILMAZ	Nurse	7604
ZONGULDAK	AYNUR AÇIKGÖZ	Midwife	7702
KARABÜK	ARZU OKUR	Nurse	7802
KARABÜK	NAGEHAN KORKMAZ	Nurse	7803

Annex 9.7: School Lists

Province	District	School Name	Code
ADANA	KARATAŞ	Adalı İlkokulu	0001
ADANA	CEYHAN	İhsan Demirtaş İlkokulu	0002
ADANA	ÇUKUROVA	Belediye Evleri İlkokulu	0003
ADANA	SEYHAN	Leman Sayıt İlkokulu	0004
ADANA	SEYHAN	Sadıka Sabancı İlkokulu	0005
ADANA	SEYHAN	Bahçelievler İlkokulu	0006
ADANA	YÜREĞİR	Sarıçam İlkokulu	0007
ADIYAMAN	KAHTA	Narince İlkokulu	0008
ADIYAMAN	KAHTA	T.P.A.O. Atatürk İlkokulu	0009
AFYONKARAHİSAR	SANDIKLI	Ballık İlkokulu	0010
AFYONKARAHİSAR	DAZKIRI	Alkim İlkokulu	0011
AĞRI	MERKEZ	Yazılı İlkokulu	0012
AĞRI	DİYADİN	Hüseyin Öner İlkokulu	0013
AĞRI	PATNOS	Sütlüpınar İlkokulu	0014
AKSARAY	MERKEZ	İncesu İlkokulu	0015
AMASYA	MERKEZ	Cumhuriyet Ortaokulu	0016
ANKARA	ALTINDAĞ	Yeni Turan İlkokulu	0017
ANKARA	ÇANKAYA	Ayten Tekışık Ortaokulu	0018
ANKARA	ÇANKAYA	Özel Çankaya Anafartalar İlkokulu	0019
ANKARA	ELMADAĞ	Barut İlkokulu	0020
ANKARA	ETİMESGUT	İmkb Etimesgut Süvari Ortaokulu	0021
ANKARA	KEÇİÖREN	Mehmet Emin Yurdakul İlkokulu	0022
ANKARA	KEÇİÖREN	Bağlum İlkokulu	0023
ANKARA	MAMAK	Fatma Tarman İlkokulu	0024
ANKARA	POLATLI	İnönü İlkokulu	0025
ANKARA	SİNCAN	Kazım Karabekir İlkokulu	0026
ANKARA	YENİMAHALLE	Özel Doktorlar İlkokulu	0027
ANKARA	YENİMAHALLE	Hazar İlkokulu	0028
ANTALYA	ALANYA	Konaklı Menderes İlkokulu	0029
ANTALYA	MANAVGAT	Karacalar Fatma Pakize Turhan İlkokulu	0030
ANTALYA	DEMRE	Karabucak İlkokulu	0031
ANTALYA	KEPEZ	İsmail Hakkı Kaya İlkokulu	0032
ANTALYA	MANAVGAT	Özel Akdeniz Başari İlkokulu	0033
ANTALYA	MURATPAŞA	Ramazan Savaş İlkokulu	0034
AYDIN	KÖŞK	Beyköy Polis Abla İlkokulu	0035
AYDIN	ÇİNE	Feride Raşit Kalkan Ortaokulu	0036
AYDIN	MERKEZ	Gazipaşa Ortaokulu	0037
BALIKESİR	GÖNEN	Sarıköy İlkokulu	0038

BALIKESİR	BİGADİÇ	75. Yıl Eti Holding İlkokulu	0039
BALIKESİR	MERKEZ	Sakarya İlkokulu	0040
BATMAN	KOZLUK	Oyuktaş İlkokulu	0041
BATMAN	MERKEZ	Selçuklu İlkokulu	0042
BATMAN	MERKEZ	Fatih İlkokulu	0043
BİNGÖL	SOLHAN	Hazarşah İlkokulu	0044
BİNGÖL	MERKEZ	İmkb Fatih İlkokulu	0045
BOLU	DÖRTDİVAN	Cumhuriyet İlkokulu	0046
BURDUR	BUCAK	Çamlık Sahil İlkokulu	0047
BURDUR	MERKEZ	Şeker Ortaokulu	0048
BURSA	İZNİK	Alparslan İlkokulu	0049
BURSA	NİLÜFER	Nesrin Fuat Bursalı İlkokulu	0050
BURSA	OSMANGAZİ	Bilge Malcıoğlu İlkokulu	0051
BURSA	OSMANGAZİ	Şehit Murat Atsen İlkokulu	0052
BURSA	YILDIRIM	Yeşilevler Münevver Özran İlkokulu	0053
BURSA	YILDIRIM	Gülhanım Karasu İlkokulu	0054
ÇANAKKALE	MERKEZ	Kumkale İlkokulu	0055
ÇANKIRI	ELDİVAN	Eldivan 100.Yıl İlkokulu	0056
ÇORUM	MERKEZ	Ziya Gökalp İlkokulu	0057
DENİZLİ	MERKEZ	Pınarkent Koyunaliler Ortaokulu	0058
DENİZLİ	MERKEZ	Ressam İbrahim Çallı İlkokulu	0059
DENİZLİ	MERKEZ	Hürriyet Ortaokulu	0060
DİYARBAKIR	ÇINAR	Karasungur İlkokulu	0061
DİYARBAKIR	LİCE	Kayacık Köyü Şehit Jandarma Çavuş İsmail Uygun İlkokulu	0062
DİYARBAKIR	BAĞLAR	Mesut Yılmaz İlkokulu	0063
DİYARBAKIR	KAYAPINAR	Özel Diyarbakir Doğa İlkokulu	0064
DİYARBAKIR	SUR	Büyükkadı Ilkokulu	0065
DİYARBAKIR	YENİŞEHİR	5 Nisan İlkokulu	0066
EDİRNE	KEŞAN	Dr. Ali İhsan Çuhacı İlkokulu	0067
ELAZIĞ	ALACAKAYA	Halkalı İlkokulu	0068
ELAZIĞ	MERKEZ	Bahçelievler Ortaokulu	0069
ERZİNCAN	MERKEZ	Güvenlik Ortaokulu	0070
ERZURUM	KARAYAZI	Kayalar İlkokulu	0071
ERZURUM	PALANDÖKEN	Sabahattin Solakoğlu İlkokulu	0072
ERZURUM	YAKUTİYE	Şükrüpaşa İlkokulu	0073
ESKİŞEHİR	ODUNPAZARI	Şehit Yusuf Tuna Güzey İlkokulu	0074
GAZİANTEP	NURDAĞI	Şatırhöyük İlkokulu	0075
GAZİANTEP	İSLAHİYE	Dervişpaşa Ortaokulu	0076
GAZİANTEP	ŞAHİNBEY	Gazi Mustafa Kemal İlkokulu	0077
GAZİANTEP	ŞAHİNBEY	Turgut Özal Ortaokulu	0078
GAZİANTEP	ŞAHİNBEY	Naciye Mehmet Gençten İlkokulu	0079

GAZİANTEP	ŞEHİTKAMİL	Hasan Celal Güzel İlkokulu	0080
GAZİANTEP	ŞEHİTKAMİL	Kıbrıs İlkokulu	0081
GİRESUN	PİRAZİZ	Eren Ömer Hekim İlkokulu	0082
HAKKARİ	ŞEMDİNLİ	Derecik Beldesi Gürmeşe Mahallesi İlkokulu	0083
HATAY	HASSA	Eğribucak İlkokulu	0084
HATAY	MERKEZ	Kisecik İlkokulu	0085
HATAY	BELEN	Mustafa Çoban İlkokulu	0086
HATAY	İSKENDERUN	İnönü İlkokulu	0087
HATAY	MERKEZ	Vali Teoman İlkokulu	0088
IĞDIR	ARALIK	Kolikent İlkokulu	0089
IĞDIR	MERKEZ	İnönü İlkokulu	0090
İSTANBUL	ARNAVUTKÖY	Suatlar İlkokulu	0091
İSTANBUL	ATAŞEHİR	Kayışdağı Arif Paşa İlkokulu	0092
İSTANBUL	AVCILAR	İstanbul Büyükşehir- Seyit Onbaşı İlkokulu	0093
İSTANBUL	BAĞCILAR	İstoç İlkokulu	0094
İSTANBUL	BAHÇELİEVLER	Atatürk İlkokulu	0095
İSTANBUL	BAKIRKÖY	Özel Florya Final İlkokulu	0096
İSTANBUL	BAŞAKŞEHİR	Toki Kayaşehir Ortaokulu	0097
İSTANBUL	BEŞİKTAŞ	Özel Ata İlkokulu	0098
İSTANBUL	BEYLİKDÜZÜ	Beylikdüzü Mehmet Gesoğlu İlkokulu	0099
İSTANBUL	BÜYÜKÇEKMECE	Adem Çelik İlkokulu	0100
İSTANBUL	ESENLER	Fidan Demircioğlu İlkokulu	0101
İSTANBUL	ESENYURT	Mustafa Yeşil Ortaokulu	0102
İSTANBUL	EYÜP	Özel Eyüboğlu Kemerburgaz İlkokulu	0103
İSTANBUL	FATİH	Tarık Us İlkokulu	0104
İSTANBUL	GAZİOSMANPAŞA	Gaziosmanpaşa İlkokulu	0105
İSTANBUL	KADIKÖY	Ihsan Sungu İlkokulu	0106
İSTANBUL	KAĞITHANE	Zafer İlkokulu	0107
İSTANBUL	KARTAL	Öğretmen Selma Akay İlkokulu	0108
İSTANBUL	KÜÇÜKÇEKMECE	Küçükçekmece İlkokulu	0109
İSTANBUL	KÜÇÜKÇEKMECE	İkitelli İlkokulu	0110
İSTANBUL	PENDİK	Fatih Sultan Mehmet İlkokulu	0111
İSTANBUL	PENDİK	Ertuğrulgazi İlkokulu	0112
İSTANBUL	SANCAKTEPE	Şehit Öğretmen Nurgül Kale İlkokulu	0113
İSTANBUL	SİLİVRİ	Mimar Sinan İlkokulu	0114
İSTANBUL	SULTANGAZİ	Gazi İlkokulu	0115
İSTANBUL	ŞİŞLİ	Özel Ufuk İlkokulu	0116
İSTANBUL	TUZLA	Çağrıbey İlkokulu	0117
İSTANBUL	ÜMRANİYE	Şehit Öğretmen Sevda Aydoğan İlkokulu	0118
İSTANBUL	ÜSKÜDAR	Mehmet Akif Ersoy İlkokulu	0119
İSTANBUL	ZEYTİNBURNU	Kazlıçeşme Abay Ortaokulu	0120

İZMİR	BERGAMA	Göçbeyli İlkokulu	0121
İZMİR	BAYRAKLI	Osman Çınar Ortaokulu	0122
İZMİR	BORNOVA	Reşat Turhan İlkokulu	0123
İZMİR	BUCA	Akıncılar İlkokulu	0124
İZMİR	GAZİEMİR	Cengiz Han İlkokulu	0125
İZMİR	KARABAĞLAR	Ali Akatlar İlkokulu	0126
İZMİR	KARŞIYAKA	Mavişehir İlkokulu	0127
İZMİR	KONAK	Özel Fatih İlkokulu	0128
İZMİR	ÖDEMİŞ	Anafartalar İlkokulu	0129
KAHRAMANMARAŞ	ANDIRIN	Gökçeli İlkokulu	0130
KAHRAMANMARAŞ	PAZARCIK	Eğrice İlkokulu	0131
KAHRAMANMARAŞ	ELBİSTAN	Özel Final İlkokulu	0132
KAHRAMANMARAŞ	MERKEZ	Fatih İlkokulu	0133
KARABÜK	MERKEZ	Kazım Karabekir İmam Hatip Ortaokulu	0134
KARS	MERKEZ	Alçılı İlkokulu	0135
KARS	ARPAÇAY	Atatürk İlkokulu	0136
KASTAMONU	TAŞKÖPRÜ	Taşköprü Yatılı Bölge Ortaokulu	0137
KAYSERİ	KOCASİNAN	Sümer Osman Göksu İlkokulu	0138
KAYSERİ	MELİKGAZİ	Osman Kavuncu Ortaokulu	0139
KAYSERİ	MELİKGAZİ	Bülent Altop İlkokulu	0140
KIRIKKALE	DELİCE	Çerikli Atatürk İlkokulu	0141
KIRIKKALE	MERKEZ	Akşemsettin Ortaokulu	0142
KIRŞEHİR	KAMAN	Fatih Ortaokulu	0143
KOCAELİ	ÇAYIROVA	Güzeltepe Ahmet Yesevi İlkokulu	0144
KOCAELİ	DİLOVASI	Dilovası Mehmet Zeki Obdan İlkokulu	0145
KOCAELİ	GÖLCÜK	Cahit Külebi Ortaokulu	0146
KOCAELİ	İZMİT	Şehit Polis Volkan Sabaz İlkokulu	0147
KONYA	ALTINEKİN	Akıncılar İlkokulu	0148
KONYA	KULU	Karacadere İlkokulu	0149
KONYA	AKŞEHİR	Nasreddin Hoca İlkokulu	0150
KONYA	KADINHANI	Musa Uğur İlkokulu	0151
KONYA	KARATAY	İzzet Bezirci İlkokulu	0152
KONYA	MERAM	Meram Şehit Pilot Ayfer Gök Ortaokulu	0153
KONYA	SELÇUKLU	Alaeddin İlkokulu	0154
KÜTAHYA	GEDİZ	Dayınlar İlkokulu	0155
MALATYA	HEKİMHAN	Kurşunlu İlkokulu	0156
MALATYA	BATTALGAZİ	Selçuk İlkokulu	0157
MALATYA	MERKEZ	Mustafa Kemal Atatürk Ortaokulu	0158
MANİSA	MERKEZ	Muradiye Cumhuriyet İlkokulu	0159
MANİSA	ALAŞEHİR	Hacı Kelepirci İlkokulu	0160
MANİSA	MERKEZ	Ahmet Tütüncüoğlu İlkokulu	0161

MANİSA	TURGUTLU	Dr.Hüseyin Orhan İlkokulu	0162
MARDİN	KIZILTEPE	Şahkulubey İlkokulu	0163
MARDİN	SAVUR	Üçkavak İlkokulu	0164
MARDİN	MERKEZ	Mehmet Akif Ersoy İlkokulu	0165
MERSİN	TARSUS	Sağlıklı İlkokulu	0166
MERSİN	AKDENİZ	Yeşilçimen Kanuni İlkokulu	0167
MERSİN	ANAMUR	Akdeniz İlkokulu	0168
MERSİN	SİLİFKE	Göksu İlkokulu	0169
MERSİN	TOROSLAR	Atike Akel Ortaokulu	0170
MERSİN	YENİŞEHİR	Necdet Ülger İlkokulu	0171
MUĞLA	MARMARİS	Şehit Ahmet Benler İlkokulu	0172
MUĞLA	MİLAS	Doktor Mete Ersoy İlkokulu	0173
MUŞ	MALAZGİRT	Beşçatak İlkokulu	0174
MUŞ	VARTO	Yatılı Bölge Ortaokulu	0175
NEVŞEHİR	MERKEZ	İcik İlkokulu	0176
NİĞDE	MERKEZ	23 Nisan Havacılar İlkokulu	0177
ORDU	KABADÜZ	Özlükent İlkokulu	0178
ORDU	MERKEZ	Altınfındık İlkokulu	0179
OSMANİYE	MERKEZ	Cevdetiye İlkokulu	0180
RİZE	FINDIKLI	Muammer Çiçekoğlu Ortaokulu	0181
SAKARYA	AKYAZI	Topçusırtı Anadolu Kalkınma Vakfı İlkokulu	0182
SAKARYA	ADAPAZARI	Nuri Bayar İlkokulu	0183
SAKARYA	PAMUKOVA	75. Yıl İlkokulu	0184
SAMSUN	HAVZA	Şeyhler İlkokulu	0185
SAMSUN	BAFRA	29 Ekim İlkokulu	0186
SAMSUN	İLKADIM	Karadeniz İlkokulu	0187
SİİRT	PERVARİ	Söğütönü İlkokulu	0188
SİİRT	MERKEZ	Orgeneral Salih Omurtak İlkokulu	0189
SİVAS	KANGAL	Ayhan Erkan İlkokulu	0190
SİVAS	SUŞEHRİ	Suşehri Hürriyet İlkokulu	0191
ŞANLIURFA	AKÇAKALE	Çukurca İlkokulu	0192
ŞANLIURFA	HARRAN	Karatepe İlkokulu	0193
ŞANLIURFA	MERKEZ	Günbalı İlkokulu	0194
ŞANLIURFA	SİVEREK	Örgülü İlkokulu	0195
ŞANLIURFA	MERKEZ	Osmangazi İlkokulu	0196
ŞANLIURFA	MERKEZ	Mevlana İlkokulu	0197
ŞANLIURFA	SİVEREK	Mimar Sinan İlkokulu	0198
ŞIRNAK	İDİL	Ocaklı İlkokulu	0199
ŞIRNAK	CİZRE	Vali Kamil Acun İlkokulu	0200
TEKİRDAĞ	ÇERKEZKÖY	Kapaklı Gazi İlkokulu	0201
TEKİRDAĞ	ÇERKEZKÖY	Özel İdare İlkokulu	0202

TEKİRDAĞ	MERKEZ	Kamil Korkmaz Zafer İlkokulu	0203
TOKAT	MERKEZ	Fatih İlkokulu	0204
TRABZON	AKÇAABAT	Kavaklı İlkokulu	0205
TRABZON	MERKEZ	Özel Neşem İlkokulu	0206
TUNCELİ	MERKEZ	Munzur Ortaokulu	0207
VAN	BAŞKALE	Büklümdere İlkokulu	0208
VAN	ERCİŞ	Deliçay İlkokulu	0209
VAN	MURADİYE	Kuşçu İlkokulu	0210
VAN	EDREMİT	Erdemkent İlkokulu	0211
VAN	MERKEZ	Vakıfbank İlkokulu	0212
YALOVA	MERKEZ	Özel Yücebilgili İlkokulu	0213
YOZGAT	MERKEZ	Çadırardıç İlkokulu	0214
YOZGAT	ŞEFAATLİ	Eser İlkokulu	0215
ZONGULDAK	MERKEZ	Gazi Ortaokulu	0216

Appendix Table 1. The Distribution of Severe Underweight and Underweight Prevalence, Standard Error and Confidence Interval Distribution According to Weight-for-age Z-Score (WAZ-Score) by Gender and NUTS

	< -3,0 SD Severe underweight		< -2,D SS underweight	
	%± SE	%95 GA	%± SE	%95 GA
Boys (n=2579)				
İstanbul	-	-	1,9±0,66	0,58-3,21
West Marmara	-	-	1,0±0,97	-0,91-2,91
East Marmara	-	-	2,6±1,05	0,53-4,66
Aegean	-	-	1,5±0,75	0,03-2,97
Mediterranean	-	-	1,1±0,55	0,02-2,18
West Anatolia	-	-	1,8±0,89	0,05-3,55
Central Anatolia	-	-	0,8±0,79	-0,76-2,35
West Black Sea	-	-	3,7±1,81	0,16-7,24
East Black Sea	-	-	-	-
Northeast Anatolia	-	-	1,1±1,08	-1,03-3,23
East Anatolia	1,3±0,91	-0,49-3,08	3,9±1,56	0,84-6,96
Southeast Anatolia	0,6±0,41	-0,21-1,41	3,4±0,97	1,49-5,30
Girls (n=2474)				
İstanbul	0,3±0,27	-0,24-0,84	1,3±0,56	0,18-2,41
West Marmara	-	-	1,2±1,19	-1,14-3,54
East Marmara	-	-	3,3±1,22	0,90-5,69
Aegean	-	-	1,1±0,62	-0,13-2,33
Mediterranean	0,3±0,29	-0,27-0,87	1,4±0,62	0,17-2,62
West Anatolia	-	-	2,0±0,97	0,08-3,92
Central Anatolia	-	-	0,9±0,87	-0,81-2,61
West Black Sea	1,0±1,0	-0,96-2,96	3,0±1,71	-0,36-6,36
East Black Sea	-	-	1,5±1,49	-1,43-4,43
Northeast Anatolia	-	-	2,3±1,31	-0,26-4,86
East Anatolia	0,6±0,61	-0,60-1,80	5,1±1,76	1,66-8,54
Southeast Anatolia	-	-	3,1±0,88	1,35-4,84
Turkey (n=4853)				
İstanbul	0,1±0,11	-0,12-0,31	1,6±0,44	0,73-2,46
West Marmara	-	-	1,1±0,76	-0,39-2,59
East Marmara	-	-	2,9±0,79	1,33-4,47
Aegean	-	-	1,3±0,54	0,24-2,36
Mediterranean	0,1±0,12	-0,13-0,33	1,3±0,42	0,46-2,13
West Anatolia	-	-	1,9±0,66	0,61-3,19
Central Anatolia	-	-	0,8±0,57	-0,32-1,92
West Black Sea	0,5±0,49	-0,46-1,46	3,4±1,26	0,93-5,86
East Black Sea	-	-	0,8±0,79	-0,76-2,35
Northeast Anatolia	-	-	1,8±0,89	0,05-3,54
East Anatolia	1,0±0,56	-0,11-2,11	4,5±1,17	2,19-6,80
Southeast Anatolia	0,3±0,20	-0,09-0,69	3,3±0,66	2,00-4,59

Appendix Table 2. The Distribution of Severe Stunting and Stunting Prevalence, Standard Error and Confidence Interval Distribution According to Height-for-age Z-Score (HAZ-Score) by Gender and NUTS

	< -3,0 SD Severe stunting		< -2,0SD Stunting	
	%± SE	%95 GA	%± SE	%95 GA
Boys (n=2483)				
İstanbul	-	-	1,0±0,48	0,05-1,95
West Marmara	-	-	-	-
East Marmara	-	-	1,8±0,88	0,07-3,52
Aegean	0,8±0,55	-0,28-1,88	1,9±0,85	0,24-3,56
Mediterranean	-	-	1,4±0,62	0,18-2,61
West Anatolia	-	-	2,2±0,98	0,27-4,12
Central Anatolia	-	-	-	-
West Black Sea	0,9±0,90	-0,87-2,67	4,6±2,01	0,66-8,53
East Black Sea	-	-	-	-
Northeast Anatolia	-	-	1,1±1,08	-1,03-3,23
East Anatolia	-	-	3,9±1,55	0,85-6,94
Southeast Anatolia	-	-	5,2±1,19	2,86-7,53
Girls (n=2474)				
İstanbul	-	-	1,8±0,66	0,49-3,11
West Marmara	-	-	1,2±1,19	-1,14-3,54
East Marmara	0,9±0,65	-0,36-2,16	0,9±0,64	-0,36-2,16
Aegean			1,8±0,80	0,23-3,37
Mediterranean	0,3±0,29	-0,27-0,87	3,1±0,93	1,28-4,91
West Anatolia	-	-	1,0±0,69	-0,36-2,36
Central Anatolia	-	-	5,1±2,03	1,11-9,08
West Black Sea	-	-	3,1±1,75	-0,33-653
East Black Sea	-	-	4,5±2,55	-0,55-9,50
Northeast Anatolia	-	-	3,1±1,51	0,13-6,07
East Anatolia	0,6±0,61	-0,61-1,81	5,1±1,75	1,66-8,54
Southeast Anatolia	0,2±0,22	-0,25-0,65	2,1±0,73	0,66-3,54
Turkey (n=4957)				
İstanbul	-	-	1,4±0,41	0,59-2,21
West Marmara	-	-	0,5±0,52	-0,51-1,51
East Marmara	0,5±0,33	-0,16-1,16	1,4±0,56	0,30-2,49
Aegean	0,4±0,27	-0,13-0,93	1,9±0,58	0,74-3,05
Mediterranean	0,1±0,12	-0,13-0,33	2,3±0,56	1,19-3,40
West Anatolia	-	-	1,6±0,61	0,41-2,79
Central Anatolia	-	-	2,5±1,00	0,54-4,46
West Black Sea	0,5±0,49	-0,46-1,16	3,9±1,35	1,26-6,54
East Black Sea	-	-	2,4±1,36	-0,27-5,07
Northeast Anatolia	-	-	2,2±0,98	0,27-4,12
East Anatolia	0,3±0,31	-0,30-0,91	4,5±1,17	2,19-6,80
Southeast Anatolia	-	-	3,6±0,69	2,25-4,95

Appendix Table 3. The Distribution of Severe Thinness and Thinness Prevalence, Standard Error and Confidence Interval Distribution According to BMI-for-age Z-Score (BAZ-Score) by Gender and NUTS,

	< -3,0 SD Severe thinness		< -2,0 SD Thinness	
	%± SE	%95 GA	%± SE	%95 GA
Boys (n=2496)				
İstanbul	0,2±0,22	-0,23-0,63	2,2±0,72	0,79-3,61
West Marmara	-		1,9±1,33	-0,72-4,52
East Marmara	1,3±0,75	-0,17-2,77	3,1±1,14	0,85-5,34
Aegean	0,8±0,55	0,28-1,88	1,5±0,75	0,02-2,97
Mediterranean	0,3±0,29	-0,26-0,87	2,2±0,77	0,68-3,72
West Anatolia	-	-	0,9±0,63	-0,34-2,14
Central Anatolia	-	-	0,8±0,79	-0,76-2,35
West Black Sea	-	-	-	-
East Black Sea	-	-	-	-
Northeast Anatolia	-	-	2,2±1,53	-0,79-5,19
East Anatolia	-	-	1,9±1,10	-0,26-4,05
Southeast Anatolia	0,3±0,29	-0,27-0,87	2,6±0,85	0,93-4,27
Girls (n=2473)				
İstanbul	0,3±0,27	-0,24-0,84	1,8±0,67	0,49-3,11
West Marmara	-	-	1,2±1,19	-1,14-3,54
East Marmara	0,9±0,65	-0,37-2,17	2,8±1,13	0,58-5,01
Aegean	0,4±0,38	-0,35-1,15	1,1±0,63	-0,13-2,33
Mediterranean	-	-	2,6±0,85	0,93-4,26
West Anatolia	-	-	1,5±0,85	-0,16-3,16
Central Anatolia	-	-	0,9±0,87	-0,81-2,61
West Black Sea	-	-	1,0±0,01	-0,96-2,96
East Black Sea	-	-	-	-
Northeast Anatolia	-	-	1,5±1,06	-0,58-3,58
East Anatolia	-	-	0,6±0,61	-0,61-1,80
Southeast Anatolia	0,3±0,28	-0,25-0,85	1,8±0,68	0,46-3,13
Turkey (n=4952)				
İstanbul	0,2±0,16	-0,11-0,51	2,0±0,49	1,04-2,96
West Marmara	-	-	1,6±0,92	-0,19-3,39
East Marmara	1,1±0,49	0,12-2,07	2,9±0,79	1,33-4,46
Aegean	0,6±0,33	-0,05-1,25	1,3±0,49	0,34-2,26
Mediterranean	0,1±0,12	-0,13-0,33	2,4±0,57	1,27-3,53
West Anatolia	-	-	1,2±0,53	0,17-2,23
Central Anatolia	-	-	0,8±0,57	-0,32-1,92
West Black Sea	-	-	0,5±0,49	-0,46-1,46
East Black Sea	-	-	-	-
Northeast Anatolia	-	-	1,8±0,89	0,05-3,54
East Anatolia	-	-	1,3±0,64	0,04-2,56
Southeast Anatolia	0,3±0,20	-0,09-0,69	2,2±0,54	1,13-3,26

Appendix Table 4. The Distribution of Normal, Overweight and Obesity Prevalence, Standard Error and Confidence Interval Distribution According to BMI-for-age Z-Score (BAZ-Score) by Gender and NUTS

	≥-2,0 SS -+1,0 SS Normal		>+ 1,0 SS Overweight		>+ 2,0 SS Obez	
	%± SE	%95 GA	%± SE	%95 GA	%± SE	%95 GA
Boys (n=2496)						
İstanbul	66,4±2,3	61,8-70,9	16,3±1,81	12,7-19,8	14,9±1,74	11,5-18,3
West Marmara	76,9±4,13	68,9-85,0	11,5±3,12	5,37-17,6	9,6±2,89	3,93-15,3
East Marmara	73,2±2,93	67,4-78,9	11,0±2,07	6,94-15,1	11,4±2,10	7,27-15,5
Aegean	70,4±2,83	64,9-75,9	14,6±2,19	10,3-18,9	12,7±2,06	8,65-16,7
Mediterranean	72,9±2,35	68,3-77,5	15,1±1,89	11,4-18,8	9,5±1,55	6,46-12,5
West Anatolia	74,0±2,94	68,2-79,8	13,5±2,29	9,01-17,9	11,7±2,15	7,48-15,9
Central Anatolia	73,0±3,96	65,2-80,7	14,3±3,12	8,18-20,4	11,9±2,88	6,25-17,6
West Black Sea	81,7±3,70	74,4-88,9	14,7±3,39	8,05-21,3	3,7±1,81	0,15-7,24
East Black Sea	70,0±5,92	58,4-81,6	16,7±4,82	7,26-26,1	13,3±4,38	4,71-21,9
Northeast Anatolia	81,5±4,05	73,6-89,4	13,0±3,51	6,13-19,9	3,3±1,86	-0,35-6,95
East Anatolia	83,8±2,96	77,9-89,6	7,8±2,16	3,56-12,0	6,5±1,98	2,61-10,4
Southeast Anatolia	82,5±2,04	78,5-86,5	10,1±1,62	6,93-13,3	4,6±1,12	2,39-6,80
Girls (n=2473)						
İstanbul	72,7±2,24	68,3-77,1	15,4±1,81	11,8-18,9	9,9±1,50	6,95-12,8
West Marmara	78,3±4,52	69,4-87,2	14,5±3,86	6,92-22,1	6,0±2,61	0,89-11,1
East Marmara	74,6±2,98	68,7-80,4	16,4±2,53	11,4-21,4	5,2±1,52	2,22-8,18
Aegean	73,1±2,67	67,8-78,3	16,4±2,23	12,0-20,8	9,1±1,73	5,70-12,5
Mediterranean	72,1±2,39	67,4-76,8	17,1±2,01	13,2-21,0	8,3±1,47	5,41-11,2
West Anatolia	78,5±2,87	72,9-84,1	15,6±2,53	10,6-20,6	4,4±1,43	1,59-7,21
Central Anatolia	82,9±3,48	76,1-89,7	12,8±3,08	6,74-18,9	3,4±1,67	0,12-6,68
West Black Sea	76,8±4,24	68,5-85,1	14,1±3,49	7,24-20,9	8,1±2,74	2,73-13,5
East Black Sea	48,5±6,15	36,4-60,6	28,8±5,57	17,9-39,7	22,7±5,15	12,6-32,8
Northeast Anatolia	84,7±3,15	78,5-90,8	9,9±2,61	4,78-15,0	3,8±1,67	0,52-7,07
East Anatolia	88,5±2,55	83,5-93,5	8,9±2,27	4,45-13,4	1,9±1,08	-0,24-4,03
Southeast Anatolia	81,6±1,98	77,7-85,5	13,6±1,75	10,2-17,0	2,6±0,82	1,00-4,19
Turkey (n=4952)						
İstanbul	69,5±1,62	66,3-72,7	15,9±1,28	13,4-18,4	12,4±1,15	10,1-14,7
West Marmara	77,5±3,05	71,5-83,5	12,8±2,44	8,01-17,6	8,0±1,98	4,1-11,9
East Marmara	73,9±2,09	69,8-77,9	13,6±1,63	10,4-16,8	8,4±1,32	5,81-10,9
Aegean	71,8±1,94	67,9-75,6	15,5±1,56	12,4-18,6	10,8±1,4	8,17-13,4
Mediterranean	72,5±1,68	69,2-75,8	16,1±1,38	13,4-18,8	8,9±1,06	6,80-10,9
West Anatolia	76,2±2,06	72,2-80,2	14,5±1,70	11,2-17,8	8,2±1,32	5,60-10,8
Central Anatolia	77,8±2,67	72,6-83,0	13,6±2,19	9,29-17,9	7,8±1,72	4,42-11,2
West Black Sea	79,3±2,81	73,8-84,8	14,4±2,43	9,63-19,2	5,8±1,62	262-8,97
East Black Sea	58,7±4,38	50,1-67,3	23,0±3,75	15,6-30,3	18,3±3,44	11,5-25,1
Northeast Anatolia	83,4±2,49	78,5-88,3	11,2±2,11	7,06-15,3	3,6±1,25	1,15-6,05
East Anatolia	86,2±1,96	82,4-90,0	8,4±1,57	5,2-11,5	4,2±1,13	1,97-6,43
Southeast Anatolia	82,0±1,42	79,2-84,8	11,9±1,19	9,54-14,3	3,6±0,69	2,25-4,95

Appendix Table 5. The Distribution of Weight-for-age Z-Score (WAZ-Score). Height-for-age Z-Score (HAZ-Score) and BMI-for-age Z-Score (BAZ-Score) by Child Age, Turkey 2013

	7-year-olds			8-year-olds		
	n	**%± SE**	**95% CI***	**n**	**%± SE**	**95% CI**
WAZ-Score	(n=2610)			(n=2343)		
Severe Underweight	4	0.2±0.08	0.02-0.37	4	0.2±0.09	0.02-0.38
Underweight	49	1.9±0.26	1.37-2.42	55	2.3±0.31	1.69-2.91
Normal	2356	90.3±0.57	89.1-91.4	2114	90.2±0.61	88.9-91.4
Heavy	148	5.7±0.45	4.81-6.58	134	5.7±0.47	4.76-6.63
Very heavy	53	2.0±0.27	1.46-2.53	36	1.5±0.25	1.01-1.99
HAZ-Score	(n=2612)			(n=2345)		
Severe Stunting	2	0.1±0.06	0.02-0.22	5	0.2±0.09	0.02-0.38
Stunting	56	2.1±0.28	1.55-2.64	57	2.4±0.31	1.78-3.02
Normal	2491	95.4±0.41	94.5-96.2	2233	95.2±0.44	94.3-96.1
Tall	58	2.2±0.28	1.63-2.76	43	1.8±0.27	1.26-2.33
Very Tall	5	0.2±0.08	0.03-0.37	7	0.3±0.11	0.08-0.11
BAZ–Score	(n=2608)			(n=2344)		
Severe Thinness	4	0.2±0.08	0.02-0.37	9	0.4±0.13	0.14-0.65
Thinness	47	1.8±0.26	1.29-2.31	41	1.7±0.26	1.17-2.22
Normal	1957	75.0±0.85	73.3-76.7	1782	76.0±0.88	74.2-77.7
Overweight	377	14.5±0.68	13.1-15.9	325	13.9±0.71	12.5-15.3
Obesity	223	8.6±0.54	7.52-9.67	187	8.0±0.56	6.90-9.09

Appendix Table 6. The Distribution of Weight-for-age Z-Score (WAZ-Score). Height-for-age Z-Score (HAZ-Score) and BMI-for-age Z-Score(BAZ-Score) by Child Residence, Turkey 2013

	Urban			Rural		
	n	**%± SE**	**95% CI**	**n**	**%± SE**	**95% CI**
WAZ-Score		(n=4099)			(n=854)	
Severe Underweight	3	0.1±0.05	0.003-0.19	5	0.6±0.26	0.08-1.11
Underweight	77	1.9±0.21	1.48-2.32	27	3.2±0.60	2.02-4.38
Normal	3673	89.6±0.52	85.9-87.9	797	93.3±0.86	91.6-94.9
Heavy	265	6.5±0.38	5.74-7.25	17	2.0±0.48	1.06-2.93
Very heavy	81	2.0±0.21	1.57-2.42	8	0.9±0.32	0.26-1.53
HAZ-Score		(n=4103)			(n=854)	
Severe Stunting	4	0.1±0.05	0.003-0.19	3	0.4±0.21	0.02-0.82
Stunting	66	1.6±0.19	1.21-1.98	47	5.5±0.78	3.97-7.03
Normal	3923	95.6±0.32	94.9-96.2	801	93.8±0.82	92.2-95.4
Tall	98	2.4±0.23	1.93-2.86	3	0.4±0.21	-0.02-0.82
Very Tall	12	0.3±0.08	0.13-0.46	-	-	
BAZ–Score		(n=4099)			(n=853)	
Severe Thinness	12	0.3±0.08	0.13-0.46	1	0.1±0.11	0.11-0.31
Thinness	73	1.8±0.21	1.39-2.21	15	1.8±0.45	0.91-2.69
Normal	3023	73.7±0.68	72.3-75.0	716	83.9±1.25	81.4-86.4
Overweight	610	14.9±0.55	13.8-15.9	92	10.8±1.06	8.71-12.9
Obesity	381	9.3±0.45	8.41-10.2	29	3.4±0.62	2.18-4.61