

**MINISTRY OF HEALTH OF TURKEY
GENERAL DIRECTORATE OF PRIMARY HEALTH CARE**

**OBESITY PREVENTION AND
CONTROL PROGRAM OF TURKEY
(2010-2014)**

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PREFACE

The main aim of National Health Policy is to reach a healthy society consisting healthy individuals. It is required to develop policies enhancing the inter sectorial cooperation to reach healthy society. A healthy life can not be provided only by increasing the quality of the health services presented to the public. It is required that the individual should be aware of his/her health, should demand services and should develop behavioural changes in the positive direction.

Today the innovations due to speedy developments in technology are presented to public usage and people live day to day changing lives. In daily life, many jobs are held with machines, cars are used even for short distances and people move less. The developing technology also affects the nutrition habits negatively. When some negative conditions such as the change in nutrition habits and lack of physical activity come together, the risk of obesity increases. In the studies, it was shown that the overweight and obesity prevalence is increasing in the world as well as in our country and begin to affect especially our children and adolescent.

Government and individuals have different responsibilities for the prevention of obesity which is one of the major health problems of our age. Government should encourage the public and individuals for a healthy life style by developing effective and widespread policies directed to the prevention of obesity, by providing correct information sources and various opportunities. Individuals however, should demand services, should benefit from the opportunities provided by the government, should adopt a life style based on the gained adequate and balanced diet and regular physical activity habits.

The Obesity control studies are longtime studies having a wide range of scope directly involving so many areas such as health, education, transportation, marketing, communication, urbanization, food, sport. "Obesity Prevention and Control Program of Turkey" contains the policy, control program and action plan as the major headings. The success in this area will be achieved by careful, patient and continuous application of Obesity Prevention and Control Program of Turkey.

"The European Charter on Counteracting Obesity" which was decided during the "WHO European Ministerial Conference on Counteracting Obesity" hosted by our country between the dates 15-17 November 2006 and signed by the WHO European Regional Director Dr. Marc DANZON and by us on behalf of the European Ministers, has been the guide to all countries in this subject.

After National Programs of Communicable Diseases, Tobacco Control, Cardiovascular Diseases, Chronic Respiratory Diseases and Cancer, we are happy for the preparation of Obesity Prevention and Control Program. I thank to all governmental institutions and organizations, private sector, professional associations, representatives of the NGO's who contribute to the preparation of this control program with their knowledge and experience; to the worthy scientists who support this program under the light of the scientific developments; to the staff of the Ministry of Health and especially to the personnel of the General Directorate of Primary Health Care, Nutrition and Physical Activity Department. I believe that this prevention program which is going to be implemented together with the contribution of our public will reach the determined targets.

Prof. Dr. Recep AKDAĞ
Minister of Health

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ABBREVIATIONS

(Listed according to the alphabetical order)

AHBS	Family Doctor Information System
ACSM	American College of Sports Medicine
BMI	Body Mass Index
BMR	Basic Metabolic Rate
CDC	Centers For Disease Control and Prevention
CoIT	Chambers of Industry and Trade
CHE	Council of Higher Education
DALY	Disability Adjusted Life Year
FoD	Federation of Disabled
GDYS	General Directorate of Youth and Sport
HBSC	Health Behavior in School Aged Children Survey
IB	Bank of Provinces
MARA	Ministry of Agriculture and Rural Affairs
MoCT	Ministry of Culture and Tourism
MoEF	Ministry of Environment and Forestry
MoF	Ministry of Finance
MoH	Ministry of Health
MoIA	Ministry of Internal Affairs
MoIT	Ministry of Industry of Trade
MoLSS	Ministry of Labour and Social Security
MoNE	Ministry of National Education
MoND	Ministry of National Defense
MONICA	Multinational Monitoring of Trends and Determinants in Cardiovascular Disease
MoPWS	Ministry of Public Works and Settlement
MoT	Ministry of Transport
NHANES	National Health and Nutrition Examination Survey
NGO	Non Governmental Organization
PAL	Physical Activity Level
PM	Prime Ministry
RMR	Resting Metabolic Rate
PoRA	Presidency of Religious Affairs
PS	Private Sector
RTSC	Radio and Television Supreme Council
SBKK	"Let's Eat Healthy, Let's Save Our Hearts" Survey
SD	Standard Deviation
SPO	State Planning Organization
SSCPA	General Directorate of Social Services and Child Protection Agency
SSI	Social Security Institution
TAF	Turkish Armed Forces
TAMRA	Tobacco and Alcohol Market Regulatory Authority
TASO	Turkish Association for the Study of Obesity
TBSA	Turkey Nutrition and Health Survey
TDHS	Turkey Demographic and Health Survey
TEKHARF	Turkish Adults Heart Disease and Risk Factors Survey
TGNA	The Grand National Assembly of Turkey
TGS	Turkish General Staff
TOHTA	Turkey Obesity and Hypertension Survey
TRT	Turkish Radio-Television Corporation
TSC	Turkish Society of Cardiology
TSIM	Ministry of Health, Primary Health Care Statistical Module
TEMS	The Society of Endocrinology and Metabolism of Turkey
TURDEP	Turkish Diabetes Epidemiology Study
TURKSTAT	Turkish Statistical Institute
TÜBİTAK	The Scientific and Technological Research Council of Turkey
UNICEF	United Nations Children's Fund
USA	United States of America
YLD	Years Lost with Disability
YLL	Years of Life Lost
WHO	World Health Organization

1-INTRODUCTION

Global obesity prevalence has been rising recently. The results of epidemiological studies showed that demographic factors like age and gender, socio-cultural factors like education level and marital status, biological factors and nutritional habits, behavioral factors like usage of tobacco-alcohol usage and lack of physical activity were responsible from the obesity.

When the human life was not so long, obesity was a sign of power, prosperity and health but nowadays it is accepted as a disease which should be treated⁽¹⁻⁴⁾. The prevalence of obesity and overweight has been rising globally. According to World Health Organization (WHO) there are over 400 million obese and 1.6 billion of overweight people in the world and in 2015, these numbers are expected to reach 700 million and 2.3 billion respectively⁽⁵⁾.

Thus, obesity prevalence is increasing in all parts of the world, affecting not only adult men and women, but also children and adolescents. Obesity which causes some diseases like cardiovascular diseases, hypertension, diabetes, some cancer types, musculo-skeletal system diseases, decrease in the quality of life and deaths; is appeared not only as a global public health problem but also a factor that has a negative effect on country economics.

Obesity, affects country economics directly or indirectly⁽⁶⁾. Health expenses related to obesity for 2-7% of health care costs in developed countries⁽⁷⁾. Obesity (diagnosis and treatment) costs 70 billion dollars in United States of America (USA) and is 7% of total health care costs. The same ratio is 2% in France and Australia and 4% in Holland⁽²⁾. Indirect costs (the loss of productivity because people who cannot work as a result of related illnesses or early death) is 48 billion dollars in USA and being overweight, immotile life, risk of infertility among young women and rise in risk of asthma are not included in this amount. All these are related to excess fat in the body and especially the cost of infertility and asthma treatments increases the health expenses significantly⁽²⁾.

Poor nutrition and lack of physical activity which are the major causes of obesity are the second most often preventable cause of death after smoking in USA⁽⁸⁻⁹⁾. Preventive approach for obesity is extremely important for the people of 21st century who expect to have a long, healthy and happy life. Health authorities should reach every part of the society to give preventive health services and they should be willing to bring the effective and common educational efforts to life.

In fighting against obesity, WHO being is the first place, so many international organizations are acting as the initiator in the subjects concerning the change of nutritional habits, putting of adequate and well-balanced diet habits and adopting active life style in the whole world by developing various programs and theses efforts are tried to reach to the individuals in the form of different strategies and action plans by most of the countries in the world. The development of "Global Strategy on Diet, Physical Activity and Health"⁽¹⁰⁾ by WHO, giving place especially to the childhood and adolescent obesity in the Second European Action Plan for Food Nutrition Policy 2007-2012⁽¹¹⁾, preparation of the "White Paper"⁽¹²⁾ by the European Commission including also the strategy in the subject nutrition, overweight and obesity related diseases in Europe, formation of European Union "Diet, Physical activity and Health Platform"⁽¹³⁾ can be given as the examples of theses initiatives.

The first study in the obesity subject was the report on the prevention and treatment of obesity, published in 1997 by WHO Europe Regional Office⁽¹⁴⁾. After this report, in 1999, "Milan Declaration", signed by 24 countries was published⁽¹⁵⁾. Presently, it is informed that obesity epidemic is one of the most important public health issues, its prevalence is reaching to an alarm level in children and adults and it creates a health burden for the future generations⁽⁴⁾.

Due to increases in obesity epidemic, the "WHO European Ministerial Conference on Counteracting



Obesity" was held between the dates 15-17 November 2006 in İstanbul, hosted by our country and during the conference which was launched by the Prime Minister Mr. Recep Tayyip ERDOĞAN obesity epidemic and solution suggestions were discussed. The conference was held with the attendance of more than 500 people who were mainly the ministers or government representatives of health, agriculture, education, sports, transportation and social security, members of inter-governmental organizations and civilian society organizations, specialists, academicians, members of international organizations and media representatives. During the conference Turkish Minister of Health Prof. Dr. Recep AKDAG and WHO European Regional Director Dr. Marc DANZON signed "The European Charter on Counteracting Obesity"⁽⁴⁾ that is given in the Annex 1.

The fight with obesity has also taken part in the various publications concerning national health policy in our country. In the "Health 21-Health For All in the 21st Century" program which was prepared by our Ministry, obesity is indicated as an important risk fac-

tor for diseases like hypertension and diabetes and with primary prevention approaches it was aimed to decrease obesity prevalence by 10% among the population having 40 years old and above until 2020⁽¹⁶⁾. In the "Turkey Cardiovascular Diseases Prevention and Control Program"⁽¹⁷⁾ preparation of a national program for the prevention of obesity which is a risk factor for many chronic diseases was taken place.

There has been an urgent need to prepare a national program and apply an action plan to reach the targets identified, to create new targets and strategies according to needs, to speed the action for obesity prevention and to ensure the implementation of the activities within a certain framework.

"Obesity Prevention and Control Program of Turkey" was prepared with the aim of forming a scientific and political determination and strengthening the intersectoral actions for the prevention of obesity which has a rising prevalence in our country.

2. GENERAL INFORMATION

2.1. Overweight and obesity

World Health Organization defines obesity as "Abnormal or excessive fat accumulation in fat tissues in a degree to cause a health problem" ⁽¹⁸⁾. 15-20 % of the body weight of adult men and 25-30 % of women is fat tissue ^(5,19,20). It is defined as obesity when this ratio exceeds 25% in men and 30% in women ^(21,22).

To determine obesity, WHO's classification is used and generally the body mass index (BMI) is taken as the basis ⁽²²⁾. BMI is the value obtained by dividing the body weight (kg) by the square of height (m²) (BMI= kg/ m²) ⁽⁷⁾. BMI is an indication assessing the body weight according to the height and it doesn't give information about the distribution of fat in the body ⁽²³⁾. The classification of underweight, overweight and obesity in adults according to BMI is given in Table 1.

In recent years, researchers emphasize the regions of existence and distribution of fat more than its total amount in the body. The region of existence and distribution of fat in the body is related to morbidity and mortality of diseases. Regional fat distribution shows differentiation in men and women genetically. In android type (male type) obesity, the fat is accumulated in upper part of body (apple type); in waist, upper abdomen and chest. In gynoid type (female type) obesity, fat is accumulated in lower part of the body (pear type); in hips femur and legs ^(5,24).

One of the simplest and the most used method reflecting the abdominal fat content is the ratio of waist circumference to hip circumference. While the waist circumference value found in this ratio mainly reflects the visceral organs and abdominal fat tissue, the hip circumference measurement in the denominator composes the muscle mass and skeletal tissue ⁽²⁴⁾.

Table 1: The international classification of adult underweight, overweight and obesity according to BMI

Classification	BMI (kg/m ²)	
	Principal cut-off points*	Additional cut-off points*
Underweight	<18.50	<18.50
Severe thinness	<16.00	<16.00
Moderate thinness	16.00 - 16.99	16.00 - 16.99
Mild thinness	17.00 - 18.49	17.00 - 18.49
Normal range	18.50 - 24.99	18.50 - 22.99 23.00 - 24.99
Overweight	≥25.00	≥25.00
Pre-obese	25.00 - 29.99	25.00 - 27.49 27.50 - 29.99
Obese	≥30.00	≥30.00
Obese- Class I	30.00 - 34.99	30.00 - 32.49 32.50 - 34.99
Obese- Class II	35.00 - 39.99	35.00 - 37.49 37.50 - 39.99
Obese- Class III	≥40.00	≥40.00

Reference: Global Database on BMI, WHO

* Intersection points were based on the BMI and mortality and disease risk factors relations in the European societies. Depending on the ethnical properties the relation between the BMI and percentage of body fat showed differentiation. Who accepted healthy BMI value for Asian as 23 kg/m², it was recommended no to gain more weight between the levels 23.00 - 24.99 kg/m² and it was regarded as fat above 25 kg/m² ⁽²⁴⁾.



According to WHO, if the waist/hip circumference ratio is greater than 0.85 in women and 1.0 in men, it is accepted as male type obesity. Waist circumference measurement alone is also used as a practical and important to determine fat distribution in the abdominal region and impairment of health ⁽²⁴⁾. Fat accumulation in abdomen and in internal organs causes insulin resistance. Insulin resistance is the most important factor that provides the relationship between obesity and Type 2 Diabetes, hypertension, dyslipidemia and coronary artery diseases ⁽²⁵⁾.

In recent years that fighting with obesity becomes widespread, determination of the risk with the measure of waist circumference alone is started to be used extensively due to its simplicity and high correlation with the waist to hip ratio. The sole measure of waist circumference being 94 cm in men, 80 cm in women and above, cause the risk of disease to increase ^(26,27).

In the patients having the waist circumference to hip circumference ration in the limits of male ytpе obesity, equations were obtained reflecting the relation between the BMI and waist circumference and then by putting 25 and 30 kg/m² values as the BMI value in these correlation equations, the fitted waist circumference levels were found ⁽²⁴⁾.

Illness risk according to waist circumference in adults is shown in Table 2 ^(25,26).

Table 2. Obesity related illness risk and waist circumference in adults ⁽²⁴⁾

Gender	Risk (Warning border) (=BMI>25)	High risk (Action border) (=BMI>30)
Male	≥94	≥102
Female	≥80	≥88

In childhood and adolescent obesity, a classification like in adults does not exist, different approaches are used to define overweight and obesity. One of the most common methods is to use percentile and/or z score values at individual and communal level. Thus, WHO released the new WHO child growth standards for children 0-5 years of age in 2006⁽²⁸⁾ and the new WHO growth reference for children and adolescents 5-19 years of age in 2007⁽²⁹⁾. Consequently, The BMI-for-age is currently used for the classification of overweight and obesity in children and adolescents. However the countries have to develop their own standards.

The tables recommended by WHO to be used for overweight and obesity for children and adolescents are given in Annex-2 and Annex-3. According to these tables, for the under fives, overweight is defined as >+2 SD standard deviation (SD) or >97th percentile and obesity as >+3 SD or >99th percentile. For children and adolescents aged 5-19 years, overweight is defined as >+1 SD or >85th percentile and obesity is defined as >+2 SD or >97th percentile.

2.2. Causes of overweight and obesity

Among the so many factors known to be the causes of obesity, excessive and wrong nutrition and lack of physical activity are accepted as the most important causes. Besides these factors, genetical, environmental, neurological, physiological, biochemical, cultural and psychological so many factors, related to each other, cause obesity. Since the increase of obesity problem, especially in children cannot be explained only by genetic factors, environmental factors the role of in the information of obesity is considered as foreground very important. Major risk and factors affecting risk in the formation of obesity are as follows ^(27,30).

- Excessive and wrong nutritional habits
- Insufficient physical activity
- Age
- Gender
- Education level
- Socio-cultural circumstances
- Income level
- Hormonal and metabolic factors
- Genetic factors
- Psychological problems
- Application of too low caloric diets with frequent intervals
- Smoking-alcohol consumption
- Some medications (anti-depressants etc.)
- Number of births and time between births

One of the factors that needs attention in obesity development, is early childhood nutrition. In some studies, children who were fed with maternal milk had lower obesity ratios. The duration of being fed with breast milk, the kind of additive nutritive supplements given and the time of starting these supplements are all effective in obesity development ^(30,31).

In various documents published by WHO and UNICEF it was that breastfeeding alone for 6 months,

starting reliable and suitable complementary food after 6 months together with breastfeeding and continuing breastfeeding at least 2 years, may decrease the risk of obesity and chronic diseases on short and long term ^(11,32).

2.3. Consequences of overweight and obesity

Obesity causes many health problems by negatively affecting the body systems (endocrine system, cardiovascular system, gastrointestinal system, skin, genitourinary system, musculoskeletal system) and psychological status.

It was known that obesity is related to some diseases and also its effect on increasing the morbidity and mortality was shown. Overweight is responsible for more than 1.000.000 deaths and 12 million life-years of ill health in the WHO European Region every year ⁽³³⁾.

The health problems/risk factors caused by obesity ^(1,21,27,30):

- Insulin resistance- Hyperinsulinemia
- Type 2 Diabetes Mellitus
- Hypertension
- Coronary artery disease
- Hyperlipidemia - Trygliceridemia
- Metabolic syndrome
- Gall bladder diseases
- Some cancer types (Gall bladder, endometrium, ovary and breast cancers in women, colon and prostate cancers in men)
- Osteoarthritis
- Stroke
- Sleep apnea
- Liver steathosis
- Asthma
- Respiratory failure
- Maternal complications
- Menstrual irregularities
- Hirsutismus
- Increased operative risks
- Psychological disturbances (Anorexia Nervosa, Blumia Nervosa, Binge eating, eating at night or trying to have a psychological satisfaction by eating something more)

- Difficulties at adapting social life
- Because of frequent loss and gain of weight and the thick subcutaneous fat tissue skin infections, inguinal and podal fungus
- Musculoskeletal system problems

2.4. Obesity Treatment

Prevention from obesity has a great importance. Prevention from obesity should start in childhood. Childhood and adolescent obesity provides a background for adulthood obesity. Thus, school, family and society should be informed about well-balanced nutrition and physical activity. Obesity treatment is a necessary, long, continuous treatment in which the individual should be involved effectively and determined. Many different underlying etiological factors make the prevention and treatment of obesity very difficult and complicated.

The aim of obesity treatment is; to target a realistic weight loss, to decrease the risk of obesity related morbidity and mortality, to give individuals a balanced diet habit and increase the quality of life. Even a 10% weight loss in 6 months can prevent most of the health problems caused by obesity ⁽¹⁾.

The methods used in the obesity treatment are gathered under 5 group ⁽²⁷⁾;

1. Medical nutrition (Diet) Treatment,
2. Exercise Treatment,
3. Behaviuoral change treatment
4. Medicine treatment
5. Surgical treatment

Obesity treatment should be performed with a team consisting from a doctor, dietician, psychologist and physiotherapist.

2.4.1. Medical Nutrition (Diet) Treatment

Medical Nutrition (Diet) Treatment plays the key role in obesity treatment. With medical nutrition (diet) treatment:

- The decrease of the body weight to a level that it should be according to the height (BMI= 18.5-24.9 kg/m²), have to be targeted. It should be remembered that medical diet treatment is special to the individual. The levels determined at the beginning, might be ideal body weight of the person as well as a little bit higher than the ideal weight.



- The weight loss diet which is going to be applied, should be in harmony with the principles of adequate and balanced nutrition. The aim is to give individuals a right eating habit and to continue this habit through.
- When the body weight come a level that it should be according to height, weight regain should be prevented and the reached weight should be kept.

Diet rules used in obesity treatment ^(34,35) :

a. Energy: The daily energy intake of the individual should be reduced in such away to ensure 0.5-1.0 kg weight loss per week. Individual should be lost weight slowly and in a long time. In the weight loss diets, the principle of determining the amount of daily energy is to give less energy to the person than he/she spends. Energy should not be given below the basal metabolism rate (BMR) or resting metabolismrate (RMR) of the individual.

b. Protein: 12-15% of daily energy intake should be provided from proteins and mainly high quality protein sources should be used.

c. Fat: Approximately the 25-30% of daily energy intake should be provided from fat. Besides the amount of the fat, the type of the fat is important, too. The ratio of energy from saturated fatty acid should be lower than 10%, from polyunsaturated fatty acid 7-8% and monounsaturated fatty acid 10-15%. The fat intake shouldn't be extremely decreased to let lipid-soluble vitamins (Vitamins A, D, E, K) be used in the body to the fat amount being above the recommended amount, causes important health problems such as obesity and cardiovascular diseases.

d. Carbohydrates: Approximately the 55-60 % of daily energy intake should be provided from carbohydrates. Simple carbohydrates like sugar should be decreased (\leq %10 of daily energy), complex carbohydrates like legumes and whole grains should be increased.

e. Vitamins and Minerals: Because of low energy consistency, deficiency of vitamins and minerals (Vitamin B, iron and calcium etc.) can be seen in low calorie diets. Balanced diets and the ones which are not so low in calorie would not cause this.

f. Fiber: Fiber amount must be increased (25-30 g/day). Vegetables, fruits, legumes, whole grain flour and whole grain products are offered as natural fiber sources.

g. Liquid: At least 2-3 liters of liquid must be consumed daily. Drinks, especially water and visible/invisible water in food content are defined as 'liquid'. Water consumption should be 8-10 glasses a day. Nonetheless, individual differences and activity level affects the liquid need. Enough liquid should be provided to obtain the optimal extraction of body metabolism waste. To drink water before, at and after meals is very sufficient at preventing constipation. Constipation effects weight loss negatively. Sugar added beverages should be avoided as liquid sources.

h. Salt: Salt amount in diet should be < 5 g/day. Thus, salt should be restricted in the diets of people who have hypertension, heart failure or edema with other reasons. Salt with iodine should be used.

i. Meals frequency: Diet should be planned as 3-6 frequent and orderly meals.

j. Smoking and use of alcohol: Smoking and use of alcohol should be avoided.

2.4.2. Physical Exercise Treatment

It was reported that obesity increased in the world as an epidemic and continue to increase, at the same time the important role of physical activity and exercise in the prevention of obesity and obesity related health problems were pointed out, systematic physical activity has an important role not only in the arrangement of energy balance but also in the reduction of health risks developed with obesity and death rates connected to these risks ⁽³⁶⁾.

Although the effect of exercise treatment on achieving weight loss is under discussion, it is definitely accepted that physical activity reduces the fat tissue and lipoidosis in the abdominal region, prevents muscle mass losses that can be seen in case of diet. Losing weight of the individuals under medical nutrition treatment and prevention of regaining of the weights lost are provided with the supportive effect of exercise treatment ^(37,38).

American College of Sports Medicine (ACSM) recommends at least 30 minutes of moderate intense exercise everyday for adults. This level of activity provides 840 kj (200 kcal) daily energy expenditure ⁽³⁹⁻⁴¹⁾. It is intended to be physically active for the obese persons everyday. Energy expenditure differs depending on the body weight and activity intensity of the person. Obese individuals are recommended to do these activities slowly ⁽⁴²⁾.

These examples can be given for intermediate intense physical activity: sports like 45-60 minutes of volleyball, 45-60 minutes of football, 35 minutes of jogging, 30 minutes of biking, 20 minutes of swimming 15 minutes jumping rope or 45-60 minutes of car washing, 45-60 minutes of wiping the floors or windows, 30-45 minutes of gardening, 15 minutes of stair climbing. The sedentary living people and everyone at the beginning should start with mild exercises and intensity should be increased depending on their adaptation ⁽⁴²⁻⁴⁴⁾.

For the prevention of obesity and its treatment in adolescences, exercise treatment should be adjusted according to the age, gender and present risk factors of the individual. In exercise treatment increasing the physical activity is targeted, by eliminating the problems preventing the individual from doing exercise, adaptation of the exercise with the individual should be provided. Everyday at least 30 minutes and more activity should be targeted. Increasing the attention to walking, swimming, biking etc. one or more activity type having aerobic characteristics can be selected to protect muscle fatigue and joints ⁽⁴²⁻⁴⁵⁾.

The main principles of physical exercise treatment are as follows ⁽⁴⁶⁾:

- Type of exercise: Jogging, Increase in daily activities, resistance and stretching exercises
- Frequency of exercise: Everyday or at least 5 days/week
- Duration of exercise: One a day 40-60 minutes or twice a day 20-30 minutes
- Intensity of exercise: 50-70% maximal oxygen expenditure. It should be organized in such a way that between 50-70% target heartbeat rate, there will be maximal oxygen consumption (*target heart rate, is the number of the heartbeats per minute during exercise*)

While applying exercise program in obese individuals, the most important points that attention has to be paid, is to keep the injury risk at the lowest level while increasing the energy expenditure. The recommended exercise program should be special to the individual, funny, applicable and consistent with daily living habits of the individual.

2.4.3. Behaviour Change Treatment

In the control of body weight, behaviour change treatment is a kind of treatment aimed to change or decrease the negative behaviours related with the

nutrition and physical activity which cause excessive weight gain to a positive direction and at the same time to make the positive behaviours as the life style by reinforcing them. The steps of behaviour change treatment are ⁽⁴⁷⁾:

- a. To observe himself/herself
- b. The control of stimulants
- c. Developing alternative behaviour
- d. Reinforcement, to reward himself/herself
- e. Cognitive reconstruction
- f. Social support

a. To observe himself/herself: This is main part of the treatment and it is important to determine the behaviours which should be kept under control. By this way, the individual is made to be aware of his/her behaviours causing obesity. The method is based on the principle of recording the behaviours concerning eating and exercise.

b. The control of stimulants: It is based on the principle of defining the event chain leading to the problematic behaviour and developing strategies to intervene at the early stages of the chain. The aim is to avoid to be affected by stimulants for food intake and increase suitable stimulants for eating habits. Alternative ways are developed for positive eating patterns.

c. Developing alternative behaviors: It is the guiding of the individual to specific activities. For this aim "the enjoyable activities" are listed in advance to use them at the time of feeling hunger or like having a snack and the most appropriate one is selected.

d. Reinforcement, to reward himself/herself: This method aims to do reinforcement by rewarding the appropriate behaviours concerning weight loss and its prevention. In the continuation of behaviour changes required for losing weight, reinforcement is an assistant and enables the individuals to enjoy with the activities other than eating.

e. Cognitive reconstruction: It provides a positive attitude for positive thinking and motivation.

f. Social support: It is an important factor for most of the obese individuals in the success of losing weight treatment program to increase the support of the family members and to decrease the conscious or unconscious negative effects again coming from the family members. To provide the active support of spouse and friends is absolutely has a positive effect.



2.4.4. Drug Treatment

The drugs used in the obesity treatment is not suitable for the individuals having mild and moderate excess weight. It is important for the used drugs to have a determined safety interms of health, to show an effect best fit for the obesity etiology, to have no important side effects in short and long terms and to have no addiction. These types of drugs should be used with the recommendation and under the control of medical doctor.

The conditions require drug treatment in obesity ⁽⁴⁸⁾:

- BMI > 30 kg/m² (in case no other risk factor exist related with obesity)
- BMI > 27 kg/m² and presence of at least one of obesity related complications/risk factors (Cardiovascular diseases, diabetes, hyper tension, dyslipidemia, sleep-apnea etc.)
- The unresponsiveness to behaviour treatment involving medical nutrition and exercise.

For the success of obesity treatment, the patient should accept to carry on medical nutrition treatment and exercise treatment besides drug treatment should do regularly his/her controls. During the treatment it should not be get pregnant and drug treatment should not be used during the pregnancy and lactation periods.

2.4.5. Surgical Treatment

Surgical treatment approach in obesity is mainly divided into two. The aim in bariatric surgery which is for the decrease of energy intake from foodstuffs, is to decrease the absorption of foodstuffs from gastrointestinal system. For this purpose methods, like bypass, gastroplasty, gastric banding and gastric balloon are used. In reconstructive surgery the aim is; to remove the present fat tissue localized in various parts of the body. In this treatment if the patient shouldn't do the requirements of the obesity treatment, fat tissue accumulation will be happen again

⁽⁴⁹⁾.

3. CURRENT SITUATION OF OBESITY IN THE WORLD AND IN TURKEY

3.1. Current Situation of Obesity in the World and Europe

Obesity is an important global public health problem. Obesity is showing an increase everyday both in developed and developing countries. In 12 year lasting MONICA study which is performed in Asia, Africa and in 6 different regions of Europe, it was announced that obesity prevalence showed an increase between 10-30% within 10 years ⁽⁵⁰⁾.

According to the NHANES (USA-National Nutrition and Health Survey) study implemented by the prevention of diseases and control center (CDC) in USA where the obesity is frequently seen, in the years 2003-2004 obesity (BMI \geq 30) prevalence was determined as 31.1% in men, 33.2% in women, in the years 2005-2006 these values were determined as 33.3% in men and 35.3% in women.

According to the various studies implemented in Europe on adults, the overweight prevalence was changed between 32-79% in men 28-78% in women. The obesity prevalence was changed between 5-23% in men, 7-36% in women. According to these studies the countries having the highest over weight condition are Albania, Bosnia-Herzegovina and United Kingdom (Scotland). Turkmenistan and Uzbekistan are the countries where the prevalence are the lowest ⁽³⁰⁾.

According to WHO data overweight and obesity are responsible for 80% of adult type 2 diabetes case, 35% of ischemic heart diseases and 55% hypertension in Europe and cause more than 1 million of deaths every year ⁽³⁰⁾. In case no precautions are taken and the increase in the obesity prevalence continues with the speed in the 1990's, it is estimated that till 2010, 150 millions adult, 15 millions children and adolescents in Europe will be obese ⁽³⁰⁾.

Obesity tendency is especially in alarming level among children and adolescents. The annual increase in the childhood obesity goes to higher. At the point that we came today it is reported that the

childhood obesity is ten times greater than the value in 1970's ^(4,30).

In USA, according to NHANES study, it was declared that 16.3% of the children having in the age group range of 2-19 and of adolescent were obese in the years between 2003-2006 ⁽⁵⁰⁾.

The countries having the highest overweight obesity prevalence in school age children in Europe are; Spain (age 6-9 35%) and Portugal (age 7-9 32%), the ones with the lowest prevalence are Slovakia (age 7-9 15%), France (age 7-9 18%), Switzerland (age 6-9 18%) and Island (18% in age 9) ⁽³⁰⁾.

According to the results of "The Pro Children" study implemented in the 9 countries in Europe in 2003 and covering children at the age of 11, the prevalence of overweight was higher in boys (17%) than girls (14%). According to the "Health Behavior in School-Aged Children Survey (HBSC)" implemented in the 41 countries in the years between 2001-2002 at the age groups of 11, 13 and 15; it was seen that in the 13 age group, 24% of the girls, 34% of the boys were overweight and in the 15 age group 31% of the girls, 28% of the boys were overweight. The obesity ratios were determined as 5% in the girls at the age of 13 and 15, and in boys as 9% ^(30,51).

WHO European Regional Office declared that, 30-80% of adults are under the effect of overweight, approximately 20% of children and adolescents are overweight and one third of these are obese ⁽³⁰⁾.

The growing problem of obesity as a public health issue caused the start of obesity prevention actions in the whole world.

3.2. Current Situation of Obesity in Turkey

With respect to nutritional status, Turkey has the view of including problems of both the developing and developed countries together. The nutritional status of Turkish people differs according to regions, seasons, socio-economical status and urban-rural



settlement. The main reason of the difference is the inequality of income distribution which affects the frequency and characteristic of nutrition problems. Also, the lack of knowledge about nutrition causes choosing wrong type of food, preparing, cooking or storing food in a wrong way and increases nutritional problems⁽⁵²⁾.

Turkish people's main food is bread and other grains. 44% of daily calorie intake is derived from bread only and 58% from bread and other grains. In years, the consumption of bread, milk-yoghurt, meat and meat products, fresh fruits and vegetables have decreased and but the consumption of legumes, egg and sugar increased. Although the amount of fat didn't differ significantly, more vegetable oil is used⁽⁵³⁾.

According to 'National Household Survey'⁽⁵⁴⁾ done by Refik Saydam Hygiene Center School of Public Health in 2003, people over 18 eat 1.64 portions of fruits and 1.57 portions of vegetables a day and this differs in urban and rural areas. WHO recommends 400 g/day⁽⁵⁵⁾ and MoH-Dietary Guidelines for Turkey (2004)⁽⁵⁶⁾ recommends 5 portions/day fruit and vegetable consumption for a well-balanced diet and maintenance of weight. According to these recommendations, it is seen that consumption of fruit and vegetable is low in Turkey.

In the last years in Turkey it was seen that fast food is the most preferred nutrition style especially among the children and adolescents in the urban areas. Fast food nutrition has high energy, rich in unsaturated fatty acids and salt contents but poor in fiber, vitamin A and C and calcium contents so this type of nutrition leads to inadequate and unbalanced nutrition and increases the risk of chronic diseases such as obesity, cardiovascular diseases, diabetes⁽⁵⁷⁾.

One of the causes of obesity is the lack of physical activity. It is known that regular physical activity is the main element of healthy living style and it is accepted that in a public having increased physical activity, health costs will be lowered considerably and this will contribute to the country economics.

According to "Turkey Burden of Disease Study⁽⁵⁸⁾" which was implemented between the years 2002-2004 in our country, it was informed that 31.519 deaths from ischemic cardiac disease and 10.269 deaths due to stroke might be prevented by sufficient physical activity. 300.850 DALY (Disability Adjusted Life Year) due to ischemic cardiac disease and 101.578 DALY due to stroke and 37.456 DALY due to

diabetes, totally 464.627 DALY can be prevented and this comprises about 4.3% of disease load.

According to the study done by MoH "Let's Eat Healthy, Let's Save Our Hearts (SBKK)"⁽⁵⁹⁾ in seven provinces in seven geographic regions, among 15468 adults over 30 years old, the physical activity habits of the individuals were also questioned and it was reported that only 3.5% of individuals do regular physical activity (at least 3 days a week, 30 minutes, moderate intensity). Besides, according to "National House-hold Survey"⁽⁵⁴⁾ (in five regions among 11481 individuals over 18 years old) 20.32% of our population is inactive, 15.99 % has low activity levels.

It was informed that physical activity level decreases day by day among children and adolescents and more time is spent with TV or computer⁽⁶⁰⁾. Although, there isn't a national survey evaluating physical activity level among children and adolescents, some examples from different studies from our country are given below.

In Ankara, in a study in which heart rate with physical activity was evaluated by monitoring and interrogation among 11-12 years old 198 children, 76.1% of boys and 34% of girls were found to be physically active out of school. 94.6% of boys and only 17% of girls declared joining physical activities during school hours⁽⁶¹⁾.

In a study, done in 2004, in Ankara, aimed to determine the growth and obesity situation in school children, the physical activity level and habits were also evaluated. 76% of 469 children in 7-14 age groups (211 boys and 258 girls) declared going to school on foot and 23.5% by car or buss. It is reported that 22% of children didn't do sports regularly, 43% of them played outdoors and duration of computer use was 1.28 hours daily. Physical activity levels of children were classified according to PAL (Physical Activity Level) values for weekdays and weekends; as sedentary (≤ 1.39), mildly active (1.40 - 1.59), active (1.60-1.89) and very active (≥ 1.90). According to this classification, it was seen that 73% of children were sedentary on weekdays and 61% on weekends (PAL ≤ 1.39)⁽⁶²⁾.

In another study searching the relationship between the duration of watching TV and childhood obesity, 350 families answered a questionnaire. The results showed that mean TV watching age was 2.7 ± 1.6 and 62% of preschool and primary school children were watched TV more than 2 hours a day and 8.3% of them more than 4 hours a day⁽⁶³⁾.

Besides the researches given above, our country included to the HBSC survey and in the study done between the years 2001-2002, the physical activity levels were questioned in the age groups of 11, 13 and 15. It was determined that 21% of girls, 29% of boys in 11 age group, 17% of girls, 22% of boys in 13 age group and 12% of girls, 16% of boys in 15 age group were doing physical activity at least 1 hour everyday at moderate and intensive level. At the same study, 59% of girls, 63% of boys in 11 year-old age, 62% of girls, 63% of boys in 13 year-old age and 68% of girls, 70% of boys were watched television at least two hour/day⁽⁵¹⁾.

3.2.1. Obesity Prevalence in Children and Adolescents

Although there is no study at national level searching the obesity prevalence among children and adolescents in Turkey, there are various studies done at local and regional levels. To display obesity profile of the children and adolescents, some of the studies implemented in different regions are given below.

In a study implemented in Kayseri on totally 3703 children; 1032 of them were in the 6-10 age group and 2671 of them were in the 11-17 age group, it was determined that 10.6% of the children were overweight ($BMI \geq 85$ -<95.persentile) and 1.6% of them were obese ($BMI \geq 95$.persentile)⁽⁶⁴⁾.

In a study done in Istanbul, Ankara and Izmir on 1044 adolescents in 12-13 age group. It was determined that 12% of them were thin, 12% of them were overweight and 2% of them were obese⁽⁶⁵⁾.

According to the results of nutrition survey done in an area with high socio-economic level in Istanbul, 20 private kindergardens, primary schools and high schools by Yeditepe University among 1669 children in the 3-17 age, it was determined that 14,7% of the girls and 18,7% of the boys were obese. Especially 34.4% of 10-12 years old boys were at high risk for obesity⁽⁶⁶⁾.

In Muğla, 4260 children between 6-15 ages were evaluated for obesity and 7.6% of the girls and 9.1% of the boys were determined as obese. In this age group main reasons of obesity were determined as watching TV for long time, eating snacks while watching TV, having working mothers and consumption of sweets at least once a day during school hours⁽⁶⁷⁾.

According to HBSC survey in the years 2001-2002, in Turkey, 7% of girls, 14% of boys in 11 age

group, 7% of girls, 13% of boys in 13 age group and 5% of girls and 14% of boys in 15 age group were found overweight or obese⁽⁵¹⁾.

Today obesity is accepted as one of the most frequently seen chronic diseases among children. While it is thought that childhood obesity is associated with adulthood obesity and underlies many chronic diseases, it is so clear how important it is to start to work for prevention of obesity at childhood.

3.2.2. Obesity Prevalence in Adults

In Turkey, there has been four large scale studies that searched obesity prevalence in adults. These studies are "Heart Disease and Risk Factors in Adults in Turkey (TEKHARF) study", "Turkey Obesity and Hypertension Research (TOHTA) study", "Turkey Diabetes, Obesity and Hypertension Epidemiology (TURDEP) Study" and "Turkey Obesity Profile (TOAD) Study.

In the TEKHFARF study done by the Turkish Society of Cardiology (TSC) involving 3681 people $BMI \geq 30$ kg/ m² were defined as obesity and one third of the Turkish men over 30 years of age (25.2%) and nearly half of the women (44.2%) were determined as obese. When middle-aged (31-49 age) and old aged groups (50 years and older) were taken separately, it was informed that the prevalence in men didn't change significantly (24.8% and 25.7%), in women significantly increased (38% and 50.2%). It was mentioned that obesity prevalence was raised with time, while it was 12.5 % in 1990 among similar ages, it doubled up in men and while the prevalence was less than 40%, it raised to 50%⁽²⁵⁾.

TOHTA study done between the years 1999-2000 on 23.888 adults, the obesity prevalence in the women over 20 years of age were determined as 35.4% and it was mentioned that compared to men obesity risk in women was 1.8 fold more⁽⁶⁸⁾.

TURDEP study was done on 24.788 people over 20 years old. According to this study obesity prevalence ($BMI \geq 30$ kg/m²) was 29.9% in women and 12.9% in men. In the same study when assessment were done with respect to central obesity (WC: in women ≥ 88 cm, in men ≥ 102 cm), obesity prevalence was determined as 34.3% (48.4% in women and 16.9% in men). The high prevalence of central obesity in women predicts that female population will soon be having serious problems like cardiovascular diseases and type 2 diabetes⁽⁶⁹⁾.



The TURDEP study was a guidance study in terms of determination of the factors affecting the obesity prevalence in Turkey. The data obtained related with the searched risk factors are given below

(69):

Age and gender: In Turkey from the age of 25 to 45 obesity prevalence was linearly increasing, between the ages 45-65 obesity prevalence showed a plateau and starting from the age of 65 in the old age groups obesity prevalence was markedly decreasing, the changes in the age groups showed parallelism to each other in both gender.

Settlement unit and geographical region: In terms of rural and urban settlement units no marked difference was observed (Urban: 23.8%, Rural: 19.6%) and in terms of geographical regions it was observed that in the East Anatolia Region obesity prevalence was the lowest (in women: 22.9% in men: 10.0%).

Profession: It was observed that the obesity prevalence was 30.7% in housewives, 18.4% in the retired people, 18.8% in the unemployed people, 17.4% in the workers, 14.9% in the civil servants and %15.1 in the self-employed people.

Education level and socioeconomical status: With the Increase in the education level, obesity prevalence was decreasing. The obesity prevalence was determined as 33.4% in the uneducated people, 22.7% in the primary school graduates, 8.7% in high school graduates, 10.0% in the university graduates. It was seen that the income status of the individual is one of the important factor determining the obesity risk and it was also determined that there is an inverse relation between income status of the family and the obesity prevalence and in the regions having the lowest socioeconomic status the ratio was 22.6% where as in the regions having high socioeconomic status this ratio was 17.9%.

TURDEP study results showing the decrease of obesity risk free from other factors especially in the women with the increase of education level, put remarkably the necessity of giving importance to the education of girls who will be the mothers of future in our country for the prevention of problems effecting the public health notably the obesity being in the first place.

In the "Turkey Obesity Profile" study which was performed by The Turkish Association for the Study of Obesity (TASO) between the years 2000-2005 in 6

provinces (İstanbul, Konya, Denizli, Gaziantep, Kastamonu ve Kırklareli) among 13.878 people who are over 20 years old, it was found that 30.9% of the individuals had $BMI < 25 \text{ kg/m}^2$, 39.6% of the individuals (W:%34.5, M:%44.8) had $BMI = 25-30 \text{ kg/m}^2$ and 29.5% of the individuals (W:%34.5, M:%21.8) had $BMI > 30 \text{ kg/m}^2$. When 7306 people were evaluated through waist circumference (central obesity), mean waist circumference was found as 79,8 in women and 98,5 in men (70).

Every five years "Turkey Demographic and Health Survey (TDHS)" study is performed in Turkey. It can be seen from the results that obesity is increasing among female population. According to the results of the researches, overweight prevalence in 15-49 age group women ($BMI = 25-29.9 \text{ kg/m}^2$) in 1998, 2003 and 2008 was found as 33.4%, 34.2% and 34.4% respectively and the obesity prevalence ($BMI \geq 30 \text{ kg/m}^2$) in 1998, 2003 and 2008 was found as 18.8%, 22.7% and 23.9% respectively (71-73). According to these results, obesity prevalence among females has been increasing 5.1% during the last ten years.

According to the study "Let's Eat Healthy, Lets Save Our Hearts (SBKK)" done by the MoH, General Directorate of Primary Health Care in 7 provinces selected from 7 geographical regions in 14 health houses, it was found that obesity prevalence in men was 21.2% and in women was 41.5%. The BMI was increased linearly between the ages 40-69 and was decreased after 70 years of age (59).

When the results of the "National Household Survey" done by Refik Saydam Hygiene Center were evaluated, it was found that in Turkey in the individuals at the age of 18 and more, the overweight prevalence was 31.35%, obesity prevalence was 12.02%. When assessed according to gender, it was found that 28.93% of the women were overweight, 14.49% were obese and in men 33.64% were overweight, 9.70% were obese (54).

Among public health precautions, prevention of obesity and treatment should be the leading one. According to Turkey Burden of Disease Study's (58) results, disease burden and death numbers which can be attributed to high BMI are given with their causes in Table 3.

As it is seen in Table 3, the preventable death numbers with the prevention of obesity are; 29.581 in ischemic cardiac disease, 11.109 in stroke, 7.674 in diabetes and totally 57.143 deaths which is 13.3% of

all deaths in society. Preventable YLD are 78.319 in diabetes, 61.035 in osteoarthritis, 53.136 in stroke. Preventable DALY are 346.294 in ischemic disease, 152.240 in diabetes, 146.930 in stroke. Prevented DALY is 7.3% of total DALY.

Table 3: Distribution of high BMI attributed disease burden and death numbers

Cause	Attributable Deaths	Attributable YLL	Attributable YLD	Attributable DALYS	Attributable DALYS rate in total DALY
Ischemic heart diseases	29.581	317.790	28.504	346.294	3.2
Hypertensive heart diseases	7.174	57.723	4.073	61.796	0.6
Ischemic Stroke	11.109	93.794	53.136	146.930	1.4
Diabetes Mellitus	7.674	73.921	78.319	152.240	1.4
Osteoarthritis	0	0	61.035	61.035	0.6
Breast cancer	724	7.141	1.718	8.859	0.1
Colon and rectum cancers	646	6.583	717	7.300	0.1
Corpus uteri cancer	235	2.079	651	2.730	0.0
Total	57.143	559.032	228.151	787.183	7.3

* Reference: Turkey Burden of Disease Study (YLL: Years of life lost, YLD: Years lost with Disability, DALY: Disability Adjusted Life Year)

The distribution of high BMI attributed disease burden according to gender is given at Table 4.

Table 4. Distribution of high BMI attributed disease burden

	Male		Female		Total	
	Number	Percent (%)	Number	Percent (%)	Number	Percent (%)
Death	26.006	11.1	31.136	15.8	57.143	13.3
YLL	278.008	8.2	281.024	11.0	559.032	9.4
YLD	101.972	4.5	126.179	4.9	228.151	4.7
DALY	379.980	6.7	407.203	7.9	787.183	7.3

* Reference: Turkey Burden of Disease Study (YLL: Years of life lost, YLD: Years lost with Disability, DALY: Disability Adjusted Life Year)

As it can be seen at Table 4, with prevention of obesity 26.006 deaths which is 11.1% of the total deaths in male are prevented. In female, the death number prevented is 31.136 which is 15.8% of total deaths. Prevented DALY is 6.7% in male and 7.9% in female.



4. THE AIM AND SCOPE OF THE OBESITY PREVENTION AND CONTROL PROGRAM OF TURKEY

Obesity is a multi-factorial chronic disease which decreases quality of life. It is one of the disease which increases so fast in the world, affects individuals and societies. For this reason, policies are developed and national action plans are prepared related with the prevention of obesity in all over the world.

Since the reason of obesity is composed of more than one factor, it is required to follow the prevention of obesity activities with multidisciplinary approach. Nowadays, in preventing obesity, besides individuals efforts, institutional efforts gain importance and it becomes obligatory to take the required precautions with multisectoral approach in the institutional level.

The aim of this program is, to fight effectively with this disease that has an increasing prevalence in Turkey and affecting our children and adolescents; to encourage the individuals to gain the habits of adequate and balanced diet and regular physical activity by increasing the knowledge level of public on fight against obesity subject; and by this way to decrease the prevalence of obesity and obesity related diseases (cardiovascular diseases, diabetes, some cancer types, hypertension, musculoskeletal system diseases etc.) Besides, in Turkey, various institutions and organizations, universities, private sector, civil society organizations are carrying out various programs, projects and training studies concerning prevention of obesity. A very important issue affecting the success level is to implement the studies being in coordination and following a roadmap. With the action plan it is aimed to do the planned studies in Turkey within the framework of certain program, being measurable and traceable/monitorable and to provide coordination.

"The Obesity Prevention and Control Program of Turkey" has a widebase and multisectoral approach. For this reason, the draft which was prepared in detailed, was assessed in the 08.07.2008

dated workshop with the attendance of the representatives of the institutions and organizations, health, sports, education, transportation, municipality, finance being in the first place, international organizations, academics from medicine, nutrition and diet, physical therapy and rehabilitation and food engineering departments of universities, food industry from private sector, consumer societies and NGO's. Furthermore, with the publication of the draft under the web address www.beslenme.saglik.gov.tr, it was opened to the public opinion. All the opinions and recommendations were carefully evaluated and the required revisions were done.

Providing political will and determination at national and local level; informing public within the scope of preventive health services with the use of different tools about obesity, adequate and balanced diet, and physical activity subjects; taking the precautions for the diagnosis and treatment of obesity; and monitoring and assessment studies are all forming the scope of this program.

5. TARGETS AND STRATEGIES FOR OBESITY PREVENTION

A. ESTABLISHMENT OF OBESITY PREVENTION AND CONTROL PROGRAM MANAGEMENT AND DEVELOPMENT OF POLICY

A.1. *Supplying political will and determination at national and local level and putting into application.*

Aim

To supply effective fight against obesity by making the obesity prevention action plan operational with the coordination of related institutions and organizations for the prevention and decrease of obesity prevalence which is an important health problem.

Targets

1. To plan all the activities for the application/ implementation of the obesity prevention and control program with the cooperation and coordination of the related institutions at the national and local level.
2. To monitor and evaluate the applications achieved within the scope of action plan.

Strategies

1. To establish "Obesity Prevention Consulting and Executive Committees"
2. To provide the establishment of the "Adequate and Balanced Nutrition and Active Life Board" in 81 provinces

A.2. *Financial arrangements in the management of obesity prevention.*

Aim

To supply the required financial support within the frame of budget possibilities for the purpose of implementation of the obesity prevention and control program effectively.

Target

To give a place to the precautions for the prevention of obesity in the policy and budget programs which are going to be developed in the fields of health, agriculture, trade, transportation, education, economics, sport, environment, city planning, working, social security, culture and tourism until 2014.

Strategies

1. To provide obesity fight strategies to be taken place among national health strategies and policies.
2. To determine economical precautions within the budget possibilities by giving priority to the regions not developed socio-economically to improve the attainability of finding safe food which forms the basis for adequate and balanced diet in the country as a whole.
3. To allocate resources within the budget possibilities in order to support the prevention from obesity program in the annual budget of the all stakeholders at national and local level.

A.3. *To determine the current situation at the national and local level and to support the researches that are going to be done.*

Aim

To determine the prevalence of obesity and overweight according to age, gender, regions, socio-economical development level etc. in Turkey for the purpose of forming basis to the fighting against obesity studies and to determine the risk factors according to the current situation.

Targets

1. To provide getting national and international comparable and reliable data.



2. To form the background for the "Turkey Nutrition and Health Survey (TBSA)" which is planned to be made in 2010-2011.
3. To make "Provincial Nutrition, Physical Activity and Health Survey" to be done in regional and/or provincial level.

Strategies

1. To provide evidence based, updated data concerning obesity from researches.
2. To provide "Turkey Nutrition and Health Survey" to be done.
3. To do Researches at Provincial level by the "Adequate and Balanced Nutrition and Active Life Board".
4. To do researches on nutrition directed to special groups (pregnants, babies and children, school children, the elders, health workers etc.)
5. To update "Dietary Guidelines of Turkey" and prepare "National Physical Activity Guidelines".

B. ACTIONS FOR OBESITY PREVENTION

B.1. To Inform and Make The Society Conscious About Obesity, Adequate and Balanced Diet and Physical Activity

Aim

To make the society adequate and balanced diet and regular physical activity habits and to decrease obesity risk.

Target

To make the society be aware of obesity and health risks until 2014.

Strategies

1. To arrange inservice training programs to improve the knowledge level of health personnel about prevention from obesity.
2. To supply information to the individuals who applied to the health organizations about prevention from obesity.
3. To make the prevention from obesity applications widespread especially to risk groups

(babies, children, pregnant and breastfeeding women, elderly, disabled people, people who quit smoking etc.) within the scope of preventive health care and family doctor services.

4. Besides routine services developing campaigns, events and programs and applying with regular intervals and making wide-spread directed to the special groups
5. To cooperate with media to transport right messages to society about obesity prevention and within this scope to increase knowledge and awareness level.

B.2. To Gain The Habit of Adequate and Balanced Diet and Regular Physical Activity for Obesity Prevention in Schools

Aim

To make the pre-school and school children, adolescents, young people gain adequate and balanced diet and regular physical activity habit by including the subject of prevention from obesity in the formal and extensive education programs and to provide contribution to the raising of healthy and productive generations.

Targets

1. To inform teachers and students about adequate and balanced diet and physical activity until 2014.
2. To ensure the guidance of children and young people from primary education, secondary education and universities for physical activity, sportive activities and social activities with the cooperation of family, school and media until 2014
3. To increase the physical activity possibilities by taking the budget possibilities into consideration till 2014.
4. To implement the inspections effectively in the food services given in schools and to ensure standardization until 2014.
5. To decrease obesity and overweight prevalence in schools by 5% until 2014.

Strategies

1. To inform preschool and school children, teachers and parents on obesity prevention .

2. To ensure improvement of the education program related with the adequate and balanced nutrition and physical activity in pre schools, primary education, secondary education and universities.
3. To improve the physical activity possibilities (gymnasium, arrangement of school gardens, supply of tools and equipments etc.) in preschools, primary education, secondary education and universities within the budget possibilities.
4. To determine students at risks (underweight, overweight, obese) in preschools, primary education, secondary education and in universities.
5. To implement nutrition program to encourage consuming food from basic food groups to provide adequate and balanced nutrition in children and adolescents and to provide the periodical control of food services.

B.3. Actions for Workplaces

Aim

In order to decrease work power loss and to increase efficiency; organization of the mass catering services for ensuring adequate and balanced diet of the workers, increasing the possibilities of physical activity and decreasing health risks originated from obesity.

Targets

1. To inform and to make workers conscious of prevention from obesity until 2014.
2. To increase the mass catering services and physical activity opportunities in the workplaces till 2014.

Strategies

1. To increase the knowledge level of the workers on adequate and balanced diet and physical activity.
2. To ensure doing of obesity prevention studies concerning the workers within the frame of workplace medical services.
3. To complete the background studies in workplaces

B.4. Providing Cooperation with Food Industry for Obesity Prevention

Aim

To cooperate with food industry for obesity prevention.

Target

To plan the activities which will be performed with the cooperation of food industry until 2012 and to provide the application of the planned targets by the end of 2014.

Strategies

1. To ensure cooperation with the food industry in the national policies.
2. To inform the superior managers of food industry about obesity prevention.
3. To inform and to make consumers conscious of adequate and balanced diet by the food industry.
4. To develop advertisement and marketing activities in such a way that will provide the consumers to do the right choices by taking the international applications into account and to take the precautions to let them not to be misled.

B.5. Supporting Adequate and Balanced Nutrition and Active Life in Media News and Advertisements

Aim

To use written and visual media effectively for informing the public in adequate and balanced diet, active life and obesity subjects and to improve the related activities.

Targets

1. To update legal arrangements about food advertisements and introductory activities took place in the media until 2013.
2. To give priority to the prevention from obesity subject in the written and visual media and to encourage broadcasting of the informative scientific programs on adequate and balanced diet and physical activity till 2014.



Strategies

1. To make the necessary arrangements by reassessing the legal arrangements related with the food advertisements and introductory activities, to put these arrangements into force and to control their applications.
2. To provide right information to be given to the public by written and visual media on adequate and balanced diet, active life and obesity.

B.6. *Encouragement of Physical Activity and Improvement of Environmental Factors*

Aim

To create, improve and make widespread the physical activity opportunities for making the public gain physical activity habit.

Target

To increase the public physical activity areas until 2014.

Strategies

1. To form sport facilities and recreational areas within the budget possibilities in the leadership of local administrations for making the physical activity in the public widespread. (healthy cities)
2. To develop physical activity applications that can be easily applied inside the house

C. **PRECAUTIONS FOR DIAGNOSIS AND TREATMENT OF OBESITY IN HEALTH INSTITUTIONS**

Aim

To evaluate individuals in terms of overweight and obesity who applied to the health institutions, to do consultancy and treatment to the patients who are diagnosed with obesity, to decrease the health expenses resulted from the treatment of obesity and obesity related chronic diseases and to decrease the obesity prevalence.

Targets

1. To decrease the formation of obesity 5% among overweight individuals having BMI more than $BMI \geq 25 \text{ kg/m}^2$ which creates risk for obesity until 2014 .

2. To prevent uncontrolled usage of the weight loss drugs until 2012 and to make the bariatric surgery decisions to be taken by the committee (surgeon, gastroenterologist, endocrinologist, dietician, psychologist) formed under the body of the health institution

Strategies

1. To contribute to the increase of knowledge of health personnel on diagnosis and treatment of obesity and also to contribute to the generalization of the applications directed to the public.
2. To ensure diagnosis and treatment of the individuals who applied to the health institutions in terms of overweight and obesity
3. To make the necessary official arrangements for the application conditions of the bariatric surgery (gastric balloon, bypass etc.) and for the payment of the costs of these methods.

D. **MONITORING AND ASSESMENT**

Aim

To make the "Obesity Prevention and Control Program of Turkey" applied effectively and widely.

Target

To establish monitoring and assessment system until 2011 for the successful application of Obesity Prevention and Control Program of Turkey.

Strategies

1. To form the monitoring and assessment system.
2. To prepare 3 years progress reports as it was mentioned in the WHO European Charter on Counteracting Obesity and to publish the first progress report in 2010.
3. To do the assessment of the "Obesity Prevention and Control Program of Turkey" in 2015 and to publish the assessment report.

**ACTION PLAN OF
OBESITY PREVENTION AND
CONTROL PROGRAM OF TURKEY
(2010-2014)**



A. ESTABLISHMENT OF OBESITY PREVENTION AND CONTROL PROGRAM MANAGEMENT AND DEVELOPMENT OF POLICY

A.1. Supplying political will and determination at national and local level and putting into application

Aim: To supply effective fight against obesity by making the obesity prevention action plan operational with the coordination of related institutions and organizations for the prevention and decrease of obesity prevalence which is an important health problem.						
Targets 1. To plan all the activities for the application/implementation of the obesity prevention and control program with the cooperation and coordination of the related institutions at the national and local level. 2. To monitor and evaluate the applications achieved.						
Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators
1. To establish "Obesity Prevention Consulting and Executive Committees"	1. Preparation of the terms of reference for the working principle and procedures of "Obesity Prevention Consulting and Executive Committees"	MoH	SPO, MARA, MoNE, MoIA, MoIT, GDYS, TURKSTAT, RTSC, TAMRA, TRT, TAF, CHE, IB, Universities, NGOs, PS	2010	Failure of effective representation of related institutions and organizations	1. Prepared and published terms of reference 2. Established "Obesity Prevention Consulting and Executive Committees"
	2. To provide periodical attendance of City governors and superiors of the Health Directorates to the evaluation meetings of the Obesity Prevention Consulting and Executive Committees	MoH, MoIA	Provincial Governors, Provincial Health Directorates	2010-2014	Failure of effective attendance	1. Number of meetings 2. Number of participants Meeting minutes where opinions are asked



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
2. To provide the establishment of the "Adequate and Balanced Nutrition and Active Life Board" in 81 provinces	1. Monitoring and evaluation of the provincial activity reports presented with systematical periods by "Adequate and Balanced Nutrition and Active Life Board" which are established or planned to be established within the body of Provincial Hygiene Boards	MoH	Provincial Health Directorates, secretariat of "Adequate and Balanced Nutrition and Active Life Board" in 81 provinces	2010-2014	Failure of representation of the reports on time	Province activity reports which are monitored and evaluated	Number of meeting per year and meeting minutes (at least twice a year)
	2. Periodical Presentation of the activity reports and working priorities to the "Adequate and Balanced Nutrition and Active Life Board" by the Health Directorate who is the secretary of the Board in order to support and direct the works of the Board	Provincial Health Directorates	Provincial Hygiene Board members	2010-2014	1. Lack and mobility of personal staff 2. Lack of nutrition and physical activity department in provincial health directorates	Submitted Reports	Meeting minutes
	3. To forward the activity reports planned and approved by the "Adequate and Balanced Nutrition and Active Life Board" to the General Directorate of Primary Health Care	Provincial Health Directorates	Provincial organizations of the related institutions	2010-2014	Lack of coordination in the provinces	Reports	Meeting minutes

A. ESTABLISHMENT OF OBESITY PREVENTION AND CONTROL PROGRAM MANAGEMENT AND DEVELOPMENT OF POLICY

A.2. Financial arrangements in the management of obesity prevention

Aim: To supply the required financial support within the frame of budget possibilities for the purpose of implementation of the obesity prevention and control program effectively.							
Target To give a place to the precautions for the prevention of obesity in the policy and budget programs which are going to be developed in the fields of health, agriculture, trade, transportation, education, economics, sport, environment, city planning, working, social security, culture and tourism until 2014.							
Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
1. To provide obesity prevention strategies to be taken place among national health strategies and policies	1. Meetings will be organized about the importance of obesity prevention initiatives being taken place in the plans and policies of the related institutions and organizations (governmental institutions, private sector etc.)	MoH	SPO, MARA, MoNE, MoIA, MoIT, GDYS, Universities, TURKSTAT, RTSC, TAMRA, TRT, TAF, CHE, IB, NGOs, Private Sector	2010	Lack of coordination between related institutions and organizations	Number of meetings arranged and participated institutions	Meeting minutes



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	2. Assessing the obesity prevention studies of all the stakeholders within the framework of best practices by "Obesity Prevention Consulting and Executive Committees" and sharing of the results with the public	MoH	All stakeholders	2010-2014	1. Failure of stakeholders to participate effectively 2. Under-estimation of the importance of the subject	The number of actions and institutions which are regarded as the best practices	Reports of evaluations and monitoring
2. To determine economical precautions within the budget possibilities by giving priority to the regions not developed socio-economically to improve the attainability of finding safe food which forms the basis for adequate and balanced diet in the country as a whole	1. To supply the necessary coordination to do the legislative arrangements for reaching qualified foods and menus that supply adequate and balanced diet for the risk groups (children, elderly, pregnant and breastfeeding women etc.)	MoH, Local Administrations, MoF	PM, MoNE, MARA, MoIA, Private sector	2014	1. Lack of coordination between related institutions. 2. Lack of resources. 3. Inadequate cooperation with food industry	1. Number of meetings 2. Legislation studies	1. Reports and minutes of meetings 2. Monitoring the legislation changes

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
3. To allocate resources within the budget possibilities in order to support the prevention from obesity program in the annual budget of the all stakeholders at national and local level	1. To allocate funds and to make initiatives to improve the workplace physical activity opportunities (office exercise)	MoF, all governmental institutions and organizations, Private sector	All governmental institutions and organizations, Private sector	2010-2014	1. Problems originated from the legislation 2. Lack of budget	1. Number of institutions who allocate funds from their budgets for the related subject 2. The amount of budget	Assessments presenting the current situation and the development
	2. To allocate funds and to make initiatives to build physical activity opportunities at schools	MoNE, MoF	MoH, GDYS, Local Administrations, Universities, Private sector	2010-2014	1. Problems originated from the legislation 2. Lack of budget	1. Number of communication at institutional level 2. Number of institutions who have a part in their budget for related subject 3. The amount of budget for related subject	Assessments presenting the current situation and the development
	3. To allocate funds and to create sports centers and recreation areas especially for risk groups (children, elderly, pregnant, women, disabled people etc.) by local administrations	MoIA, MoF, IB	PM, MoH, MoEF, GDYS, Universities, MoPWS, SSCPA, Private sector	2010-2014	1. Problems originated from the legislation 2. Lack of budget	1. Number of communication at institutional level 2. Number of institutions who allocate funds from their budgets for related subject 3. The amount of budget	Assessments presenting the current situation and the development



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	4. To allocate funds and to make initiatives to create much better city arrangements and transportation possibilities that will be provide opportunity to the all members of the society to do exercise	MoIA, MoPWS, MoF, GDYS	MoH, MoT, MoNE, MoLSS, NGOs	2014	1. Problems originated from legislation 2. Lack of budget	1. Number of communication at institutional level 2. Number of institutions who allocate funds from their budgets for related subject 3. The amount of budget	Assessments presenting the current situation and the development
	5. To allocate resources to develop actions for the prevention, diagnosis and treatment of obesity in health organizations	MoH, MoF	SSI	2013	1. Problems originated from legislation 2. Lack of budget	1. Number of communication at institutional level. 2. Number of institutions who allocate funds from their budgets for related subject 3. The amount of budget	Assessments presenting the current situation and the development

A. DEVELOPMENT OF MANAGEMENT AND POLITICS OF OBESITY PREVENTION ACTION PLAN

A.3. To Determine The Current Situation At The National And Local Level And To Support The Researches That Are Going To Be Done.

Aim: To determine the prevalence of obesity and overweight according to age, gender, regions, socio-economical development level etc. in Turkey for the purpose of forming basis to the fighting against obesity studies and to determine the risk factors according to the current situation.						
Targets <ol style="list-style-type: none"> 1. To provide getting national and international comparable and reliable data. 2. To form the background for the 'Turkey Nutrition and Health Survey (TBSA)' which is planned to be made in 2010-2011. 3. To make "Provincial Nutrition, Physical Activity and Health Survey" to be done in regional and/or provincial level. 						
Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators
1. To provide evidence based, updated data concerning obesity from researches	1. To develop a standard form/ guidance document directed to the headings that will take place in the researches for having the obtained results to be comparable	MoH	SPO, MARA, TUBITAK, Universities, TURKSTAT, private sector, NGOs	2010-2014	-	Prepared guidance document
2. To provide "Turkey Nutrition and Health Survey" to be done	1. To provide coordination of the related institutions and organizations and to form the background	MoH	MARA, TUBITAK, TURKSTAT, Universities, private sector, NGOs	2010	1. Lack of resource (money, manpower etc.) 2. Lack of coordination between institutions	The survey to be done
						Announcement of the results



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
3. To do Researches at Provincial level by the "Adequate and Balanced Nutrition and Active Life Board"	1. To provide coordination of the related institutions and organizations and to form the background	Provincial Health Directorates	Provincial Hygiene Board members	2011-2013	1. Lack of resource (money, manpower etc.) 2. Lack of coordination between institutions	Survey to be done	Announcement of the results
	2. To do "Provincial Nutrition, Physical Activity and Health Survey" in every province, in every 5 years, and presentation of the results to Obesity Prevention Consulting and Executive Committees	MoIA, MoH	SPO, TURKSTAT, MARA, Universities, private sector, NGOs	2011 -2014	Failure to achieve the research due to lack of resource and coordination	Number of provinces completed the research	Survey result reports
4. To do researches on nutrition directed to special groups (pregnants, babies and children, school children, the elders, health workers etc.)	1. Determination of risks groups and completion of the background studies concerning the planning and application of the researches	MoH	MARA, TUBITAK, TURKSTAT, Universities, NGOs, STK	2011-2012	1. Lack of resource (money, manpower etc.) 2. Lack of coordination between institutions	Survey to be done	Announcement of the results

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
5. To update "Dietary Guidelines of Turkey" and prepare "National Physical Activity Guidelines"	1. Updating the "Dietary Guidelines For Turkey" according to the research results	MoH	MARA, Universities, NGOs	2012	Lack of research data at national level	Updated guidance document	Working group meeting minutes
	2. Preparation of the 'National Physical Activity Guide' according to age groups	MoH	GDYS, MoFF, MoLSS, MoPWS, Universities, NGOs	2012	1. Lack of research data at national level 2. Difficulties with creating a common scientific idea	Prepared guidance document	Working group meeting minutes

B. INTERVENTIONS FOR OBESITY PREVENTION



B.1. To Inform and Make The Society Conscious About Obesity, Adequate and Balanced Diet and Physical Activity

Aim: To make the society adequate and balanced diet and regular physical activity habits and to decrease obesity risk.							
Target To make the society be aware of obesity and health risks until 2014.							
Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
1. To arrange in-service training programs to improve the knowledge level of health personnel about prevention from obesity	1. To create education team consisting of doctor, dietician, psychologist, physiotherapist, food engineer and nurse in 81 provinces at Health Directorates	MoH	Universities	2010	1. Lack of personnel 2. personnel mobility	Number of provinces having formed team	Lists of team members
	2. Formation of education modules and guidance document and development of education materials (book, poster, brochure, film etc.)	MoH	Universities, private sector, NGOs	2010	Lack of budget	Education modules and/or materials prepared	1. Meeting minutes 2. Research results measuring the efficiency of education materials
	3. Application of the training of the trainers programs directed to the provincial training teams	MoH	Universities, private sector, NGOs	2010	Lack of resource	Number of the education programs	Education evaluation results
2. To supply information to the individuals who applied to the health organizations about prevention from obesity	1. Preparation and updating of the information documents	MoH	Universities	2010-2014	Not doing the updations on time	1. Preparation of the documents 2. Doing the updations	1. Research results of the information level measurement 2. Records

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	2. Doing trainings for giving information	Provincial Health Directorates	Universities	2010-2014	Lack of coordination	Number of trained person	Number of training
3. To make the prevention from obesity applications widespread especially to risk groups (babies, children, pregnant and breastfeeding women, elderly, disabled people, people who quit smoking etc.) within the scope of preventive health care and family doctor services	1. Doing informative studies for encouraging the Exclusive breast feeding of the infants for the first 6 months, complementary feeding starting after 6 months and continuation to breast feeding till two years 2. Doing informative studies for Pregnant and lactating women to benefit from the consultancy services related with body weight 3. Doing informative studies for the elder people living in nursing homes, rescue homes etc.	MoH	SSCPA, Universities, private health facilities, NGOs	2010-2014	1. Lack of information in society 2. Wrong beliefs	Number of babies having been on breastfeeding only for the first 6 months	Research results related with the subject
		MoH	SSCPA, Universities, NGOs	2010-2014	1. Difficulty in reaching to the target groups 2. Lack of specialists in the related subject	Number of individuals benefiting the consulting services	Records kept in health organizations
		SSCPA, Local Administrations	MoH, MoIA, MARA, Universities, Private sector, NGOs	2010-2014	Lack of specialists	Number of institutions trained	1. Studies done in the related subjects 2. Reports of the inspections, monitoring and assessment



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	4. Doing informative studies for improving and making widespread of the consultancy services and physical activity possibilities within the budget possibilities for disabled people	MoH, MoF	PM, SSCPA, GDYS, FoD, Local Administrations Universities, private sector, NGOs	2010-2014	1. Lack of specialists 2. Difficulty to reach the disabled people 3. Communication difficulties	Number of individuals benefiting from consultancy services	Records
4. Besides routine services developing campaigns, events and programs and applying with regular intervals and making widespread directed to the special groups	1. To provide the taking part of the "Obesity prevention information line" within the ALO 184 in the body of Ministry of Health to reach every time and get correct information	MoH	Provincial Health Directorates	2010	Lack of obesity specialists	To include the nutrition, obesity and physical activity subjects in ALO 184 line	Number of the individuals wishing to take information about the nutrition, obesity and physical activity subjects by calling the ALO 184 line
	2. Organizing training events in places such as public training centers, etc.	MoH	RTSC, TRT, Anadolu Agency, Media foundations, Local administrations, Universities, Private sector, NGOs	2010-2014	1. Lack of obesity specialists 2. Financial problems	1. Number of events and trainings done. 2. Development of training materials	1. Training minutes 2. Number of participants
	3. To supply information to the soldiers in the institutions and organizations within the body of the Turkish armed forces especially in the recruit drill centers about the prevention of obesity	MoND	MoH, TGS, Gülhane Military Medical Academy, Universities	2010-2014	1. Lack of obesity specialists 2. Financial problems	Number of events and trainings done	1. Training minutes 2. Number of soldiers informed 3. Education reports (education materials, information measurement questionnaires etc.)

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	4. To supply information to the security members in the institutions and organizations within the body of the Security General Directorate about the prevention of obesity	MoA (Security General Directorate)	MoH, Universities	2010-2011	1. Lack of obesity specialists 2. Financial problems	Number of events and trainings done	1. Training minutes 2. Number of participants 3. Training reports (training materials, information measurement questionnaires etc.)
	5. To make religion chaplain mention obesity prevention subjects in their speeches	PoRA	MoH	2010-2014	Lack of information of society leaders	Number of speeches about obesity	Research results measuring the information level of the people from the different sections of the public
	6. To make the higher education institutions educating teachers to put the courses in obesity, nutrition and physical activity subjects into their course program	MoNE, CHE	MoH	2012	Difficulties in changing the course program	Changed course program	Monitoring of the course program change
	7. To make the governmental institutions and private sector to put the prevention from obesity subjects into their in-service training programs	MoH	All governmental institutions and organizations, Universities, Private sector, NGOs	2010-2014	Underestimation of the subject by managers	Number of trainings and institutions in which prevention from obesity subject have a place	Training program minutes



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	8. To plan various activities directed to the housewives (healthy menus for the guests, in house exercise program etc.)	MoH	Universities, Private sector, NGOs	2010-2012	Disinterest of the housewives	Increase in the number of activities	Activity reports
	9. To give information to the public in the sport centers and recreational areas and to provide the exercises to be done under the control of experts	GDYS, Local Administrations	Universities, Private sector	2010-2014	Lack of specialist personnel	Number of facilities giving services under the control of specialists	Specialist records found in the facilities
	10. To encourage and appreciate the local administrations, private sector, NGOs implementing various activities concerning the importance of physical activities	MoH	All governmental institutions and organizations, local administrations, Universities, Private sector, NGOs	2010-2014	Underestimation of the subject by managers	Institution reports having activities in the physical activity subjects	Activity reports

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
5. To cooperate with media to transport right messages to society about obesity prevention and within this scope to increase knowledge and awareness level	1. Organization of training programs of the media members (health reporters, producers, film directors etc.)	MoH	RTSC, TRT, Anadolu Agency, Media foundations, Universities	2010-2014	Disinterest of Media	1. Number of trainings 2. Number of media members attended the trainings	Minutes of the trainings
	2. To provide role model people in the public (artists, sportsmen, politicians etc.) to join educational activities	MoH	TGNA, TRT, RTSC, MoIT, MARA, GDYS, Anadolu Agency, Media foundations, private sector, NGOs	2010-2014	1. Disinterest of media 2. Difficulty in reaching role model people. 3. Lack of resource	Number of role model participated in the events	Media news about the subject
	3. To do initiatives for the right messages about adequate and balanced diet, obesity and physical activity to be given in the subtitles, spot film, informative advertisements, web-sites, health programs etc.	MoH	All governmental institutions and organizations, media foundations, Universities, Private sector, NGOs	2010-2014	1. Disinterest of media 2. Resistancy of food sector 3. Disinterest of the public to the subject	Media programs giving right messages related with the subject	Records about the subject



B. INTERVENTIONS FOR OBESITY PREVENTION

B.2. To Gain The Habit of Adequate and Balanced Diet and Regular Physical Activity for Obesity Prevention in Schools

Aim: To make the pre-school and school children, adolescents, young people gain adequate and balanced diet and regular physical activity habit by including the subject of prevention from obesity in the formal and extensive education programs and to provide contribution to the raising of healthy and productive generations.							
Targets:							
1. To inform teachers and students about adequate and balanced diet and physical activity until 2014.							
2. To ensure the guidance of children and young people from primary education, secondary education and universities for physical activity, sportive activities and social activities with the cooperation of family, school and media until 2014.							
3. To increase the physical activity possibilities by taking the budget possibilities into consideration until 2014.							
4. To implement the inspections effectively in the food services given in schools and to ensure standardization until 2014.							
5. To decrease obesity and overweight prevalence in schools by 5% until 2014.							
Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
1. To inform preschool and school children, teachers and parents on obesity prevention	1. To develop education modules and materials (book, brochure, book separator, coloring books, video films etc.)	MoH, MoNE	Private sector, Universities, NGOs, CHE	2010-2014	Financial problems	The developed training materials	Research results measuring the effectiveness of the developed training materials

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	2. To apply training programs for informing the pre-school, primary, secondary education students about prevention from obesity with the use of interactive teaching techniques, computer games, drama, theater plays etc.	MoH, MoNE	GDYS, Universities, Private sector, NGOs	2010-2014	1. Financial problems 2. Lack of specialists about technical subjects	1. Number of students trained. 2. Number of trainings given	1. Assessment of annual training reports 2. Research results related with the subject
	3. Organization of the activities (seminar, conference, panel, competition etc.) for secondary education and university students related with the prevention from obesity subject	MoH, MoNE	CHE, Universities, Private sector, NGOs	2010-2014	Failure in the dissemination of the activities over the countryside	Number of events done	1. Assessment of annual training reports 2. Research results related with the subject
	4. Celebration of the special days and weeks about adequate and balanced diet and physical activity effectively	MoNE	MoH, Universities, Private sector, NGOs	2010-2014	1. Failure in the dissemination of the events over the countryside. 2. Insensitivity of the sides to the subject	1. Number of events celebrated 2. Number of people participated in the events	Records and reports of the events
	5. Organization of various events in schools by sports federations and sports clubs in order to form the love of sport in the children and young people	MoNE, Sports federation	MoH, GDYS, Universities, Private sector, NGOs	2010-2014	1. Failure in the dissemination of the events over the countryside. 2. Insensitivity of the sides to the subject	1. Number of events organized by sports clubs 2. Number of participants attended to the events	Records and reports of the events



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	6. To provide organization of free breakfast/ meal programs at schools in low socio-economical regions within the budget possibilities	MoNE, MoF	SPO, MoH, MARA, Private sector, NGOs	2010-2014	1. Lack of resources 2. Lack of cooperation between institutions 3. Difficulties in the application	1. Determination of programs 2. The reached number of schools and students	Monitoring committee reports
	7. To provide information about the importance of basic nutrition and physical activity to the students in summer schools, camps etc.	MoNE, GDYS PoRA, Local Administrations	MoH, MoIA, Universities, NGOs	2010-2014	Lack of specialists	Number of students trained	Monitoring and assessment of training reports
	2. To ensure improvement of the education program related with the adequate and balanced nutrition and physical activity in pre schools, primary education, secondary education and universities	MoH, MoNE	MoH, Universities	2010-2014	1. Difficulties in changing the education program 2. lack of personnel 3. Difficulties to be faced in case of changing the education program	1. Determination of the current situation in the education program 2. The changed education program	Investigation of the course books

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
3. To improve the physical activity possibilities (gymnasium, arrangement of school gardens, supply of tools and equipments etc.) in preschools, primary education, secondary education and universities within the budget possibilities	1. To provide the use of sport facilities in the schools out of the school hours and at the weekend	MoNE	Provincial Education Directorates	2010-2014	Lack of personnel	1. Number of open facilities 2. Number of students benefiting from facilities	Studies showing the current situation and the progress
	2. To improve the physical conditions of the school sport halls and school yards which are not appropriate for physical activity or not used, and to increase the number of the proper ones within the budget possibilities	MoNE, MoF, Local Administrations	MoH, MoIA, GDYS, Universities, Private sector, NGOs	2010-2014	Lack of budget	Increase in the number of schools improved	Studies showing the current situation and the progress
	3. To give more emphasis on the construction of the sport halls in the new schools, organization of the campaigns for the construction and improvement of sports halls in the schools	MoNE, MoH	MoH, GDYS, Universities, Private sector, NGOs	2010-2014	1. Lack of budget 2. Lack of physical areas	1. Number of campaigns organized. 2. Increase in number and quality of the newly opened sports areas	Studies showing the current situation and the progress
	4. To encourage university students to attend physical and sport activities, making the conditions of the sport areas in the body of the universities sufficient and supporting the youth clubs activities	MoNE, CHE	MoH, Universities, Private sector, NGOs	2010-2014	Disinterest of the sides	1. The changed education program 2. Increase in the number and quality of the sport aimed areas 3. Number of students using these areas	1. Monitoring of the education program change 2. Studies showing the current situation and the progress



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	5. To form certification programs by giving training for the "exercise trainers"	MoNE	MoH, Universities	2011	1. Lack of specialists 2. Lack of budget	Performing the certification program	1. Number of certification program performed 2. Number of graduates from the certification program
4. To determine students at risks (underweight, overweight, obese) in preschools, primary education, secondary education and in universities	1. To measure the weight and height of all students in pre-schools, primary education, secondary education and universities twice a year	MoNE, CHE	MoH, SSCPA, Universities, NGOs	2010-2014	Difficulties in the standardization of measurements	To make research	Assessment of the research results
	2. To direct the students who were determined as problematic in the BMI assessment (underweight, overweight, obese) to the health organizations by school management/ guidance services	MoNE	MoH, Universities, NGOs	2010-2014	Not giving the required importance to the subject	Number of percentage of the students directed to the health organizations due to the high or low value of BMI	Assessment of the annual study reports

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
5. To implement nutrition program to encourage consuming food from basic food groups to provide adequate and balanced nutrition in children and adolescents and to provide the periodical control of food services	1. To implement various campaigns and activities in order to encourage healthy applications in the food services of the school canteens and cafeterias. (White flag project, Nutrition friendly schools etc.)	MoH, MoNE,	Private sector, NGOs	2010-2014	disinterest of the school administration	1. Number of the campaigns implemented 2. Number of participants attended the campaigns	Studies showing the current situation and the progress
	2. To select the foodstuffs that will be placed in the food and drink vending machines in schools, in summer schools and in private establishments preparing students for various exams, according to the essential food groups	MoNE	MoH, Universities, NGOs	2010-2014	The resistancy of food sector	1. Increase in the number of suitable automats 2. Increase in the number of student/teacher benefiting	Studies showing the current situation and the progress
	3. To develop training programs for encouraging the students to do physical activity in private establishments preparing students for various exams	MoNE	MoH, Universities, NGOs	2010-2014	not giving the required importance to the subject	Developed program	Monitoring and assessment reports of the programs
	4. To provide arrangement of the free breakfast/ meal programs at the schools in low socio-economical regions within the budget possibilities.	MoNE , MoF	SPO, MoH, MARA, Private sector, NGOs	2010-2014	1. Not giving the required importance to the subject 2. Lack of resources	Developed program	Monitoring and assessment reports of the programs



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	5. To arrange the delivery of the free fresh fruit, vegetable, milk at schools especially in low socio-economical areas	MoNE , MoF	SPO, MoH, MARA, Private sector, NGOs National Milk Council	2010-2014	1. Not giving the required importance to the subject 2. Lack of resources	To provide resource transfer	Studies showing the current situation and the progress
	6. To launch " School Milk Program" in primary education schools	MoNE, MARA, MoF	SPO, MoH, MARA, Private sector, NGOs National Milk Council	2010-2014	1. Not giving the required importance to the subject 2. Lack of resources	To provide resource transfer	Studies showing the current situation and the progress
	7. Control of menus for being adequate and balanced nutrition following the guide of Ministry of Health in pre-schools, primary education, secondary education and universities	MoNE , MoF	Universities, CHE	2010-2014	1. Not giving the required importance to the subject 2. Difficulties faced in application	1. Development of menu programs 2. Determination of principles and procedures of inspection	1. Studies showing the current situation and the progress 2. Assessment of the inspection reports

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	8. To provide the inspection of food services in the school canteens and cafeterias according to the adequate and balanced diet and food safety criteria	MoH, MoNE, MARA, Local Administrations	MoA, Private sector, NGOs	2010-2014	Regulation deficiency	1. Determination of principles and procedures of inspection 2. Number of inspections	Number of inspection and assessment of the results
	9. To make summer schools and camps widespread and to provide the inspection of the food services in these places in terms of adequate and balanced diet and food safety criterias	MoH, MoNE, MARA, Local Administrations	GDYS, NGOs	2010-2014	Lack of specialists	1. Increase in the number of the summer schools and camps 2. Determination of inspection principles and procedures about the sufficiency of food services	1. Number of students benefiting from summer schools and camps 2. Number of inspections and assessment of the results
	10. To do periodical inspection for the compatibility of the foodstuffs, food safety and food services in terms of adequate and balanced diet principles in the workplaces selling foodstuffs and/or giving food services around the schools	MoH, MARA, MoA, Local Administrations	MoNE	2010-2014	Regulation deficiency	1. Changed course program 2. Determination of principles and procedures of inspection	1. Monitoring changed legislation 2. Assessment of inspection results and number



B. INTERVENTIONS FOR OBESITY PREVENTION

B.3. Studies for Workplaces

Aim: In order to decrease work power loss and to increase efficiency; organization of the food services for ensuring adequate and balanced diet of the workers, increasing the possibilities of physical activity and decreasing health risks originated from obesity.							
Targets 1. To inform and to make workers conscious of prevention from obesity until 2014. 2. To increase the food services and physical activity opportunities in the workplaces till 2014.							
Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
1. To increase the knowledge level of the workers on adequate and balanced diet and physical activity	1. To create in-service-training documents and to organize programs that these documents are used	All governmental institutions and organizations, Private sector	All governmental institutions and organizations, Universities, Private sector, NGOs	2010-2014	1. Not giving the required importance to the subject 2. Lack of coordination	1. Developed training materials 2. Created program 3. Number of applied program (training)	In-service-trainings reports and programs
2. To ensure doing of obesity prevention studies concerning the workers within the frame of workplace medical services	1. To organize training programs in order to improve the knowledge level of the workplace doctors working in governmental and private sector related with the prevention from obesity subject	MoLSS, MoH	All governmental institutions and organizations, Universities, Private sector, NGOs	2010-2014	Not giving the required importance to the subject	1. Developed training materials 2. Organised program 3. Number of applied program (training)	In-service-trainings reports and programs

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	2. To do research for the determination of obesity among workplace staffs within the frame of workplace medical services	MoLSS, MoH	Institutional having workplace doctors	2010-2014	Not giving priority to the subject by the workplace doctors	Number of workplace researched (screened)	Research and assessment reports
3. To complete the background studies in workplaces	1. To generalize the menus supporting the improvement of positive nutrition habits which are prepared by dieticians in the food services of the workplaces (cafeteria, canteen etc.)	All governmental institutions and organizations, Private sector	MoH, Universities, Private sector, NGO's	2012	Possible difficulties in application	Number of institutions where menus approved by the dieticians are applied	Studies showing the current situation and the progress
	2. Inspection of the general food services given in the workplaces in terms of food safety	MARA, Local administrations	MoH	2010-2014	1. Lack of specialist personnel in the inspection 2. Lack of infrastructure possibilities	Increase in the number of workplaces inspected	Inspection reports
	3. To bring obligation to build sport center/facilities having best fit capacity to the number of the workers in the workplaces having more than 500 workers and implementation of exercise programs in these facilities by specialists	All governmental institutions and organizations, local administrations, Private sector	Private sector, NGOs	2010-2014	1. Lack of resource 2. Not giving the required importance to the subject by the management of the workers 3. Disinterest of the workers 4. Problems originated from the legislation	Increase in the number of workplaces having sport centers/facilities	Studies showing the current situation and the progress



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	4. To prepare training set for the employees to do physical activity before and after working hours and during the lunch break	All governmental institutions and organizations, Private sector	Universities, Private sector, NGOs	2010-2014	1. Disinterest of the employees and the managers 2. Lack of infrastructure possibilities	1. The prepared training set 2. Increase in the number of institutions doing the exercise applications	Studies showing the current situation and the progress
	5. To make the sport events and competition widespread among workers	All governmental institutions and organizations, Private sector	Universities, Private sector, NGOs	2010-2014	Difficulties that can be faced in the organization of the competitions	Number of competitions organized	Studies showing the current situation and the progress
	6. To encourage employees to benefit from private sport facilities at reduced price	All governmental institutions and organizations, Private sector	Universities, Private sector, NGOs	2010-2014	Disinterest of the employees and managers	Number of people and institutions using the facilities	Studies showing the current situation and the progress

B. INTERVENTIONS FOR OBESITY PREVENTION

B.4. Providing Cooperation with Food Industry for Obesity Prevention

Aim: To cooperate with food industry for obesity prevention.								
Target To plan the activities which will be performed with the cooperation of food industry until 2012 and to provide the application of the planned targets until 2014.								
Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control	
1. To ensure cooperation with the food industry in the national policies	1. To do social responsibility projects and training programs related with the subject	Private sector	MoH, MARA, Universities, NGOs	2010-2014	1. Failure in the effective participation of the sector 2. Failure in achieving coordination	Number of implemented projects/ trainings	1. Studies showing the current situation and the progress 2. Annual activity reports	
	2. To increase the production of foods having the properties of providing opportunity for adequate and balanced diet and giving positive nutrition habits in the prevention from obesity (reduced fat, sugar and salt ratio etc.)	MARA	MoH, Universities, Private sector, NGOs	2010-2014	1. Anxiety in sector about consumption. 2. Problems originated from the consumer preferences	Increase in the production	Production and consumption data	
2. To inform the superior managers of food industry about obesity prevention	1. Organization of training meetings	MoH, Provincial Adequate and Balanced Nutrition and Active Life Board	MoIA, MARA, CoIT, Universities, NGOs	2011-2012	1. Not giving the required importance to the subject. 2. Lack of coordination between institutions	1. Number of implemented programs 2. Number of institutions and managers informed	1. Program reports and minutes 2. Questioner results about the measurement of the knowledge level	



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
3. To inform and to make consumers conscious of adequate and balanced diet by the food industry	1. Organization of training and campaigns for consumers by food industry about adequate and balanced nutrition and physical activity	Food industry, private sector.	MARA, MoIT, MoNE, Universities, Anadolu Agency, NGOs	2010-2014	Disinterest of the consumers	1. Number of events 2. Number of participants	Training/event reports
	2. Taking place of the information about adequate and balanced diet and physical activity subjects on the promotions done for public in the food service places especially in the fast-food restaurants and presentation of best fit foods to the adequate and balanced diet in the menu contents	MoH	MARA, Universities, Private sector, NGOs	2010-2014	1. Not effective participation from food services sector 2. Not enough cooperation with the food sector 3. Not enough demand	1. Number of document prepared for the target group, and number of the food services, restaurants, doing this application 2. Increase of the food service places 3. Restaurants presenting the proper menu	Studies showing the current situation and the progress
4. To develop advertisement and marketing activities in such a way that will provide the consumers to do the right choices by taking the international applications into account and to take the precautions to let them not to be misled	1. It is provided in the labels of the food products; information to the consumers by taking the international approaches into consideration, easily understandable and easily read nutrient table (energy, total fat, saturated fat, trans-fat, salt and sugar)	MARA	MoH, Universities, STK	2010-2014	1. Delays during the preparation of the legislation. 2. Failure in the cooperation with food sector. 3. Absence of the subject in the EU legislation	Number of food product which has nutrient table on its label	The results of "Consumers' perception of label" research

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	2. To do additional arrangements for the nutrition and health claims	MARA	MoH, Universities, NGOs	2010-2014	1. Delays during the preparation of the legislation. 2. Inadequate cooperation with food sector. 3. Absence of the subject in the EU legislation	The changed Legislation	The results of "Consumers' perception of label" research
	3. To do advertisement and campaign studies by the vegetable and fruit producers in order to increase vegetable and fruit consumption in the public	Private sector, NGOs	MoH, Universities	2010-2014	Not giving the required importance to the subject	Number of advertisement and campaign take part in the media	Repeated researches related with the subject
	4. To implement activities for the presentation of the foods oriented to the supply of adequate and balanced diet and development of positive nutrition habits in the general usage areas such as around the schools and work places, cinemas etc.	MoH, MoNE	MoIA, MARA, Universities, Private sector, NGOs	2010-2014	1. Food industry 2. Disinterest of consumers	Number of Implemented studies	Studies showing the current situation and the progress
	5. To do "Consumers' perception of label" research in order to determine the perception and consciousness level of the consumers	Private sector, NGOs	MoH, MARA, Universities	2010-2014	1. Lack of resource. 2. Not giving the required importance to the subject	Doing research	Monitoring and assessment of the research results



B. INTERVENTIONS FOR OBESITY PREVENTION

B.5. Supporting Adequate and Balanced Nutrition and Active Life in Media News and Advertisements

Aim: To use written and visual media effectively for informing the public in adequate and balanced diet, active life and obesity subjects and to improve the related activities.							
Targets 1. To update legal arrangements about food advertisements and introductory activities took place in the media until 2013. 2. To give priority to the prevention from obesity subject in the written and visual media and to encourage broadcasting of the informative scientific programs on adequate and balanced diet and physical activity till 2014.							
Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
1. To make the necessary arrangements by reassessing the legal arrangements related with the food advertisements and introductory activities, to put these arrangements into force and to control their applications	1. To revise properly the current legal arrangements related with the food advertisements and presentation activities which take place in the media for children in the direction of the needs developed and the international agreements that we are a party to them	MoIT, RTSC	MoH, MARA, Universities, Media organizations, NGOs	2012-2013	Problems originated from the legislation change	Working group meetings for the revision work	Arranged legislation
	2. Establishing self-control center and private media monitoring groups to control food advertisements	MoIT, RTSC	MoH, MARA, Universities, Media organizations, NGOs	2012-2013	Difficulties in authorization	The formed self control and private media monitoring groups	1. Group meeting minutes 2. Institution approvals

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
2. To provide right information to be given to the public by written and visual media on adequate and balanced diet, active life and obesity	1. To create websites related with the adequate and balanced diet and physical activity subjects and having application source property in the internet	All governmental institutions and organizations	MoH, Universities, Private sector, NGOs	2010-2014	Difficulties in inspecting and controlling of the internet news	1.Number of true news published in internet 2.Present and recently created sites about the subject	Research results measuring the knowledge level of different sections of the public
	2. To do programs in the national and local TV's and radio channels related with the adequate and balanced diet, prevention of obesity and increasing physical activity and having scientific validity and supported by the specialists of the subject	RTSC, Media foundations	MoH, Anadolu Agency, NGOs, Universities	2010-2014	Disinterest and lack of information of media	Increase in the number of the programs consistent with the action plan and policies	Monitoring and assessment of the programs
	3. To give information about the development of adequate and balanced diet habits in the woman programs especially in the meal preparation parts with the accompany of dietician, scientific and best fit with the principles of the adequate and balanced diet and having economical options	RTSC, Media foundations	MoH, Anadolu Agency, NGOs, Universities	2010-2014	Not giving the required importance to the subject by the media	Increase in the number of the programs consistent with the action plan and policies	Studies showing the current situation and the progress



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	4. To generalize Scientific, interactive exercise programs in the national and local TV's and radio channels where information about the positive effects of physical activity on health and its role in the prevention of obesity are given with the accompany of specialists	RTSC, Media foundations	MoH, Anadol Agency, NGOs, Universities	2010-2014	Not giving the required importance to the subject by the media	Increase of programs consistent with action plan and politics	Studies showing the current situation and the progress

B. INTERVENTIONS FOR OBESITY PREVENTION ACTION

B.6. Encouragement of Physical Activity and Improvement of Environmental Factors

Aim: To create, improve and make widespread the physical activity opportunities for making the public gain physical activity habit.								
Target To increase the public physical activity areas until 2014.								
Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control	
1. To form sport facilities and recreational areas within the budget possibilities in the leadership of local administrations for making the physical activity in the public widespread (healthy cities)	1. To increase the green areas at the city centers by the local administrations and to do event arrangements such as nature walks at the places away from the city center	MoA, MoF, Local administrations, IB	MoH, MoEF, MoCT, GDYS, Private sector, NGOs	2010-2014	1. Disinterest of the sides 2. Lack of resource	1. Number of green areas created 2. Number of events done	Documents and activity reports related with the subject	
	2. To create exercise areas, basketball and football fields etc. in the parks	MoA, MoF, Local administrations, IB	GDYS, Private sector, NGOs	2010-2014	1. Lack of resource 2. Infrastructure problem	Increase in the number of areas	Studies showing the current situation and the progress	
	3. To do the required arrangements in order to make individuals benefit from the sport facilities during the day time	GDYS, Local Administrations	MoH, MoA, MoLSS, MONE, Universities, NGOs, private sector	2010-2014	1. Problems originated from the legislation 2. Lack of resource	The changed legislation	Studies about the assessment of the applications	



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	4. To form inner city spaces designed by giving priority to the pedestrians, disabled, bicycle users etc. not according to the cars	MoHA, MoPWS Local Administrations	MoH, MoNE, Universities, NGOs	2010-2014	1. Lack of resource 2. Infrastructure problem	Increase in the number of arranged innercity areas	"Best practices" reports
	5. To create exercise areas in collectively used areas like shopping malls	MoHA, Local Administrations	NGOs, Private sector	2010-2014	Disinterest of sides	Increase in the number of created exercise areas	Studies showing the current situation and the progress
	6. To do activities encouraging walking instead of using car for short distances	MoH, Local Administrations	MoNE, Universities, NGOs	2010-2014	1. Disinterest of sides 2. Absence of pedestrian walk	Increase in pedestrian lane	Studies showing the current situation and the progress
	7. To do activities to encourage individuals for the use of steps instead of lifts if they have no health problems	MoH, Local Administrations	MoNE, Universities, NGOs	2010-2014	Disinterest of sides	Increase in the number of the activities	Studies showing the current situation and the progress
	1. To prepare exercise programs especially for the housewives and to broadcast in the TV Channels	MoH, Local Administrations	MoNE, Universities, NGOs	2010-2014	Disinterest of sides	Prepared activity programs	Studies showing the current situation and the progress
	2. To develop physical activity applications that can be easily applied inside the house						

C. PRECAUTIONS FOR DIAGNOSIS AND TREATMENT OF OBESITY IN HEALTH INSTITUTIONS

Aim: To evaluate individuals in terms of overweight and obesity who applied to the health institutions, to do consultancy and treatment to the patients who are diagnosed with obesity, to decrease the health expenses resulted from the treatment of obesity and obesity related chronic diseases and to decrease the obesity prevalence.							
Targets 1. To decrease the formation of obesity 5 % among overweight individuals having BMI more than BMI $\geq 25 \text{ kg/m}^2$ which creates risk for obesity until 2014. 2. To prevent uncontrolled usage of the weight loss drugs until 2012 and to make the bariatric surgery decisions to be taken by the committee (surgeon, gastroenterologist, endocrinologist, dietician, psychologist) formed under the body of the health organizations.							
Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
1. To contribute to the increase of knowledge of health personnel on diagnosis and treatment of obesity and also to contribute to the generalization of the applications directed to the public	1. To organize training programs for the personnel (team consisting of medical doctor, dietician, psychologist, physical therapist, nurse/health officer, food engineer etc.) in the first step institutions/public health centers who are concerned with the subject and assigned	MoH	Universities, Private sector, NGOs	2011	Lack of resource (personnel and budget)	1. Number of teams charged 2. The prepared training material and modules 3. Number of arranged training programs	1. Meeting Minutes 2. Training reports
	2. To develop programs for the decrease of obesity prevalence in the region with the use of trained personnel	MoH	Universities, NGOs	2012-2014	Failure in coordination	Number of developed programs	Studies showing the current situation and the progress
	3. Clinical guidance document will be published for the diagnosis and treatment of obesity	MoH	Universities, NGOs	2010	Failure in coordination	Prepared guidance document	Study group meeting minutes



Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
2. To ensure diagnosis and treatment of the individuals who applied to the health institutions in terms of overweight and obesity	1. To establish obesity units in the first step healthcare institutions/in the family doctor system and obesity schools/centers in the government, special and university hospitals	MoH	Universities, Private sector, NGOs	2011-2014	1. Lack of coordination 2. Lack of personnel/resource	Number of health institutions having obesity unit/ center/ school	Institution approvals and the related reports
	2. To direct the patients who apply to a hospital for any reason and diagnosed with overweight or obesity to obesity unit/center/school.	MoH	Universities, Private sector, NGOs	2010-2014	1. Not giving the required importance to the subject by the personnel 2. The difficulties in the referring system	1. Number of referred patients 2. Number of registered patients to obesity unit/center/school	Records related with the subject
	3. To form surveillance system to follow the patients who apply to an obesity unit/center/school	MoH	SSI, Universities, Private sector, NGOs	2010	1. Difficulties in forming and standardization of the system 2. Failure in coordination	The established surveillance system	Records of the followed patients
	4. To establish mechanism for monitoring the data in the health information systems of MoH, AHBS, TSIM and hospital information systems databases	MoH	SSI, Universities, Private sector, NGOs	2010	1. Difficulties in forming and standardization of the system 2. Failure in coordination	The established mechanism	Records of the followed patients

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
3. To make the necessary official arrangements for the application conditions of the bariatric surgery (gastric balloon, bypass etc.) and for the payment of the costs of these methods	1. The required legal arrangements for the sale conditions and inspection of the pharmacies and the seller of herbs related with the products such as weight loss patches, herbal products which are out of scope of the legislations of MoH and MARA	MoH, MARA	Universities, NGOs	2012	1. Lack of legislation 2. Failure in coordination	Prepared legislation	Monitoring of the legislation change



D. MONITORING AND ASSESSMENT

Aim: To make the “Obesity Prevention and Control Program of Turkey” applied effectively and widely							
Target To establish monitoring and assessment system until 2011 for the successful application of Obesity Prevention and Control Program of Turkey.							
Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
1. To form the monitoring and assessment system	1. To ensure the regular flow of the obtained data, related information and the activities implemented under the responsibility of the different institutions to the MoH General Directorate of Primary Health Care	MoH, SSI	TURKSTAT, All related governmental institutions and organizations	2010-2014	Difficulties in supplying data	The number of institutions and organizations that send reports regularly	Activity reports
	2. To present regularly the data reached to the MoH General Directorate of Primary Health Care to the “Obesity Prevention Consulting and Executive Committees” for the purpose of monitoring and assessment of the Action Plan	MoH	Obesity Prevention Consulting and executive Committees	2010-2014	Difficulties in supplying data	Organized Consulting and Executive Committee meetings	1. Committee reports 2. Decisions taken 3. Annual data number reached to the General Directorate of Primary Health Care
	3. To form a subcommittee within the scope of the consulting committee in order to monitor and assess the activities and studies done. To prepare progress report twice a year in order to be presented to the consulting committee	MoH	All related governmental institutions and organizations	2010-2014	Difficulties in supplying data	Formed monitoring and assessment subcommittee	Subcommittee reports

Strategies	Activities (Actions)	Responsible Institutions	Institutions to be Cooperated	Duration (Timing)	Possible Obstacles	Progress Indicators	The data to be provided for monitoring and control
	4. To update and improve the monitoring system in order to determine and solve the problems faced in the applications	MoH	All related governmental institutions and organizations	2010-2014	Difficulties in supplying data	Updated monitoring system	Monitoring and assessment reports
	5. To organize annual evaluation meetings by "Obesity Prevention Consulting and Executive Committees"	MoH	All related governmental institutions and organizations	2010-2014	Failure in effective and continuous representation of the related institutions and organizations	Organized annual evaluation meeting	1. Meeting minutes. 2. Assessment report
2. To prepare 3 years progress reports as it was mentioned in the WHO European Charter on Counteracting Obesity and to publish the first progress report in 2010	1. Preparation of the progress report in order to present it to WHO	MoH	All related governmental institutions and organizations, WHO	2010	Lack of cooperation between institutions and organizations	Prepared report	1. All data needed to run and follow the action plan 2. Meeting and study reports
3. To do the assessment of the "Obesity Prevention and Control Program of Turkey" in 2014 and to publish the assessment report	1. To publish assessment report	MoH	All related governmental institutions and organizations	2015	Lack of cooperation between institutions and organizations	Published report	1. All data needed to run and follow the action plan 2. Meeting and study reports

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ANNEX-1

WHO EUROPEAN CHARTER ON COUNTERACTING OBESITY



WHO European Ministerial Conference on Counteracting Obesity

Diet and physical activity for health

Istanbul, Turkey, 15-17 November 2006



EUR/06/5062700/8

16 November 2006

61995

ORIGINAL: ENGLISH

European Charter on counteracting obesity

To address the growing challenge posed by the epidemic of obesity to health, economies and development, we, the Ministers and delegates attending the WHO European Ministerial Conference on Counteracting Obesity (Istanbul, Turkey, 15-17 November 2006), in the presence of the European Commissioner for Health and Consumer Protection, hereby adopt, as a matter of policy, the following European Charter on Counteracting Obesity. The process of developing the present Charter has involved different government sectors, international organizations, experts, civil society and the private sector through dialogue and consultations.

We declare our commitment to strengthen action on counteracting obesity in line with this Charter and to place this issue high on the political agenda of our governments. We also call on all partners and stakeholders to take stronger action against obesity and we recognize the leadership on this issue being provided by the WHO Regional Office for Europe.

Sufficient evidence exists for immediate action; at the same time, the search for innovation, adjustments to local circumstances and new research on certain aspects can improve the effectiveness of policies.

Obesity is a global public health problem; we acknowledge the role that European action can play in setting an example and thereby mobilizing global efforts.

1. THE CHALLENGE

We acknowledge that:

1.1 The epidemic of obesity poses one of the most serious public health challenges in the WHO European Region. The prevalence of obesity has risen up to three-fold in the last two decades. Half of all adults and one in five children in the WHO European Region are overweight. Of these, one third are already obese, and numbers are increasing fast. Overweight and obesity contribute to a large proportion of noncommunicable diseases, shortening life expectancy and adversely affecting the quality of life. More than one million deaths in the Region annually are due to diseases related to excess body weight.

1.2 The trend is particularly alarming in children and adolescents, thus passing the epidemic into adulthood and creating a growing health burden for the next generation. The annual rate of increase in the prevalence of childhood obesity has been rising steadily and is currently up to ten times higher than it was in 1970.

1.3 Obesity also strongly affects economic and social development. Adult obesity and overweight are responsible for up to 6% of health care expenditure in the European Region; in addition, they impose indirect costs (due to the loss of lives, productivity and related income) that are at least two times higher. Overweight and obesity most affect people in lower socioeconomic groups, and this in turn contributes to a widening of health and other inequalities.



1.4 The epidemic has built up in recent decades as a result of the changing social, economic, cultural and physical environment. An energy imbalance in the population has been triggered by a dramatic reduction of physical activity and changing dietary patterns, including increased consumption of energy-dense nutrient-poor food and beverages (containing high proportions of saturated as well as total fat, salt, and sugars) in combination with insufficient consumption of fruit and vegetables. According to available data two thirds of the adult population in most countries in the WHO European Region are not physically active enough to secure and maintain health gains, and only in a few countries does the consumption of fruit and vegetables achieve the recommended levels. Genetic predisposition alone can not explain the epidemic of obesity without such changes in the social, economic, cultural and physical environment.

1.5 International action is essential to support national policies. Obesity is no longer a syndrome of wealthy societies; it is becoming just as dominant in developing countries and countries with economies in transition, particularly in the context of globalization. Taking intersectoral action remains a challenge, and no country has yet effectively managed to bring the epidemic under control. Establishing strong internationally coordinated action to counteract obesity is both a challenge and an opportunity, as many key measures are cross-border both in character and in their implications.

2. WHAT CAN BE DONE: the goals, principles and framework for action

2.1 The obesity epidemic is reversible. It is possible to reverse the trend and bring the epidemic under control. This can only be done by comprehensive action, since the root of the problem lies in the rapidly changing social, economic and environmental determinants of people's lifestyles. The vision is to shape societies where healthy lifestyles related to diet and physical activity are the norm, where health goals are aligned with those related to the economy, society and culture and where healthy choices are made more accessible and easy for individuals.

2.2 Curbing the epidemic and reversing the trend is the ultimate goal of action in the Region. Visible progress, especially relating to children and adolescents, should be achievable in most countries in the next 4-5 years and it should be possible to reverse the trend by 2015 at the latest.

2.3 The following principles need to guide action in the WHO European Region:

2.3.1 High-level political will and leadership and whole-government commitment are required to achieve mobilization and synergies across different sectors.

2.3.2 Action against obesity should be linked to overall strategies to address noncommunicable diseases and health promotion activities, as well as to the broader context of sustainable development. Improved diet and physical activity will have a substantial and often rapid impact on public health, beyond the benefits related to reducing overweight and obesity.

2.3.3 A balance must be struck between the responsibility of individuals and that of government and society. Holding individuals alone accountable for their obesity should not be acceptable.

2.3.4 It is essential to set the action taken within the cultural context of each country or region and to acknowledge the pleasure afforded by a healthy diet and physical activity.

2.3.5 It will be essential to build partnerships between all stakeholders such as government, civil society, the private sector, professional networks, the media and international organizations, across all levels (national, sub-national and local).

2.3.6 Policy measures should be coordinated in the different parts of the Region, in particular to avoid shifting the market pressure for energy-dense food and beverages to countries with less regulated environments. WHO can play a role in facilitating and supporting intergovernmental coordination.

2.3.7 Special attention needs to be focused on vulnerable groups such as children and adolescents, whose inexperience or credulity should not be exploited by commercial activities.

2.3.8 It is also a high priority to support lower socioeconomic population groups, who face more constraints and limitations on making healthy choices. Increasing the access to and affordability of healthy choices should therefore be a key objective.

2.3.9 Impact on public health objectives should have priority consideration when developing

economic policy, as well as policies in the areas of trade, agriculture, transport and urban planning.

2.4 A framework, linking the main actors, policy tools and settings, is needed to translate these principles into action.

2.4.1 All relevant government sectors and levels should play a role. Appropriate institutional mechanisms need to be in place to enable this collaboration.

- Health ministries should play a leading role by advocating, inspiring and guiding multisectoral action. They should set the example when facilitating healthy choices among employees in the health sector and health service users. The role of the health system is also important when dealing with people at high risk and those already overweight and obese, by designing and promoting prevention measures and by providing diagnosis, screening and treatment.

- All relevant ministries and agencies such as those for agriculture, food, finance, trade and economy, consumer affairs, development, transport, urban planning, education and research, social welfare, labour, sport, culture, and tourism have an essential role to play in developing health promoting policies and actions. This will also lead to benefits in their own domain.

- Local authorities have great potential and a major role to play in creating the environment and opportunities for physical activity, active living and a healthy diet, and they should be supported in doing this.

2.4.2 Civil society can support the policy response. The active involvement of civil society is important, to foster the public's awareness and demand for action and as a source of innovative approaches. Nongovernmental organizations can support strategies to counteract obesity. Employers', consumers', parents', youth, sport and other associations and trade unions can each play a specific role. Health professionals' organizations should ensure that their members are fully engaged in preventive action.

2.4.3 The private sector should play an important role and have responsibility in building a healthier environment, as well as for promoting healthy choices in their own workplace. This includes enterprises in the entire food chain from

primary producers to retailers. Action should be focused on the main domain of their activities, such as manufacturing, marketing and product information, while consumer education could also play a role, within the framework set by public health policy. There is also an important role for sectors such as sports clubs, leisure and construction companies, advertisers, public transportation, active tourism, etc. The private sector could be involved in win-win solutions by highlighting the economic opportunities of investing in healthier options.

2.4.4 The media have an important responsibility to provide information and education, raise awareness and support public health policies in this area.

2.4.5 Intersectoral collaboration is essential not only at national but also at international level. WHO should inspire, coordinate and lead the international action. International organizations such as the United Nations Food and Agriculture Organization (FAO), the United Nations Children's Fund (UNICEF), the World Bank, the Council of Europe, the International Labour Organization (ILO), and the Organisation for Economic Co-operation and Development (OECD) can create effective partnerships and thus stimulate multisectoral collaboration at national and international levels. The European Union (EU) has a principal role to play through EU legislation, public health policy and programmes, research and activities such as the European Platform for Action on Diet, Physical Activity and Health.

Existing international commitments such as the Global Strategy on Diet, Physical Activity and Health, the European Food and Nutrition Action Plan and the European Strategy for the Prevention and Control of Noncommunicable Diseases should be used for guidance and to create synergies. In addition, policy commitments such as the Children's Environment and Health Action Programme for Europe (CEHAPE), the Transport, Health and Environment Pan-European Programme (THE PEP), and the Codex Alimentarius within the limits of its remit, can be used to achieve coherence and consistency in international action and to maximize efficient use of resources.

2.4.6 Policy tools range from legislation to public/private partnerships, with particular importance attached to regulatory measures. Government and national parliaments should ensure consistency and sustainability through regulatory



action, including legislation. Other important tools include policy reformulation, fiscal and public investment policies, health impact assessment, campaigns to raise awareness and provide consumer information, capacity-building and partnership, research, planning and monitoring. Public/private partnerships with a public health rationale and shared specified public health objectives should be encouraged. Specific regulatory measures should include: the adoption of regulations to substantially reduce the extent and impact of commercial promotion of energy-dense foods and beverages, particularly to children, with the development of international approaches, such as a code on marketing to children in this area; and the adoption of regulations for safer roads to promote cycling and walking.

2.4.7 Action should be taken at both micro and macro levels, and in different settings.

Particular importance is attached to settings such as the home and families, communities, kindergartens, schools, workplaces, means of transport, the urban environment, housing, health and social services, and leisure facilities. Action should also cover the local, country and international levels. Through this, individuals should be supported and encouraged to take responsibility by actively using the possibilities offered.

2.4.8 Action should be aimed at ensuring an optimal energy balance by stimulating a healthier diet and physical activity. While information and education will remain important, the focus should shift to a portfolio of interventions designed to change the social, economic and physical environment to favour healthy lifestyles.

2.4.9 A package of essential preventive actions should be promoted as key measures; countries may further prioritize interventions from this package, depending on their national circumstances and the level of policy development. The package of essential action would include: reduction of marketing pressure, particularly to children; promotion of breastfeeding; ensuring access to and availability of healthier food, including fruit and vegetables; economic measures that facilitate healthier food choices; offers of affordable recreational / exercise facilities, including support for socially disadvantaged groups; reduction of fat, free (particularly added) sugars and salt in manufactured products; adequate nutrition labelling; promotion of cycling and walking by better urban design and transport policies; creation of

opportunities in local environments that motivate people to engage in leisure time physical activity; provision of healthier foods, opportunities for daily physical activity, and nutrition and physical education in schools; facilitating and motivating people to adopt better diets and physical activity in the workplace; developing/improving national food-based dietary guidelines and guidelines for physical activity; and individually adapted health behaviour change.

2.4.10 Attention should also continue to be focused on preventing obesity in people who are already overweight and thus at high risk, and on treating the disease of obesity. Specific actions in this area would include: introducing timely identification and management of overweight and obesity in primary care, provision of training for health professionals in the prevention of obesity; and issuing clinical guidance for screening and treatment. Any stigmatization or overvaluation of obese people should be avoided at any age.

2.4.11 When designing and implementing policies, successful interventions with demonstrated effectiveness need to be used. These include projects with proven impact on the consumption of healthier foods and levels of physical activity such as: schemes to offer people free fruit at school; affordable pricing for healthier foods; increasing access to healthier foods at workplaces and in areas of socioeconomic deprivation; establishing bicycle priority routes; encouraging children to walk to school; improving street lighting; promoting stair use; and reducing television viewing. There is also evidence that many interventions against obesity, such as school programmes and active transport, are highly cost-effective. The WHO Regional Office for Europe will provide decision-makers with examples of good practice and case studies.

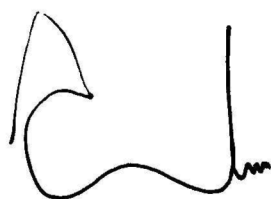
3. PROGRESS AND MONITORING

3.1 The present Charter aims to strengthen action against obesity throughout the WHO European Region. It will stimulate and influence national policies, regulatory action including legislation and action plans. A European action plan, covering nutrition and physical activity, will translate the principles and framework provided by the Charter into specific action packages and monitoring mechanisms.

3.2 A process needs to be put together to develop internationally comparable core indicators

for inclusion in national health surveillance systems. These data could then be used for advocacy, policy-making and monitoring purposes. This would also allow for regular evaluation and review of policies and actions and for the dissemination of findings to a wide audience.

3.3 Monitoring progress on a long-term basis is essential, as the outcomes in terms of reduced obesity and the related disease burden will take time to manifest themselves. Three-year progress reports should be prepared at the WHO European level, with the first due in 2010.



Professor Recep Akdağ
Minister of Health of Turkey



Dr. Marc Danzon
WHO Regional Director for Europe

Istanbul, 16 November 2006

**WHO - CHILD GROWTH STANDARDS
FOR CHILDREN
0-5 YEARS OF AGE (2006)**



BMI-for-age* BOYS

Birth to 2 years (percentiles)



Year: Month		Month	L	M	S	1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
0:	0	0	-0.3053	13.4069	0.09560	10.8	11.3	11.5	12.2	12.6	13.4	14.3	14.8	15.8	16.1	16.9
0:	1	1	0.2708	14.9441	0.09027	12.0	12.6	12.8	13.6	14.1	14.9	15.9	16.4	17.3	17.6	18.3
0:	2	2	0.1118	16.3195	0.08677	13.3	13.8	14.1	14.9	15.4	16.3	17.3	17.8	18.8	19.2	19.9
0:	3	3	0.0068	16.8987	0.08495	13.9	14.4	14.7	15.5	16.0	16.9	17.9	18.5	19.4	19.8	20.6
0:	4	4	-0.0727	17.1579	0.08378	14.1	14.7	15.0	15.7	16.2	17.2	18.2	18.7	19.7	20.1	20.9
0:	5	5	-0.1370	17.2919	0.08296	14.3	14.8	15.1	15.9	16.4	17.3	18.3	18.9	19.8	20.2	21.0
0:	6	6	-0.1913	17.3422	0.08234	14.4	14.9	15.2	15.9	16.4	17.3	18.3	18.9	19.9	20.3	21.1
0:	7	7	-0.2385	17.3288	0.08183	14.4	14.9	15.2	15.9	16.4	17.3	18.3	18.9	19.9	20.3	21.1
0:	8	8	-0.2802	17.2647	0.08140	14.4	14.9	15.1	15.9	16.3	17.3	18.2	18.8	19.8	20.2	21.0
0:	9	9	-0.3176	17.1662	0.08102	14.3	14.8	15.1	15.8	16.3	17.2	18.1	18.7	19.7	20.1	20.8
0:	10	10	-0.3516	17.0488	0.08068	14.2	14.7	15.0	15.7	16.2	17.0	18.0	18.6	19.5	19.9	20.7
0:	11	11	-0.3828	16.9239	0.08037	14.1	14.6	14.9	15.6	16.0	16.9	17.9	18.4	19.4	19.8	20.5
1:	0	12	-0.4115	16.7981	0.08009	14.0	14.5	14.8	15.5	15.9	16.8	17.7	18.3	19.2	19.6	20.4
1:	1	13	-0.4382	16.6743	0.07982	13.9	14.4	14.7	15.4	15.8	16.7	17.6	18.1	19.1	19.5	20.2
1:	2	14	-0.4630	16.5548	0.07958	13.9	14.3	14.6	15.3	15.7	16.6	17.5	18.0	18.9	19.3	20.1
1:	3	15	-0.4863	16.4409	0.07935	13.8	14.2	14.5	15.2	15.6	16.4	17.4	17.9	18.8	19.2	19.9
1:	4	16	-0.5082	16.3335	0.07913	13.7	14.2	14.4	15.1	15.5	16.3	17.2	17.8	18.7	19.1	19.8
1:	5	17	-0.5289	16.2329	0.07892	13.6	14.1	14.3	15.0	15.4	16.2	17.1	17.6	18.6	18.9	19.7
1:	6	18	-0.5484	16.1392	0.07873	13.6	14.0	14.2	14.9	15.3	16.1	17.0	17.5	18.5	18.8	19.6
1:	7	19	-0.5669	16.0528	0.07854	13.5	13.9	14.2	14.8	15.2	16.1	16.9	17.4	18.4	18.7	19.5
1:	8	20	-0.5846	15.9743	0.07836	13.4	13.9	14.1	14.8	15.2	16.0	16.9	17.4	18.3	18.6	19.4
1:	9	21	-0.6014	15.9039	0.07818	13.4	13.8	14.1	14.7	15.1	15.9	16.8	17.3	18.2	18.6	19.3
1:	10	22	-0.6174	15.8412	0.07802	13.3	13.8	14.0	14.6	15.0	15.8	16.7	17.2	18.1	18.5	19.2
1:	11	23	-0.6328	15.7852	0.07786	13.3	13.7	14.0	14.6	15.0	15.8	16.7	17.1	18.0	18.4	19.1
2:	0	24†	-0.6473	15.7356	0.07771	13.3	13.7	13.9	14.5	14.9	15.7	16.6	17.1	18.0	18.3	19.1

WHO Child Growth Standards

* If a child aged less than 2 years is measured standing up, change the height to length by adding 0.7 cm BEFORE calculating BMI, because the BMI-for-age for Birth to 2 years is based on length. For children 2 to 5 years measured lying down, convert length to height by subtracting 0.7 cm BEFORE calculating BMI for application of the BMI-for-age chart.

† 24 months corresponds to 730 days.



BMI-for-age BOYS

Birth to 13 weeks (percentiles)



Week	Percentiles (BMI in kg/m ²)										
	L	M	S	1st	3rd	5th	15th	25th	50th	75th	85th
0	-0.3053	13.4069	0.09560	10.8	11.3	11.5	12.2	12.6	13.4	14.3	14.8
1	0.5247	13.3421	0.09821	10.5	11.0	11.3	12.0	12.5	13.3	14.2	14.7
2	0.4177	13.6377	0.09454	10.8	11.3	11.6	12.3	12.8	13.6	14.5	15.0
3	0.3449	14.2241	0.09230	11.4	11.9	12.2	12.9	13.4	14.2	15.1	15.6
4	0.2881	14.7714	0.09072	11.9	12.4	12.7	13.4	13.9	14.8	15.7	16.2
5	0.2409	15.2355	0.08953	12.3	12.8	13.1	13.9	14.3	15.2	16.2	16.7
6	0.2003	15.6107	0.08859	12.6	13.2	13.5	14.2	14.7	15.6	16.6	17.1
7	0.1645	15.9169	0.08782	12.9	13.5	13.8	14.5	15.0	15.9	16.9	17.4
8	0.1324	16.1698	0.08717	13.2	13.7	14.0	14.8	15.2	16.2	17.1	17.7
9	0.1032	16.3787	0.08661	13.4	13.9	14.2	15.0	15.4	16.4	17.4	17.9
10	0.0766	16.5494	0.08612	13.5	14.1	14.4	15.1	15.6	16.5	17.5	18.1
11	0.0520	16.6882	0.08569	13.7	14.2	14.5	15.3	15.7	16.7	17.7	18.2
12	0.0291	16.8016	0.08531	13.8	14.3	14.6	15.4	15.9	16.8	17.8	18.4
13	0.0077	16.8950	0.08496	13.9	14.4	14.7	15.5	16.0	16.9	17.9	18.4

WHO Child Growth Standards

BMI-for-age* BOYS

2 to 5 years (percentiles)



Year: Month		Month	L	M	S	Percentiles (BMI in kg/m ²)										
						1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
2: 0		24 [†]	-0.6187	16.0189	0.07785	13.5	13.9	14.2	14.8	15.2	16.0	16.9	17.4	18.3	18.7	19.4
2: 1		25	-0.5840	15.9800	0.07792	13.5	13.9	14.1	14.8	15.2	16.0	16.9	17.4	18.3	18.6	19.4
2: 2		26	-0.5497	15.9414	0.07800	13.4	13.8	14.1	14.7	15.1	15.9	16.8	17.3	18.2	18.6	19.3
2: 3		27	-0.5166	15.9036	0.07808	13.4	13.8	14.0	14.7	15.1	15.9	16.8	17.3	18.2	18.5	19.2
2: 4		28	-0.4850	15.8667	0.07818	13.3	13.8	14.0	14.7	15.1	15.9	16.7	17.2	18.1	18.5	19.2
2: 5		29	-0.4552	15.8306	0.07829	13.3	13.7	14.0	14.6	15.0	15.8	16.7	17.2	18.1	18.4	19.1
2: 6		30	-0.4274	15.7953	0.07841	13.3	13.7	13.9	14.6	15.0	15.8	16.7	17.2	18.0	18.4	19.1
2: 7		31	-0.4016	15.7606	0.07854	13.2	13.7	13.9	14.5	15.0	15.8	16.6	17.1	18.0	18.4	19.1
2: 8		32	-0.3782	15.7267	0.07867	13.2	13.6	13.9	14.5	14.9	15.7	16.6	17.1	18.0	18.3	19.0
2: 9		33	-0.3572	15.6934	0.07882	13.1	13.6	13.8	14.5	14.9	15.7	16.6	17.0	17.9	18.3	19.0
2:10		34	-0.3388	15.6610	0.07897	13.1	13.5	13.8	14.4	14.9	15.7	16.5	17.0	17.9	18.2	18.9
2:11		35	-0.3231	15.6294	0.07914	13.1	13.5	13.8	14.4	14.8	15.6	16.5	17.0	17.9	18.2	18.9
3: 0		36	-0.3101	15.5988	0.07931	13.0	13.5	13.7	14.4	14.8	15.6	16.5	17.0	17.8	18.2	18.9
3: 1		37	-0.3000	15.5693	0.07950	13.0	13.5	13.7	14.4	14.8	15.6	16.4	16.9	17.8	18.1	18.8
3: 2		38	-0.2927	15.5410	0.07969	13.0	13.4	13.7	14.3	14.7	15.5	16.4	16.9	17.8	18.1	18.8
3: 3		39	-0.2884	15.5140	0.07990	12.9	13.4	13.6	14.3	14.7	15.5	16.4	16.9	17.7	18.1	18.8
3: 4		40	-0.2869	15.4885	0.08012	12.9	13.4	13.6	14.3	14.7	15.5	16.4	16.8	17.7	18.1	18.8
3: 5		41	-0.2881	15.4645	0.08036	12.9	13.3	13.6	14.2	14.7	15.5	16.3	16.8	17.7	18.0	18.7
3: 6		42	-0.2919	15.4420	0.08061	12.9	13.3	13.6	14.2	14.6	15.4	16.3	16.8	17.7	18.0	18.7
3: 7		43	-0.2981	15.4210	0.08087	12.8	13.3	13.5	14.2	14.6	15.4	16.3	16.8	17.7	18.0	18.7
3: 8		44	-0.3067	15.4013	0.08115	12.8	13.3	13.5	14.2	14.6	15.4	16.3	16.8	17.7	18.0	18.7
3: 9		45	-0.3174	15.3827	0.08144	12.8	13.2	13.5	14.2	14.6	15.4	16.3	16.8	17.6	18.0	18.7
3:10		46	-0.3303	15.3652	0.08174	12.8	13.2	13.5	14.1	14.5	15.4	16.2	16.7	17.6	18.0	18.7
3:11		47	-0.3452	15.3485	0.08205	12.8	13.2	13.5	14.1	14.5	15.3	16.2	16.7	17.6	18.0	18.7
4: 0		48	-0.3622	15.3326	0.08238	12.7	13.2	13.4	14.1	14.5	15.3	16.2	16.7	17.6	18.0	18.7

WHO Child Growth Standards



BMI-for-age BOYS

2 to 5 years (percentiles)



Year: Month		Month	L	M	S	Percentiles (BMI in kg/m ²)										
						1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
4: 1		49	-0.3811	15.3174	0.08272	12.7	13.2	13.4	14.1	14.5	15.3	16.2	16.7	17.6	18.0	18.7
4: 2		50	-0.4019	15.3029	0.08307	12.7	13.2	13.4	14.1	14.5	15.3	16.2	16.7	17.6	18.0	18.7
4: 3		51	-0.4245	15.2891	0.08343	12.7	13.1	13.4	14.0	14.5	15.3	16.2	16.7	17.6	18.0	18.7
4: 4		52	-0.4488	15.2759	0.08380	12.7	13.1	13.4	14.0	14.4	15.3	16.2	16.7	17.6	18.0	18.7
4: 5		53	-0.4747	15.2633	0.08418	12.7	13.1	13.3	14.0	14.4	15.3	16.2	16.7	17.6	18.0	18.7
4: 6		54	-0.5019	15.2514	0.08457	12.6	13.1	13.3	14.0	14.4	15.3	16.2	16.7	17.6	18.0	18.8
4: 7		55	-0.5303	15.2400	0.08496	12.6	13.1	13.3	14.0	14.4	15.2	16.2	16.7	17.6	18.0	18.8
4: 8		56	-0.5599	15.2291	0.08536	12.6	13.1	13.3	14.0	14.4	15.2	16.1	16.7	17.6	18.0	18.8
4: 9		57	-0.5905	15.2188	0.08577	12.6	13.0	13.3	14.0	14.4	15.2	16.1	16.7	17.6	18.0	18.8
4:10		58	-0.6223	15.2091	0.08617	12.6	13.0	13.3	13.9	14.4	15.2	16.1	16.7	17.6	18.0	18.8
4:11		59	-0.6552	15.2000	0.08659	12.6	13.0	13.3	13.9	14.4	15.2	16.1	16.7	17.7	18.1	18.9
5: 0		60	-0.6892	15.1916	0.08700	12.6	13.0	13.3	13.9	14.3	15.2	16.1	16.7	17.7	18.1	18.9
WHO Child Growth Standards																

* If a child aged less than 2 years is measured standing up, change the height to length by adding 0.7 cm BEFORE calculating BMI, because the BMI-for-age for Birth to 2 years is based on length. For children 2 to 5 years measured lying down, convert length to height by subtracting 0.7 cm BEFORE calculating BMI for application of the BMI-for-age chart.

† 24 months corresponds to 731 days.

BMI-for-age* GIRLS

Birth to 2 years (percentiles)



Year:	Month	Month	L	M	S	1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
0:	0	0	-0.0631	13.3363	0.09272	10.8	11.2	11.5	12.1	12.5	13.3	14.2	14.7	15.5	15.9	16.6
0:	1	1	0.3448	14.5679	0.09556	11.6	12.1	12.4	13.2	13.6	14.6	15.5	16.1	17.0	17.3	18.0
0:	2	2	0.1749	15.7679	0.09371	12.6	13.2	13.5	14.3	14.8	15.8	16.8	17.4	18.4	18.8	19.5
0:	3	3	0.0643	16.3574	0.09254	13.2	13.7	14.0	14.9	15.4	16.4	17.4	18.0	19.0	19.4	20.3
0:	4	4	-0.0191	16.6703	0.09166	13.5	14.0	14.3	15.2	15.7	16.7	17.7	18.3	19.4	19.8	20.6
0:	5	5	-0.0864	16.8386	0.09096	13.7	14.2	14.5	15.3	15.8	16.8	17.9	18.5	19.6	20.0	20.8
0:	6	6	-0.1429	16.9083	0.09036	13.7	14.3	14.6	15.4	15.9	16.9	18.0	18.6	19.6	20.1	20.9
0:	7	7	-0.1916	16.9020	0.08984	13.8	14.3	14.6	15.4	15.9	16.9	18.0	18.6	19.6	20.1	20.9
0:	8	8	-0.2344	16.8404	0.08939	13.7	14.3	14.6	15.4	15.9	16.8	17.9	18.5	19.6	20.0	20.8
0:	9	9	-0.2725	16.7406	0.08898	13.7	14.2	14.5	15.3	15.8	16.7	17.8	18.4	19.4	19.9	20.7
0:10	10	10	-0.3068	16.6184	0.08861	13.6	14.1	14.4	15.2	15.7	16.6	17.7	18.2	19.3	19.7	20.6
0:11	11	11	-0.3381	16.4875	0.08828	13.5	14.0	14.3	15.1	15.5	16.5	17.5	18.1	19.1	19.6	20.4
1: 0	12	12	-0.3667	16.3568	0.08797	13.4	13.9	14.2	15.0	15.4	16.4	17.4	17.9	19.0	19.4	20.2
1: 1	13	13	-0.3932	16.2311	0.08768	13.3	13.8	14.1	14.8	15.3	16.2	17.2	17.8	18.8	19.2	20.1
1: 2	14	14	-0.4177	16.1128	0.08741	13.3	13.7	14.0	14.7	15.2	16.1	17.1	17.7	18.7	19.1	19.9
1: 3	15	15	-0.4407	16.0028	0.08716	13.2	13.7	13.9	14.6	15.1	16.0	17.0	17.5	18.6	19.0	19.8
1: 4	16	16	-0.4623	15.9017	0.08693	13.1	13.6	13.8	14.6	15.0	15.9	16.9	17.4	18.4	18.8	19.7
1: 5	17	17	-0.4825	15.8096	0.08671	13.0	13.5	13.8	14.5	14.9	15.8	16.8	17.3	18.3	18.7	19.5
1: 6	18	18	-0.5017	15.7263	0.08650	13.0	13.4	13.7	14.4	14.8	15.7	16.7	17.2	18.2	18.6	19.4
1: 7	19	19	-0.5199	15.6517	0.08630	12.9	13.4	13.6	14.3	14.8	15.7	16.6	17.2	18.1	18.5	19.3
1: 8	20	20	-0.5372	15.5855	0.08612	12.9	13.3	13.6	14.3	14.7	15.6	16.5	17.1	18.1	18.5	19.3
1: 9	21	21	-0.5537	15.5278	0.08594	12.8	13.3	13.6	14.2	14.7	15.5	16.5	17.0	18.0	18.4	19.2
1:10	22	22	-0.5695	15.4787	0.08577	12.8	13.3	13.5	14.2	14.6	15.5	16.4	17.0	17.9	18.3	19.1
1:11	23	23	-0.5846	15.4380	0.08560	12.8	13.2	13.5	14.2	14.6	15.4	16.4	16.9	17.9	18.3	19.1
2: 0	24†	24†	-0.5989	15.4052	0.08545	12.8	13.2	13.5	14.1	14.6	15.4	16.3	16.9	17.8	18.2	19.0

WHO Child Growth Standards

* If a child aged less than 2 years is measured standing up, change the height to length by adding 0.7 cm BEFORE calculating BMI, because the BMI-for-age for Birth to 2 years is based on length. For children 2 to 5 years measured lying down, convert length to height by subtracting 0.7 cm BEFORE calculating BMI for application of the BMI-for-age chart.

† 24 months corresponds to 730 days.



BMI-for-age GIRLS

Birth to 13 weeks (percentiles)



Week	Percentiles (BMI in kg/m²)													
	L	M	S	1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
0	-0.0631	13.3363	0.09272	10.8	11.2	11.5	12.1	12.5	13.3	14.2	14.7	15.5	15.9	16.6
1	0.6319	13.2113	0.09887	10.3	10.8	11.1	11.9	12.3	13.2	14.1	14.6	15.4	15.8	16.4
2	0.5082	13.4501	0.09741	10.6	11.1	11.4	12.1	12.6	13.5	14.3	14.8	15.7	16.0	16.7
3	0.4263	13.9505	0.09647	11.0	11.5	11.8	12.6	13.1	14.0	14.9	15.4	16.3	16.6	17.3
4	0.3637	14.4208	0.09577	11.4	12.0	12.3	13.0	13.5	14.4	15.4	15.9	16.8	17.2	17.9
5	0.3124	14.8157	0.09520	11.8	12.3	12.6	13.4	13.9	14.8	15.8	16.3	17.3	17.6	18.4
6	0.2688	15.1380	0.09472	12.1	12.6	12.9	13.7	14.2	15.1	16.1	16.7	17.6	18.0	18.8
7	0.2306	15.4063	0.09431	12.3	12.9	13.2	14.0	14.4	15.4	16.4	17.0	17.9	18.3	19.1
8	0.1966	15.6311	0.09394	12.5	13.1	13.4	14.2	14.7	15.6	16.6	17.2	18.2	18.6	19.4
9	0.1658	15.8232	0.09361	12.7	13.2	13.5	14.3	14.9	15.8	16.8	17.4	18.4	18.8	19.6
10	0.1377	15.9874	0.09332	12.8	13.4	13.7	14.5	15.0	16.0	17.0	17.6	18.6	19.0	19.8
11	0.1118	16.1277	0.09304	13.0	13.5	13.8	14.6	15.1	16.1	17.2	17.8	18.8	19.2	20.0
12	0.0877	16.2485	0.09279	13.1	13.6	13.9	14.8	15.3	16.2	17.3	17.9	18.9	19.3	20.1
13	0.0652	16.3531	0.09255	13.2	13.7	14.0	14.9	15.4	16.4	17.4	18.0	19.0	19.4	20.3

WHO Child Growth Standards

BMI-for-age* GIRLS 2 to 5 years (percentiles)



Year: Month	Month	L	M	S	Percentiles (BMI in kg/m ²)									
					1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th 99th
2: 0	24 [†]	-0.5684	15.6881	0.08454	13.0	13.5	13.7	14.4	14.8	15.7	16.6	17.2	18.1	18.5 19.3
2: 1	25	-0.5684	15.6590	0.08452	13.0	13.4	13.7	14.4	14.8	15.7	16.6	17.1	18.1	18.5 19.3
2: 2	26	-0.5684	15.6308	0.08449	13.0	13.4	13.7	14.4	14.8	15.6	16.6	17.1	18.1	18.5 19.3
2: 3	27	-0.5684	15.6037	0.08446	13.0	13.4	13.7	14.3	14.8	15.6	16.5	17.1	18.0	18.4 19.2
2: 4	28	-0.5684	15.5777	0.08444	12.9	13.4	13.6	14.3	14.7	15.6	16.5	17.0	18.0	18.4 19.2
2: 5	29	-0.5684	15.5523	0.08443	12.9	13.4	13.6	14.3	14.7	15.6	16.5	17.0	18.0	18.4 19.2
2: 6	30	-0.5684	15.5276	0.08444	12.9	13.3	13.6	14.3	14.7	15.5	16.5	17.0	17.9	18.3 19.1
2: 7	31	-0.5684	15.5034	0.08448	12.9	13.3	13.6	14.2	14.7	15.5	16.4	17.0	17.9	18.3 19.1
2: 8	32	-0.5684	15.4798	0.08455	12.8	13.3	13.5	14.2	14.6	15.5	16.4	16.9	17.9	18.3 19.1
2: 9	33	-0.5684	15.4572	0.08467	12.8	13.3	13.5	14.2	14.6	15.5	16.4	16.9	17.9	18.3 19.0
2:10	34	-0.5684	15.4356	0.08484	12.8	13.2	13.5	14.2	14.6	15.4	16.4	16.9	17.9	18.2 19.0
2:11	35	-0.5684	15.4155	0.08506	12.8	13.2	13.5	14.1	14.6	15.4	16.3	16.9	17.8	18.2 19.0
3: 0	36	-0.5684	15.3968	0.08535	12.8	13.2	13.5	14.1	14.5	15.4	16.3	16.9	17.8	18.2 19.0
3: 1	37	-0.5684	15.3796	0.08569	12.7	13.2	13.4	14.1	14.5	15.4	16.3	16.8	17.8	18.2 19.0
3: 2	38	-0.5684	15.3638	0.08609	12.7	13.2	13.4	14.1	14.5	15.4	16.3	16.8	17.8	18.2 19.0
3: 3	39	-0.5684	15.3493	0.08654	12.7	13.1	13.4	14.1	14.5	15.3	16.3	16.8	17.8	18.2 19.0
3: 4	40	-0.5684	15.3358	0.08704	12.7	13.1	13.4	14.0	14.5	15.3	16.3	16.8	17.8	18.2 19.0
3: 5	41	-0.5684	15.3233	0.08757	12.6	13.1	13.3	14.0	14.5	15.3	16.3	16.8	17.8	18.2 19.0
3: 6	42	-0.5684	15.3116	0.08813	12.6	13.1	13.3	14.0	14.4	15.3	16.3	16.8	17.8	18.2 19.0
3: 7	43	-0.5684	15.3007	0.08872	12.6	13.0	13.3	14.0	14.4	15.3	16.3	16.8	17.8	18.2 19.1
3: 8	44	-0.5684	15.2905	0.08931	12.6	13.0	13.3	14.0	14.4	15.3	16.3	16.8	17.8	18.2 19.1
3: 9	45	-0.5684	15.2814	0.08991	12.5	13.0	13.3	14.0	14.4	15.3	16.3	16.8	17.8	18.3 19.1
3:10	46	-0.5684	15.2732	0.09051	12.5	13.0	13.2	13.9	14.4	15.3	16.3	16.8	17.8	18.3 19.1
3:11	47	-0.5684	15.2661	0.09110	12.5	13.0	13.2	13.9	14.4	15.3	16.3	16.8	17.9	18.3 19.1
4: 0	48	-0.5684	15.2602	0.09168	12.5	12.9	13.2	13.9	14.4	15.3	16.3	16.8	17.9	18.3 19.2

WHO Child Growth Standards



BMI-for-age* GIRLS

2 to 5 years (percentiles)



Year: Month	Month	L	M	S	Percentiles (BMI in kg/m ²)										
					1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
4: 1	49	-0.5684	15.2556	0.09227	12.5	12.9	13.2	13.9	14.4	15.3	16.3	16.8	17.9	18.3	19.2
4: 2	50	-0.5684	15.2523	0.09286	12.4	12.9	13.2	13.9	14.3	15.3	16.3	16.8	17.9	18.3	19.2
4: 3	51	-0.5684	15.2503	0.09345	12.4	12.9	13.2	13.9	14.3	15.3	16.3	16.8	17.9	18.4	19.2
4: 4	52	-0.5684	15.2496	0.09403	12.4	12.9	13.1	13.9	14.3	15.2	16.3	16.9	17.9	18.4	19.3
4: 5	53	-0.5684	15.2502	0.09460	12.4	12.9	13.1	13.9	14.3	15.3	16.3	16.9	17.9	18.4	19.3
4: 6	54	-0.5684	15.2519	0.09515	12.4	12.9	13.1	13.9	14.3	15.3	16.3	16.9	18.0	18.4	19.3
4: 7	55	-0.5684	15.2544	0.09568	12.4	12.9	13.1	13.9	14.3	15.3	16.3	16.9	18.0	18.4	19.4
4: 8	56	-0.5684	15.2575	0.09618	12.4	12.8	13.1	13.8	14.3	15.3	16.3	16.9	18.0	18.5	19.4
4: 9	57	-0.5684	15.2612	0.09665	12.4	12.8	13.1	13.8	14.3	15.3	16.3	16.9	18.0	18.5	19.4
4:10	58	-0.5684	15.2653	0.09709	12.3	12.8	13.1	13.8	14.3	15.3	16.3	16.9	18.0	18.5	19.4
4:11	59	-0.5684	15.2698	0.09750	12.3	12.8	13.1	13.8	14.3	15.3	16.3	16.9	18.1	18.5	19.5
5: 0	60	-0.5684	15.2747	0.09789	12.3	12.8	13.1	13.8	14.3	15.3	16.3	17.0	18.1	18.6	19.5
WHO Child Growth Standards															

* If a child aged less than 2 years is measured standing up, change the height to length by adding 0.7 cm BEFORE calculating BMI, because the BMI-for-age for Birth to 2 years is based on length. For children 2 to 5 years measured lying down, convert length to height by subtracting 0.7 cm BEFORE calculating BMI for application of the BMI-for-age chart.

† 24 months corresponds to 731 days.

ANNEX-3

**WHO
GROWTH REFERENCE FOR CHILDREN AND
ADOLESCENTS FOR 5-19 YEARS OF AGE
(2007)**



BMI-for-age BOYS

5 to 19 years (percentiles)



Year: Month		Month	L	M	S	Percentiles (BMI in kg/m ²)										
						1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
5: 1		61	-0.7387	15.2641	0.08390	12.7	13.1	13.4	14.0	14.4	15.3	16.2	16.7	17.7	18.1	18.8
5: 2		62	-0.7621	15.2616	0.08414	12.7	13.1	13.4	14.0	14.4	15.3	16.2	16.7	17.7	18.1	18.9
5: 3		63	-0.7856	15.2604	0.08439	12.7	13.1	13.4	14.0	14.4	15.3	16.2	16.7	17.7	18.1	18.9
5: 4		64	-0.8089	15.2605	0.08464	12.7	13.1	13.4	14.0	14.4	15.3	16.2	16.7	17.7	18.1	18.9
5: 5		65	-0.8322	15.2619	0.08490	12.7	13.1	13.4	14.0	14.4	15.3	16.2	16.7	17.7	18.1	18.9
5: 6		66	-0.8554	15.2645	0.08516	12.7	13.1	13.4	14.0	14.4	15.3	16.2	16.7	17.7	18.1	19.0
5: 7		67	-0.8785	15.2684	0.08543	12.7	13.1	13.4	14.0	14.4	15.3	16.2	16.7	17.7	18.2	19.0
5: 8		68	-0.9015	15.2737	0.08570	12.7	13.1	13.4	14.0	14.4	15.3	16.2	16.8	17.8	18.2	19.0
5: 9		69	-0.9243	15.2801	0.08597	12.7	13.1	13.4	14.0	14.4	15.3	16.2	16.8	17.8	18.2	19.1
5:10		70	-0.9471	15.2877	0.08625	12.7	13.1	13.4	14.0	14.4	15.3	16.2	16.8	17.8	18.2	19.1
5:11		71	-0.9697	15.2965	0.08653	12.7	13.2	13.4	14.0	14.5	15.3	16.2	16.8	17.8	18.3	19.1
6: 0		72	-0.9921	15.3062	0.08682	12.7	13.2	13.4	14.0	14.5	15.3	16.3	16.8	17.9	18.3	19.2
6: 1		73	-1.0144	15.3169	0.08711	12.7	13.2	13.4	14.0	14.5	15.3	16.3	16.8	17.9	18.3	19.2
6: 2		74	-1.0365	15.3285	0.08741	12.7	13.2	13.4	14.1	14.5	15.3	16.3	16.9	17.9	18.4	19.3
6: 3		75	-1.0584	15.3408	0.08771	12.8	13.2	13.4	14.1	14.5	15.3	16.3	16.9	17.9	18.4	19.3
6: 4		76	-1.0801	15.3540	0.08802	12.8	13.2	13.4	14.1	14.5	15.4	16.3	16.9	18.0	18.4	19.4
6: 5		77	-1.1017	15.3679	0.08833	12.8	13.2	13.4	14.1	14.5	15.4	16.3	16.9	18.0	18.5	19.4
6: 6		78	-1.1230	15.3825	0.08865	12.8	13.2	13.4	14.1	14.5	15.4	16.4	16.9	18.0	18.5	19.4
6: 7		79	-1.1441	15.3978	0.08898	12.8	13.2	13.4	14.1	14.5	15.4	16.4	17.0	18.1	18.5	19.5
6: 8		80	-1.1649	15.4137	0.08931	12.8	13.2	13.5	14.1	14.5	15.4	16.4	17.0	18.1	18.6	19.6
6: 9		81	-1.1856	15.4302	0.08964	12.8	13.2	13.5	14.1	14.6	15.4	16.4	17.0	18.1	18.6	19.6
6:10		82	-1.2060	15.4473	0.08998	12.8	13.2	13.5	14.1	14.6	15.4	16.5	17.1	18.2	18.7	19.7
6:11		83	-1.2261	15.4650	0.09033	12.8	13.3	13.5	14.2	14.6	15.5	16.5	17.1	18.2	18.7	19.7
7: 0		84	-1.2460	15.4832	0.09068	12.8	13.3	13.5	14.2	14.6	15.5	16.5	17.1	18.3	18.8	19.8
7: 1		85	-1.2656	15.5019	0.09103	12.9	13.3	13.5	14.2	14.6	15.5	16.5	17.1	18.3	18.8	19.8
7: 2		86	-1.2849	15.5210	0.09139	12.9	13.3	13.5	14.2	14.6	15.5	16.6	17.2	18.3	18.8	19.9
2007 WHO Reference																

2007 WHO Reference

Year: Month		Month	L	M	S	Percentiles (BMI in kg/m ²)										
						1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
7: 3		87	-1.3040	15.5407	0.09176	12.9	13.3	13.5	14.2	14.6	15.5	16.6	17.2	18.4	18.9	20.0
7: 4		88	-1.3228	15.5608	0.09213	12.9	13.3	13.6	14.2	14.7	15.6	16.6	17.2	18.4	18.9	20.0
7: 5		89	-1.3414	15.5814	0.09251	12.9	13.3	13.6	14.2	14.7	15.6	16.6	17.3	18.5	19.0	20.1
7: 6		90	-1.3596	15.6023	0.09289	12.9	13.3	13.6	14.3	14.7	15.6	16.7	17.3	18.5	19.0	20.2
7: 7		91	-1.3776	15.6237	0.09327	12.9	13.4	13.6	14.3	14.7	15.6	16.7	17.3	18.6	19.1	20.2
7: 8		92	-1.3953	15.6455	0.09366	12.9	13.4	13.6	14.3	14.7	15.6	16.7	17.4	18.6	19.2	20.3
7: 9		93	-1.4126	15.6677	0.09406	12.9	13.4	13.6	14.3	14.7	15.7	16.7	17.4	18.7	19.2	20.4
7:10		94	-1.4297	15.6903	0.09445	13.0	13.4	13.6	14.3	14.8	15.7	16.8	17.4	18.7	19.3	20.4
7:11		95	-1.4464	15.7133	0.09486	13.0	13.4	13.7	14.3	14.8	15.7	16.8	17.5	18.8	19.3	20.5
8: 0		96	-1.4629	15.7368	0.09526	13.0	13.4	13.7	14.4	14.8	15.7	16.8	17.5	18.8	19.4	20.6
8: 1		97	-1.4790	15.7606	0.09567	13.0	13.4	13.7	14.4	14.8	15.8	16.9	17.5	18.9	19.4	20.6
8: 2		98	-1.4947	15.7848	0.09609	13.0	13.5	13.7	14.4	14.8	15.8	16.9	17.6	18.9	19.5	20.7
8: 3		99	-1.5101	15.8094	0.09651	13.0	13.5	13.7	14.4	14.9	15.8	16.9	17.6	19.0	19.5	20.8
8: 4		100	-1.5252	15.8344	0.09693	13.0	13.5	13.7	14.4	14.9	15.8	17.0	17.7	19.0	19.6	20.9
8: 5		101	-1.5399	15.8597	0.09735	13.1	13.5	13.7	14.4	14.9	15.9	17.0	17.7	19.1	19.7	21.0
8: 6		102	-1.5542	15.8855	0.09778	13.1	13.5	13.8	14.5	14.9	15.9	17.0	17.7	19.1	19.7	21.0
8: 7		103	-1.5681	15.9116	0.09821	13.1	13.5	13.8	14.5	14.9	15.9	17.1	17.8	19.2	19.8	21.1
8: 8		104	-1.5817	15.9381	0.09864	13.1	13.5	13.8	14.5	15.0	15.9	17.1	17.8	19.2	19.9	21.2
8: 9		105	-1.5948	15.9651	0.09907	13.1	13.6	13.8	14.5	15.0	16.0	17.1	17.9	19.3	19.9	21.3
8:10		106	-1.6076	15.9925	0.09951	13.1	13.6	13.8	14.5	15.0	16.0	17.2	17.9	19.3	20.0	21.4
8:11		107	-1.6199	16.0205	0.09994	13.2	13.6	13.8	14.6	15.0	16.0	17.2	17.9	19.4	20.0	21.4
9: 0		108	-1.6318	16.0490	0.10038	13.2	13.6	13.9	14.6	15.1	16.0	17.2	18.0	19.5	20.1	21.5
9: 1		109	-1.6433	16.0781	0.10082	13.2	13.6	13.9	14.6	15.1	16.1	17.3	18.0	19.5	20.2	21.6
9: 2		110	-1.6544	16.1078	0.10126	13.2	13.7	13.9	14.6	15.1	16.1	17.3	18.1	19.6	20.2	21.7
9: 3		111	-1.6651	16.1381	0.10170	13.2	13.7	13.9	14.6	15.1	16.1	17.4	18.1	19.6	20.3	21.8
2007 WHO Reference																

BMI-for-age BOYS

5 to 19 years (percentiles)



Year: Month		Month	L	M	S	1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
9: 4		112	-1.6753	16.1692	0.10214	13.2	13.7	13.9	14.7	15.1	16.2	17.4	18.2	19.7	20.4	21.9
9: 5		113	-1.6851	16.2009	0.10259	13.3	13.7	14.0	14.7	15.2	16.2	17.4	18.2	19.8	20.5	22.0
9: 6		114	-1.6944	16.2333	0.10303	13.3	13.7	14.0	14.7	15.2	16.2	17.5	18.3	19.8	20.5	22.1
9: 7		115	-1.7032	16.2665	0.10347	13.3	13.8	14.0	14.7	15.2	16.3	17.5	18.3	19.9	20.6	22.2
9: 8		116	-1.7116	16.3004	0.10391	13.3	13.8	14.0	14.8	15.3	16.3	17.6	18.4	20.0	20.7	22.3
9: 9		117	-1.7196	16.3351	0.10435	13.3	13.8	14.1	14.8	15.3	16.3	17.6	18.4	20.0	20.8	22.4
9:10		118	-1.7271	16.3704	0.10478	13.4	13.8	14.1	14.8	15.3	16.4	17.7	18.5	20.1	20.8	22.5
9:11		119	-1.7341	16.4065	0.10522	13.4	13.8	14.1	14.8	15.3	16.4	17.7	18.5	20.2	20.9	22.6
10: 0		120	-1.7407	16.4433	0.10566	13.4	13.9	14.1	14.9	15.4	16.4	17.7	18.6	20.2	21.0	22.7
10: 1		121	-1.7468	16.4807	0.10609	13.4	13.9	14.2	14.9	15.4	16.5	17.8	18.6	20.3	21.1	22.8
10: 2		122	-1.7525	16.5189	0.10652	13.4	13.9	14.2	14.9	15.4	16.5	17.8	18.7	20.4	21.1	22.9
10: 3		123	-1.7578	16.5578	0.10695	13.5	13.9	14.2	15.0	15.5	16.6	17.9	18.7	20.4	21.2	23.0
10: 4		124	-1.7626	16.5974	0.10738	13.5	14.0	14.2	15.0	15.5	16.6	17.9	18.8	20.5	21.3	23.1
10: 5		125	-1.7670	16.6376	0.10780	13.5	14.0	14.3	15.0	15.5	16.6	18.0	18.8	20.6	21.4	23.2
10: 6		126	-1.7710	16.6786	0.10823	13.5	14.0	14.3	15.1	15.6	16.7	18.0	18.9	20.7	21.5	23.3
10: 7		127	-1.7745	16.7203	0.10865	13.6	14.0	14.3	15.1	15.6	16.7	18.1	19.0	20.7	21.6	23.4
10: 8		128	-1.7777	16.7628	0.10906	13.6	14.1	14.3	15.1	15.6	16.8	18.1	19.0	20.8	21.6	23.5
10: 9		129	-1.7804	16.8059	0.10948	13.6	14.1	14.4	15.2	15.7	16.8	18.2	19.1	20.9	21.7	23.6
10:10		130	-1.7828	16.8497	0.10989	13.6	14.1	14.4	15.2	15.7	16.9	18.2	19.1	21.0	21.8	23.7
10:11		131	-1.7847	16.8941	0.11030	13.7	14.2	14.4	15.2	15.8	16.9	18.3	19.2	21.0	21.9	23.8
11: 0		132	-1.7862	16.9392	0.11070	13.7	14.2	14.5	15.3	15.8	16.9	18.4	19.3	21.1	22.0	23.9
11: 1		133	-1.7873	16.9850	0.11110	13.7	14.2	14.5	15.3	15.8	17.0	18.4	19.3	21.2	22.1	24.0
11: 2		134	-1.7881	17.0314	0.11150	13.8	14.3	14.5	15.3	15.9	17.0	18.5	19.4	21.3	22.2	24.1
11: 3		135	-1.7884	17.0784	0.11189	13.8	14.3	14.6	15.4	15.9	17.1	18.5	19.4	21.4	22.2	24.2
2007 WHO Reference																

2007 WHO Reference

World Health Organization

BMI-for-age BOYS

5 to 19 years (percentiles)



Year: Month		Percentiles (BMI in kg/m ²)													
Month		L	M	S	1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
13: 4	160	-1.6888	18.4860	0.12005	14.7	15.3	15.6	16.5	17.1	18.5	20.2	21.3	23.5	24.6	27.0
13: 5	161	-1.6811	18.5502	0.12030	14.7	15.3	15.6	16.6	17.2	18.6	20.2	21.3	23.6	24.7	27.1
13: 6	162	-1.6732	18.6148	0.12055	14.8	15.4	15.7	16.6	17.2	18.6	20.3	21.4	23.7	24.8	27.2
13: 7	163	-1.6651	18.6795	0.12079	14.8	15.4	15.7	16.7	17.3	18.7	20.4	21.5	23.8	24.9	27.3
13: 8	164	-1.6568	18.7445	0.12102	14.9	15.5	15.8	16.7	17.4	18.7	20.5	21.6	23.9	24.9	27.4
13: 9	165	-1.6482	18.8095	0.12125	14.9	15.5	15.8	16.8	17.4	18.8	20.5	21.7	24.0	25.0	27.5
13:10	166	-1.6394	18.8746	0.12148	15.0	15.5	15.9	16.8	17.5	18.9	20.6	21.7	24.0	25.1	27.6
13:11	167	-1.6304	18.9398	0.12170	15.0	15.6	15.9	16.9	17.5	18.9	20.7	21.8	24.1	25.2	27.7
14: 0	168	-1.6211	19.0050	0.12191	15.1	15.6	16.0	16.9	17.6	19.0	20.8	21.9	24.2	25.3	27.8
14: 1	169	-1.6116	19.0701	0.12212	15.1	15.7	16.0	17.0	17.7	19.1	20.8	22.0	24.3	25.4	27.9
14: 2	170	-1.6020	19.1351	0.12233	15.1	15.7	16.1	17.0	17.7	19.1	20.9	22.0	24.4	25.5	28.0
14: 3	171	-1.5921	19.2000	0.12253	15.2	15.8	16.1	17.1	17.8	19.2	21.0	22.1	24.5	25.6	28.1
14: 4	172	-1.5821	19.2648	0.12272	15.2	15.8	16.2	17.2	17.8	19.3	21.1	22.2	24.6	25.7	28.2
14: 5	173	-1.5719	19.3294	0.12291	15.3	15.9	16.2	17.2	17.9	19.3	21.1	22.3	24.7	25.8	28.3
14: 6	174	-1.5615	19.3937	0.12310	15.3	15.9	16.3	17.3	17.9	19.4	21.2	22.4	24.7	25.8	28.3
14: 7	175	-1.5510	19.4578	0.12328	15.3	16.0	16.3	17.3	18.0	19.5	21.3	22.4	24.8	25.9	28.4
14: 8	176	-1.5403	19.5217	0.12346	15.4	16.0	16.4	17.4	18.1	19.5	21.3	22.5	24.9	26.0	28.5
14: 9	177	-1.5294	19.5853	0.12363	15.4	16.1	16.4	17.4	18.1	19.6	21.4	22.6	25.0	26.1	28.6
14:10	178	-1.5185	19.6486	0.12380	15.5	16.1	16.5	17.5	18.2	19.6	21.5	22.7	25.1	26.2	28.7
14:11	179	-1.5074	19.7117	0.12396	15.5	16.1	16.5	17.5	18.2	19.7	21.6	22.7	25.1	26.3	28.8
15: 0	180	-1.4961	19.7744	0.12412	15.6	16.2	16.5	17.6	18.3	19.8	21.6	22.8	25.2	26.4	28.9
15: 1	181	-1.4848	19.8367	0.12428	15.6	16.2	16.6	17.6	18.3	19.8	21.7	22.9	25.3	26.4	28.9
15: 2	182	-1.4733	19.8987	0.12443	15.6	16.3	16.6	17.7	18.4	19.9	21.8	23.0	25.4	26.5	29.0
15: 3	183	-1.4617	19.9603	0.12458	15.7	16.3	16.7	17.7	18.4	20.0	21.8	23.0	25.5	26.6	29.1

2007 WHO Reference



BMI-for-age BOYS

5 to 19 years (percentiles)

Year: Month	Month	L	M	S	1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
15: 4	184	-1.4500	20.0215	0.12473	15.7	16.4	16.7	17.8	18.5	20.0	21.9	23.1	25.5	26.7	29.2
15: 5	185	-1.4382	20.0823	0.12487	15.8	16.4	16.8	17.8	18.5	20.1	22.0	23.2	25.6	26.7	29.3
15: 6	186	-1.4263	20.1427	0.12501	15.8	16.4	16.8	17.9	18.6	20.1	22.0	23.2	25.7	26.8	29.3
15: 7	187	-1.4143	20.2026	0.12514	15.8	16.5	16.9	17.9	18.7	20.2	22.1	23.3	25.8	26.9	29.4
15: 8	188	-1.4022	20.2621	0.12528	15.9	16.5	16.9	18.0	18.7	20.3	22.2	23.4	25.8	27.0	29.5
15: 9	189	-1.3900	20.3211	0.12541	15.9	16.6	17.0	18.0	18.8	20.3	22.2	23.5	25.9	27.0	29.5
15:10	190	-1.3777	20.3796	0.12554	15.9	16.6	17.0	18.1	18.8	20.4	22.3	23.5	26.0	27.1	29.6
15:11	191	-1.3653	20.4376	0.12567	16.0	16.7	17.0	18.1	18.9	20.4	22.4	23.6	26.1	27.2	29.7
16: 0	192	-1.3529	20.4951	0.12579	16.0	16.7	17.1	18.2	18.9	20.5	22.4	23.7	26.1	27.3	29.7
16: 1	193	-1.3403	20.5521	0.12591	16.1	16.7	17.1	18.2	19.0	20.6	22.5	23.7	26.2	27.3	29.8
16: 2	194	-1.3277	20.6085	0.12603	16.1	16.8	17.2	18.3	19.0	20.6	22.6	23.8	26.3	27.4	29.9
16: 3	195	-1.3149	20.6644	0.12615	16.1	16.8	17.2	18.3	19.1	20.7	22.6	23.9	26.3	27.5	29.9
16: 4	196	-1.3021	20.7197	0.12627	16.2	16.8	17.2	18.4	19.1	20.7	22.7	23.9	26.4	27.5	30.0
16: 5	197	-1.2892	20.7745	0.12638	16.2	16.9	17.3	18.4	19.2	20.8	22.7	24.0	26.5	27.6	30.1
16: 6	198	-1.2762	20.8287	0.12650	16.2	16.9	17.3	18.5	19.2	20.8	22.8	24.0	26.5	27.7	30.1
16: 7	199	-1.2631	20.8824	0.12661	16.3	17.0	17.4	18.5	19.3	20.9	22.9	24.1	26.6	27.7	30.2
16: 8	200	-1.2499	20.9355	0.12672	16.3	17.0	17.4	18.5	19.3	20.9	22.9	24.2	26.7	27.8	30.2
16: 9	201	-1.2366	20.9881	0.12683	16.3	17.0	17.4	18.6	19.3	21.0	23.0	24.2	26.7	27.8	30.3
16:10	202	-1.2233	21.0400	0.12694	16.4	17.1	17.5	18.6	19.4	21.0	23.0	24.3	26.8	27.9	30.4
16:11	203	-1.2098	21.0914	0.12704	16.4	17.1	17.5	18.7	19.4	21.1	23.1	24.3	26.8	28.0	30.4
17: 0	204	-1.1962	21.1423	0.12715	16.4	17.1	17.5	18.7	19.5	21.1	23.1	24.4	26.9	28.0	30.5
17: 1	205	-1.1826	21.1925	0.12726	16.4	17.2	17.6	18.7	19.5	21.2	23.2	24.5	27.0	28.1	30.5
17: 2	206	-1.1688	21.2423	0.12736	16.5	17.2	17.6	18.8	19.6	21.2	23.3	24.5	27.0	28.1	30.6
17: 3	207	-1.1550	21.2914	0.12746	16.5	17.2	17.6	18.8	19.6	21.3	23.3	24.6	27.1	28.2	30.6

2007 WHO Reference

BMI-for-age BOYS

5 to 19 years (percentiles)



Year: Month		Month	L	M	S	1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
17: 4		208	-1.1410	21.3400	0.12756	16.5	17.3	17.7	18.9	19.7	21.3	23.4	24.6	27.1	28.2	30.7
17: 5		209	-1.1270	21.3880	0.12767	16.6	17.3	17.7	18.9	19.7	21.4	23.4	24.7	27.2	28.3	30.7
17: 6		210	-1.1129	21.4354	0.12777	16.6	17.3	17.7	18.9	19.7	21.4	23.5	24.7	27.2	28.4	30.8
17: 7		211	-1.0986	21.4822	0.12787	16.6	17.4	17.8	19.0	19.8	21.5	23.5	24.8	27.3	28.4	30.8
17: 8		212	-1.0843	21.5285	0.12797	16.6	17.4	17.8	19.0	19.8	21.5	23.6	24.8	27.3	28.5	30.8
17: 9		213	-1.0699	21.5742	0.12807	16.7	17.4	17.8	19.1	19.9	21.6	23.6	24.9	27.4	28.5	30.9
17:10		214	-1.0553	21.6193	0.12816	16.7	17.4	17.9	19.1	19.9	21.6	23.7	24.9	27.4	28.6	30.9
17:11		215	-1.0407	21.6638	0.12826	16.7	17.5	17.9	19.1	19.9	21.7	23.7	25.0	27.5	28.6	31.0
18: 0		216	-1.0260	21.7077	0.12836	16.7	17.5	17.9	19.2	20.0	21.7	23.8	25.0	27.5	28.6	31.0
18: 1		217	-1.0112	21.7510	0.12845	16.8	17.5	18.0	19.2	20.0	21.8	23.8	25.1	27.6	28.7	31.0
18: 2		218	-0.9962	21.7937	0.12855	16.8	17.5	18.0	19.2	20.1	21.8	23.9	25.1	27.6	28.7	31.1
18: 3		219	-0.9812	21.8358	0.12864	16.8	17.6	18.0	19.3	20.1	21.8	23.9	25.2	27.7	28.8	31.1
18: 4		220	-0.9661	21.8773	0.12874	16.8	17.6	18.0	19.3	20.1	21.9	24.0	25.2	27.7	28.8	31.2
18: 5		221	-0.9509	21.9182	0.12883	16.8	17.6	18.1	19.3	20.2	21.9	24.0	25.3	27.8	28.9	31.2
18: 6		222	-0.9356	21.9585	0.12893	16.9	17.6	18.1	19.4	20.2	22.0	24.0	25.3	27.8	28.9	31.2
18: 7		223	-0.9202	21.9982	0.12902	16.9	17.7	18.1	19.4	20.2	22.0	24.1	25.4	27.9	29.0	31.3
18: 8		224	-0.9048	22.0374	0.12911	16.9	17.7	18.1	19.4	20.3	22.0	24.1	25.4	27.9	29.0	31.3
18: 9		225	-0.8892	22.0760	0.12920	16.9	17.7	18.2	19.5	20.3	22.1	24.2	25.5	27.9	29.0	31.3
18:10		226	-0.8735	22.1140	0.12930	16.9	17.7	18.2	19.5	20.3	22.1	24.2	25.5	28.0	29.1	31.3
18:11		227	-0.8578	22.1514	0.12939	16.9	17.8	18.2	19.5	20.4	22.2	24.3	25.5	28.0	29.1	31.4
19: 0		228	-0.8419	22.1883	0.12948	17.0	17.8	18.2	19.5	20.4	22.2	24.3	25.6	28.1	29.1	31.4
2007 WHO Reference																

2007 WHO Reference



BMI-for-age GIRLS

5 to 19 years (percentiles)



Year:	Month	Month	L	M	S	Percentiles (BMI in kg/m ²)									
						1st	3rd	5th	15th	25th	50th	75th	85th	95th	99th
5: 1	61		-0.8886	15.2441	0.09692	12.4	12.9	13.1	13.8	14.3	15.2	16.3	16.9	18.1	19.6
5: 2	62		-0.9068	15.2434	0.09738	12.4	12.9	13.1	13.8	14.3	15.2	16.3	16.9	18.1	19.6
5: 3	63		-0.9248	15.2433	0.09783	12.4	12.9	13.1	13.8	14.3	15.2	16.3	17.0	18.1	19.7
5: 4	64		-0.9427	15.2438	0.09829	12.4	12.9	13.1	13.8	14.3	15.2	16.3	17.0	18.2	19.7
5: 5	65		-0.9605	15.2448	0.09875	12.4	12.9	13.1	13.8	14.3	15.2	16.3	17.0	18.2	19.8
5: 6	66		-0.9780	15.2464	0.09920	12.4	12.8	13.1	13.8	14.3	15.2	16.3	17.0	18.2	19.8
5: 7	67		-0.9954	15.2487	0.09966	12.4	12.8	13.1	13.8	14.3	15.2	16.3	17.0	18.2	19.8
5: 8	68		-1.0126	15.2516	0.10012	12.4	12.8	13.1	13.8	14.3	15.3	16.4	17.0	18.3	19.9
5: 9	69		-1.0296	15.2551	0.10058	12.4	12.8	13.1	13.8	14.3	15.3	16.4	17.0	18.3	19.9
5:10	70		-1.0464	15.2592	0.10104	12.4	12.8	13.1	13.8	14.3	15.3	16.4	17.0	18.3	20.0
5:11	71		-1.0630	15.2641	0.10149	12.4	12.8	13.1	13.8	14.3	15.3	16.4	17.1	18.3	20.0
6: 0	72		-1.0794	15.2697	0.10195	12.4	12.8	13.1	13.8	14.3	15.3	16.4	17.1	18.4	20.1
6: 1	73		-1.0956	15.2760	0.10241	12.4	12.8	13.1	13.8	14.3	15.3	16.4	17.1	18.4	20.1
6: 2	74		-1.1115	15.2831	0.10287	12.4	12.8	13.1	13.8	14.3	15.3	16.4	17.1	18.4	20.2
6: 3	75		-1.1272	15.2911	0.10333	12.4	12.8	13.1	13.8	14.3	15.3	16.4	17.1	18.5	20.2
6: 4	76		-1.1427	15.2998	0.10379	12.4	12.8	13.1	13.8	14.3	15.3	16.5	17.2	18.5	20.3
6: 5	77		-1.1579	15.3095	0.10425	12.4	12.8	13.1	13.8	14.3	15.3	16.5	17.2	18.5	20.4
6: 6	78		-1.1728	15.3200	0.10471	12.4	12.8	13.1	13.8	14.3	15.3	16.5	17.2	18.6	20.4
6: 7	79		-1.1875	15.3314	0.10517	12.4	12.8	13.1	13.8	14.3	15.3	16.5	17.2	18.6	20.5
6: 8	80		-1.2019	15.3439	0.10562	12.4	12.8	13.1	13.8	14.3	15.3	16.5	17.3	18.6	20.5
6: 9	81		-1.2160	15.3572	0.10608	12.4	12.8	13.1	13.9	14.3	15.4	16.6	17.3	18.7	20.6
6:10	82		-1.2298	15.3717	0.10654	12.4	12.9	13.1	13.9	14.3	15.4	16.6	17.3	18.7	20.7
6:11	83		-1.2433	15.3871	0.10700	12.4	12.9	13.1	13.9	14.4	15.4	16.6	17.3	18.8	20.7
7: 0	84		-1.2565	15.4036	0.10746	12.4	12.9	13.1	13.9	14.4	15.4	16.6	17.4	18.8	20.8
7: 1	85		-1.2693	15.4211	0.10792	12.4	12.9	13.1	13.9	14.4	15.4	16.6	17.4	18.9	20.9
7: 2	86		-1.2819	15.4397	0.10837	12.4	12.9	13.2	13.9	14.4	15.4	16.7	17.4	18.9	20.9

2007 WHO Reference

BMI-for-age GIRLS

5 to 19 years (percentiles)



Year:	Month	Month	L	M	S	1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
Percentiles (BMI in kg/m ²)																
7: 3		87	-1.2941	15.4593	0.10883	12.4	12.9	13.2	13.9	14.4	15.5	16.7	17.5	19.0	19.6	21.0
7: 4		88	-1.3060	15.4798	0.10929	12.4	12.9	13.2	13.9	14.4	15.5	16.7	17.5	19.0	19.7	21.1
7: 5		89	-1.3175	15.5014	0.10974	12.4	12.9	13.2	13.9	14.4	15.5	16.8	17.5	19.1	19.7	21.2
7: 6		90	-1.3287	15.5240	0.11020	12.5	12.9	13.2	14.0	14.5	15.5	16.8	17.6	19.1	19.8	21.2
7: 7		91	-1.3395	15.5476	0.11065	12.5	12.9	13.2	14.0	14.5	15.5	16.8	17.6	19.2	19.8	21.3
7: 8		92	-1.3499	15.5723	0.11110	12.5	13.0	13.2	14.0	14.5	15.6	16.9	17.6	19.2	19.9	21.4
7: 9		93	-1.3600	15.5979	0.11156	12.5	13.0	13.2	14.0	14.5	15.6	16.9	17.7	19.3	20.0	21.5
7:10		94	-1.3697	15.6246	0.11201	12.5	13.0	13.3	14.0	14.5	15.6	16.9	17.7	19.3	20.0	21.6
7:11		95	-1.3790	15.6523	0.11246	12.5	13.0	13.3	14.0	14.6	15.7	17.0	17.8	19.4	20.1	21.7
8: 0		96	-1.3880	15.6810	0.11291	12.5	13.0	13.3	14.1	14.6	15.7	17.0	17.8	19.4	20.2	21.7
8: 1		97	-1.3966	15.7107	0.11335	12.6	13.0	13.3	14.1	14.6	15.7	17.0	17.9	19.5	20.2	21.8
8: 2		98	-1.4047	15.7415	0.11380	12.6	13.1	13.3	14.1	14.6	15.7	17.1	17.9	19.6	20.3	21.9
8: 3		99	-1.4125	15.7732	0.11424	12.6	13.1	13.4	14.1	14.7	15.8	17.1	18.0	19.6	20.4	22.0
8: 4		100	-1.4199	15.8058	0.11469	12.6	13.1	13.4	14.2	14.7	15.8	17.2	18.0	19.7	20.4	22.1
8: 5		101	-1.4270	15.8394	0.11513	12.6	13.1	13.4	14.2	14.7	15.8	17.2	18.1	19.8	20.5	22.2
8: 6		102	-1.4336	15.8738	0.11557	12.6	13.1	13.4	14.2	14.7	15.9	17.2	18.1	19.8	20.6	22.3
8: 7		103	-1.4398	15.9090	0.11601	12.7	13.2	13.4	14.2	14.8	15.9	17.3	18.2	19.9	20.7	22.4
8: 8		104	-1.4456	15.9451	0.11644	12.7	13.2	13.5	14.3	14.8	15.9	17.3	18.2	20.0	20.7	22.5
8: 9		105	-1.4511	15.9818	0.11688	12.7	13.2	13.5	14.3	14.8	16.0	17.4	18.3	20.0	20.8	22.6
8:10		106	-1.4561	16.0194	0.11731	12.7	13.2	13.5	14.3	14.9	16.0	17.4	18.3	20.1	20.9	22.7
8:11		107	-1.4607	16.0575	0.11774	12.8	13.3	13.5	14.4	14.9	16.1	17.5	18.4	20.2	21.0	22.8
9: 0		108	-1.4650	16.0964	0.11816	12.8	13.3	13.6	14.4	14.9	16.1	17.5	18.4	20.2	21.1	22.9
9: 1		109	-1.4688	16.1358	0.11859	12.8	13.3	13.6	14.4	15.0	16.1	17.6	18.5	20.3	21.1	23.0
9: 2		110	-1.4723	16.1759	0.11901	12.8	13.3	13.6	14.4	15.0	16.2	17.6	18.5	20.4	21.2	23.1
9: 3		111	-1.4753	16.2166	0.11943	12.8	13.4	13.6	14.5	15.0	16.2	17.7	18.6	20.5	21.3	23.2

2007 WHO Reference



BMI-for-age GIRLS

5 to 19 years (percentiles)



Year:	Month	Month	L	M	S	Percentiles (BMI in kg/m ²)									
						1st	3rd	5th	15th	25th	50th	75th	85th	95th	99th
9: 4		112	-1.4780	16.2580	0.11985	12.9	13.4	13.7	14.5	15.1	16.3	17.7	18.7	20.5	23.3
9: 5		113	-1.4803	16.2999	0.12026	12.9	13.4	13.7	14.5	15.1	16.3	17.8	18.7	20.6	23.4
9: 6		114	-1.4823	16.3425	0.12067	12.9	13.4	13.7	14.6	15.1	16.3	17.8	18.8	20.7	23.5
9: 7		115	-1.4838	16.3858	0.12108	13.0	13.5	13.8	14.6	15.2	16.4	17.9	18.8	20.7	23.6
9: 8		116	-1.4850	16.4298	0.12148	13.0	13.5	13.8	14.6	15.2	16.4	17.9	18.9	20.8	23.7
9: 9		117	-1.4859	16.4746	0.12188	13.0	13.5	13.8	14.7	15.2	16.5	18.0	18.9	20.9	23.8
9:10		118	-1.4864	16.5200	0.12228	13.0	13.6	13.9	14.7	15.3	16.5	18.0	19.0	21.0	23.9
9:11		119	-1.4866	16.5663	0.12268	13.1	13.6	13.9	14.7	15.3	16.6	18.1	19.1	21.1	24.0
10: 0		120	-1.4864	16.6133	0.12307	13.1	13.6	13.9	14.8	15.4	16.6	18.2	19.1	21.1	24.1
10: 1		121	-1.4859	16.6612	0.12346	13.1	13.6	14.0	14.8	15.4	16.7	18.2	19.2	21.2	24.2
10: 2		122	-1.4851	16.7100	0.12384	13.1	13.7	14.0	14.9	15.4	16.7	18.3	19.3	21.3	24.3
10: 3		123	-1.4839	16.7595	0.12422	13.2	13.7	14.0	14.9	15.5	16.8	18.3	19.3	21.4	24.4
10: 4		124	-1.4825	16.8100	0.12460	13.2	13.7	14.1	14.9	15.5	16.8	18.4	19.4	21.5	24.6
10: 5		125	-1.4807	16.8614	0.12497	13.2	13.8	14.1	15.0	15.6	16.9	18.5	19.5	21.5	24.7
10: 6		126	-1.4787	16.9136	0.12534	13.3	13.8	14.1	15.0	15.6	16.9	18.5	19.5	21.6	24.8
10: 7		127	-1.4763	16.9667	0.12571	13.3	13.9	14.2	15.1	15.7	17.0	18.6	19.6	21.7	24.9
10: 8		128	-1.4737	17.0208	0.12607	13.3	13.9	14.2	15.1	15.7	17.0	18.6	19.7	21.8	25.0
10: 9		129	-1.4708	17.0757	0.12643	13.4	13.9	14.2	15.1	15.8	17.1	18.7	19.8	21.9	25.1
10:10		130	-1.4677	17.1316	0.12678	13.4	14.0	14.3	15.2	15.8	17.1	18.8	19.8	22.0	25.2
10:11		131	-1.4642	17.1883	0.12713	13.4	14.0	14.3	15.2	15.9	17.2	18.8	19.9	22.1	25.3
11: 0		132	-1.4606	17.2459	0.12748	13.5	14.0	14.4	15.3	15.9	17.2	18.9	20.0	22.2	25.4
11: 1		133	-1.4567	17.3044	0.12782	13.5	14.1	14.4	15.3	16.0	17.3	19.0	20.0	22.2	25.6
11: 2		134	-1.4526	17.3637	0.12816	13.6	14.1	14.4	15.4	16.0	17.4	19.0	20.1	22.3	25.7
11: 3		135	-1.4482	17.4238	0.12849	13.6	14.2	14.5	15.4	16.1	17.4	19.1	20.2	22.4	25.8

2007 WHO Reference

BMI-for-age GIRLS

5 to 19 years (percentiles)



Year:	Month	Month	L	M	S	Percentiles (BMI in kg/m ²)									
						1st	3rd	5th	15th	25th	50th	75th	85th	95th	99th
11: 4	136	136	-1.4436	17.4847	0.12882	13.6	14.2	14.5	15.5	16.1	17.5	19.2	20.3	22.5	25.9
11: 5	137	137	-1.4389	17.5464	0.12914	13.7	14.2	14.6	15.5	16.2	17.5	19.3	20.4	22.6	26.0
11: 6	138	138	-1.4339	17.6088	0.12946	13.7	14.3	14.6	15.6	16.2	17.6	19.3	20.4	22.7	26.1
11: 7	139	139	-1.4288	17.6719	0.12978	13.7	14.3	14.7	15.6	16.3	17.7	19.4	20.5	22.8	26.2
11: 8	140	140	-1.4235	17.7357	0.13009	13.8	14.4	14.7	15.7	16.3	17.7	19.5	20.6	22.9	26.4
11: 9	141	141	-1.4180	17.8001	0.13040	13.8	14.4	14.8	15.7	16.4	17.8	19.6	20.7	23.0	26.5
11: 10	142	142	-1.4123	17.8651	0.13070	13.9	14.5	14.8	15.8	16.4	17.9	19.6	20.8	23.1	26.6
11: 11	143	143	-1.4065	17.9306	0.13099	13.9	14.5	14.9	15.8	16.5	17.9	19.7	20.8	23.2	26.7
12: 0	144	144	-1.4006	17.9966	0.13129	14.0	14.6	14.9	15.9	16.6	18.0	19.8	20.9	23.3	26.8
12: 1	145	145	-1.3945	18.0630	0.13158	14.0	14.6	15.0	15.9	16.6	18.1	19.9	21.0	23.4	26.9
12: 2	146	146	-1.3883	18.1297	0.13186	14.0	14.7	15.0	16.0	16.7	18.1	19.9	21.1	23.5	27.0
12: 3	147	147	-1.3819	18.1967	0.13214	14.1	14.7	15.0	16.1	16.7	18.2	20.0	21.2	23.6	27.2
12: 4	148	148	-1.3755	18.2639	0.13241	14.1	14.7	15.1	16.1	16.8	18.3	20.1	21.3	23.7	27.3
12: 5	149	149	-1.3689	18.3312	0.13268	14.2	14.8	15.1	16.2	16.8	18.3	20.2	21.3	23.8	27.4
12: 6	150	150	-1.3621	18.3986	0.13295	14.2	14.8	15.2	16.2	16.9	18.4	20.2	21.4	23.9	27.5
12: 7	151	151	-1.3553	18.4660	0.13321	14.3	14.9	15.2	16.3	17.0	18.5	20.3	21.5	23.9	27.6
12: 8	152	152	-1.3483	18.5333	0.13347	14.3	14.9	15.3	16.3	17.0	18.5	20.4	21.6	24.0	27.7
12: 9	153	153	-1.3413	18.6006	0.13372	14.3	15.0	15.3	16.4	17.1	18.6	20.5	21.7	24.1	27.8
12: 10	154	154	-1.3341	18.6677	0.13397	14.4	15.0	15.4	16.4	17.1	18.7	20.6	21.8	24.2	27.9
12: 11	155	155	-1.3269	18.7346	0.13421	14.4	15.1	15.4	16.5	17.2	18.7	20.6	21.8	24.3	28.0
13: 0	156	156	-1.3195	18.8012	0.13445	14.5	15.1	15.5	16.5	17.3	18.8	20.7	21.9	24.4	28.1
13: 1	157	157	-1.3121	18.8675	0.13469	14.5	15.2	15.5	16.6	17.3	18.9	20.8	22.0	24.5	28.2
13: 2	158	158	-1.3046	18.9335	0.13492	14.6	15.2	15.6	16.7	17.4	18.9	20.9	22.1	24.6	28.4
13: 3	159	159	-1.2970	18.9991	0.13514	14.6	15.3	15.6	16.7	17.4	19.0	20.9	22.2	24.7	28.5

2007 WHO Reference



BMI-for-age GIRLS

5 to 19 years (percentiles)



Year: Month	Month	L	M	S	Percentiles (BMI in kg/m ²)										
					1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
13: 4	160	-1.2894	19.0642	0.13537	14.6	15.3	15.7	16.8	17.5	19.1	21.0	22.3	24.8	26.0	28.6
13: 5	161	-1.2816	19.1289	0.13559	14.7	15.3	15.7	16.8	17.5	19.1	21.1	22.3	24.9	26.1	28.7
13: 6	162	-1.2739	19.1931	0.13580	14.7	15.4	15.8	16.9	17.6	19.2	21.2	22.4	25.0	26.1	28.8
13: 7	163	-1.2661	19.2567	0.13601	14.8	15.4	15.8	16.9	17.7	19.3	21.2	22.5	25.1	26.2	28.9
13: 8	164	-1.2583	19.3197	0.13622	14.8	15.5	15.9	17.0	17.7	19.3	21.3	22.6	25.1	26.3	28.9
13: 9	165	-1.2504	19.3820	0.13642	14.8	15.5	15.9	17.0	17.8	19.4	21.4	22.6	25.2	26.4	29.0
13:10	166	-1.2425	19.4437	0.13662	14.9	15.6	15.9	17.1	17.8	19.4	21.4	22.7	25.3	26.5	29.1
13:11	167	-1.2345	19.5045	0.13681	14.9	15.6	16.0	17.1	17.9	19.5	21.5	22.8	25.4	26.6	29.2
14: 0	168	-1.2266	19.5647	0.13700	15.0	15.6	16.0	17.2	17.9	19.6	21.6	22.9	25.5	26.7	29.3
14: 1	169	-1.2186	19.6240	0.13719	15.0	15.7	16.1	17.2	18.0	19.6	21.6	22.9	25.6	26.8	29.4
14: 2	170	-1.2107	19.6824	0.13738	15.0	15.7	16.1	17.3	18.0	19.7	21.7	23.0	25.6	26.8	29.5
14: 3	171	-1.2027	19.7400	0.13756	15.1	15.8	16.2	17.3	18.1	19.7	21.8	23.1	25.7	26.9	29.6
14: 4	172	-1.1947	19.7966	0.13774	15.1	15.8	16.2	17.4	18.1	19.8	21.8	23.2	25.8	27.0	29.7
14: 5	173	-1.1867	19.8523	0.13791	15.1	15.8	16.2	17.4	18.2	19.9	21.9	23.2	25.9	27.1	29.7
14: 6	174	-1.1788	19.9070	0.13808	15.2	15.9	16.3	17.4	18.2	19.9	22.0	23.3	25.9	27.1	29.8
14: 7	175	-1.1708	19.9607	0.13825	15.2	15.9	16.3	17.5	18.3	20.0	22.0	23.4	26.0	27.2	29.9
14: 8	176	-1.1629	20.0133	0.13841	15.2	15.9	16.4	17.5	18.3	20.0	22.1	23.4	26.1	27.3	30.0
14: 9	177	-1.1549	20.0648	0.13858	15.3	16.0	16.4	17.6	18.4	20.1	22.2	23.5	26.1	27.4	30.0
14:10	178	-1.1470	20.1152	0.13873	15.3	16.0	16.4	17.6	18.4	20.1	22.2	23.5	26.2	27.4	30.1
14:11	179	-1.1390	20.1644	0.13889	15.3	16.0	16.5	17.6	18.4	20.2	22.3	23.6	26.3	27.5	30.2
15: 0	180	-1.1311	20.2125	0.13904	15.3	16.1	16.5	17.7	18.5	20.2	22.3	23.7	26.3	27.6	30.2
15: 1	181	-1.1232	20.2595	0.13920	15.4	16.1	16.5	17.7	18.5	20.3	22.4	23.7	26.4	27.6	30.3
15: 2	182	-1.1153	20.3053	0.13934	15.4	16.1	16.6	17.8	18.6	20.3	22.4	23.8	26.5	27.7	30.4
15: 3	183	-1.1074	20.3499	0.13949	15.4	16.2	16.6	17.8	18.6	20.4	22.5	23.8	26.5	27.7	30.4

2007 WHO Reference

BMI-for-age GIRLS

5 to 19 years (percentiles)



Year: Month	Month	L	M	S	Percentiles (BMI in kg/m ²)											
					1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th	
15: 4	184	-1.0996	20.3934	0.13963	15.4	16.2	16.6	17.8	18.6	20.4	22.5	23.9	26.6	27.8	30.5	
15: 5	185	-1.0917	20.4357	0.13977	15.5	16.2	16.6	17.9	18.7	20.4	22.6	23.9	26.6	27.9	30.5	
15: 6	186	-1.0838	20.4769	0.13991	15.5	16.2	16.7	17.9	18.7	20.5	22.6	24.0	26.7	27.9	30.6	
15: 7	187	-1.0760	20.5170	0.14005	15.5	16.3	16.7	17.9	18.8	20.5	22.7	24.0	26.7	28.0	30.6	
15: 8	188	-1.0681	20.5560	0.14018	15.5	16.3	16.7	18.0	18.8	20.6	22.7	24.1	26.8	28.0	30.7	
15: 9	189	-1.0603	20.5938	0.14031	15.6	16.3	16.8	18.0	18.8	20.6	22.8	24.1	26.8	28.1	30.7	
15:10	190	-1.0525	20.6306	0.14044	15.6	16.3	16.8	18.0	18.8	20.6	22.8	24.2	26.9	28.1	30.8	
15:11	191	-1.0447	20.6663	0.14057	15.6	16.4	16.8	18.0	18.9	20.7	22.8	24.2	26.9	28.2	30.8	
16: 0	192	-1.0368	20.7008	0.14070	15.6	16.4	16.8	18.1	18.9	20.7	22.9	24.2	27.0	28.2	30.9	
16: 1	193	-1.0290	20.7344	0.14082	15.6	16.4	16.8	18.1	18.9	20.7	22.9	24.3	27.0	28.2	30.9	
16: 2	194	-1.0212	20.7668	0.14094	15.7	16.4	16.9	18.1	19.0	20.8	23.0	24.3	27.1	28.3	31.0	
16: 3	195	-1.0134	20.7982	0.14106	15.7	16.4	16.9	18.1	19.0	20.8	23.0	24.4	27.1	28.3	31.0	
16: 4	196	-1.0055	20.8286	0.14118	15.7	16.5	16.9	18.2	19.0	20.8	23.0	24.4	27.1	28.4	31.0	
16: 5	197	-0.9977	20.8580	0.14130	15.7	16.5	16.9	18.2	19.0	20.9	23.1	24.4	27.2	28.4	31.1	
16: 6	198	-0.9898	20.8863	0.14142	15.7	16.5	16.9	18.2	19.1	20.9	23.1	24.5	27.2	28.4	31.1	
16: 7	199	-0.9819	20.9137	0.14153	15.7	16.5	17.0	18.2	19.1	20.9	23.1	24.5	27.2	28.5	31.1	
16: 8	200	-0.9740	20.9401	0.14164	15.7	16.5	17.0	18.3	19.1	20.9	23.1	24.5	27.3	28.5	31.2	
16: 9	201	-0.9661	20.9656	0.14176	15.7	16.5	17.0	18.3	19.1	21.0	23.2	24.6	27.3	28.5	31.2	
16:10	202	-0.9582	20.9901	0.14187	15.8	16.6	17.0	18.3	19.2	21.0	23.2	24.6	27.3	28.6	31.2	
16:11	203	-0.9503	21.0138	0.14198	15.8	16.6	17.0	18.3	19.2	21.0	23.2	24.6	27.4	28.6	31.2	
17: 0	204	-0.9423	21.0367	0.14208	15.8	16.6	17.0	18.3	19.2	21.0	23.3	24.7	27.4	28.6	31.3	
17: 1	205	-0.9344	21.0587	0.14219	15.8	16.6	17.0	18.3	19.2	21.1	23.3	24.7	27.4	28.6	31.3	
17: 2	206	-0.9264	21.0801	0.14230	15.8	16.6	17.1	18.4	19.2	21.1	23.3	24.7	27.4	28.7	31.3	
17: 3	207	-0.9184	21.1007	0.14240	15.8	16.6	17.1	18.4	19.2	21.1	23.3	24.7	27.5	28.7	31.3	
2007 WHO Reference																

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Year: Month	Month	L	M	S	Percentiles (BMI in kg/m ²)										
					1st	3rd	5th	15th	25th	50th	75th	85th	95th	97th	99th
17: 4	208	-0.9104	21.1206	0.14250	15.8	16.6	17.1	18.4	19.3	21.1	23.4	24.8	27.5	28.7	31.3
17: 5	209	-0.9024	21.1399	0.14261	15.8	16.6	17.1	18.4	19.3	21.1	23.4	24.8	27.5	28.7	31.4
17: 6	210	-0.8944	21.1586	0.14271	15.8	16.6	17.1	18.4	19.3	21.2	23.4	24.8	27.5	28.8	31.4
17: 7	211	-0.8863	21.1768	0.14281	15.8	16.6	17.1	18.4	19.3	21.2	23.4	24.8	27.6	28.8	31.4
17: 8	212	-0.8783	21.1944	0.14291	15.8	16.7	17.1	18.4	19.3	21.2	23.4	24.8	27.6	28.8	31.4
17: 9	213	-0.8703	21.2116	0.14301	15.8	16.7	17.1	18.5	19.3	21.2	23.5	24.9	27.6	28.8	31.4
17:10	214	-0.8623	21.2282	0.14311	15.8	16.7	17.1	18.5	19.3	21.2	23.5	24.9	27.6	28.8	31.4
17:11	215	-0.8542	21.2444	0.14320	15.8	16.7	17.1	18.5	19.4	21.2	23.5	24.9	27.6	28.9	31.4
18: 0	216	-0.8462	21.2603	0.14330	15.9	16.7	17.1	18.5	19.4	21.3	23.5	24.9	27.7	28.9	31.5
18: 1	217	-0.8382	21.2757	0.14340	15.9	16.7	17.2	18.5	19.4	21.3	23.5	24.9	27.7	28.9	31.5
18: 2	218	-0.8301	21.2908	0.14349	15.9	16.7	17.2	18.5	19.4	21.3	23.6	25.0	27.7	28.9	31.5
18: 3	219	-0.8221	21.3055	0.14359	15.9	16.7	17.2	18.5	19.4	21.3	23.6	25.0	27.7	28.9	31.5
18: 4	220	-0.8140	21.3200	0.14368	15.9	16.7	17.2	18.5	19.4	21.3	23.6	25.0	27.7	28.9	31.5
18: 5	221	-0.8060	21.3341	0.14377	15.9	16.7	17.2	18.5	19.4	21.3	23.6	25.0	27.7	28.9	31.5
18: 6	222	-0.7980	21.3480	0.14386	15.9	16.7	17.2	18.5	19.4	21.3	23.6	25.0	27.7	29.0	31.5
18: 7	223	-0.7899	21.3617	0.14396	15.9	16.7	17.2	18.6	19.5	21.4	23.6	25.0	27.8	29.0	31.5
18: 8	224	-0.7819	21.3752	0.14405	15.9	16.7	17.2	18.6	19.5	21.4	23.6	25.1	27.8	29.0	31.5
18: 9	225	-0.7738	21.3884	0.14414	15.9	16.7	17.2	18.6	19.5	21.4	23.7	25.1	27.8	29.0	31.5
18:10	226	-0.7658	21.4014	0.14423	15.9	16.7	17.2	18.6	19.5	21.4	23.7	25.1	27.8	29.0	31.5
18:11	227	-0.7577	21.4143	0.14432	15.9	16.7	17.2	18.6	19.5	21.4	23.7	25.1	27.8	29.0	31.5
19: 0	228	-0.7496	21.4269	0.14441	15.9	16.7	17.2	18.6	19.5	21.4	23.7	25.1	27.8	29.0	31.6
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