

# **GUIDELINES FOR CARBOHYDRATE CONSUMPTION IN TURKEY: ITS EFFECT ON FOOD-BASED DIETARY GUIDELINES**



**Healthy Pasta Meal  
Scientific Consensus Conference  
Rio de Janeiro, Brazil  
October 25-26, 2010**

**Prof. Gülden Pekcan, PhD  
Hacettepe University  
Faculty of Health Sciences  
Department of Nutrition and Dietetics  
[gpekcan@hacettepe.edu.tr](mailto:gpekcan@hacettepe.edu.tr)**

# Healthy Diet and Physical Activity

## Healthy diets

*(eating a wide variety of foods in adequate and balanced amounts),*

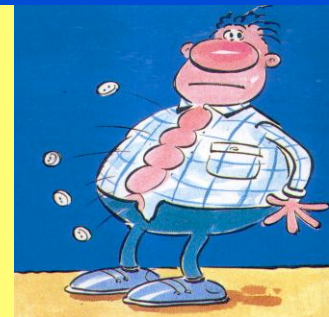
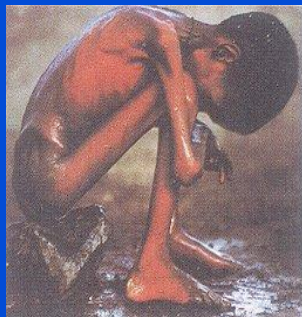
regular and adequate physical activity

are major factors in the promotion and maintenance of good health

throughout the entire life course.



# Inadequate and unbalanced nutrition



Countries are now facing  
**"DOUBLE BURDEN OF DISEASES"**  
UNDER-NUTRITION AND OBESITY

- existing side-by-side
- within the same country
- within the same community
- and even within the same household.

# OBESITY and NCD

**OBESITY**



```
graph TD; A[OBESITY] --> B["Cardiovascular diseases  
Stroke  
Type II diabetes  
Cancers  
etc."];
```

Cardiovascular diseases

Stroke

Type II diabetes

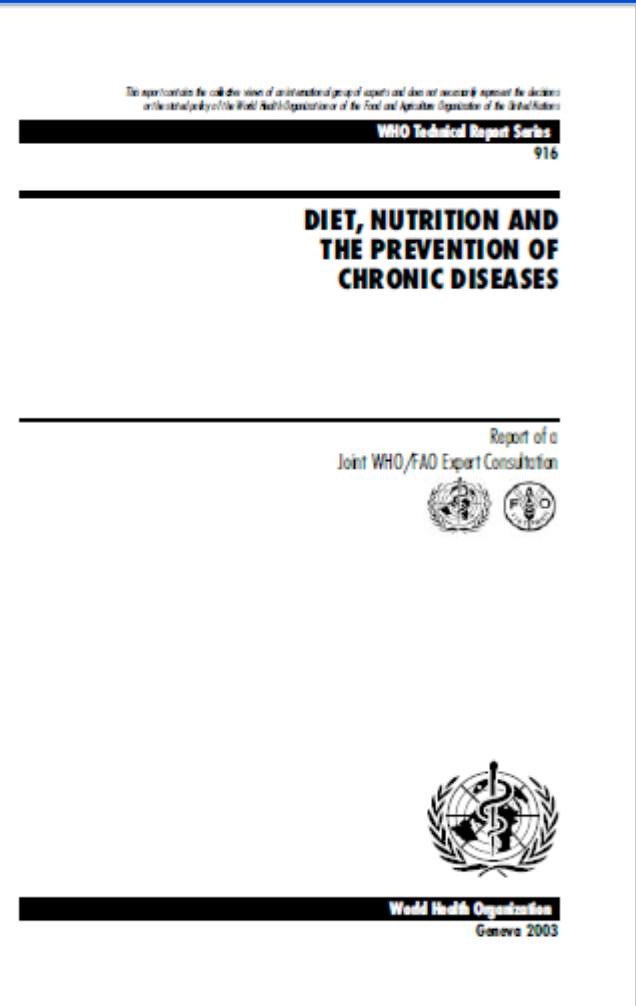
Cancers

etc.

# Diet, Nutrition and the Prevention of Chronic Diseases, WHO Tech Rep. No 916, 2003

## Population nutrient intake goals

| Nutrients     | Goals/ day        |
|---------------|-------------------|
| Carbohydrate  | 55-75% E          |
| Total fat     | 15-30% E          |
| Protein       | 10-15% E          |
| Saturated fat | < 10% E           |
| Trans fat     | < 1% E            |
| Sodium (salt) | < 2000 mg (< 5 g) |
| Added sugar   | < 10% E           |
| Dietary fibre | > 25 g            |
| Cholesterol   | < 300 mg          |





# FAO/WHO Scientific Update on carbohydrates in human nutrition: conclusions

J Mann, JH Cummings, HN Englyst, T Key, S Liu, G Riccardi, C Summerbell, R Uauy, RM van Dam, B Venn, HH Vorster and M Wiseman

*European Journal of Clinical Nutrition* (2007) 61 (Suppl 1), S132–S137; doi:10.1038/sj.ejcn.1602943

---

Keywords: carbohydrates; human nutrition; chronic diseases; FAO; WHO; scientific update

# WHO GLOBAL STRATEGY ON DIET and PHYSICAL ACTIVITY- 2004

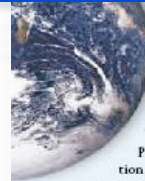


WORLD HEALTH ORGANIZATION

## GLOBAL STRATEGY ON DIET, PHYSICAL ACTIVITY AND HEALTH

In May 2004, the 57th World Health Assembly (WHA) endorsed the World Health Organization (WHO) Global Strategy on Diet, Physical Activity and Health. The Strategy was developed through a wide-ranging series of consultations with all concerned stakeholders in response to a request from Member States at World Health Assembly 2002 (Resolution WHA55.23).

The Strategy, together with the Resolution by which it was endorsed (WHA57.17), are contained in this document.



## GLOBAL STRATEGY ON DIET,

efforts of many stakeholders, public and private, over several decades. A combination of sound and effective actions is needed at global, regional, national and local levels, with close monitoring and evaluation of their impact. The following paragraphs describe the responsibilities of those involved and provide recommendations deriving from the consultation process.

### MEMBER STATES

35. The Global Strategy should foster the formulation and promotion of national policies, strategies and action plans to improve diet and encourage physical activity. National circumstances will determine priorities in the development of such instruments. Because of the great variations in and between different countries, regional bodies should collaborate in formulating regional strategies, which can provide considerable support to countries in implementing their national plans. For maximum effectiveness, countries should adopt the most comprehensive action plans possible.
36. The role of government is crucial in achieving lasting change in public health. Governments have a primary steering and stewardship role in initiating and developing the Strategy, ensuring that it is implemented and monitoring its impact in the long term.
37. Governments are encouraged to build on existing structures and processes that already address aspects of diet, nutrition and physical activity. In many countries, existing national strategies and as

clude technical experts and representatives of government agencies, and have an independent chair to ensure that scientific evidence is interpreted without any conflict of interest.

38. Health ministries have an essential responsibility for coordinating and facilitating the contributions of other ministries and government agencies. Bodies whose contributions should be coordinated include ministries and government institutions responsible for policies on food, agriculture, youth, recreation, sports, education, commerce and industry, finance, transportation, media and communication, social affairs and environmental and urban planning.
39. National strategies, policies and action plans need broad support. Support should be provided by effective legislation, appropriate infrastructure, implementation programmes, adequate funding, monitoring and evaluation, and continuing research.
  - ① National strategies on diet and physical activity. National strategies describe the measures to promote healthy diets and physical activity that are essential to prevent disease and promote health, including those that tackle all aspects of unbalanced diets, including undernutrition and overnutrition. National strategies should include specific goals, objectives, and actions, similar to those outlined in the Strategy. Of particular importance are the elements needed to implement the plan of action, including identification of necessary resources and national focal points (for national functions).

**Goal:** To promote and protect health by guiding the development of an enabling environment for sustainable actions at all levels.

[www.who.int/dietphysicalactivity/en/](http://www.who.int/dietphysicalactivity/en/)

# The Global Strategy has 4 main objectives

1

• **Reduce risk factors for chronic diseases** that stem from unhealthy diets and physical inactivity through public health actions.

2

• **Increase awareness and understanding** of the influences of diet and physical activity on health and the positive impact of preventive interventions.



# The Global Strategy has 4 main objectives

3

- **Develop, strengthen and implement global, regional, national policies and action plans** to improve diets and increase physical activity that are sustainable, comprehensive and actively engage all sectors.

4

- **Monitor science and promote research** on diet and physical activity

**The Global Strategy describes the responsibilities of those involved and provides recommendations for action to key stakeholders, including:**

- **Member states**
- **WHO**
- **International partners**
- **Civil society and nongovernmental organizations**
- **Private sector**

# **SITUATION IN TURKEY and GUIDELINES**



# Some demographic and health indicators-Turkey

|   |              |
|---|--------------|
| <b>Total population, 2008 (million)</b>       | <b>71.5</b>  |
| <b>Population, urban, 2008 (%)</b>            | <b>75.0</b>  |
| <b>Population under 15 years, 2008 (%)</b>    | <b>27.0</b>  |
| <b>Population over 65 years, 2008 (%)</b>     | <b>6.8*</b>  |
| <b>Total fertility rate</b>                   | <b>2.15*</b> |
| <b>Life expectancy at birth, 2008 (years)</b> | <b>71.7</b>  |
| <b>Male</b>                                   | <b>69.3</b>  |
| <b>Female</b>                                 | <b>74.2</b>  |

# Major nutrition problems are;

- Protein-energy malnutrition (PEM)
- Micronutrient (vitamin & mineral) deficiencies
  - Iron deficiency anemia (IDA)
  - Vitamin A deficiency (VAD)
  - Iodine deficiency disorders (IDD)
  - and others (vit. D, A, Folic acid, B12)
  - tooth decays.....
- Diet-related chronic diseases
  - Obesity
  - Cardiovascular diseases
  - Diabetes, osteoporosis, some cancers etc.

# Prevalence of Obesity in Adults (BMI: $\geq 30$ kg/m<sup>2</sup>) (%)

**Male: 11-22%**  
**Female: 23-35%**

|                                 | n     | Age (year)               | Male | Women |
|---------------------------------|-------|--------------------------|------|-------|
|                                 | 3681  | + 30                     | 12.5 | 32.0  |
| TEKHARF (2000)                  | 2494  | +30                      | 11.3 | 32.6  |
| TOHTA (1999-2000)               | 23888 | Adult( <i>BMI</i> : >25) | 40.0 | 50.0  |
| TURDEP (1997-1998)              | 24778 | +20                      | 12.9 | 29.9  |
| Turkey Obesity Profile (2000-5) | 13788 | +20                      | 21.8 | 34.5  |
| TOHS (1999-2000)                | 20119 | +20                      | 14.4 | 24.6  |
| Yumuk et al. (2001)             | 12866 | +20                      | 14.1 | 32.4  |
| TDHS (2003)                     |       | 15-49                    | -    | 22.7  |
| TOPS (2000-2005)                | 13788 | +20                      | 21.8 | 34.5  |
| Delibaşı et al. 1999-2000       | 13570 | +18                      | 7.8  | 22.1  |

# Morbidity of NCDs (%)

| Disease          | %                                 | Year         | Source  |
|------------------|-----------------------------------|--------------|---|
| Diabetes         | 7.2<br>8.4                        | 1999; 2001   | Satman et al. 1999;<br>2002;2004<br>Yumuk et al. 2005 |
| Hypertension     | 29<br>31.8<br>M: %27.5<br>F:%36.1 | 1997-1998    | Satman et al. 2002<br>Arıcı et al. 2005               |
| Cancer incidence | 49/100000<br>70/100000            | 2000<br>2003 | GBD 2006  |

Turkish Hypertension Prevalence Study.  
Hatemi et al. TOHTA Study, 2004  
TURDEP Study, 2004

## All Deaths from NCDs (%)

| Diseases                     | %                        |
|------------------------------|--------------------------|
| Cardiovascular diseases(%)   | 47.7<br>E: 43.9; K: 52.3 |
| Cancer (%)                   | 13.1                     |
| Ischaemic heart diseases (%) | 21.7                     |
| Cerebrovascular diseases (%) | 15                       |



# Obesity in children and adolescents (%)

## 6-17 years

- Overweight: 10.0-15.2 %
- Obese: 1.6-16%

## 0-5 years

Reference  
/standard ?

Stunted: 14.8%  
Underweight: %13.3  
Wasting: 3.7%

*Krassas et al. Pediatr Endoc Rev 1Suppl.3:460-4,2004*

*Sur et al. Prev Med 41(2):614-21,2005*

*Manios et al. Pediatr Int 47(2):159-66,2005*

*Manios et al. Lipid Health Dis 4:3:11,2004*

*Arslan et al. Obesity Congress, 2004*

*Yabancı, PhD thesis,2004*

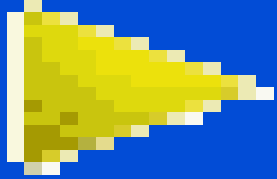
*Keskin et al. EJCN 59:64-71,2005*

*Köksal et al. I World PHN Congress, 2006*

*Rakicioğlu et al. World PH Congress, 2006*

*İndak et al. Acta Paediatrica, 95: 194-/198,2006*

# **DIETARY INTAKE IN TURKEY**



# Food consumption surveys

**1974- National**

**1984- 3 provinces, without health data**

**Result:** 36 years dietary intake + health  
26 years dietary intake ☹️

**TURKEY NUTRITION and HEALTH SURVEY  
(TNHS) 2010 😊**

# Factors Affecting Dietary Intake in Turkey

## Dietary Intake Changes

**Regions**

**Seasons**

**Socio-  
economical  
status**

**Settlement**

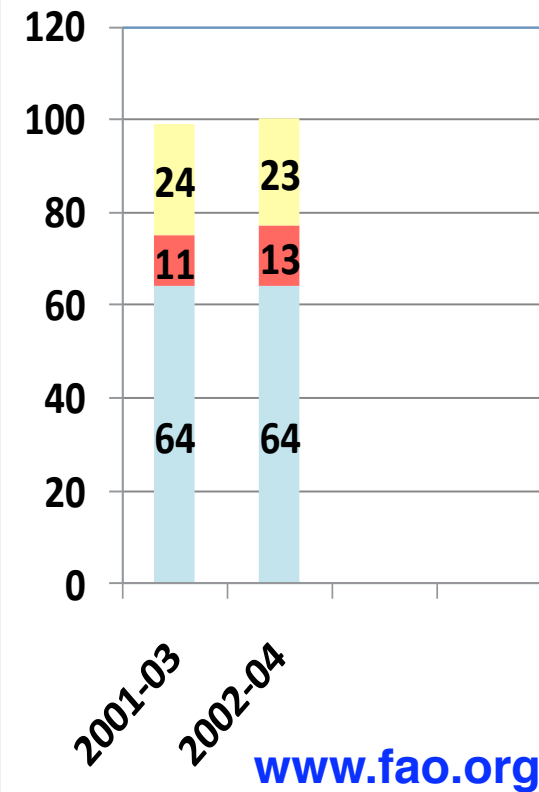
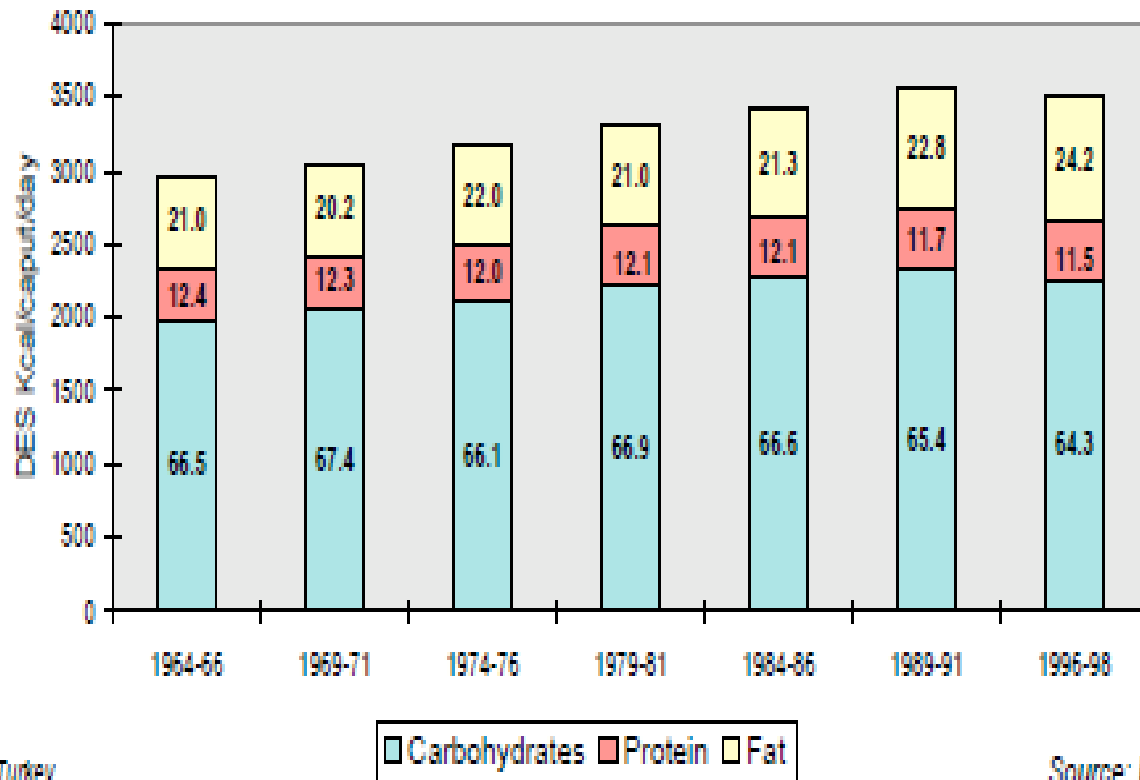
- **Urban**
- **Rural**

# Population nutrient intake goals- Turkey

| Nutrients     | Goals/ day        | TURKEY            |
|---------------|-------------------|-------------------|
| Carbohydrate  | 55-75% E          | 55-60% E          |
| Total fat     | 15-30% E          | 25-30% E          |
| Protein       | 10-15% E          | 10-15% E          |
| Saturated fat | < 10% E           | < 10% E           |
| Trans fat     | < 1% E            | < 1% E            |
| Sodium (salt) | < 2000 mg (< 5 g) | < 2000 mg (< 5 g) |
| Added sugar   | < 10% E           | < 10% E           |
| Dietary fibre | > 25 g            | 25-30 g           |
| Cholesterol   | < 300 mg          | < 300 mg          |

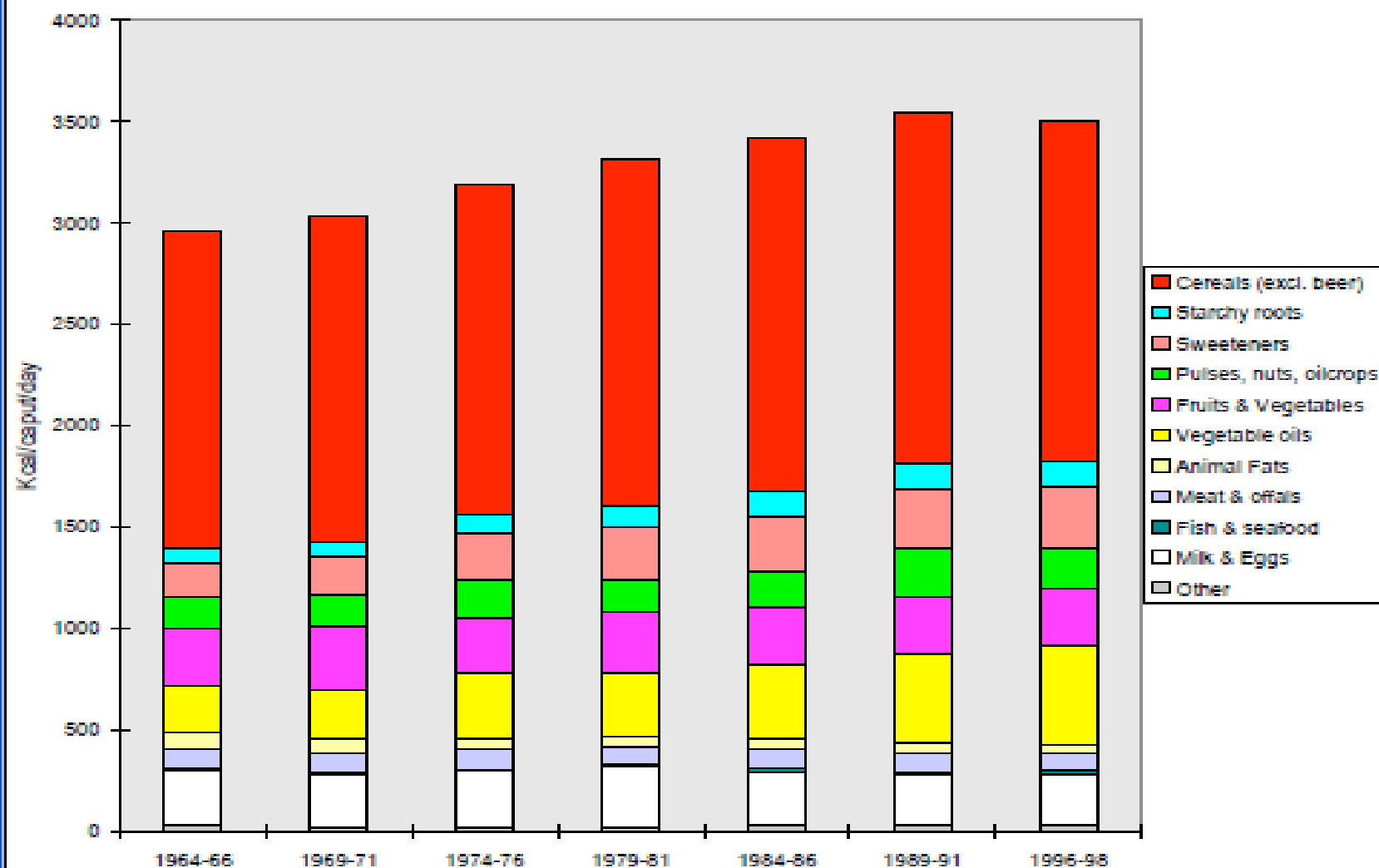
# Distribution of CHO, protein and fat in total energy (%)

**Figure 1:** Share of protein, fat and carbohydrate in Dietary Energy Supply  
Trends from 1964-66 to 1996-98



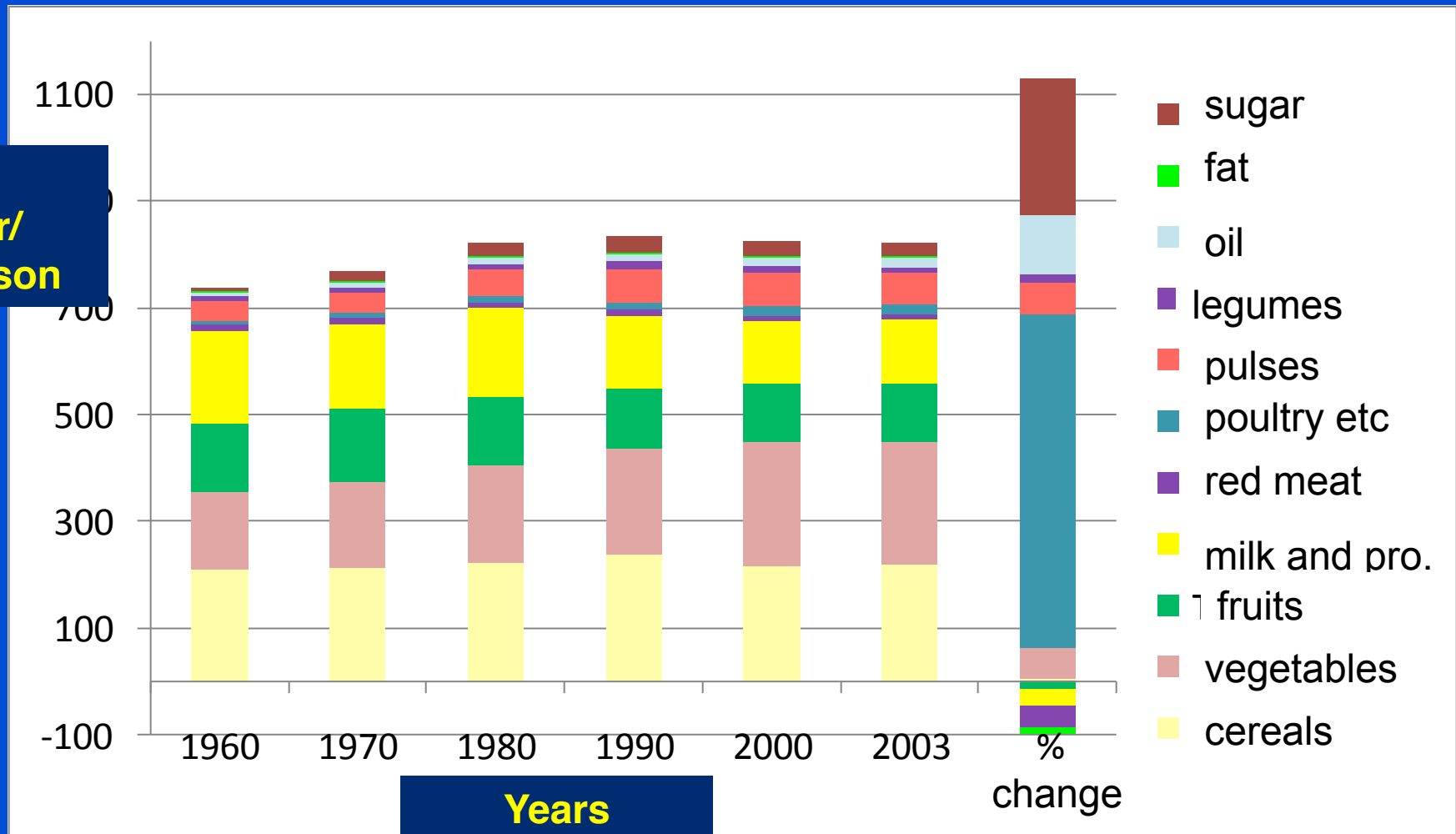
**Pekcan G, Marchesich R. *FAO- Nutrition Country Profile – Turkey , March 2001, FAO Rome.***

**Figure 3: Share of major food groups in Dietary Energy Supply  
Trends from 1964-66 to 1996-98**



**Pekcan G, Marchesich R. *FAO- Nutrition Country Profile - TURKEY*, March 2001, FAO Rome.**

# HBS-food consumption per year (kg/person)





# HBS- Intakes per year (kg/person)

| Food       | 1960 | 1970 | 1980 | 1990 | 2000 | 2003 | Change (%) |
|------------|------|------|------|------|------|------|------------|
| Cereals    | 209  | 211  | 222  | 237  | 216  | 218  | 4.1        |
| Vegetabl   | 145  | 163  | 182  | 200  | 233  | 231  | 58.9       |
| Fruits     | 127  | 138  | 129  | 111  | 108  | 108  | -15.3      |
| Milk, pro. | 175  | 157  | 167  | 136  | 117  | 122  | -30        |
| Red meat   | 14   | 13   | 9    | 13   | 11   | 9    | -40.6      |
| Poultry..  | 5    | 8    | 12   | 13   | 17   | 19   | 626        |
| Pulses     | 37   | 39   | 51   | 62   | 63   | 58   | 57         |

# HBS- Intakes per year (kg/person)

| Food         | 1960 | 1970 | 1980 | 1990  | 2000 | 2003 | Change (%) |
|--------------|------|------|------|-------|------|------|------------|
| Legumes      | 9    | 8    | 8    | 14    | 13   | 11   | 17         |
| Oil          | 8    | 10   | 14   | 16    | 18   | 17   | 110        |
| Fat          | 3    | 3    | 3    | 2     | 2    | 3    | -21        |
| Sugar        | 7    | 19   | 24   | 31    | 28   | 25   | 258        |
| <b>DAILY</b> |      |      |      |       |      |      |            |
| Energy kcal  | 2881 | 3097 | 3281 | 3539  | 3387 | 3328 | 15.5       |
| Protein g    | 90.8 | 90.5 | 95.6 | 102.4 | 97.4 | 96.1 | 5.8        |
| Fat g        | 67.7 | 70.2 | 83.9 | 88.0  | 92.6 | 91.2 | 34.7       |

# Intake depending on SES-Ankara, 2005

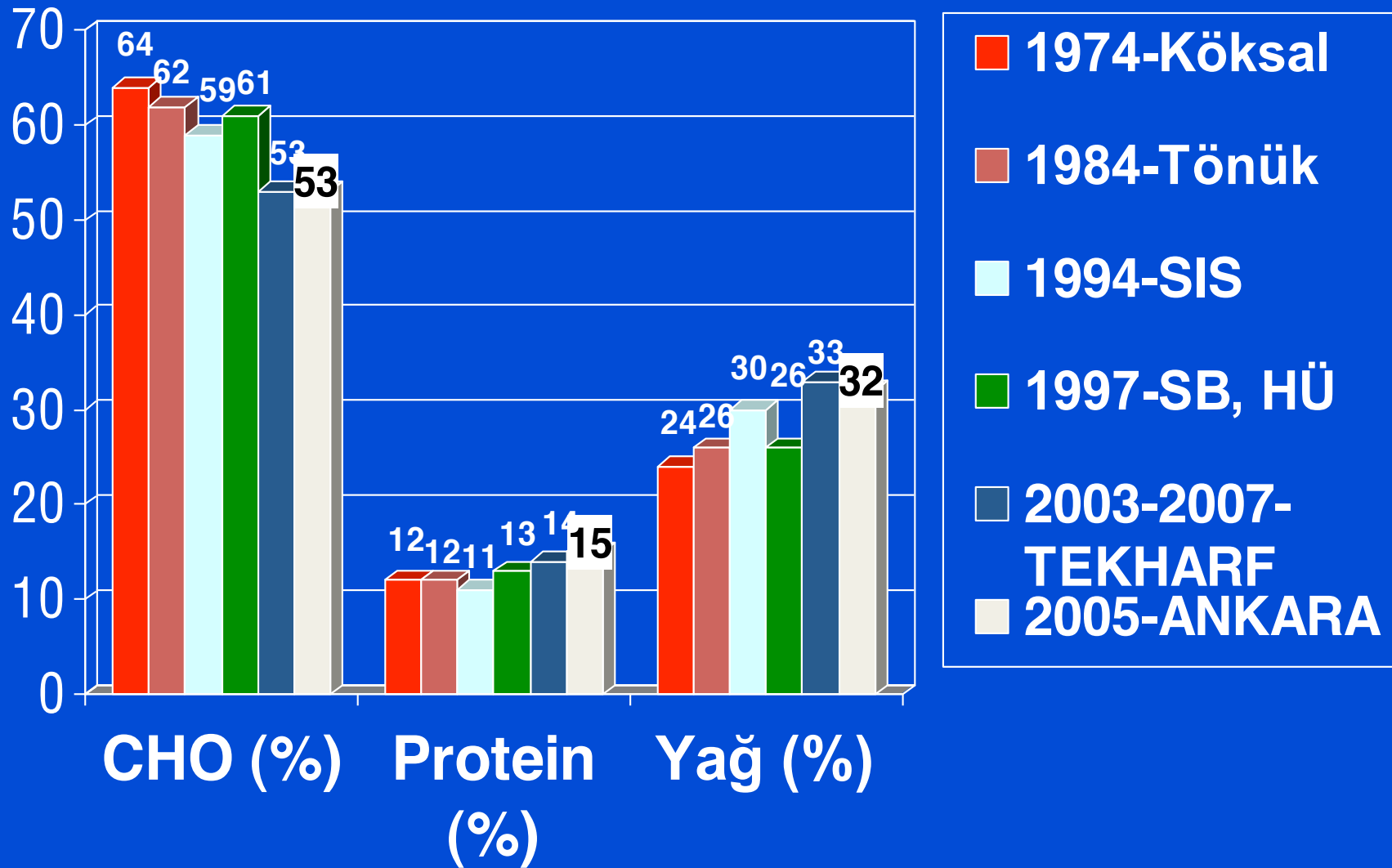
|               | Low<br>n: 576 | Middle<br>n: 646 | High<br>n: 405 | Total<br>n: 1627 |
|---------------|---------------|------------------|----------------|------------------|
| Energy (kcal) | 2186          | 2162             | 2312           | 2208             |
| Protein (g)   | 75.4          | 76.8             | 89.6           | 79.6             |
| Plant (g)     | 61.8          | 55.7             | 50.9           | 56.1             |
| Fat (g)       | 72.2          | 77.9             | 88.0           | 78.5             |
| CHO (g)       | 300.4         | 279.8            | 279.3          | 286.7            |
| Fibre (g)     | 30.1          | 25.9             | 27.8           | 27.8             |

# Food Intake Depending on SES- (g/day) Ankara, 2005

|               | Low<br>n: 576 | Middle<br>n: 646 | High<br>n: 405 | Total<br>n: 1627 |
|---------------|---------------|------------------|----------------|------------------|
| Milk, yogurt  | 108           | 139              | 176            | 138              |
| Cheese        | 42            | 48               | 52             | 47               |
| Red meat      | 33            | 51               | 74             | 51               |
| Poultry, fish | 35            | 37               | 64             | 43               |
| Eggs          | 30            | 35               | 32             | 33               |
| Legumes       | 46            | 33               | 36             | 38               |
| Vegetables    | 475           | 426              | 515            | 465              |
| Fruits        | 330           | 425              | 382            | 382              |
| Bread         | 230           | 198              | 180            | 204              |
| Cereals       | 98            | 100              | 111            | 102              |
| Fat, oils     | 30            | 26               | 30             | 28               |
| Sugar         | 24            | 25               | 30             | 26               |

Pekcan, Köksal, Küçükerdönmez, Özel. Household food wastage in Turkey, FAO, 2006

# 1974, 1984, 1994, 1997 and TEKHARF Studies



Köksal, 1974  
Tönük, 1984

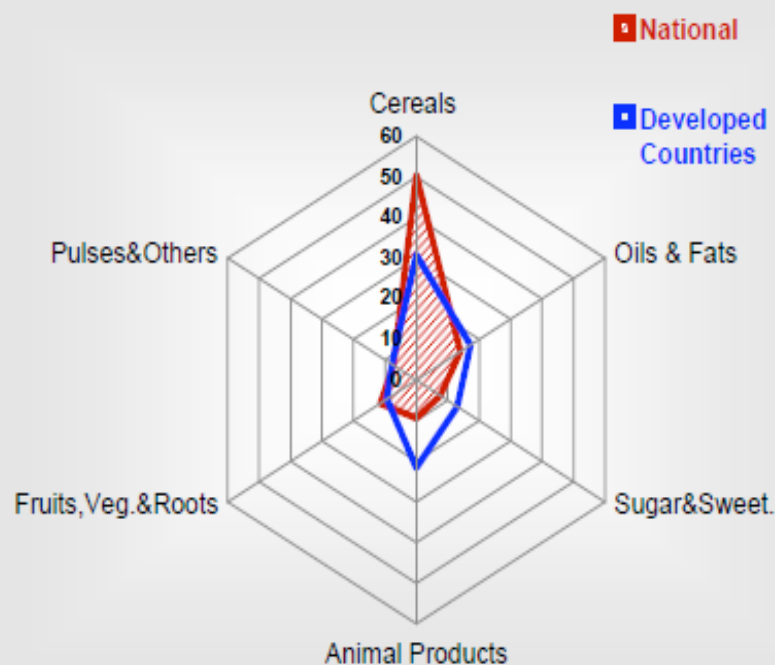
Sağlık Bakanlığı, H.Ü. Beslenme ve Diyetetik Böl. 1997 (7 il)  
Ünsalan, 1998 (SIS-1994)

Arslan ve ark. 2003-07  
Pekcan et al. 2005

# Source of Dietary Energy Consumption

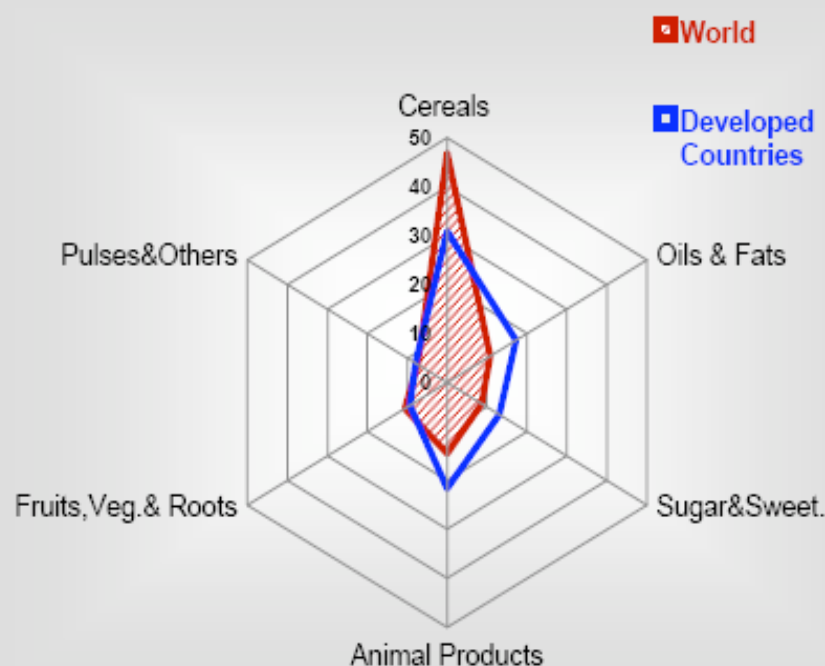
## Turkey

Source of Dietary Energy Consumption % 01-03



## World

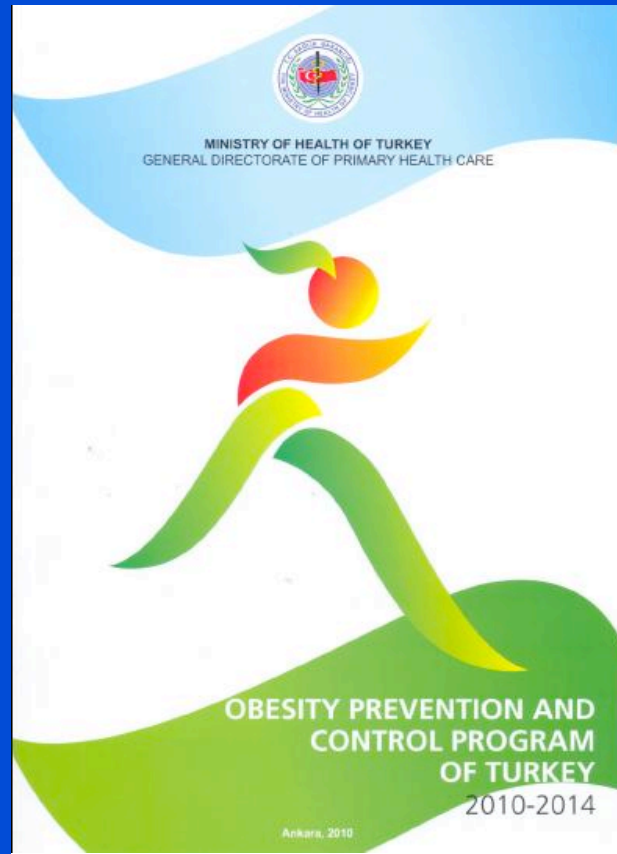
Source of Dietary Energy Consumption % 01-03



## **Turkey prepared;**

- **“The National Food and Nutrition Action Plan - 2003”**
  - **Food-based dietary guideline- 2004**
- **“The National Obesity Prevention Program of Turkey (2010 - 2014)”**

# The National Obesity Prevention Program of Turkey (2010 - 2014)





# TARGETS AND STRATEGIES FOR OBESITY PREVENTION (1)

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

1. *Supplying political will and determination at national and local level and putting into application*
2. *Financial arrangements in the management of obesity*
3. *To determine the current situation at the national and local level and to support the researches that are going to be done*

# TARGETS AND STRATEGIES FOR PREVENTION OF OBESITY (2)

## B. ACTIONS FOR OBESITY PREVENTION

1. *To inform and make the society conscious about obesity, adequate and balanced diet and physical activity*
2. *To gain the habit of adequate and balanced diet and regular physical activity for obesity prevention in schools*
3. *Actions for workplaces*
4. *Providing cooperation with food industry*
5. *Supporting adequate and balanced nutrition and active life in media news and advertisements*
6. *Encouragement of physical activity and improvement of environmental factors*

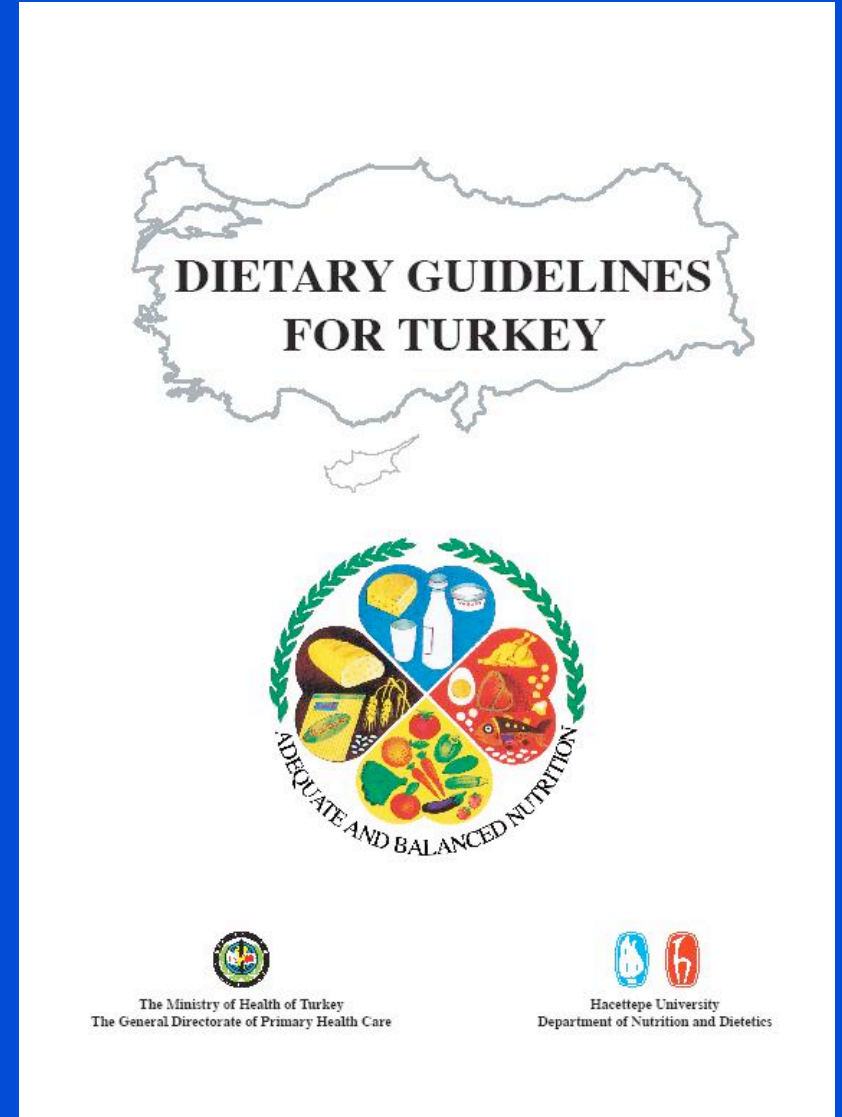
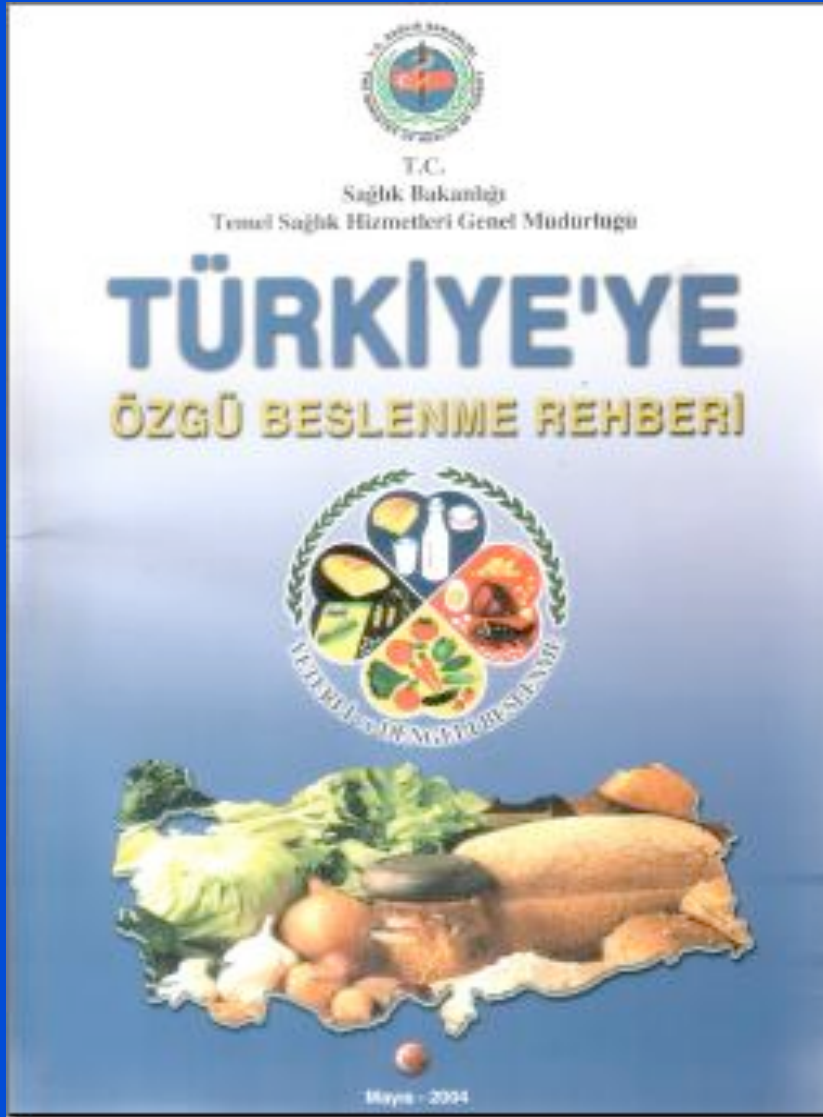
# **TARGETS AND STRATEGIES FOR PREVENTION OF OBESITY (3)**

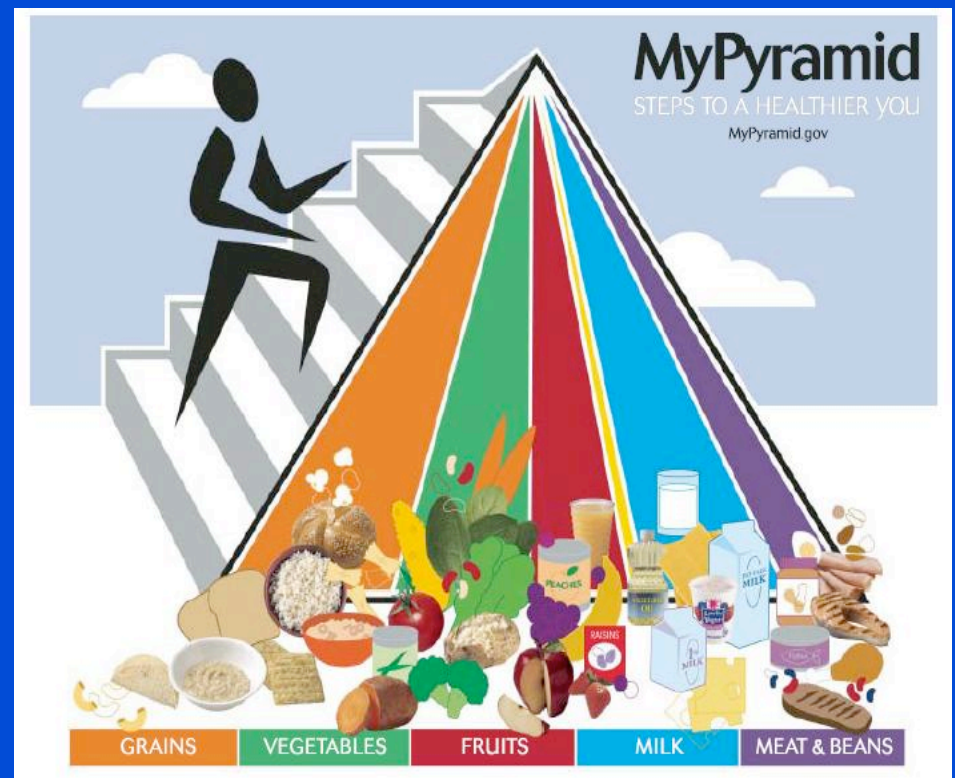
**C. PRECAUTIONS FOR DIAGNOSIS AND  
TREATMENT OF OBESITY IN HEALTH  
INSTITUTIONS**

**D. MONITORING AND ASSESSMENT**

# **Increasing Awareness and Knowledge**

Year: 2004





## **Food groups (4 groups)**

**Milk and milk products**

**Meat and meat products, eggs, legumes**

**Fruits and vegetables**

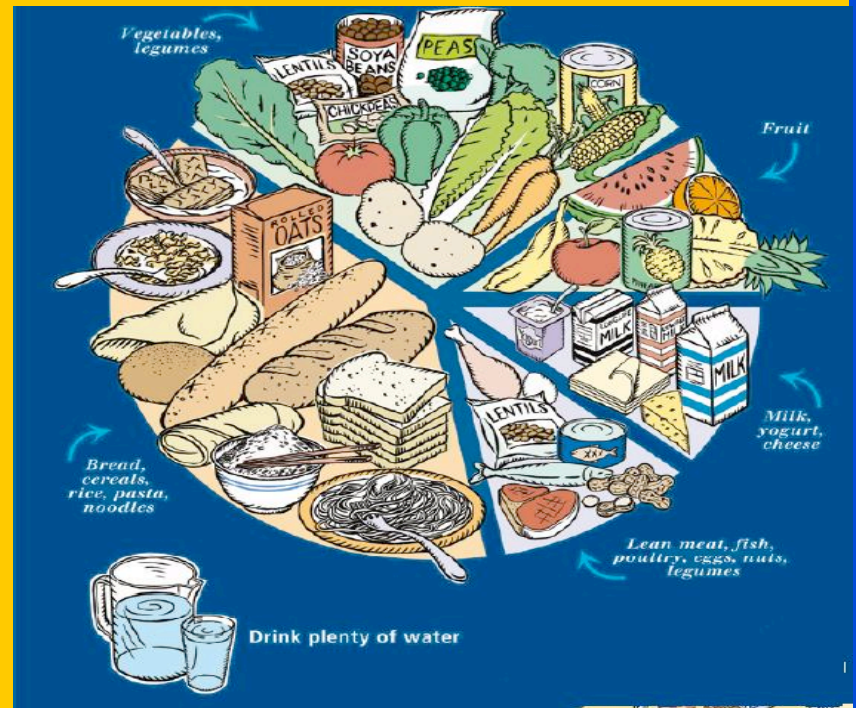
**Bread and other cereals**

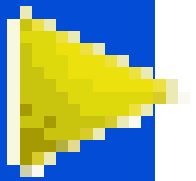


# FOOD GROUPS

4 FOOD GROUPS

EACH MEAL





# **MILK and MILK PRODUCTS**



# MILK and MILK PRODUCTS

- Milk
- Yogurt
- Cheese
- and / or other alternatives

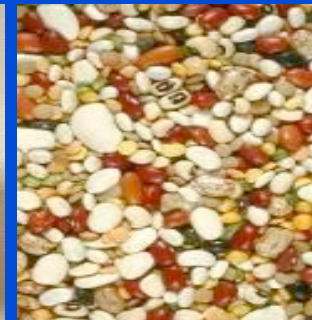




# **MEAT and MEAT PRODUCTS, EGGS and LEGUMES**

# MEAT and MEAT PRODUCTS, EGGS and LEGUMES

- Red meat
  - Chicken, turkey and fish
  - Eggs
- Legumes (dry beans, lentils, chickpeas etc.)
  - Seeds (nuts, walnuts, almonds etc.)
  - and / or other alternatives





# FRUITS and VEGETABLES





# RECOMMENDATION



- Eat at least **five** portions/servings (at least 400 g) of a variety of non-starchy vegetables and of fruits every day.

## Variety;

**Red** - **orange**, **green**, **yellow**, white and **purple**, including tomato-based products and allium vegetables such as garlic.

# **BREAD and CEREALS**



# **BREAD and CEREALS**



**Bread**

**Rice**

**Pasta, noodles, couscous**

**Bulgur (cracked wheat) and others**

**Preferably wholegrain**

# **BREAD and CEREALS**



**Energy**

**Complex carbohydrates, fiber (wholegrain)**

**Protein (plant origin)**

**Iron, magnesium, folate**

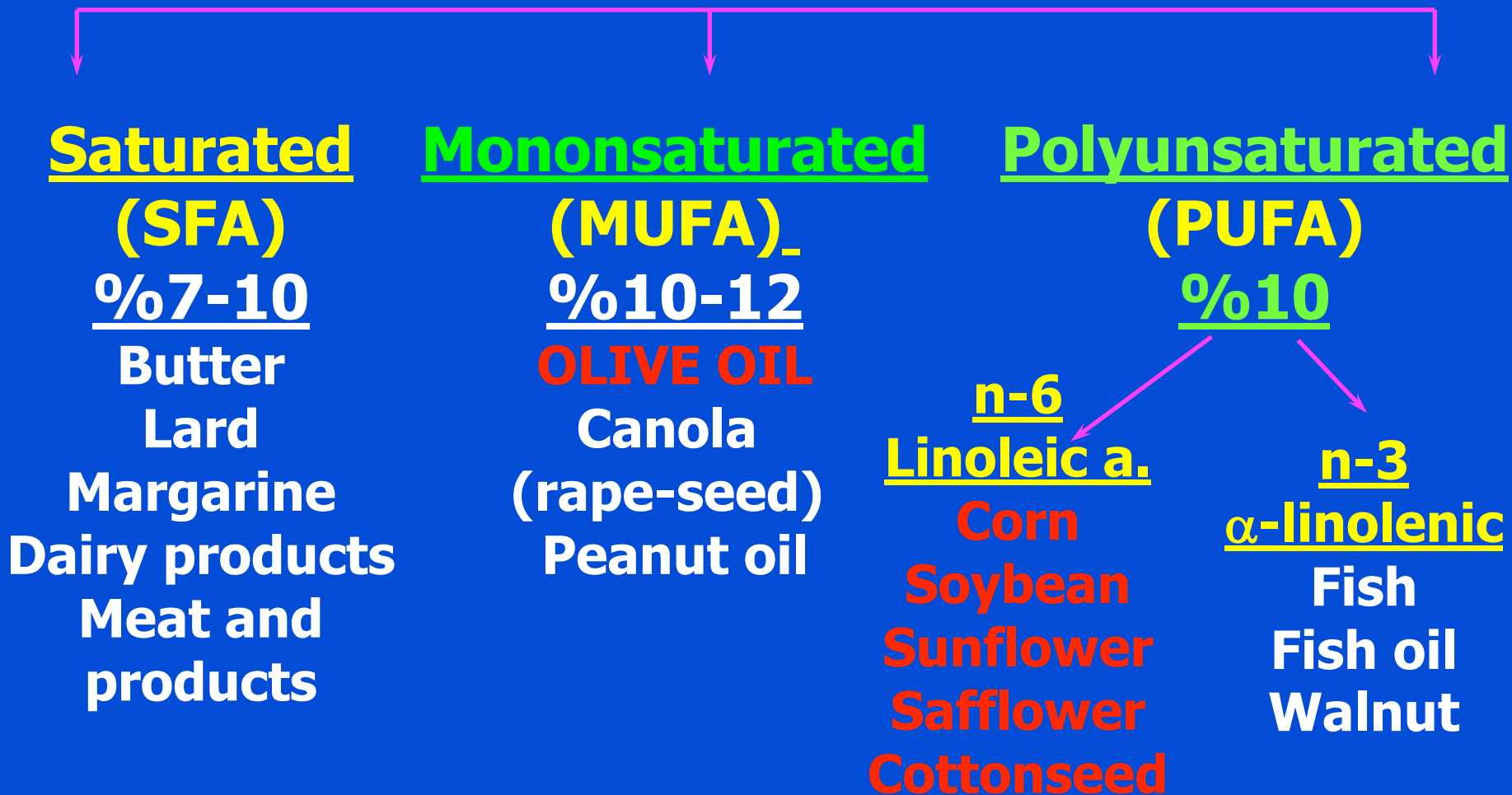
**Low fat content**



# Fats

A) Visible

B) Invisible (in foods)



# Food-Based Dietary Guidelines (1)



## HEALTHY DIET and PHYSICAL ACTIVITY

**Eat variety of foods**



**Increase intake of fresh fruits and vegetables**

**Eat whole-grain bread, cereals, legumes**



**Consume low fat dairy products**

**Reduce fat intake  
(saturated → unsaturated)**

**Increase fibre intake  
(Eat whole cereals, fruits and vegetables)**



**Maintain body weight in normal limits**



**Increase physical activity**



# Food-Based Dietary Guidelines (2)



## HEALTHY DIET and PHYSICAL ACTIVITY

**Do not skip meals  
Breakfast is important**



**Avoid intake of alcohol and reduce caffeine intake**



**Reduce salt intake  
Use iodized salt**



**Choose foods low in sugar  
Reduce sugar containing beverages**



**Drink enough water**

**Maintain food safety**

# Breastfeeding and complementary feeding



# TYPICAL TURKISH DIET

## Percentage of daily energy

- 44% from bread
- 58 % bread and other cereals

Pekcan G, Karaagaoglu N. State of nutrition in Turkey. Nutrition and Health 2000; 14: 41–54.

Pekcan G (Turkey) and Marchesich R (ESNA-FAO). FAO. Nutrition Country Profiles – Turkey (2001). [www.fao.org/es/ESN/ncp/tur-turmap.pdf](http://www.fao.org/es/ESN/ncp/tur-turmap.pdf)

# Turkish Diet

- Wheat is a staple food for Turkey.
- Mainly consumed as;

- bread



- bulgur



- rice

- pasta, homemade noodles (called şehriye)







# A Typical Meal – Food groups





# A Typical Meal - Food Groups





# Homemade pasta with meat- MANTI



# HOMEMADE NOODLES (ERİŞTE)





# CONCLUSION

**Carbohydrates are the principal energy source in the diet.**

**Carbohydrates (complex) in adequate amounts are part of healthy diets.**

**Pasta meals are good source of complex carbohydrates. Preferably prepared by whole grains.**

**Pasta is liked by many people and children.**



# CONCLUSION

## COOKING PRINCIPLES (Guideline for Turkey)

**Cook pasta like rice (pilaf).**

**Do not drain and rinse underwater.**

**Add enough water. After it is cooked add some cold water and olive oil. Wait for a while.**

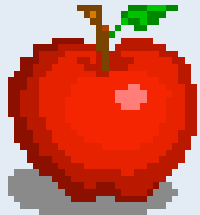
**Do not fry butter on it.**

**Prepare with meat, vegetables, legumes and nuts.**

**Serve with salad and/or yogurt.**

**Make the pasta meal adequate and balanced.**

**Enjoy what you eat.**



# EAT A WIDE VARIETY OF FOODS

- Only one type of food/food group could not meet the needs.
- No single food is inherently **good or bad**.
- Foods besides nutrients, contain bioactive molecules (phytochemicals)



**TEAM**

**T** ogether

**E** veryone

**A** chieves

**M** ore

Knowing is not enough; We must apply.  
Wishing is not enough; We must do.  
Goethe

Thanks