

20th lecture:

Overview of Non-Communicable Diseases

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Objectives:

By the end of the session the students should be able to define and understand:

- The epidemiology of non-communicable diseases
- Risk factors for non-communicable diseases
- Overall framework and common preventive strategies against non-communicable diseases



Did you know?

- 35,000,000 people died from chronic diseases in 2005
- 60% of all deaths are due to chronic diseases.

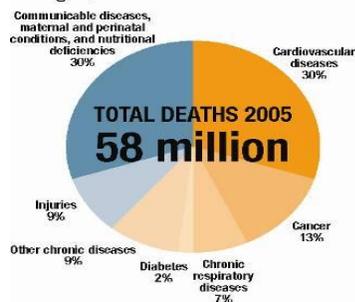
For your information: The lives of far too many people in the world are being blighted and cut short by chronic diseases such as heart disease, stroke, cancer, chronic respiratory diseases and diabetes.

Globally, 58 million people will die in 2005. 35 million of these deaths will be as a result of chronic diseases. This means that 60% of all deaths in 2005 are due to chronic diseases.

The projected 35 million death toll from chronic diseases is double the number of deaths from all infectious diseases (including HIV/AIDS, tuberculosis, and malaria), maternal and perinatal

Non communicable diseases

Projected main causes of death, worldwide, all ages, 2005



- Cardiovascular disease, mainly heart disease, stroke
- Cancer
- Chronic respiratory diseases
- Diabetes

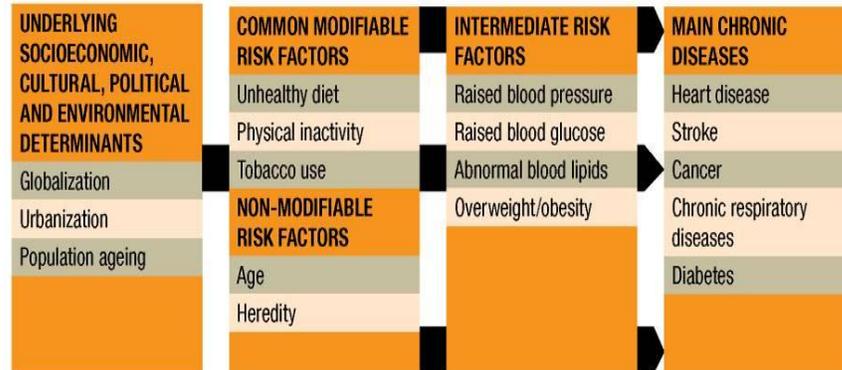
The majority of deaths worldwide for all ages are due to chronic diseases. Cardiovascular diseases (mainly heart disease and stroke) are responsible for 30% of all deaths. Cancer, chronic respiratory diseases, and diabetes are also major causes of mortality.

The contribution of diabetes is underestimated because although people may live for years with diabetes, their deaths are usually recorded as being caused by heart disease or kidney failure.

Definition

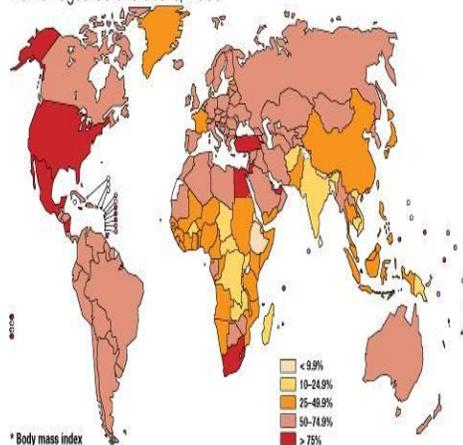
- Non-communicable diseases are all impairments or deviations from the normal, which have one or more of the following characteristics;
 - Are permanent
 - Leave residual disability (such as diabetic foot, hypertensive retinopathy)
 - Caused by non-reversible pathological alterations
 - Require special training of the patient for rehabilitation
 - May be expected to require a long term supervision

Causes of Non-communicable diseases

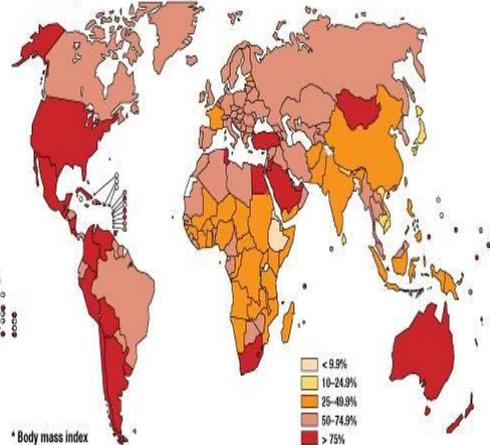


Risks are increasing

Projected prevalence of overweight (BMI^a ≥25 kg/m²), women aged 30 and above, 2005

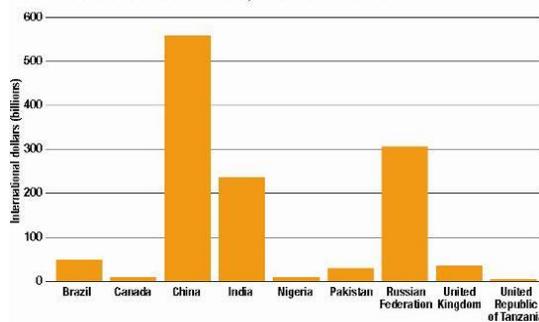


Projected prevalence of overweight (BMI^a ≥25 kg/m²), women aged 30 and above, 2015



The economic impact: billions

Projected foregone national income due to heart disease, stroke and diabetes in selected countries, 2005–2015



The problem has serious impact. The burden of chronic disease:

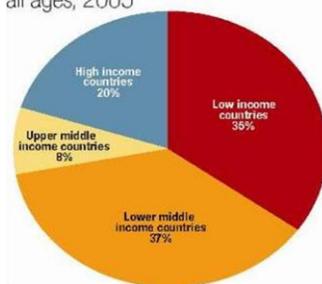
- has major adverse effects on the quality of life of affected individuals;
- causes premature death;
- and creates large adverse – and underappreciated – economic effects on families, communities and societies in general.

Chronic diseases undermine the macroeconomic development of many countries. This slide will show that countries will forego billions in national income over the next 10 years as a result of premature deaths caused by heart disease, stroke, and diabetes.

- China: \$558 billion
- Russian Federation: \$303 billion
- India: \$237 billion

80% of chronic disease deaths occur in low & middle income countries

Projected global distribution of chronic disease deaths
by World Bank income group,
all ages, 2005



Misunderstandings versus realities:

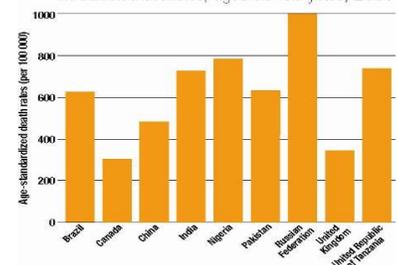
MISUNDERSTANDING
CHRONIC DISEASES
MAINLY AFFECT
RICH PEOPLE

Reality: **In all but the least developed countries of the world, the poor are much more likely than the wealthy to develop chronic diseases**, and everywhere are more likely to die as a result. Moreover, chronic diseases cause substantial financial burden, and can push individuals and households into poverty.

MISUNDERSTANDING
CHRONIC DISEASES MAINLY
AFFECT OLD PEOPLE

Reality: **Almost half of chronic diseases occur prematurely, in people under 70 years of age.** One quarter of all chronic disease deaths occur in people under 60 years of age. In low and middle income countries, middle-aged adults are especially vulnerable to chronic diseases. People in these countries tend to develop disease at younger ages, suffer longer – often with preventable complications – and die sooner than those in high income countries.

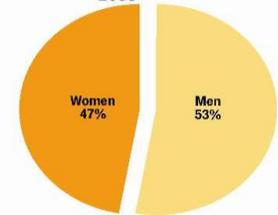
Projected chronic disease death rates
for selected countries, aged 30–69 years, 2005



MISUNDERSTANDING**CHRONIC DISEASES AFFECT PRIMARILY MEN**

Reality: Chronic **diseases, including heart disease, affect women and men almost equally.**

Projected global coronary heart disease deaths by sex, all ages, 2005

**MISUNDERSTANDING****CHRONIC DISEASES CAN'T BE PREVENTED**

Reality: **the major causes of chronic diseases are known, and if these risk factors were eliminated, at least 80% of all heart disease, stroke and type 2 diabetes would be prevented; over 40% of cancer would be prevented.**

MISUNDERSTANDING**CHRONIC DISEASE PREVENTION AND CONTROL IS TOO EXPENSIVE**

Reality: a full range of chronic disease interventions are very cost-effective for all regions of the world, including sub-Saharan Africa. Many of these solutions are also inexpensive to implement. The ideal components of a medication to prevent complications in people with heart disease, for example, are no longer covered by patent restrictions and could be produced for little more than one dollar a month. **(The benefit is higher than what is going to be spent on treatment)**

Examples:

- Coronary Heart Diseases
- Hypertensive Heart Diseases
- Cancer
- Stroke
- Diabetes
- Chronic Obstructive diseases
- Peptic Ulcer
- Blindness
- Mental Retardation
- Schizophrenia
- Arthritis

Risk factors:

| Modifiable | Non-modifiable |
|---|--|
| <ul style="list-style-type: none"> - Cigarette smoking - High Blood pressure - Elevated serum Cholesterol - Diabetes - Life style changes (dietary patterns, physical activity) - Stress factors (prone to IBS, HTN, MI) - Alcohol abuse | <ul style="list-style-type: none"> - Age - Sex - Family Hx - Genetic factors - Personality? - Race |

The objectives of Integrated Chronic Disease Prevention and Control Program are:

- ✓ To strengthen prevention and control of chronic non-communicable diseases by tackling the major risk factors, focusing on WHO's **four priority** non-communicable diseases - **cardiovascular diseases, cancer, diabetes, and chronic respiratory diseases**, and underlying determinants of health
- ✓ To reduce premature mortality and morbidity, and
- ✓ To improve quality of life, with particular focus on developing countries

Prevention

- Primary prevention
 - o Population Strategy (e.g. BCG vaccine)
 - o High Risk strategy (mammogram for breast cancer)
- Secondary prevention (preventing complications)
- Tertiary prevention (coping with the disease)

Population strategy

- Dietary Changes
- Blood pressure control
- Physical activity (weight reduction) - specially children
- Behavioral change – reduction of stress and Smoking cessation
- Self care
- Health education

High Risk approach

- Identify Risk: Identify high risk people and families eg those who smoke, and have high serum cholesterol
- Specific advice: helping them to stop smoking and exercise and diet control ect

Secondary Prevention

- Continuation of primary care
- Early case detection and treatment
 - o eg: CHD
 - Cessation of smoking
 - Reduction of serum cholesterol level
- Compliance

Application of the frame: work what works?



Comprehensive and integrated action is the means to prevent and control chronic diseases

Chronic diseases can be prevented and controlled using available knowledge.

The stepwise framework offers a flexible and practical public health approach to assist ministries of health in balancing diverse needs and priorities while implementing evidence-based interventions.

Comprehensive and integrated action is required.

Comprehensive action requires combining population-wide approaches that seek to reduce the risks throughout the entire population with strategies that target individuals at high risk. Even a small shift in the average population levels of several risk factors can lead to a large reduction in the burden of chronic disease.

Chronic Heart Disease (CHD)

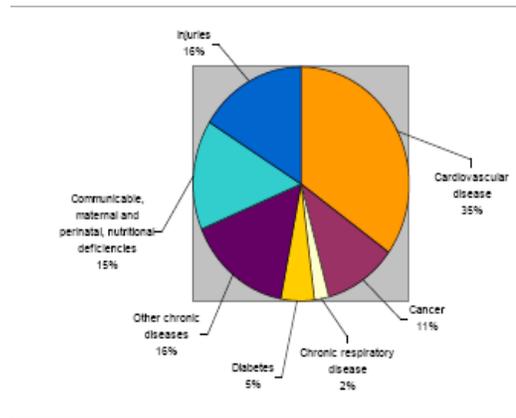
- Definition:
 - o Impairment of heart function due to inadequate blood flow to the heart compared to its needs, caused by obstructive changes in the coronary circulation to the heart.
 - Angina on effort
 - Myocardial infarction (MI)
 - Irregularities of the heart

- Cardiac failure
- Sudden death

Epidemiology of CHD in KSA

Facts:

- In Saudi Arabia, chronic diseases accounted for 69% of all deaths in 2002 (see chart, right).
- Total deaths in Saudi Arabia, 2002 = 97,000.
- Total deaths related to chronic disease in Saudi Arabia, 2002 = 67,000.



Risk factors?

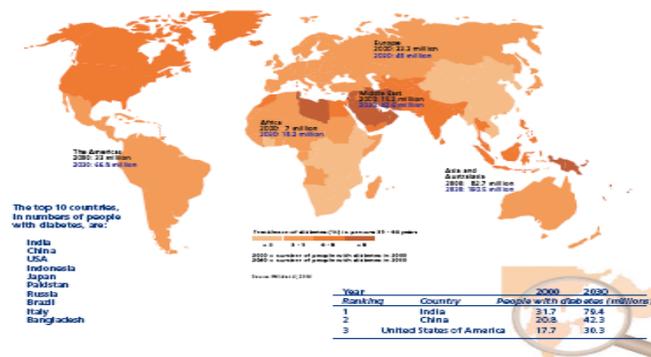
- Smoking
- HTN
- Dyslipidemia
- DM
- Genetic predisposing?
- Physical inactivity
- Hormones?
- Type A personality
- Oral contraceptives-higher diastolic and systolic BP

Prevention:

- Population strategy?
- High risk strategy?
- Individual strategy?

Diabetes Mellitus

Prevalence of diabetes



Types of DM?

- Type 1 diabetes :(previously known as insulin-dependent or childhood-onset) is characterized by a lack of insulin production. Without daily administration of insulin, Type 1 diabetes is rapidly fatal
- Type 2 diabetes (formerly called non-insulin-dependent or adult-onset) results from the body's ineffective use of insulin
- Gestational diabetes is hyperglycemia which is first recognized during pregnancy

Risk Factors?

- Familial tendency
- Obesity
- Diabetogenic drug
- Insanitary environment

Complications:

Prevention:

- Primary- screening of high risk group
 - o Ideal body weight and nutrition
 - o Exercise
- Secondary
 - o Moderate blood glucose control and compliance
 - Foot care
 - o Screening for retinopathy (which causes blindness);
 - o Blood lipid control (to regulate cholesterol levels);
 - o Screening for early signs of diabetes-related kidney disease
- Tertiary

The global goal

- A 2% annual reduction in chronic disease death rates worldwide, per year, over the next 10 years.
- The scientific knowledge to achieve this goal already exists.

36 000 000 lives can be saved

- The target for this goal is an additional 2% annual reduction in chronic diseases death rates over the next 10 years to 2015.
- The scientific knowledge to achieve this goal already exists.
- Pursuing this goal would result in 36 million chronic disease deaths averted by 2015.