



OVERVIEW OF NON-COMMUNICABLE DISEASE

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Objectives of the session



- 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

Definition



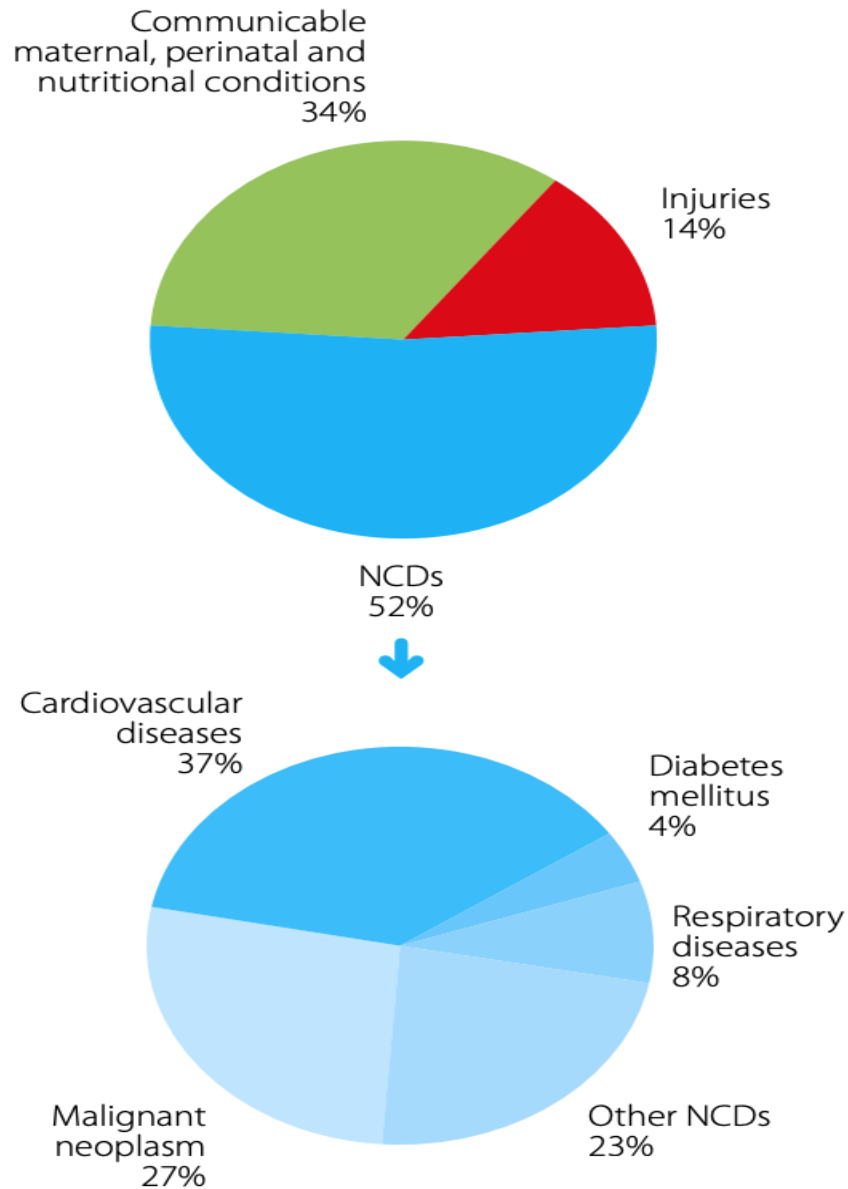
- Non-communicable diseases are all impairments or deviations from the normal, which have one or more of the following characteristics;
 - Are permanent
 - Leave residual disability
 - Caused by non-reversible pathological alterations
 - Require special training of the patient for rehabilitation
 - May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

Epidemiology of NCDs



- **Noncommunicable diseases (NCDs) kill 41 million people each year, equivalent to 71% of all deaths globally**
- **Each year, 15 million people die from a NCD between the ages of 30 and 69 years; over 85% of these "premature" deaths occur in low- and middle-income countries**
- **Cardiovascular diseases account for most NCD deaths, or 17.9 million people annually, followed by cancers (9.0 million), respiratory diseases (3.9million), and diabetes (1.6 million)**
- **These 4 groups of diseases account for over 80% of all premature NCD deaths.**
- **Tobacco use, physical inactivity, the harmful use of alcohol and unhealthy diets all increase the risk of dying from a NCD.**
- **Detection, screening and treatment of NCDs, as well as palliative care, are key components of the response to NCDs**

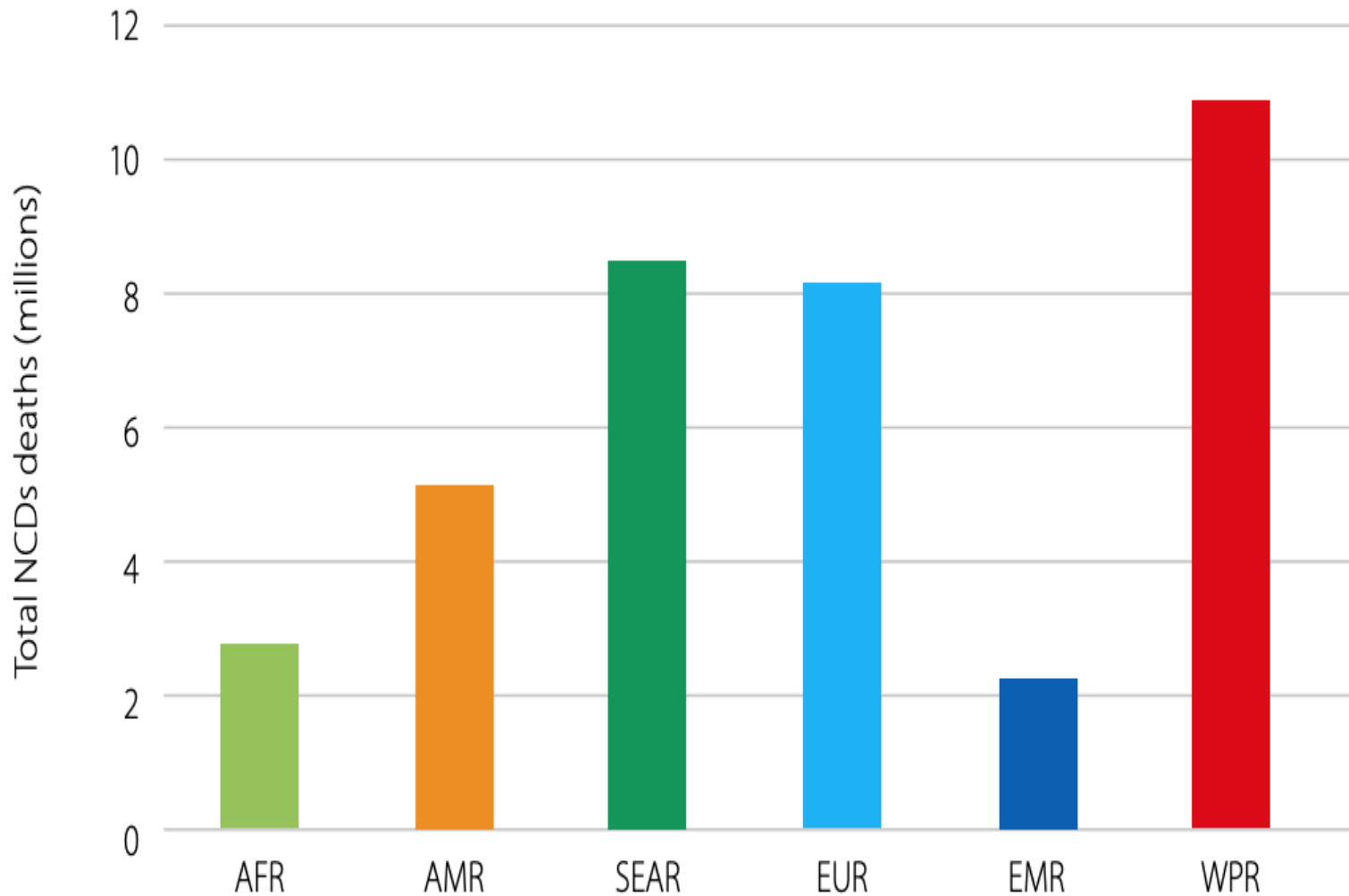
Fig. 1.3 Proportion of global deaths under the age 70 years, by cause of death, comparable estimates, 2012
(1)



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



Fig. 1.1 Total NCD deaths, by WHO region, comparable estimates, 2012

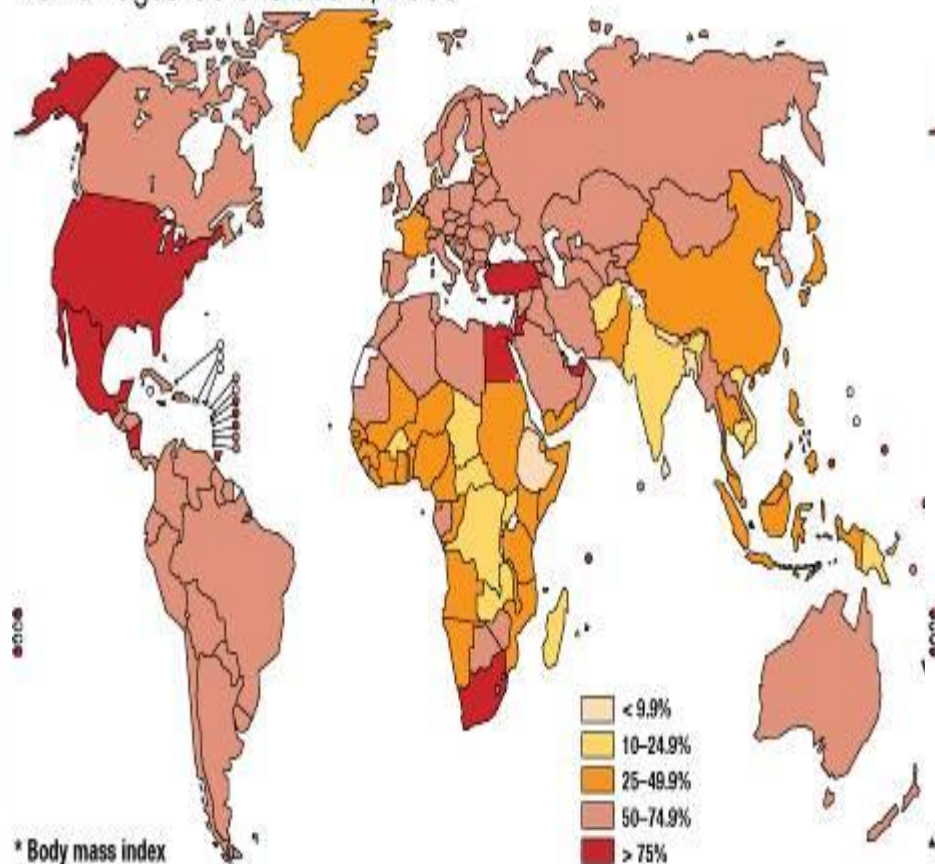


AFR=African Region, AMR=Region of the Americas, SEAR =South-East Asia Region, EUR=European Region, EMR=Eastern Mediterranean Region, WPR=Western Pacific Region

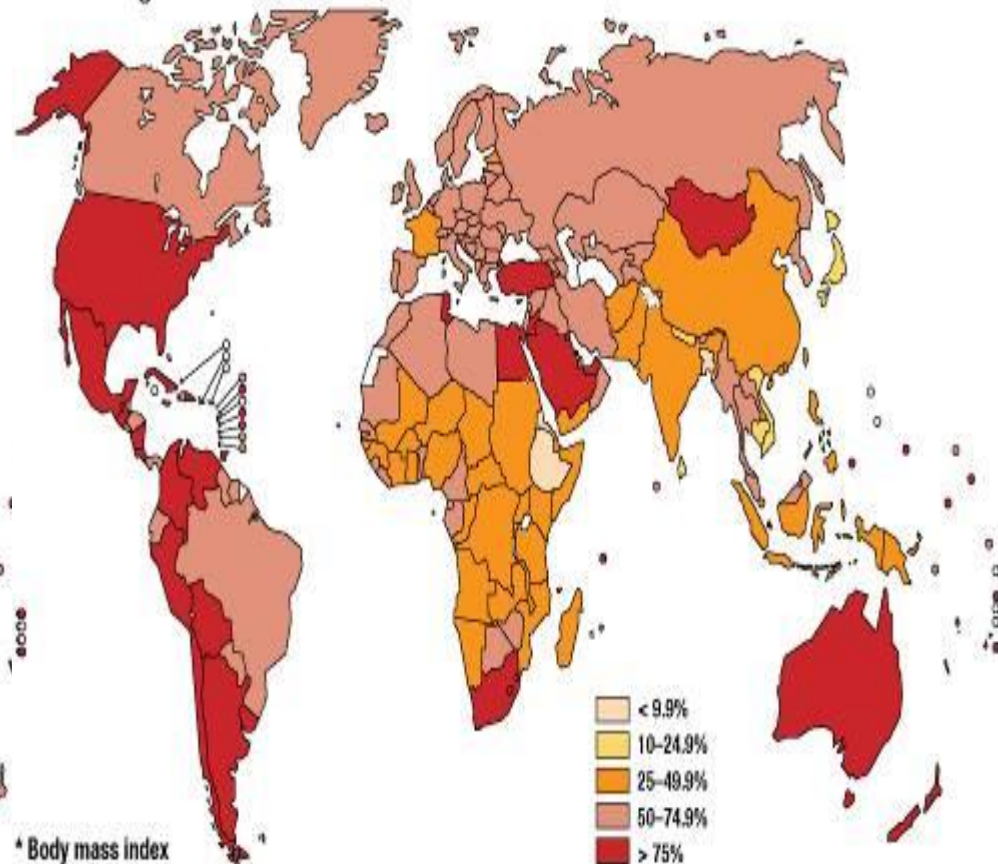
Risks are increasing



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



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



Reality: chronic diseases are concentrated among the poor



MISUNDERSTANDING
CHRONIC DISEASES
MAINLY AFFECT
RICH PEOPLE



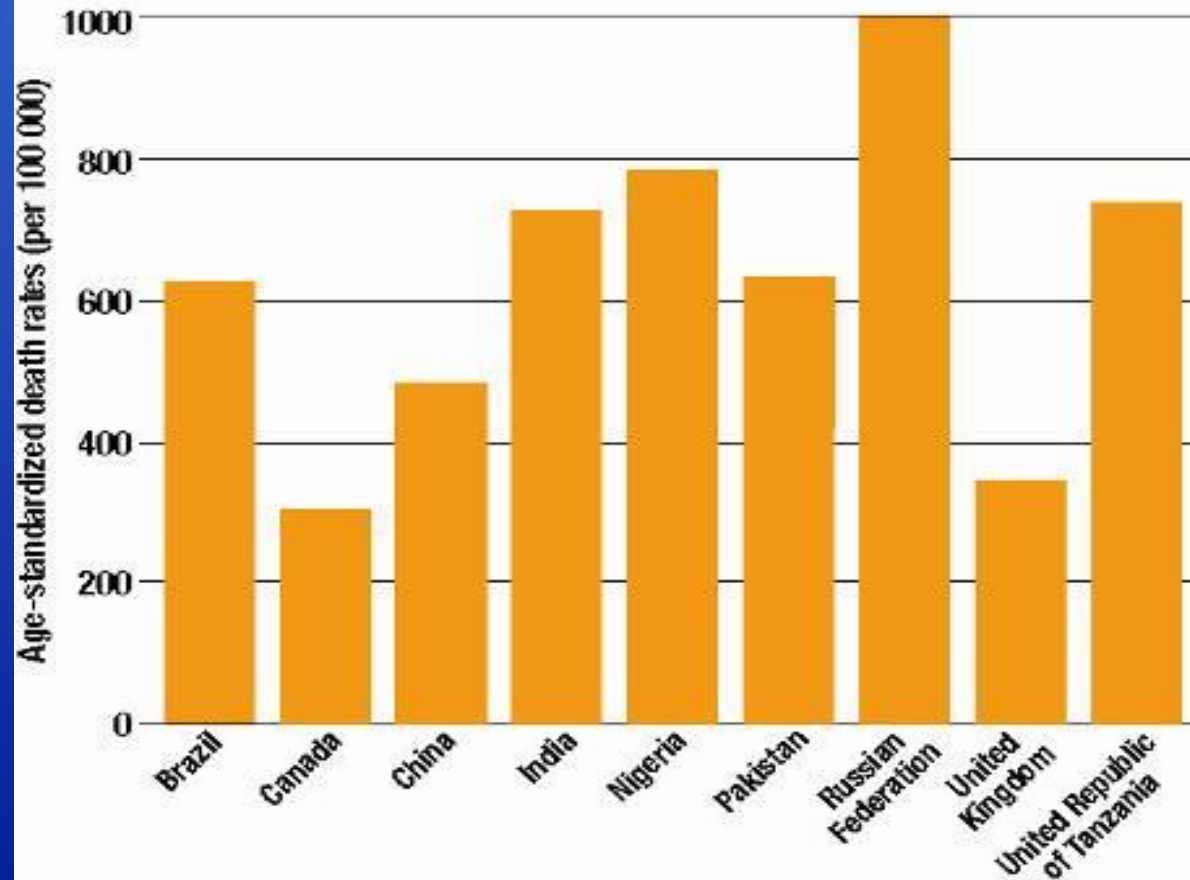
Reality: almost half in people under
age 70 years



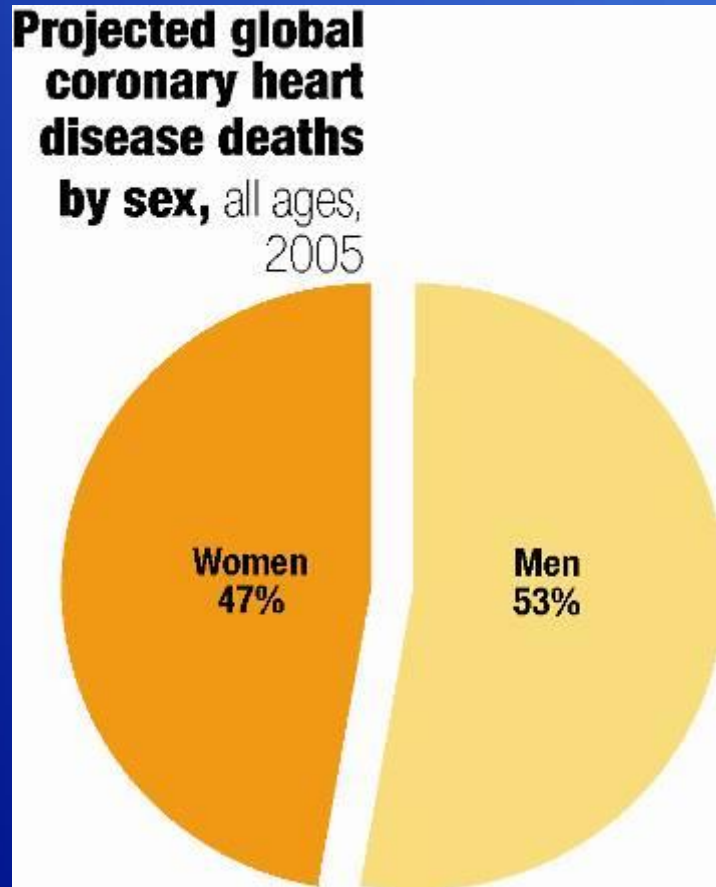
MISUNDERSTANDING

**CHRONIC DISEASES MAINLY
AFFECT OLD PEOPLE**

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



Reality: chronic diseases affect men and women almost equally



MISUNDERSTANDING
CHRONIC DISEASES AFFECT PRIMARILY MEN

Reality: 80% of premature heart disease, stroke and type 2 diabetes is preventable, 40% of cancer is preventable



MISUNDERSTANDING

**CHRONIC DISEASES
CAN'T BE PREVENTED**

Reality: inexpensive and
cost-effective interventions exist



MISUNDERSTANDING

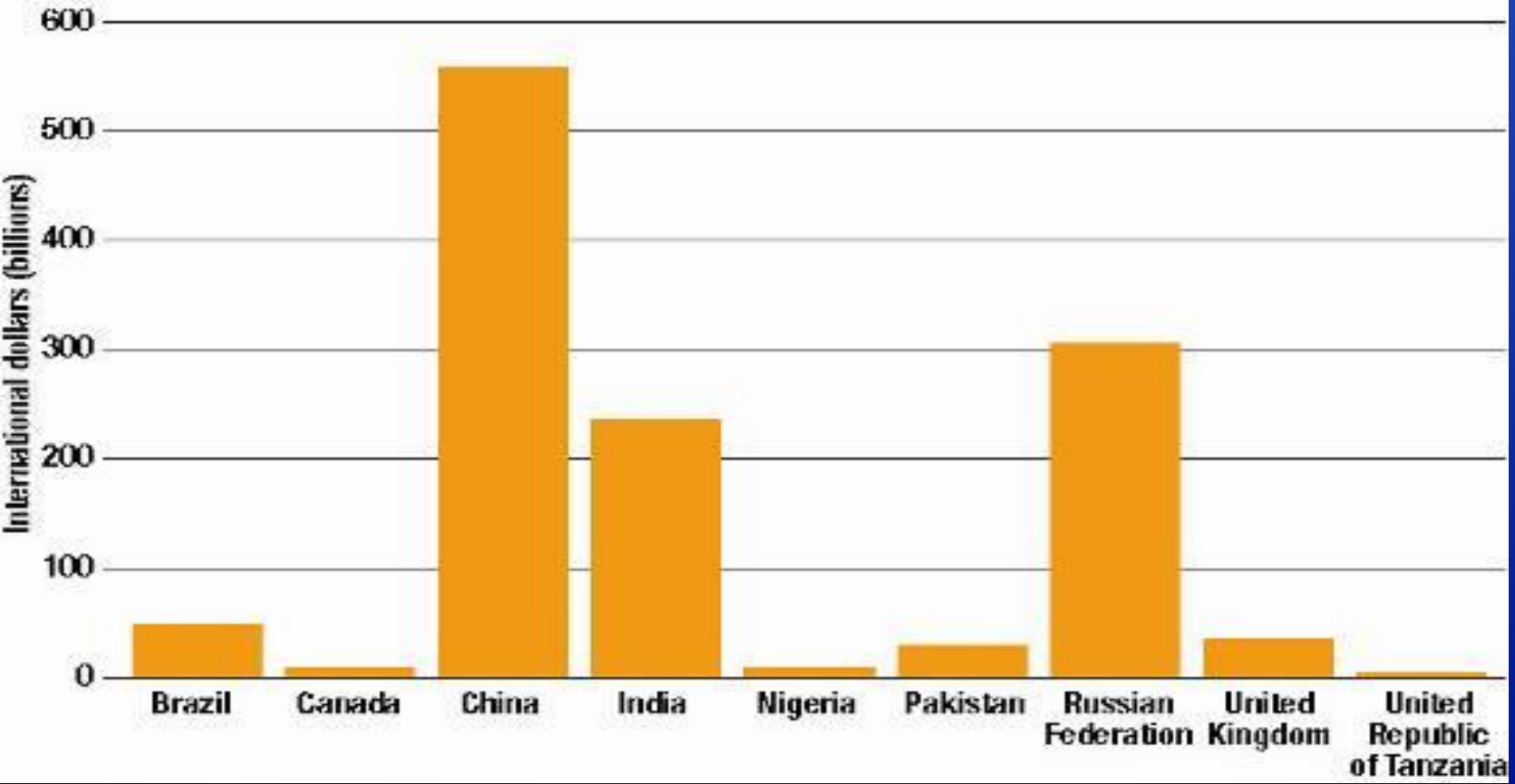
**CHRONIC DISEASE
PREVENTION AND CONTROL
IS TOO EXPENSIVE**

The economic impact: billions



Projected foregone national income

due to heart disease, stroke and diabetes
in selected countries, 2005–2015



Examples



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

Causes of Non-communicable diseases



UNDERLYING SOCIOECONOMIC, CULTURAL, POLITICAL AND ENVIRONMENTAL DETERMINANTS

Globalization

Urbanization

Population ageing

COMMON MODIFIABLE RISK FACTORS

Unhealthy diet

Physical inactivity

Tobacco use

NON-MODIFIABLE RISK FACTORS

Age

Heredity

INTERMEDIATE RISK FACTORS

Raised blood pressure

Raised blood glucose

Abnormal blood lipids

Overweight/obesity

MAIN CHRONIC DISEASES

Heart disease

Stroke

Cancer

Chronic respiratory diseases

Diabetes

Modifiable behavioural risk factors



- Modifiable behaviours, such as tobacco use, physical inactivity, unhealthy diet and the harmful use of alcohol, all increase the risk of NCDs.
- Tobacco accounts for over 7.2 million deaths every year (including from the effects of exposure to second-hand smoke)
- 4.1 million annual deaths have been attributed to excess salt/sodium intake
- More than half of the 3.3 million annual deaths attributable to alcohol use are from NCDs, including cancer
- 1.6 million deaths annually can be attributed to insufficient physical activity

Metabolic risk factors



- Metabolic risk factors contribute to four key metabolic changes that increase the risk of NCDs:
 - Raised blood pressure
 - Overweight/obesity
 - Hyperglycaemia (high blood glucose levels) and
 - Hyperlipidaemia (high levels of fat in the blood)
- In terms of attributable deaths:
 - 1. Elevated blood pressure (Attributable risk is 19%)
 - 2. Overweight and obesity
 - 3. Raised blood glucose.

Risk factors



- Modifiable
 - Cigarette smoking
 - High Blood pressure
 - Elevated serum Cholesterol
 - Diabetes
 - Life style changes (dietary patterns, physical activity)
 - Stress factors
 - Alcohol abuse
- Non-Modifiable
 - Age
 - Sex
 - Family Hx
 - Genetic factors
 - Personality?
 - Race

The objectives of Integrated Chronic Disease Prevention and Control Programme 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



Frame work for NCD prevention

Prevention



- Primary prevention
 - Population Strategy
 - High Risk strategy
- Secondary prevention
- Tertiary prevention

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 Advise: helping them to stop smoking and exercise and diet control ect

Secondary Prevention



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

What works



The **stepwise** framework

1 **PLANNING STEP 1**
Estimate population need and advocate for action

2 **PLANNING STEP 2**
Formulate and adopt policy

3 **PLANNING STEP 3**
Identify policy implementation steps

Policy implementation steps	Population-wide interventions		Interventions for individuals
	National level	Sub-national level	
Implementation step 1 CORE	Interventions that are feasible to implement with existing resources in the short term.		
Implementation step 2 EXPANDED	Interventions that are possible to implement with a realistically projected increase in, or reallocation of, resources in the medium term.		
Implementation step 3 DESIRABLE	Evidence-based interventions which are beyond the reach of existing resources.		

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



Global actions

Box I.1 Voluntary global targets for prevention and control of noncommunicable diseases to be attained by 2025



(1) A 25% relative reduction in the overall mortality from cardiovascular diseases, cancer, diabetes, or chronic respiratory diseases



(2) At least 10% relative reduction in the harmful use of alcohol, as appropriate, within the national context



(3) A 10% relative reduction in prevalence of insufficient physical activity



(4) A 30% relative reduction in mean population intake of salt/sodium



(5) A 30% relative reduction in prevalence of current tobacco use



(6) A 25% relative reduction in the prevalence of raised blood pressure or contain the prevalence of raised blood pressure, according to national circumstances



(7) Halt the rise in diabetes and obesity



(8) At least 50% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes



(9) An 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major noncommunicable diseases in both public and private facilities

Box I.2 Objectives of the Global NCD Action Plan (1)

1. To raise the priority accorded to the prevention and control of NCDs in global, regional and national agendas and internationally agreed development goals, through strengthened international cooperation and advocacy.
2. To strengthen national capacity, leadership, governance, multisectoral action and partnerships to accelerate country response for the prevention and control of NCDs.
3. To reduce modifiable risk factors for NCDs and underlying social determinants through creation of health-promoting environments.
4. To strengthen and orient health systems to address the prevention and control of NCDs and the underlying social determinants through people-centred primary health care and universal health coverage.
5. To promote and support national capacity for high-quality research and development for the prevention and control of NCDs.
6. To monitor the trends and determinants of NCDs and evaluate progress in their prevention and control.

Box I.3 Key messages of the Global Status Report on Noncommunicable diseases 2014

- Message 1** Noncommunicable diseases act as key barriers to poverty alleviation and sustainable development
- Message 2** While some countries are making progress, the majority are off course to meet the global NCD targets
- Message 3** Countries can move from political commitment to action by prioritizing high-impact, affordable interventions
- Message 4** All countries need to set national NCD targets and be accountable for attaining them
- Message 5** Structures and processes for multisectoral and intersectoral collaboration need to be established
- Message 6** Investment in health systems is critical for improving NCD outcomes
- Message 7** Institutional and human resource capacities and financial resources for NCD prevention and control require strengthening.



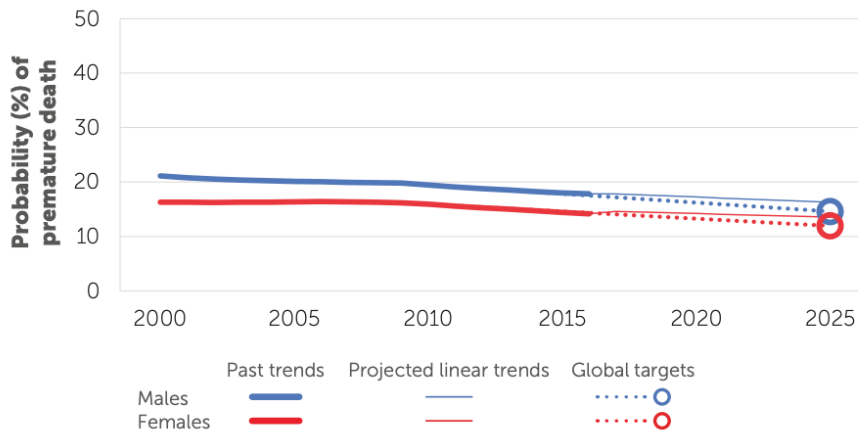
Situation in Saudi Arabia



SAUDI ARABIA

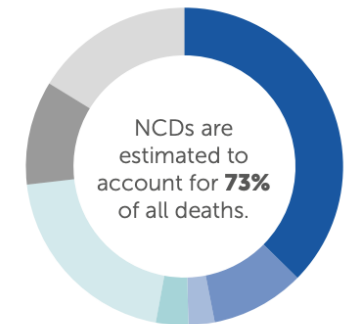
2016 TOTAL POPULATION: 32 276 000
2016 TOTAL DEATHS: 114 000

RISK OF PREMATURE DEATH DUE TO NCDs (%)*



PROPORTIONAL MORTALITY*

- ▶ 37% Cardiovascular diseases
- ▶ 10% Cancers
- ▶ 3% Chronic respiratory diseases
- ▶ 3% Diabetes
- ▶ 20% Other NCDs
- ▶ 11% Communicable, maternal, perinatal and nutritional conditions
- ▶ 16% Injuries



12 000 LIVES CAN BE SAVED BY 2025 BY IMPLEMENTING ALL OF THE WHO "BEST BUYS"

MORTALITY*		NATIONAL TARGET SET		DATA YEAR	MALES	FEMALES	TOTAL
Premature mortality from NCDs	✓	Total NCD deaths	2016	48 600	34 500	83 100	
		Risk of premature death between 30-70 years (%)	2016	18	14	16	
Suicide mortality	-	Suicide mortality rate (per 100 000 population)	2016	-	-	3	

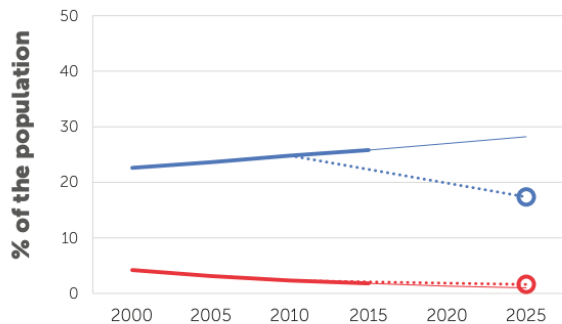


RISK FACTORS

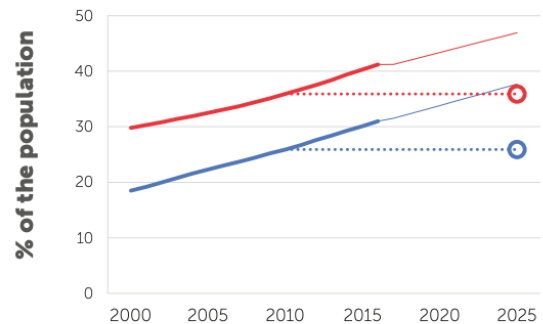
	Harmful use of alcohol	X	Total alcohol per capita consumption, adults aged 15+ (litres of pure alcohol)	2016	0	0	0
	Physical inactivity	✓	Physical inactivity, adults aged 18+ (%)	2016	44	64	52
	Salt/Sodium intake	X	Mean population salt intake, adults aged 20+ (g/day)	2010	8	8	8
	Tobacco use	✓	Current tobacco smoking, adults aged 15+ (%)	2016	26	2	16
	Raised blood pressure	✓	Raised blood pressure, adults aged 18+ (%)	2015	21	16	19
	Diabetes	X	Raised blood glucose, adults aged 18+ (%)	2014	15	14	14
	Obesity	✓	Obesity, adults aged 18+ (%)	2016	31	41	35
			Obesity, adolescents aged 10-19 (%)	2016	19	14	17
	Ambient air pollution	-	Exceedance of WHO guidelines level for annual PM2.5 concentration (proportion)	2016	-	-	8
	Household air pollution	-	Population with primary reliance on polluting fuels and technologies (%)	2016	-	-	<5

SELECTED ADULT RISK FACTOR TRENDS

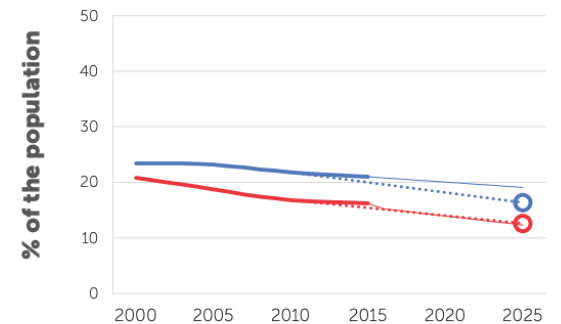
CURRENT TOBACCO SMOKING



OBESITY





RAISED BLOOD PRESSURE



Past trends Projected linear trends Global targets
 Males
 Females



NATIONAL SYSTEMS RESPONSE

 Drug therapy to prevent heart attacks and strokes	X	Proportion of population at high risk for CVD or with existing CVD (%)	-	...
		Proportion of high risk persons receiving any drug therapy and counselling to prevent heart attacks and strokes (%)	-	...
		Proportion of primary health care centres reported as offering CVD risk stratification	2017	More than 50%
		Reported having CVD guidelines that are utilized in at least 50% of health facilities	2017	Yes
 Essential NCD medicines and basic technologies to treat major NCDs	X	Number of essential NCD medicines reported as "generally available"	2017	10 out of 10
		Number of essential NCD technologies reported as "generally available"	2017	6 out of 6

... = no data available

* The mortality estimates for this country have a high degree of uncertainty because they are not based on any national NCD mortality data (see Explanatory Notes)

World Health Organization - Noncommunicable Diseases (NCD) Country Profiles, 2018.

References



- Park text book: pgs 365 - 413
- Global status report on noncommunicable diseases 2014. available at:
http://apps.who.int/iris/bitstream/handle/10665/148114/9789241564854_eng.pdf;jsessionid=7C541177D05F9265E49BD9C3C5872CCF?sequence=1