



Ankara University
SCHOOL OF MEDICINE

The First Medical School In The Republic of Turkey (1945)

Public Health Approach for Chronic Diseases such as DM, HT..

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Global Health Risks

GLOBAL HEALTH RISKS

Mortality and burden of disease attributable to selected major risks



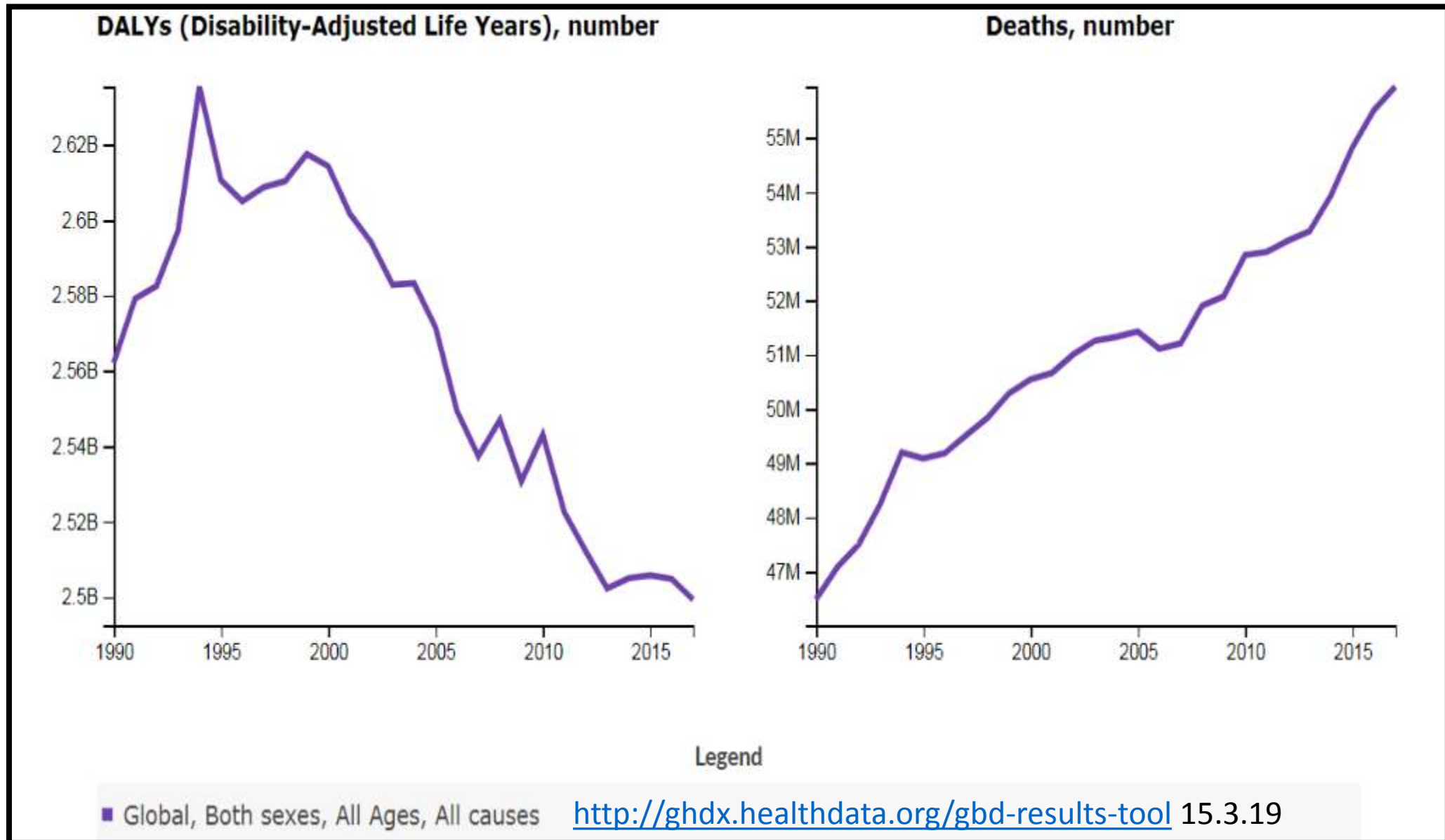
The leading global risks for mortality in the World are;

- * **high blood pressure**
(responsible for 13% of deaths globally),
- * **tobacco use** (9%),
- * **high blood glucose** (6%),
- * **physical inactivity** (6%),
- * and **overweight and obesity** (5%).

These risks are responsible for raising the risk of chronic diseases such as **heart disease, diabetes and cancers**. They affect countries across all income groups: high, middle and low.

https://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf, 15th March 2019

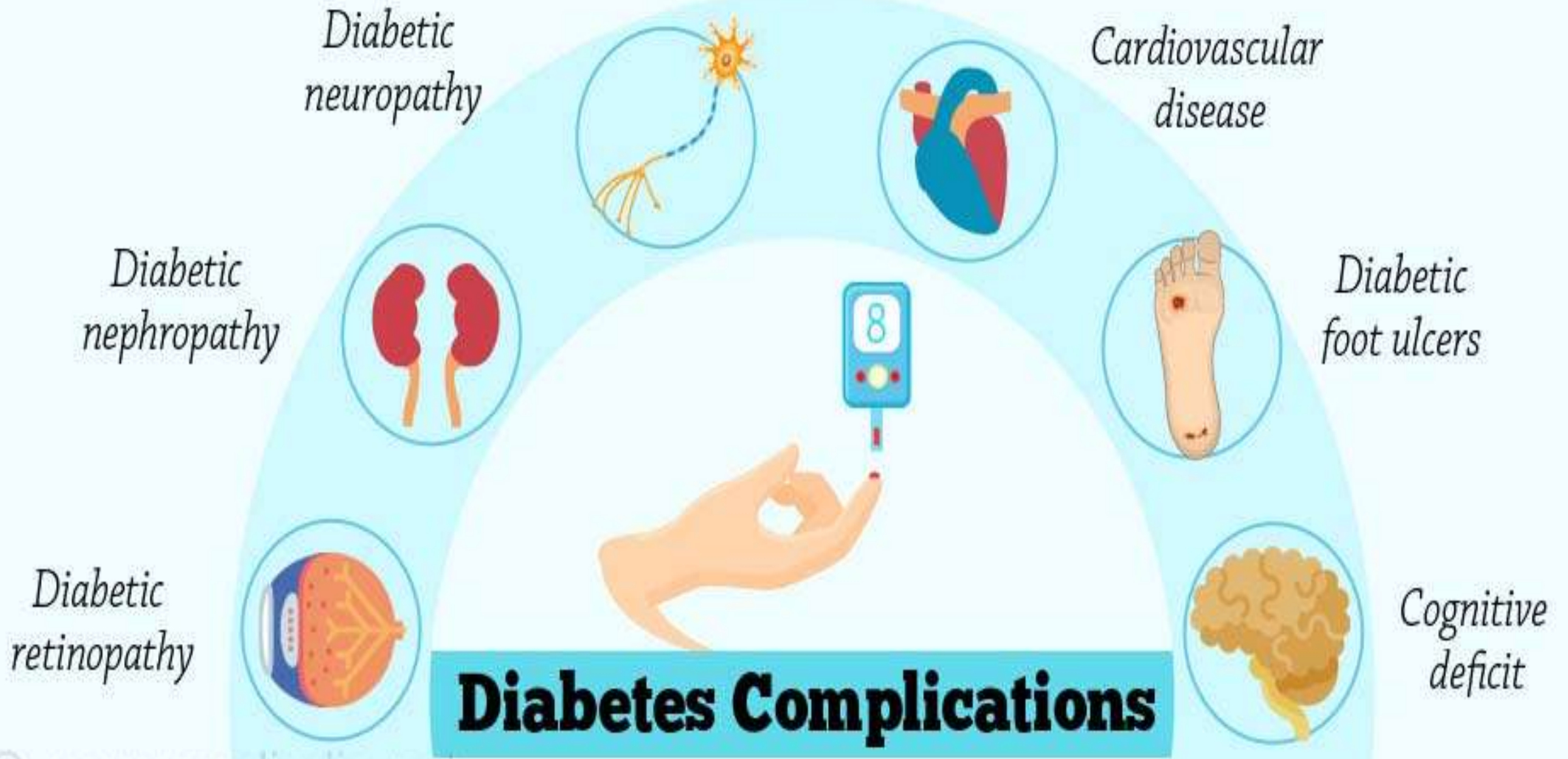
Global DALY and Death Trends



Diabetes

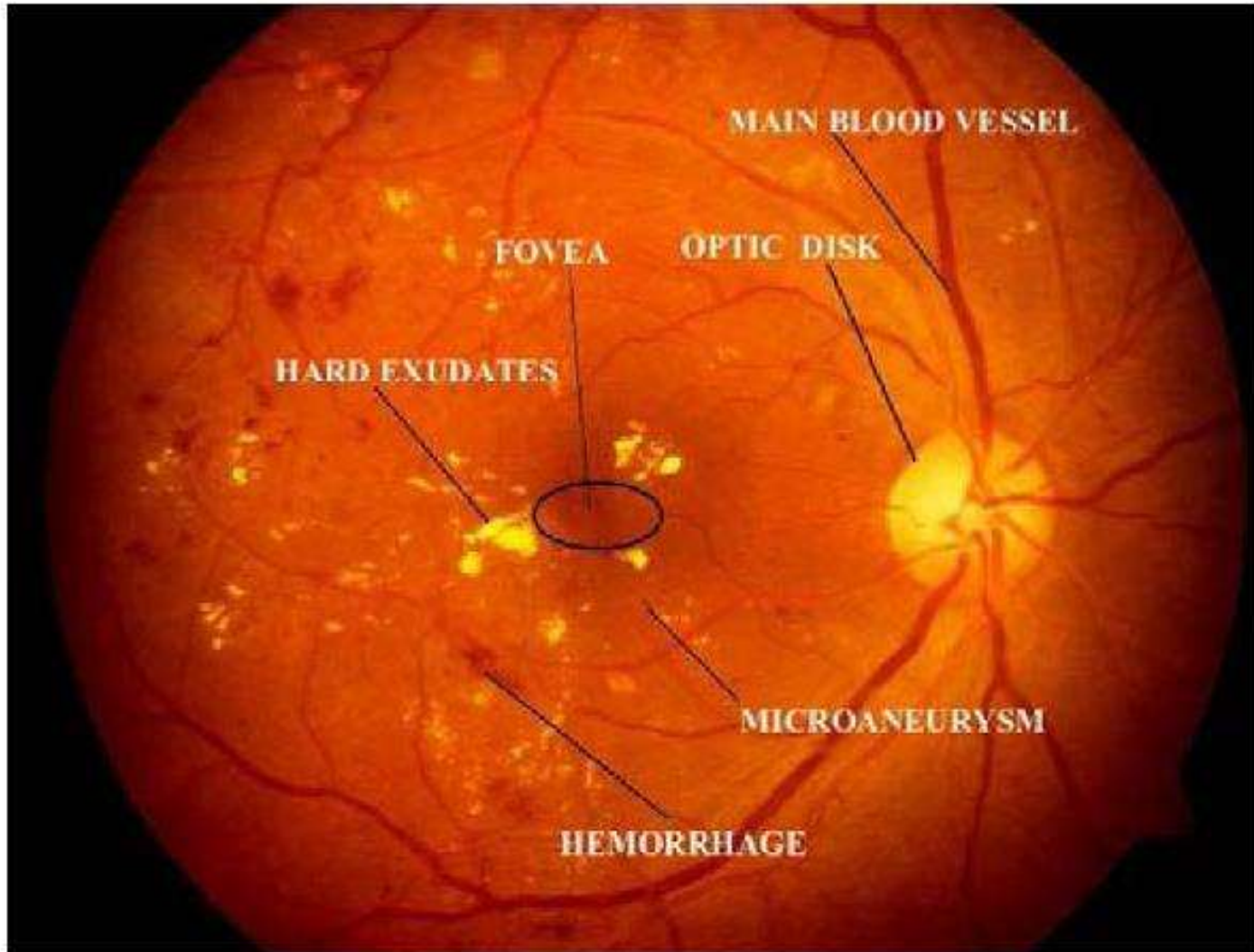
- Several factors have contributed to the increase in the prevalence of diabetes. Ageing of populations along with greater exposure to lifestyle-related risk factors, most importantly **high BMI**, has increased the incidence of diabetes in almost all countries.
- At the same time, improvements in treatment of diabetes have increased the life expectancy among people with diabetes. The large increase in prevalence imposes a **substantial economic burden on health-care systems**.
- In the USA, diabetes was responsible for the **largest health-care spending** and the greatest increase over the past 2 decades among 155 health conditions.
- This highlights the importance of development and implementation of more effective **population-level strategies** to prevent diabetes.

([https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32154-2/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32154-2/fulltext), 25.3.19)

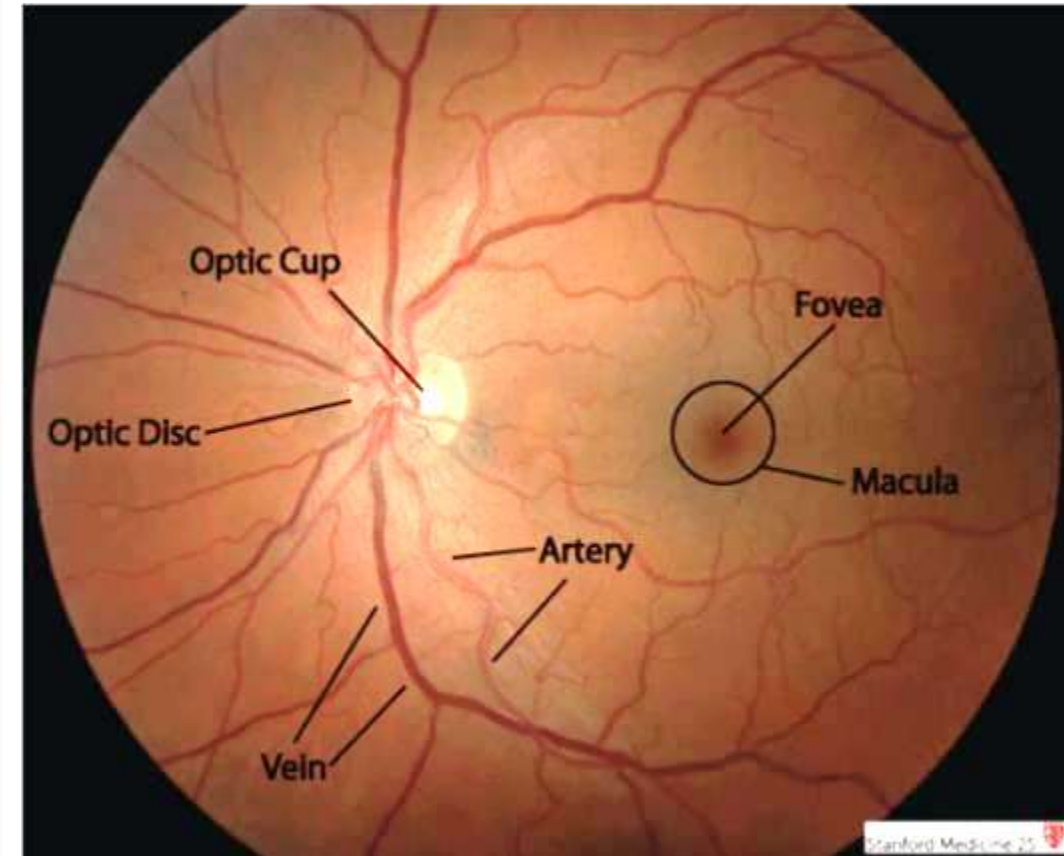


Fundus of eye

Diabetic retina



Normal retina



Diabetic foot



15.03.2019



www.ahmetsaltik.net

WHO; Raised Blood Pressure

Situation and trends

Worldwide, raised blood pressure is estimated to cause **7.5 million deaths**, about 12.8% of the total of all deaths. This accounts for 57 million disability adjusted life years (DALYS) or 3.7% of total DALYS. Raised blood pressure is a major risk factor for coronary heart disease and ischemic as well as hemorrhagic stroke.

Blood pressure levels have been shown to be positively and continuously related to the risk for stroke and coronary heart disease.

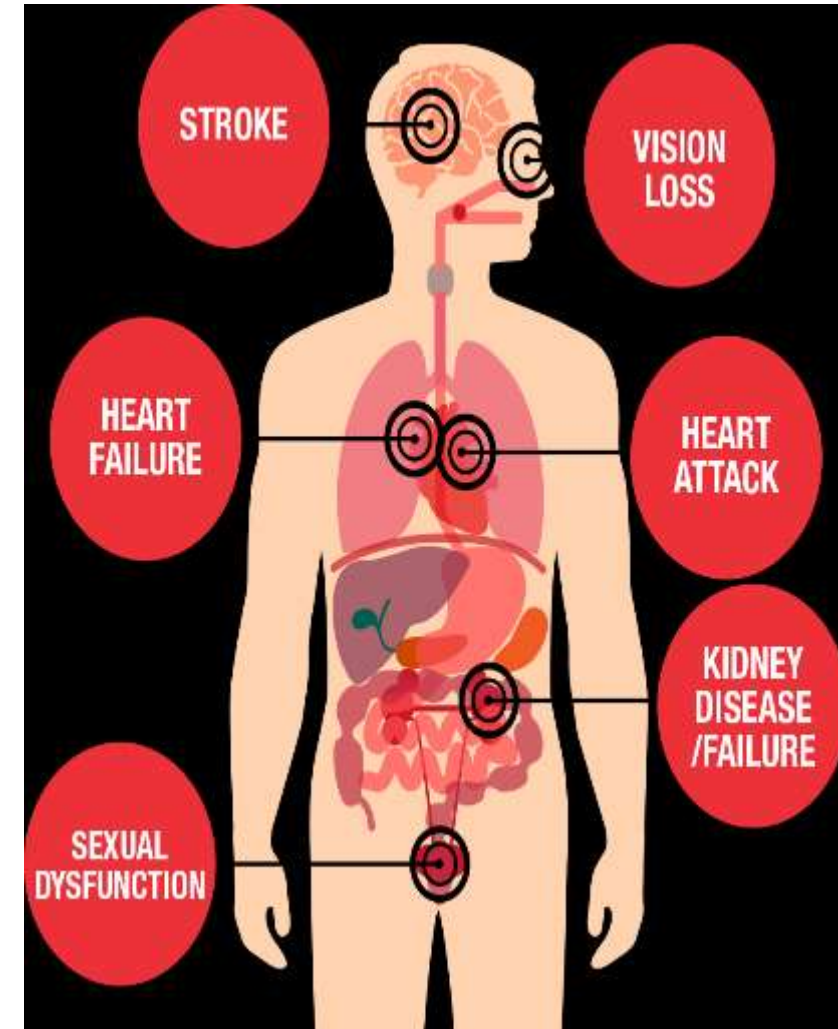
In some age groups, the risk of cardiovascular disease doubles for each increment of 20/10 mm Hg of blood pressure, starting as low as 115/75 mm Hg. In addition to coronary **heart diseases and stroke**, complications of raised blood pressure include heart failure, peripheral vascular disease, renal impairment, retinal hemorrhage and visual impairment. Treating systolic blood pressure and diastolic blood pressure until they are **less than 140/90** mm Hg is associated with a reduction in cardiovascular complications.

https://www.who.int/gho/ncd/risk_factors/blood_pressure_prevalence_text/en/ 15.3.19

WHO; Raised Blood Pressure

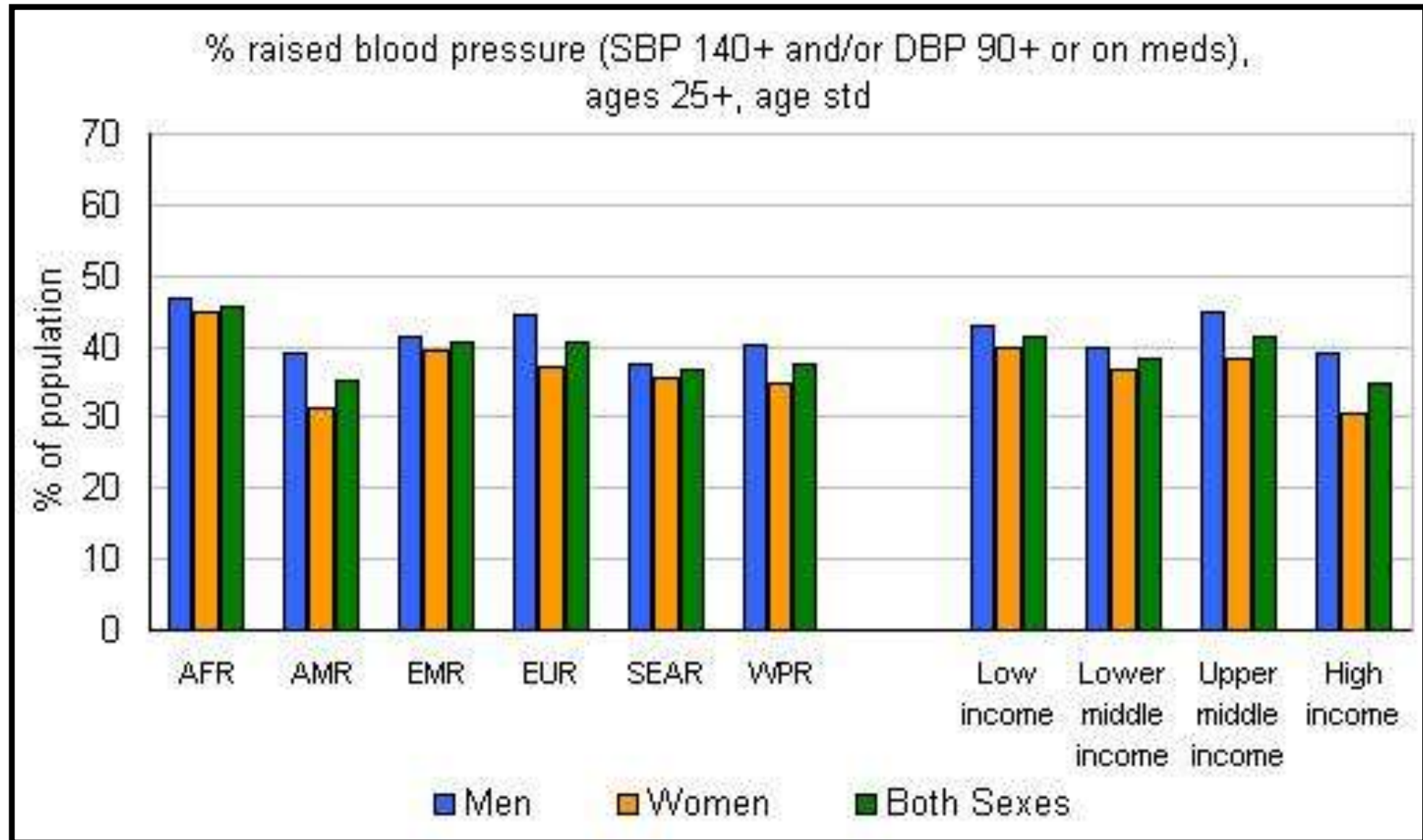
Situation and trends

Globally, the overall prevalence of raised blood pressure in adults aged 25 and over was around **40%** in 2008. The proportion of the world's population with high blood pressure, or ***uncontrolled hypertension***, fell modestly between 1980 and 2008. However, because of population growth and ageing, the number of people with uncontrolled hypertension rose from 600 million in 1980 to nearly 1 billion in 2008.



https://www.who.int/gho/ncd/risk_factors/blood_pressure_prevalence_text/en/ 15.3.19

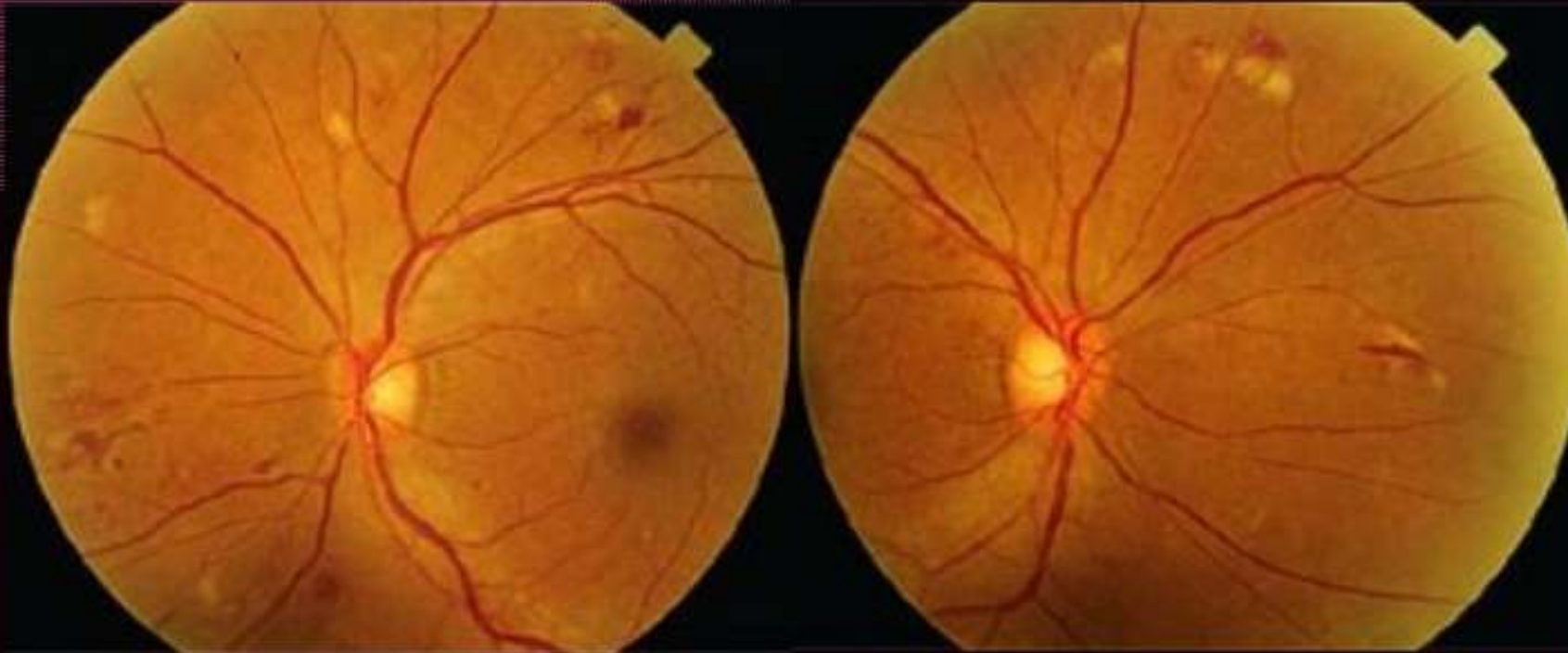
WHO; Raised Blood Pressure



https://www.who.int/gho/ncd/risk_factors/blood_pressure_prevalence_text/en/ 15.3.19

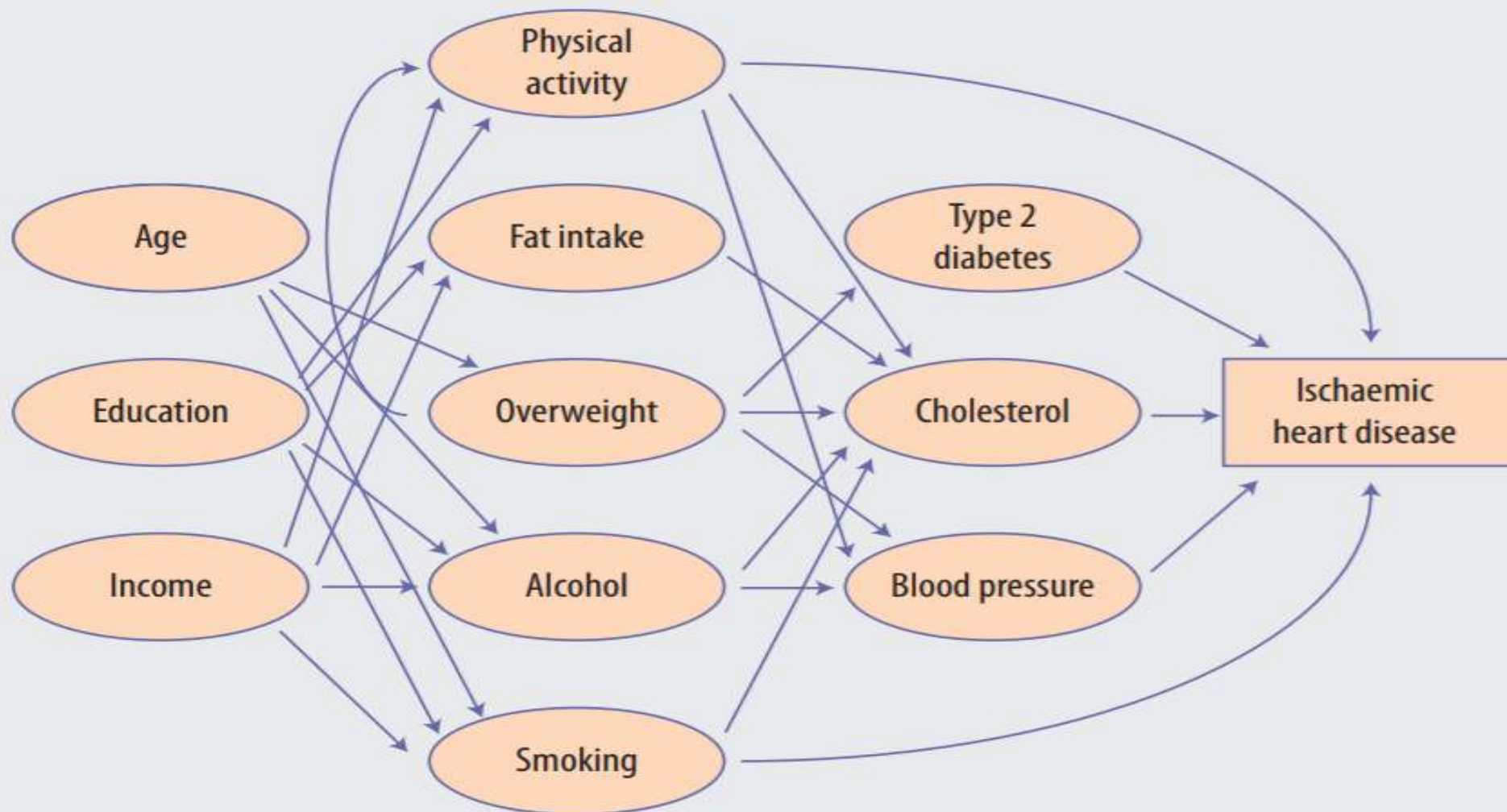
Hypertensive Retinopathy – Diagnostic Techniques & Signs

Generalised narrowing of the retinal arterioles



Causal Chain for IHD

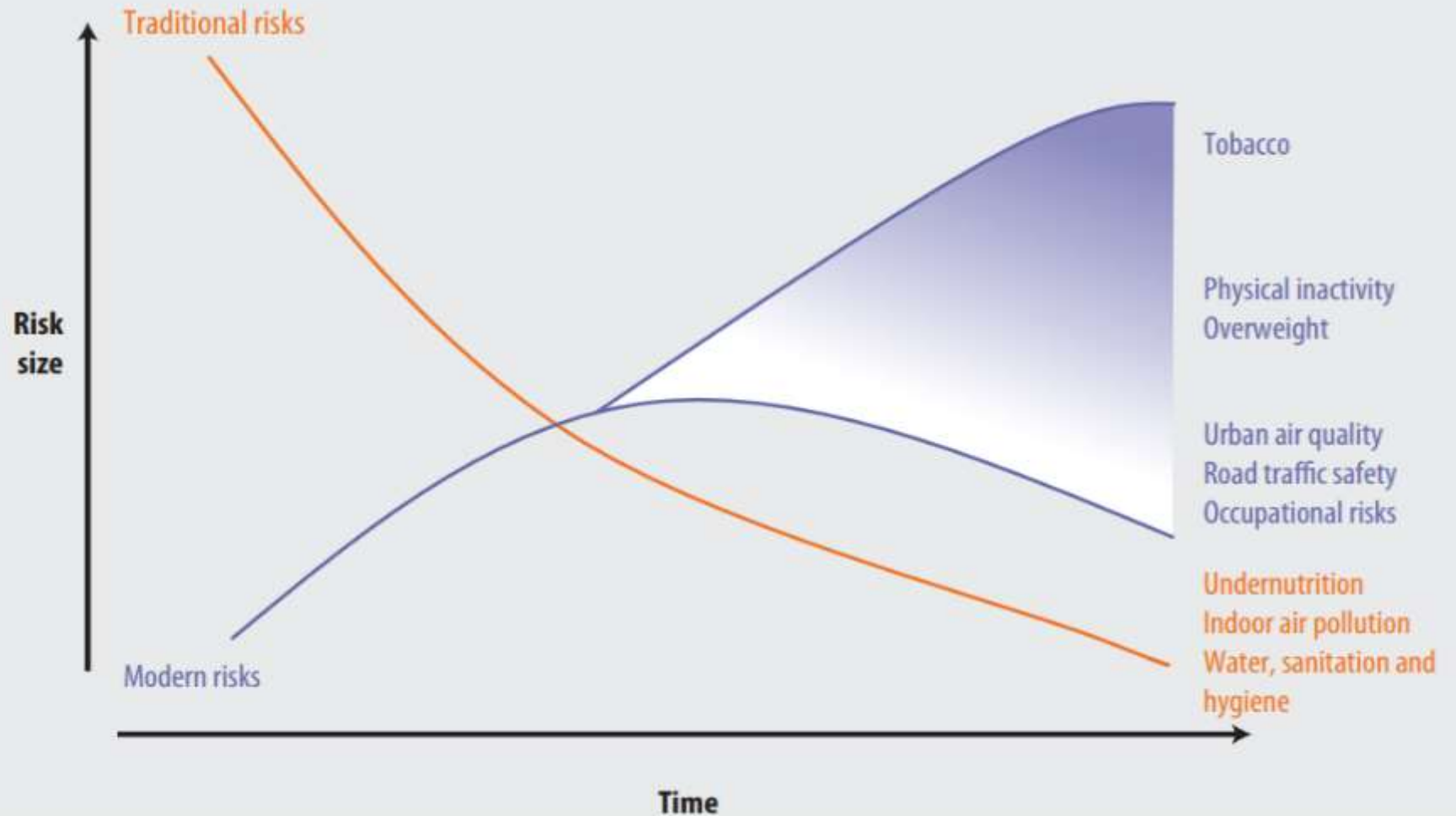
Figure 1: The causal chain. Major causes of ischaemic heart disease are shown. Arrows indicate some (but not all) of the pathways by which these causes interact.



https://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf, 15th March 2019

The Risk Transition

Figure 2: The risk transition. Over time, major risks to health shift from traditional risks (e.g. inadequate nutrition or unsafe water and sanitation) to modern risks (e.g. overweight and obesity). Modern risks may take different trajectories in different countries, depending on the risk and the context.



https://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf, 15th March 2019

Disability-Adjusted Life Year (DALY)

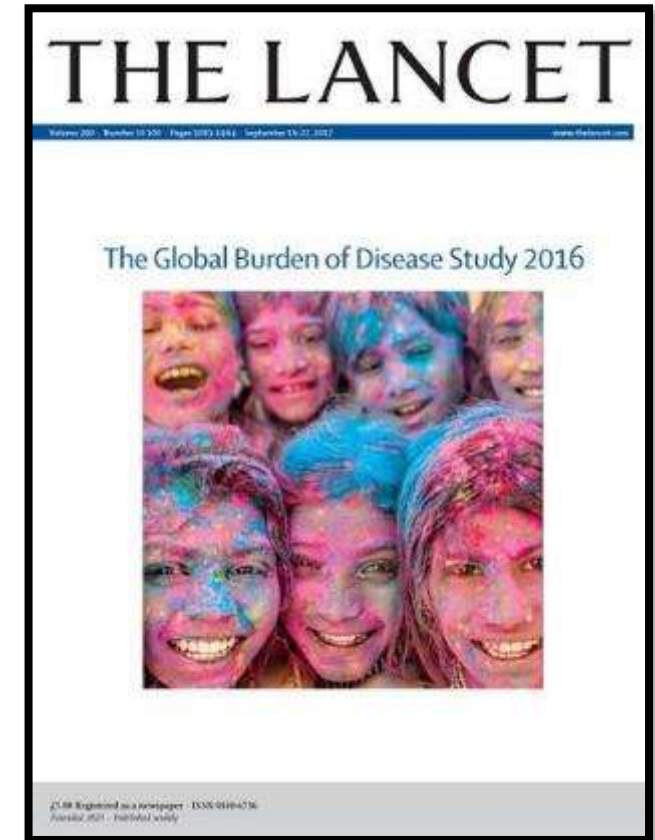
- Quantifying the Burden of Disease from mortality and morbidity
- Definition
- One **DALY** can be thought of as one lost year of "healthy" life. The sum of these **DALYs** across the population, or the burden of disease, can be thought of as a measurement of the gap between current health status and an ideal health situation where the entire population lives to an advanced age, free of disease and disability.

(www.who.int/healthinfo/global_burden_disease/metrics_daly/en/index.html, 2.6.12)

Worldwide burden of diabetes

- Diabetes is a pandemic of major public health importance cannot be disputed.
- While the some data don't emphasis the importance of diabetes as a **global public health problem**, these do not place in perspective the ranking of diabetes as compared to other diseases and illnesses.
- The GBD (*Global Burden of Disease*) 2017 data highlight this fact in multiple ways.
- The disease and its complications or co-morbid conditions rank high in the list of risk factors, and causes of **death**.

(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4192997/>, 25.3.19)



Global, regional, and national incidence, prevalence, and years lived with disability for 328 diseases and injuries for 195 countries, 1990–2016: a systematic analysis for the Global Burden of Disease Study 2016

Background : *Worldwide burden of diabetes*

- As mortality rates decline, life expectancy increases, and populations age, non-fatal outcomes of diseases and injuries are becoming a larger component of the *global burden of disease*.
- **The Global Burden of Diseases**, Injuries, and Risk Factors Study 2016 (GBD 2016) provides a comprehensive assessment of prevalence, incidence, and years lived with **disability** (YLDs) for 328 causes in 195 countries and territories from 1990 to 2016.

([https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(17\)32154-2/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(17)32154-2/fulltext), 25.3.19)

Globally;

low back pain,
migraine,
age-related & other hearing loss,
iron-deficiency anaemia,
and major depressive disorder

*were the 5 leading causes of
YLDs in 2016.*

Disability due to DM

- **Disability:** Disability adjusted life years
- ***Disability adjusted life years (DALYs)*** are computed as a sum of YLL and YLD. Thus they represent a more comprehensive marker of disability due to any disease.
- **Diabetes** is the 14. largest cause of DALYs worldwide, and the 16th highest in South Asia. South Asian men report a 15th and 18th position for diabetes-caused DALYs respectively, while their women peers experience diabetes to be the 12th and 18th most important cause DALY.
- Once again, the relative importance of diabetes goes up after 55 years of age.

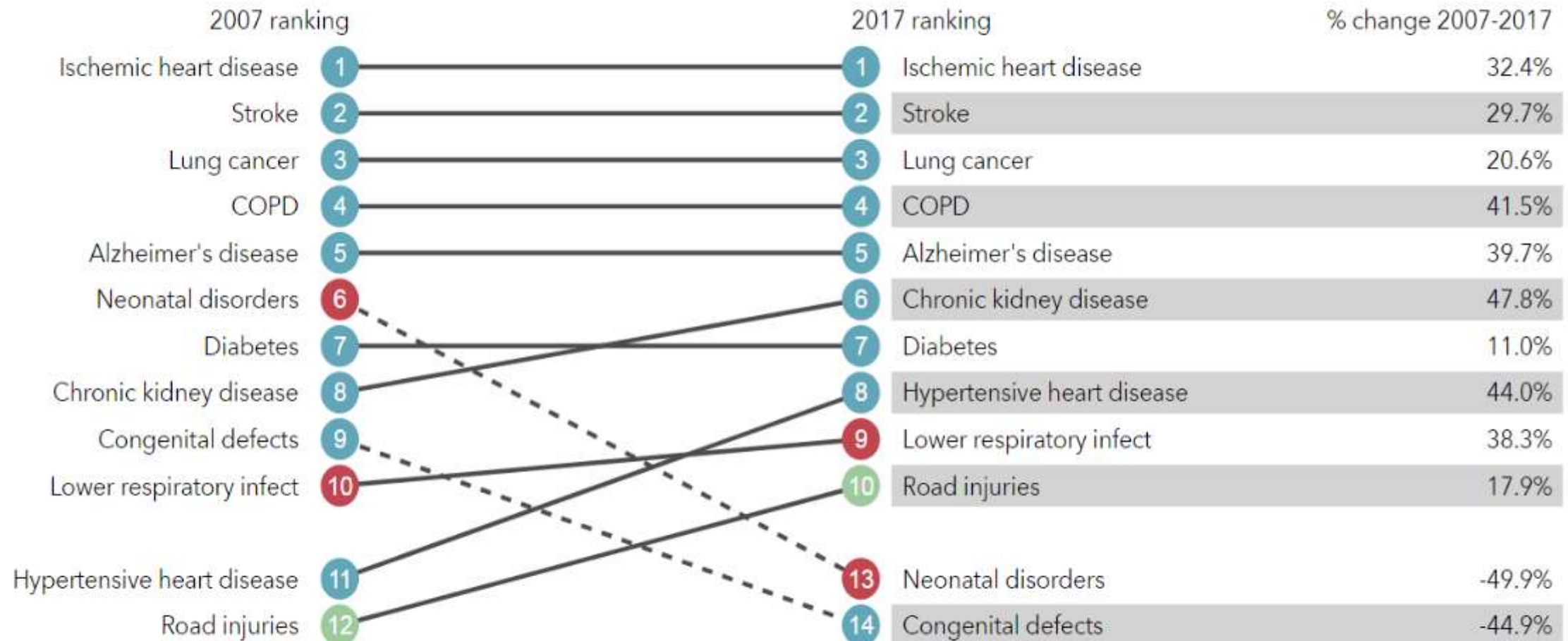
(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4192997/>, 25.3.19)

Risk factors for DM

- Disease is preceded by risk factors. The major risk factors which lead to deaths and **DALYs** include aspects related directly or indirectly to DM.
- **High blood pressure** is the most important risk factor for death in 2010 (up from 4th position in 1990), while **high body mass index** (BMI), high fasting plasma glucose (FPG), and **high total cholesterol** are at 6th, 7th and 15th ranks (*as compared to 10th, 9th and 14th positions in 1990 respectively*).
- **Dietary habits** seems to dominate the rest of the 2010 list, with tobacco (rank 2), alcohol (rank 3), low fruit intake (rank 5), high sodium intake (rank 11), low nuts and seeds intake (rank 12), low vegetable use (rank 17), low whole grain use (rank 16) and high processed meat intake (rank 22) adding to the risk of death and disease.

(<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4192997/>, 25.3.19)

What causes the most deaths?

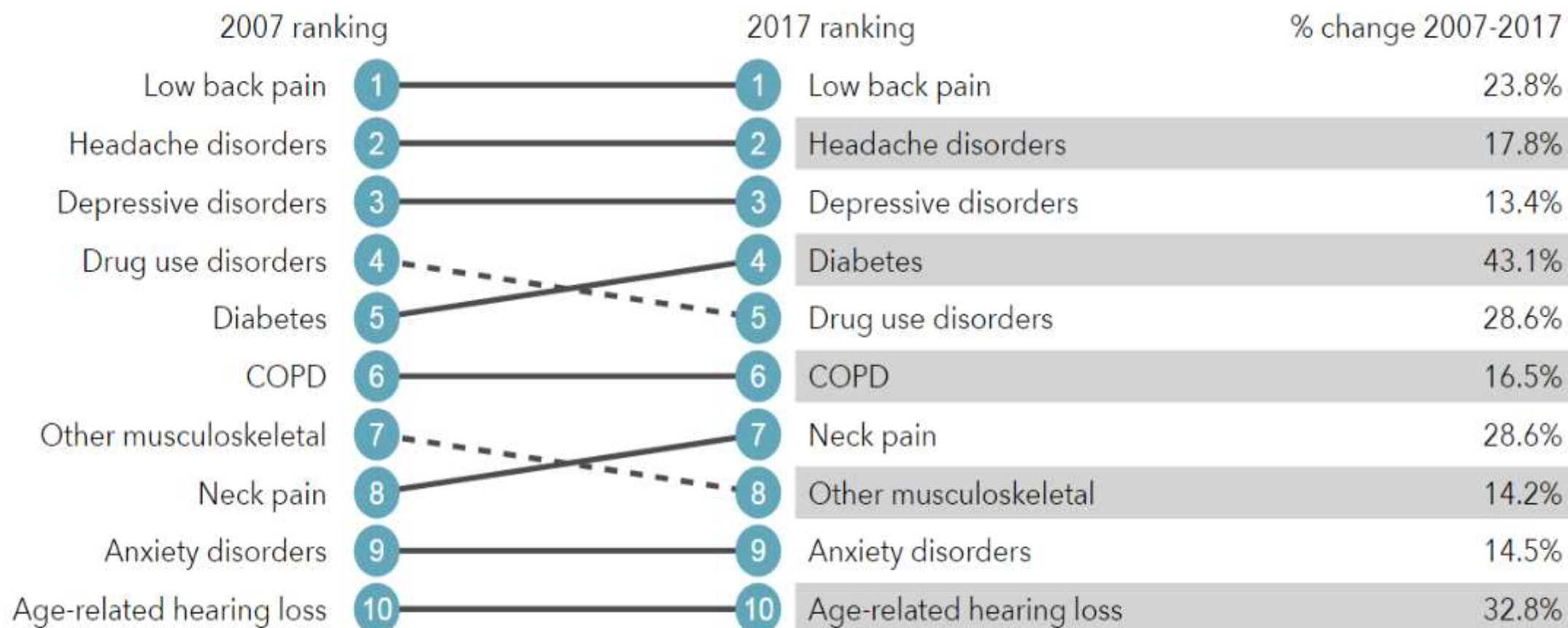


Top 10 causes of death in 2017 and percent change, 2007-2017, all ages, number <http://www.healthdata.org/turkey> 15.3.19

What health problems cause the most disability?

<http://www.healthdata.org/turkey> 15.3.19

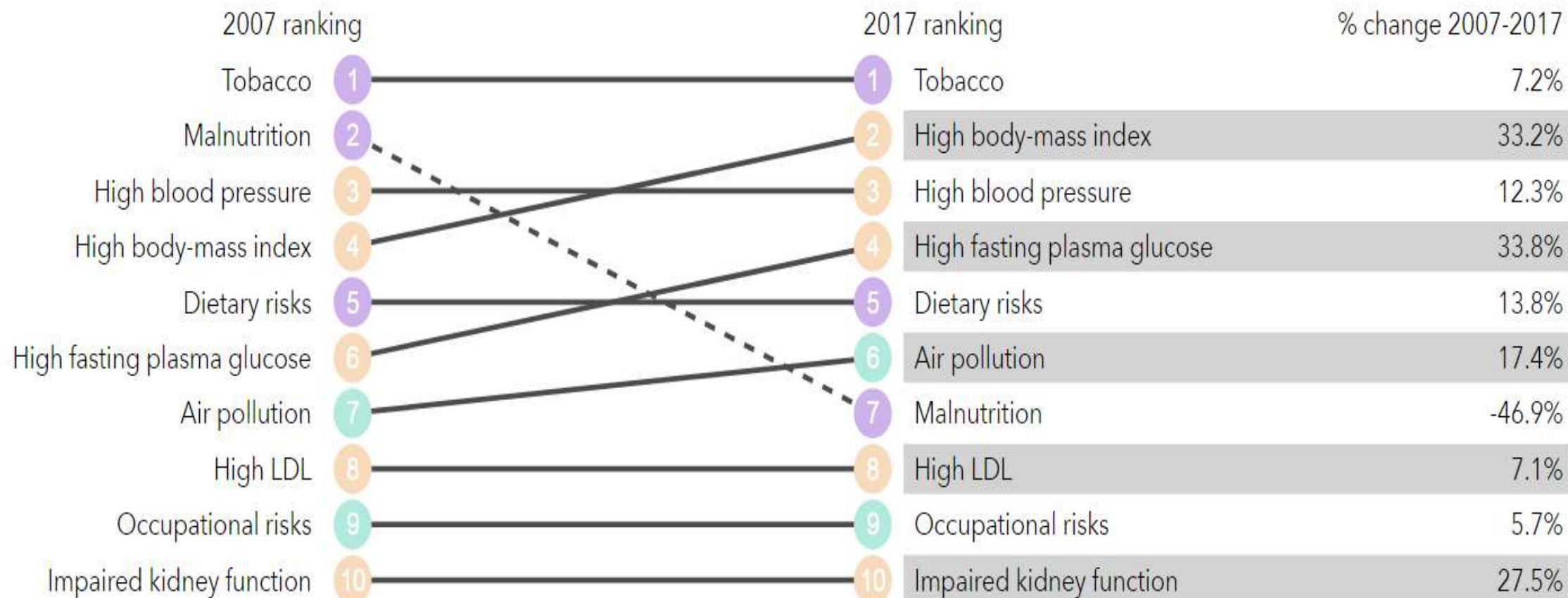
- Communicable, maternal, neonatal, and nutritional diseases
- Non-communicable diseases
- Injuries



What risk factors drive the most death and disability combined?

<http://www.healthdata.org/turkey> 15.3.19

- Metabolic risks
- Environmental/occupational risks
- Behavioral risks

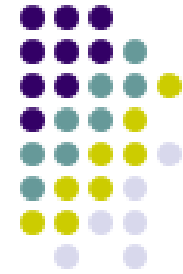


Cost vs. Outcome

Cost	Categories	Worse	Same	Better
	Costlier	No	No	<u>May be</u>
	Same cost	No	No	<u>Yes</u>
	Cheaper	<u>May be</u>	<u>Yes</u>	<u>Yes</u>
Outcome				

Paradigm of Cost-Quality

Cost difference / Quality difference = Cost-efficiency rate



High cost

Low cost

High
quality

????

APPROVAL

Low
quality

OBJECTION

????

The three 'Es'

Evidence —→ Evaluation —→ Effectiveness

Not opinion but evidence...

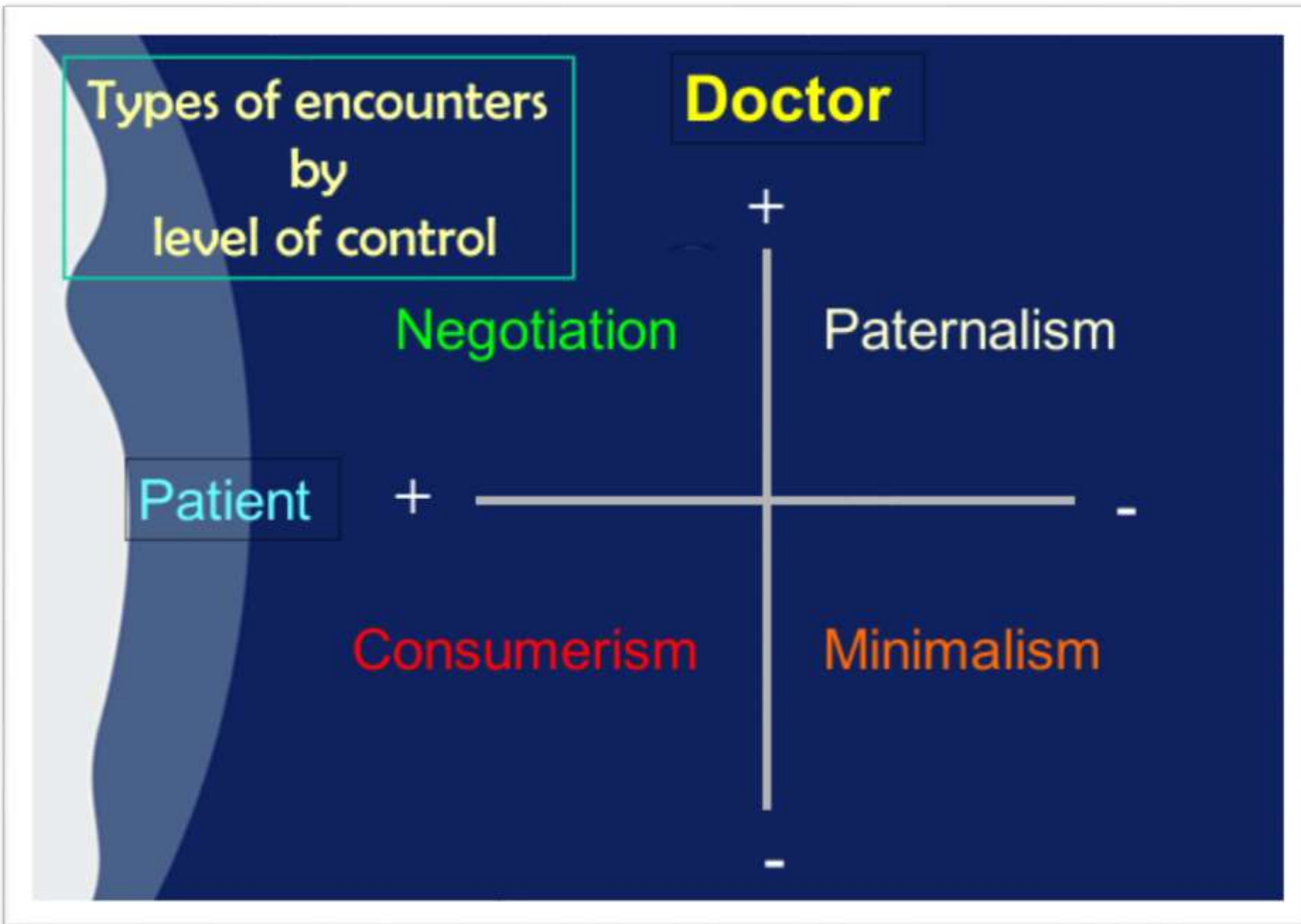
Evidence based medicine is essential..

Components of contemporary clinical decision making

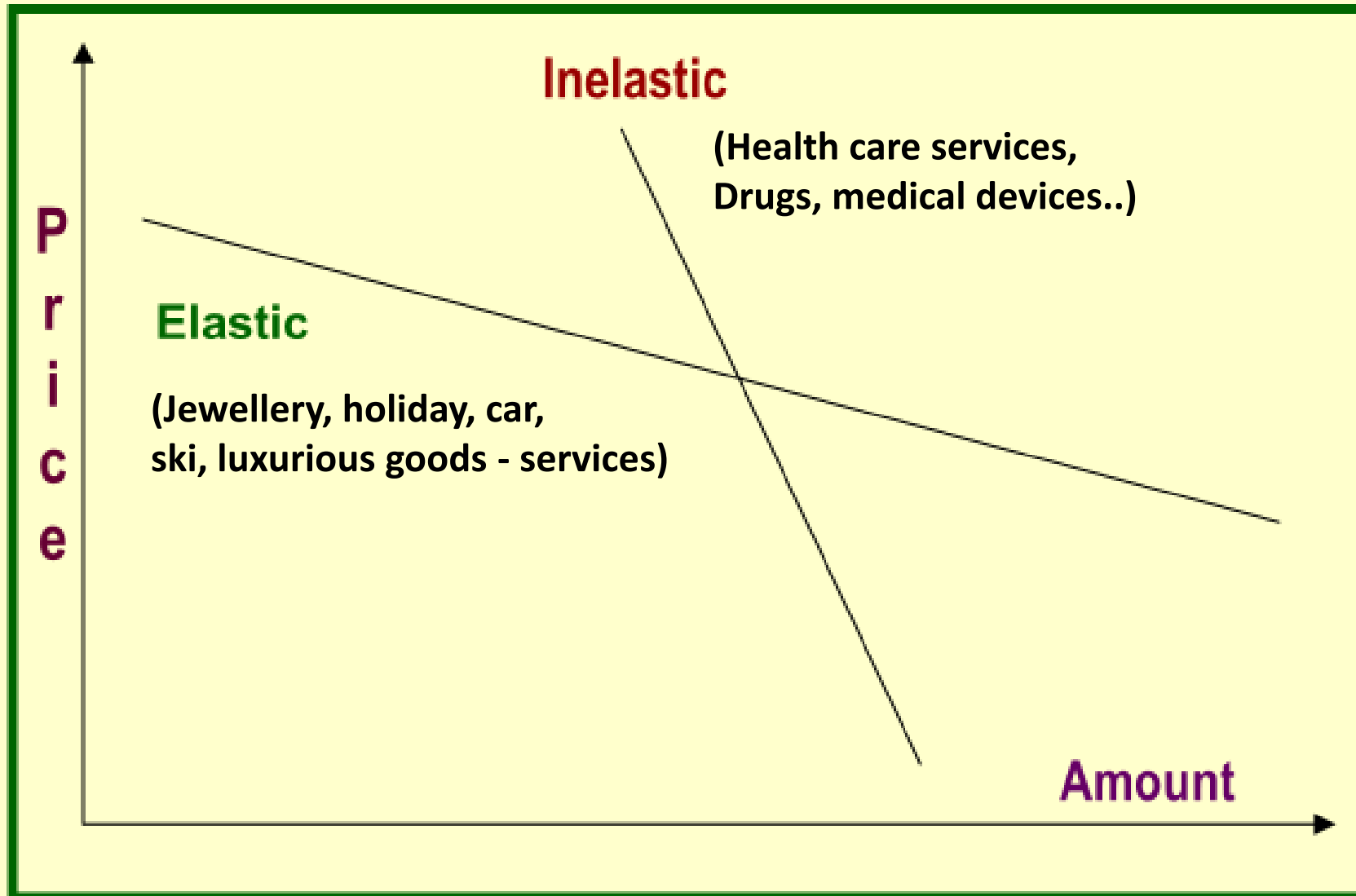


From : Prof. Albert I. Wertheimer, Temple University, USA. Ankara, 24 May 2005

- **Direct cost**
- **Indirect cost**
 - Food, lodging, transport, loss of family wages etc.
- **Intangible cost**
 - Pain and suffering

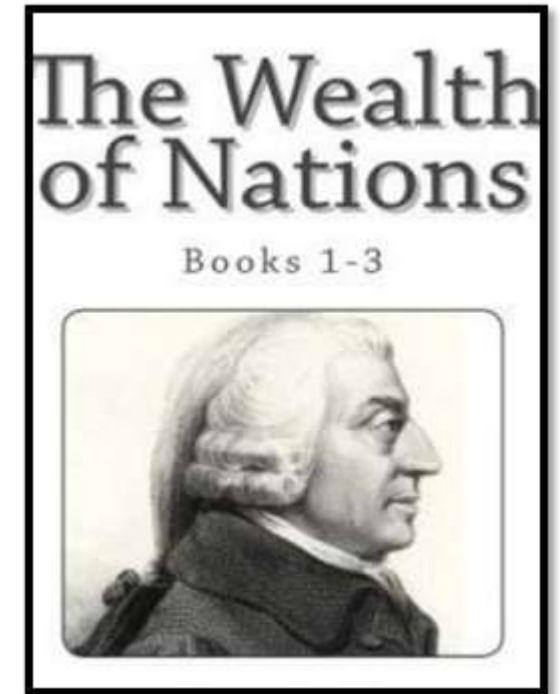


Elasticity of Demand in health services



Adam Smith's 1776

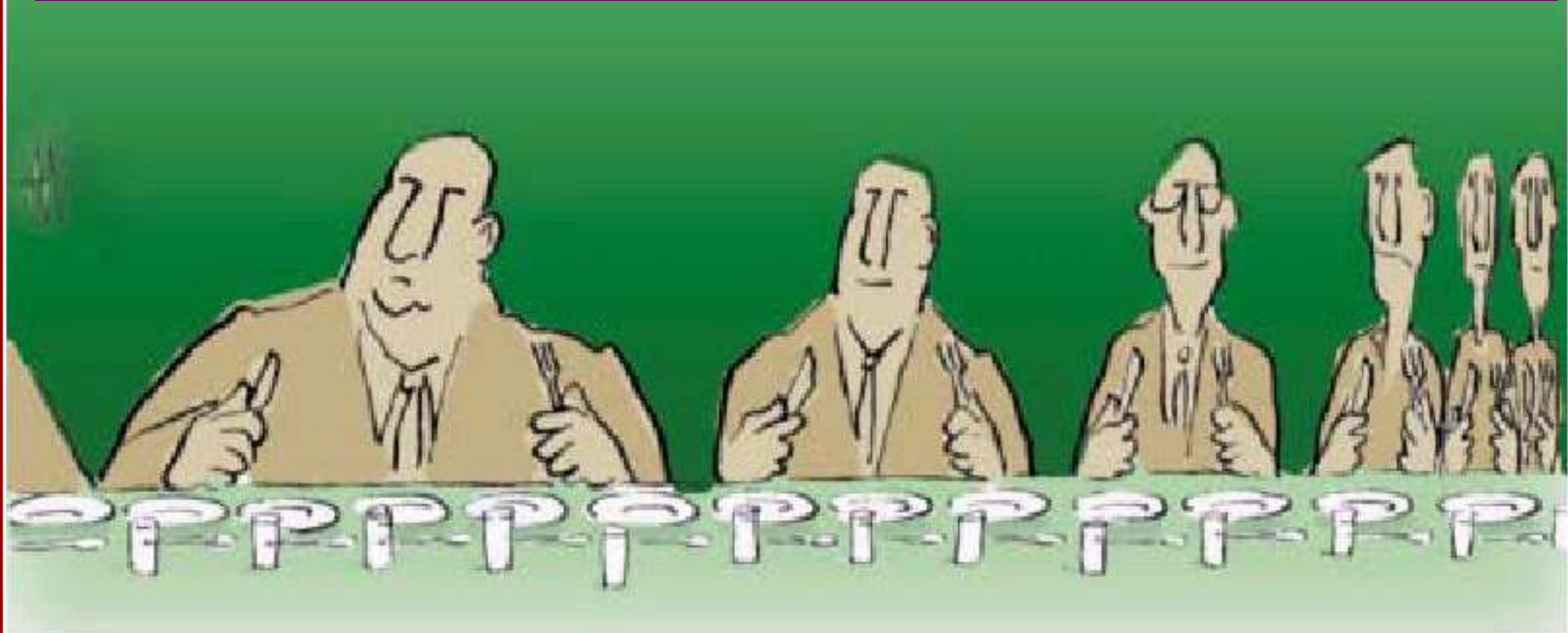
«*Supply and Demand Law*»



Health care is such critically important that, cannot be left to free market..

Undistributed National income..

Gini coefficient is getting worse and worse.



Poverty, globalization and growth :

Perspectives on some of the statistical links

Prof. Dr. Joseph E. Stiglitz, *Nobel Laureate in Economics*, 2002

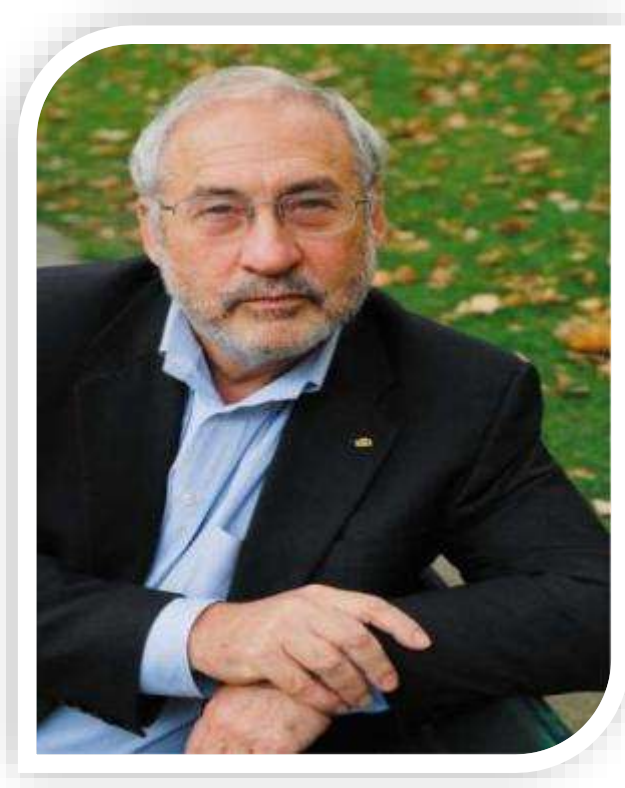
“.. Hidden beneath the surface in these econometric studies of globalization is another subtext : Because **Globalization** has proven so good for growth and poverty reduction, critics of globalization must be wrong. But these cross-sectional studies cannot address the most fundamental criticisms of globalization as it has been practiced : That it **is unfair and that its benefits have disproportionately gone to rich people**..”

Poverty, globalization and growth :

Perspectives on some of the statistical links

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“.. Are there **pro-poor growth strategies** that do more to reduce **poverty** as they promote growth? And are there growth strategies that increase **poverty** as they promote growth strategies that should be shunned?.”



Poverty, globalization and growth :

Perspectives on some of the statistical links

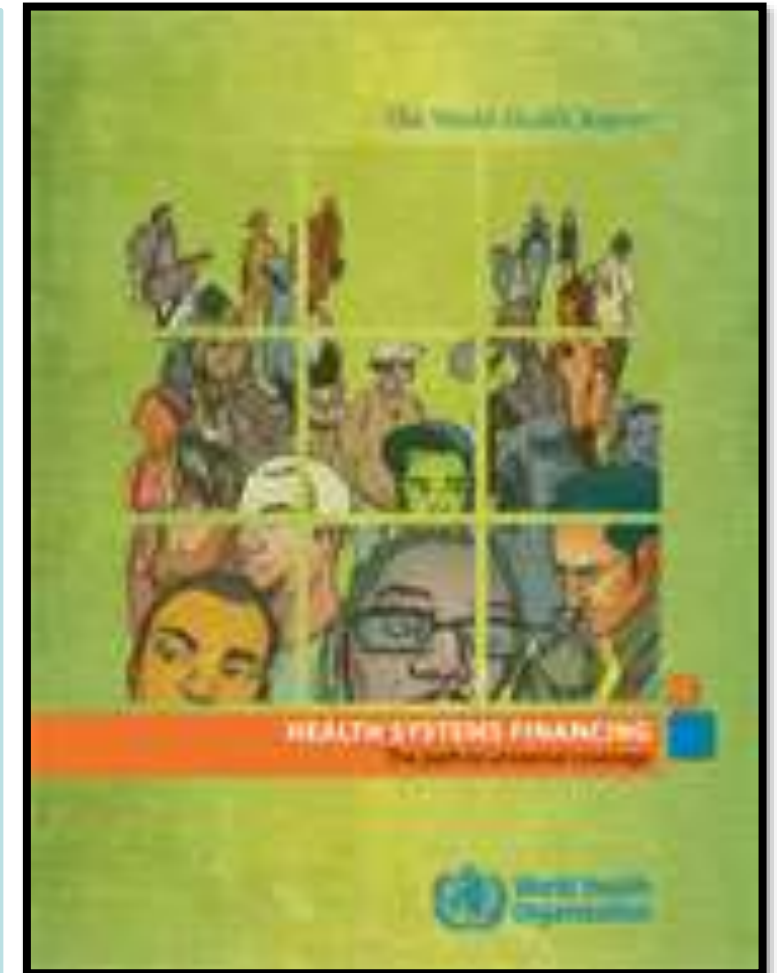
Prof. Dr. Joseph E. Stiglitz, *Nobel Laureate in Economics*, 2002

“.. For instance, neither theory nor evidence supports the view that opening markets to short term, speculative capital flows increases economic growth. But there is considerable evidence and theory that **Globalization** increases economic instability, and that economic instability contributes to insecurity and poverty..”

The World Health Report 2010

Health systems financing : the path to universal coverage

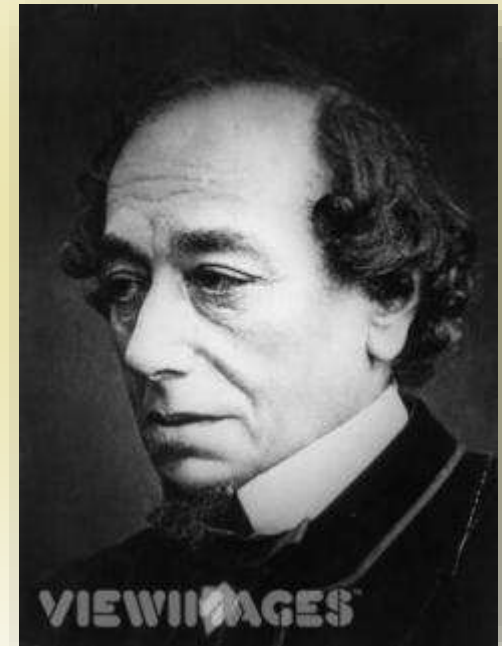
Good health is essential to human welfare and to sustained economic and social development. WHO's Member States have set themselves the target of developing their *health financing systems to ensure that **all people can use health services***, while being protected against financial hardship associated with paying for them.



While detecting health care requirement of the community; **Mutual Relationship between Economy and Health...**

«The health of a country's economy;
it depends primarily on the
healthy people.»

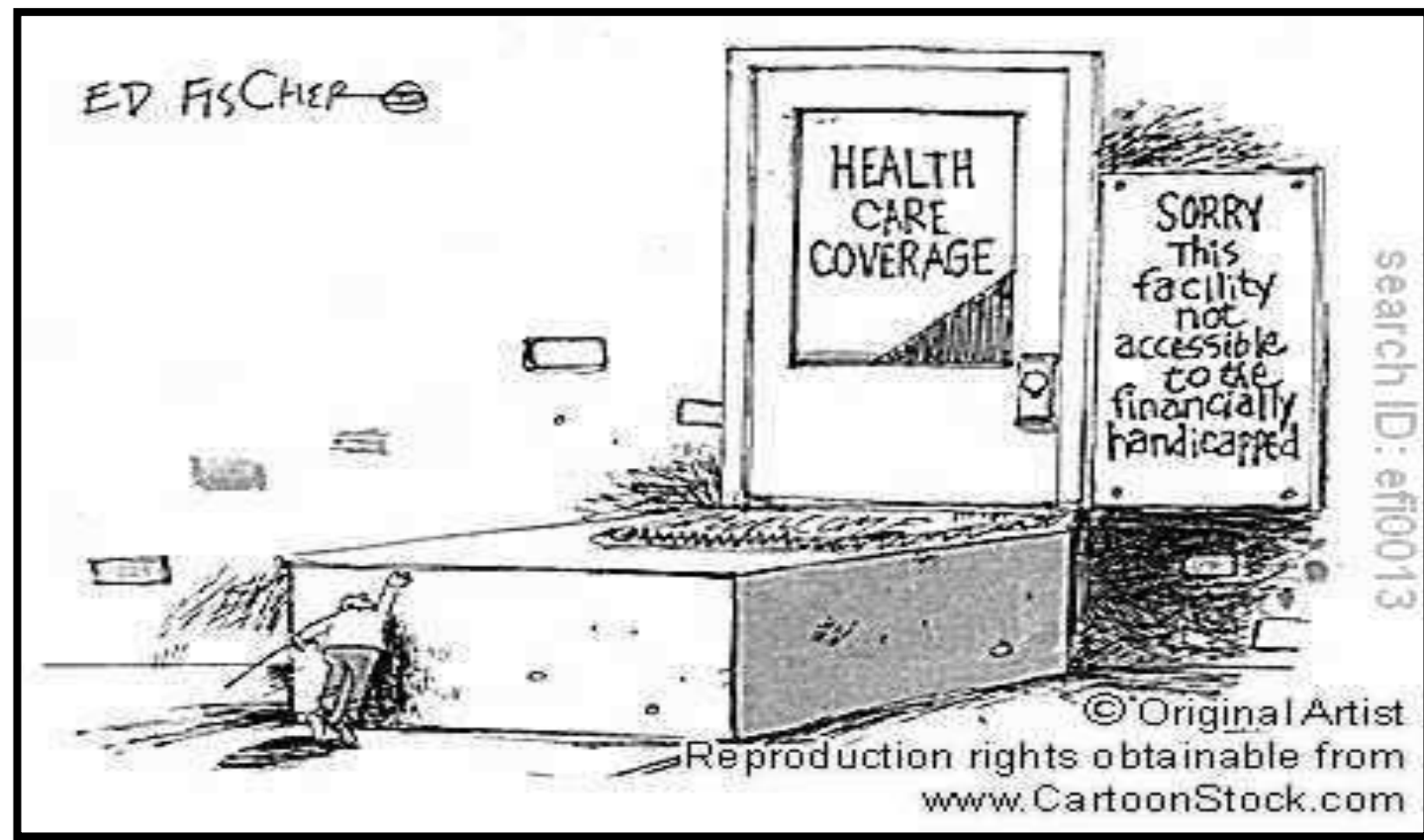
Benjamin DISRAELI
Former British Primeminister



(1804-1881)

***Prevention is always
better than cure..***

***Thank you
for sincere
cooperation..***



***Never forget; Health is an
essential human right and
gained at birth for everyone
without any pre-condition..***

**Cost of health care
must be financed
by a fair taxation
system..**