



# Role of Diet, Physical Activity and Lifestyle In Promoting Health

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# WHO Definition of Health

- 'Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'
- Signed on 22 July 1946 by the representatives of 61 States and entered into force on 7 April 1948.
- The Definition has not been amended since 1948.



# Health is a Fundamental Right



The right to health ≠ The right to be healthy

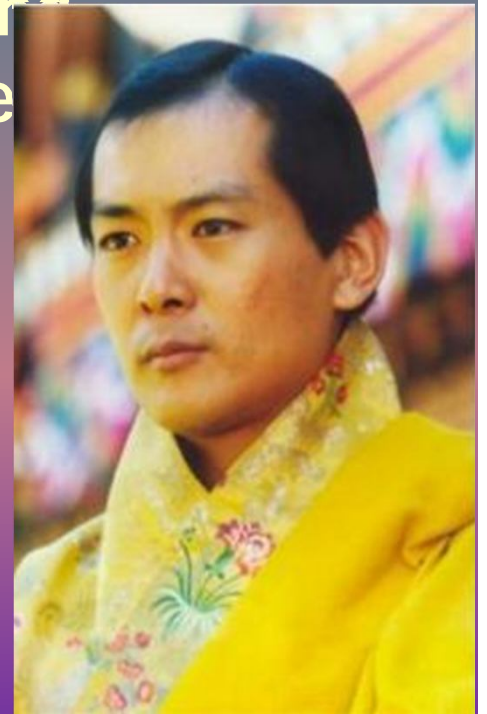
# What is Well-Being?

- Presence of positive emotions and moods (e.g., contentment, happiness), the absence of negative emotions (e.g. depression, anxiety) , satisfaction with life, fulfillment and positive functioning.
- In simple terms, well-being can be described as judging life positively and feeling good.



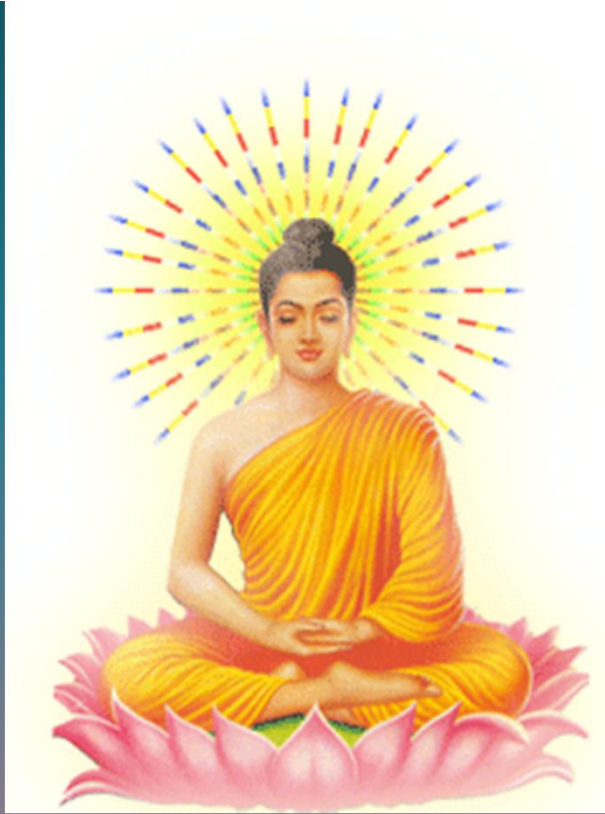
# Bhutan's Gross National Happiness Index

- GNH is a much richer objective than GDP or economic growth
- It measures not only the material well-being but also community, culture, governance, knowledge and wisdom, health, spirituality and psychological welfare, a balanced use of time and harmony with the environment.





“The secret of health for both mind and body is not to mourn for the past, nor to worry about the future, but to live the present moment wisely and earnestly”  
- Lord Buddha



'Every human being is the author of his own health or disease'

- Lord Buddha

'Health is the greatest gift, contentment the greatest wealth,  
faithfulness the best relationship'

- Lord Buddha

# Pluralistic Healthcare System

- Indigenous (more than 2500 years)
- Ayurveda (300 B.C. from India)
- Allopathic (1505)



# Some more Healthcare Systems

- Unani Medicine
- Siddha Medicine
- Homoeopathy
- Yoga
- Naturopathy
- Acupressure
- Acupuncture



# Sri Lanka has a long history of Health Service

## An Ancient Hospital



4<sup>th</sup> Century BC - Mihintale

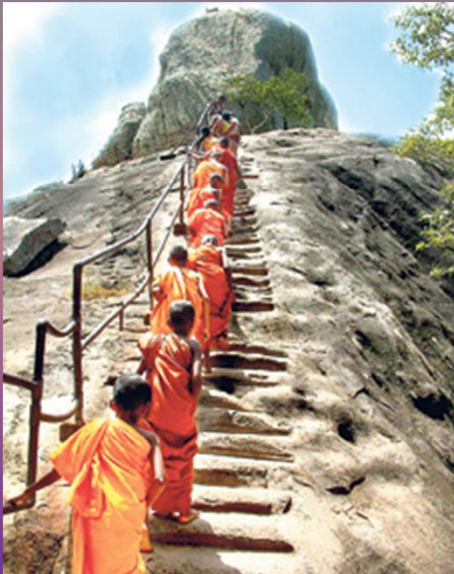
## The First Primary Health Care Unit



1926 - Kalutara

# Monastic Way of Life

- Do not kill
- Do not steal
- Do not be unchaste



- Do not lie
- Do not take drugs or drink intoxicants



# Sri Lankan Way of Life















# Sri Lanka Today

## In Asia

- A Economic hub
- An Aviation hub
- A Knowledge hub
- A Naval hub
- An energy hub

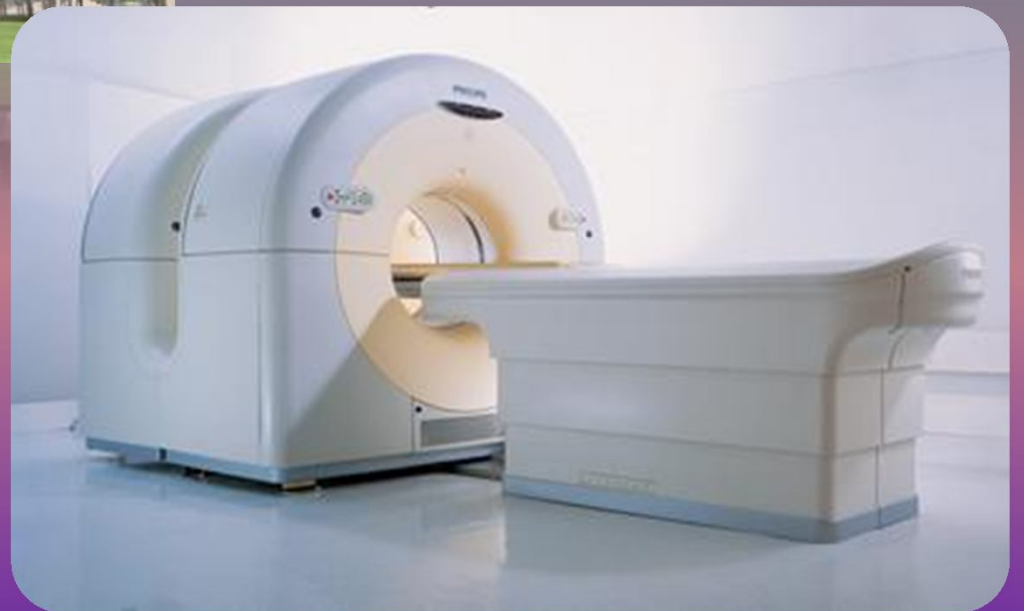


# Health System in Sri Lanka is ever expanding

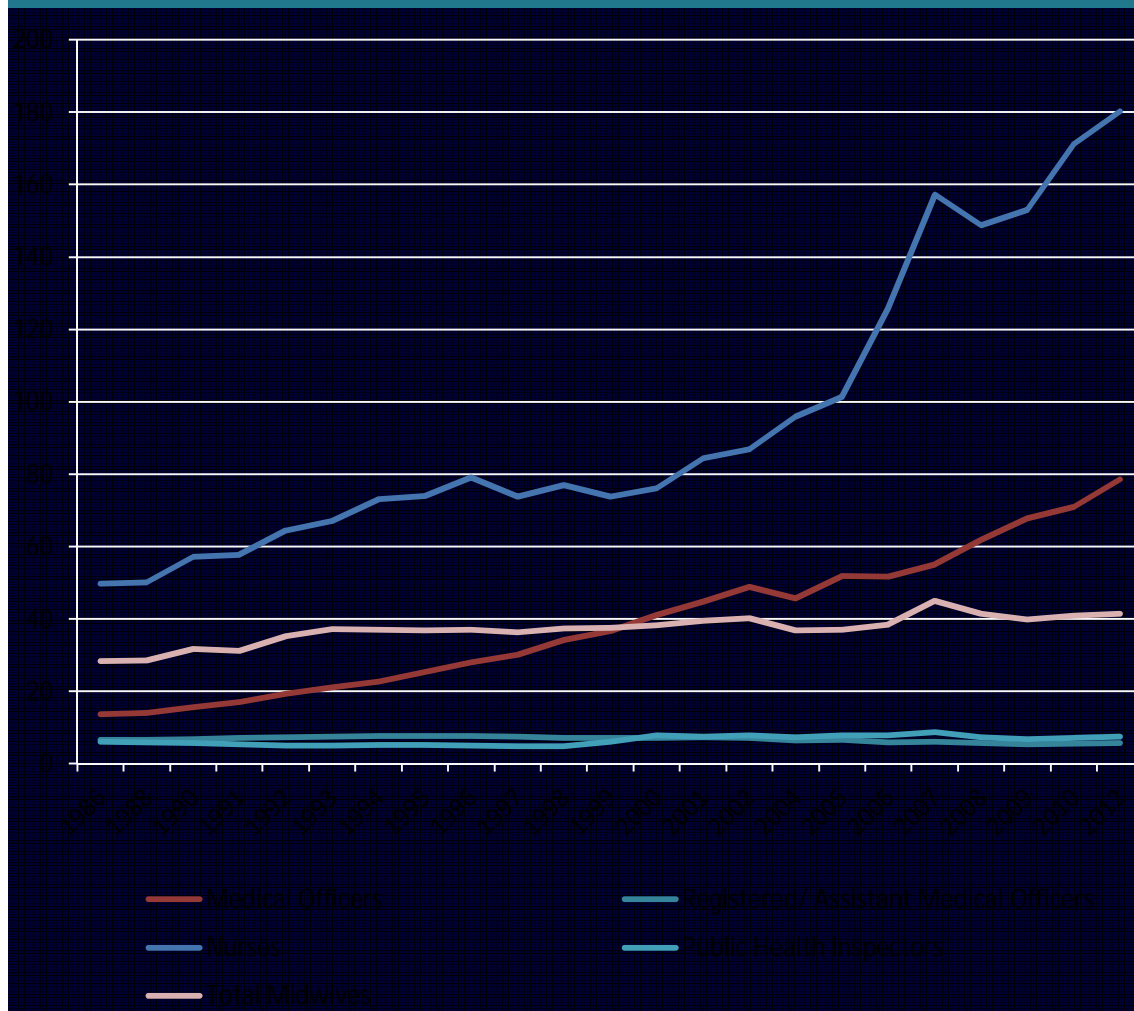


**Epilepsy Center**

**PET Scanner**



# Human Resource, Equipment, Infrastructure



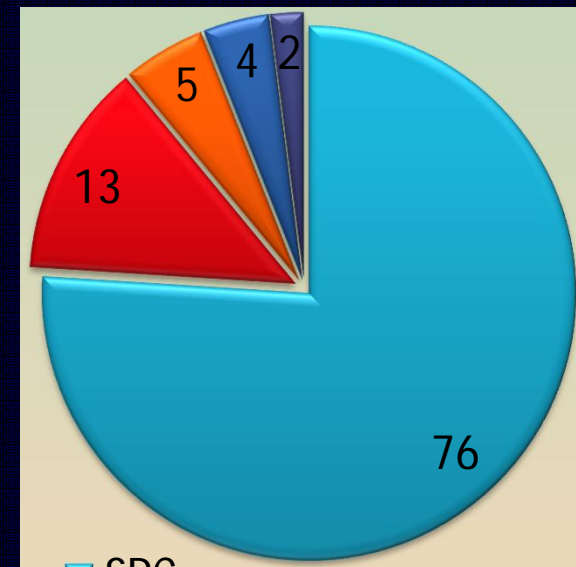
Medical Officers – 16,000  
Specialists – 1,700  
Nurses - 32,000  
Other staff – 72,000



# Healthcare Expenditure

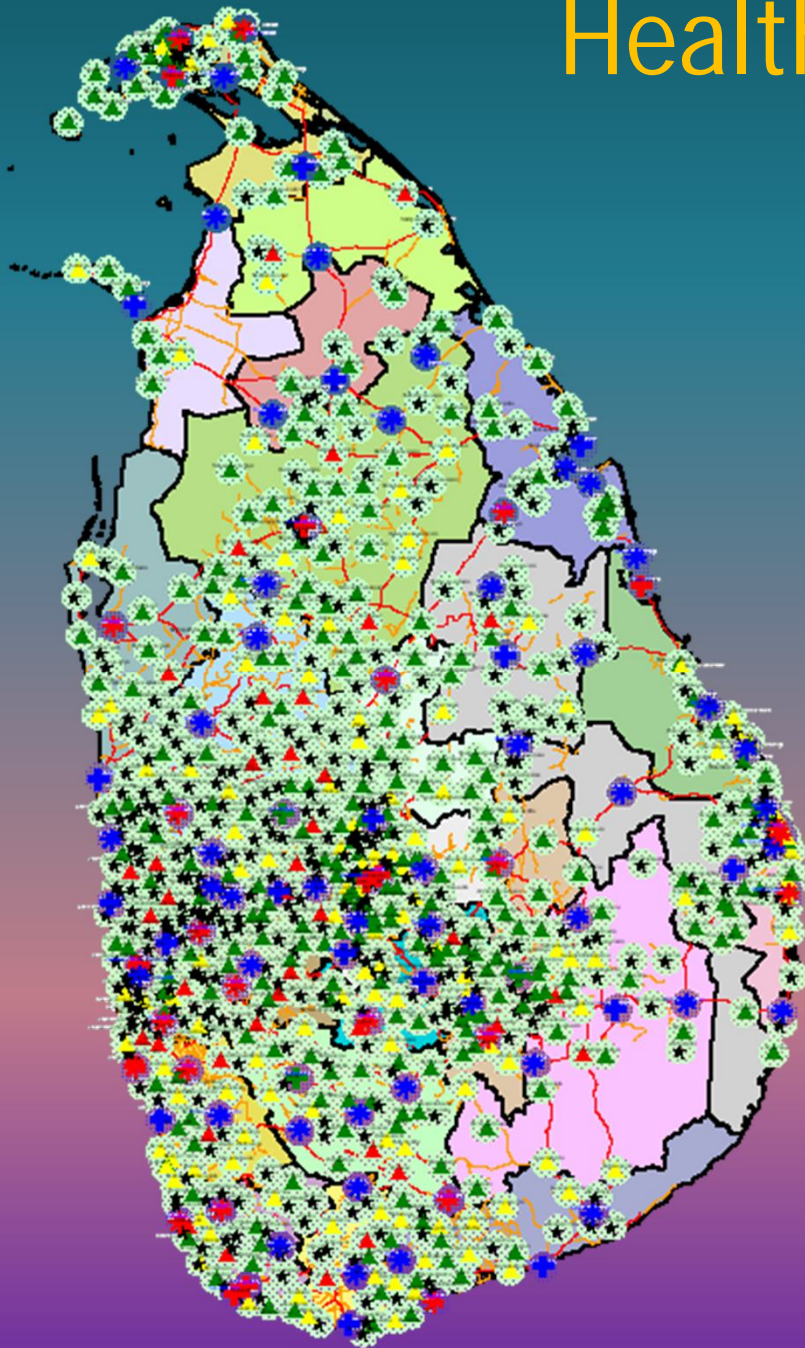
Central Ministry of Health		
Type of Expenditure	2005(Rupees Millions)	2012 (Rupees Millions)
Capital Expenditure	6,271	13,647
Recurrent Expenditure	22,593	57,859
<b>Total</b>	<b>28,864</b>	<b>71,506</b>
Provincial Ministries of Health		
Capital	1,840	3,703
Recurrent	9,354	18,862
	11,194	22,565
<b>Total Expenditure(all)</b>	<b>40,058</b>	<b>94,071</b>

## Medical Supplies (35% of recurrent budget)



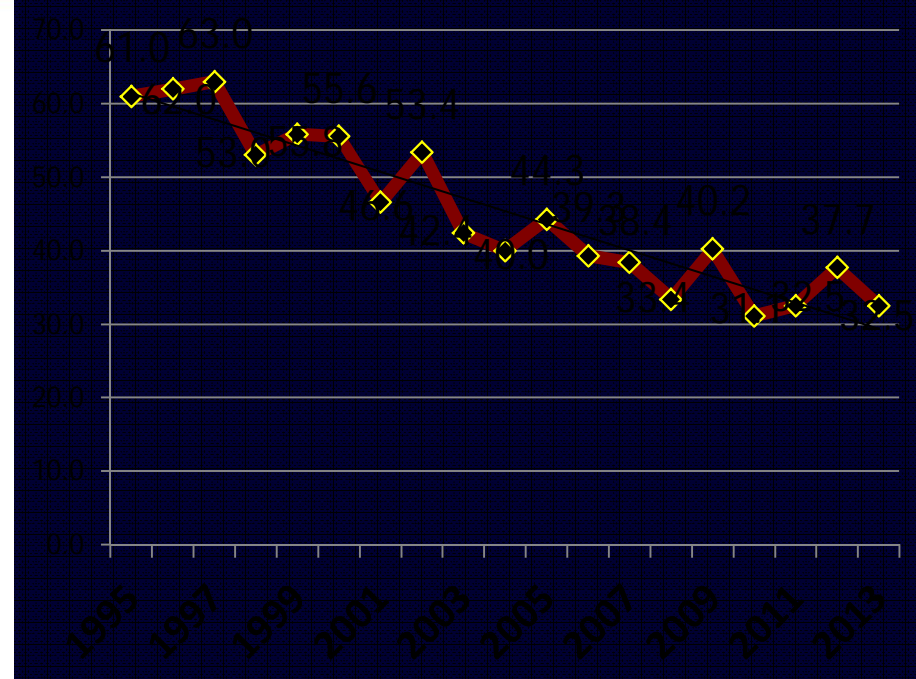
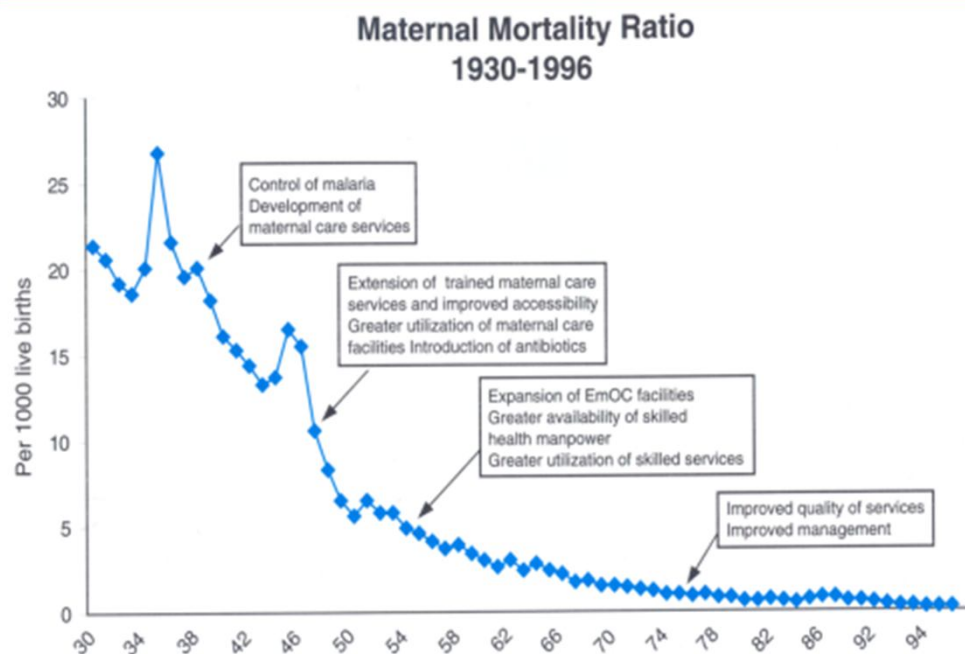
- SPC
- Local Purchasing
- SPMC
- FHB and Epidemiology Unit
- Oxygen

# Health Accessibility



Institution	No
National Hospital of Sri Lanka	1
Teaching Hospitals	20
Provincial General Hospitals	3
District General Hospitals	18
Base Hospitals Type A	21
Base Hospitals Type B	45
Divisional Hospitals A	38
Divisional Hospitals B	139
Divisional Hospitals C	306
Primary Medical Care Unit	474
Special Hospitals + Military + Board Managed	14
<b>Total</b>	<b>1079</b>

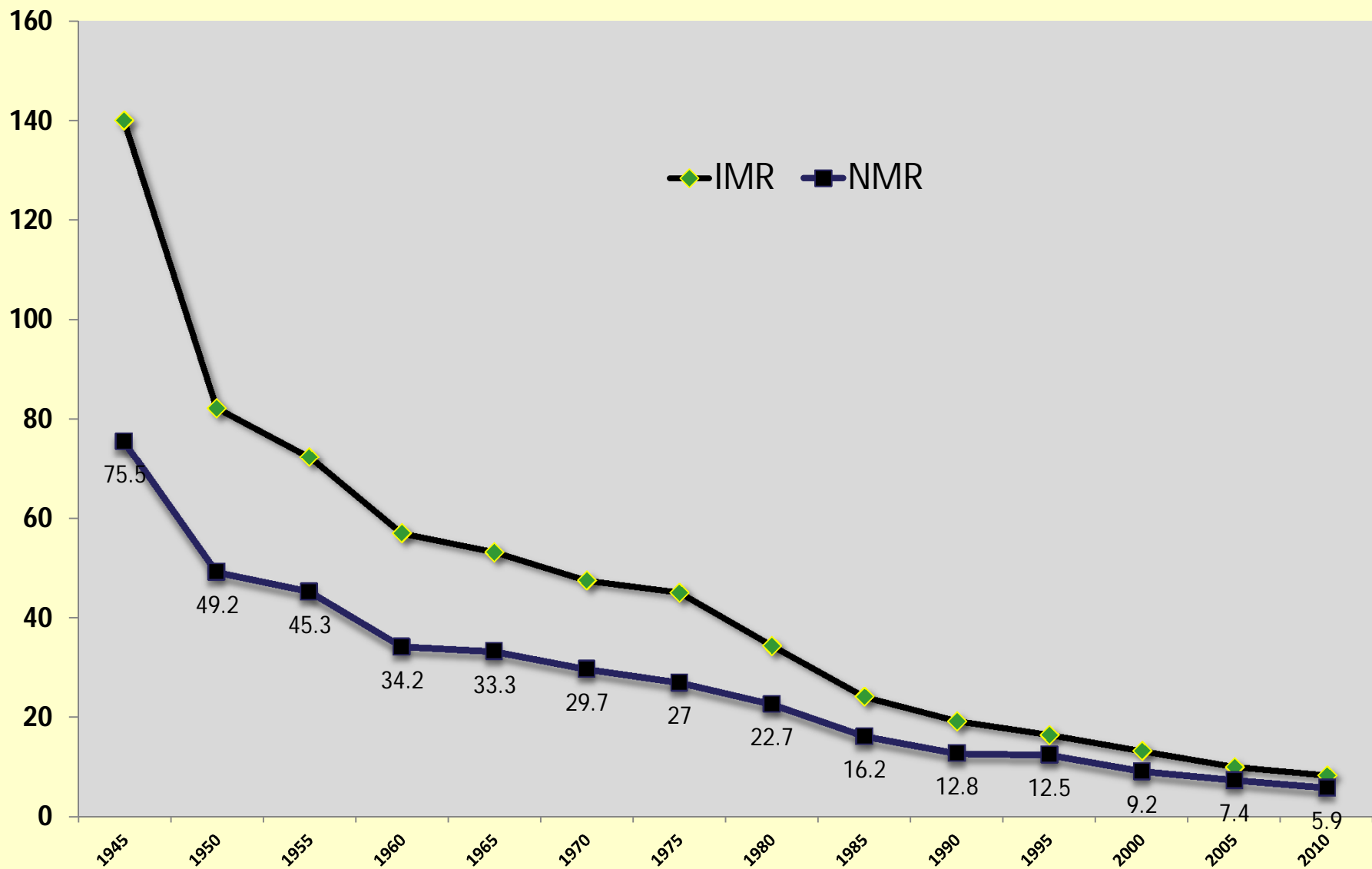
# Maternal Mortality Ratio, Sri Lanka, 1930 - 2013



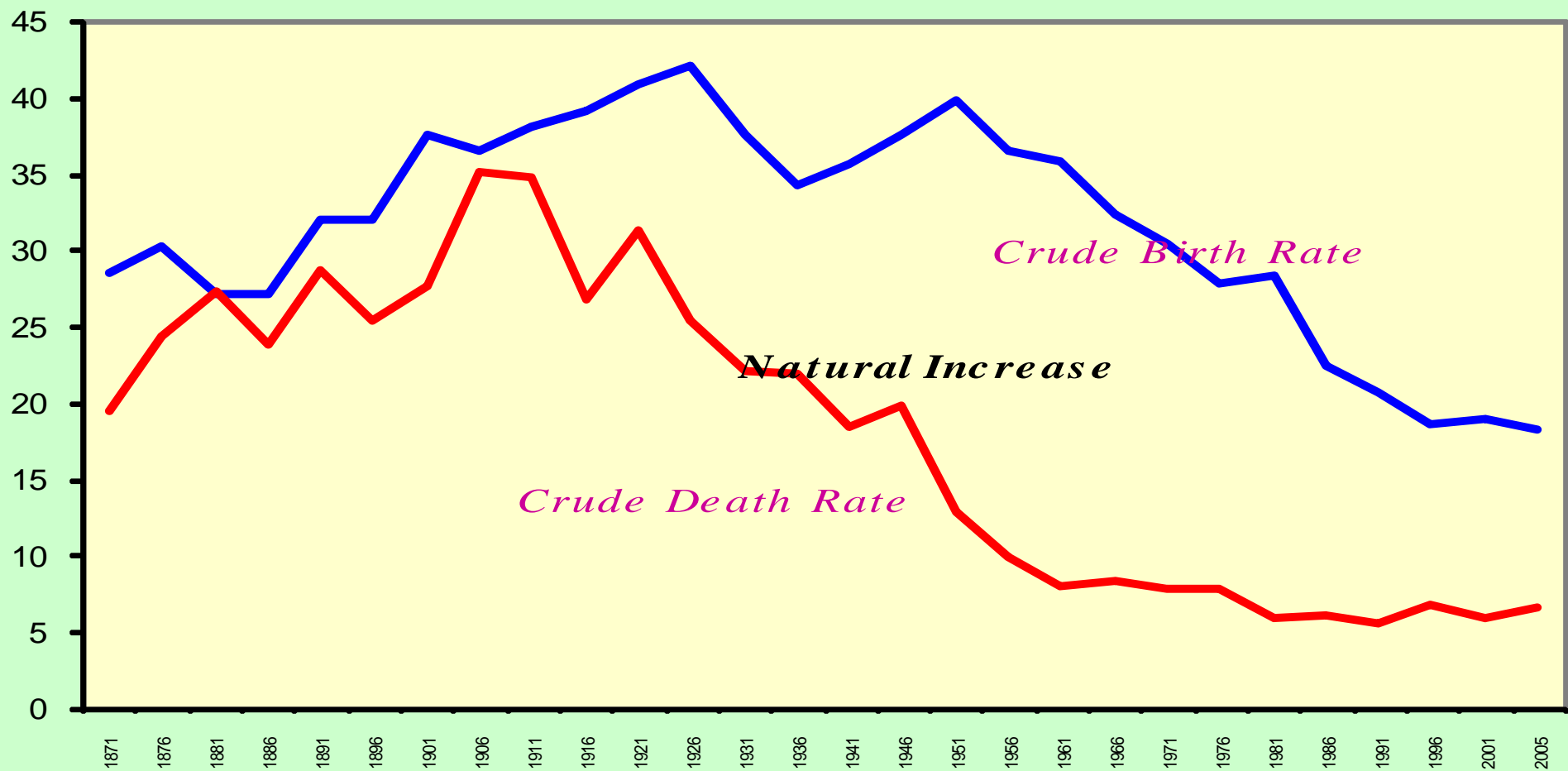
Country	MMR
Australia	6
United States	28
China	32
Bangladesh	170
Afghanistan	400
<b>Sri Lanka</b>	<b>31</b>

Region	MMR
World	260
Developed Countries	14
Developing Countries	290
Africa	590
Asia	190
South-Asia	280

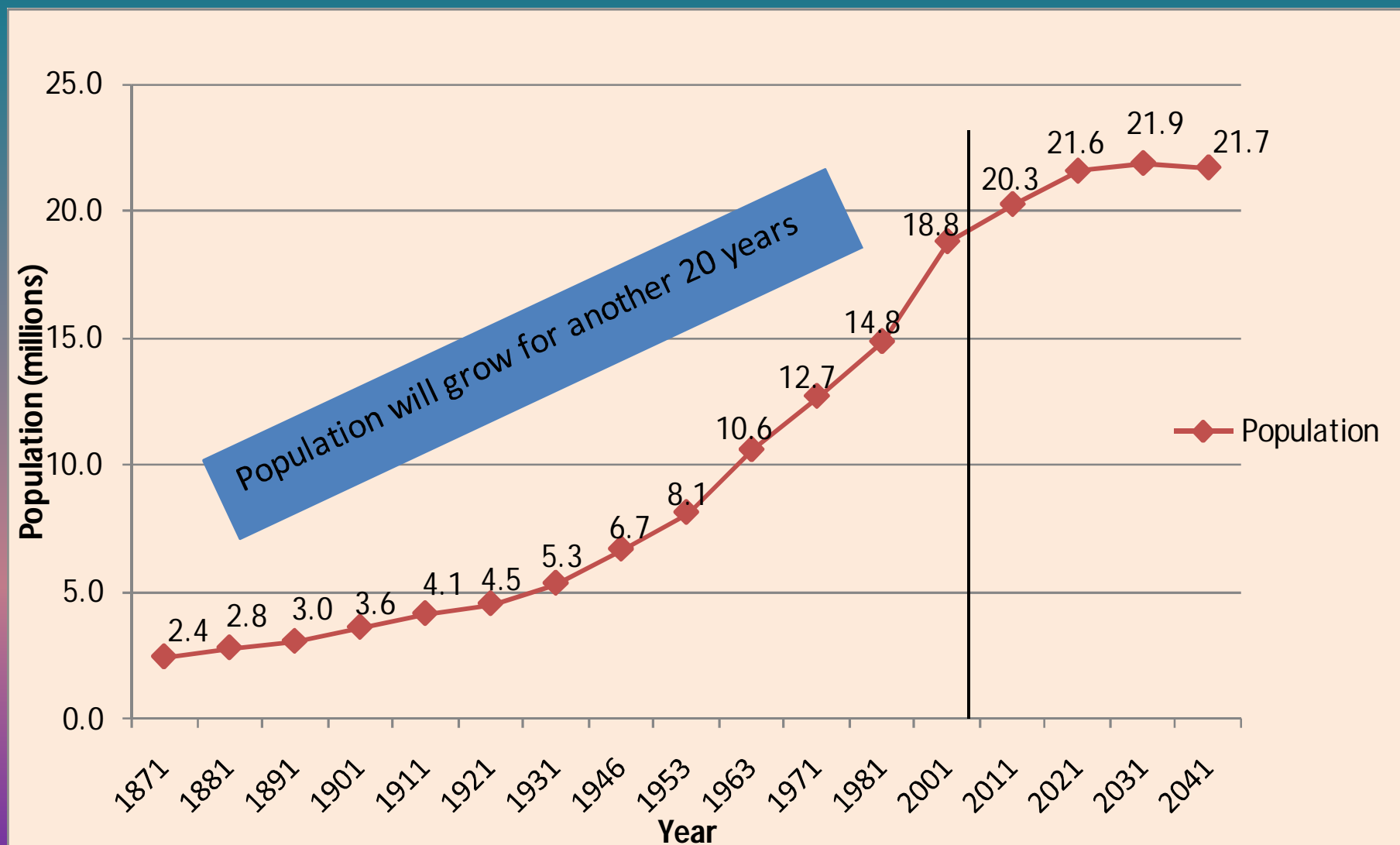
# Neonatal and Infant Mortality Rates



# Demographic Transition of Sri Lanka 1871 - 2005

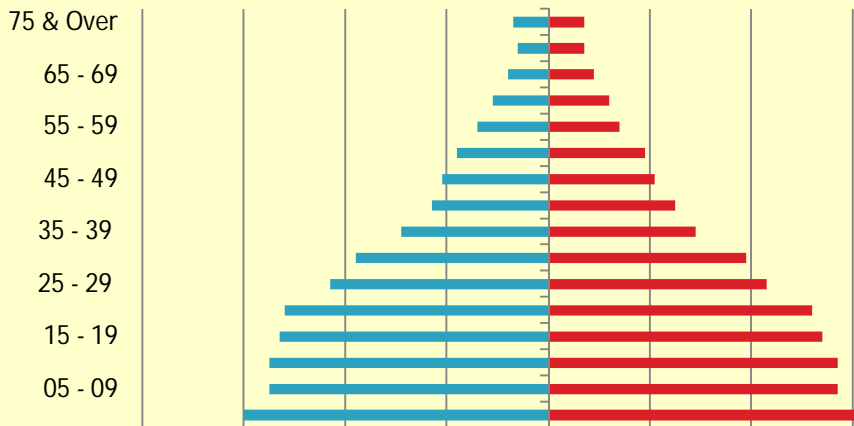


# Population of Sri Lanka, 1871 – 2041

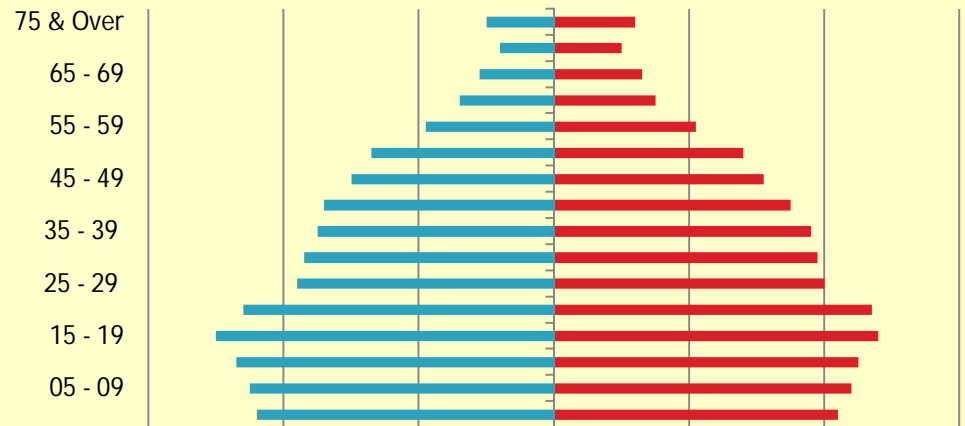


# Population Pyramid

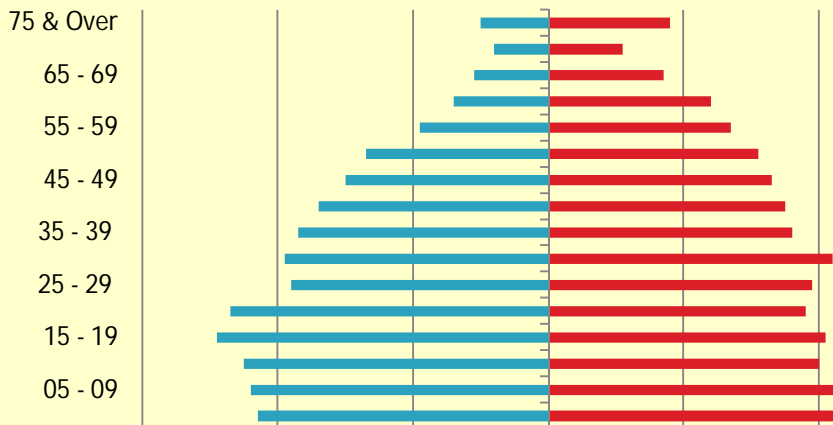
**1981**



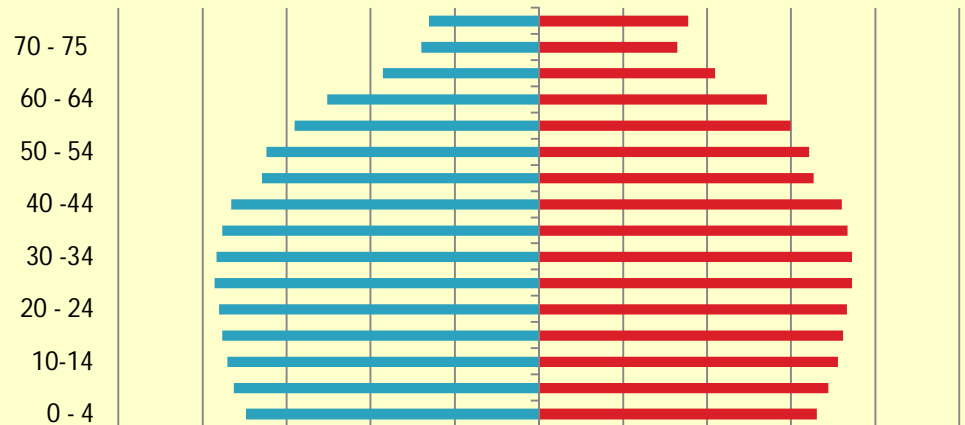
**2001**



**2012**



**2020**



# Total Health Expenditure as Per Capita, a % of GDP, in Selected Countries - 2012

Country	% of GDP	Per Capita (US\$)
USA	17.9%	8,895
France	11.8%	4,260
Switzerland	11.3%	6,062
Germany	11.3%	4,617
Belgium	10.8%	4,320
Austria	11.5%	5,065
Canada	10.9%	4,676
Norway	9.0%	5,970
UK	9.4%	3,495
Japan	10.1%	3,578
Sri Lanka	3.2%	189



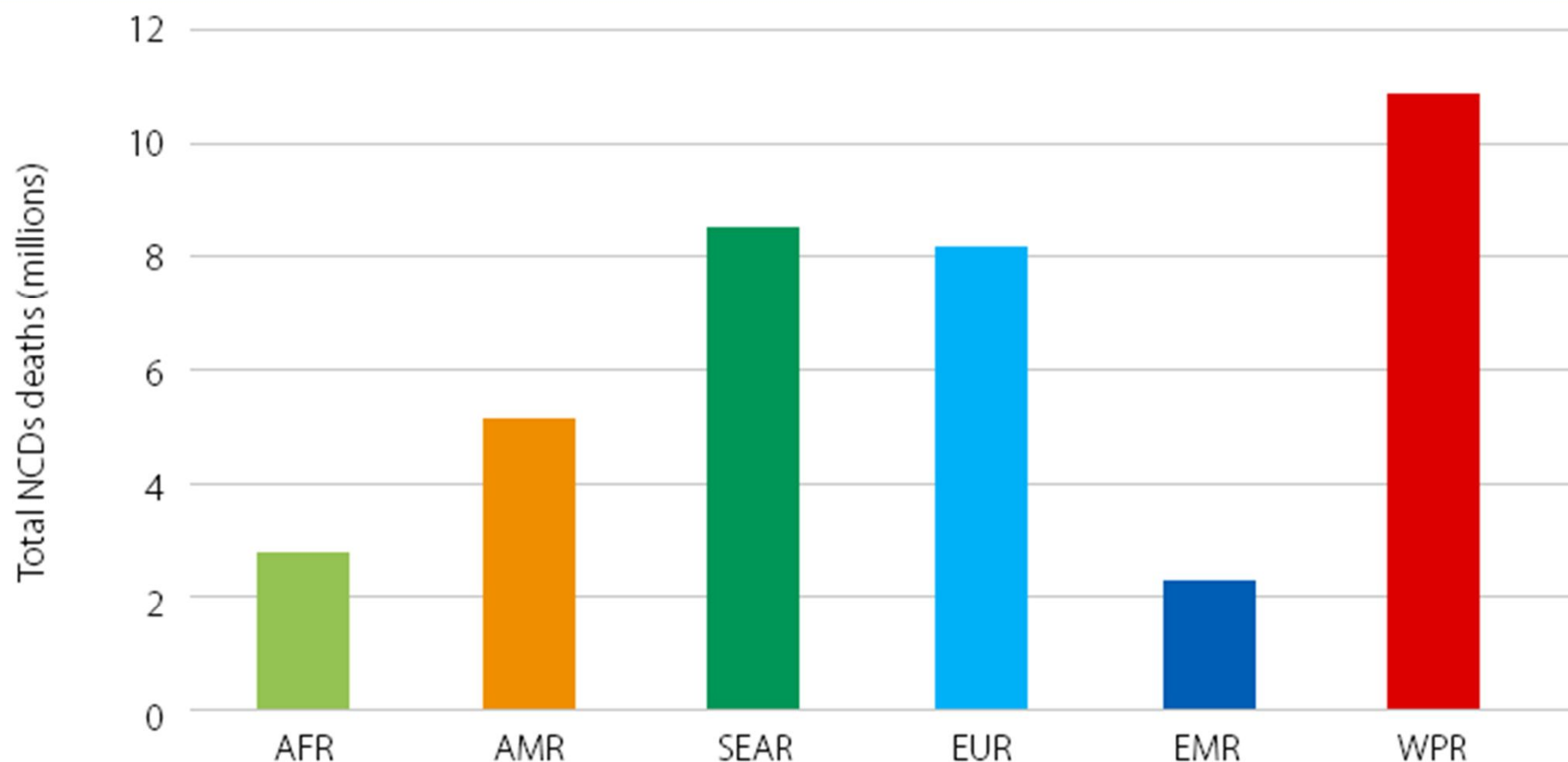
# Positioning of Sri Lanka in the Global Context (2013 or near)

Country	Per Capita Health Expenditure (US\$)	Life expectancy at birth	Infant Mortality Rate (IMR)	Under-five mortality rate	Maternal Mortality Rate (MMR)
Singapore	2,507	83	2	3	6
Malaysia	423	74	6	9	29
Republic of Korea	1,880	81	3	4	27
China	367	75	11	13	32
Thailand	264	75	11	13	26
Philippines	122	69	23	30	120
Indonesia	107	71	24	29	190
Maldives	720	77	8	10	31
India	61	66	41	53	190
Pakistan	37	65	69	86	170
Bangladesh	32	70	34	41	170
Nepal	39	68	32	40	190
Myanmar	14	66	42	51	200
<b>Sri Lanka</b>	<b>102</b>	<b>75</b>	<b>9</b>	<b>10</b>	<b>29</b>

# Sri Lanka Health Indicators vis-à-vis Global Best (2014 or near)

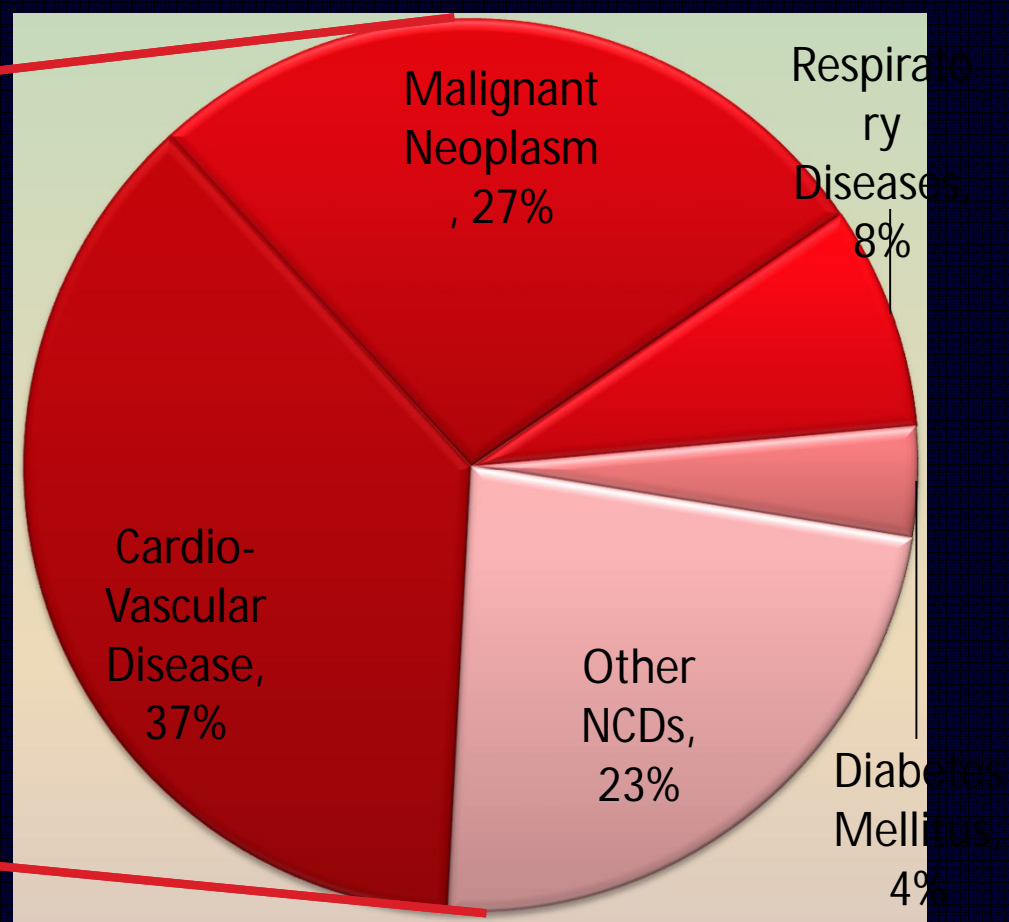
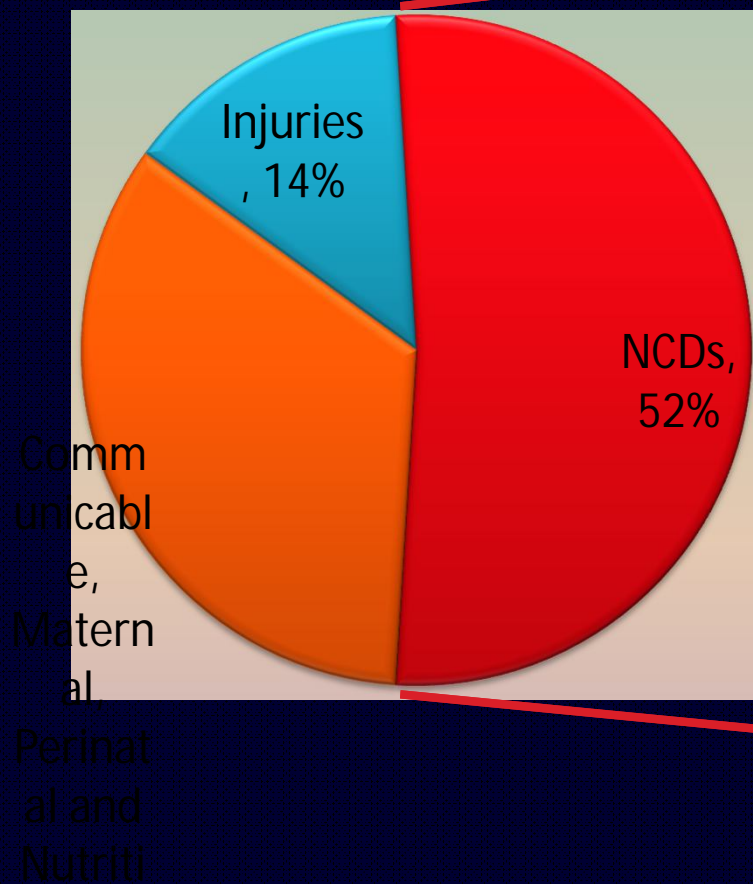
Health Indicator		Sri Lanka	Global Best	Scope for improvement (%)
Life expectancy at birth (years)	Male	71.0	82.0	13.5
	Female	78.0	87.0	10.4
Life loss due to ill health	Female	13.9	8.8	36.7
	Male	11.8	7.8	33.9
Under-5 mortality (per '000 live births)		10	3	70
IMR (per '000 live births)		8	2.2	72.5
MMR(per 00'000 live births)		29	6	79.4
Malaria deaths (per 00'000)		0	0	0.0
Tuberculosis deaths (per 00'000)		5.9	0	100.0

# Total NCD deaths, by WHO region, comparable estimates, 2012

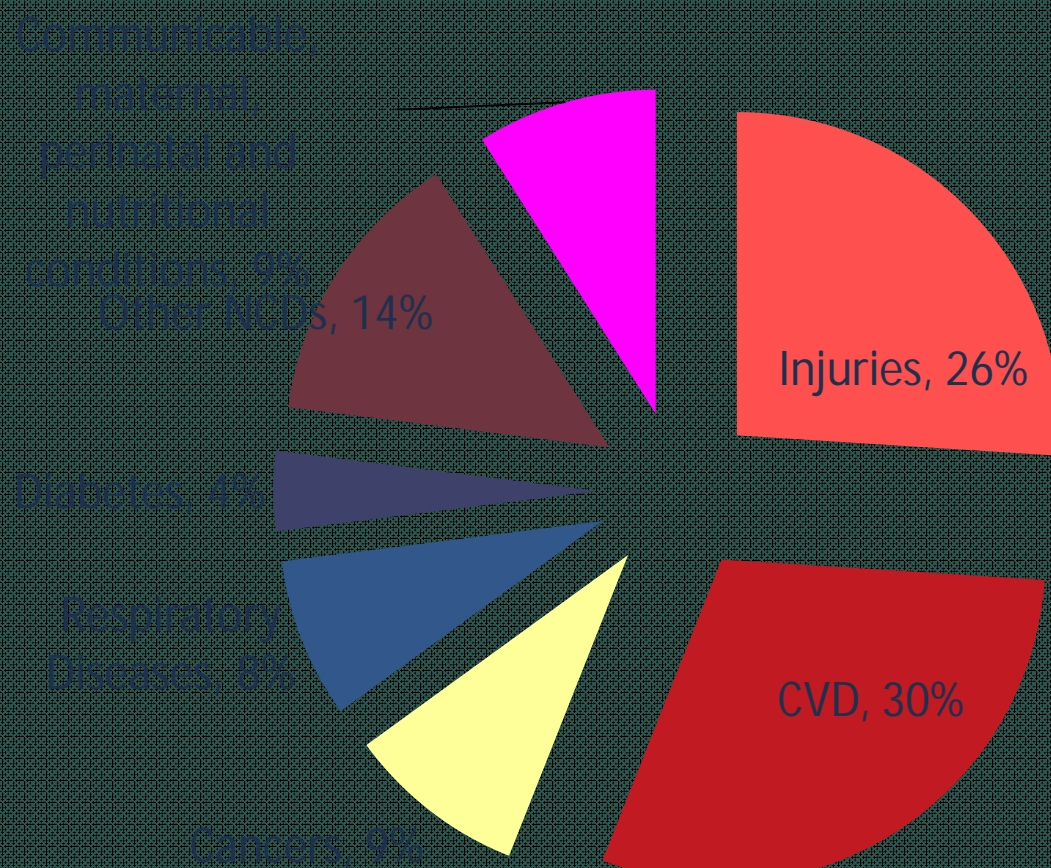


AFR=African Region, AMR=Region of the Americas, SEAR =South-East Asia Region, EUR=European Region, EMR=Eastern Mediterranean Region, WPR=Western Pacific Region

# Proportion of Global Deaths under the age 70 years, by cause of death, comparable estimates, 2012

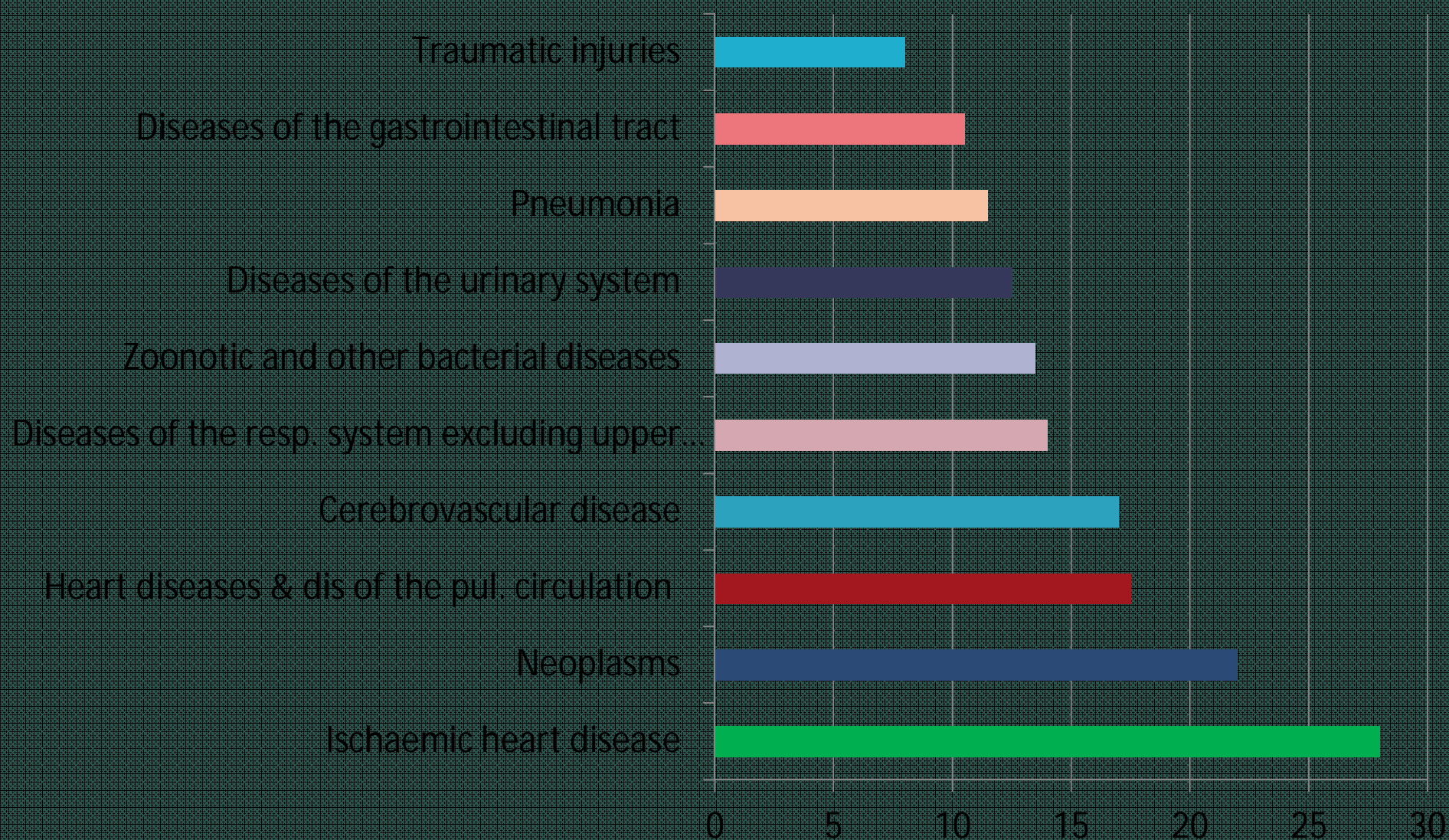


# NCD Burden In Sri Lanka-2008

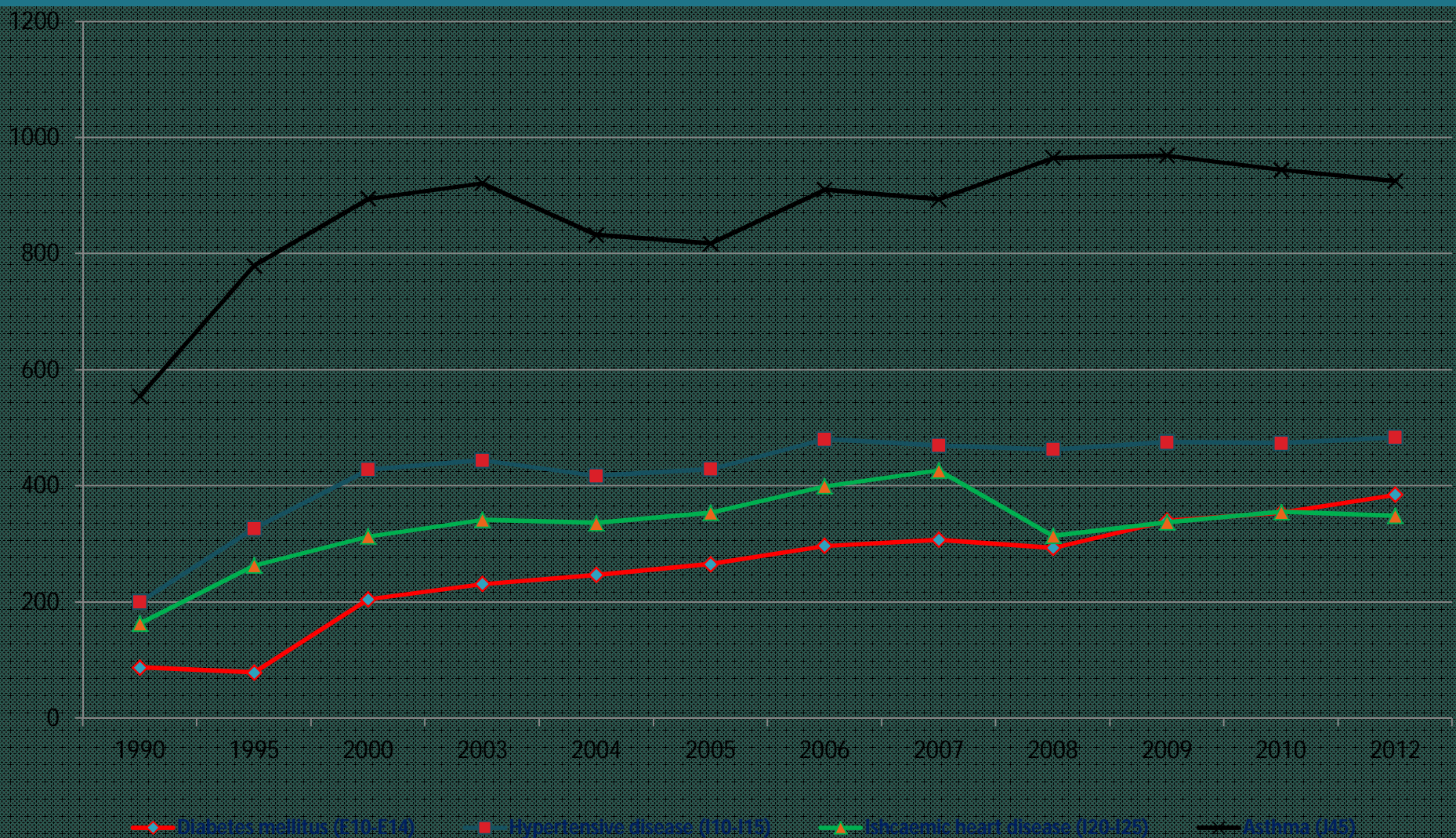


NCDs are estimated to account for 65% of all deaths – WHO Estimates

# Leading Causes of Hospital Deaths, 2012, Rate per 100,000 Population



# Trends in Hospitalisation of Selected NCDs, per 100,000 population 1990 – 2012



# Screening for NCDs and Risk Factors

- Healthy Life Centers - 742
- Work Places
- Mobile Medical Clinics



# Healthy Lifestyle Centers

- Preferably over 40 years of age person for screening
- Assessment of risk behaviour - smoking, unhealthy diet, use of alcohol etc
- Check – blood pressure, blood sugar, cholesterol etc.
- Risk prediction
- Health promotion
- Treat according to the guideline
- Referral



# Essential Drug List

1. Adrenaline tartrate 0.1% Injection 1ml Ampoule
2. Aspirin Tablet 100mg
3. Atenolol Tablet 50 mg
4. Atorvastatin Tablet 10mg
5. Beclometasone dipropionate -aerosol Inhaler -50 mcg metered dose, 200 dose Unit MDI dry powder Capsule for Breath induced device, 100mcg DPI & 200 mcg DPI
6. Chlorpheniramine maleate ( Chlorphenamine) -Injection.10mg in 1ml Ampoule , Tablet 4mg
7. Enalapril maleate Tablet 5mg
8. Frusemide - Injection 20mg in 2ml Ampoule ; Tablet 40 mg (Frusemide)
9. Glibenclamide Tablet 5mg
10. Glyceryl trinitrate Tablet 0.5 mg sublingual
11. Hydrochlorothiazide tablet 25mg
12. Hydrocortisone hemisuccinate Injection 100mg Vial
13. Metformin Tablet 500mg & 850 mg
14. Nifedipine Slow Release Tablet 20mg –
15. Salbutamol - respiratory solution 0.5% in 10ml Bottle; Tablet 2mg & 4 mg
16. Theophylline Slow Released Tablet 125mg



# STEP wise Approach to Surveillance

- General Objective:
  - To conduct Non-Communicable Disease Risk Factor Survey in Sri Lanka
- Specific Objectives:
  - To ascertain the prevalence of key risk factor for major non-communicable diseases
  - To assess the baseline for Healthy Lifestyle interventions of NCD component of Health Sector Development project
  - To set up the infrastructure for a sustainable national NCD surveillance mechanism



# Core Indicators for the Selected Risk Factors

	Key Risk Factor	Data Variable	Indicator
Step 1 Behavioural	Tobacco use	Current daily smoker	Proportion of adults currently smoking cigarettes daily
	Alcohol consumption	Current drinker	Proportion of adults currently drinking – past 30 days
	Physical inactivity	Duration of total activity	Proportion of inactive adults
			Median level of physical inactivity
	Fruit and vegetable consumption	Number of servings of fruit and vegetable	Proportion of adults eating less than 5 servings a day

# Core Indicators for the Selected Risk Factors

	Key Risk Factor	Data Variable	Indicator
Step 2 Behavioural	Overweight	Body Mass Index, body weight, waist circumference	Mean Body Mass Index, meant waist circumference
			Proportion of overweight and obese adults
	Blood pressure	Systolic and diastolic blood pressure	Mean systolic blood pressure
			Proportion of adults with elevated blood pressure

# Prevalence of Major NCD Risk factors

Risk Factor	Male	Female
<b>*Smoking (Adults)</b>	<b>22.8%</b>	<b>0.3%</b>
<b>* Alcohol Users</b>	<b>26.0%</b>	<b>1.2%</b>
<b>*Physical Inactivity (&lt;600MET minutes / week)</b>	<b>17.9%</b>	<b>31.9%</b>
<b>*Fruit &amp; Vegetable Consumption (&lt;5 fruits/vegetable servings)</b>	<b>81.4%</b>	<b>83.3%</b>

\*Sri Lanka STEPS survey 2007

\*\*Ragama Risk Factor Study 2007

\*\*\*Katulanda et al 2005

# Prevalence of Major NCD Risk factors

Risk Factor	Male	Female
<b>*Obesity (BMI<math>\geq</math>25)</b>	<b>19.6%</b>	<b>30.4%</b>
<b>**Lipid Levels (Total Cholesterol)</b>	<b>19.4%</b>	<b>28.7%</b>
<b>***Hypertension (Systolic BP<math>&gt;</math>140mmHg &amp; Diastolic <math>&gt;</math> 90mmHg)</b>	<b>13%</b>	<b>14%</b>
<b>****Diabetes Mellitus</b>	<b>10% among <math>&gt;</math>18 years old</b>	

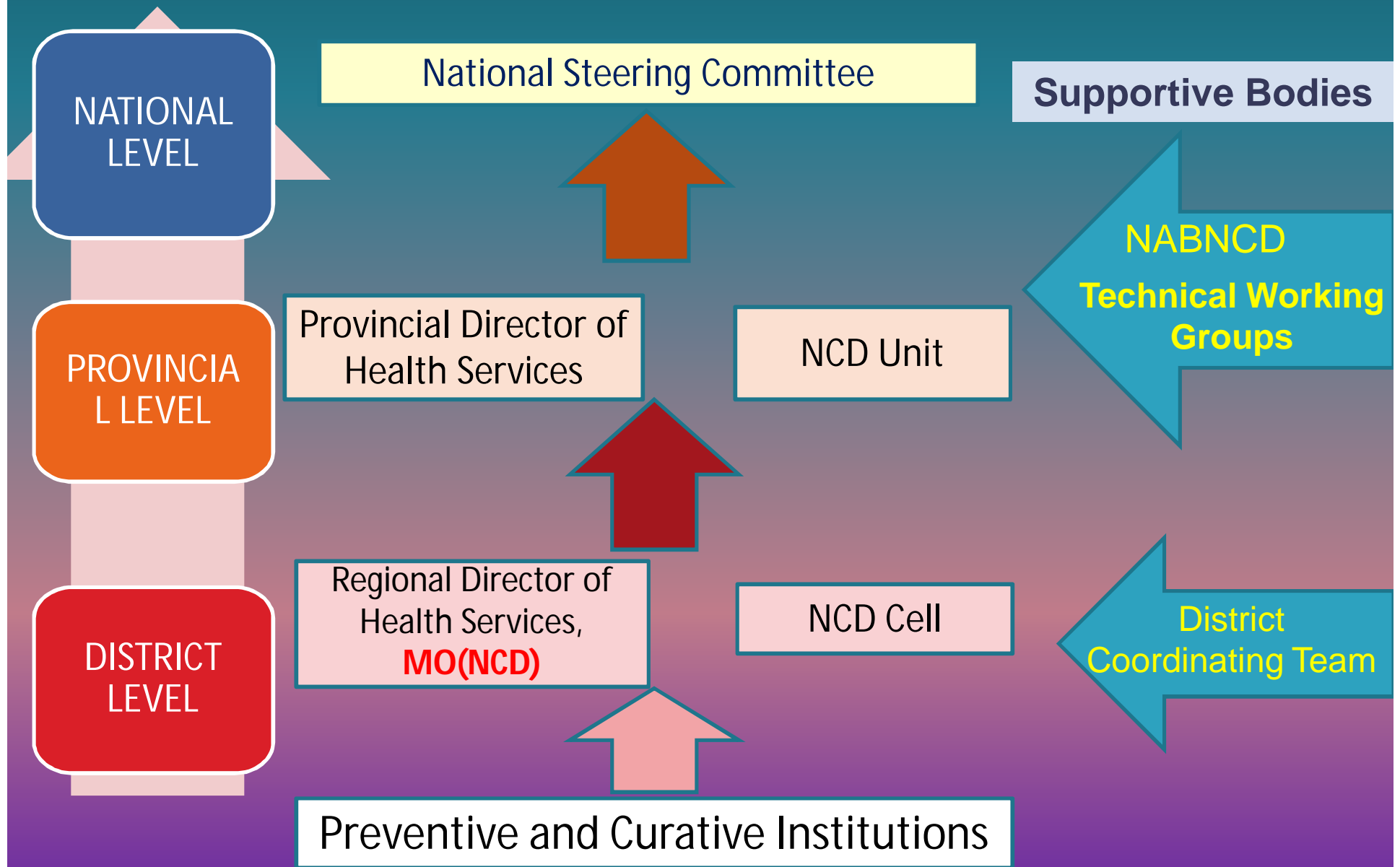
\*Sri Lanka STEPS survey 2007

\*\*Ragama Risk Factor Study 2007

\*\*\*Katulanda et al 2005

\*\*\*\* Katulanda et al 2008

# Overall Monitoring of the NCD Programme



# Health Promotion

Policy  
Development

Community  
Mobilization

**Health Promotion**

Life skill-based  
Environment

Establish safe  
Environment

Re-orient  
Health  
Services



# Health Sector Response

- **Political commitment**
- **Identified as a priority area**
- **Funds have been allocated for NCD prevention and control**



# Lifecycle Approach



# Breastfeeding

- WBTi SI (World Breastfeeding Trend initiative Ranking 2008 - 2012)
- Sri Lanka Rank - No 1
- DHS - 2007 - 85.2%
- BF protects against NCD (DM, CVD) in adulthood
- gives protection against breast cancer



# Physical Activity

## Benefits

- Improved health and feeling of wellbeing
- Maintenance of healthy bones, muscles and joints
- Weight control
- Improved posture, balance, flexibility and strength
- Reduction in symptoms of anxiety and stress and the promotion of self-esteem

## Types of Activities

Moderate	Vigorous
Walking Briskly	Jogging
Walking Downstairs	Walking Upstairs
Dancing	Fast Dancing
Biking	Biking up a hill
Swimming	Aerobics
Gardening	Jump-roping
Housework eg washing floor or windows	Sports e.g. football, basketball

# Weight Control & BMI

- Eat sensibly
- Gradual weight loss is the only proven way to lose unwanted body fat and to keep it off.
- Sensible weight loss should aim for a calorie deficit of 250 – 500 kcals per day.



$$\text{BMI} = \frac{(\text{weight in kilograms})}{\text{height in meters}^2}$$

# Safe Water

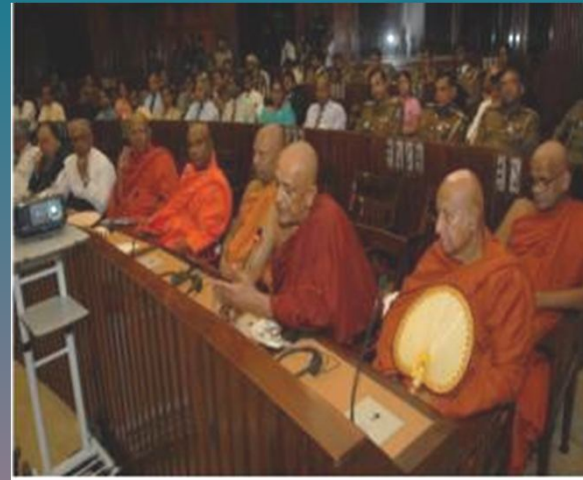
- **Dehydration** – abnormal depletion of body fluids
- The major component of blood
- Necessary for
  - Electrolyte and pH balance
  - Transporting cells and O<sub>2</sub>
- Recommended amount – 8 glasses/day
- 50-60% of body is water



# Fruits and Vegetables in Food Pyramid



# Health Sector Responce

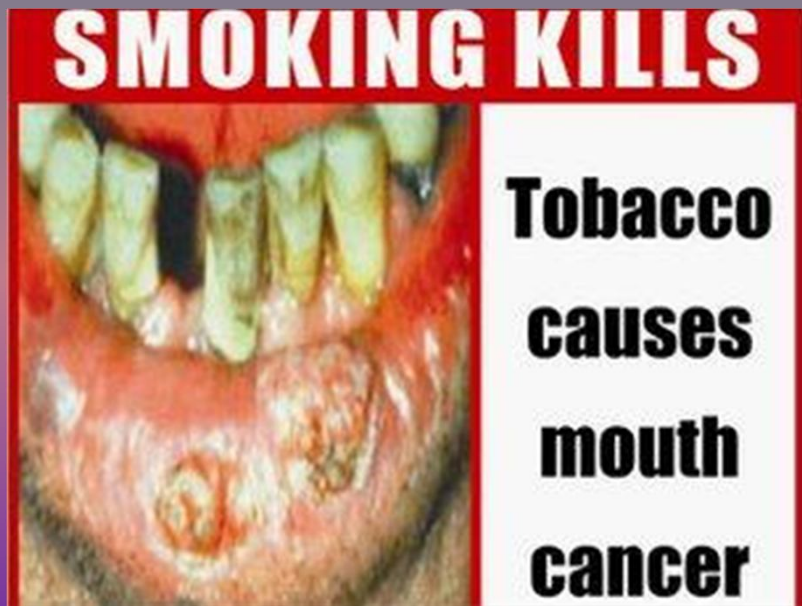
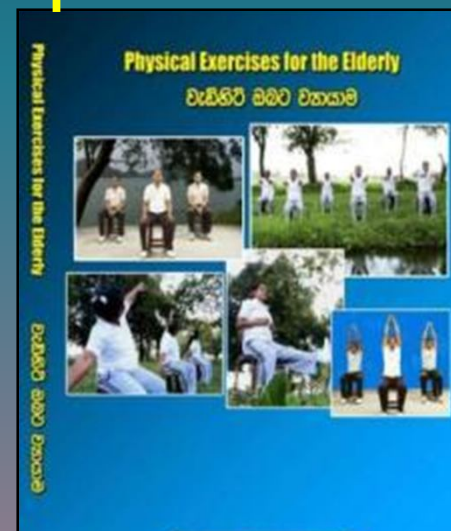


**Sri Lanka was the first in the South-East Asia Region to ratify the WHO FCTC (Framework Convention Alliance for Tobacco Control) in 2006**

*Established National Authority on Tobacco & Alcohol (NATA) - 2006 to implement the Act, district cells were established.*

# Health Sector Response

- Implementation of NATA act: 80% pictorial warning, stop smoking in enclosed public places
- Implement nutrition policy
- Physical Activities in working places



# Health Sector Response

- Provide students with health, mental health, and social services to address healthy eating, physical activity, and related chronic disease prevention.
  - **Healthy canteen policy in schools**
  - **Implementation of physical activity programmes**



# Health Sector Response

- Healthy canteens at workplaces
- Screening for selected NCD is done at Healthy Lifestyle Centres (HLC), work Places, mobile clinics
- Media campaign and awareness programmes
- Training programmes for health staff



# Promotion of Home Gardening and Natural Fertilizers



# Health Sector Response

- Legislation to reduce salt & sugar, decrease saturated fat and eliminate trans fat
- Legislation on subsidies for farmers (vegetables and fruits)
- Food labeling
- Walking paths and play areas in all new towns



# Tobacco & Alcohol



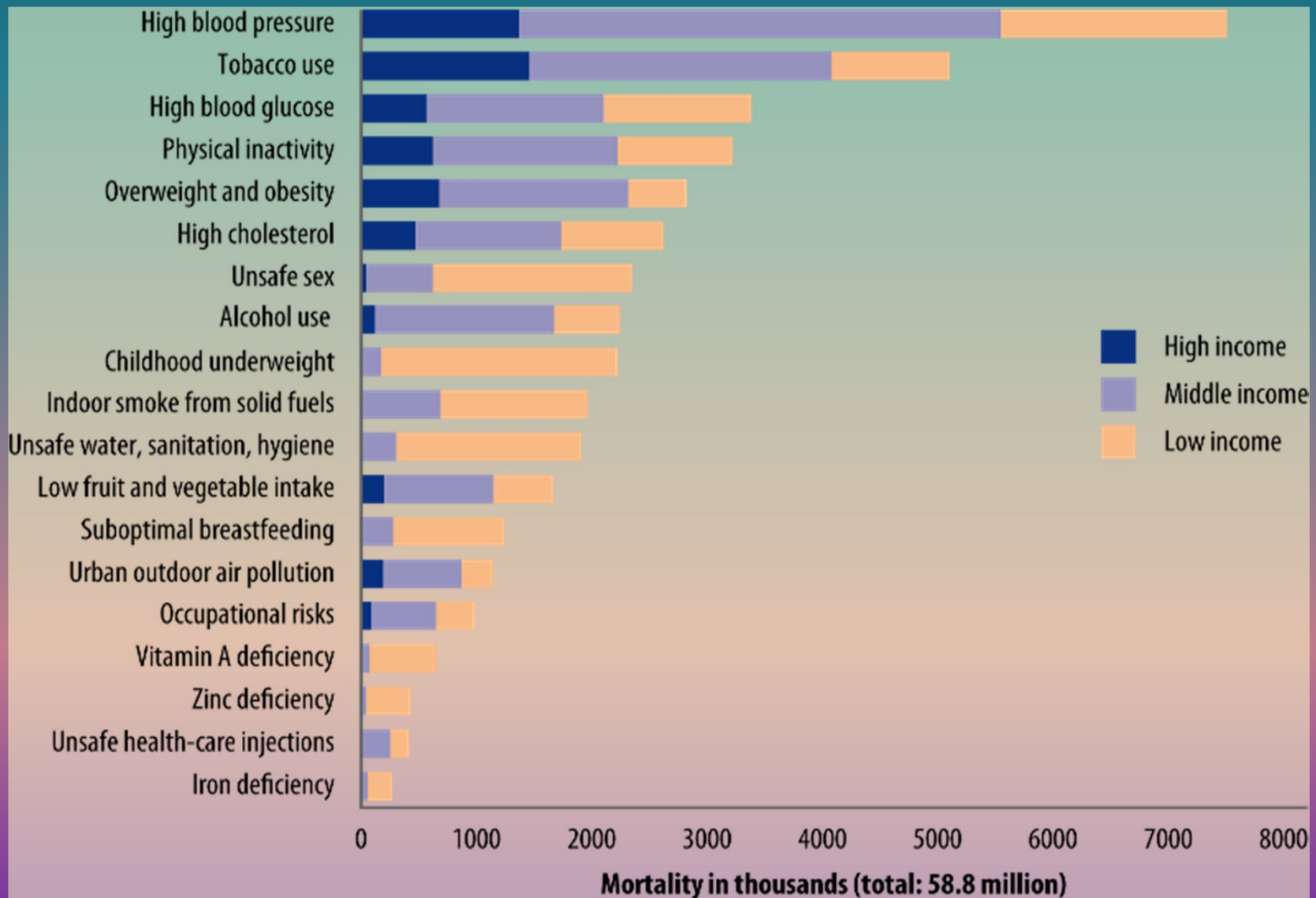
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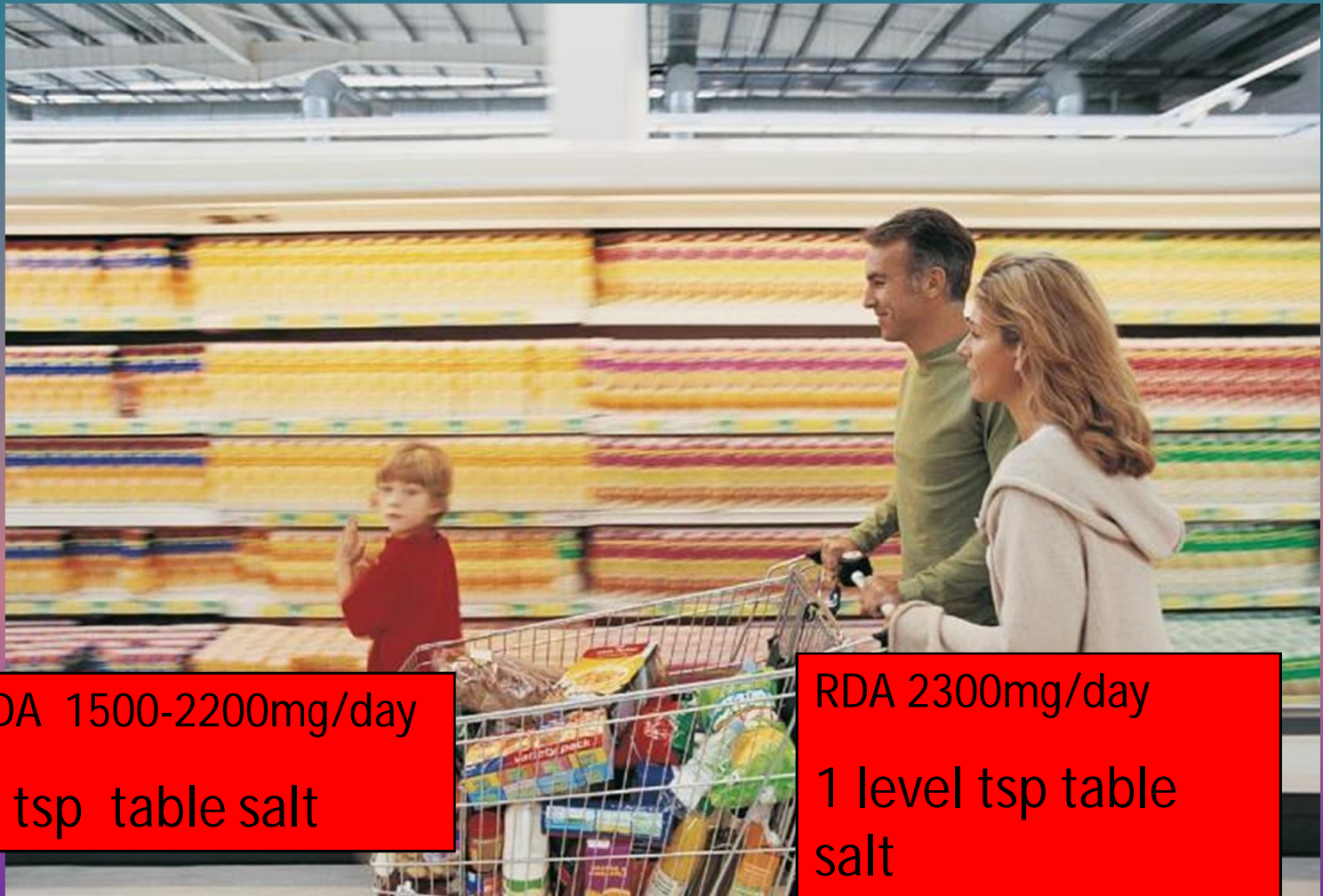


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# Deaths attributed to 19 leading risk factors, by income level, 2004



# Salt Intake



RDA 1500-2200mg/day

$\frac{3}{4}$  tsp table salt

RDA 2300mg/day

1 level tsp table salt

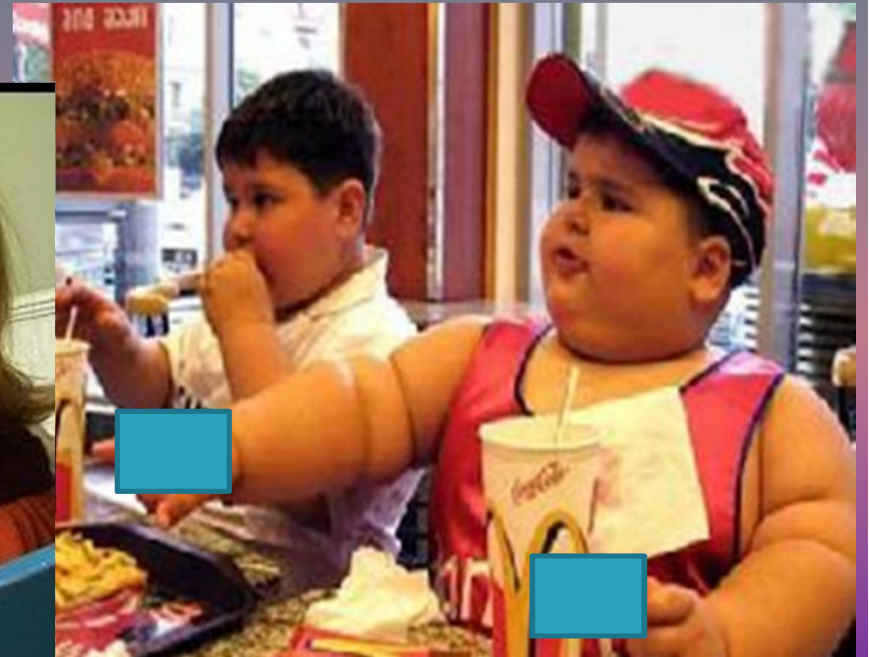
# Sugar Intake


- 1 slab of chocolate (100g) = 14 tsp
- Ice cream 100g = 4 ½ tsp
- Chocolate biscuits 100g (9) = 11 tsp
- Jam 1 table sp = 3tsp
- Cola drink one glass= 5 tsp
- Fruit cake one piece = 5 tsp
- Tomato sauce = 1 tsp
- Malted drink 1table sp = 1-2 tsp



# Challenges

- Priority of NCD in other Ministries
- Rapid change in lifestyle of people towards unhealthy habits
- Community level interventions
- Out of pocket expenditure
- Mass-media influence



A composite image featuring Mahatma Gandhi on the right side, walking towards the left. He is dressed in his iconic white dhoti and shawl, holding a long white staff. The background is a dramatic landscape of layered mountain ranges under a sunset sky with vibrant orange and yellow clouds. The top of the image has a solid teal header.

You must be the change you wish to see in the world  
- Mahatma Gandhi

# THANK YOU VERY MUCH

