

Emerging health risks & trends: India's path to 2047

Speakers name : Dr.Asha Sapre - Senior Global Medical Officer
Vikram Jain - Pricing Actuary (AVP)



Time Travel



1947 to 2047

Swatantra Bharat
Tryst with Destiny

Viksit Bharat
Tryst with Reality

India : The
golden bird

10,000
qualified
actuaries

Health
Insurance for
all

Agenda



Part 1: Discusses the key health trends from the clinical perspective encompassing, Metabolic Health & AMR

Speaker : Dr. Asha Sapre

Part 2: Insurance for all by 2047 vision needs health considerations for it be a reality

Speaker : Vikram Jain

Unavoidable Truths

mint Premium | LOUNGE

**Understanding metabolic syndrome,
a condition affecting 1 in 3 Indians**

India to face 'tsunami' of chronic diseases in near future, warns US-based oncologist

The cancer burden worldwide is expected to be 28.4 million cases in 2040, a 47 per cent rise from 2020, due to demographic changes



Last Updated : 18 January 2023, 17:05 IST

Coping with the financial burden and implications of non-communicable diseases

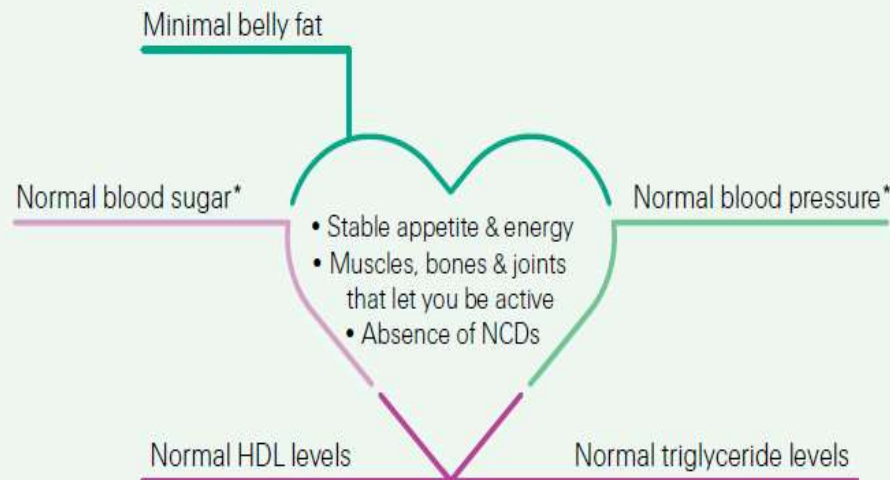
NCDs have meant more morbidity and mortality rates, now worsened by the pandemic. But digital tools and lifestyle changes can help people with NCDs lead near-normal lives.

ET Healthworld.com
From The Economic Times

www.actuariesindia.org

Concept of Health- Metabolic Health

What is metabolic health?



this may occur at the expense of increasing risk of CAD. Thus, three prospective epidemiological studies have suggested that hyperinsulinemia is a risk factor for CAD (56–58). The mechanism by which hyperinsulinemia increases the risk of developing CAD is far from clear, and it need not function as a primary risk factor for it to play a role in this regard. Abnormalities of lipoprotein metabolism have also been described in untreated patients with hypertension, including an elevation of plasma triglyceride concentration (54,59). Hypertriglyceridemia appears to be secondary to insulin resistance and hyperinsulinemia, and highly significant correlations have been documented between resistance to insulin-stimulated glucose uptake, hyperinsulinemia, increased very-low-density lipoprotein (VLDL) secretion rate, and hypertriglyceridemia in normal humans and patients with hypertriglyceridemia (60–62). Similar relationships have also been described in rats with various forms of carbohydrate-induced hypertriglyceridemia (44,63,64). Furthermore, when insulin-stimulated glucose uptake is enhanced ~~by~~ by weight reduction in humans (65) or exercise training in rats (47,64), plasma insulin and triglyceride levels fall. Finally,

TABLE 1
Syndrome X

Resistance to insulin-stimulated glucose uptake
Glucose intolerance
Hyperinsulinemia
Increased very-low-density lipoprotein triglyceride
Decreased high-density lipoprotein cholesterol
Hypertension

have been somewhat obscured. Based on available data, it is possible to suggest that there is a series of related variables—**syndrome X**—that tends to occur in the same individual and may be of enormous importance in the genesis of CAD. These changes include resistance to insulin-stimulated glucose uptake, hyperglycemia, hyperinsulinemia, an increased plasma concentration of VLDL triglyceride, a decreased plasma concentration of HDL-cholesterol, and high blood pressure (Table 1). The common feature of the proposed syndrome is insulin resistance, and all other changes are likely to be secondary to this basic abnormality. All five of

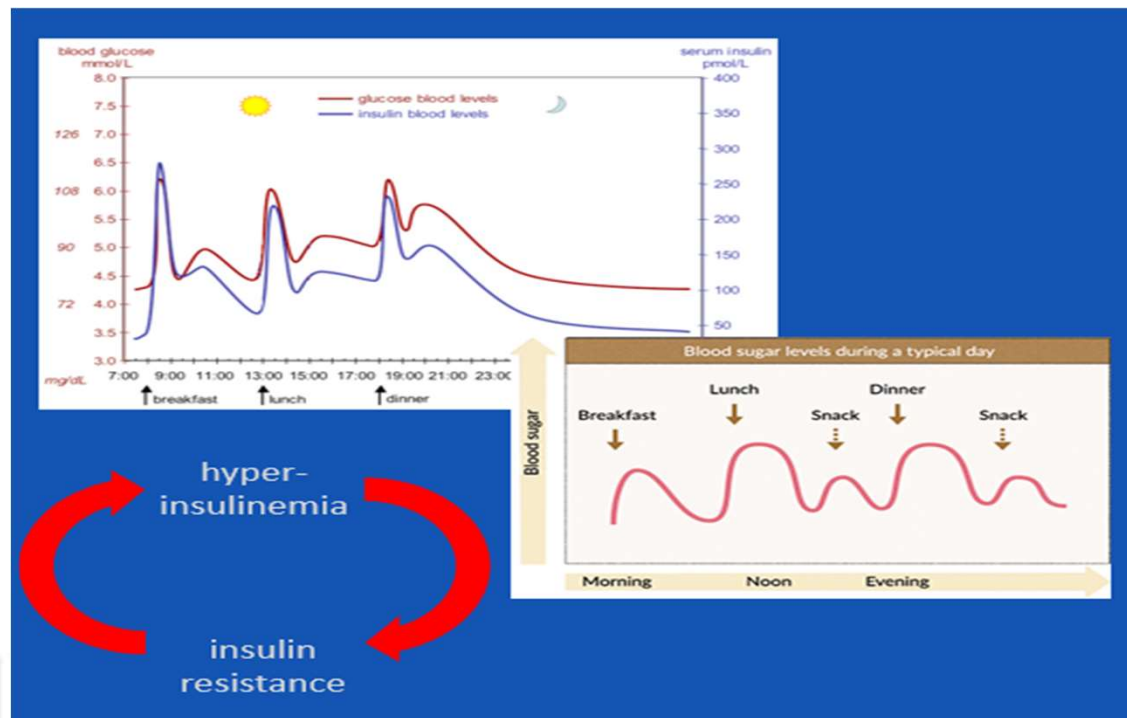
The common feature of the proposed syndrome is insulin resistance, and all other changes are likely to be secondary to this basic abnormality.

AHA (2021) Metabolic Syndrome criteria (≥ 3 out of 5)

- High blood glucose (sugar)*
- Low levels of HDL (“good”) cholesterol in the blood
- High levels of triglycerides in the blood
- Large waist circumference or “apple-shaped” body
- High blood pressure*

[The role of insulin resistance and hyperinsulinemia in coronary heart disease - PubMed \(nih.gov\)](#) Metabolism. 1992 May

Metabolic health requires insulin sensitivity

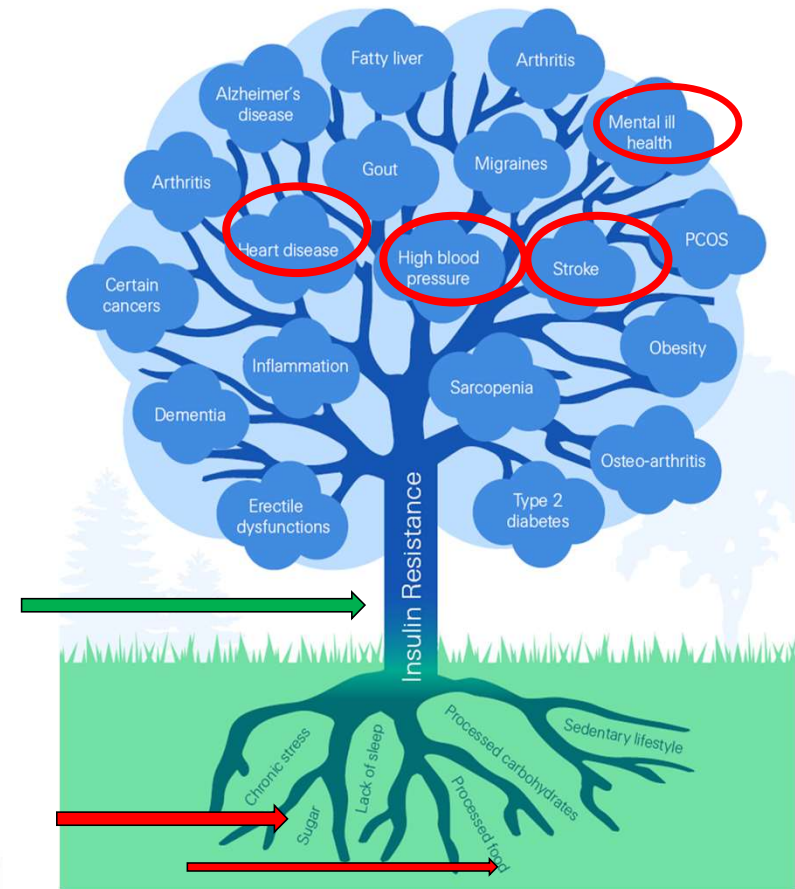


Metabolic health influences Everything

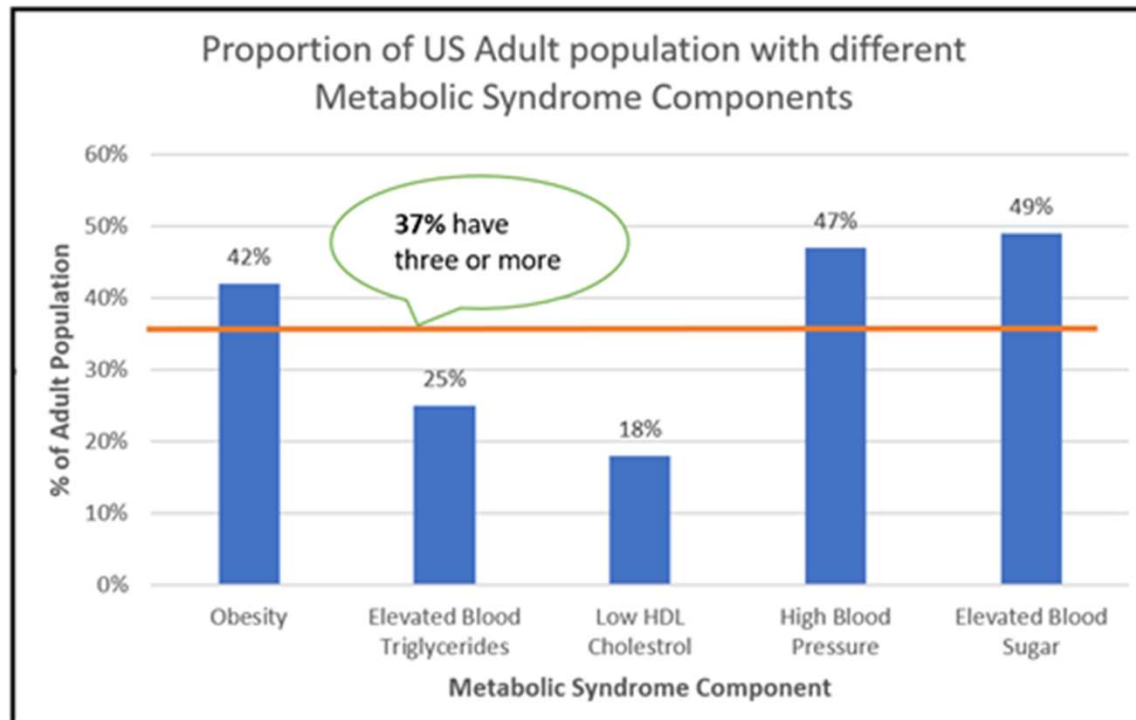
The ROOT cause is Insulin resistance

Factors contributing to Insulin resistance

- Nutrition (high in total carb , excess refined carbs and sugars)
- Obesity
- Lack of physical inactivity
- Poor sleep
- Chronic stress
- Genetics
- Comorbid conditions



Metabolic syndrome – Individual components



<https://www.cdc.gov/obesity/data/adult.html>

<https://www.nhlbi.nih.gov/health/high-blood-triglycerides>

<https://www.cdc.gov/nchs/products/databriefs/db290.htm>

<https://www.cdc.gov/bloodpressure/facts.htm>

<https://www.cdc.gov/diabetes/health-equity/diabetes-by-the-numbers.html>

<https://www.cdc.gov/diabetes/data/statistics-report/prevalence-of-prediabetes.html>

Metabolic syndrome in India



Table 2. Percentage of components of metabolic syndrome with their confidence interval among women aged 15–49 and men aged 15–54 by states/UTs in India, NFHS-4.

State	Obesity		Hypertension		Impaired glucose tolerance (IGT)	
	Women	Men	Women	Men	Women	Men
India	3.8 (3.747– 3.840)	2.2 (2.096– 2.270)	30 (29.891– 30.108)	43.6 (43.295– 43.885)	49.6 (49.462– 49.699)	53.2 (52.858– 53.452)

Note: Obesity- BMI>30kg/m²; Hypertension- Systolic BP≥130 or diastolic BP≥85mmHg or treatment of previously diagnosed hypertension; IGT- Blood glucose≥100mg/dl or previously diagnosed diabetes.

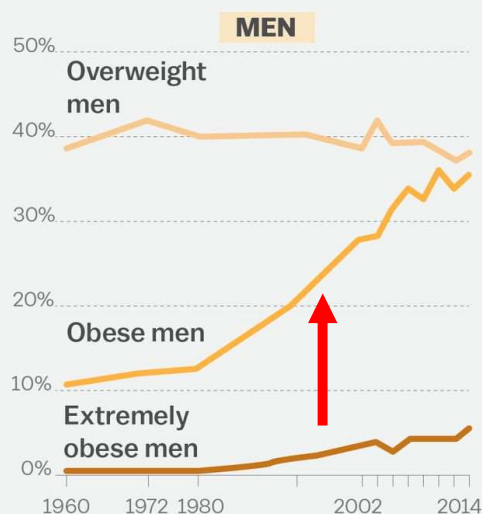
Table 3. Percentage of metabolic syndrome with confidence interval (CI) among women aged 15–49 and men aged 15–54 in India.

State	Women			Men		
	Percentage	Confidence Interval (CI)	N	Percentage	Confidence Interval (CI)	N
India	1.5	(1.427–1.585)	641902	1.1	(1.008–1.131)	106660

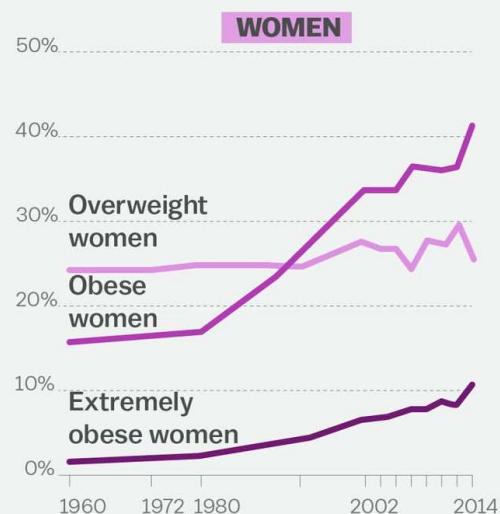
[The epidemiological profile of metabolic syndrome in Indian population: A comparative study between men and women - ScienceDirect](#)

Obesity saga

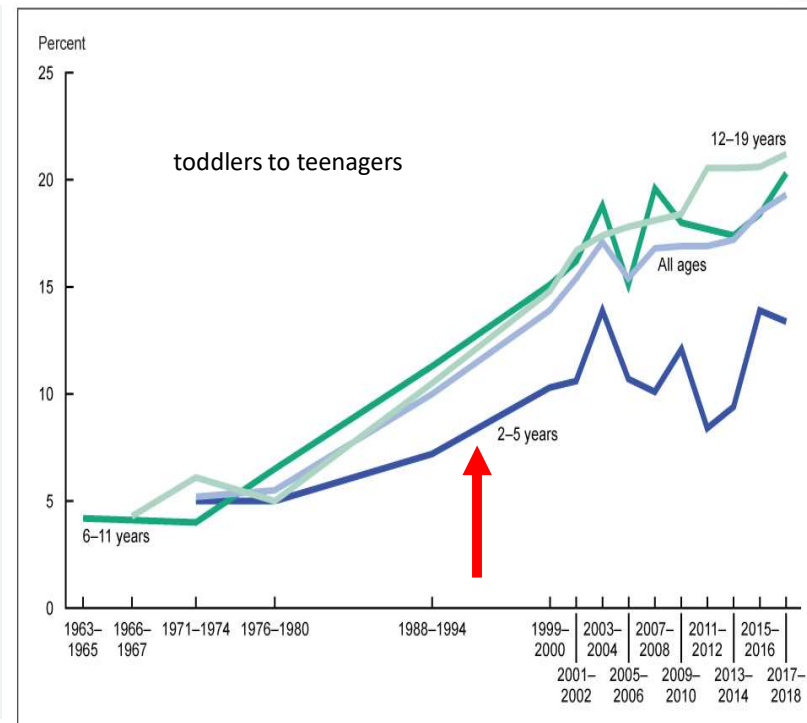
The stunning rise of obesity in America



SOURCE: CDC

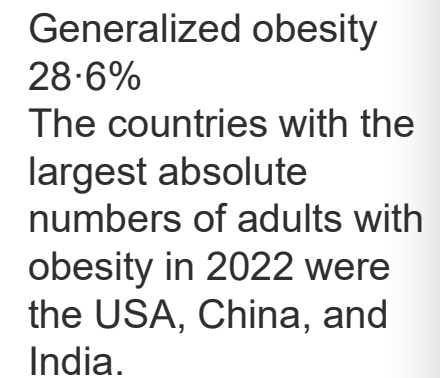


Vox



NOTE: Obesity is body mass index (BMI) at or above the 95th percentile from the sex-specific BMI-for-age 2000 CDC Growth Charts.
 SOURCES: National Center for Health Statistics, National Health Examination Surveys II (ages 6-11), III (ages 12-17); and National Health and Nutrition Examination Surveys (NHANES) I-III, and NHANES 1999-2000, 2001-2002, 2003-2004, 2005-2006, 2007-2008, 2009-2010, 2011-2012, 2013-2014, 2015-2016, and 2017-2018.

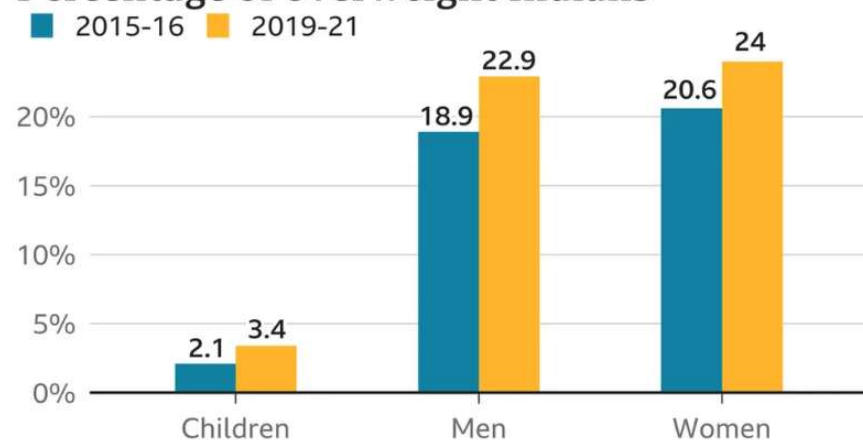
Institute of Actuaries of India



www.actuariesindia.org

The Thin Fat Indian

Percentage of overweight Indians



Note: Men and women whose BMI ≥ 25 kg/m². Children below 5 who are overweight.

Source: NFHS-4 (2015-16) and NFHS-5 (2019-21)

BBC

Obesity parameter	Women (%) (95% CI)	N	Men (%) (95% CI)	N
Waist circumference >80 cm for women and >94 cm for men	39.6 (39.5-39.7)	655,328	11.9 (11.7-12.1)	85,377
BMI ≥ 25	23 (22.9-23.1)	649,421	22.1 (21.8-22.3)	84,925

Table 1

Prevalence of BMI and WC - a comparison.

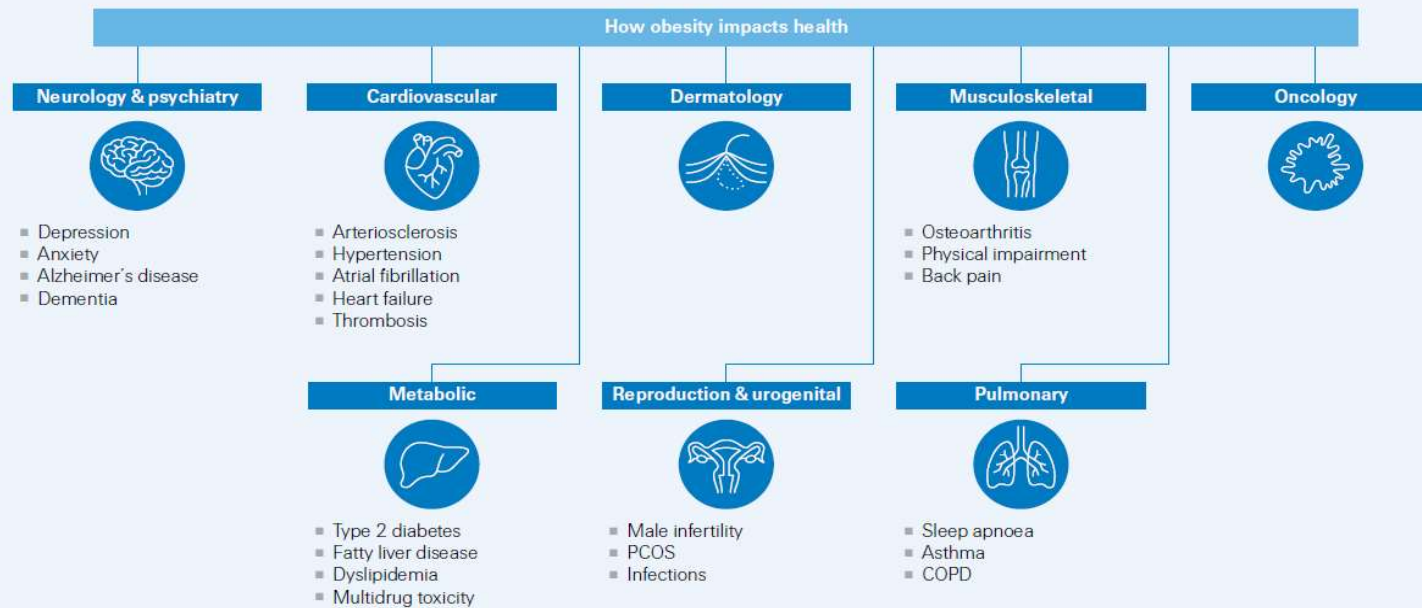
NFHS-5: Indians are getting fatter - and it's a big problem 25 May 2022
Geeta Pandey BBC News, Delhi

Abdominal obesity in India: analysis of the National Family Health Survey-5 (2019-2021) data Chaudhary, Monika et al. The Lancet Regional Health - Southeast Asia, Volume 14, 100208

Obesity Impact

Figure 11

Obesity – a multisystem health concern

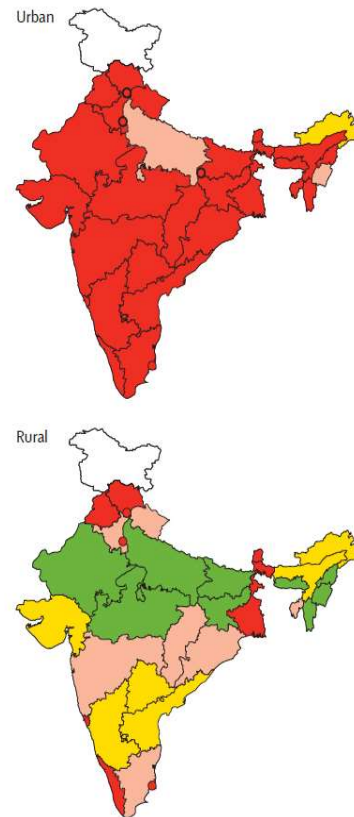
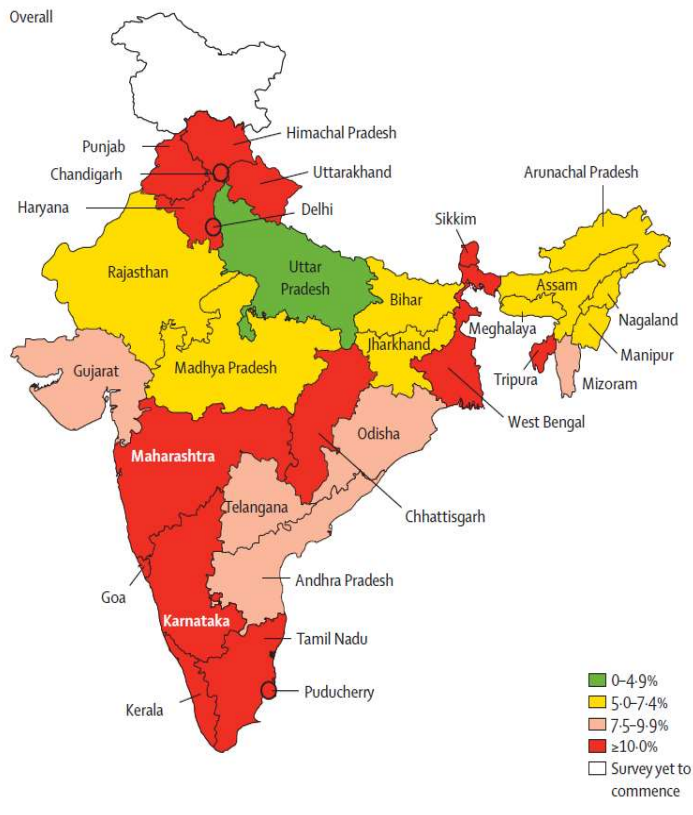


Source: Swiss Re Institute

India Story

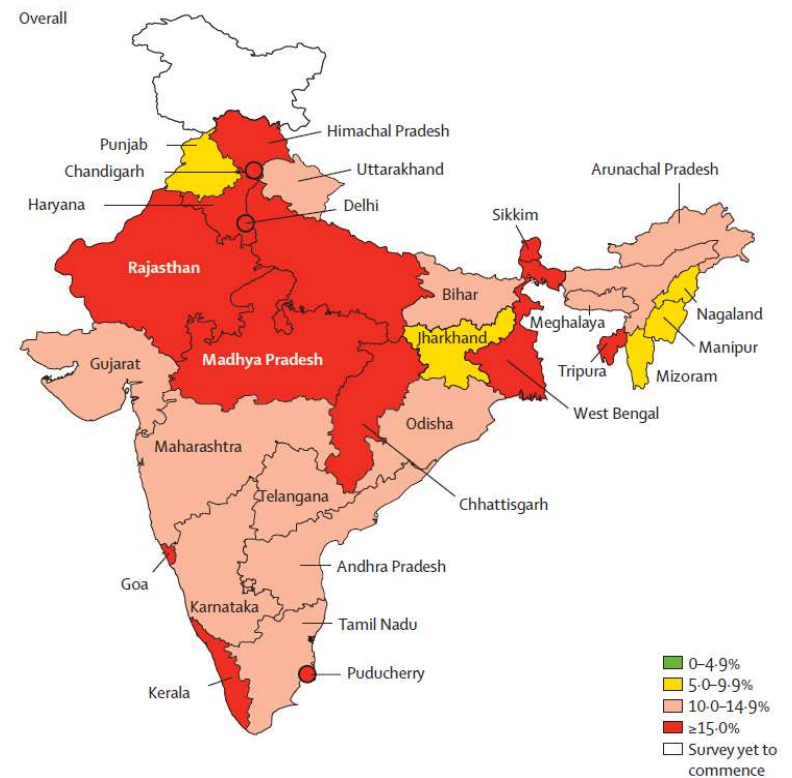
Diabetes weighted prevalence 11.4%

A Diabetes
Overall



Pre-Diabetes weighted prevalence 15.3%

B Prediabetes
Overall



Metabolic non-communicable disease health report of India: the ICMR-INDIAB national cross-sectional study (ICMR-INDIAB-17) - The Lancet Diabetes & Endocrinology

www.actuariesindia.org

Trends as seen in the NFS surveys

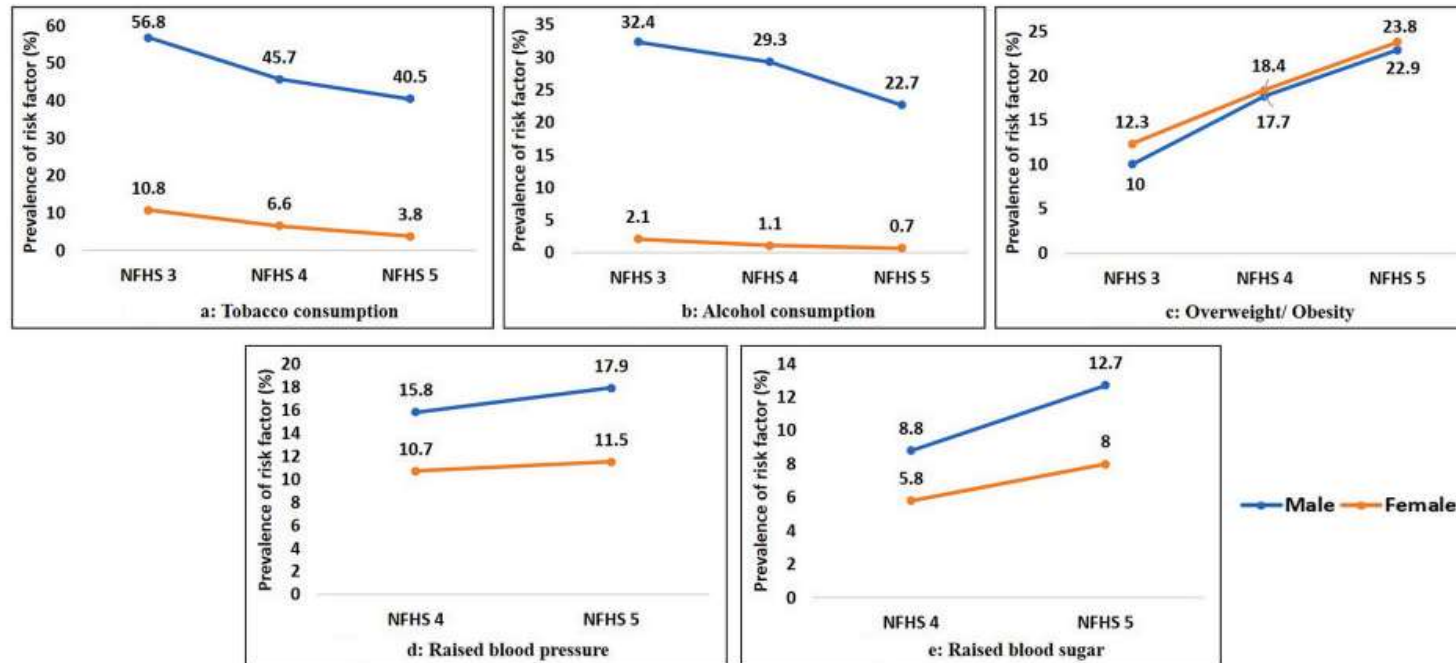
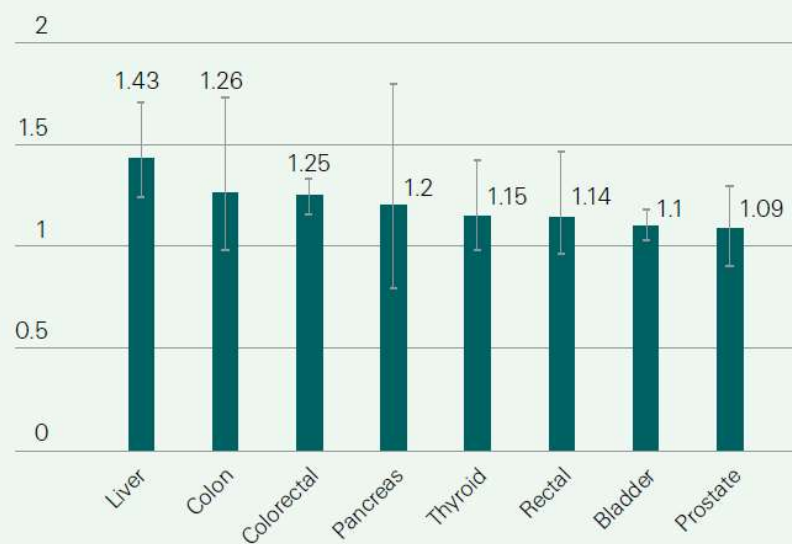


Fig. 2. Genderwise trend of risk factors a: Tobacco consumption b: Alcohol consumption c: Overweight/Obesity d: Raised blood pressure e: Raised blood sugar.

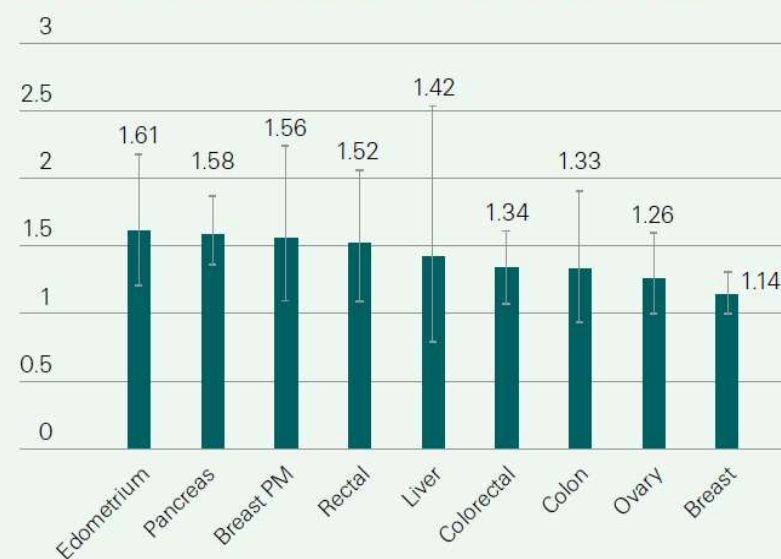
Trend of risk factors for cardiovascular diseases among young and middle-aged Indians: Insights from a nationally representative survey Kartikey Yadav et al. International Journal of Cardiology Cardiovascular Risk and Prevention, Volume 19, 2023,

Beyond cardiovascular diseases -Alzheimer's Disease and Cancer

Relative risk of cancer incidence for males with MetS



Relative risk of cancer incidence for females with MetS



Metabolic Psychiatry : Beyond CVS

1

Metabolic dysfunction is **highly prevalent** in people with **serious mental illness (SMI)**.

2

Metabolic dysfunction plays a significant, if not primary role in causing SMI.

3

People with SMI have **2-3 X risk of cardiovascular disease** and **live 10 years less** than people without SMI.

4

Many of the existing **treatments** for serious mental illness further compromise metabolic health.

Outcomes

CENTRAL ILLUSTRATION: Modifiable Risk Factors in Young Adults During First Acute Myocardial Infarction

	During a first myocardial infarction in young adults (18-59 years) in the U.S.	
25%	Diabetes Mellitus	>1 in 4
6%	Drug Abuse	>1 in 20
57%	Hypertension	>1 in 2
58%	Dyslipidemia	>1 in 2
16%	Obesity	>1 in 6
54%	Smoking	>1 in 2
92%	Any of these modifiable risk factors	>9 in 10

Modifiable Risk Factors in Young Adults With First Myocardial Infarction - ScienceDirect

Table 1. Baseline Characteristics of the Study Population

	Overall (N=1,462,168)	18- to 44-Year Group (n=280,875)	45- to 59-Year Group (n=1,181,282)
Age, yrs	50 ± 7	39 ± 5	53 ± 4
Risk factors			
Diabetes mellitus	27.4 (0.1)	22.6 (0.2)	28.5 (0.2)
Dyslipidemia	56.8 (0.3)	51.7 (0.3)	57.5 (0.3)
Hypertension	57.9 (0.2)	49.8 (0.3)	59.8 (0.2)
Obesity	17.8 (0.1)	20.7 (0.2)	17.1 (0.2)
Smoking	52.8 (0.3)	56.8 (0.4)	51.9 (0.3)
Drug abuse	5.5 (0.1)	9.6 (0.2)	4.6 (0.1)
Number of risk factors			
0	8.3	9.7	8.0
≥1	91.7	90.3	92.0
≥2	70.1	67.2	70.7
≥3	39.4	37.0	39.9
≥4	14.0	13.6	14.1
≥5	2.7	2.9	2.7
6	0.1	0.2	0.1
Mechanical revascularization	70.3 (0.4)	66.9 (0.4)	71.1 (0.4)

Metabolic Health is THE most impactful and widespread driver of mortality and morbidity across ALL lines of business – **and it can be significantly improved**

Metabolic Health
(*underlying “issue” is insulin resistance*)

key driver
of

Non-Communicable diseases (NCDs) : >70% of all mortality

Cancer

Cardio-vascular
disease

Autoimmune
diseases

Musculo-
skeletal
disorders

Mental
disorders

Majority of Mortality

Majority of CI claims

Major causes of Disability

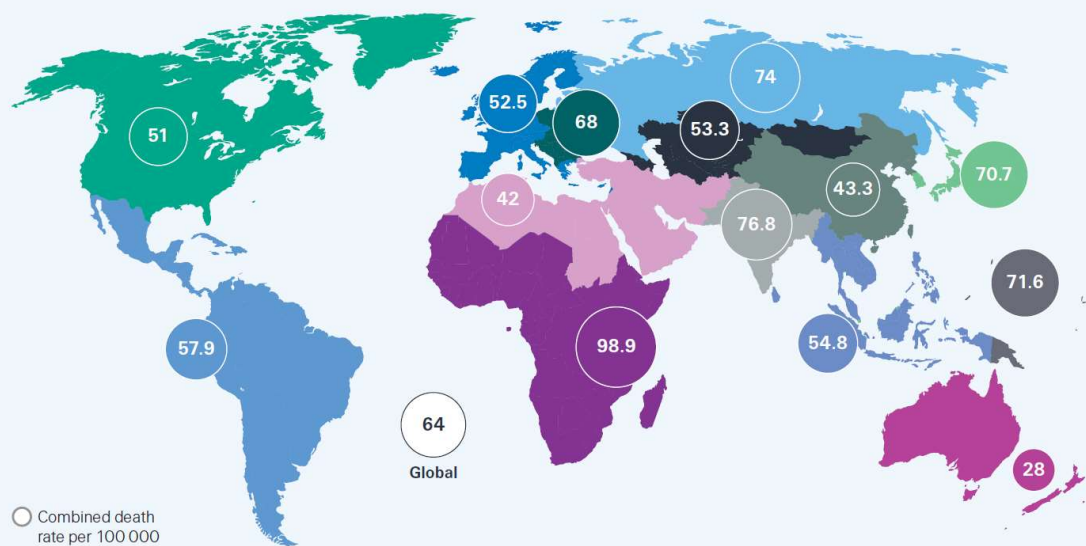
Majority of Medex costs

Emerging risks – Beyond the Obvious

Antimicrobial resistance occurs when bacteria, viruses, fungi, and parasites adapt over time, rendering previously effective treatments ineffective

Figure 1

Global map of all-age, AMR-associated death rates per 100 000



○ Combined death rate per 100 000

Infographic: Swiss Re

Data derived from: 'Global burden of bacterial antimicrobial resistance in 2019: a systematic analysis', Lancet, 2022

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Impacts are unequally distributed, disproportionately affecting people in the most vulnerable regions.

WHO calls this the silent pandemic



« AMR could unwind 100 years of medical progress, making infections that are easily treatable today a death sentence. No country is immune to this threat, but low and middle income countries bear the greatest burden. »

Tedros Ghebreyesus, WHO Director-General

The more unusual causes of AMR

- Climate change
- Climate-driven migration
- Armed conflicts

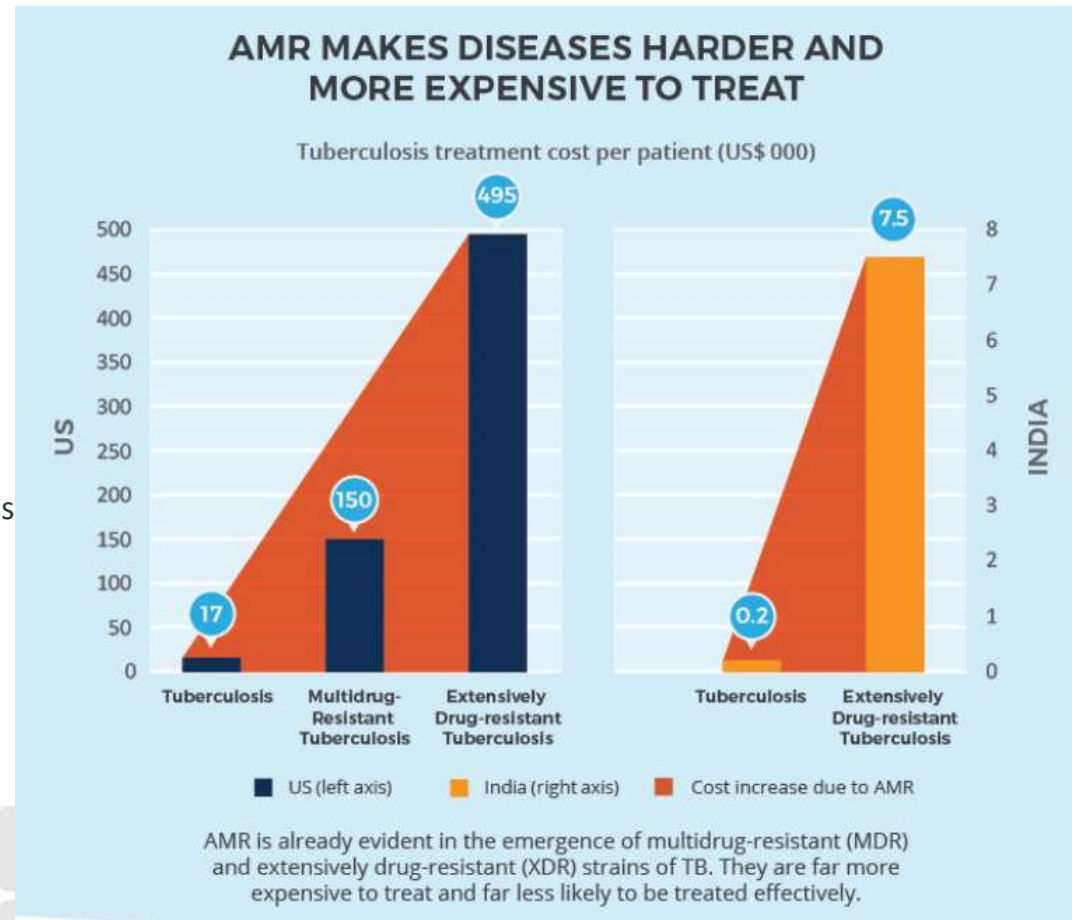
Focus on large scale AMR events on Mortality , extended impact on morbidity costs and resource utilization

- Increased costs due to more expensive drugs prolonged hospitalization ,
- Strain health or medical insurance, potentially necessitating additional coverage to handle the repercussions of AMR infection.

Lifting our voices against 'the silent pandemic' Paul Murray Blog 23 Sep2024

AMR in India

- A public health issue
- World's largest consumer of antimicrobial agents
- Quality of antibiotics , High use of Fixed drug combinations contributes to spread
- Unrestricted access to most antibiotics
- Death rates linked to AMR in India are 50% higher than those in Europe or the US.
- By 2050, India is expected to have two million deaths every year due to AMR



Impact and potential future risk

Current modelling of AMR deaths in 2050 will be comparable to cancer deaths today, at around 10 million annually

World Bank estimates that AMR could result in
US\$ 1 trillion additional healthcare costs by 2050,
US\$ 1 trillion to US\$ 3.4 trillion GDP losses per year by 2030

Limited global attention and funding , thus AMR related mortality forecasts are sparse
2019, AMR accounted for 4.95 million deaths annually,

Agenda



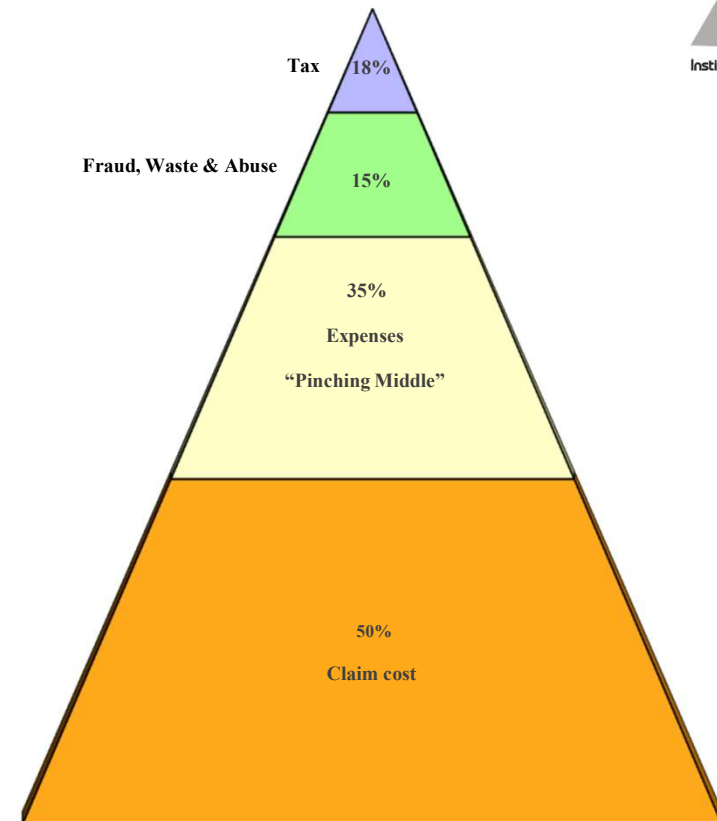
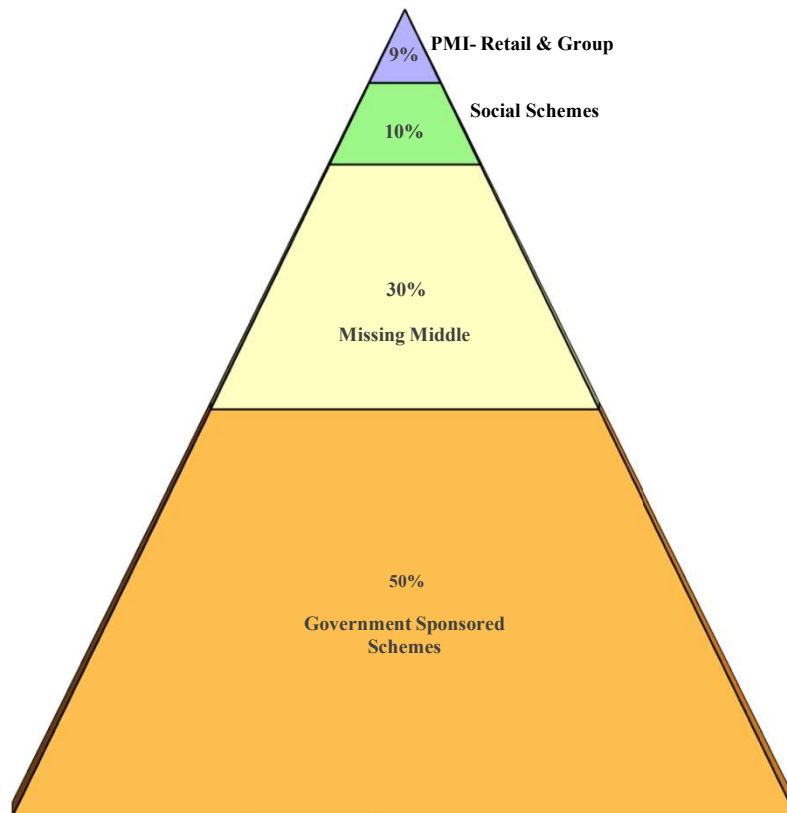
Part 1: Discusses the key health trends from the clinical perspective encompassing, Metabolic Health & AMR

Speaker : Dr. Asha Sapre

Part 2: Insurance for all by 2047 vision needs health considerations for it be a reality

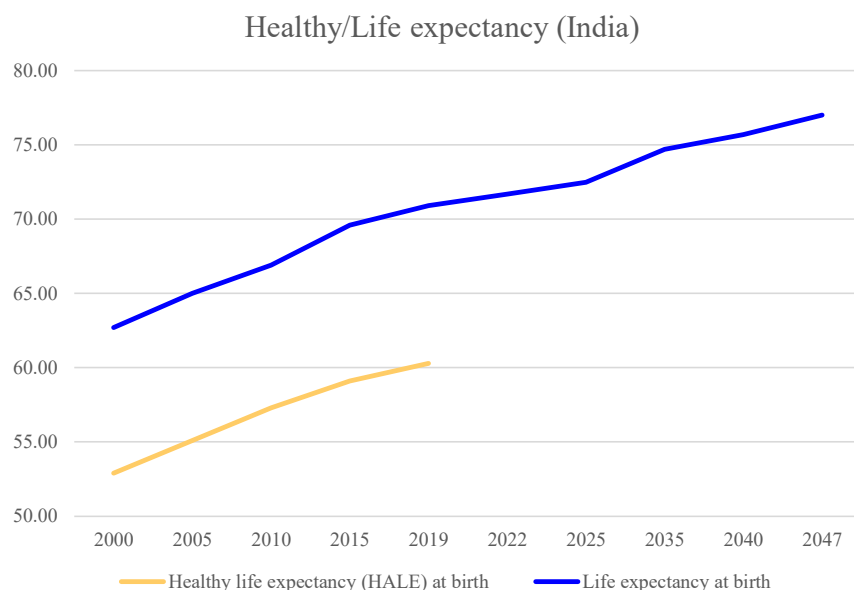
Speaker : Vikram Jain

The twin pyramids !!

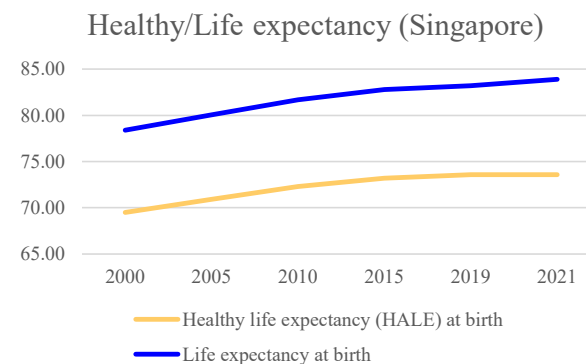
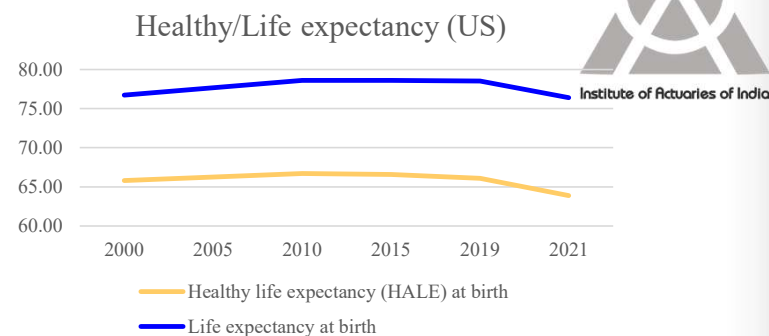


➤ The twins need equal attention

The shifting dynamics: Healthy Ageing?



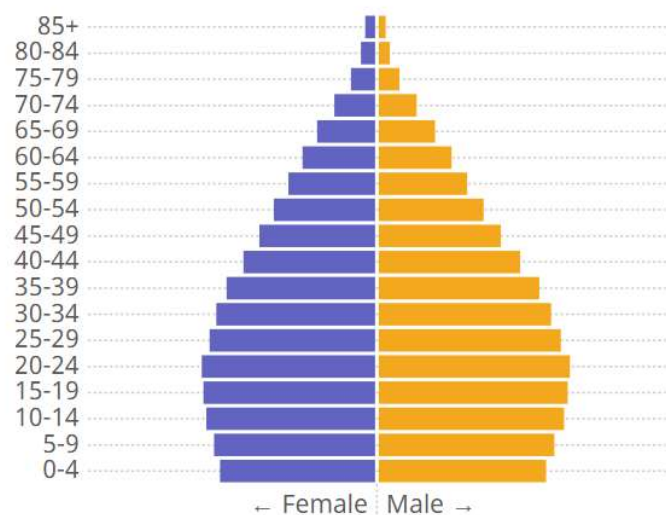
- Subtle increase in gap between HALE and Life expectancy
- The world has witnessed a major event : Covid-19
- Will increase in life expectancy pose Health challenges ?



The shifting dynamics: Age Saga

2023

Population by age and sex. India



2050

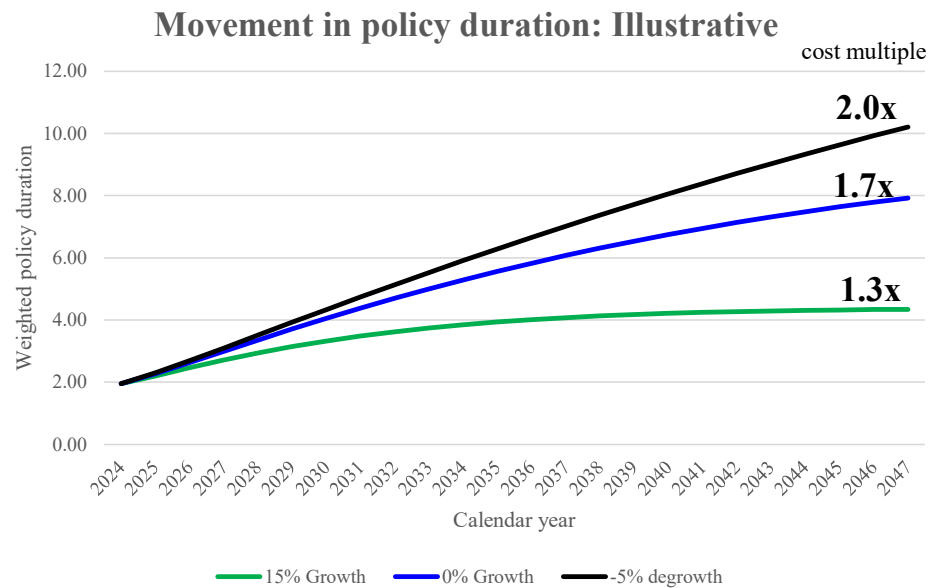
Population by age and sex. India



- Average population age to move from 31 to 38 years
- Proportion of Age 50+ to increase from 20% to 35%. Current proportion in Insured population ~10%!!

The shifting dynamics !!

The Vintage



- Growth will be the fuel for sustainability
- Solving the missing middle conundrum is in Industry's interest

The Reality



India now the cancer capital of the world

Diagnosis at younger age in India, compared to other countries

Feeling the blues

Sharp increase in mental health disorders amongst those between 18 to 40

Expanding Waistlines

Beneath the illusion of normal BMI, significant increase in visceral fat

Stress on Pressure

More people hover in the pre-hypertension zone

Sweet tooth turns bitter

Prediabetes is increasing amongst young adults

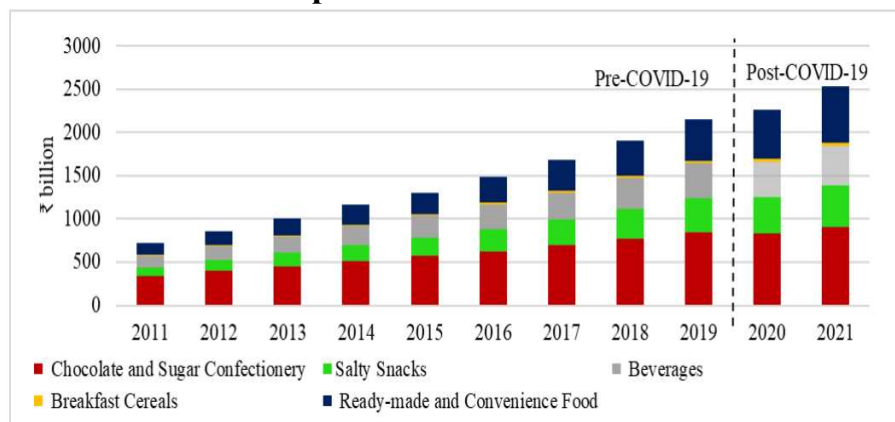
Cholesterol levels

Hypercholesterolemia – 25%
High LDL cholesterol – 20%
Prevalence

- How do we propose to cover the impaired lives?

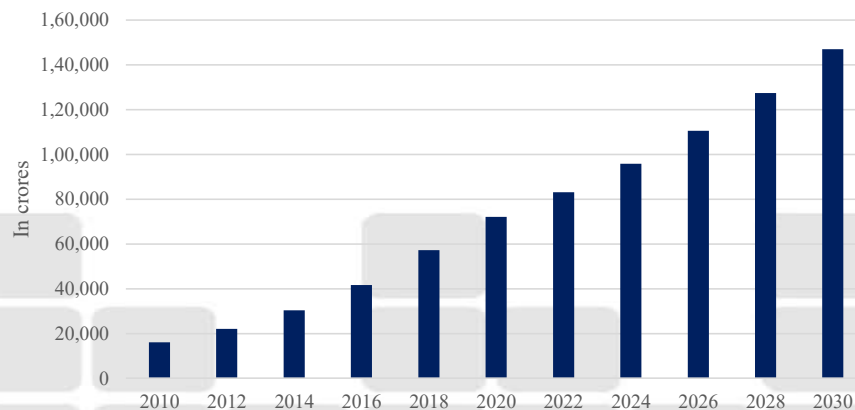
Food and Environment trends

Ultra processed food trends

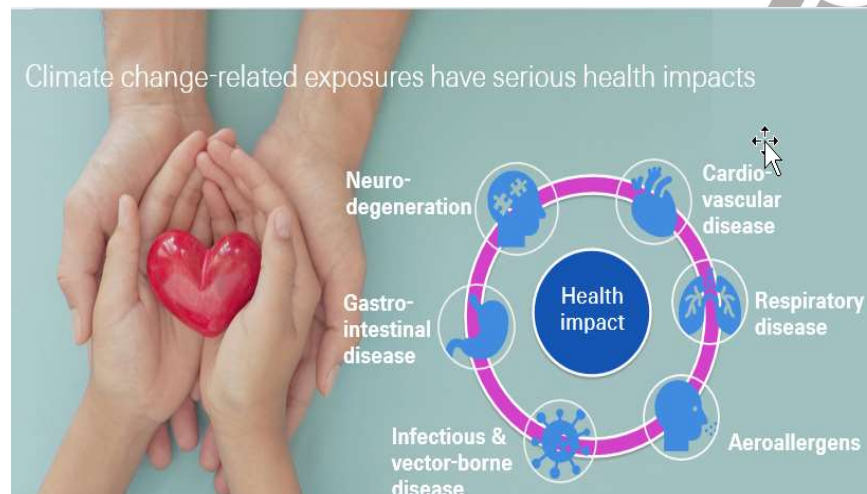


Source: Compiled from Euromonitor Database

Non alcoholic beverage market size



Climate crisis is health crisis



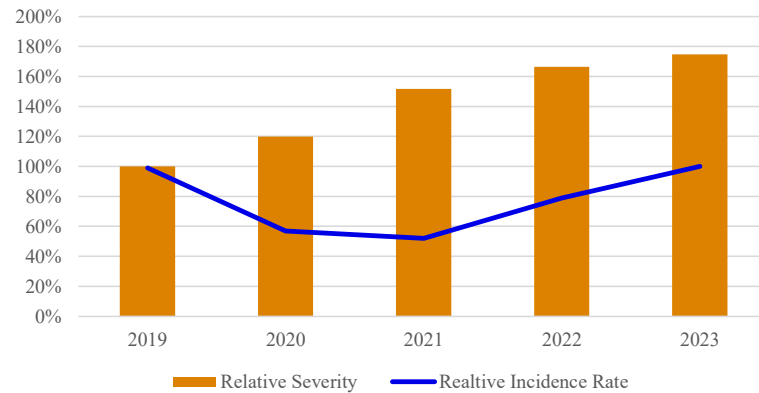
-  In 2023, exposure to heat was 2400 hours when light outdoor activity like walking posed **at least a moderate risk to heat stress**
-  **~50% higher exposure to heatwave** for infants and adults (age >65) in 2014-23 as compared to 1990-99
-  The **transmission potential for dengue** carried by Aedes albopictus mosquitoes **increased 85 percent** from 1951-1960 to 2014- 2023
-  **Climate change has substantially altered the transmission dynamics** of climate-sensitive infectious diseases in India with malaria, normally remaining confined to low land areas, has spread to Himalayas; and dengue infection has expanded throughout the country including coastal regions.

www.actuariesindia.org

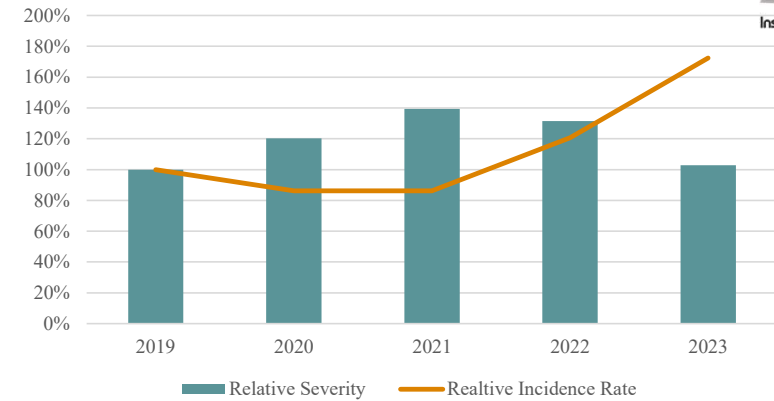
The recent trend in Incidence rate



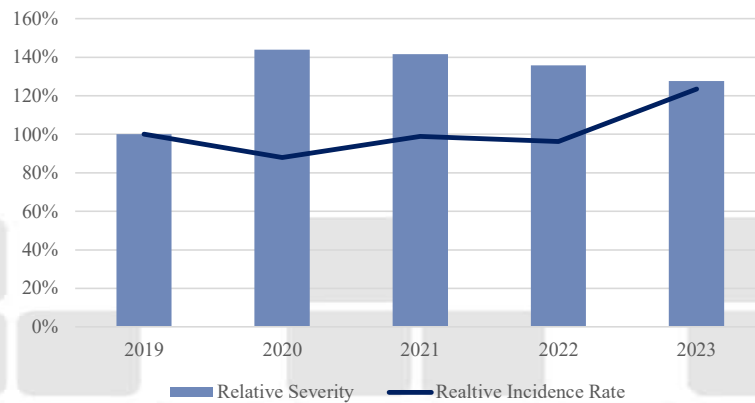
Srilanka Market



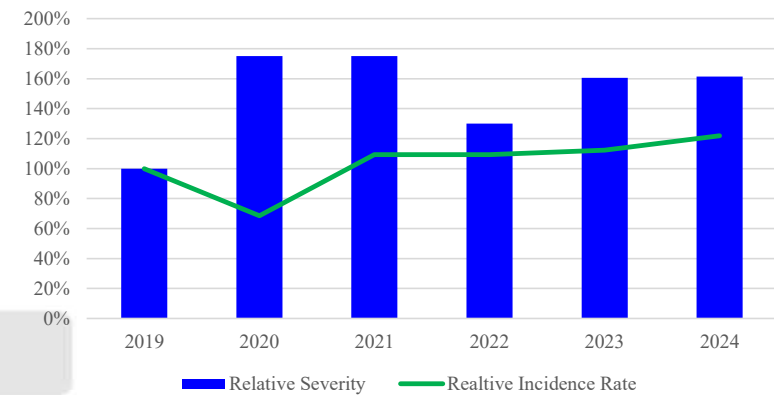
Indonesia Market



Hongkong Market



India Market



Institute of Actuaries of India

Public awareness

Taxation

Clinical guidelines

Health guidelines

The diagram illustrates a digital ecosystem for insurance. At the center is a glowing blue cube labeled "INSURANCE IN A BOX". Behind it is a transparent globe filled with numerous small icons representing different types of risks and services, such as fire, theft, health, and travel. Radiating from the globe are lines connecting to larger circular nodes, each containing an icon and a label. These labels include: "Anchors", "Tactical linking", "Embedded banking", "Fintech", "Liveness", "Onboarding", "Encryption", "Claims processing", "Insurance purchasing", "AML", "Data mining", "Underwriting", "Anti-fraud", "Governance", "Uncovering", "Consensus", and "Overseeing". The entire scene is set against a dark background with light rays emanating from the central cube.

- ✓ Risk assessment
- ✓ Distribution
- ✓ Fraud detection
- ✓ Customization

Wellness & Primary care

Health care costs

Health & Insurance for all by 2047

Thank you
Time to discuss more