

Obesity- a growing challenge in India and China- the two most populous country in the world

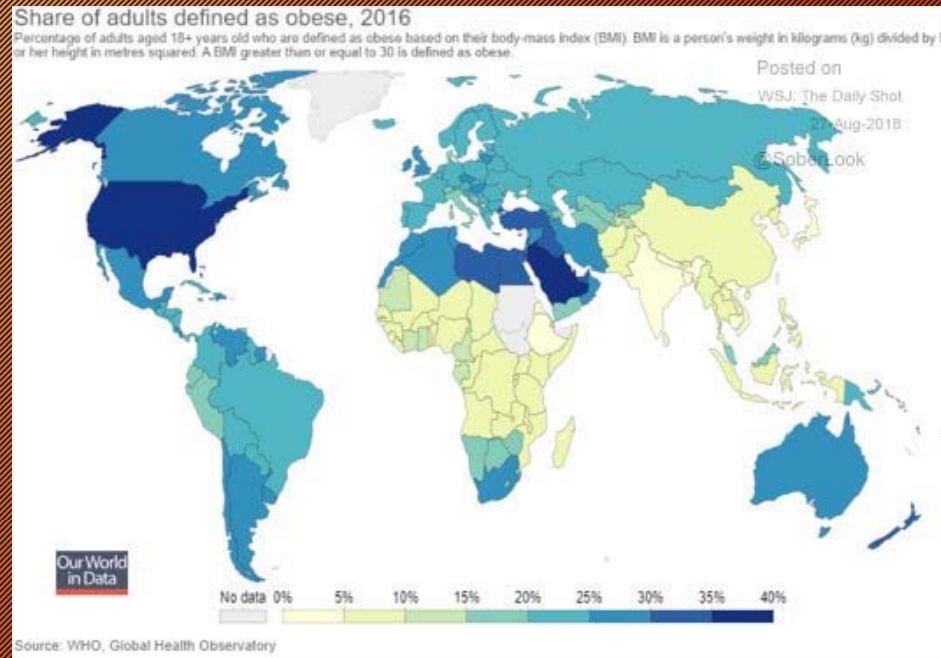
Prevalence including obesity in children, the risk factors, strategies,
lessons learnt

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Global Prevalence of Adult Obesity



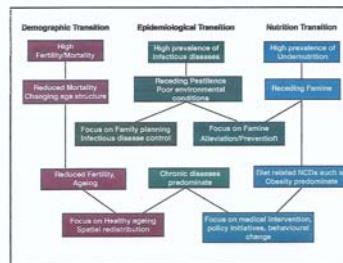
Global Factsheet on Overweight and Obesity(WHO 2016)

- Obesity has nearly tripled since 1975 worldwide.
- Trend is faster in developing countries
- 1.9 billion Adults (18 years and older) were overweight of these over 650 million were obese.
- 39% of adults aged 18 years and over were overweight, and 13% were obese.
- 41 million children under the age of 5 were overweight or obese.
- Over 340 million children and adolescents aged 5-19 were overweight or obese in 2016.

Why Consider India and China

- The two most populous countries in the world
- China(1.43 billion people) and India(1.37 billion people) in 2019, comprising of 19 and 18 per cent respectively, of the global total in 2019(UN, WPP2019).
- Both the Countries have developed economically to become the world economic powers
- But economic development, although brought down undernutrition has brought in the problem of overweight and obesity affecting the health
- By numeric logic they account for largest number of overweight and obesity cases in the world, although the prevalence of obesity is lower than many countries in the west.

Demography, Epidemiological, Nutrition, and Socio-economic Transition fueling epidemic of Obesity in India and China



(Adapted from "An overview on the nutrition transition and its health implications: the Bologna meeting", Popkin, 2002)

Prevalence of O & O in China

- Overweight adults (ages ≥ 20) accounted for around 25.71% of males and 22.78% of females (as compared with *39.84% of males and 29.46% of females* in the United States).
- Obese adults (ages ≥ 20) accounted for around 5.02% of males and 5.51% of females (as compared with *30.66% of males and 35.45% of females* in the United States).

Prevalence of O&O in Children and adolescents, China

- Overweight children and adolescents (ages 2-19) accounted for around 12.34% of males and 9.82% of females (as compared with 15.79% of males and 15.82% of females in the United States).
- Obese children and adolescents (ages 2-19) accounted for around 5.91% of males and 4.24% of females (as compared with 12.99% of males and 12.4% of females in the United States).
- Research data indicates that in 2015, China had the highest numbers of obese children (15.3 million), and the second highest (behind only the United States) number of obese adults (57.3 million). These high numbers are largely attributable to China's massive population

Recent reviews(Lancet Global Health September, 2019)

- China has the largest number of affected people worldwide, with about 46% of adults and 15% of children being obese or overweight.⁴
- Chinese society is increasingly making efforts to address the rising obesity and chronic disease epidemic.³

India: The second most populous country in the world: 1.37 billion people(2019 estimate)



Prevalence of Underweight/overweight or obese among Adult Women and Men(15-49 years)

Indicators	NFHS-4 (2015 - 16)			NFHS-3 2005-06
	Urban	Rural	Total	Total
Nutritional Status of Adults (age 15-49 years)				
<u>Women</u> whose Body Mass Index (BMI) is below normal (BMI < 18.5 kg/m²) %	15.5	26.7	22.9	35.5
<u>Women who are overweight or obese</u> BMI ≥ 25.0 kg/m²) (%)	31.3	15.0	20.6	12.6
<u>Men</u> whose Body Mass Index(BMI) is below normal (BMI < 18.5 kg/m²) %	15.4	23.0	20.2	34.2
<u>Men who are overweight or obese</u> BMI ≥ 25.0 kg/m²) (%)	26.6	14.3	18.9	9.3

Prevalence of overweight and obesity in children and adolescents (Ranjani et al reviewed prevalence data from 52 studies conducted in 16 of 28 States in India 1981 to 2013)

- **Obesity in Under five children : < 2 per cent**
- **Obesity in Children above 5 years: between 2 to 8 per cent.**
- **Overweight rates were around two times higher and seem to be more in northern and eastern India than in southern India.**

Adolescent: Overweight: 3 to 24.7 %.

Obesity: 1.5 to 14 per cent

- **Wide variability in their prevalence in India.**
- **Slightly higher prevalence rates reported in boys, compared to girls.**
- **The least prevalence of obesity was reported from Nagaland (2.3%) and the maximum from New Delhi (29%).**

Figure . Box plots indicating overweight (a) , obesity (b) and combined (c) trends in Indian children and adolescents (1981-2013).

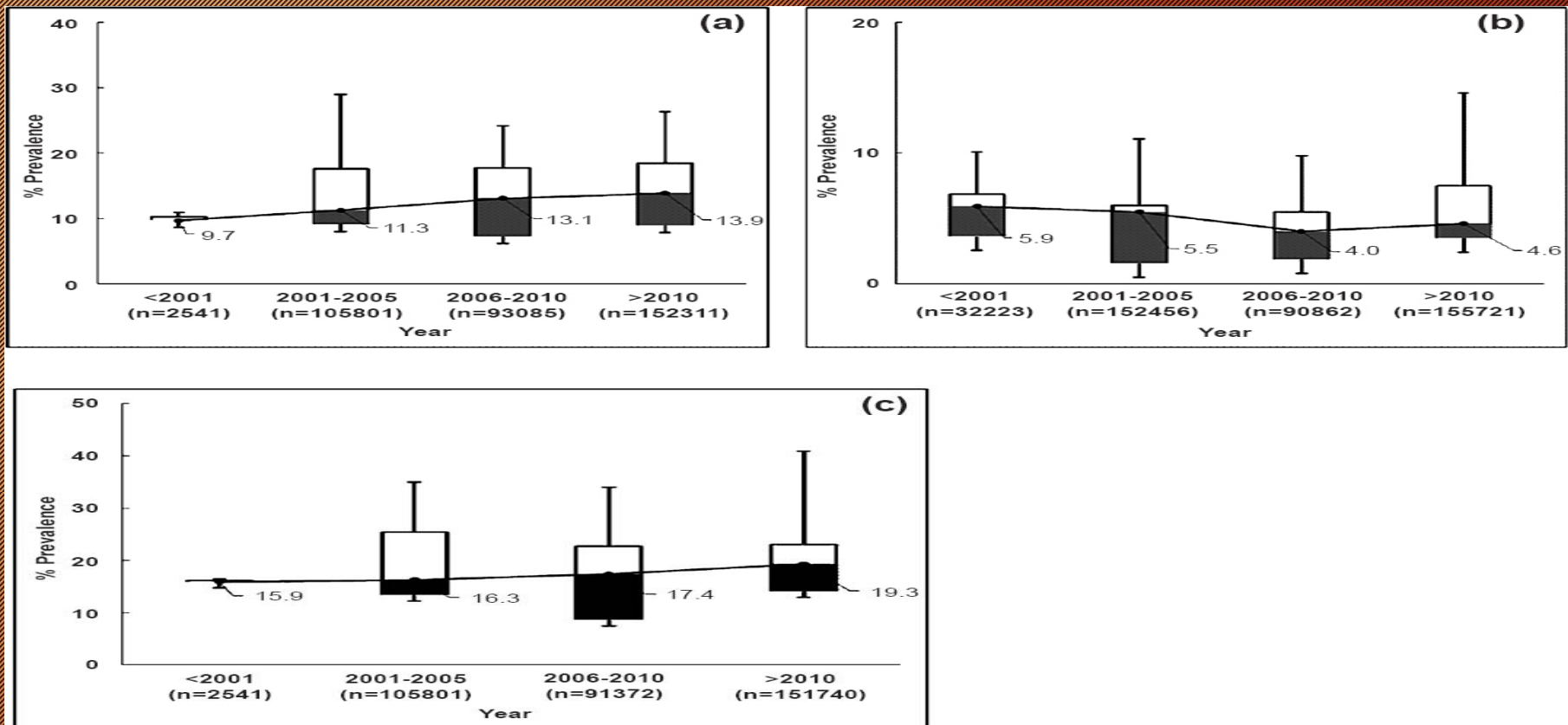
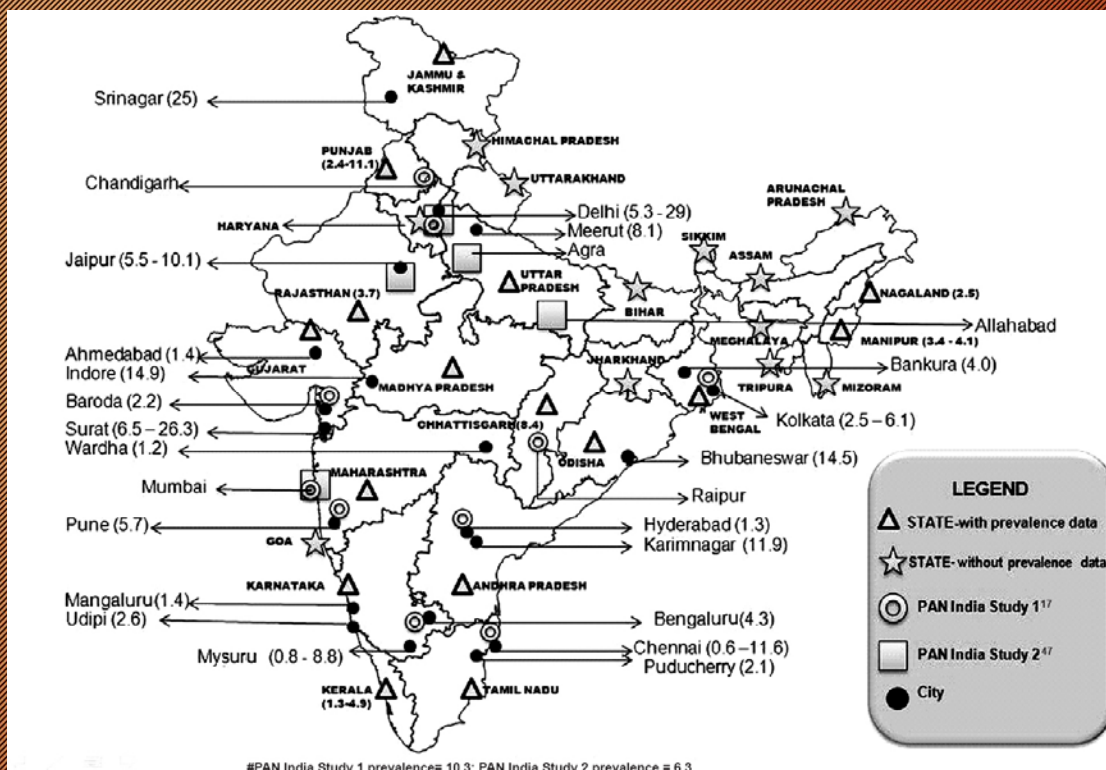


Figure 3. Map of India indicating prevalence (%) of childhood obesity in various States and cities. Values in parentheses are prevalence in percentages. *Source:* Ref: Ranjani H et al, Indian J Med Res 2016,143:160-74



Overweight and Obesity in Children and Adolescents

- **Persistence into adulthood** with all its health risks& socio-economic implications
- A huge challenge for epidemiologists, program managers, and policy makers world over including India.
- It is threatening to offset the growth, development, and the “demographic dividend” of India and overburdening our health system
- **The observed associations of adult obesity and attendant comorbidities with birth weight, breast feeding practice, rebound of the BMI, and overweight during adolescence suggest that these periods may be critical for targeting prevention efforts.**

Prevalence of Hypertension in India(NFHS-4) among adult women and men(15-49 years)

Blood pressure Systolic/ Diastolic(in mm hg)	Urban	Rural	Total
Women:			
Slightly above normal (Systolic 140-159 mm of Hg and/or Diastolic 90-99 mm of Hg) (%)	7.3	6.5	6.7
Moderately high (Systolic 160-179 mm of Hg and/or Diastolic 100-109 mm of Hg) (%)	1.6	1.3	1.4
Very high (Systolic \geq 180 mm of Hg and/or Diastolic \geq 110 mm of Hg) (%)	0.7	0.7	0.7
Men:			
Slightly above normal (Systolic 140-159 mm of Hg and/or Diastolic 90-99 mm of Hg) (%)	11.4	9.8	10.4
Moderately high (Systolic 160-179 mm of Hg and/or Diastolic 100-109 mm of Hg) (%)	2.7	2.0	2.3
Very high (Systolic \geq 180 mm of Hg and/or Diastolic \geq 110 mm of Hg) (%)	1.0	0.8	0.9

Blood sugar level among adult women and men(15 -49 years) in India NFHS - 4

Blood Sugar Level	Urban	Rural	Total
Women:			
Blood Sugar level High: 140-159 mg/dl	6.9	5.2	5.8
Blood Sugar level Very High: > 160 mg/dl	3.6	2.3	2.8
Men:			
Blood Sugar level High: 140 -159 mg/dl	8.8	7.4	8.0
Blood Sugar level Very High: > 160 mg/dl	4.4	3.5	3.9

Unique features of Obesity in Indians

Obesity in type-2 diabetic patients is a very common phenomenon and often termed as "Diabesity."

Diabetes, obesity, hypertension, dyslipidemia are grouped under one name "Metabolic syndrome."

- The rising prevalence of these lifestyle disorders in India is of concern which act as major risk factors for coronary artery diseases (CAD).
- Increased predisposition to diabetes and premature CAD in Indians is attributed to the "**Asian Indian Phenotype**" characterized by less of generalized obesity measured by BMI and greater central body obesity as shown by greater Waist Circumference and Waist to Hip Ratio(WHR).^[9]
- **Many Indians fit into the category of metabolically obese normal weight individuals.**
- Despite having lean BMI, an adult Indian has **more chances of having abdominal obesity.**
- The body fat percentage of an Indian is significantly higher than a western counterpart with similar BMI and blood glucose level.

Risk Drivers: (1) Excess caloric intake

- Unrestricted availability, access and intake of energy-dense foods
- No/less availability, accessibility and affordability of Healthy Foods in schools, work place and markets
- Eating out more frequently, Changing life
- Dietary habits not been adapted to current, often less energy-demanding lifestyles
- **Changing Lifestyles and unhealthy eating behavior**
- **Low knowledge about nutrition in parents and caregivers.**
- Children and adolescents cannot choose the environment in which they live or the food they eat.
- Children also have a limited ability to understand the long-term consequences of their behavior. They therefore require special attention.

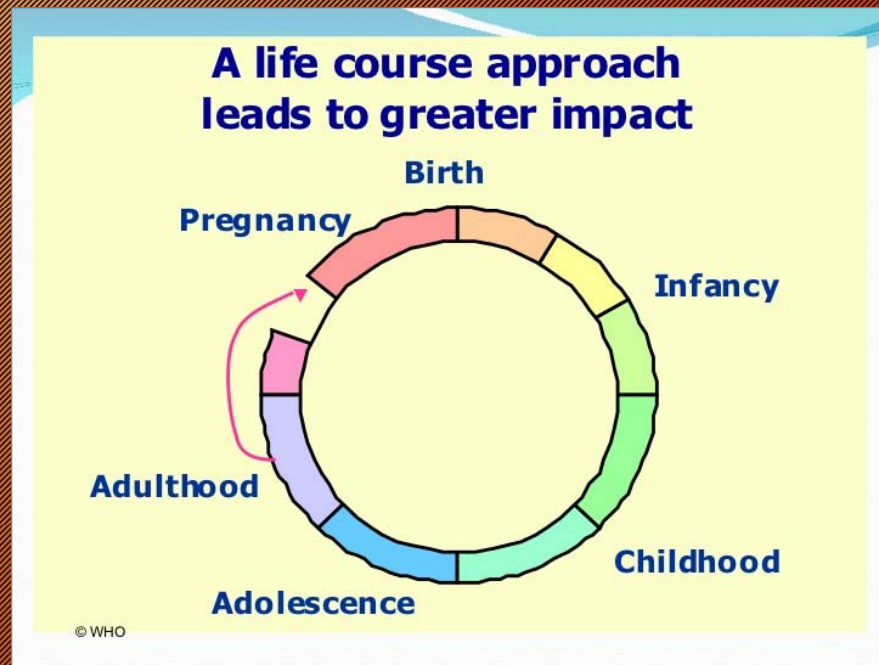
Excess Calorie intake contd.

- Skipping breakfast. Daily allowance (pocket money) to School students to purchase lunch,
- Overprotection and forced feeding by parents
- Abundance of fast-food outlets and eating points.
- The practice of overfeeding of low-birth-weight babies to catch up growth.
- Aggressive advertising by transnational fast-food and cola companies
- **social and economic development and policies** in the areas of agriculture, transport, urban planning, the environment, food processing, distribution and marketing, as well as education.
- **The problem is societal and therefore it demands a population-based multisectoral, multi-disciplinary, and culturally relevant approach.**

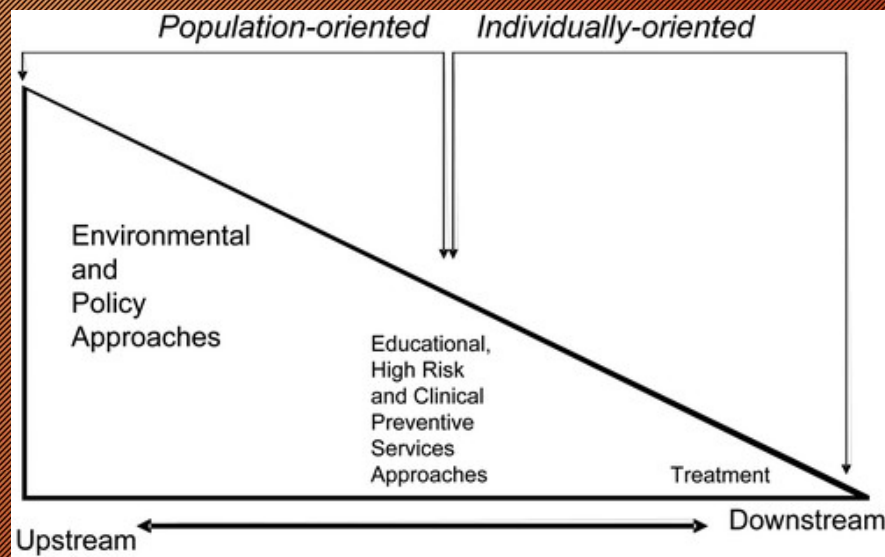
2. Lack of physical activity

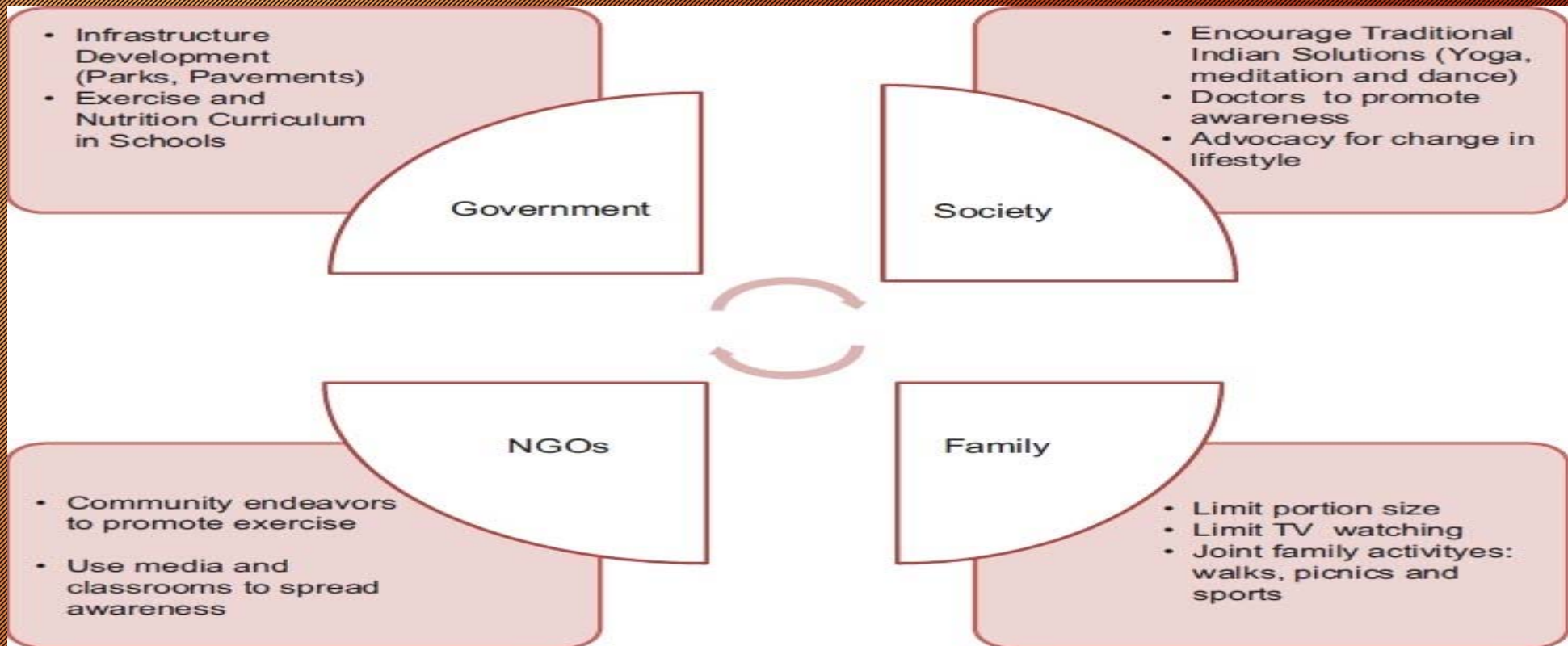
- Increasing sedentary habits, increased motorized transport.
- Overindulgence in indoor leisure activities and entertainment (e.g., television viewing, internet, and computer games, mobiles)
- easy availability of domestic help to take care of household chores
- lack/inadequate open spaces , cycle tracks, playgrounds and gymnasiums in schools and communities
- unsafe neighborhoods for walking and other outdoor activities,
- increasing pressure on children to perform in academics
- reduced emphasis on sports
- **Modifying environment(Enabling Environment) to promote physical activity should be part of any preventive strategies.**

Cross cutting and Life course approach to Overweight and Obesity

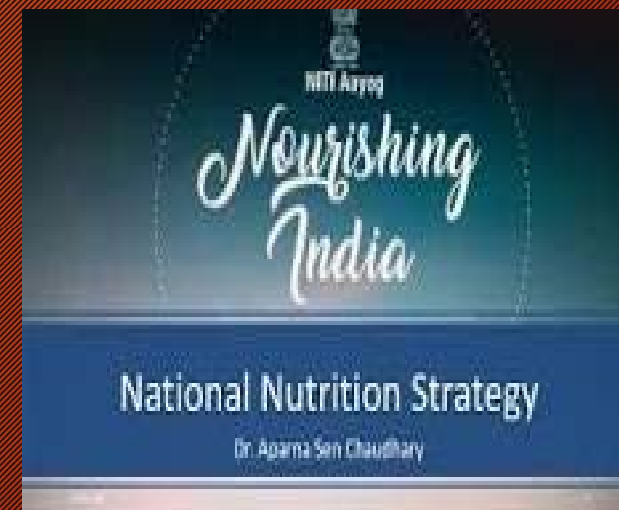


Prevention of Overweight






India's Policies and Strategy




Programs:

5 X 5 matrix for RMNCH+A				
Let's make every mother and child healthy, Transformational Leadership can do it				
R	M	N	C	A
Reproductive Health	Maternal Health	Newborn Health	Child Health	Adolescent Health
<ul style="list-style-type: none"> Focus on spacing methods, particularly PPIUCD at high case load facilities Interval IUCD at sub-centers on fixed days Doorstep delivery of contraceptives by ASHA Strengthening safe abortion services Maintaining sterilization services 	<ul style="list-style-type: none"> Use MCTS to ensure early registration of pregnancy and provide full ANC Detect high risk pregnancies and line list and manage severely anemic mothers Equip delivery points with trained HR & other infrastructure Review maternal, infant and child deaths for corrective actions Notify sub-centers with less institutional delivery load, distribute Mesoprostol and incentivize ANMs for domiciliary deliveries 	<ul style="list-style-type: none"> Early initiation and exclusive breastfeeding Home based newborn care through ASHA Essential Newborn Care and resuscitation services at all delivery points Equip Special Newborn Care Units with highly trained HR and other infrastructure Empower ANM for community level use of Gentamycin 	<ul style="list-style-type: none"> Complementary feeding, IFA supplementation and focus on nutrition Diarrhoea management at community level using ORS and Zinc Management of pneumonia Full immunization coverage Rashtriya Bal Swasthya Karyakram (RBSK): screening of children for 4D (birth defects, development delays, deficiencies and disease) and its management 	<ul style="list-style-type: none"> Community based services through peer educators Delay in age of marriage Strengthen ARSH clinics Weekly IFA Supplementation (WIFS) under national Iron Plus initiative Promote menstrual hygiene
Health Systems <ul style="list-style-type: none"> Case load based deployment of HR at all levels Ambulances, drugs, diagnostics, reproductive health commodities Behavior change communication Supportive supervision and use of scorecards based on HMIS Public grievances redressal mechanism 		Cross cutting <ul style="list-style-type: none"> Equip nurses to provide specialized and quality care Address social determinants of health through convergence Introduce difficult area and performance based incentives Focus on un-served and underserved villages, urban slums and blocks Bring down out of pocket expenses 		

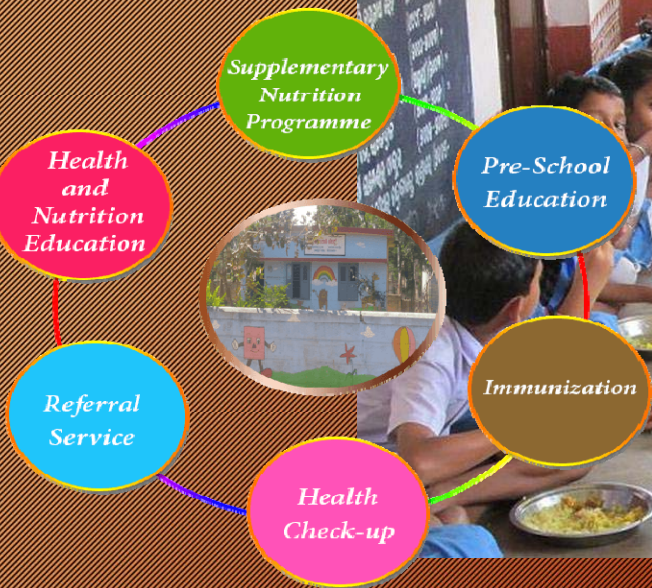


SCHOOL HEALTH PROGRAMME



MINISTRY OF HEALTH AND FAMILY WELFARE
GOVERNMENT OF INDIA

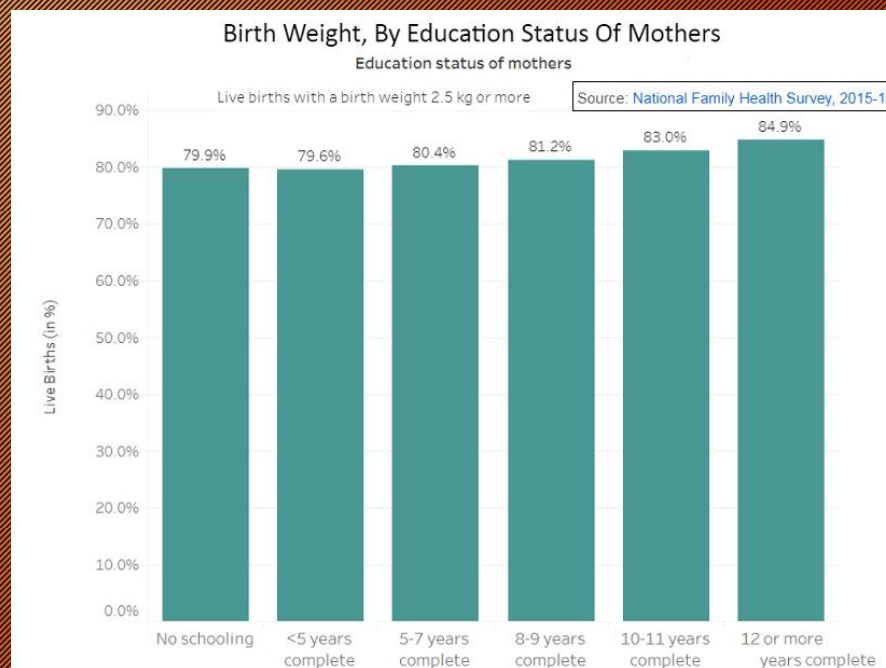
Programs: Integrated Child Development Services Scheme(ICDS), Mid Day Meal in Schools and Adolescent Health Programs



Ante-natal, Natal and Post natal Care

Maternity care for last birth in the 5 years before the survey	Urban	Rural	Total	NFHS-3 (2005-06)
Mothers who had antenatal check-up in the first trimester (%)	69.1	54.2	58.6	43.9
Mothers who had at least 4 ante-natal care(%)	66.4	44.8	51.2	37.0
Mothers who had full ante-natal care(%)	31.1	16.7	21.0	11.6
Institutional birth(%)	88.7	75.1	78.9	38.7
Mothers who received post natal care from doctor/nurse/LHV/ANM/Midwife/other health personnel within 2 days of delivery	71.7	58.5	62.4	34.6

Incidence of LBW babies 18%- down from 22% a decade ago, according NFHS-4(2015-06)



Success of Breast-feeding program: NFHS-4 (2015 - 16)

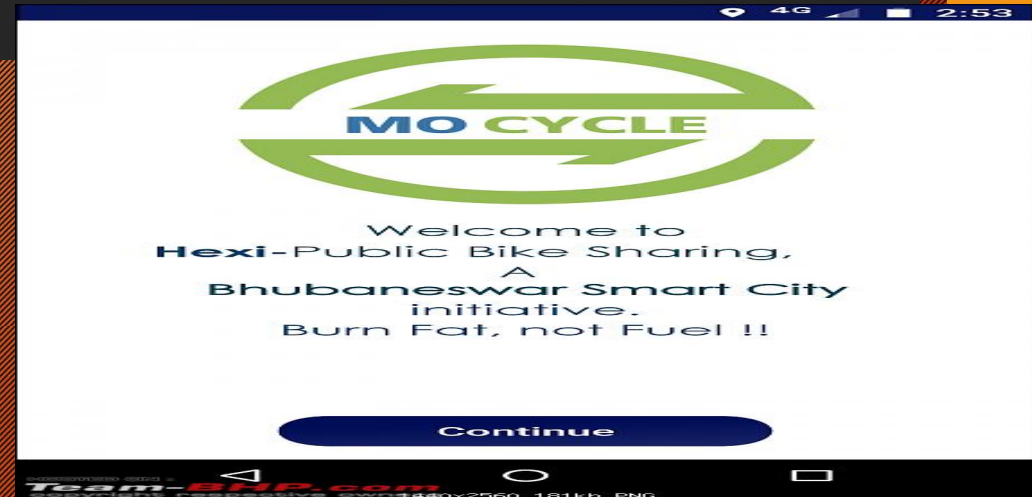
Indicator	Urban	Rural	Total	NFHS-3 (2005-06)
Children under age 3 years breastfed within one hour of birth (%)	42.8	41.1	41.6	23.4
Children under age 6 months exclusively breastfed (%)	52.1	55.9	54.9	46.4
Children age 6-8 months receiving solid or semi-solid food and breastmilk (%)	50.1	39.9	42.7	52.6
Breastfeeding children age 6-23 months receiving an adequate diet (%)	10.1	8.2	8.7	NA

National Action Plan and Monitoring Framework for Prevention and Control of NCDs: MOH&FW, 2012 - 2013

Table 1: Targets for NCD prevention and control in India

S.No.	Framework element	Outcome	Targets	
			2020	2025
1.	Premature mortality from NCDs	Relative reduction in overall mortality from cardiovascular disease, cancer, diabetes, or chronic respiratory disease	10%	25%
2.	Alcohol use	Relative reduction in alcohol use	5%	10%
3.	Obesity and diabetes	Halt the rise in obesity and diabetes prevalence	No mid-term target set	Halt the rise in obesity and diabetes prevalence
4.	Physical inactivity	Relative reduction in prevalence of insufficient physical activity	5%	10%
5.	Raised blood pressure	Relative reduction in prevalence of raised blood pressure	10%	25%
6.	Salt/sodium intake	Relative reduction in mean population intake of salt, with aim of achieving recommended level of less than 5gms per day	20%	30%
7.	Tobacco use	Relative reduction in prevalence of current tobacco use	15%	30%
8.	Drug therapy to prevent heart attacks and strokes	Eligible people receiving drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes	30%	50%
9.	Essential NCD medicines and basic technologies to treat major NCDs	Availability and affordability of quality, safe and efficacious essential NCD medicines including generics, and basic technologies in both public and private facilities	60%	80%
10.	Household indoor air pollution	Relative reduction in household use of solid fuels as a primary source of energy for cooking	25%	50%

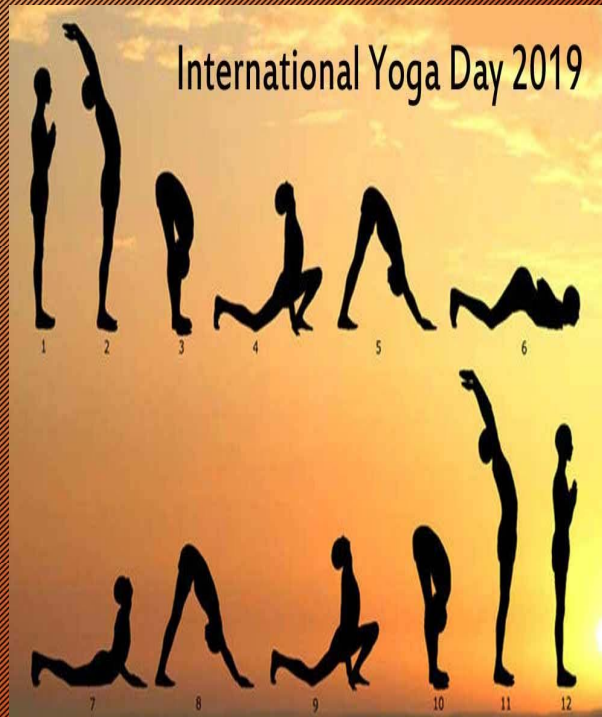
SMART CITY MISSION



Parks and open-air gyms



Yoga helps reduce body Weight: India's gift to the world



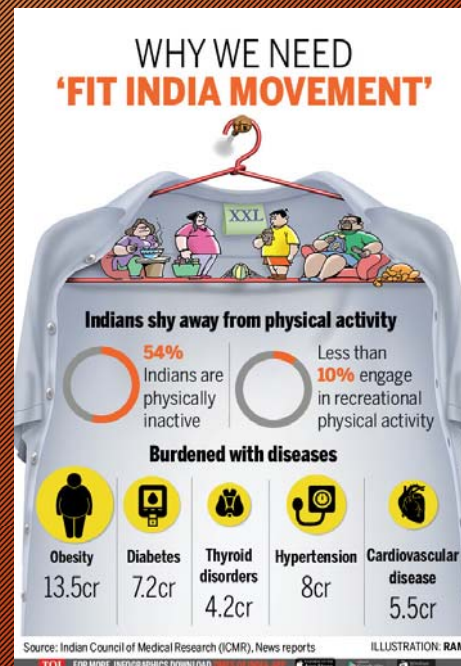
Economic Tools: Taxes and subsidies

- Processed Foods and sugar-sweetened beverages (SSB) - pose a unique risk of increasing the risk of obesity, type 2 diabetes and cardiovascular disease,” said a statement by medical professionals urging the Government to tax SSB
- Mexico introduced a soda tax in January 2014 and saw a 12 per cent drop in SSB sales by December 2014.
- A 2014 Stanford University study concluded that a 20 per cent tax on SSBs in India would avert 11.2 million cases of overweight/obesity and 4 lakh cases of type 2 diabetes between 2014 and 2023.
- The tax would also substantially increase revenue available to the government to support other public health measures,” said the statement.

Taxes and Subsidies In India

- **GST on soft drinks** will attract **40% GST**, up from total taxes of **32% now**,
- **A large number of Vegetables NOT Attracting GST** across India:
- Few vegetables attracting up to **5% GST**: Herb, bark, dry plant, dry root, and dry flower etc.
- **GST Rate for Fruits**. **GST** is levied under five rates in **India**, namely **NIL, 5%, 12%, 18% and 28%**.

The Latest: Fit India Movement: Launched on 29th August, 2019



Opportunities before us:

1. **Linking Obesity** in NPCDCS program, the National Health Mission, National Nutrition Mission provides an opportunity for harmonizing efforts and better utilization of resources.
2. The recent experiences in HIV/AIDS control, Tuberculosis, maternal health and tobacco control for multisectoral approach and involvement of private sector
3. Growing international momentum, advocacies and commitments
4. Huge health infrastructure, Medical colleges, Schools of Public Health and manpower available in Public and private sector
5. Digitization of and access to appropriate health and nutrition information
6. Leadership in Government

Challenges:

1. Obesity and NCDs is still perceived predominantly as a health issue to be addressed by the health ministry.
2. Priorities given to maternal and child health, infectious diseases and undernutrition.
3. Regulating food industries and marketing .
4. Implementing “Whole of Government”, “Health in All Policies”, and “Whole of Society” approach.
5. Involving private sector, academic and research institutions in an effective way.
6. Deficiencies in the health system to tackle this behavioral issues
7. All stakeholders realizing their responsibilities
8. Sustainability

Directions for future research:

- (1) long-term, large-scale, multilevel, multicomponent, interdisciplinary obesity research;
- (2) research on healthy eating policies and interventions;
- (3) research on implementation, expansion, and sustainability of school-based research;
- (4) explore novel research approaches and intervention methods;
- (5) enhance research on environmental risk factors for obesity;
- (6) enhance research on outcome and impact evaluation.
- (7) Review of School and Medical Curriculum



Thank you