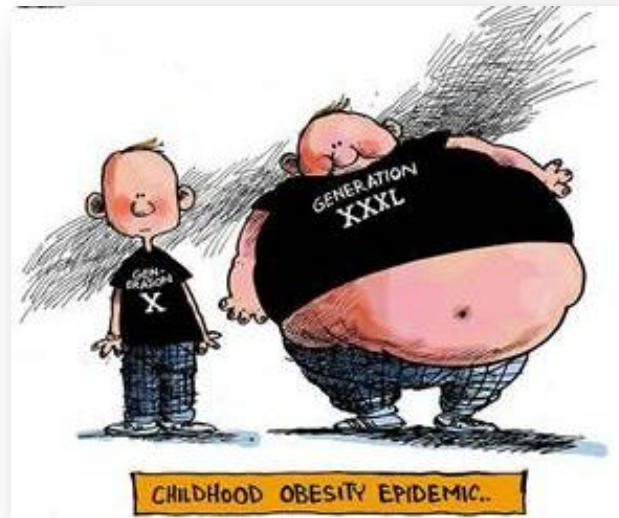


Overweight and Obesity Among Young People in India



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Outline of presentation

- Understanding obesity and overweight
- Trends in prevalence
- Determinants of Overweight
- Role of Environment in obesity
- Marketing of sweetened and aerated beverages to children
- Steps to be taken

What is Overweight and Obesity?

- Overweight – Excess weight for a given height for a given age
- Obesity – Excess fat in the body for a given age.
- Indicates imbalance between caloric intake and expenditure.
- Determined by – genetics, environment and behaviour

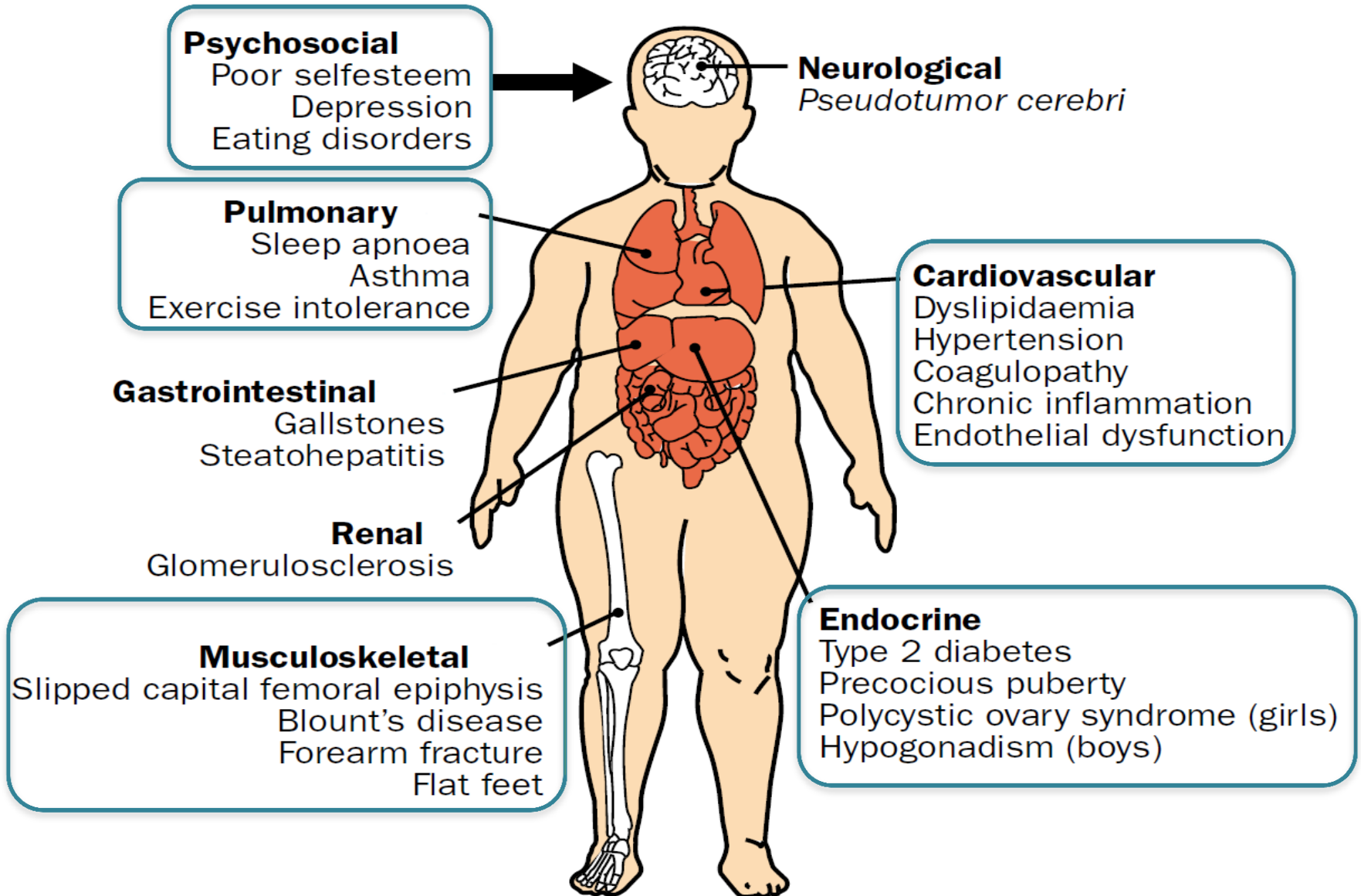
Young Age is a critical period.

- Period of growth – gaining height and weight is critical for this period.
- Measurement and definition issues related to overweight and obesity exist.
- Changing cut-offs with age and different standards/norms.
- Most behaviors establish themselves in this age.
- Body/image consciousness also develops at this age.
- Tracking of childhood obesity into adulthood.

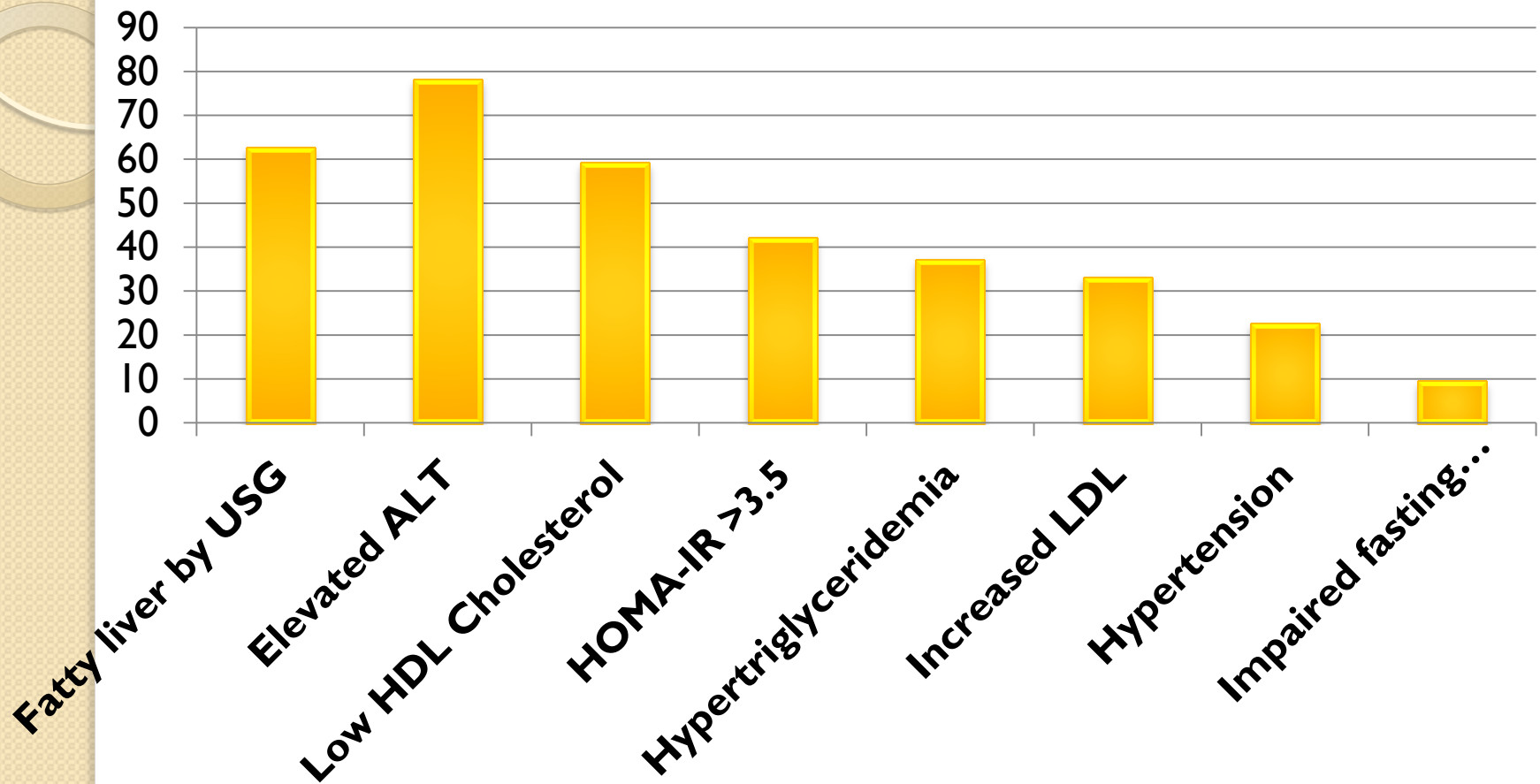


Chubby ≠ Healthy

COMPLICATIONS OF CHILDHOOD OBESITY



Prevalence of various complications of overweight in 10-15 year old in an AIIMS Study (n=218)



Long-term health effects:

- 70% to 80% overweight children are overweight adults
- Diabetes- 30-40 % of kids born in 2000, Heart disease in 30s



India (CBSE)

2007 Fact Sheet

- The 2007 India GSHS was a school-based survey.
- A two-stage cluster sample design was used to produce data representative of all students in classes 8, 9, and 10 in India.
- Uses a self-administered globally standard questionnaire
- The overall response rate was 83%.
- A total of 8,130 students participated in the survey.

Results for students aged 13-15 years	Total	Boys	Girls
Dietary Behaviours and Overweight			
Percentage of students who went hungry most of the time or always during the past 30 days because there was not enough food in their home	3.5 ± 0.7	3.3 ± 0.8	3.8 ± 0.9
Percentage of students who are overweight*	10.8 ± 2.1	11.6 ± 2.6	9.7 ± 2.0
Percentage of students who are obese**	2.1 ± 0.6	2.5 ± 0.9	1.5 ± 0.6
	12.9%	14.1%	11.2%
Physical Activity			
Percentage of students who were physically active for a total of at least 60 minutes per day on all 7 days during the past 7 days	30.2 ± 3.0	31.0 ± 3.1	29.1 ± 4.3
Percentage of students who spent three or more hours per day during a typical or usual day sitting and watching television, playing computer games, talking with friends, or doing other sitting activities	23.2 ± 2.3	24.5 ± 2.4	21.2 ± 3.0

Literature Review on childhood obesity

INDIAN J MED RES, FEBRUARY 2016

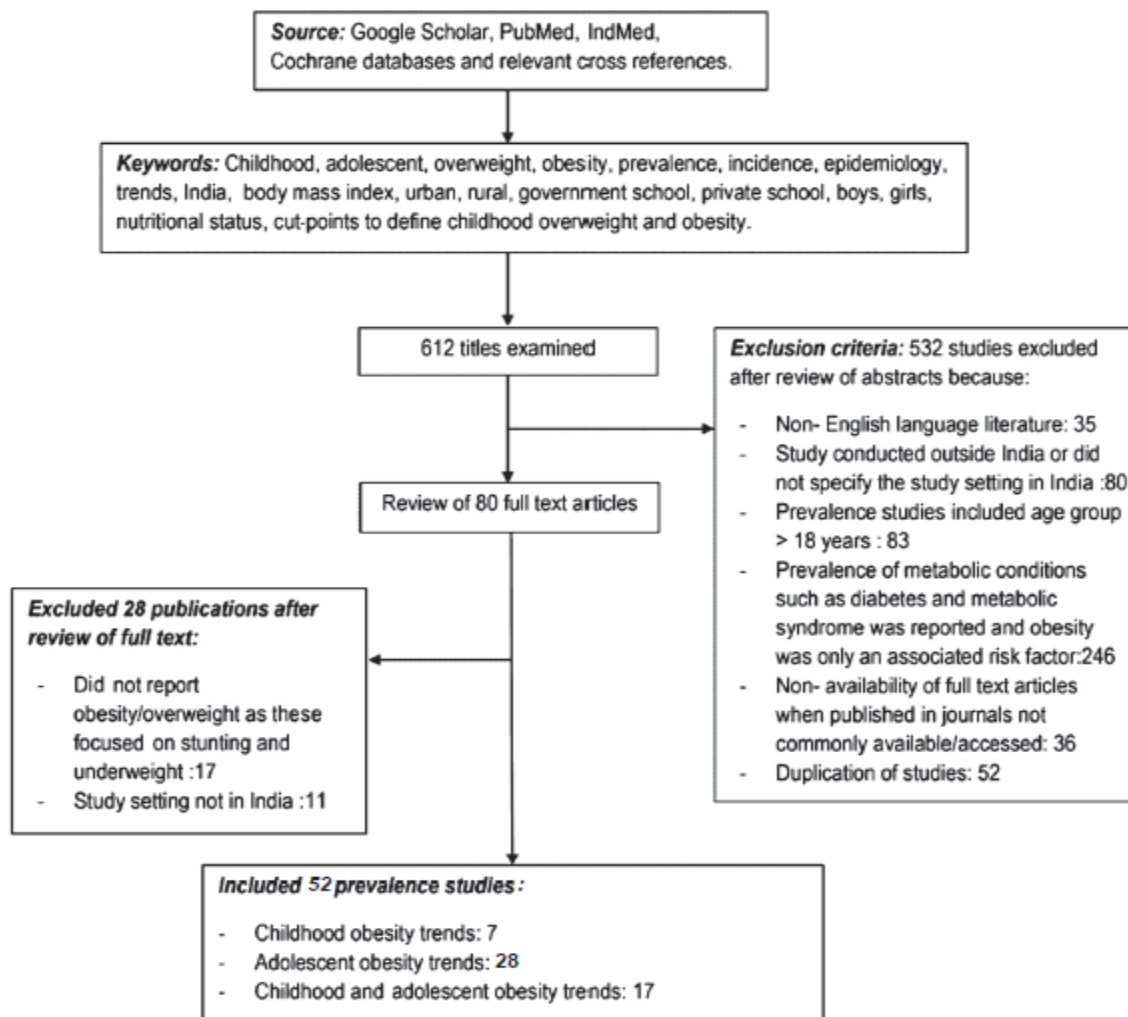


Fig. 1. Flow chart indicative of the review process.

RANJANI *et al*: CHILDHOOD OVERWEIGHT & OBESITY IN INDIA

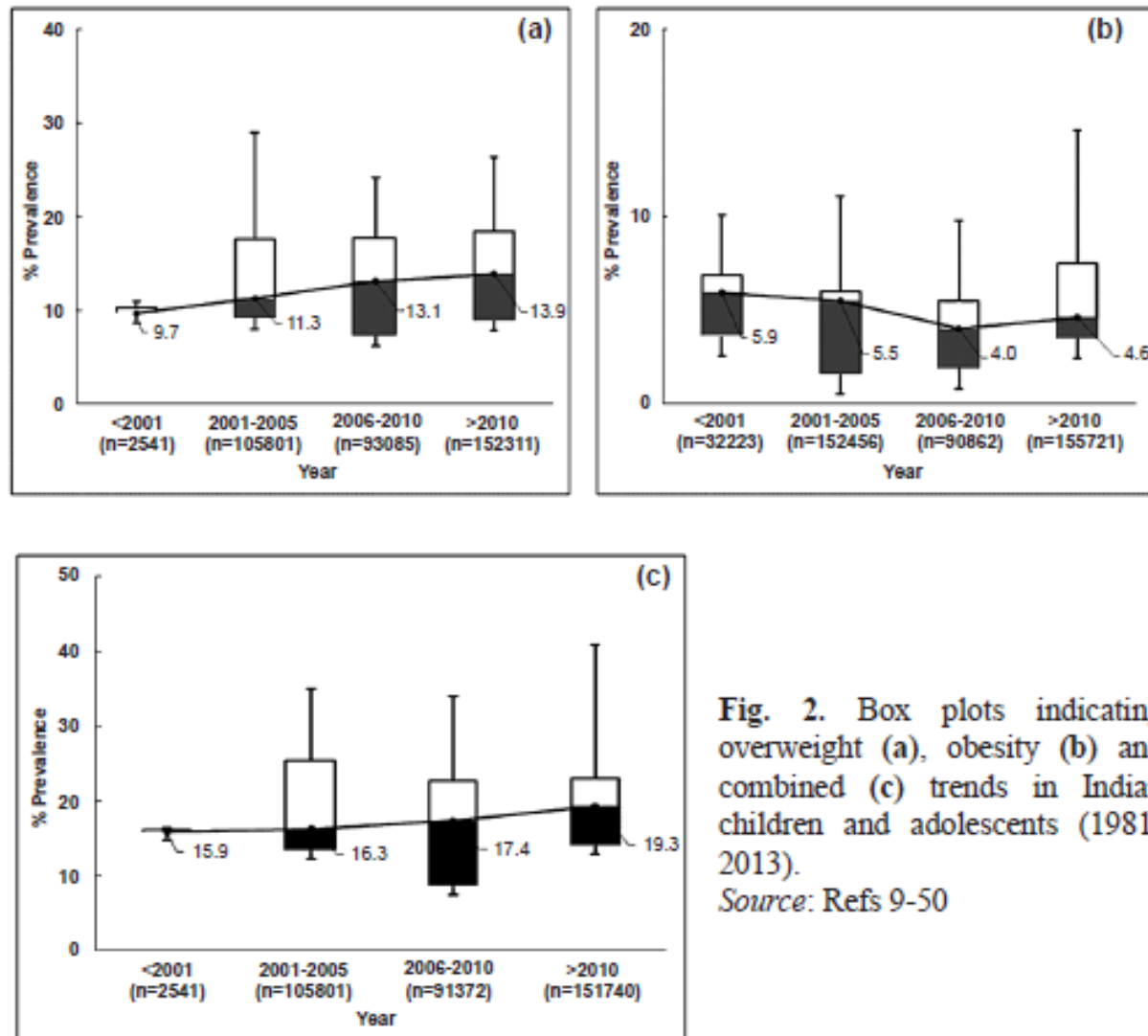


Fig. 2. Box plots indicating overweight (a), obesity (b) and combined (c) trends in Indian children and adolescents (1981-2013).

Source: Refs 9-50

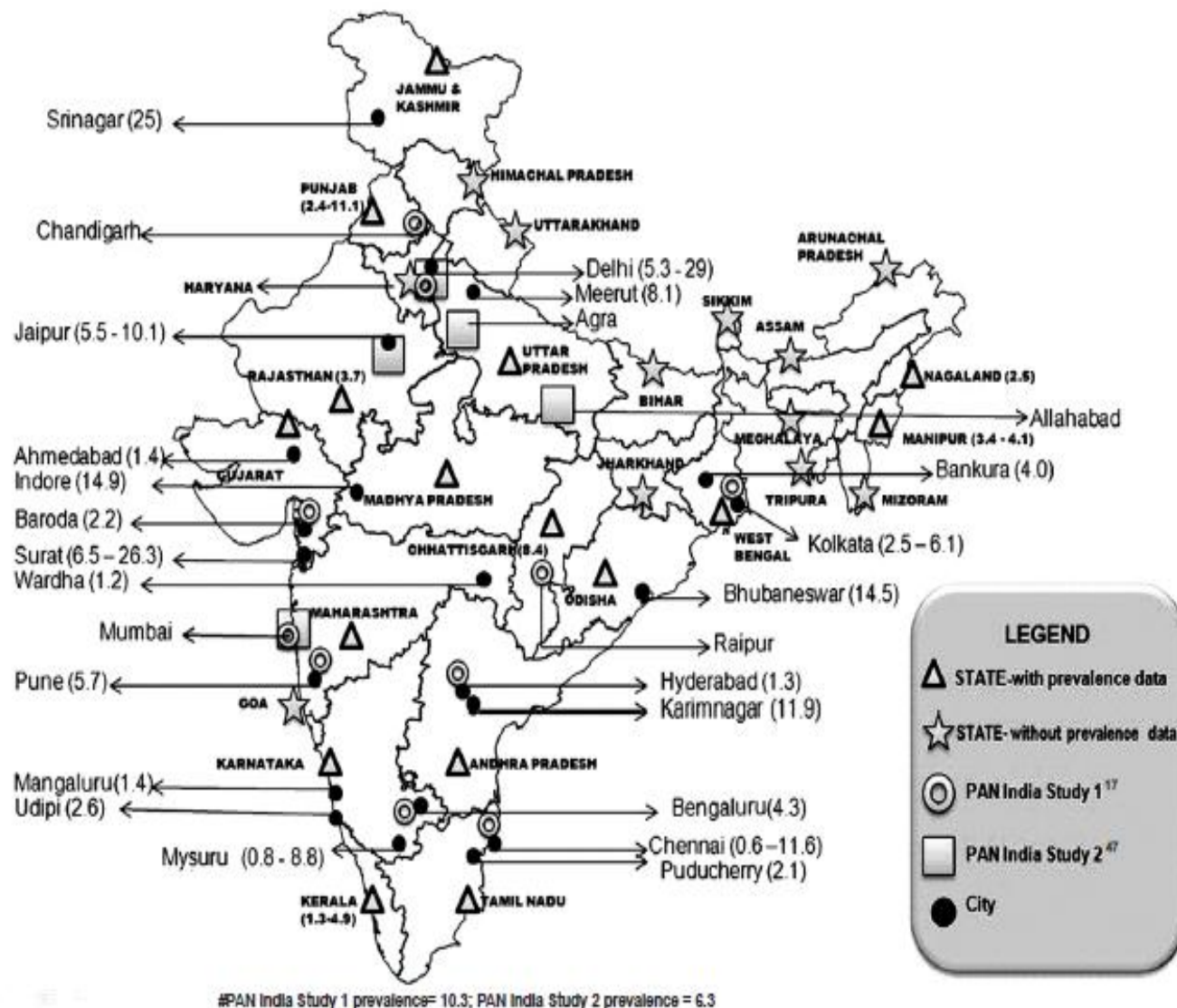


Fig. 3. Map of India indicating prevalence (%) of childhood obesity in various States and cities. Values in parentheses are prevalence in percentages. Source: Refs 9-15, 17-49, 52, 53, 64-71.

Determinants

- Sex – Usually more in Boys
- SES – Children in lowest SES category 4-5 times less likely to be obese as compared to children in highest SES.
- Rural / Urban Difference: Urban children show higher rates of overweight and obesity.

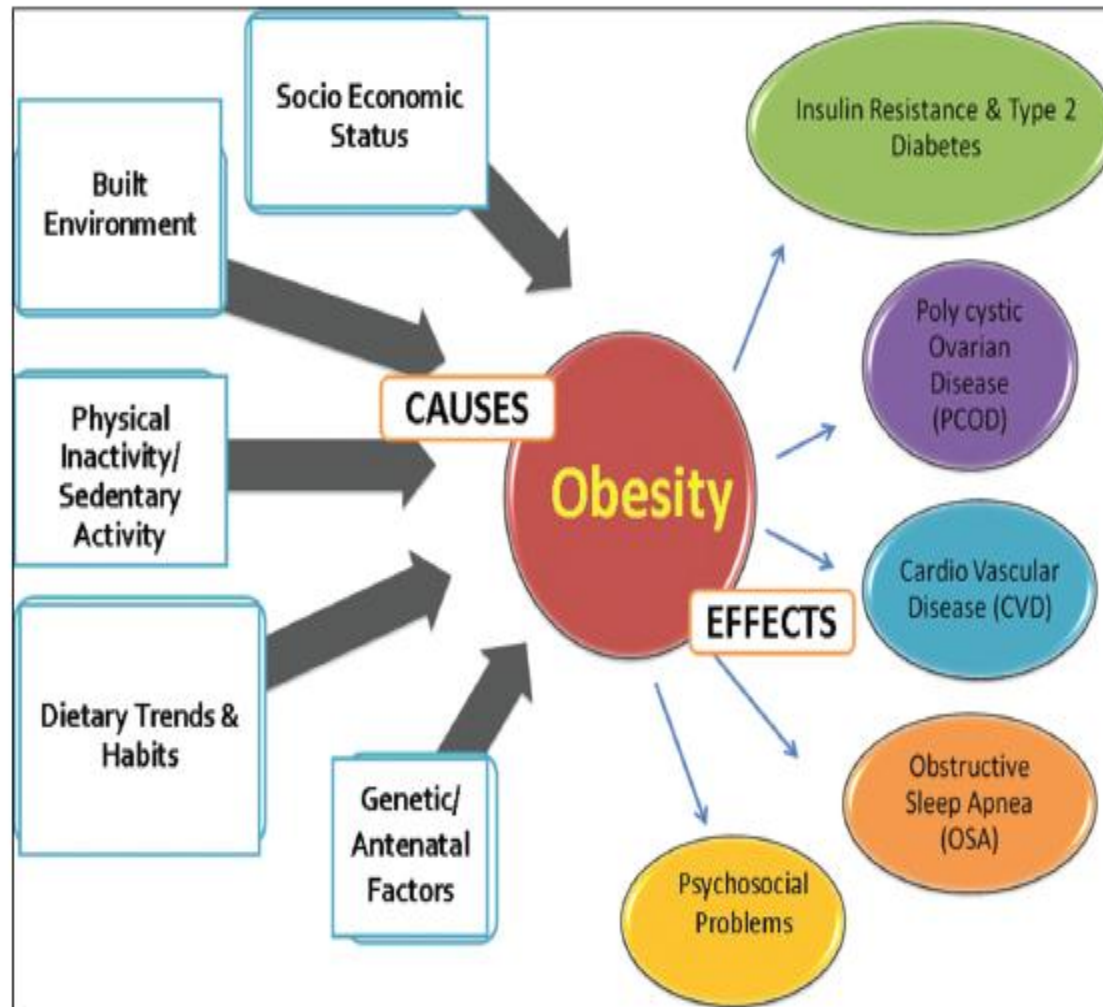


Figure 1: Childhood obesity-complex condition with multiple causes and consequences

Obesogenic Environment



Our Obesogenic Environment



It is difficult to maintain a healthy diet and physical activity in an environment that discourages physical activity and encourages excessive consumption.

Am J Clin Nutr 2009;89:477-84



• Television viewing has been associated with:

- Increased meal frequency (Stroebele & Castro, 2004).
- Fast food consumption (Taveras et al., 2006).
- Snacking (Snoek et al., 2006; Thomson et al., 2006).
- Increased intake of dietary fat (Epstein et al., 2005; Miller et al., 2008).
- Lower intake of fruit and vegetables (Boynton-Jarrett et al., 2003).

Home Environment

- Example Set by Parents
- Children decide meals of family
- Food habits – “ Convenience trumps goodness” in today’s fast paced life.
- Typical family outing is to go to a Cinema/mall followed by Burger/Pizza/Chhole Bhature.
- Availability of sweetened beverages and namkeens at homes – For Guests.



Community Environment

- Density of stores selling beverages/chips and namkeens/ fast food joints
- Places for Exercise/Parks
 - Issues of cultural acceptability
 - Security / lighting
 - Pavements and their encroachment
 - Urban Design/Flyovers

Ballabgarh Environment

Indicators	Urban	Rural
Diet Environment		
Density of stores Selling		
•Fruits and Vegetable	13.6/Sq Km	36.7/Sq Km
•Chips and Namkeens	122.2/Sq Km	92.6/Sq Km
•Fast foods	7.2/ Sq Km	10.0/Sq Km
Exposure Score to Marketing		
•Fruits and Vegetables	0.8/3	0.5/3
•Chips/Namkeens/drinks	2.4/3	2.1/3
Physical Activity Environment		
Density of LTPA facilities	5.8 / Sq Km	1.3/ Sq Km
Walkability Score	8.7	6.3

School Environment

- Food Environment
 - Breakfast/Lunch
 - Canteen policy
- Physical Activity
 - Exercise period
 - Availability of play ground
- Education
 - IEC within schools
 - Curriculum

**PROMOTE INTAKE OF
HEALTHY FOODS**

**PROMOTE
PHYSICAL ACTIVITY**

**WEIGHT
MANAGEMENT**



**HEALTH, NUTRITION
AND PHYSICAL
ACTIVITY FOR SCHOOL-
AGE CHILDREN**

**PRECONCEPTION AND
PREGNANCY CARE**

**EARLY CHILDHOOD
DIET AND PHYSICAL
ACTIVITY**

Promote Intake of Healthy Food

- **Define what is good and what is bad** - Clear guidelines for adults and children need to be developed and disseminated.
- Population education and awareness about reading labels, understanding portion size
- Consumer information - pack nutrition information
- Tax on sugar sweetened beverages
- Reduce marketing exposure to children
- Schools, child care, sports facilities to create healthy food environment
- Improve access to healthy food



Role of Food Industry

- Marketing
 - Advertisement
 - Television - use of “Stars”
 - Hoardings/Billboards
 - Pricing
 - Gifts and inducements
- Food Portion size
- Food Product development – Healthier Choices – Low salt/sugar alternatives



Advertising

Broadcast: including TV and radio.

Print media: including newspapers, magazines and comic books.

Online: including on-search engines, social networking sites, news sites and blogs, as well as television programmes, films and media clips watched online.

Outdoors: including billboards, posters and moving vehicles. Cinemas.

Product placement and branding

Product placement, e.g. in TV, radio, films, computer games. Publicity.

Branded books, e.g. counting books for pre-schoolers.

Branded toys e.g. fast food store as a playhouse.

Branded computer games.

Interactive web sites, e.g. with puzzles and games.

Sponsorship

TV and radio programmes.

Events: including community and school events and contests.

Educational materials and equipment.

Programmes: including public health campaigns and school breakfast or lunch programmes.

Venues.

Sport teams.

Direct marketing

Promotional emails.

Promotional sales by telephone.

Text messaging to mobile phones.

Home catalogues, leafleting and canvassing (also known as “doorstep selling”).

Contests or sweepstakes.

“Money off” vouchers.

Promotion and sampling schemes in schools, e.g. chocolate drives.

Product design and packaging

Product design: colours and shapes, e.g. dinosaur-shaped products.

Packaging design: imagery, colours, playshapes.

Product portions: e.g. king size, duo packs.

In-pack and on-pack promotions: e.g. gifts, puzzles, vouchers.

Point-of-sale

On-shelf displays.

Displays at check-outs, pay-points, end-of-aisles in supermarkets.

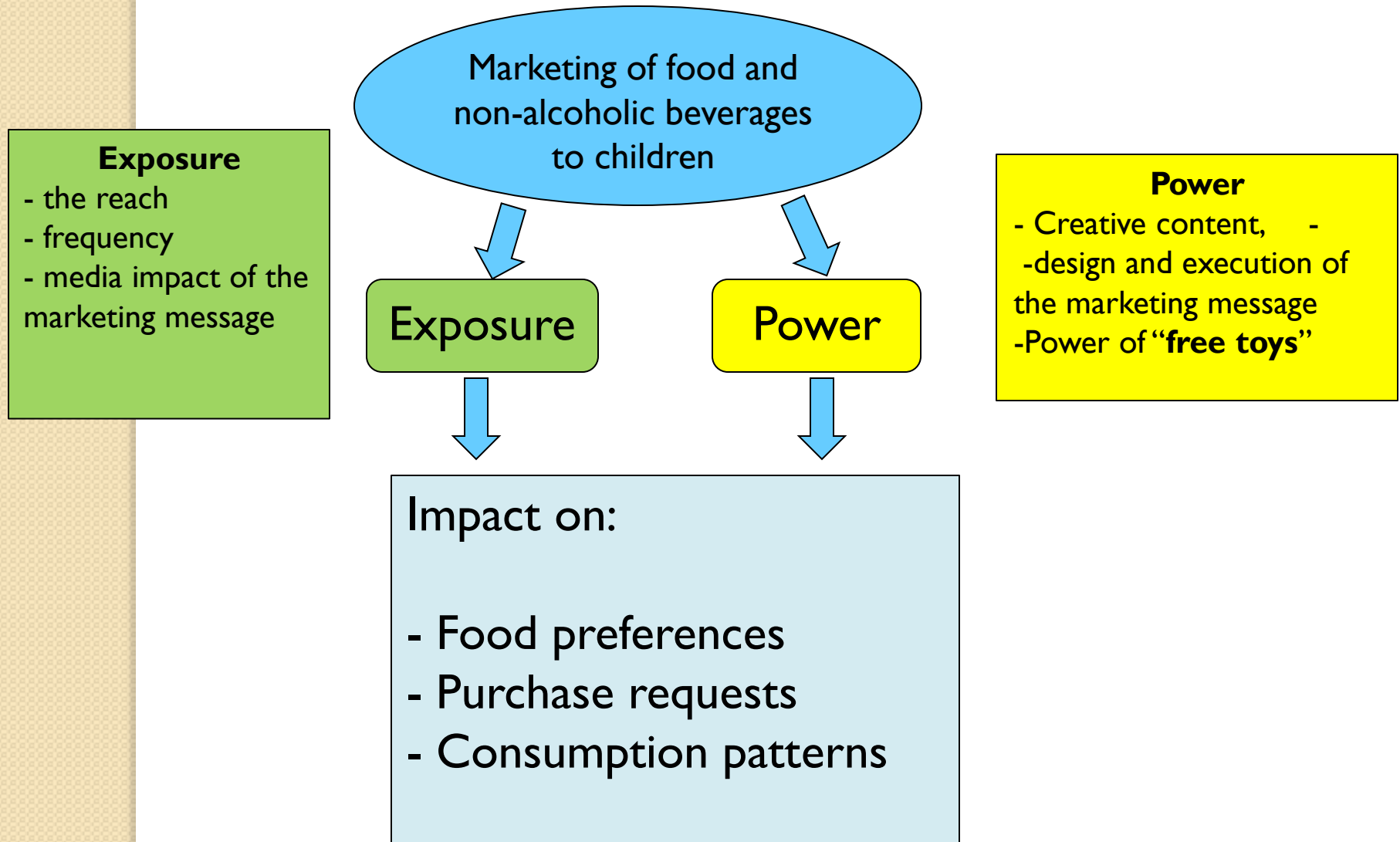
Special offers and pricing incentives.

Vending machines in schools and youth clubs.

Loyalty schemes.

Free samples and tastings.

Effectiveness = "Exposure" + "Power"



Evidence of the impact of advertising regulations

Ban on advertising to children in Quebec (1980)

Between 7.1% and 9.3% drop in the probability of purchasing fast food

Annual drop of between 11 million and 22 million fast-food meals

Impact on purchases behaviour. Baylis & Dhar (2007)

Following the food advertising regulations in France (2004)

21% of individuals above age 15 changed their eating habits

17% of individuals above age 15 changed their food-purchasing habits

Impact on self-reported behaviours - Ministère de la santé de la jeunesse et des sports (2008)

Ban on advertising to children in the UK (2008)

Children aged 4–9 saw 52% less advertisement on unhealthy food

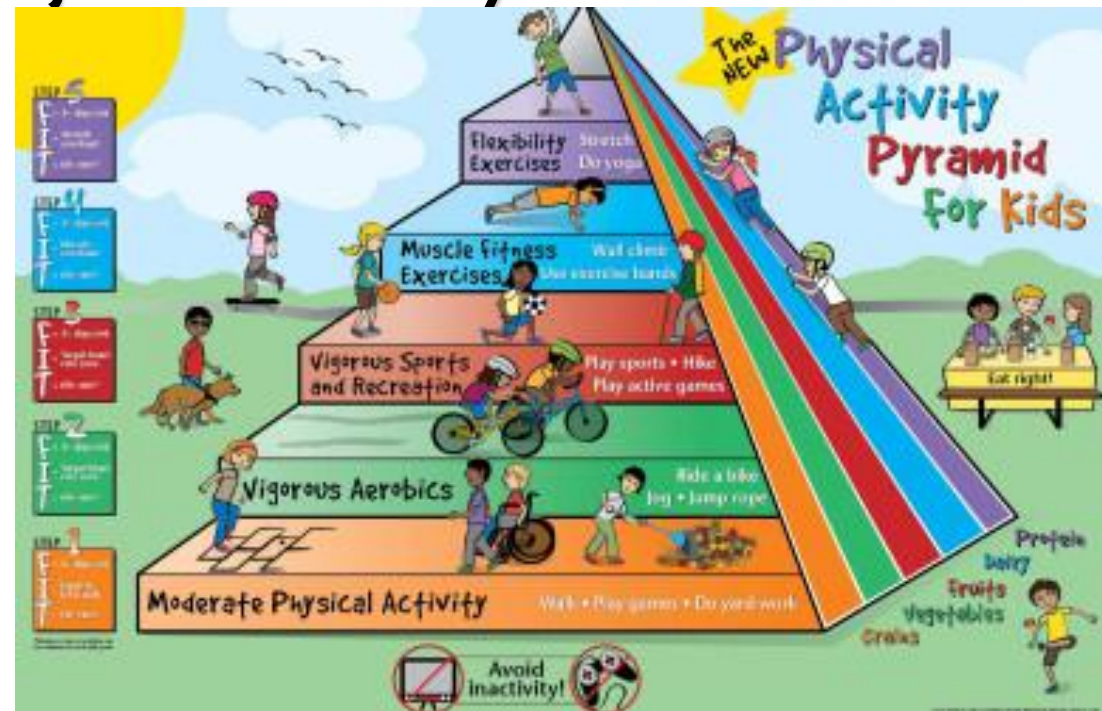
Children aged 10–15 saw 22% less advertisement on unhealthy food

Change in exposure to the messages - UK Ofcom evaluation (2010)

Junk food – global regulations

Banned/restricted in schools	Advertisements restricted	Tax imposed
Canada, Ontario (2011)	Australia (under progress)	Finland (2011)
Costa Rica (2012)	Canada (1971)	France (2012)
Latvia (2006)	France (2007)	Hungary (2011)
Lithuania (2010)	Lithuania (under progress)	Ireland (under progress)
Mexico (2011)	New Zealand (2010)	Mexico (2013)
Peru (2013)	Norway (2012)	Peru (under progress)
Philippines (2007)	Peru (2013)	United States, San Francisco (under progress)
Poland (under progress)	Poland (2007)	
South Korea (2009)	Romania (2008)	
England (2007)	South Korea (2010)	
Scotland (2008)	Sweden (1991)	
United Arab Emirates (2011)	Taiwan (under progress)	
United States (w.e.f. July 2014)	England (2008)	
	United States (under progress)	

Make Physical Activity entertaining and attractive and a joint activity



THE BRAIN BENEFITS OF EXERCISE

INCREASES PRODUCTION OF NEUROCHEMICALS THAT PROMOTE BRAIN CELL REPAIR

IMPROVES MEMORY

LENGTHENS ATTENTION SPAN

BOOSTS DECISION-MAKING SKILLS

PROMPTS GROWTH OF NEW NERVE CELLS AND BLOOD VESSELS

IMPROVES MULTI-TASKING AND PLANNING



Table 1: Intervention strategies from India to prevent/combat childhood obesity in India.^[69-73]

Author and year	Study design, population	Intervention	Outcome
Kameswara Rao and Bachu ^[69] 2009	School-based interventional study 610, School children (5-18 years), North India	Four intervention groups with each intervention period for 6 months: 1. Obesity prevention and reduction (OR team) 2. Prevention of excessive sweets, chocolates and carbohydrate consumption (SCC) 3. Reducing the duration of daily TV watching (TV team) 4. Increasing physical activity (team)	Reductions by 0.33%, 27.5%, 17%, 19% were achieved respectively in obesity, sweets/chocolates/carbohydrate rich food consumption, sedentary life and prolonged TV viewing
Shah <i>et al.</i> ^[70] 2010	School based 40,196, 8-18 years, from New Delhi, Agra and Jaipur	6 months of nutritional education program on the knowledge and behavior of urban Asian Indian school children	A significantly higher improvement was observed in: Younger children (aged 8-11 years) as compared with those aged 12-18 years, in females compared with males and in government schools compared with private schools. Though a considerable proportion of private school subjects had good knowledge of health and nutrition, only a few practiced healthy behavior
Singhal <i>et al.</i> ^[71] 2010	School-based controlled trial 99, 15-17 years from New Delhi	Multi-component intervention model of nutrition and lifestyle education on behavior modification, anthropometry and metabolic risk profile for a period of 6 months	Significant improvement in several domains of knowledge. Also, there was a significant decrease in mean waist circumference, sagittal abdominal diameter, waist-to-hip ratio and fasting blood glucose in the intervened children
Singhal <i>et al.</i> ^[72] 2011	School-based controlled intervention trial 106, 15-17 years from New Delhi	Intensive nutrition and lifestyle education model on insulin resistance, β -cell function, disposition index and subclinical inflammation for a period of 6 months	Significantly higher mean value of homeostasis model assessment denoting β -cell function was seen in the intervention group compared to the controls. C-reactive protein was significantly lowered. The increase observed in the DI in adolescents in the intervention group was significantly higher compared to the controls
Aravindalochanan <i>et al.</i> ^[73] 2012	School-based randomized trial 255, 9-13 years from Chennai	PowerPoint presentations addressing the burden and causes of childhood obesity in India, its implications on current and future health to create awareness among children. Also emphasized the benefits of balanced diet and physical activity to maintain an ideal BMI in a simple language with pictorial representations for a period of 6 months	There was a significant increase in the level of knowledge among normal and overweight children followed by a mass education program. However, the obese children had higher awareness levels in the pre-test, which showed a non-significant increase in post-test

DI: Disposition index, SCC: Sweets, chocolates and carbohydrate consumption, OR: Odds ratio, PA: Physical activity

Steps to be taken

- Measure and Monitor obesity in a nationally representative sample regularly.
- Modify and Monitor Environment
- Initiate School based health promotion interventions
- Regulate Marketing to children
- Use fiscal measures to promote healthy diet
 - Higher taxes on unhealthy food
 - Subsidy for fruits and vegetables

Acknowledgement

- WHO
- MDRF, Chennai
- Dr. Vandana Jain and Dr. Baridalyne from AIIMS New Delhi

