JUNK FOOD TARGETED AT CHILDREN

Regulatory action required to limit exposure and availability

Centre for Science and Environment

JUNK FOOD TARGETED AT CHILDREN

Regulatory action required to limit exposure and availability

Centre for Science and Environment

Research direction: Sunita Narain, Chandra Bhushan

Writers: Amit Khurana, Indu Dhangar

Editor: Souparno Banerjee

Editorial support: Sheeba Madan

Expert contributor: Dr Rekha Harish, professor and head of department of paediatrics, Government Medical College, Jammu

Cover design: Chaitanya Chandan

Layout: Kirpal Singh

Production: Rakesh Shrivastava and Gundhar Das

Published by
Centre for Science and Environment
41, Tughlakabad Institutional Area
New Delhi 110 062
Phones: 91-11-29955124, 29955125, 29953394
Fax: 91-11-29955879
E-mail: cse@cseindia.org
Website: www.cseindia.org

Printed at Multi Colour Services, New Delhi

Contents

Preface

"There is nothing called junk food" – says the food industry. This was the contention that the industry had put forth to a committee set up in 2013 under directions from the Delhi High Court. The committee had been tasked to frame guidelines for junk food in the country. I was a member of the committee, along with extremely dedicated, committed and knowledgeable medical professionals.

On the face of it there was no one from the junk food industry in the committee. In the early meetings, we only knew that there were members of two associations who were representing the food industry in the committee. But as discussions got under way, it became clear that the big junk food industry was present in the meeting. We learnt that the member representing the National Restaurant Association of India was a top official from Coca-Cola – the world's most powerful beverage company that is at the centre of the junk food debate globally. The other grouping, All India Food Processors Association, was represented by Swiss food giant Nestlé, which has commercial interest in instant noodles and other junk food.

The committee had been set up because of a case filed in 2010 by Delhi-based NGO Uday Foundation, which asked for a ban on junk food in schools and in their vicinity. In September 2013, the High Court ordered the government to set up a committee to frame guidelines for food as the "ill effects of eating junk food have been documented by public health experts and also paediatricians".

The question for the committee was to understand what makes food junk; why is it bad for our health; and what is being done to regulate junk food in other parts of the world. And most importantly, learning from this, what would be the best way to regulate junk food in the country.

My colleagues and I at the Centre for Science and Environment (CSE) took on the responsibility to review global literature and to produce information to guide the work of the committee on these issues. This document puts together the information and our recommendations on what needs to be done.

First, the question of what is junk food. The Hyderabad-based National Institute of Nutrition (NIN) has defined junk food as food that contains little or no protein, vitamin or minerals but is rich in salt, fat and energy. Second, why regulate this food? There is also robust evidence of the linkage between consumption of this food and non-communicable diseases (NCDs) like diabetes, hypertension and heart diseases. Childhood obesity has become the most serious health concern; even in our part of the world where malnutrition is a big concern. Study after study points to high-calorie intake because of unrestricted access to energy-dense fast food in school canteens and neighbourhoods. It has also been established that while physical exercise is vital, it is not a substitute for a balanced diet. This document puts together key studies, which establish the necessity for action and fast.

Third, we looked at what are governments doing to respond to this growing battle of the bulge. We found governments are acting to tax junk food, ban it in schools and restrict its advertisement. All this is adding up to high-profile

campaigns, where celebrities shun endorsement of this food and push for healthier options. In the US, first lady Michelle Obama has taken on the mantle to campaign against junk food.

The question is how should India respond? What should be our policy? To evolve this the first question we have addressed is criterion to define and identify junk food – how much of sugar or fat or salt in food is unhealthy. We have looked at the different options – practiced worldwide as well as what would be the criterion based on Indian diets. In this work, we have drawn extensively on the knowledge and work of the NIN and medical professionals in the committee.

Based on these methodologies we then prepared a list of the most common junk food that would need to be regulated. It includes chips and other fried packaged food; carbonated beverages; instant noodles; and confectionery.

The principles to regulate junk food we recommend are as follows: children are not the best judge of their food and are aggressively targeted by advertisements and seduced by celebrity endorsements. Moreover, schools are the right place to learn right values about nutrition. Based on this we have recommended a ban on junk food in and around schools, and also a canteen policy that foods categorised as green (healthy) would constitute over 80 per cent of the choices available. We have said that non-standardised junk food, like samosa, would be available sparingly in the canteens. There would be efforts to "green" this food through better ingredients and cooking mediums. This food was categorised as yellow. Red category food – common junk food – would not be available at all.

But all this would not work unless people are informed about what they are eating. To do this, labelling on food should specify how much fat, sugar or salt it contained in relation to their daily diet. We have also recommended strongly against celebrity endorsement.

Clearly, this is a tough agenda. But we believe that there is enough evidence and enough reason for us to act.

We remain grateful to discussions and inputs from the medical members of the committee. Their knowledge and commitment towards a healthy India is unmatched.

Now, we hope that our concern will become your concern.

Sunita Narain

1. Balanced diet, junk food and non-communicable diseases

Balanced diet and dietary needs of children[1]

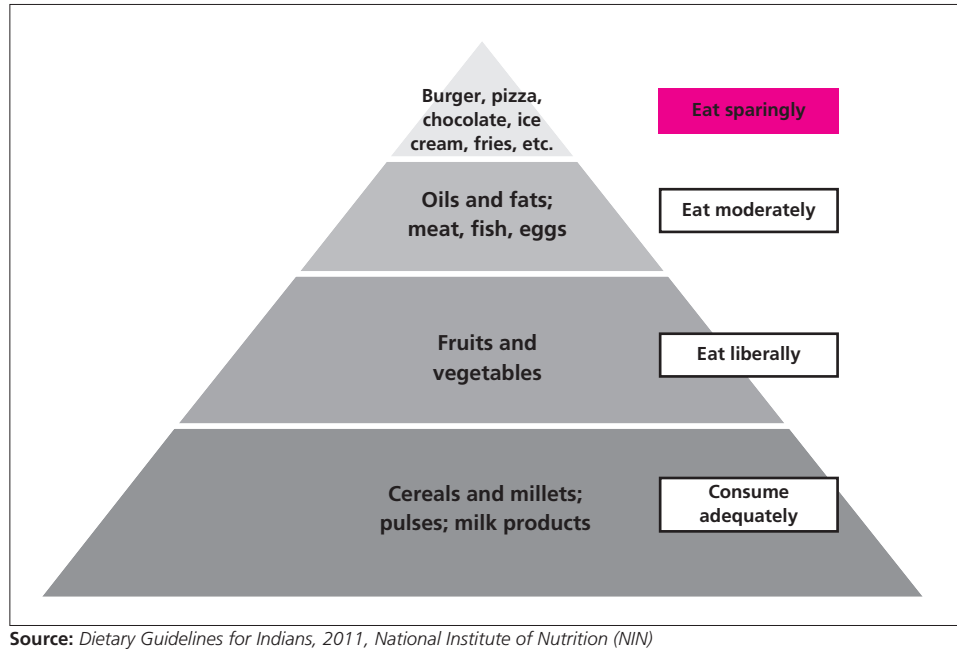
As per the 'Dietary Guidelines for Indians, 2011' of the National Institute of Nutrition (NIN), a balanced diet is one which provides all nutrients in required amounts and proper proportions. It should provide around 50-60 per cent of the total calories from carbohydrates, preferably from complex carbohydrates; about 10-15 per cent from proteins; and 20-30 per cent from both visible and invisible fat. In addition, it should provide other non-nutrients such as dietary fibre and antioxidants that bestow positive health benefits.

Carbohydrates, fats and proteins are macronutrients. Micronutrients such as vitamins and minerals are necessary for physiological and biochemical processes to acquire, assimilate and utilise food to maintain health and activity. Antioxidants and other phytochemicals protect the human body from free radical damage. Dietary fibre delays the absorption of carbohydrates and fats and increases the satiety value.

The guidelines depict the importance of foods through a 'Food Pyramid' (see Figure 1: *The NIN food pyramid).* Balanced diet is recommended through a blend of four basic food groups such as cereals, millets and pulses; vegetables and fruits; oils, fats and nuts; and milk and animal foods. Notably, food items such as burgers, pizza, fries, chocolates, ice cream, jam etc are not considered the right choice to meet the nutrient needs and must be eaten sparingly.

The guidelines define processed foods as "foods that are subjected to technological modifications either for preservation or for converting into ready-to-use/eat foods, eliminating laborious household procedures".

Figure 1: The NIN food pyramid



Source: *Dietary Guidelines for Indians, 2011, National Institute of Nutrition (NIN)*

Table 1: Recommended Daily Allowance (RDA) for a 10-12 year old moderately active child

Nutrient/energy	RDA
Energy (E)	2100 Kcal*
Sugar	Up to 30 g
Total visible fat	35 g [~15%E]
Saturated fatty acids (SFA)	Up to 8% E
Trans fatty acids (TFA)	< 1% E
Salt	5 g

Notes: **Average for calculation purpose [2,190 Kcal for a boy weighing 34.3 kg and 2,010 Kcal for a girl weighing 35 kg]; calorie calculation: 1 g of fat = 9 Kcal; 1 g of protein = 4 Kcal; 1 g of carbohydrate/sugar = 4 Kcal*
Source: *Dietary Guidelines for Indians, 2011, National Institute of Nutrition*

Processed foods being rich in fats, salt, sugar and preservatives, may pose a health risk if consumed regularly; the guidelines further recommend:

- Preferring traditional and home-made foods
- Avoiding replacing meals with snack foods
- Limiting consumption of sugar and processed foods which provide only (empty) calories

The guidelines also recognise children's special needs of growth and of fighting infections, and the importance of body building foods such as proteins and protective nutrients such as minerals and vitamins. Nutritionally adequate and balanced diet has an important role in appropriate body composition, body mass index (BMI) and reduced risk of diet-related chronic diseases in later life.

The actual energy and dietary requirements vary with factors such as age, sex and activity. The recommended daily energy limit varies between 1,060 kilo-calorie (Kcal) and 3,020 Kcal for one to 17 year olds (see Table 1: *RDA for a 10-12 year old moderately active child*).

Junk food and ingredients of concern

As per the NIN, "unhealthy (junk) foods are those containing little or no proteins, vitamins or minerals but are rich in salt, sugar, fats and are high in energy (calories)."

Globally, the term junk food is popularly used to identify food items with little or no nutritional value but high in fat, salt and sugar. Foods with similar attributes are also termed as:

- **HFSS** foods i.e. foods that are 'High in Fat, Salt and Sugar', by the World Health Organization (WHO) and certain other countries
- **FMNV** i.e. 'Foods of Minimal Nutritional Value', as in the US
- **EDLNF or EDNPFC** i.e. 'Energy-Dense Low-Nutrient Density Foods' or 'Energy Dense and Nutrient Poor Foods for Children', as in Republic of Korea
- **'Energy Dense'** foods by certain associations

Such foods are regarded as not conducive in maintaining health. Key characteristics include:

- **Imbalance of nutrients:** (a) Excess of nutrients that have a negative impact on health if consumed in high amounts. Such nutrients include fat, sugar and salt (sodium). (b) Absence or limited presence of nutrients which are favorable in maintaining health such as proteins, vitamins, phytochemicals, minerals and dietary fibre.

- **Presence of unfavorable nutrients and chemical additives:** Presence of trans fatty acids (TFAs) and additives such as preservatives which are known to have negative impact on health. These are commonly found in processed and packed foods.

Ingredients of junk food are known to impact health in several ways. Excess consumption is linked to obesity. Numerous studies across the world have established strong linkages of junk food with non-communicable diseases (NCDs) such as diabetes, hypertension, heart disease and cancer.

Sugar: Sugar provides empty calories with no beneficial effect and there is no safe level of its intake. High use of sugar, particularly fructose, is harmful as it is addictive and induces more consumption.[2] Studies have confirmed that fructose which is most commonly used in carbonated beverages, has toxic effects on the liver that are similar to effects of alcohol.[3] Studies have established direct relationship of sugar with obesity, diabetes and metabolic syndrome.[4]

Salt: Salt is added for preservation and enhancing the taste of food. High salt content in diet is strongly associated with high blood pressure and related cardiovascular disease (CVD).[5] Evidence suggests that high salt intake increases the mass of the left ventricle, and stiffens and narrows arteries, including coronary and renal arteries. It increases the probability of stroke, severity of cardiac failure and tendency for platelets to aggregate.[6] As per the WHO, cutting down on dietary salt intake to a recommended 5 g per day has a major impact on reducing blood pressure and CVD.

Saturated Fatty Acid (SFA): SFAs are widely used in packaged foods including milk chocolate, cookies, crackers, and snack chips. When consumed in excess of the recommended limit, SFAs are known to clog arteries and increase risk of heart attack and stroke.

Trans Fatty Acid: TFAs are formed while hydrogenation of vegetable oils to make vanaspati or polyhydrogenated vegetable oils (PHVOs); hydrogenation is done to give a longer shelf life and better form and texture to PHVOs. Typically, TFAs are found to be high in bakery products and snacks that are deep-fried in PHVOs. TFAs are well known to have an adverse impact on blood lipid levels as they reduce the amount of good cholesterol: High-Density Lipoprotein (HDL) and increase bad cholesterol: Low-Density Lipoprotein (LDL). Their consumption increases insulin resistance and promotes obesity. The WHO recommends less than 1 per cent of calories from TFAs.

Besides the above, other ingredients that are of concern include **caffeine** used in carbonated beverages and energy drinks as an addictive stimulant; if consumed in excess, it can lead to impaired muscle and nerve functions, dehydration and a host of other disorders.[7] Processed foods including carbonated beverages are also known to contain **additives such as artificial flavours, colouring agents and preservatives** that have been reported to have negative effect on health.

Table 2: Modifiable risk factors – unhealthy diet associated with three out of four major non-communicable diseases

	Tobacco use	Unhealthy diet	Physical inactivity	Harmful use of alcohol
Cardiovascular disease	√	√	√	√
Diabetes (Type 2)	√	√	√	√
Cancer	√	√	√	√
Chronic respiratory disease	√			

Source: *Global Status Report on non-communicable diseases, 2010, WHO*

Junk food and non-communicable diseases

The WHO reports that NCDs are one of the leading causes of deaths worldwide:

- In 2008, over 80 per cent of global deaths due to CVD and diabetes occured in low- and middle-income countries. NCDs also kill at a younger age in these countries, where 29 per cent of NCD deaths occur among people under the age of 60, compared to 13 per cent in high-income countries.
- In India, as of 2008, about 53 per cent of all deaths were due to NCDs. The disease burden of NCDs is expected to reach to 57 per cent by 2020 as compared to 29 per cent in 1990.[8]

The WHO says unhealthy diet is associated with three out of four major NCDs (see Table 2: *Modifiable risk factors*). It is known as one of the modifiable risk factors, which as part of an objective is aimed to be reduced in the global action plan for the prevention and control of NCDs (2013-20).

Unhealthy diet leads to metabolic changes and conditions such as becoming overweight, high blood pressure, and raised blood glucose and cholesterol, which are among the leading causes of NCD deaths in India.[9]

Childhood obesity

Childhood obesity is one of the most serious public health challenges of the 21st century. Overweight children are likely to become obese adults. As per the WHO, about 44 per cent of the diabetes burden and 23 per cent of the CVD burden is attributable to overweight and obesity. Overweight children are more likely than non-overweight children to develop insulin resistance, hyperinsulinemia, diabetes and CVD at a younger age, which in turn are associated with a higher chance of premature death and disability.[10]

Studies have established the link between consumption of junk food and obesity. Numerous studies done among school children of Delhi, Amritsar and southern India show that the prevalence of overweight/obesity is high and on the rise. In urban post-pubertal children of Delhi, it increased from 16 per cent in 2002 to about 24 per cent in 2006. It is high among the affluent class and children of private schools compared to low- and middle-income groups.[11]

Hypertension

In India, hypertension is the leading NCD risk and accounts for over 10 per cent of all deaths.[13] Hypertension is strongly associated with high BMI and salt intake. A cross-sectional study[14] (published in *Epidemiology* in 2013) among 400 school children in Chennai found that the total prevalence of hypertension

WHO Commission on Childhood Obesity, May 2014

In order to get the best possible advice on the crisis of childhood obesity, a high-level commission was set up during the 67th World Health Assembly in May 2014. The commission will produce a consensus report specifying approaches that are likely to be most effective in different contexts around the world. The recommendations of the report will be announced at the 2015 Assembly. As per the WHO:

- The number of overweight or obese infants and young children (aged zero to five years) increased from 31 million globally in 1990 to 44 million in 2012.
- A vast majority of overweight or obese children live in developing countries, where the rate of increase has been more than 30 per cent higher than that of developed countries.
- If current trends continue, the number of overweight or obese infants and young children globally will increase to 70 million by 2025.
- Without intervention, obese infants and young children will likely continue to be obese during childhood, adolescence and adulthood.[12]

was 21.5 per cent. Several other studies done in India suggest high prevalence of hypertension in overweight and obese children compared to children whose weight is normal.[15]

As per the WHO, the amount of dietary salt consumed is an important determinant of blood pressure levels and overall cardiovascular risk. The World Heart Federation says that a universal reduction in dietary intake of about 3 g of salt, can lead to a 50 per cent reduction in the number of people needing treatment for hypertension. The same decrease would lead to a 22 per cent drop in the number of deaths resulting from strokes and a 16 per cent fall in the number of deaths from coronary heart disease (CHD).[16]

Diabetes and paediatric metabolic syndrome

Type-2 diabetes, very common in adults, is now increasingly being reported in children. The leading risk factor for kids is being overweight, often connected with an unhealthy diet and lack of physical activity. According to a study on post-pubertal Indian children, 67 per cent males with high BMI were found to have insulin resistance while the overall prevalence was about 22 per cent in males and 36 per cent in females.[17] As per the *Diabetes Atlas 2006* published by the International Diabetes Federation, the number of people with diabetes in India is around 40.9 million and is expected to rise to 69.9 million by 2025 unless urgent preventive steps are taken.[18]

Metabolic syndrome is a cluster of the risk factors for type-2 diabetes and CVD; it is characterised by abdominal obesity and high blood pressure. The prevalence of metabolic syndrome in overweight children in Delhi was found to be about 18 times higher than their normal-weight counterparts in the city.[19]

Coronary Heart Disease

CHD is expected to be the single most important cause of death in India by the year 2015. According to the World Heart Federation, 35 per cent of all CHD deaths in India occur in those aged 35-64 years. CHD affects Indians with greater frequency and at a younger age than counterparts in developed countries, as well as in many other developing countries.[20] The age group of 20-29 years has seen the highest rise with double the number of cases since 2000, as per a study published in the *Indian Journal of Medical Research*.[21]

Junk food replacing balanced diet

In India, consumption of junk food is steeply increasing, both in urban and rural areas. The ease of availability, taste, low cost, peer pressure and aggressive marketing and advertisements make them popular with children and adolescents.

A study on the junk food eating habits of school children in Delhi found that 60-70 per cent of children in different age groups consumed chips at least two-three times a week.[22] In another study among overweight adolescent girls (16-18 years) in Kurukshetra in 2013, the mean daily energy intake was found to be about 110 per cent of the RDA and fat intake was almost double the RDA. The most common (60.4 per cent) effect of skipping the meal was consumption of foods such as potato chips, chocolates and carbonated drinks.[23]

Unless strong regulations are in place to control the availability and exposure of junk foods to children, consumption is likely to accelerate. According to an assessment by a global analytical company CRISIL in 2013, the fast food restaurant market is expanding to tier II and tier III cities. It is projected to double in the next couple of years and annual spending per middle class household at such restaurants is expected to increase 1.5 times by 2015-16.[24]

As per the NIN dietary guidelines, "the shift from traditional to 'modern' foods, changing cooking practices, increased intake of processed and ready-to-eat foods, (and) intensive marketing of junk foods and 'health' beverages have affected people's perception of foods as well as their dietary behavior. Irrational preference for energy-dense foods and those with high sugar and salt content pose a serious health risk to the people, especially children. The increasing number of overweight and obese people in the community and the resulting burden of chronic non-communicable diseases necessitate systematic nutrition educational interventions on a massive scale."

Impact of junk food availability in schools and their neighbourhoods: two studies

A study published in the *American Journal of Clinical Nutrition* in 2009 showed that those students who attended school near fast food restaurants were heavier than their counterparts who attended school that were not near such restaurants. Students with a high intake of fast food had a low intake of fruits and vegetables.[25]

Another study published recently in *Endocrine Reviews* states that one of the key determinants of childhood obesity was increased calorie intake among school children. Unrestricted access to energy-dense fast foods in school cafeteria, school vending machines, and school neighbourhood along with low knowledge about dietary components are found to be the major contributors. The researchers recommend that schools must keep healthy food in their cafeteria; they have suggested a ban on sweetened beverages and energy-dense junk food in schools to curb childhood obesity.[26]

Additionally, a lot is at stake if traditional and balanced diet is replaced:

- a diverse range of macronutrients and micronutrients in their most natural forms;
- original flavours, colours and aromas that continue to keep the appetite alive for a lifetime;
- a wide range of time-tested spices and herbs that continue to act at sub-therapeutic levels; and
- abundant dietary fibre that provide feeling of fullness and contribute to the health of digestive and metabolic systems.

2. Junk food – global regulations

To respond to the obesity and NCD epidemic, several countries have adopted one or more of the following three approaches (see Table 3: *Global regulatory status*). Typically, junk food items which are high in fat, sugar and salt and low in nutritive value are selected for regulating their exposure and availability to children.

- Ban availability in schools.
- Regulate advertisement and promotion.
- Impose taxes.

Ban on junk food in schools

Over the last decade, several countries across the world have begun to regulate availability of junk food (see Table 4: *Food items with restricted marketing/availability in schools*). Most countries have adopted specific legislation that is aimed to promote health of school children, provide healthy and nutritious food and respond to the childhood obesity crisis. Measures adopted include formulating nutrition standards and criteria to help decide on foods to be allowed or banned; keeping school canteens, kiosks and vending machines under purview of the ban; and replacements with healthier traditional foods at most times. Interestingly, such regulatory initiatives have also been taken by some developing countries from South America and Asia.

Table 3: Global regulatory status – a summary*

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)	
	Uruguay (2013)	

Note: **Non-exhaustive*
Source: *See Annexure I for details*

Table 4: Food items with restricted marketing/availability in schools across countries*

Cereal products with added sugars	Cola and other carbonated sweetened drinks	Mayonnaise, peanut butter
Cheddar cheese	Chocolates	Pizzas
Butter and margarine	Roasted chicken bites and chicken nuggets	Pork rinds, fried tacos and tortas
Sausages and burgers	Yoghurt candies and water ices	Cakes and muffins
Potato chips and crisps	Fizzy orange drink and sweet juices	Marshmallow candies, spun candy, and candy-coated popcorn
Cookies	Drinking chocolate powder and sports drinks	Hamburgers and instant noodles
Confectioneries: sugar boiled confectionery, candies	Onion rings, sweetened milkshakes	Jams, marmalades, highly-sweetened syrup, sweets
French fries	Crispy chicken strips in tortilla wrap	Atole (a sweetened corn starch-based beverage)

Note: **Non-exhaustive*
Source: *See Annexure I for details*

Some of the legislations are:

- Canada: 'School Food and Beverage Policy, 2010' under the 'Healthy Food for School Act, 2008'
- Peru: 'Promoting Healthy Food for Children Act', 2013
- UAE: 'Guide of Health and Nutritional Practices of School Canteen', 2011
- United States: 'Smart Snacks in Schools', nutrition standards for all foods sold in schools under the 'Healthy, Hunger-Free Kids Act, 2010'
- England: 'Nutritional Standards and Requirements for School Food' (England) Regulations, 2007

Restriction on junk food advertisement and promotion

There is an overwhelming view that children's exposure to junk food must be minimised and regulated. The 2004 Global Strategy of WHO on Diet, Physical Activity and Health stated that "food advertising messages that encourage unhealthy dietary practices should be discouraged and the government should develop a multi-sectoral approach to address any such issues." Later, it was noted that advertising to children included promotion that is deliberately targeted at children and promotion targeting other groups but to which children are widely exposed.

In 2012, the WHO provided a framework for implementing the set of recommendations on the marketing of food and non-alcoholic beverages to children, which is also suggested to be implemented by its member states in its global action plan for the prevention and control of NCDs (2013-20). WHO Europe, in its latest report in 2013, acknowledged that marketing of food and beverage products that are high in fat, sugar and salt to children is recognised as an important cause of child obesity and diet-related NCDs.

Impact of junk food advertisements and promotion on children

A growing body of scientific evidence across the world reflects the extent of influence advertisements and promotion have on consumption of junk food by children. Recent studies measuring impact of food and non-alcoholic beverages on children suggest:

- A majority of the eating and drinking preferences of children are results of advertisements.
- At the age of 11-12 years, only about 40 per cent of the children are aware of the selling and persuasive intent of advertisements.
- Children select more branded and non-branded fat-rich and carbohydrate-rich items from food preference checklists after viewing food commercials compared to other commercials.
- Taste and healthiness are reported as the most important factors in snack food choices, but when faced with the actual food choice, children of five-12 years of age predominantly choose unhealthy foods.
- Confronted with identical foods consistently, children aged four-six years prefer the taste of those foods that had popular cartoon characters on the packaging.
- Overweight children (aged four-eight years) are significantly more likely to recognise fast food restaurant logos than other food logos.

Self regulation vs mandatory control[1]

Large food companies participate in a variety of voluntary initiatives or pledges at global, regional and country levels. The European Union (EU) Pledge is one such voluntary initiative that was launched in 2007 by 11 leading food and beverage companies. The objective was to change the way of advertising food and beverage over different forms of media (television, print and internet) targeted at children. By September 2012, there were 19 companies, representing over 80 per cent of EU food and beverage advertising spends.

Self regulatory initiatives by companies or company federations are known to have limitations compared to mandatory control by state. Typically, in these initiatives, the age of children and the nutrition criteria are inconsistently defined. Companies have their own selection criteria about foods that are not to be advertised. Lack of robustness in covering the new developments in advertising and promotional opportunities is also a concern. The self-made rules are narrow and limited in what is to be covered; poorly or inconsistently defined; erratically or insufficiently monitored; and weakly or inconsistently enforced.

While pledge coordinators claim success, monitoring by other organisations suggest otherwise. For example, in Germany, children's exposure to food commercials has largely remained unaffected by the EU Pledge of 2007. After a similar set of voluntary commitments in the US, adolescent exposure to food advertisements increased by over 20 per cent during 2004-11. In Australia and Canada, with persistent fast food advertisements, limited improvement is observed in advertisement exposure to children. In the case of Spain, non-conformance to the national self-regulatory code has raised doubts over its effectiveness.

Emerging techniques targeted at children are a challenge

Advertisement and promotion is moving beyond television (see Table 5: *Emerging techniques that need to be under regulatory purview*). With growing internet and smart phone usage among children, food marketing companies have round-the-clock access to their target audiences for personalised

Table 5: Emerging techniques that need to be under regulatory purview

Placement of online advertising	• Search engines, social networking sites, news sites, music sites and blogs
	• TV-on-demand, films and media clips viewed online
	• Online and downloadable games, music and other media
Product placement and branding	• TV and radio programmes, films, computer games, downloadable 'apps'
	• Branded books, toys and computer games
	• Interactive company-owned websites, for example with puzzles and games
	• Branding on sports teams and advertising at sports and cultural events
Viral marketing	• Word-of-mouth and personal recommendation by consumers, sometimes in return for payment or reward, and increasingly encouraged in social networking sites
Sponsorship	• Sponsorship of TV and radio programmes, music videos
	• Celebrity product endorsement
	• Sponsorship of community and school events and contests
	• Corporate gifts of educational materials and equipment
	• Corporate support of health campaigns, sports clubs, school meals
Direct marketing	• Promotional e-mails
	• Promotional sales by telephone, text messaging to mobile phones
	• Promotion and sampling schemes in schools
Advergaming	Branding and advertising embedded in video games and interactive fantasy worlds, available online or for downloading
Point of sale and product promotion	• Packaging vouchers with links to discounts on videos, films, music
	• Packaging codes with links to online games, social networking sites or apps
	• Vending machine codes with links to online immediate discounts
Integrated marketing	Linking film, toy and food products and new media, such as a breakfast cereal with on-pack promotion of a brand-promoting game played on a web site, with matching Facebook page and Twitter messaging
Interactive and user-generated marketing	Includes two-way marketing and market-shaping activities. For example, TV advertisements invite viewers to vote for different flavours of a brand which then get produced and marketed; or the company launches a competition to create a video commercial which individuals put on YouTube for viral distribution.

Source: *Marketing of foods high in fat, salt and sugar to children, WHO Europe, 2012-13*

communication at perhaps much lower costs. Both self regulation and mandatory state regulation is limited in its efforts to control this trend. With such a wide spectrum of platforms available, control on merely television advertisements will not be able to limit the 'exposure' and 'power' of advertisements targeted at children.

Taxing junk food

In order to limit the overall consumption of foods that are high in fats, sugar and salt, several countries have imposed or proposed taxes on carbonated beverages, energy drinks, sugar sweetened/flavoured beverages, packaged

sweets, ice creams, jams, salty snacks, chocolates and food flavourings. This measure makes 'price' a limiting factor in consumption and adds to 'revenues' that would contribute to public health expenditure. Popularly, these taxes have been named as 'fat tax', 'soda tax' etc.

Role of labelling in junk food consumption

As per the WHO, providing accurate, standardised and comprehensive information on the content of food items is conducive to consumers making healthy choices. Global best practices can broadly be segregated as 'Nutrition facts' labelling, 'Front-of-pack' labelling and 'Menu' labelling.

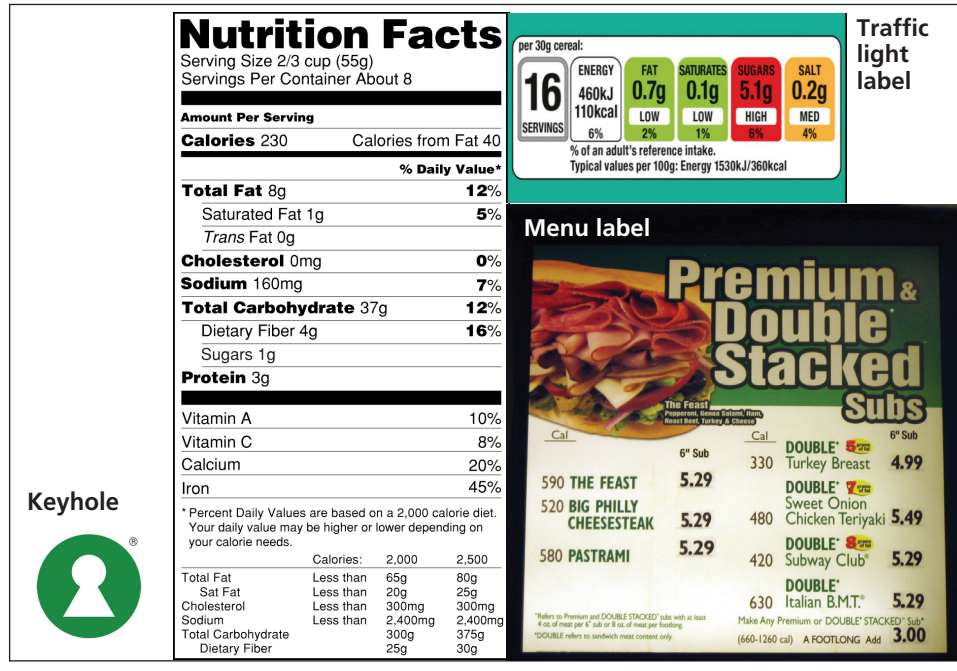
'Nutrition Facts' labelling[2]

'Nutrition Facts' labelling is practiced in countries like the US and is becoming popular in other parts of the world. Aimed at enabling informed dietary decisions by the consumers, these labels must provide complete information on the nutrient content; have a standardised presentation to limit confusion and promote easy understanding; and be based on recognised scientific criteria. Typically, at the back of the pack, a 'Nutrition Facts' label depicts serving size, number of servings, and nutrient information per serving as percentage of the daily value.

'Front-of-pack' labelling

This is a figurative representation of key information on the front of the pack (FoP). It is a useful labelling tool that complements at the labelling at the back of pack. Several FoP labelling initiatives are being practised across the world: these include the 'Traffic Light' system prevalent in the UK, and the 'Keyhole' sign in countries such as Denmark, Sweden and Norway.

Figure 2: Examples of best practices in food labelling prevalent in different countries*



Note: **Non-exhaustive*

Source: *commons.wikimedia.org (nutrition facts); sustainableeventsdenmark.org (keyhole); foodnavigator.com (traffic light label); cspinet.org (menu label)*

Centre for Science and Environment (CSE) study highlighted labelling issues in 2012

- Many of the food items tested claimed to be free of trans fats, but the study showed otherwise.
- Some brands did not mention the nutrition information for a serving size leaving one with no scope for knowing how many calories they had consumed.
- The serving size was not standardised; it varied between brands and also from country to country.
- There was no mention of the amount the ingredients contributed to the RDA, which is a best practice followed in several countries. Information on how much of a packet or a serving would add up to the RDA for sugar, salt, fat, total calorie etc is widely recognised as a potent tool to address the public health concern of diet-related NCDs.
- Non-packaged junk food items such as burgers, fries and pizzas had their nutritional value and content on their respective websites which is of little or no value. The websites also showed a double standard. For instance, McDonald's American website gave information on 22 nutritional attributes whereas the website for India displayed the information for only six nutritional attributes. Other popular fast food chains in India followed a similar practice.
- For non-packaged junk food, there was no provision for sharing nutritional information on menus and menu boards at the outlets.

The 'Traffic Light' labelling is an FoP labelling system along with mandatory nutrition declaration at back of pack. Colour coding – Green, Amber and Red – is an additional expression in line with EU FIC (food information to consumers) and includes energy and four nutrients of concern, i.e. total fat, saturated fat, sugar and salt; amount of nutrients and percentage contribution to the reference intake; and descriptions such as 'High', 'Medium' or 'Low' based on the amount of ingredients.[3]

The 'Keyhole' sign is a positive label that suggests fulfilling a certain criteria on dietary fibre, salt, sugar, fat and saturated fats. It indicates a healthier option to consumers.[4]

'Menu' labelling[5]

'Menu' labelling is about listing of calorie content and nutrients such as sodium displayed on menus and menu boards of fast food outlets and chain restaurants. It is proposed by the US Food and Drug Administration (USFDA) for menus, wherein restaurants and similar retail food establishments with 20 or more locations are to list calorie content information for standard menu items on restaurant menus and menu boards, including drive-through menu boards. It also applies to vending machines.

Nutrient profiling models to categorise food

According to the WHO, "Nutrient profiling is a science of classifying or ranking foods according to their nutritional composition for reasons relating to preventing disease and promoting health."[6] Nutrient profiling helps to assess the quality of food with reference to levels of nutrients such as fats, sugar, salt, vitamins, minerals and dietary fibre. Several countries/organisations have developed their own models. To harmonise the various models, the WHO is field testing select models.[7] Some countries have already implemented the nutrient profile models.[8] National authorities can develop their own or adapt the existing models for public health applications.

Applications of nutrient profile models

- Food marketing targeted at children and adolescents
- Product labelling, logos or symbols ('front-of- pack' labelling)
- Public procurement of foods (in schools)
- Health and nutrition claims
- Information and education
- Use of economic tools to orient food consumption (taxes)

Nutrient profile model (FSA-Ofcom model) of the UK[9]: This has been developed by the Food Safety Agency (FSA) and used by the Office of Communications (Ofcom) to introduce broadcasting restrictions on advertisements of junk foods and encourage promotion of healthier alternatives. The model uses a simple scoring system wherein points are allocated on the basis of nutrient content of 100 g of a food or drink. Points are awarded for 'A' nutrients (energy, saturated fat, total sugar and sodium), and for 'C' nutrients (fruit, vegetables and nut content, fibre and protein). The score for 'C' nutrients is then subtracted from the score for 'A' nutrients to give the final nutrient profile score. Foods scoring four or more points, and drinks scoring one or more points, are classified as 'less healthy' and are subject to controls on the advertising of foods to children on TV.

SAIN-LIM model of France[10]: Developed and proposed by the French Food Safety Agency (AFSSA) to regulate health and nutrition claims on food items, SAIN represents the 'Nutrient Density Score' of five qualifying nutrients (fibre, calcium, iron, proteins and vitamin C) and LIM is the 'Limited Nutrient Score' of disqualifying nutrients (fat, sugar and salt/sodium). On the basis of SAIN and LIM and the defined thresholds, food items are categorised into SAIN-LIM quadrants. Foods in Quadrant 1 (High SAIN and Low LIM) and Quadrant 2 (High SAIN and High LIM) can carry nutrient claims. Foods in Quadrant 1 only can carry a health claim.

Similar models involving identified threshold limits of select nutrients are being applied in countries such as Republic of Korea and Brazil for restrictions on marketing of junk foods.[11] The 'Keyhole' sign that is used for several years is another 'positive label' based on nutrient profiling. The 'Keyhole' indicates 'low in fat, sugar and salt and high in fibre' within a particular category such as dairy, vegetables, cereals etc.

3. Guidelines for regulating junk food targeted at children

Principles of the proposed guidelines

A. Children are not the best judges of their food choices. They have limited understanding about the impact of food on their health. Broadly, they are not aware about the concept of balanced diet and what kind of food is to be consumed or avoided. They also lack the required know-how on diseases and their relation to diet. While on one hand they lack awareness and necessary discretion, they are being aggressively targeted by food marketing on the other. They are one of the biggest viewer groups of television, and food advertisements constitute a major share of overall TV, radio and print advertisements across the world.

B. Schools are not the right places for promoting junk food. They are a place to learn the right values and constructive behavior for a lifetime. Since food consumption at school is a significant part of the overall daily diet, schools should not allow canteens to promote food habits that negatively impact the health of children.

C. Benefits of balanced, fresh and traditional food cannot be replaced. Frequent consumption of junk foods or foods high in salt, sugar and fats and low in other essential macro and micronutrients is detrimental and should be avoided. Such eating behaviors may extend beyond schools and become a dietary habit.

Guidelines for regulating junk food targeted at children:

1. Ban the availability of most common junk foods in schools and nearby areas within 500 yards

The objective is to restrict the consumption of this kind of food in the school premise, where the child is without parental supervision. In schools and nearby areas within 500 yards, ban the availability of the most common junk foods (see Table 6: *Most common junk food items that should be banned in schools and in nearby areas within 500 yards*) that are widely promoted and advertised, easily accessible to children, and are standardised processed foods. Similar foods are also banned or restricted in schools of several countries.

Table 6: Most common junk food items that should be banned in schools and in nearby areas within 500 yards

S No	Most common junk foods
1	Chips, fried packaged foods and similar packaged food items
2	Carbonated beverages
3	Sugar sweetened non-carbonated beverages
4	Instant noodles
5	Potato fries, burgers
6	Confectionery items such as chocolates, candies, gums

Source: *See Note 1 on page 25 - Objective and scientific criterion for categorising food*

The identified foods are based on an evaluation done on such foods available in India. They are considered unhealthy due to the imbalance in nutrients, i.e. HFSS and/or low in proteins, fibres and nuts.

Two methodologies have been used to identify the junk food items that need to be banned in schools and nearby (see Note 1: *The objective and scientific criterion for categorising food*). The Food Safety and Standards Authority of India (FSSAI) or the NIN should initiate steps to develop a programme for identification of further foods based on these criterion and inform schools accordingly.

Besides the listed foods, another food category of concern is the non-standardised deep fried foods such as *samosa*, *chana bhatura*, etc. that are available in school canteens and nearby areas. More data is required on the nutrient composition of such foods. Moreover, such foods are non-standardised and therefore their nutrient composition cannot be the same, as it will depend on the ingredients used in different institutions and households. The school management must ensure regulation of such foods through canteen policies that promote healthy, wholesome and nutritious foods. The school canteen policy would provide guidance on this matter to the management.

2. Develop a canteen policy to provide nutritious, wholesome and healthy food at school

Canteens in schools should not be treated as commercial outlets. They carry a social responsibility towards inculcating healthy eating behavior. They can be used to motivate children to consume healthy and hygienic food. Canteen policies based on nutrition criteria have been developed in many countries such as Australia, Canada, Singapore and Abu Dhabi. A suitable canteen policy that enables nutritious, wholesome and healthy foods to children should be developed in consultation with the health and education ministries. It should be based on the following:

- The school canteen policy should clearly specify the foods (category Red) which are not permitted for sale (as shortlisted in Guideline 1); foods that should be eaten most (over 80 per cent of the available choice/category Green) and foods that should be eaten sparingly (less than 20 per cent of the available choice/category Yellow) (see Table 7: *Food categorisation for school canteen policy*).
- The policy should be applicable for all types of schools such as primary, secondary, day care, boarding etc. Depending upon the place and region, the

Table 7: Food categorisation for school canteen policy

GREEN	**Always on menu**	Vegetables and legumes, fruits, grain (cereal) foods; mostly whole grain and/or high in fibre, lean meat, egg, fish etc
YELLOW	**Select carefully** Approach should be greening, small portion size and reduced frequency	Baked vegetable-based snacks, ice creams, milk-based ices and dairy desserts etc
RED	**Not on menu** Banned from schools as they are high in fat, salt and sugar	Energy drinks, carbonated and other sweetened beverages, fried packaged foods, chocolates, potato fries

Source: *Framework based on the school canteen guidelines of Australia; see Annexure II*

policy should include foods that are to be promoted as well as discouraged for consumption by children.

- The policy should also take into consideration non-standardised foods that are sold in canteens and may extend to foods that are brought by children from home. Regarding foods that are to be discouraged, suitable measures such as decreasing the frequency and portion size could be suggested.
- A 'School Health Team' or similar unit could be set up in each school comprising teachers, parents, students and school canteen operators, who will coordinate, implement and monitor the canteen policy to make available quality and nutritious food to students in schools.
- A well-structured curriculum on balanced diet and its health impacts should be introduced. The curriculum needs to take into account the level of students and the fact that children migrate from one class to another. The NIN should be involved in developing this curriculum.
- Schools should also promote nutrition education and awareness among children through tools such as posters. If required, a provision for funds from the Department of School Education and Literacy should be made (see Note 2: *Sample menu options for healty food in school canteen*).

3. Regulate and restrict marketing and promotion of junk food targeted at children and adolescents

There is a substantial increase in junk food advertising expenses across the world. Children especially are vulnerable to advertising because they cannot fully understand the disguised persuasive techniques of the advertisements and judge critically. The impact is exponential as proved by several studies. In line with recommendations and framework by the WHO, the objective is to regulate the 'exposure' and 'power' of advertisements and promotional activities that are targeted at children. These restrictions should be mandatorily enforced through appropriate legislations and directives as the voluntary self-regulatory initiatives have had limited success. To begin with, a list of foods shortlisted in Guideline 1 are to be considered. Subsequently, more foods identified as unhealthy can be added.

- Advertisements of junk food should not be designed for and targeted at children below 16 years of age across all media.
  - Such advertisements should not be allowed to broadcast on TV and radio from 4:00 PM to 10:00 PM on weekdays and from 8:00 AM to 10:00 PM on weekends and holidays.
  - Such advertisements should be banned from being broadcast during TV and radio programmes having children and adolescents as a key audience. This includes all kinds of cartoon shows and certain educational, entertainment and sports programmes that are designed for children less than 16 years of age.
  - There should be a ban on 'celebrity endorsement' of junk food by sports icons, movie stars, child artists, and famous cartoon and fictional characters.
  - Restrictions should be imposed on such advertisements in the new age marketing channels such as internet, mobiles, paid TVs and social media. Special emphasis is to be given to children-related content such as gaming, sports, and academic training modules.

- Promotional activities of junk food targeted at children are to be regulated.
  - Toys and other freebies should not be allowed to be given with such foods.
  - Sports icons, movie stars, child artists, and famous cartoon and fictional

characters should be barred from any open or disguised promotional activity in schools and outside.
– In-school sponsorships of sports, cultural, literary or any other event by makers (brands) of such foods should not be allowed.
– Promotion and marketing of such foods in all public areas where the children can possibly aggregate (other than schools) is to be banned; these would cover billboards and advertisements at stadiums, airports and hospitals.

4. FSSAI to develop and enforce stringent labelling laws to enable disclosure of relevant information on junk foods

The objective is to educate the consumer to facilitate an informed decision, as it is critical to a healthy and balanced diet. In the current context, it is more about creating awareness among parents at home that gets reflected into eating behaviors of the entire family, including the children.

In India, the labelling rules mandate packaged food manufacturers to declare nutritional information on product labels indicating the energy value in Kcal, followed by the amount of nutrients present. However, it needs to be made stringent. CSE, in a study conducted in the past on commonly available junk foods, had found misleading claims on the amount of trans fats present, lack of standardised serving sizes and information on contribution to RDA. Also, non-packaged junk food items such as burgers, fries and pizzas had listed their nutritional values and contents on their respective websites, which was of little or no value.

- 'Nutrition facts' labelling at the back of the packet is to be mandatorily followed. It should inform on how much the quantity of nutrients in a food packet and serving size contribute to the total daily requirement. Desired information includes:
  – Serving size and number of serving size per packet/container
  – Per serving information and its contribution to RDA (in per cent) as per the NIN
    – Calories
    – Key ingredients (in gram) such as total fat, saturated fat, trans fat, sugar, carbohydrates, proteins, salt/sodium
  – Total calorie count based on which RDA is calculated

- 'Front-of-pack' labelling that provides the nutrition facts in a simpler, easy to understand figurative way is to be mandatorily practised.

- For non-packaged food items such as burgers and pizzas, stringent labelling regulations must be enforced such as in the form of menu labelling, point-of- purchase labelling boards, or on paper wraps or boxes at fast food outlets. Such labels should provide information on calories and nutrients per serving size and as a percentage of RDA by NIN.

5. Establish stringent limits for unhealthy ingredients like trans fatty acids

From the perspective of controlling the intake of trans fatty acids that are extensively used in bakery, confectionery and deep fried cooking, a limit of 10 per cent of trans fats in the cooking medium (vanaspati etc) should be revised to 5 per cent at the earliest. This would at least make it closer to the stringent norms followed in certain countries.

6. Encourage physical activity by children and adolescents

No amount of physical activity can justify the consumption of junk food. Physical activity and good health go together only if they are accompanied by a well-balanced and nutritious diet. Government and schools should take initiatives to encourage physical activity by children such as supporting infrastructure within and outside the school, creating awareness among children and their parents, and increasing time and marks/grades allocated to sports. Children aged five-17 should engage regularly in physical activity of at least 40-45 minutes daily.

It is to be noted that the recommended guidelines are just the beginning in the task of regulating junk foods that are targeted at children. These are far from being sufficient. A lot needs to be done in this regard and the FSSAI should play an active role in doing so. The work in this area will be critical to ensure that food provides nutrition and wellbeing to Indian children and secures their health.

Note 1: Objective and scientific criterion for categorising food

1. A scoring-based nutrient profiling model practised in the UK[1]
Nutrient profiling is a science of classifying or ranking foods according to their nutritional composition for reasons related to preventing disease and promoting health. The nutrient profiling model of the UK forms the basis of a regulation which prohibits advertising of specified food and beverages during children's programmes and programmes for which children under the age of 16 years form a disproportionately high part of the audience.

The model uses a simple scoring system wherein points are allocated on the basis of nutrient content of 100 g of a food or drink. Points are awarded for 'A' nutrients (energy, saturated fat, total sugar and sodium), and for 'C' nutrients (fruit, vegetables and nut content, fibre and protein). The score for 'C' nutrients is then subtracted from the score for 'A' nutrients to give the final nutrient profile score. If a food or drink scores 11 or more 'A' points then it cannot score points for protein unless it also scores 5 points for fruit, vegetables and nuts.

Table 8: Scores depicting unhealthy junk foods

Food Item	Cut-off score	Score
Lays Potato Chips	4	**14**
Haldiram Aloo Bhujia	4	**18**
Maggi Noodles	4	**19**
McAloo Tikki Burger	4	**7**
Cadbury Dairy Milk Chocolate	4	**24**
Coca Cola	1	**2**
Pepsi	1	**2**
Slice	1	**3**
Maaza	1	**2**

Note: *Scoring details are mentioned in Annexure III*
Source: *Primarily based on information on nutrient contents mentioned on respective company websites*

Foods scoring 4 or more points, and drinks scoring 1 or more points, are classified as 'less healthy' and are subject to controls on the advertising of foods to children on TV.

2. A cut-off method based on RDA of nutrients set by NIN[2]

The method is based on RDA of nutrients provided by the NIN. Most of these are in line with those recommended by the WHO. NIN guidelines have been adapted to suit the Indian population (see Table 9: *RDA of nutrients considered for children*). The criterion is developed based on inputs from eminent professionals in the field of nutrition, paediatrics and public health.

Methodology for setting the cut-off limit: RDA of calories and individual nutrients is apportioned across meals and snacks throughout the day (see Table 10: *Meal break-up considered* and Table 11: *Cut-off limit for calories and nutrients that should not be exceeded in a snack or meal*). It is then compared with actual amount of calories and respective nutrients that are present in food items. Foods with higher than the set cut-off limit of one or more parameters are considered unhealthy. Breakfast and/or mid-morning snack is considered for school children.

Based on the cut-off values, various foods available in the India are evaluated (see Table 12: *Limits above cut-off values that depict unhealthy junk foods*). A bold figure in the table highlights that the cut-off is exceeded vis-à-vis respective nutrient or calorie.

Table 9: RDA of nutrients considered for children (based on 2100 Kcal for 10-12 years)

Salt/sodium	RDA for salt is 5 g per day; RDA for sodium is 2 g per day
Total fat	Total fat intake should not be >30% Energy required (E) per day
Trans fatty acids (TFAs)	RDA is <1% E per day
Saturated fatty acid (SFAs)	RDA is up to 8% E
Added sugar	RDA is 30 g sugar per day

Source: *Dietary guidelines for Indian, 2011, NIN*

Table 10: Meal break–up considered (% total calories) to set the cut-off limit

Breakfast	25%
Mid-morning snack	10%
Lunch	25%
Evening snack	10%
Dinner	25%
Bedtime snack	5%

Source: *Inputs from eminent professionals in the fields of nutrition, paediatrics and public health*

Table 11: Cut-off limit for calories and nutrients that should not be exceeded in a snack or meal*

	% RDA allocated	Kcal limit	Total fat [g/% of total]	SFAs [g/% of total]	TFAs [g/% of total]	Sugar [g]	Salt/ Sodium [g]
Snack	10%	210	7 g 30%	1.86 g 8%	0.23 g 1%	3 g	0.5 g /0.2 g
Meal	25%	525	17.5 g 30%	4.65 g 8%	0.57 g 1%	6.25 g	1.25 g /0.5 g

**Calculation illustration:*

- *Kcal: 10% of 2100=210 Kcal; 25% of 2100=525 Kcal*
- *Total fat: 30% E of 210 for snack = 63 Kcal and 63/9 (Kcal/g of fat) = 7 g; similarly its 17.5 g for meal*
- *SFAs: 8% E of 210 snack = 16.8 Kcal and 16.8/9 (Kcal/g of fat) = 1.86; similarly its 4.65 g for meal*
- *TFAs: 1% E of 210 snack =21 Kcal and 21/9 (Kcal/g of fat) = 0.23 g; similarly its 0.57 g for meal*
- *Sugar: 10% of 30 g (RDA) for a snack = 3g; similarly its 6.25 g for meal*
- *Salt/Sodium: 10% of 5 g of salt (RDA) and 2 g of sodium (RDA) for a snack = 0.5 g of salt and 0.2 g of sodium; similarly its 1.25 g of salt and 0.5 g of sodium per meal*

Source: *Inputs from eminent professionals in the fields of nutrition, paediatrics and public health*

Table 12: Limits about cut-off values that depict unhealthy junk foods

Food item	Serving size	Calories [Kcal]	Total fat [g]	Saturated fat [g]	Sodium [g]	Added sugar [g]
Lays Potato Chips	50 g	**272**	**17**	**2.7**	**0.39**	1
Haldiram Aloo Bhujia	50 g	**315**	**25**	**5**	**0.34**	0
McDonalds Fries (Regular)	110 g	**343**	**17**	NA	0.26	0
McAloo Tikki Burger	155 g	**352**	**14**	NA	**0.84**	**8**
Maggi Noodles	80 g	**360**	**14**	**6.8**	**0.95**	0.8
Coca Cola	300 ml	132	0	0	0	**33**
Pepsi	300 ml	132	0	0	0	**33**
Slice	300 ml	189	0	0	0	**45**
Maaza	300 ml	162	0	0	0	**39**
Cadbury Dairy Milk	40 g	**211**	**11**	**8**	0.06	**21**

Source: *Company websites primarily. Details mentioned in Annexure III. Trans fatty acids are not used in calculations*

Note 2: Sample menu options for healthy foods in school canteens

Table 13: Sample food options that could be labelled green and made available in schools

Food items	Kcal	Food items	Kcal
Vegetable sandwiches - brown or multigrain bread (no mayonnaise, low fat cheese can be used)	150-200	Paneer/ chicken/ egg/ salami sandwiches - brown or multigrain bread (no mayonnaise; low fat cheese)	200-250
Fruit salad: 1 big katori	100	Fruit chat	100
Single fruits (seasonal)	80-100	Fruit yoghurt	100
Chickpea vegetable chat: 1 medium katori	100	Paneer/ vegetable cutlets: 2 pc	200
Fruit custard: 1 big katori	200	Khandvi: 2 pcs	80
Veg poha: 1 medium katori	150	Sprout salad: 1 medium katori (sprouts 30g rest salad)	100
Veg uttapam: 1 medium	150	Veg upma: 1 medium katori	200
Vegetable pulao with veg raita: 1 medium katori	200	Vegetable idlis with chutney: 2 pc	120
Vegetable (whole wheat flour/ multigrain flour) kathi rolls: 1 pc	150	Paneer/ chicken/ egg (whole wheat flour/ multigrain flour) kathi rolls: 1 pc	200

Source: *Inputs from eminent professionals in the fields of nutrition, paediatrics and public health*

Table 14: Sample beverage options (200 ml) that could be made available in schools

Beverages	Kcal	Beverages	Kcal
Low fat milk shakes with seasonal fruits (banana, mango, cheeku, strawberry, black currant) no added sugar	180	Fresh lime soda/ shikanjee (with 10g sugar)	40
		Badam milk	180
Fresh fruit juice	120	Salted/ plain lassi	120
Smoothies with fruits	180	Jaljeera	60

Source: *Inputs from eminent professionals in the fields of nutrition, paediatrics and public health*

Annexure I: How junk food is regulated across the world*

Australia	Advertisements (Bill proposed but Pending)[1]	In 2011, a bill to amend the 'Broadcasting and Services Act,1992' sought to: ● Prohibit the broadcast or internet upload of 'an unhealthy food advertisement that is directed to children.' Children are defined as 'under the age of 16 years' ● Ban unhealthy food ads on commercial TV for select hours during weekdays, weekends and holidays
Canada	Schools Ontario (2011)[2]	As per the 'School Food and Beverage Policy, 2010', under the 'Healthy Food for School Act, 2008': ● 'Nutrition Standards' are set for food and beverages sold in publicly funded elementary and secondary schools. Food is divided into vegetables and fruit, grain products, milk and alternatives, meat and alternatives, mixed dishes (e.g., pizza, pasta, soup, salads, and sandwiches), miscellaneous items and confectionery items (e.g., candy, chocolate) ● 'Nutrition Criteria' based on 'Nutrition Standards' is outlined below for schools: – Not permitted for sale: Contain few or no essential nutrients and/or contain high amounts of fat, sugar, and/or sodium (e.g., deep-fried and other fried foods, confectionery) – Sell most (≥ 80%): Healthiest options with higher levels of essential nutrients and lower amounts of fat, sugar, and/or sodium. They must make up at least 80 per cent of all food choices. Same requirement applies to beverage choices – Sell less (≤ 20%): May have slightly higher amounts of fat, sugar, and/or sodium than food and beverages in the "sell most" category. They must make up no more than 20 per cent of all food choices. Same requirement applies to beverage choices
	Advertisements (1971)[3]	As per the 'Broadcast Code for Advertising to Children' under 12 years, in relation to food products: ● Advertisements must not convey to a child that they are a substitute for meals ● Advertisements ought not to be portrayed in a way that it becomes excessive for a person to consume ● The quantity of food shown should not exceed the labelling or serving size Quebec (1978)[4] ● The Sec. 248 of 'Consumer Protection Act' bans all advertisements targeting children aged 13 years and less.
Costa Rica	Schools (2012)[5]	● Regulation brought up to restrict food products that are high in fat, sugar, calories and low in nutrition ● Chips, cookies, candy and carbonated sodas banned from elementary and high school
Finland	Tax (2011)[6]	Imposed taxes on soft drinks, ice-cream, sweets, chocolates etc.
France	Advertisements (2007)[7]	● Advertisement for unhealthy food must carry health messages: – "For your health, avoid eating too many foods that are high in fat, sugar or salt" – "For your health, avoid snacking between meals" ● Companies that do not provide public health warnings are penalised with about 1.5 % of their advertising budget
	Tax (2012)[8]	Tax introduced on sweetened non-alcoholic drinks, energy drinks etc. Zero calorie 'diet drinks' are exempted.

Cont…

How junk food is regulated across the world		
Hungary	Tax (2011)[9]	Tax imposed on beverages, energy drinks, packaged sweets, ice cream, jam, salty snacks and food flavourings
Ireland	Tax (under progress)[10]	Extra taxes on sugary drinks proposed in 2011
Latvia	Schools (2006)[11]	One of the EU countries to: ● Prohibit foodstuffs and drinks that are high in sugar, salt, artificial colourings and flavourings from kindergartens, primary and secondary public schools ● Replaced those with 'healthy alternatives' such as dried fruit, unsalted nuts, unsweetened fruit juice, wholegrain snacks, mineral water and milk
Lithuania	Schools (2010)[12]	Restriction on the supply of HFSS foods and products in schools and all children establishments. Prohibition of foodstuffs with > 0.4 mg/100 g of sodium
	Advertisements (under progress)[13]	A draft law that prohibits advertisements of confectionery, soft drinks and snacks on TV and radio programmes and in press publications intended for children
Mexico	Schools (2011)[14]	Published guidelines in order to reduce the consumption of high calorie foods within the basic school. ● Apply to about 220,000 public and private primary and middle schools serving 25 million children ● Schools barred from serving or selling sugary sodas, juices or processed snacks, including local favorites such as tamarind candies ● Banned unhealthy less-processed foods include pork rinds, atole (a sweetened corn starch-based beverage), fried tacos and tortas. ● Exceptions for healthier versions include tortas made from beans, avocado and cheese, or chicken and vegetables ● All tacos, burritos and salads are to be low in fat
	Tax (2013)[15]	Legislation passed to contain twin epidemics of obesity and Type 2 diabetes ● Tax imposed on soft drinks, sports drinks and sugary beverages ● It also calls for tax on flavoured beverages as well as concentrates, powders, syrups, essences or flavour extracts
New Zealand	Advertisements (2010)[16]	Advertisements for food and beverages that influence children aged under 14 years to adhere to the 'Children's Code for Advertising Food, 2010' such as: ● Advertisements should not by implication, omission, ambiguity or exaggerated claim mislead or deceive or be likely to mislead or deceive children, abuse their trust or exploit their lack of knowledge without reason play on fear ● Persons or characters well-known to children shall not be used in advertisements to promote food in such as way so as to undermine a healthy diet as defined by the Food Nutrition Guidelines for Healthy Children
Norway	Advertisements, (under progress) (2012)[17]	● The age limit is increased to 16 years from earlier set 12 years for restrictions ● Proposed to ban on advertisements of 'unhealthy foods' such as sodas, cookies, chocolate, ice cream, greasy burgers, chewing gum with sugar, yoghurt candies, sweet juices, sweetened milk drinks, and sugar cereals ● Draft regulation on Marketing of Food and drink to children were formulated. Section 4 of the Draft Regulations prescribes the prohibition on marketing of unhealthy food and drink to children.
Peru	Schools (2013)[18]	The law 'Promoting Healthy Food for Children Act' calls for ● Healthy food in school kiosks or cafeterias ● A system for monitoring nutrition, overweight, and obesity among children and adolescents

Cont…

How junk food is regulated across the world

		● Controls on advertising aimed at children and adolescents ● Nutrition education in schools and more physical activity
	Advertisements (2013)[19]	The 'Promoting Healthy Food for Children Act' considers the age limit of 16 years and prohibits ● Advertisements that encourage 'immoderate consumption' of food and non-alcoholic beverages with HFSS and shows 'inappropriate portions' ● Suggests that parents are 'more intelligent or more generous' in purchasing a particular product
	Tax (under progress)[20]	Plans to introduce tax on foods that are HFSS
Philippines	Schools (2007)[21]	Through Guidelines issued by the Department of Education to the school canteens in public elementary and secondary schools: ● Prohibited sale of carbonated drinks, sugar based synthetic or artificial flavoured juices, junk foods and any food product that may be detrimental to the child's health ● Foods allowed to be sold in school canteens include: – Only nutrient rich food like root crops, noodles, rice and corn products in native preparation – Fruits and vegetables in season and fortified food products labeled rich in protein, energy, vitamins and minerals – Milk, shakes and juices prepared from fruits and vegetables in season
Poland	Schools (under progress)[22]	A bill is currently on hold until December 2013 for comments from EU commission and member states. Once approved in its present form, it will ban the sale of foods and drinks with HFSS in kindergartens, primary schools, secondary schools and other educational and care institutions as follows: ● Sweets and confectionery and bakery wares with sugar content exceeding 10 g of added sugars in 100 g of product ● Fast food, instant food, snacks with sodium > 300 mg in 100 g of product ● Dairy products with added sugars > 15 g in 100 g/ml of product ● Cereal products with added sugars > 25 g in 100 g of product ● Jams, marmalades, highly-sweetened syrups with content of added sugars > 50 g in 100 g of product ● Carbonated and still beverages with added sugars and synthetic colourings; Energy and isotonic drinks Schools are also restricted to advertise, present and promote purchase of any of the banned foods listed above
	Advertisements (2007)[23]	As per Article 9 of the 'Combating Unfair Commercial Practices Act, 2007','In all circumstances, aggressive commercial practices shall be regarded as unfair commercial practices: including in an advertisement a direct exhortation to children to buy advertised products or persuade their parents or other adults to buy advertised products for them".
Romania	Advertising (2008)[24]	The Ministerial Order 1563/2008 addressing the ● Approval of the list of foods, not recommended for preschool children and school children ● The principles, underlying healthy diets for children and adolescents also establishes the criteria for which specific food items should not be recommended ● These food items are not allowed to be sold within school premises in order to encourage schoolchildren to adopt healthy dietary habits

Cont…

How junk food is regulated across the world		
South Korea	Schools (2009)[25]	Sale of junk food and drinks in school and surrounding areas is banned by the Health Ministry
	Advertisements (2010)[26]	● Ban on advertisement of foods with HFSS such as hamburgers, pizzas, instant noodles, chocolate and other candies and ice cream ● Such advertisements are banned from 5 PM to 7 PM on TV and from children's programme at any time of the day
Sweden	Advertisements (1991)[27]	As per the 'Radio and TV Act': ● All TV advertisements directed to children aged under 12 years are banned from the first day of the commercial TV broadcast
Taiwan	Advertisements (under progress)[28]	Amendments to regulate the fast food are proposed in the 'Food Sanitation Management Act', and the draft of a 'National Nutrition Law. If approved, the draft would restrict: ● Advertising on children's channels between 4 PM and 6 PM ● Marketing methods used for fast food, such as giving away toys with meals ● Conducting promotional activities for fast foods or snacks including chocolate, potato chips, fried chicken, french fries, cola and other sugared drinks ● Financial penalties to be imposed in case of violations
United Arab Emirates	Schools (2011)[29]	As per the guidelines 'Guide of Health and Nutritional Practices of School Canteen' by Dubai Health Authority and Dubai Municipality: ● All public and private schools in the Emirate of Dubai, banned foods with high caloric value, artificial flavours and poor nutritional value such as crisps, burgers, chocolate and sugary drinks
United States	Schools *Implementation w.e.f. July 1, 2014*[30]	● The 'Smart Snacks in Schools' nutrition standards programme under the 'Healthy, Hunger-Free Kids Act, 2010' puts a ban on junk foods in schools. It will replace it with healthier items on school menus by 2014-15 school year in all grade levels (elementary, middle and high school) ● As of now several states have policies for competitive foods segregated into 'Foods of Minimal Nutritional Value' (FMNV) and all other foods offered for individual sale – FMNV includes carbonated beverages, water ices, chewing gum, hard candy, jellies and gums, marshmallow candies, fondant, licorice, spun candy, and candy-coated popcorn – Other competitive foods offered for sale in schools include foods purchased through a la carte in the cafeteria, vending machines, school stores, canteens, and snack bars
	Advertisements (under progress)[31]	● The Interagency Working Group constituted under the 'Omnibus Appropriations Act, 2009', proposed two 'Nutrition Principles' based on which marketing of foods to children aged 2-17 is to be done after 2016: – Meaningful contribution to a healthful diet – Nutrients with negative impact on health or weight ● About 20 categories of advertising, marketing and promotional activities are identified in the Federal Trade Commission's (FTC) food marketing study definitions. These include: – Television, radio, and print advertising – Company sponsored web sites, ads on third-party Internet sites, and other digital advertising, such as email and text messaging – Packaging and point-of-purchase displays and other in-store marketing tools – Advertising and product placement in movies, videos, and video games

Cont…

How junk food is regulated across the world		
		– Premium distribution, contests, and sweepstakes – Cross promotions, including character licensing and toy co-branding – Sponsorship of events, sports teams, and individual athletes – Word-of-mouth and viral marketing – Celebrity endorsements – In-school marketing – Philanthropic activity tied to branding opportunities
	Tax[31]	San Francisco (proposed, 2013) ● Propose to Introduce tax on soda and sugar sweetened beverages
United Kingdom	Schools	England (2007)[32] As per The Education (Nutritional Standards and Requirements for School Food) (England) Regulations, 2007 ● Comprehensive food and nutrient-based standards for maintained schools. Became statutory in primary schools from 2008 and secondary schools from 2009 ● Cover foods and drinks served at lunchtime and during school day ● Food-based standards: severely restrict foods high in fat, salt and sugar, as well as low quality reformed or reconstituted foods ● Nutrient-based standards: stipulate the minimum amounts of essential nutrients, vitamins and minerals and the maximum amounts of fats, salt and sugars that should be provided as part of an average school lunch Scotland (2008)[33] ● Restricted savory snacks ● Prohibited confectionery such as chocolate, chocolate products and sweets ● Prohibited sugary soft drinks, fizzy drinks etc. ● Menus must not contain more than three deep-fried items in a single week (including chips). Chips, if served, must be served as part of a meal.
	Advertisements (2008)[34]	The Ofcom, an independent regulator along with Department of Health and Food Safety Agency put: ● Ban on advertisements of HFSS food and drinks in and around programmes for under 16 (including pre-school children) ● Restrictions on programmes sponsored by food and drink products that are HFSS ● Restrictions on use of celebrities, cartoon characters and free gifts as incentives while promoting food and drinks that are HFSS
Uruguay	Advertisements (2013)[35]	The newly approved 'Healthy Diets in Educational Units' law bans advertising to children in school

* As in Dec 2013

Annexure II: School canteen policy of Australia – a reference framework

Australia[37]	The National Healthy School Canteen (NHSC) guidelines, 2010	The National Healthy School Canteens Guidelines for healthy foods and drinks supplied in Australian school canteens is based on the current 2013 Australian Dietary Guidelines, which gives advice on the quality and quantity of foods and drinks recommended for children in Australia to achieve optimal health and limit the risk of chronic diseases related to poor nutrition in adulthood. Foods and drinks have been classified according to the amount of nutrients they provide and are classified as green amber and red category. **Green: Always on the menu:** These foods and drinks are the best choices for a healthy school canteen. A large variety of these foods and drinks must be available every day and be the main choices on the menu. They contain a wide range of nutrients and are generally low in saturated fat and/or sugar and/or sodium (salt). **Amber: Select carefully:** These foods and drinks contain some valuable nutrients, moderate amounts of saturated fat and/or sugar and/or sodium (salt) and if eaten regularly or in large amounts, may contribute to excess energy (kilojoules) being consumed. These foods and drinks must be assessed carefully against the Nutrient Criteria Tables to ensure that: • The healthiest choices from this category are selected • These foods and drinks must not dominate the menu • The serve size must be small **Red: Not on the menu:** These foods and drinks must not to be sold or provided in schools, unless part of a special whole school event. These foods and drinks may contain excess energy (kilojoules) and/or saturated fat and/or sodium (salt) and/or sugar and are low in nutritional value

Source: *health.gov.au*

Annexure III: Junk food categorisation based on nutrient profiling model of the UK[36]

Nutrient profiling model of the UK

STEP 1: Total A points

A maximum of ten points can be awarded for each nutrient. Total 'A' points = (points for energy) + (points for saturated fat) + (points for sugars) + (points for sodium). The table below indicates the points scored, depending on the amount of each nutrient in 100g of the food or drink:

Points	Energy (kJ)	Sat Fat (g)	Total Sugar (g)	Sodium (mg)
0	≤ 335	≤ 1	≤ 4.5	≤ 90
1	> 335	> 1	> 4.5	>90
2	> 670	>2	> 9	> 180
3	> 1005	> 3	> 13.5	>270
4	> 1340	> 4	> 18	> 360
5	> 1675	> 5	> 22.5	> 450
6	> 2010	> 6	> 27	> 540
7	>2345	>7	>31	>630
8	>2680	>8	>36	>720
9	>3015	>9	>40	>810
10	>3350	>10	>45	>900

Source: *Nutrient profiling technical guidance, UK*

STEP 2: Total C points

A maximum of five points can be awarded for each nutrient/food component. Total 'C' points = (points for % fruit, vegetable & nut content) + (points for fibre [either NSP or AOAC]) + (points for protein). The table below indicates the points scored, depending on the amount of each nutrient/food component in 100g of the food or drink:

Points	Fruit, Veg & Nuts (%)	Protein (g)	NSP Fibre ' (g)	Or AOAC Fibre ' (g)
0	≤ 40	≤ 1.6	≤ 0.7	≤ 0.9
1	>40	>1.6	>0.7	>0.9
2	>60	>3.2	>1.4	>1.9
3	-	>4.8	>2.1	>2.8
4	-	>6.4	>2.8	>3.7
5	>80	>8.0	>3.5	>4.7

**The nutrient profiling model was developed using NSP fibre intake; where the NSP value is not known, AOAC fibre values can be used*

Source: *Nutrient profiling technical guidance, UK*

STEP 3: Overall score

Overall score = Total 'A'points – Total 'C' points

- If a food scores less than 11 'A' points then the overall score is calculated as follows:
  Total 'A' points (energy + saturated fat + sugars + sodium) Minus Total 'C' points (fruit, veg and nuts + fibre + protein)
- If a food scores 11 or more 'A' points but scores 5 points for fruit, vegetables and nuts then the overall score is calculated as follows:
  Total 'A' points (energy + saturated fat + sugars + sodium) Minus Total 'C' points (fruit, vegetable and nuts + fibre + protein)
- If a food scores 11 or more 'A' points, and less than 5 points for fruit, vegetables and nuts, then the overall score is calculated as follows:
  Total 'A' points (energy + saturated fat + sugars + sodium) Minus Points for fibre + points for fruit, vegetables and nuts (not allowed to score for protein)

Assessment of the final score

- A food is classified as **'less healthy' where it scores 4 points or more**
- A drink is classified as **'less healthy' where it scores 1 point or more**

A food is not be subjected to advertising restriction if it scores 4 points or more and a drink scores less than 1 point or more. A set of commonly available packed and non-packed foods are scored based on the UK model. The scores depict that such foods can easily be categorised as unhealthy. While scoring:

- Nutrition values are primarily estimated based on nutrient information mentioned at respective Indian company websites. However, in few cases where it is not available, respective US websites or a third party independent websites are referred. Sources are mentioned wherever applicable
- Conversion per 100 g is done with simple mathematical calculations
- Energy in Kcal converted to energy KJ (1Kcal=4.184 kJ)
- Content of fruit vegetable and nuts assumed to be <=40% wherever applicable
- No scoring is done for proteins wherever total 'A' points are equal to or more than 11 (as per scoring criteria of the model)

Table: Scores depicting unhealthy junk foods

	Lays Potato Chips		Haldiram Aloo Bhujia		McAloo Tikki Burger		Maggi Noodles		Cadbury Dairy Milk Chocolate		Coca Cola; Pepsi		Slice		Maaza	
	Qty	Sc	Qty	Sc	Qty	Sc	Qty	Sc	Qty	Sc	Qty	Sc	Qty	Sc	Qty	Sc
Energy (kJ)	2276	6	2552	8	941.4	2	1841	5	2212	6	184	0	264	0	226	0
Saturated fat (g/100g)	5.3*	5	10	9	2.1^	2	8.6	8	20	10	0	0	0	0	0	0
Total sugar (g/100g)	2	0	0	0	5.12	1	1	0	52.5	10	11	2	15	3	13	2
Sodium (mg/100g)	770	8	670	7	538	5	1530	10	146	1	0	0	0	0	0	0
Total A Pts		**19**		**24**		**10**		**23**		**27**		**2**		**3**		**2**
Fruit, Veg. & nuts (%)	≤ 40	0	≤ 40	0	≤ 40**	0	0	0	0	0	0	0	13	0	19	0
Fibre (g/100g)*	3.6	5	20	5	2.56	3	4	5	2.5	3	0	0	0	0	0	0
Protein (g/100g)	7.8	0	5	0	5.12	0	9	0	7.5	0	0	0	0	0	0	0
Total C pts		**5**		**5**		**3**		**5**		**3**		**0**		**0**		**0**
Final Score: A-C		**14**		**19**		**7**		**18**		**24**		**2**		**3**		**2**
Cut-off Score		4		4		4		4		4		1		1		1

Notes: Qty = Quantity and Sc = Score; As in May 2014

Sources:

Lays Potato Chips: *hfritolay.com; pepsicoindia.co.in;

Haldiram Aloo Bhujia: haldiram.com

McAloo Tikki Burger: Mcdonaldsindia.Net; ^Information not mentioned on Indian and US company website. Approximate estimation based on saturated fat content of same brand potato fries obtained from an independent website. **Assumed to be less that 40% (by weight) based on ingredients; potato is not considered a vegetable as per the model

Maggi Noodles: caloriecount.about.com- Maggie 2 minute noodle; nutritional information not mentioned on company website

Cadbury Dairy Milk Chocolate: caloriecount.about.com-Dairy Milk; nutritional information not mentioned on company website

Coca Cola and Pepsi: coca-colaindia.com; pepsicoindia.co.in; specific gravity considered same as water

Slice and Maaza: pepsicoindia.co.in-slice; coca-colaindia.com-maaza; specific gravity considered same as water

Annexure IV: Junk food categorisation based on Indian RDA-based cut-off criteria

Based on the threshold values of calories and individual nutrients as mentioned above, various snack and meal foods available in the India are evaluated. A bold figure in the tables below highlights that the thresholds are exceeded vis-à-vis respective nutrient or calories. A food exceeding the threshold of one nutrient or calories is considered unhealthy. Most of the data is from respective product websites. In few cases, wherein information is not available on independent third party website is referred. Sources are mentioned. Simple calculations are done based on the criteria depicted above. Serving size considered are approximate estimations based on available packet size and average consumption observed.

Table: Nutrients cut-off values that depict unhealthy junk foods

Food item	Serving size	Calories [Kcal]	Total fat [g]	Saturated fat [g]	Sodium [g]	Added sugar [g]
Common Snack foods – Packed						
Lays Potato Chips	50 g	**272**	**17**	**2.7***	**0.39**	1
Haldiram Aloo Bhujia	50 g	**315**	**25**	**5**	**0.34**	0
Maggi Noodles**	80 g	**360**	**14**	**6.8**	**0.95**	0.8
Coca Cola	300 ml	132	0	0	0	**33**
Pepsi	300 ml	132	0	0	0	**33**
Slice	300 ml	189	0	0	0	**45**
Maaza	300 ml	162	0	0	0	**39**
Cadbury Dairy Milk Chocolate**	40 g	**211**	**11**	**8**	0.06	**21**
Common Snack foods – Non Packaged						
McDonalds Fries (Regular)	110 g	**343**	**17**	NA	0.26	0
KFC Golden Fries (Regular)	73.5 g	**216.4**	**9.94**	**3.8**	0.12	0
McAloo Tikki Burger	155 g	**352**	**14**	NA	**0.84**	**8**
KFC Vegetable Burger	188.3 g	**534.8**	**24.99**	**11.7**	**1.2**	NA
McChicken Burger	163 g	**407**	**19**	NA	**1.0**	**5**
KFC Chicken Zinger	195.8	**463**	**21.3**	**6.46**	**0.97**	NA
Pizza Hut's margerita pan (Personal) 2 slices	110 g	**288.2**	4.84	**2.86**	**0.5**	1.48
Meal – McDonalds						
McAloo Tikki Burger	155 g	352	14	NA	0.84	8
McDonalds Fries (Regular)	110 g	343	17	NA	0.26	0
Coca Cola	300 ml	132	0	0	0	33
Total		**827**	**31**		**1.1**	**41**
Meal – KFC						
KFC Chicken Zinger	195.8 g	463	21.3	11.7	0.97	0
KFC Golden Fries (Regular)	73.5 g	216.4	9.94	3.8	0.12	0
Pepsi	300 ml	132	0	0	0	33
Total		**811.4**	**31.24**	**15.5**	**1.09**	**33**

Note: As in May 2014
Sources:
Common Snack foods – Packed: *Company website US-hfritolay.com; pepsicoindia.co.in-lays; haldiram.com; **Independent website – caloriecount.com as information on respective website is not available caloriecount.about.com-maggi 2 minute noodle; pepsicoindia.co.in ; coca-colaindia.com; pepsicoindia.co.in-slice; coca-colaindia.com-maaza; caloriecount.about.com-cadburysdairy milk
Common Snack foods – Non Packaged: mcDonaldsindia.net-mcalootikki-mcchicken-fries ; kfc.co.in - veg zinger appears to have been renamed; pizzahut.co.in
Meal – McDonalds: mcDonaldsindia.net ; coca-colaindia.com
Meal – KFC: kfc.co.in www.kfc.co.in ; coca-colaindia.com

References

1. Balanced diet, junk food and non-communicable diseases

1. NIN 2011, *Dietary guidelines for Indians: A manual*; *Nutrient requirements and recommended dietary allowances for Indians,* a report of the expert group of the Indian Council of Medical Research
2. 'Role of ghrelin in food reward', *Addict Biol.* 2012 January; 17(1): 95-107, *http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3298643/*

   http://www.paho.org/nutricionydesarrollo/wp-content/uploads/2012/05/Comment.-Toxic-truth-about-sugar.pdf
3. Lustig, R H, Schmidt, L A and Brindi, C D, 'The toxic truth about sugar', *Nature,* Vol 482, *http://www.nature.com/nature/journal/v482/n7383/full/482027a.html%3FWT.ec_id%3DNATURE-20120202*
4. Malik, V S, 'Sugar sweetened beverages and the risk of metabolic syndrome and type 2 diabetes: A meta analysis', *http://care.diabetesjournals.org/content/33/11/2477.full*
5. 'Salt intake and hypertension: Walking the tight rope', *Can J Cardiol* 1997;17:272B
6. 'Harmful effects of dietary salt in addition to hypertension', *Journal of Human Hypertension* (2002) 16, 213-223
7. Seifert *et al*, 'Health effects of energy drinks on children, adolescents and young adults', *Paediatrics,* Februrary 14, 2011
8. World Health Organization 2011, NCD Country Profiles, *http://www.who.int/nmh/countries/ind_en.pdf*
9. World Health Organization, 2010, 'Global status report on non-communicable diseases', *http://whqlibdoc.who.int/publications/2011/9789240686458_eng.pdf*
10. 'Childhood obesity and adult morbidities', *Am J Clin Nutr* 2010;91(suppl):1499S-1505S, *http://ajcn.nutrition.org/content/91/5/1499.Sfull.pdf*
11. 'Prevalence of overweight and obesity amongst school children in Delhi, India', *Asia Pac J Clin Nutr* 2008;17 (4):592-596, *http://apjcn.nhri.org.tw/server/APJCN/17/4/592.pdf*
12. 'World Health Assembly opens: Director-General announces new initiative to end childhood obesity', *http://www.who.int/mediacentre/news/releases/2014/world-health-assembly67/en/*
13. 'Time to effectively address hypertension in India', *Indian J Med Res* 137, April 2013, pp 627-631
14. 'Prevalence and determinants of hypertension among urban school children in the age group of 13-17 years in Chennai, Tamil Nadu', *IOSR Journal of Dental and Medical Sciences* (IOSR-JDMS) e-ISSN: 2279-0853, p-ISSN: 2279-0861, Volume 8, Issue 3
15. 'Prevalence and determinants of hypertension among urban school children in the age group of 13-17 years in Chennai, Tamil Nadu, *http://www.omicsonline.org/prevalence-and-determinants-of-hypertension-among-urban-school-children-in-the-age-group-of-years-in-chennai-tamilnadu-2161-1165.1000130.pdf*

16. World Health Federation, *http://www.world-heart-federation.org*
17. 'High prevalence of insulin resistance in post-pubertal Asian Indian children is associated with adverse truncal body fat patterning, abdominal adiposity and excess body fat', *http://www.nature.com/ijo/journal/v28/n10/full/0802704a.html*
18. International Diabetes Federation, *http://www.idf.org/diabetesatlas*
19. 'Prevalence of Pediatrics Metabolic Syndrome (PMS) amongst Children in the Age Group of 6-18 Years Belonging to High Income Group Residing in National Capital Territory (NCT) of Delhi', *Indian J Pediatr* (2010) 77:1041, *http://medind.nic.in/icb/t10/i9/icbt10i9p1041.pdf*
20. Mark D Huffman, *Coronary heart disease in India*, Centre for Chronic Disease Control, New Delhi, India
21. *Wall Street Journal*, *http://online.wsj.com/news/articles/SB10001424052702304644104579191682155932364*
22. Anoop Mishra and Seema Gulati 2010, 'Consumption of lifestyle foods among children', unpublished data, presented at CSE's South Asian Media Briefing on Food Safety and Environmental Toxins, March 29-30, 2012
23. 'Increasing Proclivity for Junk Food among Overweight Adolescent Girls in District Kurukshetra, India', *http://www.isca.in/IJBS/Archive/v2i3/14.ISCA-IRJBS-2013-026.pdf*
24. *http://www.techsciresearch.com/2114*
http://www.techsciresearch.com/2104
25. 'Proximity of Fast-Food Restaurants to Schools and Adolescent Obesity', *Am J Public Health*, 2009, *http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2661452/*
26. 'Childhood Obesity in Developing Countries: Epidemiology, Determinants and Prevention', *http://edrv.endojournals.org/content/33/1/48.long*

2. Junk food – global regulations

1. 'Marketing of foods high in fat, salt and sugar to children', update 2012-13, *http://www.euro.who.int/__data/assets/pdf_file/0019/191125/e96859.pdf*
2. USFDA, *http://www.fda.gov/Food/IngredientsPackagingLabeling/LabelingNutrition/ ucm20026097.htm*
3. Food.gov.uk, *http://multimedia.food.gov.uk/multimedia/pdfs/pdf-ni/fop-guidance.pdf*
4. Nordic Council of Ministers, *http://www.norden.org/en/nordic-council-of-ministers/council-of-ministers/council-of-ministers-for-fisheries-and-aquaculture-agriculture-food-and-forestry-mr-fjls/keyhole-nutrition-label*
5. USFDA, *http://www.fda.gov/Food/IngredientsPackagingLabeling/LabelingNutrition/ucm217762.htm*
6. WHO, Nutrient Profiling, *http://www.who.int/nutrition/topics/profiling/en/*
7. *Nutrient Profiling*, a report of WHO-IASO technical meeting, *http://www.who.int/nutrition/publications/profiling/WHO_IASO_report2010.pdf*
8. 'A framework for implementing the set of recommendations on the marketing of foods and non-alcoholic beverages to children', *http: //www.who.int/dietphysicalactivity/Marketing Framework2012.pdf*
9. 'Technical Guide Nutrient Profiling', *http://www.food.gov.uk/multimedia/pdfs/techguidenutprofiling.pdf*

10. *Nutrient Profiles*, French Agency for Food, Environmental and Occupational Health & Safety, *http://www.anses.fr/en/content/nutrient-profiles*; *http://discovery.ucl.ac.uk/1369569/1/Thesis-GMASSET-UCL-2012-FINAL.pdf*
11. 'A framework for implementing the set of recommendations on the marketing of foods and non-alcoholic beverages to children', *http://www.who.int/dietphysicalactivity/Marketing Framework2012.pdf*

3. Guidelines for regulating junk food targeted at children

1. 'Nutrient Profiling Technical Guidance', *https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/216094/dh_123492.pdf*
2. NIN 2011, *Dietary guidelines for Indians: A manual*; 'Nutrient requirements and recommended dietary allowances for Indians', a report of the expert group of the Indian Council of Medical Research; Based on inputs from eminent professionals in the fields of nutrition, paediatrics and public health

Annexures

1. Protecting Children from Junk Food Advertising (Broadcasting and Telecommunications Amendment) Bill 2011: *http://www.aph.gov.au/Parliamentary_Business/Bills_Legislation/Bills_Search_Results/Result?bId=s827*; Taking Preventative Action – A Response to Australia: The Healthiest Country by 2020 – The Report of the National Preventative Health Taskforce, Australian Government, 46 (Commonwealth of Australia 2010): *http://www.preventativehealth.org.au/internet/preventativehealth/publishing.nsf/Content/6B7B17659424FBE5CA25772000095458/$File/tpa.pdf*
2. Healthy food for healthy schools protocol, Halton District School Board: *http://www.hdsb.ca/ParentInfo/Ontario%20Nutrition%20Standards%20for%20Schools/Healthy%20Food%20for%20Healthy%20Schools%20Protocol%202011.pdf*; School food and beverage policy, October 4, 2010: *http://www.edu.gov.on.ca/extra/eng/ppm/ppm150.pdf*
3. Broadcast Code for Advertising to Children – The Code: *http://www.adstandards.com/en/ clearance/childrens/broadcastCodeForAdvertisingToChildren-TheCode.aspx#social*
4. Consumer Protection Act, Quebec: *http://www2.publicationsduquebec.gouv.qc.ca/dynamicSearch/telecharge.php?type=2&file=/P_40_1/P40_1_A.html*
5. UNSCEO, Restriction on Sale of Unhealthy foods in School Cafeterias are Established in Costa Rica: *http://portal.unesco.org/geography/en/ev.php-URL_ID=15181&URL_DO=DO_ TOPIC&URL_SECTION=201.html*
6. Food taxation in Europe: Evolution of the legislation, European Public Health Alliance: *http://www.epha.org/spip.php?article4814*
7. Dr Rhonda Jolly, Marketing Obesity? Junk Food, Advertising and Kids, 12th January 2011: *http://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/rp/rp1011/11rp09#_Toc282609530*; *http://www.epha.org/spip.php?article2554*
8. Food taxation in Europe: Evolution of the legislation, European Public Health Alliance: *http://www.epha.org/spip.php?article4814;* Perkins, E. C.,

France's New Sugary Drink Tax Take Effect Jan.1, Jan 01 2012: *Digital Journal: http://digitaljournal.com/article/317037*

9. Food taxation in Europe: Evolution of the legislation, European Public Health Alliance: *http://www.epha.org/spip.php?article4814;* EU Food Law, Hungary hikes taxes, adds beer, alcopops and jam, 13th Dec. 2011, *http://www.eurofoodlaw.com/policy/tax/hungary-hikes-taxes-adds-beer-alcopops-and-jam--1.htm*; EU Food Law, Hungary adopts chip Tax, 15th July 2011: *http://www.eurofoodlaw.com/policy/tax/hungary-adopts-chip-tax-18592.htm*
10. Food taxation in Europe: Evolution of the legislation, European Public Health Alliance: *http://www.epha.org/spip.php?article4814*
11. Promotion of healthy food in Latvia's schools, European Public Health Alliance: *http://www.epha.org/spip.php?article2350*; Ban on junk-food sales in Latvian schools, 09 November 2006: *http://www.euractiv.com/health/ban-junk-food-sales-latvian-scho-news-217407*
12. Marketing of foods high in fat, salt and sugar to children: update 2012–2013 (WHO Regional Office for Europe, Copenhagen, Denmark : 2013): *http://www.euro.who.int/__data/assets/pdf_file/0019/191125/e96859.pdf*
13. Marketing of foods high in fat, salt and sugar to children: update 2012–2013 (WHO Regional Office for Europe, Copenhagen, Denmark: 2013): *http://www.euro.who.int/__data/assets/pdf_file/0019/191125/e96859.pdf*
14. Mexico City: putting the brakes on Junk Foods in Schools: *http://peavyblack.com/2012/08/20/mexico-city-putting-the-brakes-on-junk-foods-in-schools/*
15. Elinor Comlay, Coke Femsa shares fall as Mexico passes food, drink taxes, Thu Oct 31, 2013: *http://www.reuters.com/article/2013/10/31/us-mexico-sodatax-idUSBRE99U16120131031*
16. Children's Code For Advertising Food 2010, Advertising Standards Authority: *http://www.asa.co.nz/code_children_food.php*
17. Norway: Tightening of Restrictions on Unhealthy Food Ads Aimed at Youth, Library of Congress: *http://www.loc.gov/lawweb/servlet/lloc_news?disp3_l205403682_text* ; Alex Jhonston, Sorry Norway Food Companies, No More Greasy Burger Ads for Kids, Dec. 11 2012: *http://www.theepochtimes.com/n2/world/sorry-norway-food-companies-no-more-greasy-burger-ads-for-kids-323868.html*
18. Peruvian government promotes healthy food for children, says president, Lima May 16, 2013: *http://www.presidencia.gob.pe/peruvian-government-promotes-healthy-food-for-children-says-president*; Latin American countries crack down on junk food, *The Lancet*, Volume 382, Issue 9890, 385 - 386, 3 August 2013: *http://download.thelancet.com/pdfs/journals/lancet/PIIS0140673613616578.pdf*
19. Latin American countries crack down on junk food, *The Lancet*, Volume 382, Issue 9890, 385 - 386, 3 August 2013: *http://download.thelancet.com/pdfs/journals/lancet/PIIS0140673613616578.pdf*
20. 'Fat tax' on unhealthy food must raise prices by 20% to have effect, says study, *The Guardian*, Wednesday 16 May 2012: *http://www.theguardian.com/society/2012/may/16/fat-tax-unhealthy-*

food-effect ; Manuel Vigo, Peru could impose tax on junk food, Jan. 2 2012 *http://www.peruthisweek.com/news-1282-Peru-could-impose-tax-on-junk-food/*

21. Department of Education, Philippines: *http://deped.gov.ph/index.php/issuances/deped-orders/2007/document/dos200708pdf?limit=100&format=raw*
22. EU Food Law, Poland to ban junk foods in schools, Sept. 27 2013: *http://www.eurofoodlaw.com/country-reports/eu-member-states/poland/poland-to-ban-junk-foods-in-schools--1.htm* (need to register)
23. The Act of 23 August 2007 on combating unfair commercial practices, *Journal of Laws* No. 171 of 2007, item 1206: *https://www.google.co.in/url?sa=t&rct=j&q=&esrc=s&source= web&cd=1&cad=rja&ved=0CCoQFjAA&url=http%3A%2F%2Fwww.uokik.gov.pl%2Fdownload.php%3Fplik%3D7636&ei=WwegUvucMoebigf4yYCQDQ&usg=AFQjCNEyRxdALvn4tS5DJsSFbPygnc2XtQ&bvm=bv.57155469,d.aGc*
24. Marketing of foods high in fat, salt and sugar to children: update 2012–2013 (WHO Regional Office for Europe, Copenhagen, Denmark: 2013): *http://www.euro.who.int/__data/assets/pdf_file/0019/191125/e96859.pdf* ; Ministry of Public Health. Ordin Nr. 1563 din 12 eptembrie 2008 [Ministerial Order No.1563 of 12 September 2008]. Official Journal for Romania, 2008, 651: *http://str.calificativ.ro/news/preview/alimente_nerecomandate-1528.pdf*
25. South Korea restricts TV ads for junk, Jan. 19 2010: *http://www.telegraph.co.uk/expat/expatnews/7025149/South-Korea-restricts-TV-ads-for-junk.html; Schools Nationwide Ban Junk Foods, Jan 24 2009, http://timescampus.ebse.co.kr/kids_ebs.htm?NID=89&code=ebs_headline*
26. South Korea restricts TV ads for junk, Jan. 19 2010: *http://www.telegraph.co.uk/expat/expatnews/7025149/South-Korea-restricts-TV-ads-for-junk.html*
27. Evolution of the legislation in European countries, European Public Health Alliance: *http://www.epha.org/spip.php?article2554*; The Radio and TV Act (1996:844): *http://www.nonpubenfants.org/IMG/pdf/Loi_suedoise.pdf*
28. The Amendment to Act Governing Food Sanitation Imposes Comprehensively Stricter Penalties on Non-Compliant Businesses, Food & Drug Administration, Ministry of Health & Welfare: *http://www.fda.gov.tw/EN/newsContent.aspx?id=9917&chk=2f6ee658-7ee6-4361-a9e1-b53b4bf6fcbf* ; Draft amendment to strengthen food safety approved, Executive Yuan, Republic of China (Taiwan), Dec. 21 2013: *http://www.ey.gov.tw/en/News_Content2.aspx?n=1C6028CA080A27B3&s=3D6A0D7AC95A64E1* ; Taiwan fast food ads to be restricted, Jan 11 2013, *http://www.taiwantoday.tw/ct.asp?xItem=200720&ctNode=445*
29. Guide to Health and Nutritional Practices of School Canteens, Dubai Municipality, Dubai Health Authority: *http://www.dm.gov.ae/wps/wcm/connect/0f9efc3b-ac2d-4169-a426-170e55a02c06/School+canteens.pdf?MOD=AJPERES* ; DHA and Dubai Municipality issue healthy nutritional guidelines for all schools in Dubai, Government of Dubai, May 22nd 2011: *http://www.dha.gov.ae/En/media/news/pages/dhaanddubaimunicipality.aspx*

30. Smart Snacks in School – USDA's "All Foods Sold in Schools" US Department of Agriculture: *http://www.fns.usda.gov/cnd/governance/legislation/allfoods_flyer.pdf* ; Smart Snacks in School, Food And Nutrition Service, US Department of Agriculture: *http://www.fns.usda.gov/cnd/governance/legislation/allfoods.htm* ; School Meals, Food and Nutrition Service, US Department of Agriculture: *http://www.fns.usda.gov/cnd/menu/fmnv.htm*; School Meals Programmes - Competitive Foods Are Available in Many Schools; Actions Taken to Restrict Them Differ by State and Locality, United States General Accounting Office, April 2004: *http://www.gao.gov/assets/250/242132.pdf*
31. Food for Thought, Interagency Working Group on Food Marketing to Children: *http://ftc.gov/os/2011/04/110428foodmarketfactsheet.pdf;* Oct 29 2013, San Francisco joins sugary drinks fray with tax proposal, *http://www.reuters.com/article/2013/10/29/us-usa-soda-california-idUSBRE99S19F20131029* ; 'Big Soda' set to outspend foes over tax: *http://www.sfgate.com/bayarea/article/Big-Soda-set-to-outspend-foes-over-tax-5044936.php*
32. The Education (Nutritional Standards and Requirements for School Food) (England) Regulations 2007: *http://www.legislation.gov.uk/uksi/2007/2359/pdfs/uksi_20072359_en.pdf*
33. Healthy Eating in Schools - A Guide to Implementing the Nutritional Requirements for Food and Drink in Schools (Scotland) Regulations 2008, Healthier Scotland, Scottish Government: *http://www.scotland.gov.uk/Resource/Doc/238187/0065394.pdf* ; Health Promotion and Nutrition in School, The Scottish Govt: *http://www.scotland.gov.uk/Topics/Education/Schools/HLivi/foodnutrition;* The Scotsman, Junk Food Law is Passed, March 15th 2003: *http://www.scotsman.com/news/politics/top-stories/junk-food-law-is-passed-1-691025*
34. Television Advertisement of Food and Drink Products to children, OFCOM, Independent Regulator and Competition Authority for the UK Communications Industries: *http://stakeholders.ofcom.org.uk/consultations/foodads_new/statement/*
35. Healthy Eating in Learning Centres: *http://www.parlamento.gub.uy/indexDB/textosaprobados/ListarTexto.asp?Id=1305* ; Advertising Education Forum, Bill to ban junk food advertising in schools adopted by Senate, April 11th 2011, Uruguay: *http://www.aeforum.org/news/1365686024/Uruguay:Bill_to_ban_%E2%80%98junk_food%E2%80%99_advertising_in_schools_adopted_by_Senate*
36. Food.gov.uk: *http://www.food.gov.uk/multimedia/pdfs/techguidenutprofiling.pdf*
37. Health.gov.au: *https://www.health.gov.au/internet/main/publishing.nsf/Content/5FFB6A30ECEE9321CA257BF0001DAB17/$File/Canteen-Guidelines.PDF*

Centre for Science and Environment
41, Tughlakabad Institutional Area, New Delhi 110 062
Ph: 91-11-40616000 **Fax:** 91-11-2995 5879
Email: cse@cseindia.org **Website:** www.cseindia.org