

Optimizing the impact of health and related programmes / policies to address the issue of Childhood Obesity in India----A narrative review

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ABSTRACT

Non-communicable diseases are already acknowledged as a double burden, and now childhood obesity is putting extra strain on our health system. The current paper aimed to analyze the ongoing health and related programmes/policies in India, and we discussed the existing opportunities in the programmes to address the issue of childhood obesity in India. We searched the "MEDLINE," "PsycINFO," "Scopus," "Web of Science," and "Google Scholar" databases using the following keywords: ("overweight") and ("obesity"), ("childhood obesity"), ("nutritional programmes in India"), ("Health policies in India"), ("malnourished children in India") in combination with each other and in truncated form. All the relevant articles and policy documents (MOHFW, INDIA) available in the public domain were included to support the argument for this narrative review. We found that we have programme gaps like guidelines issues by Food Safety Standards Authority of India to tackle childhood obesity and it has not been strictly implemented due to multiple reasons. School health programme has an opportunity to address the issue of childhood obesity, but at the ground level the outcomes are not very promising. The National Nutrition Mission have only focussed on undernutrition and anemia problem, ignoring the overweight/childhood obesity. Primary care physicians are key players in the treatment of childhood obesity, yet rates of obesity management in the primary care setting are low. National Programme for prevention & Control of Cancer, Diabetes, Cardiovascular Diseases & stroke is dealing with health promotion and prevention, early diagnosis, and management of all ages, except children. Diet provided in Integrated Child Development Scheme is calculated based on calories, not by the quality which is a concern to us. The breastfeeding promotion programme named Mothers Absolute Affection programme has not been implemented with letter and spirit. Other than health programmes, we assume that Ministry of Urban Planning, Foreign Direct Investment policy, Advertisement Council of India and many more sector/policy/programme are indirectly responsible for the increasing burden of childhood obesity in India. Lack of awareness and wrong perception also responsible for the development of childhood obesity. We have multiple National Health Programmes and Policies to address the childhood malnutrition, but are focussing the undernutrition component only, ignoring overnutrition problem in the children, which is emerging as quadruple burden to our health system. Appropriate actions and inclusion of suggestions provided in this study for the improvement of the programmes at the practical level needs to be considered by the policy makers to halt the ever-rising trend of childhood obesity and primary care physicians should play a leadership role.

Keywords: Childhood obesity, malnutrition, policies, programmes, undernutrition

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Introduction

Non-communicable diseases are already acknowledged as a double burden, and now childhood obesity is putting extra strain on our health system. Previously, childhood obesity was perceived as a challenge for developed countries, but it is now escalating in the middle- and low-income countries. Generally, those living in urban areas have a greater risk than those in rural areas.^[1] As per definition- “Body mass index (BMI) is a measure used to determine childhood overweight and obesity. Overweight is defined as a BMI at or above the 85th percentile and below the 95th percentile for children and teens of the same age and sex. Obesity is defined as a BMI at or above the 95th percentile for children and teens of the same age and sex.”^[2]

The International Association for the Study of Obesity (IASO) the International Obesity Task Force (IOTF) revealed that worldwide, approximately 200 million school children are either overweight or obese.^[3] Although the prevalence of childhood obesity could be decreasing in some more developed areas of these countries, overall, in Asia and Africa, the problem is increasing. Among Asian countries, China has 15 million and India has 14 million children with such overweight problems.^[4] Certain categories are vulnerable to obesity, such as the children of migrants and indigenous populations.^[5]

In the NCD Risk Factor Collaboration (NCDRisC) study, 2,416 population-based studies were conducted, with “data of 31.5 million children and adolescents aged 5–19 years.” According to this study, “the mean BMI in 1975 was 17.2 and 16.8 kg/m² for girls and boys, respectively, which is high enough. It was the lowest in South-East Asia and East Africa, and highest in Polynesia, Micronesia, and English-speaking regions.”^[6]

In addition to this research, India has many malnutrition issues among the children, from being underweight to being overweight and obese. National Family Health Survey-4 (2015–2016) revealed that among children under 5 years old, 36% were underweight, 21% were wasting, and 38%, stunted. According to the following definition: “Weight for height being more than 2 SD above the median of the reference population, only 2% of Indian children were overweight.” Unfortunately, in this survey, children over 5 years were not included.^[7] The study suggests the prevalence of overweight/obesity among adolescent Indian children increased from 9.8% to 11.7% from 2006 to 2009.^[8] As per computation by Lobstein and Jackson-Leach, we expect the number of obese children in India to reach 17 million by the end of 2025.^[9] The, increasing prevalence of childhood obesity is a major problem for India. It is observed that the prevalence of overweight/obesity in children in the northern part of India-New Delhi has almost doubled the percentage from 16% in 2002 to 24% in 2006.^[10] In South India – Udupi, the prevalence of obese and overweight children was higher in urban school-age children (6.2--10.8%).^[11]

Factors responsible for childhood obesity

One of the causes of obesity is polygenic in inheritance. The inheritance of BMI is reported between 25 and 40%. Although multiple studies reported that genetics play <5% role in the development of childhood obesity for all causes.^[12]

Regarding the role of gender, the GDB Collaborators and the NCDRisC study Group found no difference among young people under 20 years old. In their longitudinal study on 8,544 children, Whitaker *et al.* revealed that the prevalence of obesity decreased with age, but then increased again after a certain age. This could be because of the endocrinological development of children, so it is essential to use growth charts for follow-up. The GDB Collaborators Group has also observed a similar pattern of the growth curve.^[13]

Other than genetics and gender, globalization is shaping the unhealthy eating behavior among Indian children very rapidly. In a study conducted by Gulati *et al.* revealed that children living in urban areas preferred not to consume homemade food, which they described as “old-fashioned.” It was found that adolescence and consumption of “junk food” have strong associations.^[14-16]

Lifestyle changes play a major role in the development of childhood obesity, it affects senior secondary schools in India, where children adopt a sedentary lifestyle, and eat junk food to overcome the stress of competitive examinations. The reward pathways of the brain also influence our habits. This perspective reveals the causes of addictive behavior, such as cigarette smoking, alcohol misuse, drug addiction, and consumption of high-energy food and/or drinks. Now it is a clearly known fact that Physical inactivity and psychosocial factors are responsible for the development of childhood obesity. In a study conducted by Pengpid and Peltzer found the effects of “loneliness, lack of close friends, anxiety and worrying, suicidal ideation, and bullying,” resulting in overweight/obese school-age children in Oceania.^[17]

Eating disorders could be a form of non-appropriate escape for psychiatric disorders. Binge eating disorder is a well-known example of this condition.^[18] Birth weight is an interesting indicator of future weight; low birth weight could be a sign of future obesity, whereas an excessive birth weight could indicate gestational diabetes.^[19]

In India, living in urban areas and the obesity of children have a strong association. The social determinants of health is an important factor for childhood obesity. The school environment is an important context for promoting healthy lifestyles for all children and their families. This opportunity could be important for improving the health of the community. Children’s living environment consists of buildings, parks, transportation, and public spaces, but also, the accessibility of these places has effect on the prevention of the childhood obesity.^[20] The outcomes of childhood obesity are multifaceted, and it is described in Table 1.

Table 1: Outcomes of obesity in the school children

Physical	Psychological	Social
Respiratory and sleep problems	Low self-esteem	Low participation in social activities
Insulin resistance	Increased depressive symptoms	Lack of social support due to less interaction with peers
High blood pressure	Unhealthy dietary practices	
Dyslipidemia		
Musculoskeletal problems		
Gall stones		
Fatty liver		

Need for this study- Childhood obesity cannot be assessed in the same way as obesity in adults, for example, BMI is not an appropriate tool to assess obesity in children. It is crucial to create a definition of obesity specifically for children. Only by this way, structured management plans can be developed for sustainable goals, such as the prevention of obesity in adulthood, which could result in metabolic disorders, cardiovascular complications, etc., The psychosocial impact is also particularly important for children's development. Prevention is an easier and more cost-effective solution than the treatment of obesity and its complications. Several innovative programs to overcome childhood obesity in different countries resulted in essential learning outcomes for healthcare workers, policymakers, and stakeholders. The WHO's Commission for Ending Childhood Obesity declared that this challenge needs, "a whole-government the approach in which policies across all sectors systematically take health into account, avoid harmful health impacts, and thus improve population health and health equity." In India, there are many programs related to health, which focus on overweight children, but unfortunately many more health programmes have missed the opportunity to address the issue of childhood obesity, for unknown reasons. Primary care physicians have been identified as key players in the treatment and prevention of obesity by several national groups, yet rates of obesity management in the primary care setting is low because of barriers at multiple levels. As per the study, "Barriers to conducting obesity management fell into four categories: provider-level/individual (e.g., lack of knowledge and confidence), practice-based/systems-level (e.g., lack of time and resources), parent-level (e.g., poor motivation and follow-up), and environmental (e.g., lack of access to resources)." Hence, we have conducted this study to find out the existing programme opportunities by which childhood obesity problem can be addressed effectively without putting the extra burden on our existing health system.

Methodology-The current paper aimed to analyze the ongoing health programmes/policies in India, and we will discuss what are the opportunities we must address the issue of childhood obesity in India. We have searched the "MEDLINE, PsycINFO, Scopus, Web of Science, and Google Scholar" databases using the following keywords: ("overweight") and ("obesity"), ("childhood obesity"), ("nutritional programmes in India"), ("Health policies in India"), ("malnourished children in India") in combination with each other and in truncated form. All the

relevant articles and policy documents (MOHFW, INDIA) available in the public domain from 2005 were included to support the argument for this narrative review.

Results

Details of our search results are given in the Table 2.

The Indian constitution has a provision in part-IV (Article-45,47) which includes the development of strategies and interventions for nutritional programmes in the five-year plan. Re-enforcing this provision of the constitution, the Government has started many programmes and issues various guidelines based on nutrition and aspects governing it. Table 2 describes some of the nutritional programmes and schemes which have been initiated by the Government of India with a vision to provide and improve comprehensive primary health services and thus overall improving the health status of the community at large. The school health programme has set a benchmark in screening those who are undernourished but those who have problems with weight and over nutrition, they have been totally ignored in the programmes.

Programmes like Reproductive, Maternal, New-born, Child and Adolescent Health (RMNCH + A) is no doubt the best among those dealing with pregnant women, new-born children, and adolescents, but it lacks emphasis on those women who deliver big babies/large babies or Intrauterine growth retardation (IUGR) babies who are prone to become obese in the later life.^[22]

In India, there is a cultural norm of considering every child feeble, and every mother eager to let them eat in bulk for rapid growth and strength. Such IUGR babies are being fed more because of their weak structure. In the long run, such children develop obesity which usually gets unnoticed.

Furthermore, Programmes like Rashtriya Bal Swasthya Karyakram (RBSK) usually detect 4Ds which include 31 health conditions among children, except BIG BABIES/IUGR BABIES.^[23]

Safe and Nutritious food Initiative to stem Obesity at the workplace and Guidelines for Eat right India Initiative to reduce obesity and the burden of Non-communicable diseases by Food Safety and Standards Authority of India (FSSAI) is

Table 2: Existing National Health programme provisions, its gaps, and opportunities

Name of the programmes/policies	Existing Provisions	What can be done/incorporated/making compulsory in the programmes to prevent childhood obesity?
School Health Programme ^[21]	<p>“One important component of SHP is Screening of general health, assessment of Anaemia/Nutritional status, visual acuity, hearing problems, dental check-up, common skin conditions, heart defects, physical disabilities, learning disorders, behaviour problems.”</p> <p>“Health Promoting Schools which includes 60 minutes/day of physical activity. Regular practice of Yoga, Physical education, health education”</p>	<p>Screening of the school children for their general health assessment should be made compulsory and a register can be maintained for developing a surveillance system for the future. Here, special focus on childhood obesity can be impressed upon.</p> <p>The schools can be converged with the Health and wellness Centres of their respective areas for activities related to regular practise of Yoga, physical education and health education.</p>
RMNCH + A Programme ^[22]	<p>Continuum of care across life cycle and different levels of health system in RMNCHA are described as under:-</p> <p>“Facility-based care of childhood illnesses (IMNCI)”</p> <p>“Care of children with severe acute malnutrition (NRC)”</p> <p>“Immunisation”</p> <p>“Peri-conception Folic acid supplementation”</p> <p>“Weekly IFA supplementation”</p> <p>“Micro-nutrient supplementation”</p> <p>“Counselling and preparation for new-born care, breast feeding, birth preparedness”</p>	<p>Emphasis should be given to pregnant women who delivers Big babies/IUGR babies.</p> <p>Follow-up can be incorporated for such Big babies and IUGR babies as they have a chance to become obese in the future.</p>
RBSK Programme ^[23]	<p>“RBSK is an important initiative aiming at early identification and early intervention for children from birth to 18 years to cover 4 ‘D’s viz. Defects at birth, Deficiencies, Diseases, Development delays including disability.”</p> <p>In deficiencies, following diseases are mentioned “Anaemia especially severe anaemia, Vitamin A deficiency, vitamin D deficiency, Severe Acute Malnutrition”</p>	<p>Among the 31 health conditions included in the RBSK programme, the management of Overweight babies/BIG BABIES can be incorporated within the programme and such babies can be followed up by RBSK team as they do for other 31 health conditions.</p>
FSSAI ^[24]	<p>Safe and Nutritious food Initiative to stem Obesity</p> <p>Guidelines for Eat right India Initiative to reduce obesity and burden of Non-communicable diseases.</p>	<p>The initiatives and guidelines released by FSSAI are mere documents which have not been bought into practise. Such guidelines must be incorporated with the National Nutritional Policy and strictly implemented within the schools and office premises.</p>
NPCDCS ^[25]	<p>Main 3 objectives of the programme include “Health promotion through behaviour change with involvement of community, civil society, community-based organizations, media etc.” “Screening at all levels in the health care delivery system from sub-centre and above for early detection of diseases covered under the program including management and follow up.” and “To build capacity at various levels of health care for prevention, early diagnosis, treatment, rehabilitation, IEC/BCC, operational research and rehabilitation.”</p>	<p>As the programme effectively engages adolescents and other adults’ members of the community and considers preventive measures for NCD control, there is a wide scope to include the child age group within the domain of the programme and include diseases like childhood obesity which will definitely bring about the desired behavioural and dietary changes right from the childhood among them.</p>
ICDS ^[26]	<p>“The programme envisages the Improvement in the health and nutritional status of children 0-6 years and pregnant and lactating mothers.” Key interventions include “Guidance to Parents through Home visits”, “Early screening and referral”, “Monthly monitoring & promotion of child growth & Developmental milestones.”</p> <p>“Enhancement of the maternal education and capacity to look after her own health and nutrition and that of her family.”</p>	<p>The ICDS programme provides nutritional supplements to the beneficiaries and the quantity of the supplements is calculated based on the caloric value of the food. It would be a better determinant to include the quality of the food as one of the criteria along with the caloric value of the food to be regarded as a balanced diet. Furthermore, Lack of awareness and trainings among the health care workers on measuring children for overweight and obese as well as to address those with high growth velocity should be included in the programme.</p>
Mothers Absolute Affection (MAA) Programme ^[27]	<p>Main objectives of the programme are to “Build an enabling environment for breastfeeding through awareness generation activities, targeting pregnant and lactating mothers, family members and society in order to promote optimal breastfeeding practices.”</p>	<p>These guidelines have been bought into existence but are not being followed by many. These should be practised all over the nation with strict dedication and empowerment.</p>
National Nutrition Mission ^[28]	<p>The targets of this programme are “to reduce the level of stunting, under-nutrition, anaemia and low birth weight babies.”</p>	<p>Overnutrition and overweight/obesity among the under five children component is missing. It can be added.</p>

well-documented strategies to reduce the burden of obesity within the community but such guidelines are mere documents and have not been taken seriously.^[24]

National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke (NPCDCS), one of the flag bearer programmes for the reduction of the burden

of Non-communicable diseases (NCDs) is dealing with health promotion and prevention, early diagnosis and management, and integration with the primary health care system through NCD cells at different levels for optimal operational synergies. It includes all age groups except the children.^[25]

Another torchbearer service, Integrated Child Development Services (ICDS) has brought about improvement in the health and nutritional status of children 0–6 years and pregnant and lactating mothers. But the diet provided to the beneficiaries is calculated based on calories, not by the quality which is a concern to us.^[26]

Capacity building and lack of awareness among the workers is also an issue. Mother's Absolute Affection (MAA) Programme was started with a hope to reduce the infant mortality rate and improve the childhood nutritional status.^[27] This programme has been initiated with hopes that the health care system will rely on this, but the truth is the programme has not been implemented with letter and spirit. Other than programmes till date we do not have any dedicated surveillance mechanism to track overweight children right from the beginning. Low awareness among the health care workers, teachers, and wrong perception among the parents (e.g., Fat baby is healthy) are also responsible for this hidden epidemic of obesity among the children.^[20]

Discussion

Childhood obesity is an emerging public health problem (a hidden epidemic) in India. It eventually predisposes children to future morbidities including type 2 diabetes, polycystic ovarian diseases (in a female child), metabolic syndrome, cardiovascular diseases, and cerebrovascular diseases. From the analysis of various documents and research papers, it is quite evident from the results of our review that multiple factors are associated with childhood obesity, especially in India.^[29]

Childhood obesity has gained momentum among researchers since few decades and it is now considered as a silent epidemic but strangely awareness about childhood obesity and its associated outcome is still suboptimal among the community which may be because of multiple reasons.^[29] Firstly, we postulate that there is a sense of confusion in defining a definite terminology for this condition and the confusion lies in the perception regarding childhood obesity among the healthcare workers/policy makers and community. We assume that health workers/policymakers envisage malnourished children and undernourished children with the same lens, because in most of the child health/nutrition related programmes in India, the greater inclination is no doubt given towards eliminating malnutrition considering the undernourished children only and nothing about overweight and obese children which is technically illogical.

As poverty is one of the pressing issues in India like other poor countries, from the last decades we were working together to improve the status of undernourished children, during that we completely forgot the silent epidemiological transition, the

changing nutrition patterns among the children.^[29] The policy makers focused on undernutrition and now we are facing double face of malnutrition, under and over nutrition both, which need to be addressed simultaneously through multipronged approach.

There are cultural factors also involved in this etiology of childhood obesity, this is because, it is observed that in India every mother thinks that “FAT BABY is healthier one,” and it is evident from paediatric OPDs/AWW as the mothers often complaints of their children not gaining proper weight and often asks for multivitamins prescription to the doctors/health workers, but in reality the baby is healthy. So, it is essential to raise awareness among the mothers in the community whom to consider healthy and when to seek help from the health care professionals.

Furthermore, effective disease surveillance plays an important role in preventing/controlling any disease. Unfortunately, the non-existent of regular surveillance mechanism for childhood obesity is another hurdle to prevent this in India. Till date only WHO-ICMR NCD risk factor surveillance study and the IDSP (2007–2008) has been conducted. Although there are numerous interventional studies/surveys which had been conducted at different regions of India, but it is not coherent and comprehensive one, for this reason it is very difficult to figure out the actual burden of childhood obesity in our community.^[29] In our opinion, to prevent this problem, we need a dedicated surveillance mechanism like Global Adult Tobacco Survey (GATS) at the central level which will monitor the surveillance mechanism at all levels and suggest measures for effective prevention and control. Presently the existing surveys like NHFS and DLHS only include adult data for obesity as BMI. We think that non-inclusion of children health (especially, BMI) data during surveys like NHFS, DLHS is a missed opportunity for us. We assume that besides creating regular monitoring and surveillance mechanism, inclusion of child health data (BMI) in NHFS and DLHS may be immensely helpful to the policy makers and programme managers in future for planning anti-obesity (childhood) programmes/policies/initiatives.

Besides the lack of dedicated surveillance mechanism, we have wrong perception about childhood obesity. It is evident from the literature that we have a false impression in our mind that childhood obesity occurs due to factors like binge eating and physical inactivity, but this is partially true, in reality childhood obesity is multifactorial and we need life cycle approach (from the womb) for it.

Environmental, socioeconomic, and societal changes over the past three decades, with the availability of convenient, high-calorie foods together with the advent of a sedentary lifestyle, can partly explain the rising rates of obesity in children.

It is evident from the literature that genetic predisposition, IUGR baby, BIG BABY of a diabetic mother, maternal health, environmental factor, social factor, cultural factor are also responsible for childhood obesity. Till date, due to our myopic

vision we have not focussed on the above-mentioned factors with practical considerations. Besides this, we have multiple health programmes and we have a strong network of AWW centres. Currently, a total of 13.77 lakh Anganwadi centres are operational in the country with a strength of 12.8 lakh workers and 11.6 lakh helpers, as per the official data, 23,673 number of PHCs and 1,522,346 schools (level-wise) are functioning all over the India,^[30] where we can effectively implement the anti-obesity programme to tackle childhood obesity.

If we look very closely to our existing health programmes and policies, we will find that we have a wide range of opportunities to address this problem. One problem is we are still silent on this issue. The question is Why?

As an example, we have a vibrant school health programme in India where there is a provision of screening for the undernourished as well as obese/overweight children but because of high workload, in most of the government schools the screening components of obese/overweight children is often missed. Additionally, school health guidelines mention the mandatory 60 min physical activity time for the children per day, the inclusion of yoga within the existing curriculum, but practically it is observed that the implementation of school health guidelines are often suboptimal this is due to multiple reasons. Here, the use of Health and wellness centres can be put into use and convergent programme with school health programmes can be started with.

Additionally, in RMNCH + A programme, no special emphasis is given to the pregnant mother who delivers BIG BABIES/ IUGR BABIES, for this reason, particular focus and follow-up can be incorporated who have BIG BABIES and IUGR babies as they have a chance to become obese in the future.

Similarly, under the RBSK programme which deals with 4Ds (Disability, delays, disorders, and deficiencies), where the overweight baby component is missing among 31 health conditions. Such programmes have provisions to include the 5th 'D,' that is, Detection of Childhood Obesity which will eventually help in early screening and diagnosis of those children with the condition.

In the Primary Health Centres, primary care physicians are key players in the treatment of childhood obesity, yet rates of obesity management in the primary care setting are low because of multiple bottlenecks. We must work toward removing the bottlenecks and encourage the primary care physicians to play a leadership role in tackling childhood obesity at the grassroots level.

Other than health programmes, FSSAI have introduced new guidelines and campaigns like "Eat right" and many more. FSSAI is executing activities at multiple levels to curb the junk food menace in the school premises/canteens, which is one of the main culprits for childhood obesity. As there is a little support from other sectors and due to low manpower (till date), we have not witnessed any tangible outcomes from FSSAI, (it is still

patchy few schools are adhering and few are not). Additionally, this one is also a guideline, not a policy, so many schools are reluctant to adhere to this.

NPCDCS programme was launched in India to prevent NCDs. One of the programme objectives is to - "promote behavior change in adolescents to prevent NCDs such as hypertension, stroke, cardiovascular diseases and diabetes." But in this programme also the childhood obesity component is missing. This can be considered as programme gap and we may take the initiative to fill this gap by proper advocacy for childhood obesity.

In ICDS programme, for supplementary nutrition, only caloric values of the foods are considered not the food quality which is an important determinant of a balanced diet (indirect cause of childhood obesity), lack of which it can lead to childhood obesity. Another practical problem is lack of awareness and training among AWW workers for overweight and obese children as well as to address the issues of any child who is having high growth velocity. These ground level practical problems must be addressed through proper training and retraining.

Other than ICDS programme, National Nutrition Mission (Poshan Aviyan) has launched recently which focussed on undernutrition and anaemia components for the children, without mentioning the overnutrition component anywhere. As per our opinion this is the right time to incorporate the over-nutrition component in this programme.

Lack of breast feeding/suboptimal breast feeding to the child is also considered as a root cause of childhood obesity. Recently, Mothers Absolute Affection (MAA) programme is launched through health ministry. It is an attempt to bring undiluted focus on the promotion of breastfeeding and provision of counselling services for supporting breastfeeding through health systems. The programme has been named "MAA" to signify the support a lactating mother requires from family members and at health facilities to breastfeed successfully. Unfortunately, there is a problem of programme implementation and due to its non-obligatory nature (it is just a guideline) many sectors are still not adhering to this guideline.

Physical factors like stress is also considered as a precipitating factor in childhood obesity. Bullying by the peers to an obese child is common as result the child resorts for home isolation, during home isolation he/she intakes of more junk foods and spent more screen time and he/she become more obese; thus it runs as a vicious cycle etc., We need to break this vicious cycle by proper counselling and dietary advice in the schools/AWW of in the clinics where there are provisions for counselling.

Other than health programmes, the Advertising Standards Council of India (ASCI) should come out with more stringent policies to ban misleading advertisements and on junk food advertisements which adversely affects child health and gives rise the pandemic of childhood obesity. There should be ban

on the advertisement of junk food items on channels specific for children.

Change in tax rules may be considered to curb junk foods, as it is already showed good dividends in foreign countries.^[15] To our knowledge, no additional taxes are imposed on junk foods in India, that's why junk foods are cheap and profitable. Imposing a higher tax on junk foods and giving a discount to the healthy foods to the shop owners, can be an alternative to prevent this epidemic. Unregulated Foreign Direct Investment of fast-food companies are also creating a problem for us. There could be a limit for that, limitation for investment for junk foods to a certain region may be a solution to this problem. Multisectoral involvement like Ministry of Urban development can impose strict policies to the town planners for making playground compulsory in each society. Lastly, we assume that if NPCDCS, Scholl health programme and FSSAI can work in a tightly knitted fashion then we can manage childhood obesity effectively and efficiently.

Conclusions

1. We have multiple guidelines for intake of a balanced diet, but in most of the cases we are not following it
2. Lack of awareness is aggravating the problem of childhood obesity
3. No overarching polices are present to tackle this hidden epidemic
4. Pediatric providers in the primary health care are key players in the treatment of childhood obesity, yet rates of obesity management in the primary care setting are low.

Recommendations

1. We may convert a few programmes like FSSAI, School Health programme guidelines into policies for better implementation
2. We may club three programmes into one- School health + NPCDCS + FSSAI which can prevent the problem of childhood obesity in India
3. Increased awareness generation for the health workers + parents + teachers are the need of the hour and it can be done through IEC activities
4. Establishment of a regular monitoring and surveillance mechanism (settings based) is another promising option.
5. We can include childhood obesity component in some existing programmes (RNMCH + A, RBSK etc.) and we must work towards removing the bottlenecks and encourage the primary care physicians to play a leadership role to tackle childhood obesity at the grass-root level.

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Conflicts of interest

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