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CHILDHOOD OBESITY in India

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In India, obesity is emerging as an important health problem, paradoxically co-existing with significant under nutrition prevailing in different sections of the population, says Dr. Jagmeet Madan, Principal and Professor, Department of Food and Nutrition, SNDT University. It is such a profound statement. While the percentage of overweight children in advanced countries like the United States is growing at an alarming rate, with 1 out of 3 kids now considered overweight or obese, India is fast catching up. This country or for that matter any country can ill afford to neglect this which is becoming a pandemic. What was once considered a medical or a clinical problem is now becoming a public health problem due to the rising prevalence and its many adverse health effects.

Various reasons can be attributed for causing this public health problem but some of the main factors are a) Dietary factors like calorie dense foods, b) Sedentary lifestyle without outdoor exercises, c) Genetics and many environmental factors, d) Home environment where improper eating habits are practiced due to poor nutritional knowledge and e) Developmental factors where prolonged breast feeding, that can inversely influence the risk of causing obesity later on, is neglected. In some rare cases medical and psychological illnesses can also lead to over-weight or obesity.

The problem which looks so overpowering can be managed by simple ways, as suggested by the author of the lead article by promoting healthy eating, balanced intake all macro and micro nutrients, and most importantly inculcating regular physical activity. It is a conscious effort that elders have to put right from the day child bearing by the expectant mother starts and day one of child rearing begins after delivery.

Childhood Obesity in India

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Obesity has become a pandemic, and is recognised as a public health problem (WHO 2005,2010). WHO estimates that there are 1 billion adults who are over weight (BMI > 25) and 300 million who are obese. The overall figure is expected to rise to 1.5 billion.

The latest IOTF estimates (IASO, 2006) indicate a major rise in childhood obesity by 2010 across the continent. Globally, it is estimated that approximately 10 per cent of all children and adolescents are overweight or obese (WHO,2005).

In India, obesity is emerging as an important health problem, paradoxically, co-existing with significant undernutrition prevailing in different sections of the population. Ramachandran, et al (2002). studied children from six schools in Chennai, two each from high, middle and lower income groups. The prevalence of overweight (including obese) adolescents ranged from 22 per cent in better off schools to 4.5 per cent in lower income group schools. In a Delhi school with tuition fees more than ₹ 2,500 per month, the prevalence of overweight was 31 per cent, of which 7.5 per cent were frankly obese (Umesh Kapil et al,2002). Prevalence of overweight and obesity among the affluent adolescent school children of Amritsar, Punjab was 9.91 per cent in boys and 11.99 per cent in girls and 4.95 per cent boys and 6.31 per cent girls respectively. A study conducted (Shefali Pandey; Rama Vaidya, 2006) on school children from an affluent class of society in Mumbai city shows a prevalence of 15.3 per cent of obesity (14.2 per cent in 1075 girls and 16.1 per cent in 1346 boys). A study carried out by Madan (2007) on schoolgoing children of Mumbai city from higher socio-economic strata revealed a prevalence of 30.9 per cent as overweight and 16 per cent obese. Recent data by Anoop Misra et al (2009) comprisisng 38,296 children aged 8-18 yrs from schools located in five cities of India reveals a prevalence of 14.5 per cent and 4.8 per cent by CDC cut offs. The prevalence was higher (21.1 per cent and 12.3 per cent respectively) in children aged 14-18yrs when analyzed by age and gender specific cut offs for Asian Indians. On extrapolating this data to urban population, currently, more than 15 million children would be overweight and 4 million abdominally obese in India.

These figures are indeed alarming and give us a strong message of 'Nutrition Transition' in present times, which calls for a concerted effort on putting brakes to this growing epidemic of obesity cutting across all age groups.

Dietary factors and physical activity strongly influence the energy balance and therefore are the major modifiable elements influencing weight gain. There is a strong association of body weight with insulin resistance; higher BMI is associated with hyperinsulinaemia and insulin resistance (Ramachandran,2004). This in turn has shown positive correlations with visceral and subcutaneous fat in Indian population. Overweight and obese children are at a raised risk of comorbidities including Type 2 diabetes, fatty liver disease, and endocrinal and orthopaedic disorders. Overweight children enter adulthood with a raised risk of adult obesity of up to 17 fold (after adjusting parental obesity) and adult obesity in turn carries an increased likelihood of metabolic and cardiovascular diseases, certain cancers and a range of other disorders including psychiatric problems .

COMPARISON OF PREVALENCE OF OVERWEIGHT AND OBESITY IN CHILDREN AND ADOLESCENT FROM INDIAN STUDIES

AUTHOR	YEAR	AGE GROUP (YRS)	NUMBER OF SUBJECTS	PREVALENCE (%) OVERWEIGHT	PREVALENCE (%) OBESITY
Mohan B	2004	11-17	2467	11.6	2.6
Khadilkar Y	2004	10-15	1228	19.9	5.7
Chatwal J	2004	9-15	2008	14.2	11.1
Subramanayam V	2003	10-15	707	10.0	6.0
Chatterji P	2002	4-18	5000	29.0	6.0
Kapil U	2002	10-16	870	24.7	7.4
Ramachandran A	2002	13-18	4700	16.8	3.1
Pandey & Vaidya	2001	3-17	2439	15.1	15.3
*Madan	2008	8-16	676	30.9	16.0
*Misra et al	2009	8-18	38,296	14.5	4.8

*THE CUT OFF'S USED FOR DEFINING OVERWEIGHT AND OBESITY IN CHILDREN ARE CDC CHARTS OF BMI FOR CHILDREN WITH > 85TH PERCENTILE AS OVERWEIGHT AND >95TH PERCENTILE AS OBESE

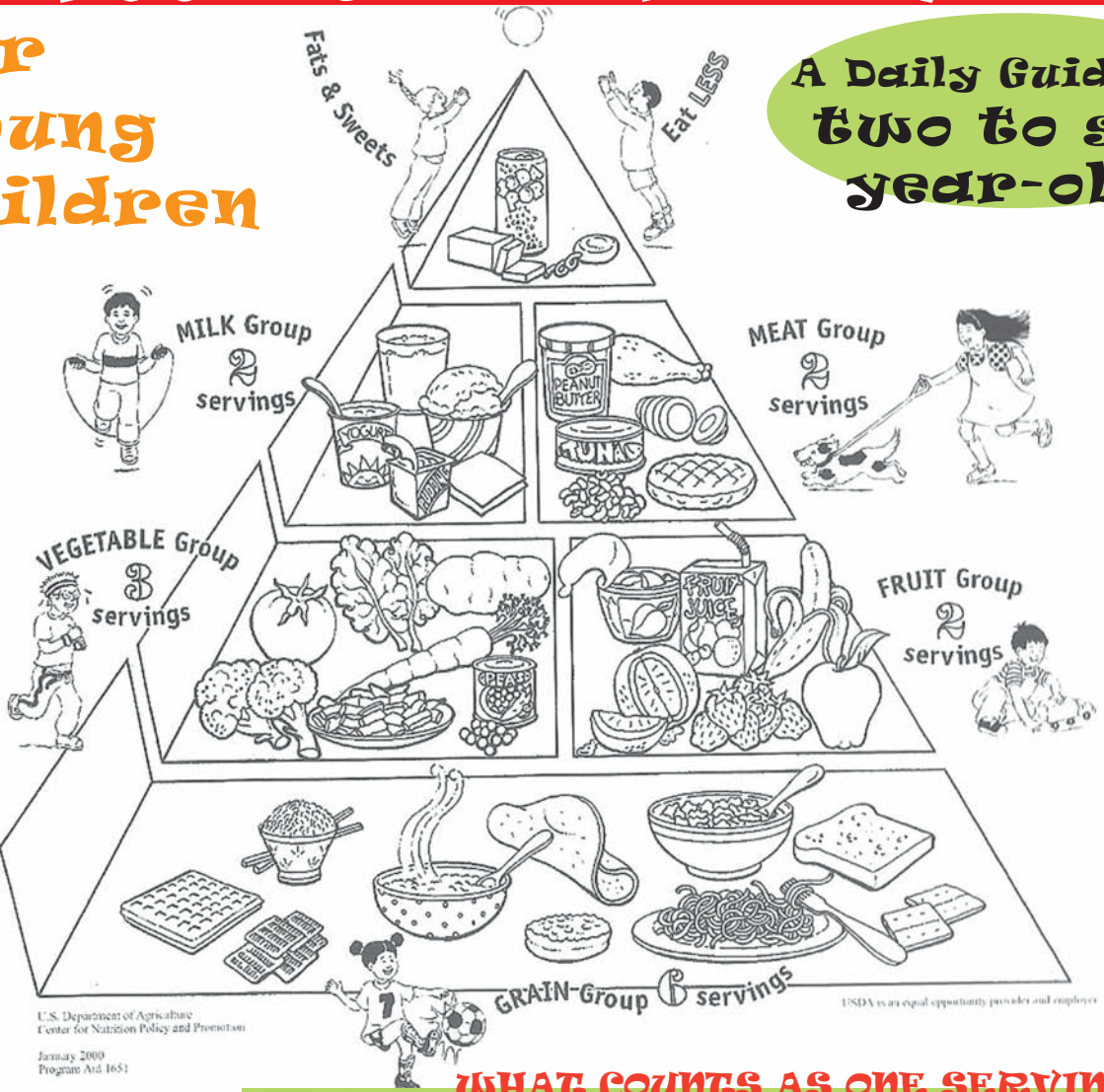
The etiological factors include genetic factors, dietary nutrition transition and decreased physical activity due to TV viewing, computer working and the trend of sedentary ways of recreating. There is a lot of research to show that parental BMI has a direct bearing on the children's BMI. It has not only genetic implications but also environmental factors which govern the family food habits. Recent studies suggests that it's the caloric intake coupled with inferior quality of food choices which is predominated with sugary drinks, chips, wafers, refined sugar and hydrogenated fats based bakery products which needs to be targeted as a priority. The quality of intake has a direct bearing on the body fat percentage.

Primary prevention of obesity is essentially the promotion of healthy eating and physical activity. Improving access to high nutritional quality foods and enhancing control by adolescents over their food resources, should become a major

FOOD GUIDE PYRAMID

For Young Children

A Daily Guide for two to six-year-olds



FOOD IS FUN and learning about food is fun, too. Eating foods from the Food Guide Pyramid and being physically active will help you grow healthy and strong.

WHAT COUNTS AS ONE SERVING?

GRAIN GROUP
1slice of bread
1/2 cup of cooked rice or pasta
1/2 cup of cooked cereal
1 ounce of ready-to-eat cereal

FRUIT GROUP
1 piece of fruit or melon wedge
3/4 cup of juice
1/2 cup of canned fruit
1/4 cup of dried fruit

MEAT GROUP
2 to 3 ounces of cooked lean meat, poultry or fish
1/2 cup of cooked dry beans or egg counts as 1 ounce of lean meat, 2 tablespoons of peanut butter count as 1 ounce of meat

VEGETABLE GROUP
1/2 cup of chopped raw or cooked vegetables
1 cup of raw leafy vegetables

MILD GROUP
1 cup of milk or yougurt
2 ounces of cheese

FATS AND SWEETS
Limit calories from these

Four to six-year-olds can eat these serving sizes. Offer two to three-year-olds less, except for milk
Two to six–year-old children need a total of 2 servings from the milk group each day.

EAT a variety of FOODS and ENJOY!

component of a supportive environment.

Ref: Tips for using Food Guide Pyramid for young children 2 to 6 yrs old, USDA, Centre for Nutrition Policy and Promotion, Washington, DC, 1999

THE FOOD GUIDE PYRAMID FOR CHILDREN IN INDIAN SCENARIO NEEDS TO EMPHASIZE

1 Increased intake of vegetables and fruits (Food groups with shorter names and definite number of servings).

2 Limited intake of cereals with whole grain based choices and support it with nuts and oilseeds.

3 Good quality carbohydrates and proteins through incorporating pulses.

4 Emphasis on whole foods than nutrients with emphasis on portion size.

5 Limit intake of refined carbohydrates, poor quality fats, and salt rich snacks.

6 Should show the importance of physical activity pursuits.

THE HEALTHFUL EATING TIPS TO USE WITH YOUNG CHILDREN INCLUDE

1 Be patient because young children are often afraid to try new foods so apply "try me" approach at intervals.

2 Be a planner; for breakfast and lunch offer foods from three or more of the five pyramid groups; for the main meal offer foods from four or more of the Five Food Pyramid; for snacks offer from two or more of the five pyramid. Space snacks well.

3 Be a healthful role model. Eat meals with children whenever possible and practice what you expect your child to do.

4 Be adventurous. Have a weekly 'family try a new food' night. Involve children in shopping and food preparation.

5 Be Creative. Get variety in options , texture, and colour.

6 Remember children have strong likes and dislikes so allow the child to choose from foods available at a meal but avoid forcing or bribing to eat. Include at least one food at each meal that you know your child will eat.

7 If your child refuses to eat vegetables and fruits, give vegetables in a disguised form, in soups, alter texture . Encourage consumption of a variety of fruits.

8 If your child eats too many sweets avoid using sweets as a bribe or reward. Limit purchase and preparation at home. Try using fruit as a dessert.

9 The American Academy of Pediatrics Committee on Nutition supports recommendations that children older than two years follow a diet with a maximum of 30 per cent of calories from fat and no more than 300 mg of cholesterol per day. Restricting fat intake during puberty does not compromise on the nutritional adequacy and growth of children.

10 Portion size is an important concept to emphasize in managing childhood obesity. Training children to start with small portion size and sensitizing them to respond to their hunger and not appetite is important. Further more, parents should not encourage "eating everything to clean the plate" rather start with small helping!

Schools are an important environment to reach adolescents. Schools provide a lot of opportunities to improve nutrition through curriculum content, practical work related to food ,through environmental changes aimed at offering healthier food products and providing infrastructure to improve physical activity and also through parent teacher interactions. Suggestions provided by the adolescents to help adolescents eat a more healthful diet included making healthful food taste and look better, making healthful food more available and convenient, limiting the availability of unhealthful options, teaching them good eating habits at an early age, and changing social norms to make it "cool" to eat healthfully. Introducing healthy food options in school and college canteens may go a long way in making the desired change in eating behaviour.

There are a series of school health initiatives in place in India including HRIDAY, CHETNA, MARG etc. Project Marg is one of the biggest School Health Initiative under the auspices of Diabetes Foundation of India and the World Diabetes Foundation, Denmark. It is operational in thirteen cities of India covering more than a lakh of children from private and

government schools. The focus of the programme is to sensitize the child, child's school environment that is teachers, and home environment that is parents so that it is a complete and focused approach towards prevention of obesity at an early age and the resulting complications. A recent study by Singhal, Misra et al (2010) cites, multicomponent model of nutrition and lifestyle education was successful in improving the nutrition related knowledge, eating habits, and lifestyle practices and resulted in beneficial changes in anthropometric and biochemical profiles of the Asian Indain adolescents. This model should be applied on a countrywide basis to prevent obesity and diabetes.

Thus in conclusion we have to address this expanding numbers of overweight and obese children on a war footing and this calls for a number of school and community based health initiatives for children. There is an urgent need for corporates, media, NGOs, schools, colleges, academia and doctors to join hands, and take this movement further aggressively so that we can prevent and achieve our goal before it is too late.

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Snippets

BY DR J. S. PAI

CHILDHOOD OBESITY: A rising health problem in India

A recent survey conducted among urban kids reveals that obesity has set in much before adolescence among children in India. The study conducted by Bangalore-based EduSports, a sports-management company that works closely with school children, revealed that nearly 23 per cent of the 4,098 children (aged between 5 and 14 years) surveyed across the country, possessed a high Body Mass Index (BMI).

The study, which measured aerobic capacity, anaerobic capacity, flexibility, muscle strength and body composition in the children surveyed, found that 25 per cent of the children above eight years of age and 19 per cent children in the age group of seven years and below were obese. While, 19 per cent children showed low BMI level, a whopping 42 per cent of the children surveyed did not possess ideal BMI ratios. The study was made part of the curriculum in twenty one schools across 15 cities in India. A total of 2,200 boys and 1,898 girls were surveyed.

This is not the only survey that reveals the increase in this serious health problem. Another one conducted by The All India Institute of Medical Sciences (AIIMS), New Delhi, among children in the age group of 14 and 18 found 17 per cent of children to be obese or overweight. A similar study by Delhi's Fortis Hospital found that 28 per cent of school kids in the city are obese, whereas a research in urban areas of southern India revealed 21 per cent boys and 18 per cent of girls between 13 and 18 years, to be obese. The studies have also shown how parents in India are unaware that their children are overweight or obese.

One of the reasons why obesity is growing at an alarming pace among children in India is the lack of physical activity among them. The space constraints across schools in Indian cities have children with no opportunity to participate in games and other physical activities. In Mumbai, for example, the neighbourhood park is a rare sight. Playgrounds and parks are becoming extinct, increasingly being replaced by shopping malls. Very often, and especially during weekends when footfalls are higher, these malls organize and host recreational activities for children such as drawing and painting, indoor gaming, cultural programmes, and other participatory events. But much of these activities are sedentary and cannot replace the benefits physical exercise would impart for a healthy growth and development of children.

Children of today are exposed to environments that allow familiarity to computers and video games much earlier in age as opposed to say, a decade ago. Located in Bhayander, Mumbai, Maxus mall spread over five lakh square feet has reserved 18,000 square feet for a dedicated gaming zone for children. The mall owners have gone on quote saying they are in the process of further expanding the gaming zone as the demand for this form of entertainment is increasing by the day.

Endocrinologist Dr Shehzad Topiwala, says in his blog, "Obesity in children is largely attributable to a sedentary lifestyle, which gets compounded by overeating." In the absence of an environment that fails to encourage exercise or healthy eating, children are becoming prey to obesity early on in life."

While chronic obesity is a complex condition, its root cause is consumption of calories in excess of what the body is able to use. An adequate level of physical activity can help utilize excess calories obtained through food and drink. An inactive or sedentary life style, on the other hand, leads to unhealthy weight gain.

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Dr Topiwala points out how parents too are responsible in overlooking this problem. "Parents naturally want their children to gain weight, as they grow. The result is that they tend to overlook, even welcome, some extra pounds that creep in. But such a situation carries the risk of imminent obesity and can become a serious problem," he says.

Endocrine and genetic problems are uncommonly responsible for childhood obesity; they are indicated if the child is short, in addition to obese. Also, you belong to a family of overweight people, your child is genetically predisposed to be overweight.

The genetic makeup of Indians is different from that of other ethnic groups. Indians are known to have a higher per

cent of fat for a given body mass index to height ratio, said Mumbai-based eminent endocrinologist Dr H B Chandalia.

Obesity in children is dangerous, reiterates Dr Topiwala. "Obese children are at much greater risk of growing into obese adults. This can make them prone to several, serious health problems such as diabetes, heart disease, eating disorders, high blood pressure, respiratory problems, liver problems, and sleep disorders. Moreover, they may experience fatigue, and emotional problems such as low self-esteem and lack of confidence. Behavioural issues and depression too are not uncommon in obese people," he adds.

Obesity is a growing global problem. The World Health Organization (WHO) has been active in its mission to curb the global problem of childhood obesity. In December, last year, WHO organised an event, in collaboration with the Ministry of Health and Sports, France to discuss population based prevention strategies for childhood obesity. This was in response to the increasing number of obese children (more than 22 million) across the globe. The event invited academics and government officials from WHO regions to discuss the pros and cons of population based initiatives to prevent childhood obesity, and make plans to scale up successful intervention and ensure sustainability of national policies to tackle obesity in children.

In India approximately 70 million people are considered obese. One of the many serious consequences of obesity is the increased risk of developing type 2 diabetes, which is itself a major health concern for India.

Parents in India need to be aware of the overall impact of obesity in the future health of their children, and accordingly make necessary changes in the environmental factors that are in their control – encourage exercise and take control of nutritional requirements, discourage and delay unhealthy eating of junk and processed foods.

FROM: BOLOHEALTH.COM AUG 30, 2010

CHILDHOOD OBESITY A RISK FOR PREMATURE DEATH

The researchers studied 4,857 children from the indigenous Indian population in the US, born between 1945 and 1984. All underwent detailed medical examinations, including measurement of body fat (BMI), cholesterol, blood pressure, and blood sugar. The children were then followed up for an average of 24 years of their continuing lives, during which time further parameters were monitored, as were any deaths in the group.

In this group, 559 individuals (11.5 per cent) died before the age of 55, 166 of them from natural causes. The most common natural causes of death were alcohol-related liver disease and cardiovascular disease. Among the four risk factors that were monitored in the study, childhood obesity turned out to be the strongest predictor of premature death from disease. The 1,214 most overweight children in the group (the upper quarter) had a mortality frequency that was more than twice as high (230 per cent) of that of the leanest quarter of those studied.

In a similar manner, high blood sugar was shown to elevate the frequency of death by 73 per cent, and high blood pressure in the childhood years raised the risk by 53 per cent. These two risk factors were almost entirely associated with the degree of obesity. On the other hand, the scientists found no measurable effects on mortality from high cholesterol values in childhood. All children in the group were diabetes free when the study commenced, but nearly 600 of them developed diabetes during the follow-up period. However, this fact could not explain the connection between childhood obesity and premature death.

This is the first study of its kind and is especially interesting since the group under study, as children as early as the 1940s, had an equally high level of obesity as many children today. The proportion of overweight children is on the rise all over the world, and the authors conclude that measures to increase physical activity, improve food habits, and keep families together should receive high priority during early childhood.
SCIENCE DAILY (FEB. 17, 2010)

GENETIC STUDIES REVEAL NEW CAUSES OF SEVERE OBESITY IN CHILDHOOD

Scientists in Cambridge have discovered that the loss of a key segment of DNA can lead to severe childhood obesity. This is the first study to show that this kind of genetic alteration can cause obesity. The results are published today in Nature. The study, led by Dr Sadaf Farooqi from the University of Cambridge and Dr Matt Hurles from the Wellcome Trust Sanger Institute, looked at 300 children with severe obesity. The team scanned each child's entire genome looking for types of mutation known as copy number variants (CNVs). CNVs are large chunks of DNA either duplicated or deleted from our genes. Scientists believe this type of mutation may play an important role in genetic diseases.

By looking for CNVs that were unique in children with severe obesity, compared with over 7,000 controls (apparently healthy volunteers from the Wellcome Trust Case Control Consortium 2), they found that certain parts of the genome were missing in some patients with severe obesity. According to Dr Farooqi: "We found that part of chromosome 16 can be deleted in some

families, and that people with this deletion have severe obesity from a young age. Our results suggest that one particular gene on chromosome 16, called SH2B1, plays a key role in regulating weight and also in handling blood sugar levels. People with deletions involving this gene had a strong drive to eat and gained weight very easily."

Dr Matt Hurles adds: "This is the first evidence that copy number variants have been linked to a metabolic condition such as obesity. They are already known to cause other disorders such as autism and learning difficulties."

The findings also have implications for diagnosing severe childhood obesity, which has on occasion been misattributed to abuse. Some of the children in the study had been formally placed on the Social Services 'at risk' register on the assumption that the parents were deliberately overfeeding their children and causing their severe obesity. They have now been removed from the register. "This study shows that severe obesity is a serious medical issue that deserves scientific investigation," says Dr Farooqi. "It adds to the growing weight of evidence that a wide range of genetic variants can produce a strong drive to eat. We hope that this will alter attitudes and practices amongst those with professional responsibility for the health and well-being of children." Obesity is increasing throughout the world and is now recognised as a major global public health concern. Although the increased prevalence of obesity over the past 30 years is undoubtedly driven by environmental factors, genetic factors play a major role in determining why some people are more likely to gain weight than others.

FROM: SANGER INSTITUTE PRESS 6TH DECEMBER 2009

NEW INTERVENTION PROGRAM PROMOTES HEALTHY DIETARY CHOICES DURING INFANCY

Many infants and toddlers consume too many nutrient-poor but calorie-rich foods, which can lead to overweight and obesity. Early childhood prevention programs can help protect children against obesity by fostering more healthful eating habits; a key mission of the Center for Childhood Obesity Research at Pennsylvania State University. In the current study, nurses went to the homes of first-time parents to teach them about timing and methods for the introduction of solids to their infants, how to improve their infant's liking and acceptance of new foods such as vegetables using repeated exposure, and how to identify infant hunger and fullness cues. Altogether, the program is designed to teach parents to feed their infants "responsively."

Mothers who received the one year intervention had infants who were more likely to accept vegetables and novel foods. Lead researcher Jennifer Savage from the Center for Childhood Obesity Research says, "These results provide the first evidence that teaching parents how, what, and when to feed their infants can promote healthful eating habits." The intervention also promoted improved growth patterns among infants. "Because early feeding decisions and practices play a critical role in the development of children's food preferences and intake, our intervention program focuses on teaching parents about how to respond sensitively and appropriately to infant hunger and fullness cues, allowing infants and toddlers a role in deciding how much to eat, while also providing information on how, what, and when to introduce solids to promote acceptance of new foods," says Savage. The success of the intervention has implications for long-term obesity prevention.

SCIENCE DAILY (JULY 13, 2010)

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DUAL BURDEN IN INDIA – UNDER NUTRITION AND OBESITY

Much before achieving successful control of under nutrition in the community, we are already facing the problem of increasing prevalence of obesity. The origin of both these problems is in childhood. Exclusive breast-feeding for first 4-6 months followed by weaning along with continuation of breast-feeding for at least a year is a good start to prevention of obesity in infancy. Next crucial age group is around school age where sedentary lifestyle coupled with faulty eating habits paves the way for future obesity. This is the age to inculcate ideal lifestyle. Once obesity sets in, it is often too late to reverse it. Therefore, every attempt must be made to prevent obesity and its far-reaching consequences. The present article in In Touch reiterates importance of this epidemic that is looming large in India. I hope readers spread this message across the community.