NSI MUMBAI CHAPTER

ISSUE 2
SEP 2025

# NEWSLETTER

## IN THIS ISSUE



## PEDIATRIC NUTRITION: NOURISHING FUTURES

Pediatric nutrition focuses on providing the right balance of nutrients to support the growth, development, and overall health of infants, children, and adolescents. It addresses their unique dietary needs, prevents deficiencies, and lays the foundation for healthy habits that last a lifetime. Proper nutrition not only fuels physical growth but also supports brain development, immunity, and emotional well-being. Investing in pediatric nutrition today ensures healthier, stronger adults tomorrow.

# FOREWORD MESSAGE

**Dr. Bharati Kulkarni**
**Director, ICMR – National Institute of Nutrition**

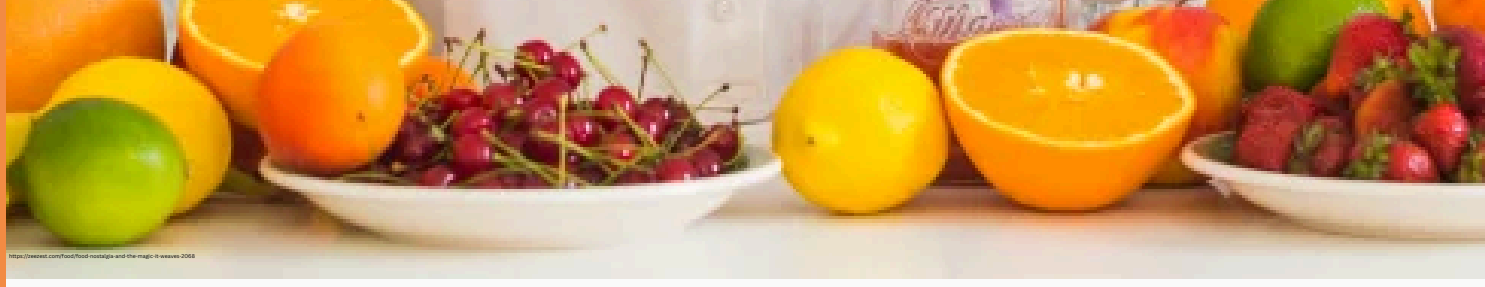
Good nutrition during childhood is the foundation of lifelong health and development. Yet, despite decades of progress, India continues to face multiple nutrition challenges among children. As indicated by the National Family Health Survey-5 (NFHS-5), nearly 36% of our under-five children are stunted, 19% are wasted, and over 32% are underweight whereas almost 67% children below five years of age suffer from anaemia. This reflects deep-rooted problems of maternal and child undernutrition. Adding to these concerns is the rising trend of childhood overweight, which has increased from 2.1% to 3.4% in recent years among under 5 children (NFHS-5). These figures point to a dual burden of persisting undernutrition on one hand and a worrying shift toward obesity on the other. Both these contrasting forms of malnutrition compromise growth, learning, and long-term well-being and demand urgent, community-focused solutions.

We need to respond with bold and sustained action at multiple levels. Community-driven strategies and nutrition education in schools can shape habits early, empowering children to make informed choices about food and activity. Building healthier school environments, limiting ultra-processed foods, and promoting regular physical activity can go a long way in curbing childhood obesity. This calls for active collaboration between families, schools, health systems, and local governance. Our policies and programs such as POSHAN Abhiyaan, Anaemia Mukt Bharat, and Saksham Anganwadi have laid a strong foundation. What is now required is stronger implementation, better integration of services, and active involvement of communities and local institutions. Simultaneously, policies must be strengthened to ensure regular growth monitoring, and provide targeted support to vulnerable groups, including low-birthweight and preterm infants.

The Nutrition Society of India has always been at the forefront of bringing nutrition students, practitioners and researchers together to exchange scientific knowledge and increase awareness on policy-related issues. As a community of researchers, practitioners, and policy advocates, we have the collective responsibility to act decisively. Nutrition literacy, inclusive approaches that involve both parents, and continued investment in frontline workers will be central to success.

I congratulate the Nutrition Society of India, Mumbai Chapter, for their continued efforts of fostering dialogue, innovation, and partnerships that translate science into practice. Together, we can make meaningful progress toward ensuring that every Indian child has access to safe, diverse, and nourishing diets, laying the foundation for healthier generations ahead.

I call upon all members of the Nutrition Society of India (NSI), Mumbai Chapter, to remain deeply engaged in research, advocacy, and action that strengthens child nutrition. Together, we can ensure that no child is left behind—whether due to undernutrition, hidden hunger, or rising obesity. Our shared vision must be to build healthier generations who can grow, learn, and thrive to their fullest potential.

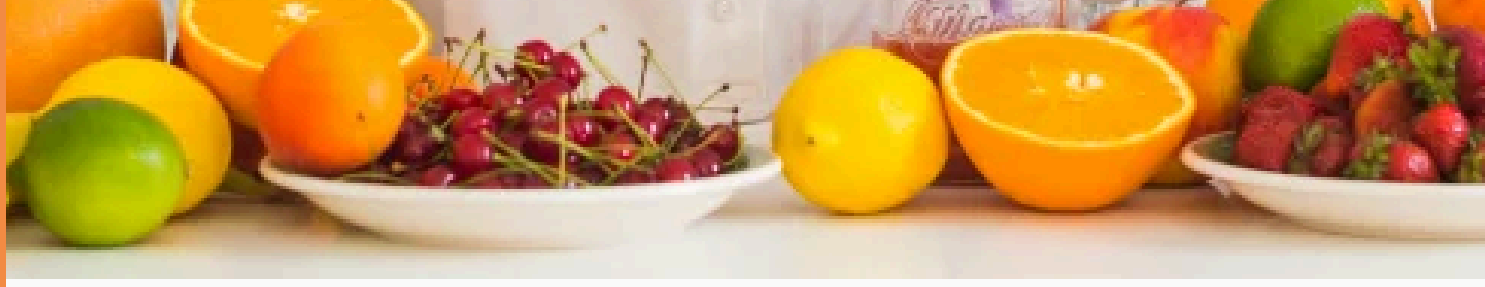


# FOREWORD MESSAGE

**Dr. Sarath Gopalan**
**National President- Nutrition Society of India (NSI)**

As the National President , NSI, it gives me great pleasure to participate in a Conference which is a collaborative effort between the NSI Mumbai Chapter and Seva Mandal Education Society's Smt. Maniben M.P. Shah College of Arts and Commerce, Mumbai. The theme of the Conference is extremely relevant and important to a country like India which must focus on the very young population because these individuals are going to become the future productive citizens who will drive India forward! As nutrition educators to our young students pursuing knowledge and training in specific areas of Nutrition, it is important to keep in mind that while they develop interest and subsequent expertise in a specific aspect of Nutrition, a broad understanding and some awareness about other areas of Nutrition is equally important because a healthy child in the community at some point in time may become ill with a specific disease setting and the knowledge and practical understanding of planning nutritional intervention in this changed setting is an important educational tool which will help the individual involved primarily in nutrition education and intervention at the community level. It is equally important that clinicians and dietitians practicing clinical nutrition in hospitals also be made aware of public health nutrition intervention strategies and epidemiological tools which are being utilized to assess the impact of such interventions.

A comprehensive approach to Pediatric Nutrition requires that each and every one of us understand and realize that health and disease are the two ends of a spectrum and a child is likely to shuttle from one to the other and back and therefore a broad understanding of Pediatric Nutrition is essential to help us contribute to the health and nutrition of our future productive citizens who will influence India's development and progress – " SUPOSHIT BHARAT FOR A VIKSIT BHARAT!



# FOREWORD MESSAGE

**Dr. SubbaRao M Gavaravarapu**
**National Secretary- Nutrition Society of India (NSI)**

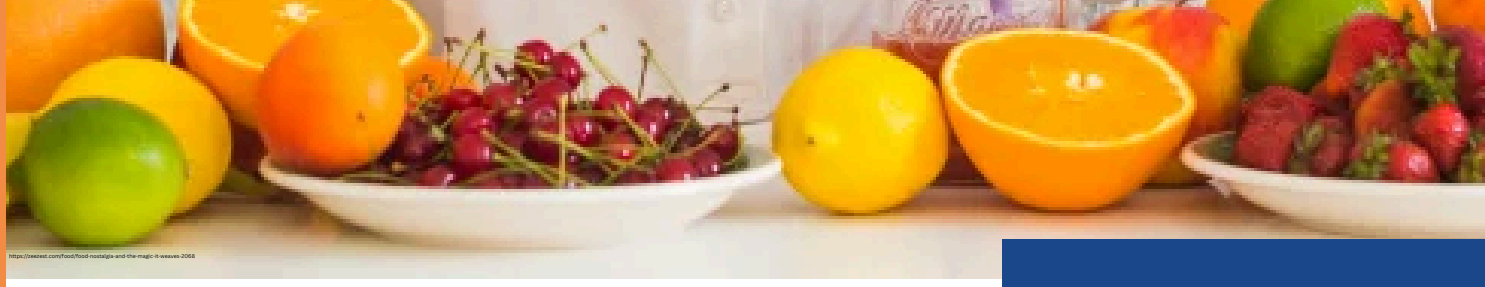
Paediatric age that encompasses, infancy, childhood and even adolescence represents critical several windows of growth, development, and learning, yet malnutrition (both undernutrition as well as overweight/obesity) continues to be a serious public health challenge in India. According to NFHS-5, 35.5% of children under five years are stunted, 19.3% wasted, and 32.1% underweight, while 67% (mostly girls) suffer from anaemia. These are clear signs of inadequate nutrient intake and poor diet quality. Alongside persistent undernutrition, childhood overweight and obesity has been on the rise. Factors such as low dietary diversity, infrequent and imbalanced meals, and nutrient inadequacy remain unresolved at the population level. Many children still have diets low in fruits, vegetables, pulses, and protein-rich foods, while calorie-dense, nutrient-poor foods have become increasingly common, affordable and easily accessible.

Beyond the plate, today's children and adolescents confront new challenges that significantly affect their health. Rising academic pressure, performance-related stress, and reduced sleep due to late-night study practices and unrestricted screentime are directly influencing growth, immunity, and cognitive outcomes. Research has been showing that Increased sedentary time, low physical activity, and high recreational screen time compound the nutritional challenges, further contributing to overweight, obesity, and early onset of non-communicable diseases (NCDs).

Urgent multi-sectoral action is required to address both under- and overnutrition. Strengthening school-based programs that promote dietary diversity, appropriate meal frequency, and nutrient adequacy; ensuring access to fortified foods; curbing availability of ultra-processed foods; and advocating for regular physical activity are critical steps forward. Integrating awareness about balanced sleep routines, mindful screen use, and stress management into health and nutrition education will holistically safeguard the well-being of children and adolescents.

The Nutrition Society of India (NSI) has long fostered scientific dialogue and practical solutions for improving population health. I am pleased to see the NSI Mumbai Chapter prioritizing paediatric and adolescent nutrition through this symposium and their e-newsletter. I also extend my appreciation to the authors who contributed scholarly articles in the current issue for their zeal in promoting authentic, evidence-based knowledge.

I congratulate the NSI - Mumbai Chapter for its sustained efforts in bridging science and community practice. As we work collectively, let us envision a future where every Indian child and adolescent has access not just to food, but to diets that are diverse, adequate, nourishing, and supported by healthy lifestyles, enabling them to thrive to their fullest potential.
Wishing the Symposium a great success...



# FROM EDITOR'S DESK

**Dr. Rupali Sengupta**
**Convener-Nutrition Society of India(NSI), Mumbai Chapter**

**Mr. Shivshankar Timmanpyati**
**Local Executive Committee Member, (NSI) Chapter**

While children today are growing up with more opportunities than ever before, they also encounter new health challenges that deserve our attention. One growing concern is childhood obesity. This isn't only about numbers on a scale—it impacts how children grow, learn, feel about themselves, and how healthy they will be as adults. The good news is that prevention starts with simple steps: encouraging play and movement, making healthier foods more available, and creating supportive spaces at home, in schools, and in our neighbourhoods. On the other hand, we still have concern for the severely malnourished & undernourished. Micronutrient deficiencies can be seen in both, obese as well as undernourished category

A powerful way to make this happen is through nutrition literacy in schools. When children understand food and health in a fun and practical way, they carry those lessons for life. From classroom activities to school meals, every effort counts in helping them build smart habits early. What's more, children often take this knowledge back home—spreading awareness to their families and becoming role models for healthier living.

One creative initiative leading the way is the Sugar Board project by the Government of India. These boards reveal just how much sugar is hidden in everyday foods and drinks. For children, it's an eye-opener —transforming abstract nutrition advice into something they can see and understand. But it goes beyond the board itself: it sparks curiosity, questions, and conversations, giving young generation the confidence to make better choices.

At the heart of all these efforts is a simple truth: child nutrition is a shared responsibility. When families, teachers, health professionals, and communities come together, the impact multiplies. Together, we can make sure ,every child has the chance to grow strong, learn with energy, and step into the future with good health and confidence.

**@nsi.mumbai** **www.nsimumbai.org**

**@Nutrition Society of India, Mumbai Chapter**

**www.youtube.com/@nsimumbai**

# EDITORIAL BOARD


# Nutrition Literacy in Schools: Building Healthier Futures for Children

**Dr. Neha Joshi**
Research Analyst,
Indian Cancer Society, Mumbai.

In the tapestry of child development, nutrition weaves through every thread, not only physical growth but also academic performance, emotional wellbeing, and long-term health. Despite increasing awareness and efforts from government as well as social organisations, many children in India still lack basic knowledge about healthy eating and balanced diet. Dual burden of malnutrition is evident across India irrespective of the socioeconomic strata. E.g. Some are undernourished and anaemic; others face the rising threat of obesity and lifestyle diseases. In both cases, the gap is not just in access to food, but in understanding it.

That's where nutrition literacy comes in. And there's no better place to begin than our schools.

**Why Nutrition Literacy Matters**

Nutrition literacy is about educating children to make smart, informed choices about what they eat. It's not only about knowing the names of food group but it's about understanding how food affects their bodies, moods, concentration, and energy levels. When children learn early on why iron is important, how sugar impacts their health, or how to build a balanced meal, they're better equipped to care for themselves throughout life.

The Current Scenario in Indian Schools

India's schools are home to a complex nutrition landscape. Issues like iron-deficiency anaemia, high consumption of junk food, sugary drinks, and processed snacks remains alarmingly common. A study conducted in Delhi and Mumbai found that only 27% of students knew the importance of iron in the diet, however a nutrition education program helped to increase the knowledge levels to 59%.

In Karnataka, anaemia awareness sessions were planned for children of government schools. Students demonstrated significantly improved knowledge about the condition and how to prevent it after just a few interactive sessions,[3].
These results highlight that when children are taught well, they learn well, especially when the teaching connects to their daily lives.

**Schools as Catalysts for Change**

Schools can act as positive catalyst to promote healthy eating habits. They're not just educational spaces; they're micro-communities where behaviours, choices, and attitudes are shaped. Children spend most of their day here, eat at least one meal in school, and interact regularly with teachers and peers who influence their thinking.

Nutrition literacy can be embedded in various creative ways like Including food and health topics into school curriculum, conducting cooking demos/competitions, tasting sessions, and school kitchen garden projects, training teachers about health and nutrition or conducting parents' workshops on balanced meals and healthy lunchboxes

Programs like the Eat Right School initiative by Food Safety and Standards Authority of India (FSSAI) have already made inroads by combining education with real-life activities. It's not about giving children a lecture on balanced diet, it's about letting them taste spinach, grow tomatoes, or decode food labels in a fun and memorable way[4].

**The Sugar Conversation: A Timely Intervention**

One of the more recent and welcome developments has been the growing attention to sugar consumption in schools. In May 2025, Central Board of Secondary Education (CBSE) directed all affiliated schools to establish "Sugar Boards" to make students aware about the potential health risks of excessive sugar intake, highlighting the gap between current consumption levels (13%–15% of total calories) and the recommended limit of 5%. Schools are also advised to arrange workshops and submit implementation reports by mid-July 2025, thus promote healthier dietary habits among students[5]. In some metropolitan cities, these advisories are being followed up with campaigns and color-coded food labels to help children and parents make better choices. This is in line with global research, which points to the role of excessive sugar intake in obesity, diabetes, and even reduced academic performance due to poor energy regulation.

**Learning from What's Working**

We have already seen the power of school-based programs. The i-PROMISE Plus program in Delhi implemented a two-year nutrition and physical activity intervention among middle school students. The results showed an increased vegetable intake and healthier habits in the intervention group[1].

Another impactful intervention, a flipchart-based nutrition education session in a Delhi slum school significantly improved the awareness and confidence of adolescent girls to make healthier food choices[6]. These examples show that even small, low-cost efforts can have a big impact when done thoughtfully.

**Community Involvement: The Missing Link**

Children do not live in isolation. Schools must reach beyond their gates for nutrition literacy to truly take root. Engaging parents, local health workers, NGOs, and even shopkeepers around the school can create a nutrition-supportive environment.

Using regional languages, hunting positive traditional food practices, and emphasizing on locally available ingredients can also help make the messages more relatable and actionable. Involving Anganwadi workers in school sessions, displaying local food charts, or running nutrition competitions can make learning participatory and culturally anchored.

**Conclusion: A Call to Action**

Nutrition literacy isn't just another chapter in a textbook; it's a life skill. When taught well, it helps children to understand their nutritional needs, look beyond marketing labels, and make healthy food choices with confidence.

The research is clear and the urgency is real. What we now need is scale and commitment, from policymakers, educators, health professionals, and communities. If every child learns why food matters, they will grow up not just healthy but empowered.

Let's give them that chance.

References

1. Rawal, T., Muris, J. W., Mishra, V. K., Arora, M., Tandon, N., & van Schayck, O. C. (2023). Effect of an educational intervention on diet and physical activity among school-aged adolescents in Delhi-The i-PROMISe (PROMoting health literacy in Schools) plus study. Dialogues in Health, 2, 100123.
2. Bharti, R., Marwaha, A., Badshah, T., Sengupta, R., Barmi, B., Rao, E., ... & Bhatia, B. (2021). Effectiveness of a nutritional education intervention focussed on iron among school children in national capital region and Mumbai. J. Clin. Diagn. Res, 15, 31-36.
3. Salam, S. S., Ramadurg, U., Charantimath, U., Katageri, G., Gillespie, B., Mhetri, J., ... & Anumba, D. O. (2023). Impact of a school-based nutrition educational intervention on knowledge related to iron deficiency anaemia in rural Karnataka, India: A mixed methods pre–post interventional study. BJOG: An International Journal of Obstetrics & Gynaecology, 130, 113-123.
4. https://eatrightindia.gov.in/eatrightschool/
5. https://cbseacademic.nic.in/web_material/Circulars/2025/45_Circular_2025.pdf
6. Raikar, K., Thakur, A., Mangal, A., Vaghela, J. F., Banerjee, S., & Gupta, V. (2020). A study to assess the effectiveness of a nutrition education session using flipchart among school-going adolescent girls. Journal of education and health promotion, 9(1), 183.

# SOME OF IDEAS FOR NUTRITION LITERACY WHICH CAN BE IMPLEMENTED IN SCHOOLS

## What's On My Plate?" Activity

- Visual section where children or parents draw or snap a photo of their meal.
- Prompt: "Is it balanced? Can you spot the protein, grain, veg, fruit, and healthy fat?"
- Add a simple color-coded plate guide for reference.

## Nutrition Crossword or Word Search

- Include nutrition-related terms (like "Iron," "Protein," "Fiber," "Hydration," etc.).
- Can be themed (e.g., "Fruits of India," "Nutrients We Need," or "Traditional Indian Foods").

## "Spot the Sugar!" Game

- Show images of common packaged foods (biscuits, cereals, juices).
- Ask readers to guess which has the most hidden sugar.
- Reveal surprising answers with explanations and quick tips on reading food labels.

## Grow Your Own: "Mini Kitchen Garden Challenge"

- Introduce a school/home gardening challenge.
- Encourage growing easy items like tomatoes, coriander, spinach, or mint.
- Ask children to name their plant and send photos or a short write-up to be featured next time.

## Recipe Corner: "Healthy Tiffin Ideas"

- Share one easy, local, balanced meal or snack recipe.
- Make it child-friendly and seasonal.
- Example: Beetroot paratha, Sprouted moong salad, Ragi ladoo, etc.

# Childhood Obesity

Sheryl S. Salis (RD, CDE, CPT, CISSN, ND, MDHA)
Registered Dietitian, Certified Diabetes Educator, Certified Insulin Pump Trainer
Founder- Nurture Health Solutions & Nurture Health Academy and Research Centre
Author- Diet in Diabetes Simplified
Email-salisfernz@gmail.com

Childhood obesity is a significant, global public health issue and a multifaceted condition. It arises from an intricate interplay of biological, developmental, environmental, behavioral, and hereditary factors and is a complex issue that affects kids of all ages creating a cascade of health risks.

The latest World Obesity Atlas published by the World Obesity Federation in March 2024 estimates that 33 million children in India are living with overweight and obesity as of 2020.[ii] The percentage of overweight children increased from 2.1% in NFHS-4 to 3.4% in NFHS-5[iii]. Almost 10% of children with high BMI are likely to be living in India.

Childhood obesity often starts during preschool years, and for many, it persists throughout life. Early detection and prevention focusing on preschool years are critical to mitigating obesity's lifelong consequences.

Assessment Parameters

Overweight and obesity, or increased weight-for-height, reflect body weight that is more than what is considered a healthy weight for a given height.

Physical examination: Height, weight, body mass index, mid-parental height, changing centiles upwards on the growth chart, waist circumference (WC), body fat, acanthosis nigricans, skin tags, xanthelasma, gynecomastia, striae, thyromegaly, hepatomegaly

In Indian children under 5 years of age, weight for length/ height using WHO charts are used to diagnose overweight and obesity.

| Classification (<5 y) | (W/L) Percentile | (W/L) SDs |
|---|---|---|
| Overweight | ≥95th to 99.9th | ≥+2 to +3 |
| Obesity | ≥99.9th | ≥+3 |

In 5–18-year-old Indian children, the IAP 2015 BMI charts are used for plotting the BMI in Indian children.

| Classification (5 to 18 y) | BMI (adult equivalent) |
|---|---|
| Overweight | >23rd adult equivalent |
| Obesity | >27th adult equivalent |
| Class 2 Obesity | ≥120% to 140% of 95th pc or BMI ≥35 to 40 kg/m2 |
| Class 3 Obesity | ≥140% of the 95th pc or BMI ≥40 kg/m2 |

BMI has certain limitations and cannot differentiate between lean and fat mass and is therefore an insufficient marker of abdominal adiposity.

WC is an important predictor of visceral adiposity and a key measure of cardio-metabolic risk. In Indian children, waist circumference greater than 70th percentile can be used as a cutoff for identifying children with central adiposity.

According to Indian Academy of Pediatrics(IAP) Revised Guidelines on Evaluation, Prevention and Management of Childhood Obesity, every child aged 10 years or older who is overweight and children aged 2-10 years with obesity and positive family history must be evaluated for hypertension, dyslipidemia, hyperglycemia, metabolic dysfunction-associated steatotic liver disease (MASLD) and other comorbidities in presence of risk factors or waist circumference greater than 70th percentile.

**Causes of Childhood Obesity**

A substantial body of evidence shows that while genetic predispositions influence susceptibility to obesity, it is their interplay with external factors, such as obesogenic environments, frequent consumption of energy-dense, oversized meals, sedentary lifestyles, increased screen time, insufficient sleep, and habitual behaviors like eating out or ordering in that drives the manifestation of obesity.

Secondary, genetic, and endocrine factors or medications such as steroids account for only a small fraction of obesity cases.

The risk of adiposity-related morbidity is strongly influenced by family history, regardless of obesity in the affected family members, and varies between racial/ethnic groups.

Gestational factors such as gestational diabetes (GDM), gestational weight gain, and pre-pregnancy obesity can metabolically imprint the fetus, increasing their risk for childhood obesity and type 2 diabetes later in life.

Low birth weight babies show a dramatic transition to central adiposity and insulin resistance very early in life. Early adiposity rebound, prior to 5 years of age have a fivefold greater chance of adult obesity compared to those with late adiposity rebound.

Elevated leptin in children with obesity is both a marker and mediator of metabolic dysfunction. Ongoing research indicates that leptin correlates positively with indices of insulin resistance, suggesting that impaired leptin signaling may contribute to the development of insulin resistance.

Economic constraints have driven a rise in the consumption of cheaper, ultra-processed, energy-dense foods as many parents struggle to afford or find time to prepare nutritious home-cooked meals.

Obesity and depression are interlinked in a bidirectional way each increasing the risk of the other and this association is seen to be more pronounced among adolescent females. Obesity during adolescence is also linked with disordered eating and eating disorders, which can further compromise both physical and mental health.
Prevention and management of childhood obesity calls for multidisciplinary approach involving dietitians, psychologists, fitness experts, and physicians working collaboratively.
Parents play a pivotal role in shaping childhood obesity risk by managing the types of foods available at home and imposing limits on screen time. Beyond the home environment, the social context especially peer-related factors like eating norms, acceptance, and peer pressure significantly influences children's food choices and eating behaviors
For children with severe obesity or those presenting with comorbidities, IAP recommends gradual weight loss of approximately 0.5 kg per month for a period of 2–5 years, and up to 1 kg per week for older children and adolescents.

**Dietary Intervention in The Prevention of Childhood Obesity**
There is no 'one size that fits all'. MNT must be individualized and "tailor made", after detailed assessment taking into account the child's age, pubertal status, rate of growth, BMI percentile, associated comorbidities, existing dietary habits, family preferences, and socio-economic status. The meal plan must be calorie controlled to meet energy needs aligned with activity levels. The meal plan must ensure adequate energy for growth and development while avoiding excess energy that can lead to weight gain. Focus must be on improving quality of nutrients to promote balanced nutrition and prevent nutritional deficiencies.

**Preventive Strategies in Infancy:**
To promote healthy growth and reduce risk of obesity, it is essential to support optimal maternal nutrition and weight both before and during pregnancy. Infants should be exclusively breastfed for six months, and continued for two years. Pasteurized donor human milk is preferred over formula if maternal milk is unavailable. Fresh, homemade, complementary foods should be introduced at six months.

Added sugars should be avoided during the first two years of life, and added salt during the first year. Avoid sugar-sweetened beverages, packaged fruit juices, and processed foods. Feeding should be responsive, not forced and bottle feeding must be discouraged. Regular, careful monitoring of infant growth is key to identifying early excessive weight gain.

**Preventive Strategies in Children and Adolescents:**
Parents and caregivers should lead by example and adopt an authoritative approach to foster healthy eating habits. This involves offering portion controlled, diverse, nutrient-dense foods that supports healthy eating behaviors, setting regular meal routines, and tuning into their child's hunger and fullness cues to avoid overfeeding.

Free sugars should contribute less than 5% of total energy intake. Children should consume sufficient fiber by incorporating a variety of fruits, vegetables, whole grain cereals and pulses.

Consumption of ultra-processed, nutrient poor foods high in fat, salt, and sugar (HFSS), caffeinated, carbonated, colored, sugar sweetened beverages must be avoided.

Fruit juices must be swapped with whole fruits. Fresh, homemade foods are preferred over packaged, ready to eat foods as the latter are higher in calories, salt, added sugars, and saturated fats. Plain water must be encouraged over sugar-sweetened beverages, fruit juices, or aerated drinks.

Children with obesity have a higher risk of iron deficiency, even without anemia and should therefore undergo active screening and appropriate intervention. Additional micronutrient deficiencies, such as vitamin $B_{12}$, zinc, and vitamin D, are also common and warrant attention.

Children must be involved in grocery shopping and cooking. Knowledge about healthy eating, avoiding mindless snacking, learning how to interpret food labels, and adopting healthier cooking methods can help prevent obesity.

Using bribes, threats, or force to make children eat can dull their sensitivity to satiety cues and promote overeating. Mealtime distractions, such as eating while watching screens must be strongly discouraged and food should never be used as a form of reward or punishment.

Schools play a pivotal role in influencing behaviors of children and is a critical setting for intervention of structured programs to combat childhood obesity. Schools can enhance both the effectiveness and long-term sustainability of such programs by involving teaching staff in implementing and championing health initiatives. School events and activities should be free from sponsorship by companies producing unhealthy food and beverages. Schools must eliminate unhealthy food options from their canteens and ensure that such items are not available in the immediate vicinity of the campus.

The AAP Clinical Decision Support recommends the pneumonic '5-2-1-0' rule for prevention of obesity among children.

- Consumption of at least 5 servings of fruits and vegetables each day
- Limit screen time < 2 hours per day
- Participation in 1 hour of physical activity every day (moderate to vigorous physical exercise every day)
- 0 intake of sugar-sweetened beverages daily.

**Healthy Snacks and Tiffin Options**

Skipping meals and snacking is commonly observed in adolescents. Meals especially dinners have been replaced by unhealthy snacks which are high in HFSS. They are low in protein and dietary fiber further contributing to obesity, hypertension, dyslipidaemia and dysglycemia. Late night snacking while watching television must be discouraged.

Snacks can be made healthy using healthy ingredients. Nutritious, innovative tiffin options include like millet dosa, upma, dal dosa/chilla, oats pancakes, makhana bhel, sprout/chana chaat. Care must be taken to keep the sugar, fat and salt to the minimum.

Unhealthy dips/ sauces/spreads can be swapped with mint, coriander yogurt chutney, hung curd dips and hummus. Laddoos/Chikkis made from sesame seeds, peanuts, chickpea flour (sattu), Bengal gram (chana), dry fruit and nut rolls, sweets made from thickened milk, low-fat hung curd, or paneer/chena combined with nuts or jaggery in moderation are healthier, nutritious alternatives to calorie-dense traditional sweets.

Children must be educated on interpreting food labels correctly and availability of healthy snacks in small portions at reasonable prices must be promoted.

Gut dysbiosis in early life can contribute to childhood obesity. Studies have demonstrated that modulating the gut microbiota through diet, lifestyle changes, prebiotics, probiotics may contribute to gut homeostasis and management of childhood obesity and its associated comorbidities.

Chrononutrition -Meal timing and dietary components play an important role in regulating circadian clocks, to reduce risk of childhood obesity.

Sleep Duration:
Recommended sleep duration for optimal health is:
Age-0-5 years: at least 11 hours
5-10 years: at least 10 hours
10 years and above – at least 9 hours
Screen time:
IAP recommends no screen time up to 2 years
Maximum 1 hour from 1-5 years
2 hours from 5 10 years, the lesser the better.
10-18 age group- balance screen time with other age specific developmental goals.

## Physical Activity Recommendations

| | Duration | Type of Activity |
|---|---|---|
| **Infants** | 30 minutes/day of prone position (tummy time) in young infants. | Remain active throughout the day through activities like reaching and grasping, pulling and pushing, and floor play (including crawling) in a safe and supervised environment. |
| **Toddlers and Preschoolers** | at least 180 minutes a day | Varied physical activities as per their developmental age, that is spread across the day |
| **Older Children and Adolescents**<br>**(5-17 years)** | Both aerobic and anaerobic exercises to maintain good health and strengthen their muscles and bones.<br>High-intensity interval training/ resistance exercises (20 minutes in a day) should be incorporated at least 3 times a week to strengthen their muscles and bones. | At least 60 minutes of moderate to vigorous physical activity spread throughout the day |
| The school curriculum should also incorporate 30 minutes of exercise schedule every day. | | |

## Summary

A multidisciplinary approach comprising dietitians, psychologists, fitness experts, and physicians working together with assistance from parents, caregivers, and teachers is crucial for the prevention and management of childhood obesity. Sustainable and flexible lifestyle changes that prioritize nutrient-dense, portion-controlled meals, structured meal routines, 60 minutes of physical activity daily, and adequate sleep will ensure long-term adherence and well-being. Encouraging mindful eating free from screen distractions supports better self-regulation and reduces the risk of overeating. Motivational support and frequent follow-ups are essential to bring about behavior change.


**REFERENCES**

- World Health Organization. 2018. Taking action on childhood obesity (No. WHO/NMH/PND/ECHO/18.1). World Health Organization.
- World Obesity Atlas 2024. [Last accessed on 2025 Aug 17]. Available from:https://www.worldobesity.org/resources/resource-library/world-obesity-atlas-2024 .
- Verma M., Esht V., Alshehri M. M., et al. Factors contributing to the change in overweight/obesity Prevalence among Indian adults: a multivariate decomposition analysis of data from the national family health surveys. Advances in Therapy . 2023:1–21. doi: 10.1007/s12325-023-02670-3.
- Indian Academy of Pediatrics Revised Guidelines on Evaluation, Prevention and Management of Childhood Obesity, Indian Pediatrics, Dec 2023
- Khadilkar A, et al. Waist circumference percentiles in 2-18 year old Indian children. J Pediatr. 2014;164:1358-62.
- Gaillard R, Felix JF, Duijts L, Jaddoe VW. Childhood consequences of maternal obesity and excessive weight gain during pregnancy. Acta Obstet Gynecol Scand. 2014 Nov;93(11):1085-9. doi: 10.1111/aogs.12506. Epub 2014 Oct 9. PMID: 25231923.
- Rosenbaum M, Thaker VV. Special Considerations Relevant to Pediatric Obesity. In: Endotext [Internet]. South Dartmouth (MA): MDText.com, Inc.; 2000–. Updated 2022 Oct 8 [cited 2025 Aug
- Available from: https://www.ncbi.nlm.nih.gov/books/NBK279060/
- Ranjani H, Pradeepa R, Mehreen TS, Anjana RM, Anand K, Garg R, Mohan V. Determinants, consequences and prevention of childhood overweight and obesity: An Indian context. Indian J Endocrinol Metab. 2014 Nov;18(Suppl 1):S17-25. doi: 10.4103/2230-8210.145049. PMID: 25538874; PMCID: PMC4266865.
- Soliman AT, Yasin M, Kassem A. Leptin in pediatrics: A hormone from adipocyte that wheels several functions in children. Indian J Endocrinol Metab. 2012 Dec;16(Suppl 3):S577-87. doi: 10.4103/2230-8210.105575. PMID: 23565493; PMCID: PMC3602987.
- Nackers LM, Appelhans BM. Food insecurity is linked to a food environment promoting obesity in households with children. J Nutr Educ Behav. 2013 Nov-Dec;45(6):780-4. doi: 10.1016/j.jneb.2013.08.001. Epub 2013 Sep 8. PMID: 24021456.
- efinition and diagnostic criteria of clinical obesity, Rubino, Francesco et al.The Lancet Diabetes & Endocrinology, Volume 13, Issue 3, 221 - 262
- H. Dele, Hiram F, Kami S. 2018. Obesity in Childhood and Adolescence, (2) 2nd Edition. Collen Kraft
- Stok FM, de Vet E, de Ridder DT, de Wit JB. The potential of peer social norms to shape food intake in adolescents and young adults: a systematic review of effects and moderators. Health Psychol Rev. 2016 Sep;10(3):326-40. doi: 10.1080/17437199.2016.1155161. Epub 2016 Mar 22. PMID: 26878931.
- Salvy SJ, de la Haye K, Bowker JC, Hermans RC. Influence of peers and friends on children's and adolescents' eating and activity behaviors. Physiol Behav. 2012 Jun 6;106(3):369-78. doi: 10.1016/j.physbeh.2012.03.022. Epub 2012 Mar 28. PMID: 22480733; PMCID: PMC3372499.
- Lahariya C (2025). Obesity Care in India: National White paper. Foundation for People-centric Health Systems, New Delhi. Pp 1-48. Licence: CC BY-NC-SA 3.0 IGO.
- Madan Jagmeet, Desai Sharvari, Moitra Panchali, Salis Sheryl, Agashe Shubhada, Battalwar Rekha, Mehta Anushree, Kamble Rachana, Kalita Soumik, Phatak Ajay Gajanan, Udipi Shobha A., Vaidya Rama A., Vaidya Ashok B, Effect of Almond Consumption on Metabolic Risk Factors—Glucose Metabolism, Hyperinsulinemia, Selected Markers of Inflammation: A Randomized Controlled Trial in Adolescents and Young Adults ,Frontiers in Nutrition ,VOLUME=8, 2021
- Salis S, Virmani A, Priyambada L, Mohan M, Hansda K, Beaufort C. 2021. 'Old Is Gold': How Traditionl Indian Dietary Practices Can Support Pediatric Diabetes Management. Nutrients. 10;13(12):4427. doi: 10.3390/nu13124427
- Luo, Y., Li, M., Luo, D., & Tang, B. (2025). Gut Microbiota: An Important Participant in Childhood Obesity. Advances in nutrition (Bethesda, Md.), 16(2), 100362. https://doi.org/10.1016/j.advnut.2024.100362
- Fiore G, Scapaticci S, Neri CR, Azaryah H, Escudero-Marín M, Pascuzzi MC, La Mendola A, Mameli C, Chiarelli F, Campoy C, Zuccotti G, Verduci E. Chrononutrition and metabolic health in children and adolescents: a systematic review and meta-analysis. Nutr Rev. 2024 Oct 1;82(10):1309-1354. doi: 10.1093/nutrit/nuad122. PMID: 37944081.

# Empowering Young Minds:

## THE SUGAR BOARD INITIATIVE AND BEYOND...

Dr Veena Yardi
Former Associate Professor College of Home Science, Nirmala Niketan
Visiting Faculty -ICT and College of Home Science Nirmala Niketan .
Director - Niramaya Health Foundation (NGO)



The Central Board of Secondary Education (CBSE) has taken a significant step towards promoting healthier eating habits and combating childhood obesity and diabetes by mandating the establishment of "Sugar Boards" in over 24,000 affiliated schools across India since May'25 on the recommendation of National Commission for Protection of Child Rights (NCPCR).

These "Sugar boards" are display panels installed in common areas of schools to educate students, teachers, and parents about the risks of excessive sugar consumption and the benefits of healthier eating habits. The visual presentation of information is likely to enhance children's understanding and retention of the material.

**The Sugar Board Initiative: A Proactive Approach**

The Sugar Board initiative represents a proactive approach to addressing the growing health concern of childhood obesity, Type II diabetes, other metabolic disorders and dental problems. It will also foster a culture of health consciousness among students, educators, and parents, will encourage informed food choices, promote long-term health benefits, reduce the incidence of non-communicable diseases and nurture a generation of health-conscious citizens. It will also
Support India's commitment to UN Sustainable Development Goal 3: Ensure healthy lives and promote well-being for all at all ages.

By displaying informative boards in schools, students will be made aware of:
·Recommended Daily Sugar Intake: Understanding the daily limits for sugar consumption.

- Sugar Content in Common Foods: Identifying hidden sugars in packaged foods and beverages.
- Health Risks: Understanding the health implications of high sugar intake, including diabetes and obesity
- Healthier Dietary Alternatives: Exploring nutritious options to sugary snacks and drinks and promoting Food literacy, Mindfulness & Healthier food choices.

This move aims to educate students about the risks associated with excessive sugar consumption, a major contributor to overweight/obesity and non-communicable diseases like diabetes, cardiovascular diseases, and hypertension.

**The Need for Nutrition Education**

India is witnessing a disturbing trend of increasing childhood obesity, with a significant proportion of school children in pre-diabetic state (15.35%) or already having diabetes (1%). Indian Council of Medical Research (ICMR) and the World Health Organization (WHO) recommend that children consume less than 5% and 10% of their daily calories respectively from added sugars, ideally fewer than 5% for added health benefits. However, Indian children aged 4-10 consume around 13% of their daily calories from added sugars, while those aged 11-18 consume nearly 15%, far exceeding the recommended limit, highlighting the need for effective nutrition education and awareness programs.

By imparting nutrition education from early age and providing access to nutrition experts, we can empower young minds to make informed choices about their health. The Sugar Board initiative is a crucial step towards promoting healthy eating habits, and with the right implementation, it can have a lasting impact on the well-being of Indian school children.

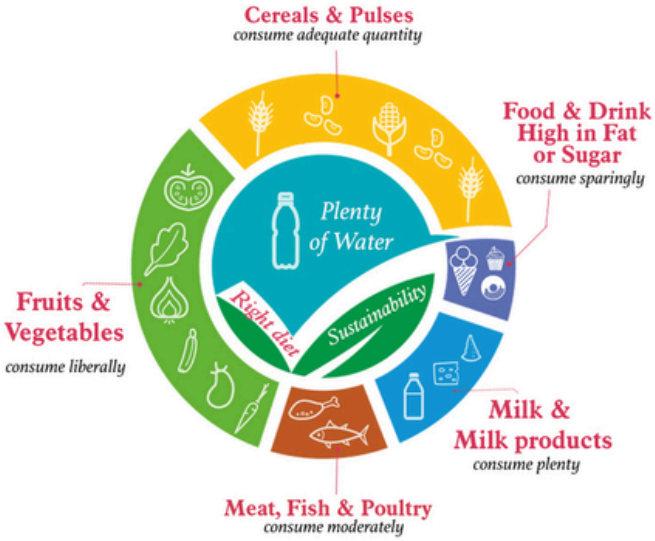
**Suggestions for Effective Implementation**

To ensure the success of the Sugar Board initiative, the following suggestions are proposed:

- Institutionalize Nutrition Education: Integrate nutrition education into school curricula.
- Regular Monitoring: Regularly monitor school canteens and vendors to ensure compliance with healthy food options.
- Enforce FSSAI's Eat Right School Guidelines: Enforce guidelines in all education boards to promote healthy eating habits.
- Promote Local, Traditional, and Seasonal Foods: Reduce reliance on processed foods.
- Appointment of a Nutritionist -To take this initiative to the next level, consider appointing a part-time or full-time nutritionist in each school. This would enable:

- Nutritional Status Assessment: Monitoring students' nutritional health and providing personalized diet counselling on a regular basis.

- Nutrition Literacy: Educating students, teachers, parents, and canteen staff about balanced diets and healthy eating habits and overall lifestyle modification.



**A Holistic Approach**

The Sugar Board initiative is a welcome step towards addressing the growing burden of non-communicable diseases in India. However, it is essential to adopt a holistic approach that includes:

- Imparting Nutrition Education on regular basis.
- Promoting Physical Activity for better fitness.
- Parent Involvement: Involving parents in the initiative to promote healthy eating habits at home as well.
- Stricter Regulations: Implementing stricter regulations on 'junk food marketing' and sales around schools.
- Establishment a comprehensive Health Promotion System: Implementing not only Sugar Boards but also Salt Boards, Fat Boards, and Physical fitness Boards, either as separate entities or under unified framework, to promote overall health and well-being among students.
- School Nutrition Policy: Implementing policies to regulate food options in school canteens and surrounding areas
- Front-of-Pack Labelling: Introducing clear labelling systems to help consumers make informed choices.
- Follow up and Evaluation programs and Research studies to assess impact of the 'Sugar Board Initiative'


**Conclusion**

As a nutritionist ,I applaud the Sugar Board initiative and encourage consumers ,food manufacturers ,and policy makers to work together to create a healthier food environment .By adopting a comprehensive approach and following the ICMR's guidelines, we can empower young minds to make informed choices about their health and well –being, ultimately reducing the burden of diet-related diseases in India. Schools are seen as influencers for children's well-being, and the Sugar Boards are one opportunity to integrate health literacy through workshops, discussions, and wellness programs. The Sugar Board initiative is a significant step towards promoting public health and reducing sugar intake .By working together, we can reduce the burden of diet-related diseases and promote a culture of healthy eating .Prevention is better than cure!


REFERENCES

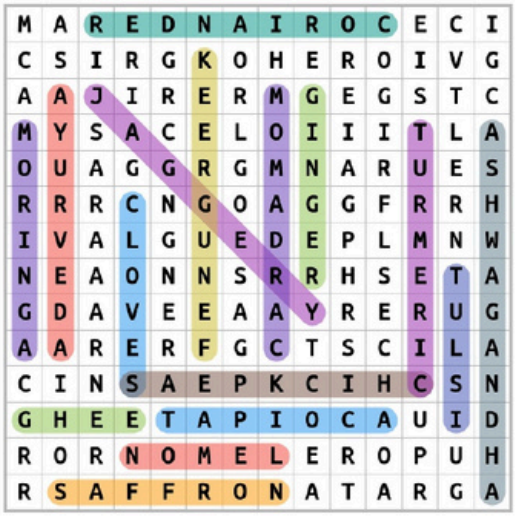
- [1] WORLD HEALTH ORGANIZATION. (2015). GUIDELINE :SUGARS INTAKE FOR ADULTS AND CHILDREN.
- [2] ICMR. (2024). DIETARY GUIDELINES FOR INDIANS.*EMPOWERING YOUNG MINDS: THE SUGARBOARD INITIATIVE AND BEYOND*
.[ 3]COMPREHENSIVE NATIONAL NUTRITION SURVEY (CNNS) ,2023
[4] (CIRCULAR NO. 26/2025) I CBSE ACADEMIC WEBSITE.

# traditional indian functional foods

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M | A | R | E | D | N | A | I | R | O | C | E | C | I |
| C | S | I | R | G | K | O | H | E | R | O | I | V | G |
| A | A | J | I | R | E | R | M | G | E | G | S | T | C |
| M | Y | S | A | C | E | L | O | I | I | I | T | L | A |
| O | U | A | G | G | R | G | M | N | A | R | U | E | S |
| R | R | R | C | N | G | O | A | G | G | F | R | R | H |
| I | V | A | L | G | U | E | D | E | P | L | M | N | W |
| N | E | A | O | N | N | S | R | R | H | S | E | T | A |
| G | D | A | V | E | E | A | A | Y | R | E | R | U | G |
| A | A | R | E | R | F | G | C | T | S | C | I | L | A |
| C | I | N | S | A | E | P | K | C | I | H | C | S | N |
| G | H | E | E | T | A | P | I | O | C | A | U | I | D |
| R | O | R | N | O | M | E | L | E | R | O | P | U | H |
| R | S | A | F | F | R | O | N | A | T | A | R | G | A |

GINGER
JAGGERY
LEMON
MORINGA
CLOVES
TULSI
CORIANDER
FENUGREEK
SAFFRON
CHICKPEAS
ASHWAGANDHA
GHEE
TURMERIC
AYURVEDA
CARDAMOM
TAPIOCA

**-Post Graduate Department of Food Science and Nutrition, SNDT Women's University, Juhu Campus, Mumbai**



# RIDDLES - CAN YOU GUESS THE FOOD

In the kitchen , I shine so bright ,A pinch of me , makes the dishes take flight, My curcumin powders , fight inflammation might , What am I ?

I am a drink that's cool, calm,and serene , My probiotic soothe, the digestive scene .In the summer heat , I'm a refreshing queen , what am I ?

I am a fruit, that's small, yet packs a punch, My vitamin C goodness , is a healthy crunch .I am a rasayana rockstar,in ayurveda lunch,what am I

I'm a nut, that's crunchy, and oh so sweet,My omega-3 goodness, is a heart-healthy treat.I'm a brain-boosting superstar, in Indian cuisine's beat,What am I?

I'm a herb, that's sacred, and oh so fine, My adaptogenic powers, help you relax in time.I'm a stress-less superstar, in Ayurveda's shrine,What am I?

I'm a spice, that's warm, and oh so bright,My digestive powers, ignite the gut's delight.I'm a traditional remedy, in Ayurveda's beat,What am I?

I'm a bean, that's small, yet mighty as can be,My calcium content, is a bone-healthy guarantee.I am a traditional treasure, in Indian cuisine's sea, What am I?

Golden and pure, I shine so bright,
In Indian cuisine, I'm a delight.
What am I?

I'm a winter treat, warm and so fine,
Made with edible gum, and sweetness divine.
What am I?

I'm a nut that's crunchy and sweet,
Rich in healthy fats, a snack to beat.
In Indian sweets, I'm often found,
A delicious addition, renowned.What am I?

- **Maniben Nanavati Women's College**

# RIDDLES

1. I'm orange, full of Vitamin A, and I help your eyesight every day. What am I

2. I'm round and small, packed with fiber, and I can be eaten raw or in a pie. What am I?

3. I'm green and leafy, I help your bones and teeth, and I'm often in a salad. What am I?

4. I'm yellow, full of potassium, and monkeys love me. What am I?

5. I'm a liquid, I keep you hydrated, and I have no calories. What am I?

6. I'm a protein-packed food that can be scrambled, fried, or boiled, and I come from a farm. What am I?

**By: Amandeep Kaur Bhabra**
**DY Patil University, Navi Mumbai**

## POEM

Oh dear child, so bright and sweet,
Let's talk about the food you eat!
For tiny tummies, brains that grow,
Good nutrition helps them glow.

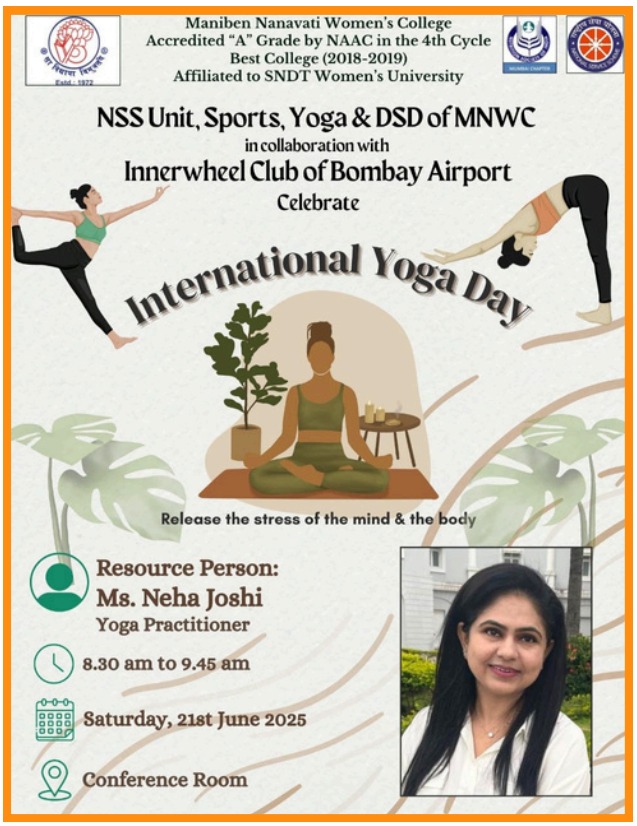
Start the day with milk or oats,
Not with chips or sugar boats!
Add some fruits an apple, pear,
Vitamins are hiding there!

Veggies green and carrots bright,
Help you see well through the night.
Lentils, beans, and nuts so small,
Make you strong and help you grow tall.

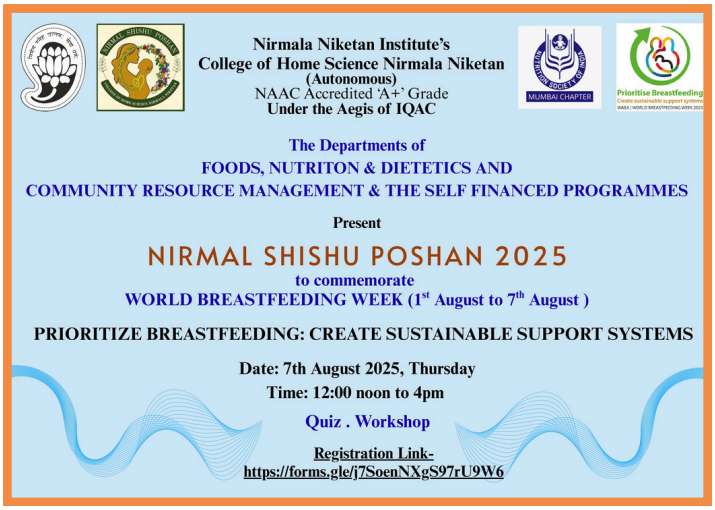
Proteins in your eggs and peas,
Keep you jumping with great ease.
A bowl of curd or yogurt plain,
Keeps your gut calm ,no tummy pain!

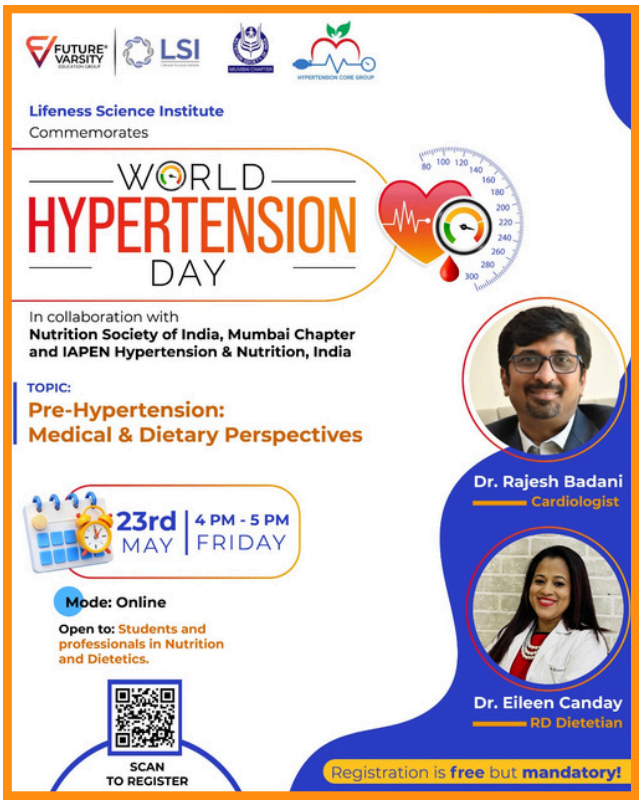
**BY: SANA A.Q BAHADUR**
**INTERN, DEPT OF NUTRITION AND DIETETICS,**
**K. J. SOMAIYA HOSPITAL AND RESEARCH CENTRE, MUMBAI.**

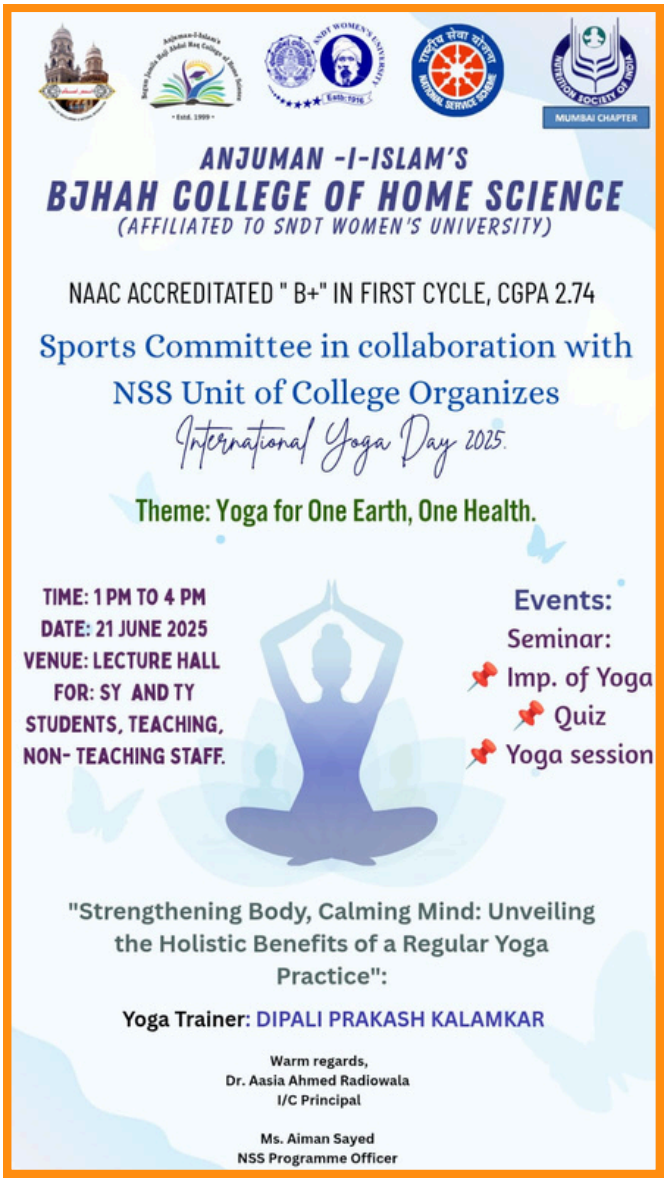
# COLLABORATIVE ACTIVITES


# COLLABORATIVE ACTIVITES

# COLLABORATIVE ACTIVITES