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Adolescentoday

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ADOLESCENT HEALTH ACADEMY
A Subspeciality Chapter of Indian Academy of Pediatrics
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Message From Chairperson

Warm greetings from IAP-Adolescent Health Academy team 2024!! We are pleased to share 2nd issue of AdolescenToday (official e-bulletin of AHA 2024)

Theme of this issue is Adolescent Nutrition. Adolescence is a period of rapid growth and puberty. Obviously, during this time, there is increase in the requirement of both macro and micronutrients. This is the last chance for growth and development and is associated with increase in height, weight, muscle and bone mass, blood volume and changes in body proportion.

The triple burden of malnutrition in adolescents refers to the coexistence of three forms of malnutrition: under nutrition, micronutrient deficiencies and overweight/obesity.

This complex issue poses significant challenges for adolescents in India.

Understanding adolescent nutrition is critical due to the unique developmental changes and specific nutritional needs that occur during this stage of life. This is crucial for promoting optimal physical, cognitive and emotional development.

Education on optimal nutrition should be a priority for parents, caretakers, and healthcare providers to ensure adolescents reach their full potential.

Dr. Geeta Patil
AHA Chairperson, 2024

CONGRATULATIONS

Hearty congratulations to all on the formation of new IAP - Adolescent Health Academy state branches.

We Welcome

Andhra Pradesh	Maharashtra
Chattisgarh	Punjab
Delhi	Tamil Nadu
Gujarat	Telangana
Karnataka	Uttar Pradesh
Kerala	West Bengal

Editorial

Greetings Dear Reader,

Welcome to our second issue! All you need to know of teen nutrition is here , authoritative , engaging ,and more.

In 2000, Eric Schlosser in his 'Fast Food Nation - The Dark Side of The All-American Meal 'says' Fast food has joined Hollywood movies, blue jeans, and pop music as one of America's most prominent cultural exports. Unlike other commodities, however, fast food isn't viewed, read, played, or worn. It enters the body and becomes part of the consumer. No other industry offers, both literally and figuratively, so much insight into the nature of mass consumption. Fast food is heavily marketed to children and prepared by people who are barely older than children. This is an industry that both feeds and feeds off the young. Hundreds of millions of people buy fast food every day without giving it much thought, unaware of the subtle and not so subtle ramifications of their purchases. They rarely consider where this food came from, how it was made, what it is doing to the community around them. They just grab their tray off the counter, find a table, take a seat, unwrap the paper, and dig in. The whole experience is transitory and soon forgotten'

The fast-food juggernaut seemed unstoppable, at least until we saw the success of Revant (a social media influencer who took on multinational Cadbury's) and his ilk. If Dataism is the new religion of this century (historian Yuval Noah Harari, in his book Homo Deus: A Brief History of Tomorrow, 2015), let us teach our young to use and interpret the data safely.

Did you notice our cover design ? Credit to an 18 th century Spanish artist Luis Melendez beautiful original , that we intentionally vandalised by painting in fries, pizza, cake, carton drinks and a burger. That's what we are doing to our bodies aren't we ?

READ the labels and obsess with the education therein. Exhort them to choose whole foods that are available naturally [exemplified by urging them to not eat anything their great grandmother wouldn't recognize as food!]

We cheer for school gardens and kitchens, fresh cooking and promote lunch boxes, not takeaways. The trend of food deliveries directly to school and vending machines, seen in metros, is scary to say the least. Please moot for a squad of health professionals to keep an eye on canteen fare.

We are in battle mode it seems and the enemy is right in our midst. We need to bring healthcare professionals, parents, teachers and most importantly adolescents themselves into the fight.

We welcome your feedback. We have tried to include as many of the photos that were sent to us from all the zones. Do see the bulletin on your laptops for clarity and ease of reading. I acknowledge Dr Gowri Somayaji s inputs in editing and compiling articles and visuals and Dr Geeta Patil our inspirational Chairperson in inviting the authors to write for us.

Please do register for the ADOLESCON 2024. See you all in Nashik!

Best regards from
Shubha Badami and
The Editorial Team of Drs Gowri Somayaji, Poonam Bhatia, Deepa Passi, Joshi Anand K and Abhijit B.

Nutritional Hunger : Hidden to Overt Micronutrient Deficiency among Adolescents

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Introduction

'Hidden Hunger' refers to the deficiency of micronutrients such as essential minerals and vitamins, most of which are not often visible clinically, but remain hidden. Deficiencies are often undetected, among children and adolescents. But these can be identified with a high index of suspicion. Most of the deficiencies, whether 'hidden or overt' have important public health consequences. Therefore, the term 'micronutrient hunger' is proposed instead of 'hidden hunger'.

Micronutrient deficiency affects more than 2 billion people, which accounts for one-third of the population worldwide. The short-term and long-term effects can be significant, leading to impaired physical growth, poor cognitive function, learning disabilities, chronic diseases, low productivity, and even death.In addition, hidden hunger compromises the learning ability, productivity and hence impairs the socioeconomic growth of the individual and the society.

Inadequate eating practices can result in various deficiencies in adolescents, even when energy intake remains adequate due to consuming energy-dense but nutrient-poor foods. Adolescents are a vulnerable group for hidden hunger due to their high nutritional requirement for the rapid somatic and reproductive maturation, their choosy and erratic dietary habits and life style.

Some reasons for hidden hunger are reliance on low-cost, monotonous staples, limited choices, lack of dietary diversity of foods, impaired absorption or use of nutrients, and the presence of antinutrients, which limit the bioavailability of nutrients that are crucial for growth and development. Most adolescent have inadequate knowledge about their nutritional needs.

Micronutrient deficits, or hidden hunger, are often intergenerational. Due to their prevalence among adolescents, particularly girls, it is often passed on to the next generation. Hidden hunger is often associated with lowered or compromised immunity and growth, which may eventually lead to degenerative and chronic illnesses. According to the 2019 report 'Adolescents, Diets and Nutrition: Growing Well in a Changing World' by UNICEF, over 80% of the adolescent population in India demonstrated multiple micronutrient deficiencies. Increasing incomes and changes in dietary patterns among adolescents with greater consumption of junk foods, fried foods, and sugar-sweetened beverages and less consumption of green leafy vegetables and fruits are contributing to this nutritional disaster.

Deficiencies of four micronutrients—iron, iodine, zinc, and vitamin A—pose the greatest threat to global public health because of their rising prevalence and the ensuing negative effects on development and health.

The Global Hunger Index (GHI) is a tool created to track and measure hunger worldwide by nation and region.India is ranked 107th, with a reported GHI

prevalence of 29%, a mere 10% decrease from 39% in 2000. The target of 'Zero Hunger by 2030' is still far off.The Global Hidden Hunger Index (GHHI) 2022 focuses on micronutrients as a part of the dramatic hunger situation worldwide. It is measured among preschool-age children as the average of three deficiency prevalence estimates: i) stunting due to zinc deficiency, ii) anemia due to iron deficiency, and iii) vitamin A deficiency. Zinc serves as a surrogate for stunting, iron for physical capability and cognition, and vitamin A for immunity. In the Hidden Hunger Index in preschool children (HHI-PD) score, these three components are equally weighted: ([stunting (%) + anemia (%) + low serum retinol (%)]/3). Even though the hidden hunger index pertains to the prevalence of micronutrient deficiency among preschool children, it acts as a pointer about the status of micronutrient malnutrition among other age groups in the same country.

Many children neither get the proper nutrition at the right age nor have enough variety in their diets to help them reach their maximum potential in terms of growth and development. When a child lacks a necessary vitamin, they either grow at normal rate and use up more body stores, which eventually causes a loss in bodily functions (type I functional nutrients), or they grow slower and actively conserve the nutrient to keep the concentration in the tissues (type II growth nutrients)

Micronutrient deficiencies among Indian adolescents

As per NFHS 5 & CNNS data, Indian adolescents have significant burden of micronutrient deficiency. Comprehensive national nutrition survey(CNNS)2016-2018 estimated the prevalence of micronutrient deficiency among Indian children and adolescents. Prevalence of anemia, iron deficiency, vitamin A deficiency, vitamin D deficiency, zinc deficiency, B12 deficiency, folate deficiency and iodine status were estimated in different age groups.

CNNS revealed that 28% of Indian adolescents were anemic.17% had mild anemia, 10% had moderate anaemia and 1% had severe anaemia. Anemia was more prevalent among female adolescents 12 years of age and older (~40%) compared to their male counterparts (~18%). Anemia was a moderate or severe public health problem among adolescents in 20 states. Iron deficiency was identified by measuring the serum ferritin levels; serum ferritin < 12 µg/L in children aged 1- 4 years and < 15 µg/L in children aged 5 years and above is considered as iron deficiency. 22% of adolescents had iron deficiency as evidenced by low serum ferritin levels. Female adolescents had a higher prevalence of iron deficiency (31%) compared to male adolescents (12%).. The dietary requirement of iron increases at the ages 13-18, especially for girls; to compensate for the monthly menstrual blood loss. Iron deficiency anemia is associated with low mental performance, inattention, lower learning capacity. Iron deficiency without anemia is also associated with negative effect on cognitive development in children and adolescents.

Serum retinol concentration < 20 µg/ dL is diagnostic of vitamin A deficiency. CNNS estimated that 16% of Indian adolescents are vitamin A deficient. Vitamin A deficiency is a severe public health problem (prevalence > 20%) among adolescents in four states. Vitamin A is critical during the phase of rapid pubertal growth. Severe

vitamin A deficiency is associated with Xerophthalmia; the more common mild forms of Vitamin A deficiency cause impaired immune function and an increased risk of morbidity from infectious diseases.

Vitamin D is essential for bone growth and adequate intake is required to prevent growth faltering during adolescence.CNNS estimated vitamin D deficiency by measuring serum 25 OH D levels; serum 25 OH D < 12 ng/mL (30 nmol/L) is considered as vitamin D deficiency. Prevalence of vitamin D deficiency was 24% among adolescents.

Zinc is a nutrient which can be considered both as growth nutrient and functional nutrient.Zinc deficiency is characterized by growth retardation, loss of appetite, and impaired immune function. Zinc deficiency will act as a limiting factor to growth and sexual maturation during adolescence. CNNS found that 32% of adolescents have zinc deficiency.

Vitamin B12 and folate are necessary for the formation of RBCs, repair of body cells and tissues, and for the synthesis of DNA. Vitamin B12 is also important for maintaining normal nerve function. Deficiency in vitamin B12 or folate results in macrocytic anaemia. 31% adolescents had vitamin B12 deficiency and 37% of adolescents had folate deficiency.

Adequate iodine status (median urinary iodine concentration 100 µg/L and 300 µg/L) was observed among Indian adolescents. Iodine deficiency is associated with impaired concentration and poor social and cognitive performance.

Impact of Micronutrient Malnutrition

Hidden hunger in developing countries is associated with negative effects on health and survival. Micronutrient deficiency rarely occur alone, and deficits of different micronutrients frequently coexist in an individual. Micronutrient deficiencies affect people directly and society indirectly. The long-term effects of micronutrient deficiencies are detrimental to national economic development and human capital in addition to being evident at the individual level. The intergenerational effects of micronutrient deficiencies, which we are only now beginning to comprehend, and the cycle of micronutrient deficiencies that last throughout generations must be of utmost concern.

Ensuring Micronutrient sufficiency is termed 'Rainbow Revolution'. This is in view of the availability of these nutrients in multi-color nutrients represented in the Rainbow. Also seven micronutrients are in highlight with National consensuses/ supplementation programs; namely Iron, Folic acid, Vitamin A, Iodine, Zinc, Vitamin D and also gut related vitamins: Vitamin K & B 12. But, others among Vitamin B Complex, Vitamin C, Copper, Chromium also cannot be under-rated.

Strategies to Tackle Micronutrient Malnutrition

The goal of increasing food production to satisfy the demands of the world's expanding population has centered on efficiency and yield maximization. The output of energy has increased, while the micronutrient content of diets has decreased. As a result, several strategies have been used to raise micronutrient intake:

- Diversificationof diet: Diversification of diet is the most efficient intervention to prevent and tackle micronutrient malnutrition. A

balanced diet incorporating all the food groups will meet all micronutrient requirements. Adolescents should be educated about the practice of healthy eating habits and importance of the consumption of vegetables, fruits, dairy products, pulses, nuts,fish and meat in addition to the staple cereal based diet. My plate recommended by the US FDA can be used as an educational tool for this.

- Supplementation: Specific micronutrient deficiencies can be prevented by supplementing the nutrient to the target population. Even though supplementation is the most effective short term program to address the micronutrient deficiencies, in the long run these programs are to be replaced by dietary diversification and fortification.
- Fortification: Food fortification refers to addition of micronutrients to the food items during processing. Salt, oil, milk, wheat, rice, atta etc. are fortified by adding micronutrients like iodine, iron, vitamin A, vitamin d, folic acid and B12.
- Biofortification: Biofortification refers to breeding crops to increase their nutritive value, either by selective breeding or genetic engineering. Golden rice rich in beta carotene, iron and zinc fortified pearl millet are examples of biofortification.

Available National Public Health Programmes

- Vitamin A Supplementation program is integrated with national immunization program. One lakh units vitamin A is given to infants at 9 -10 months along with measles rubella vaccination. Second dose 2 lakh units is given along with first DPT booster at 18 months. Then further doses are offered at 6 monthly interval upto 5 years. Vitamin A is also supplemented to children with measles and severe acute malnutrition.
- Anemia Mukt Bharath aims at comprehensive management of anemia. The beneficiaries under this program include children aged 6 moths to 59 months, school children aged 5-9 years, adolescents, pregnant and lactating mothers and women of reproductive age groups. Prophylactic iron supplementation is one intervention in this program. It aims at supplementing 20 mg iron and 100 mcg folic acid twice weekly for children 6 months – 59 months; 45 mg iron and 400 mcg folic acid once weekly for children aged 5- 9 years; 60 mg iron and 500 mcg folic acid once weekly for adolescents and women of reproductive age group. Pregnant and lactating women are supplemented with 180 tablets of IFA tablets with 60 mg iron and 500 mcg folic acid. Other interventions under this program include biannual deworming, behavioral change communication campaign, point of care digital testing of anemia, iron fortification of food and addressing non nutritional causes of anemia. This program demands that all the food supplied through health facility program to be fortified with iron E.g. double fortified salt with iron and iodine, fortified wheat and rice with

iron, folic acid and vitamin B12.

- Zinc supplementation to children with acute diarrheal disease. All children with acute diarrheal disease are supplemented with zinc for 14 days (20 mg/ day for children above 6 months and 10 mg/ day for children below 6 months)
- Universal Iodization of salt is a success story in India that has ensured Iodine sufficiency among majority of the people of India.
- At Risk approach for supplementation of other B Complex vitamins, especially folate, B 12, Vitamin C, D & K is also in place for those at risk.

Summary & Conclusion

- Hidden hunger refers to micronutrient deficiency such as essential minerals and vitamins, most of which are often hidden and not visible clinically.
- Adolescents are a vulnerable subset to have hidden hunger due to their high nutritional requirements and exotic eating patterns.
- A good proportion of adolescents have multiple micronutrient deficiency diseases as shown in NFHS 5 & CNNS data.
- Micronutrient deficiencies can have long term effect on the growth and maturation during adolescence. Hidden hunger compromises the endurance, learning ability, productivity and hence impairs the socioeconomic growth of the individual and the society.
- Micronutrient deficiencies can be prevented by dietary diversification, supplementation, fortification and biofortification.

Further Reading

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What to be Included / Excluded from Adolescent Diet

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Introduction :

Adolescence, a period spanning from the onset of puberty to adulthood, is a crucial stage marked by profound physical, cognitive, neurobiological, and psychosocial development. Adolescence is a key time for accreting muscle and bone mass and acquiring cardio-respiratory fitness. Thus, being a **period of rapid growth which is nutritionally sensitive,** it requires adequate & appropriate nutrition to achieve the maximum potential [1].

Adolescence is associated often by a growing sense of independence from caregivers. As adolescents begin to make their own nutritional decisions, there is a risk of adopting unhealthy eating habits. These choices can contribute to issues such as being overweight/obese/underweight, developing eating disorders, or deficiencies of essential nutrients. These conditions can subsequently lead to **metabolic issues, growth disturbances, and hindered cognitive, psychosocial, and pubertal development [2].**

According to Comprehensive National Nutritional Survey (CNNS) 2019, 56.4% of total disease burden is due to unhealthy diets. The data collected from 35,831 adolescents showed 27.4% to be stunted whereas 24.4% had thinness, 4.8% were overweight and 1.1% were obese. They highlighted the fact that significant number of children had early indications of NCD (non-communicable disease) and related risk factors (hypertension and diabetes) [3]. In addition, older adolescents (15-19) years and females were at higher risk of being stunted when compared with adolescents (10-14 years) and female respectively. Therefore, Indian adolescents face the double burden of **under nutrition as well as over nutrition** which is strongly associated with socio demographic features [4]. Data from CNNS also suggested the high prevalence **of Vitamin B12, folic acid, iron, vitamin D and zinc deficiency among adolescents** [5]. Other studies have also shown that more than half of children are deficient in micronutrients (Vitamin D, iron, zinc, copper, selenium etc.)

It's vital for the pediatrician and other healthcare providers to be actively involved in adolescent health care education. To impart to them the necessary information about growth, development, changes, and nutritional needs. Education should not be solely based on anthropometric parameters like weight / BMI and concerns at presentation, but should be **holistic, encompassing comprehensive nutritional counselling, prioritizing balanced diet, about unprocessed food, hazards of media misinformation, misconceptions about so called 'Healthy' drinks and supplements, the future impact of unhealthy diet** etc. Adolescents should be **screened for body image concerns, non-communicable diseases, and disordered eating behaviors.** Additionally, healthcare providers should advocate for improved nutritional messaging for adolescents, ensuring it disseminates from reliable sources like schools, media, corporations, and public

health organizations [6]. **In May 2024 ICMR & National institute of nutrition have released revised dietary guidelines for Indian Population with emphasis on promotion of health and prevention of diseases across all age groups with special attention to the nutritionally vulnerable segments - infants, pregnant & lactating mothers, adolescents and elderly[7].**

They released **seventeen guidelines** ensuring adequate nutrition across all age groups

1. Eat variety of foods to ensure balanced diet
2. Ensure provision of extra food and healthcare during pregnancy and lactation
3. Ensure exclusive breastfeeding for the first 6 months& continue breast feeding till two years and beyond
4. Start feeding homemade semisolid complementary food to the infant soon after 6 months of age
5. Ensure appropriate and adequate diets for children and adolescents both in health and sickness.
6. Eat plenty of vegetables and legumes
7. Use oil/fats in moderation; choose a variety of oil seeds, nuts, nutricereals and legumes to meet daily needs of fats and essential fatty acids(EFA).
8. Obtain good quality proteins and essential amino acids(EAA) through appropriate combination of foods and AVOID protein supplements.
9. Adopt a healthy lifestyle to prevent abdominal obesity, overweight and overall obesity.
10. Be physically active and exercise regularly to maintain good health.
11. Restrict salt intake
12. Consume safe and clean food
13. Adopt appropriate precooking and cooking methods
14. Drink adequate quantity of water
15. Minimise consumption of high fat, sugar salt(HFSS) and ultra processed food.
16. Include nutrient rich diets of the elderly for the health and wellness
17. Read information on food labels to make informed and healthy food choices

What is to be included in Adolescent's diet ?

National Institute of Nutrition, and ICMR recommend nutritionally adequate balanced diet for adolescent children.[7]

Healthy Meal or healthy food : Healthy meal includes plentiful vegetables, sufficient whole grains and pulses or beans, along with modest amount of seeds or nuts, complemented by a selection of fruits and plain fermented yogurt or curd. Diet should be free of sugars or contains very minimal amounts. Similarly, the amount of fats /oils should be minimal with salt to taste [7].

Healthy Snack : A nutritious snack could be a vegetable or fruit salad sprinkled with

seeds or nuts and served with yogurt, accompanied by roasted or boiled beans, black-eyed peas, chickpeas, and peanuts[7].

Food Groups : Food has been categorised into **10 groups.** Group 1 includes-Cereals and Millets, Group 2-Pulses, Group 3-vegetables, Group 4-Nuts, oils, seed fats, Group 5-Green leafy vegetables, Group 6 Fruits 7- Dairy, Group 8-Roots and tubers, Group 9-Flesh foods and Group 10- Spices and herbs. One should consume adequate quantities of foods from **at least 5-7 food groups on daily basis,** with adequate added water intake This ensures diversity and adequacy of most nutrients, vitamins, minerals, phytonutrients, fibre and bioactive substances.

A Balanced Diet provides the necessary calories, minerals, and fibre, ensuring overall nutrition. It's diverse, offering a range of nutrients obtained from different food groups. Consuming a variety of wholesome foods is essential for nutritional adequacy. Exposure to sunlight is also recommended[7].

A balanced diet should provide 45% calories from cereals and millets, up to 15% from pulses, bean and meat/flesh. Rest of the calories from nuts, vegetables, fruits and milk(Fig.1).

This will ensure **Carbohydrates: 50-55% of total calories, protein-10-15%, Dietary fats-20-30%** (fig.2).

A very practical approach is **"My Plate for the day"** for inclusion of minimum 8 food groups. Half of the plate should comprise of vegetables, fruits, green leafy vegetables, roots and tubers. The next major portion is comprised of cereals and millets followed by pulses, flesh foods, eggs, nuts, oil seeds and milk/curd (Fig.3). The plate must be complete at least once daily and 5-6 days a week [7,9,10].Water as thirst dictates.

Age group	Category of work	Body wt	Cereals /Millets (g)**	*Pulses & Beans (g)	GLV (g)	Vege tables (g)	Roots & Tubers (g)	Fruits (g)	Nuts (g)	Milk/ Curd (ml)	Fats & oils (g)	Energy (Kcal) obtained from these food groups	Crude protein (g) Obtained from these food groups
Boys	10–12 yrs	34.9	280	90	100	200	100	100	30	400	35	~2230	76
Girls	10–12 yrs	36.4	250	85	100	200	100	100	30	400	30	~2060	70
Boys	13–15 yrs	50.5	390	130	100	200	100	100	40	400	45	~2860	95
Girls	13–15 yrs	49.8	300	100	100	200	100	100	35	400	40	~2410	81
Boys	16–18 yrs	64.4	450	150	100	200	100	150	50	400	55	~3300	107
Girls	16–18 yrs	55.7	315	105	100	200	100	150	40	400	40	~2490	85

Figure 1: Balanced diet composition for Adolescents as per ICMR NIN 2024[7]

Nutrients Energy (E)	Age group		
	1–2 years	3–18 years	Adults
Protein, %E * (PE ratio)	5–15	5–15	7.5–20
Total Fat, %E	35–40	30–35	20–30
#n-6 PUFA, %E	4–10	4–10	4–10
n-3-PUFA, %E	0.5–1	0.5–1	0.5–1
##EPA+DHA, mg/day	100	250	300
Carbohydrate, %E	50–60	50–60	50-60

Figure 2: Percent total energy from different macronutrients acceptable macronutrient distribution range(AMDR), ICMR NIN 2024[7].

Figure 3 : My plate for the day for 2000 Kcal adapted from ICMR NIN Guidelines 2024[7]

Nutrient Requirements : The diet of adolescents shouldalso be planned based on **Estimated Average Requirements (EAR)** whereas supervised supplementation in the state of deficiency is based on Recommended Daily allowance (RDA) as in other age groups [7]. The modified EAR (fig.4) and RDA(fig. 5) recommended by National Institute of ICMR in 2020 &updated in 2024 are as follows[7-9].

Category/ Age group	Physical activity level	Body Wt (kg)	Energy (**) (Kcal)	(Kcal/ kg-d)	Protein (g)	(g/kg-d)	Calcium (mg/d)	Magnesium (mg/d)	Iron (mg/d)	Zinc (mg/d)	Iodine (µg/d)	Thiamine (mg/d)	Riboflavin (mg/d)	Niacin (mg/d)	Vit B6 (mg/d)	Folate (µg/d)	Vit B12 (µg/d)	Vit C (mg/d)	Vit A (µg/d)	Vit D (IU/d)
Boys 10-12y	–	34.9	2320	64	27.0	0.75	650	199	32	7.0	70	1.3	1.7	12	1.7	180	2	45	360	400
Girls 10-12y	–	36.4	2060	57	27.0	0.71	650	207	16	7.3	70	1.2	1.6	12	1.6	186	2	44	370	400
Boys 13-15y	–	50.5	2860	57	36.0	0.72	800	287	15	11.9	100	1.6	2.2	16	2.2	258	2	60	430	400
Girls 13-15y	–	49.6	2400	49	33.0	0.70	800	282	17	10.7	100	1.3	1.9	13	1.8	244	2	55	420	400
Boys 16-18y	–	64.4	3120	52	45.0	0.70	850	367	19	14.7	100	1.9	2.5	19	2.5	296	2	70	490	400
Girls 16-18y	–	55.7	2500	45	37.0	0.67	850	317	18	11.8	100	1.4	1.9	14	1.9	253	2	57	400	400

Figure 4: Summary of estimated average requirements (EAR) of nutrients for Indian adolescents, ICMR NIN 2020 updated 2024[9].

Carbohydrates : Carbohydrates can be either simple or complex, with cereals and millets being major sources. It is preferable to consume healthy complex carbohydrates, such as those found in whole grains (like whole wheat flour, millets, and oats), whole lentils, and starchy vegetables. Dietary fibre plays a crucial role in delaying the absorption of carbohydrates and fats, which increases feelings of fullness. A fibre-rich diet helps lower blood glucose and lipid levels, enhances insulin sensitivity, and reduces the risk of metabolic syndrome.

Proteins : It is important to include high-quality proteins in the diet. Animal-based foods such as milk, meat, fish, and eggs, along with plant-based foods like pulses, are rich protein sources. Animal proteins are of high quality as they contain all essential amino acids and are bio available, whereas plant proteins have fewer essential amino acids but can be of good quality when millets, cereals, and pulses are combined. The best practice is to add items like milk, curd, paneer (cottage cheese), sprouts, dal, whole lentils, soybean, eggs, chicken, or fish to meals.

Fat : The diet should include an adequate amount of good quality fats with enough polyunsaturated fatty acids (PUFA) to meet the recommended essential fatty acids intake. It is important to limit the use of cooking oils (vegetable oils), saturated fats (like butter and ghee), and avoid partially hydrogenated vegetable oils. Fat intake should be 25-35% of the diet for adolescents, with saturated fats kept below 10% and trans fats kept nil/ negligible. Recommended amount of n-6 PUFA is 4-10% of total energy, n-3 PUFA is 0.5 -1% of total energy requirements.[7]Prefer monounsaturated fats (MUFA) over polyunsaturated fats (PUFA) and saturated fats.

MUFA : Groundnut oil, rice bran oil, canola oil

PUFA : Soyabean, sunflower, safflower, groundnut, kala chana, rajma, lobia [black-eyed pea], walnuts, sesame

Saturated fats : Butter, cheese, red meat, egg yolk, ham, sausages, cocoa butter, coconut oil

Trans fats: Ultra processed food, hydrogenated vegetable oils, deep fried recycled item like-samosa and kachori, French fries, chips, mithai, bakery products etc.

Vitamins and minerals : They must be present in diet in adequate amounts as recommended. They are required for various body processes, maintenance of structure of skin, nerves, bone, eyes, mucous membranes, transmission of nerve signals, acid/base balance, enzymatic and hormonal activity.

Salt and Sugar : Increased salt intake leads to development of hypertension and related cardiovascular morbidity. In 2020, the World Health Organization (WHO) recommended that adolescents >15 yrs &adults consume no more than 5 grams (just under a teaspoon) of salt per day, an amount providing about 2 grams of sodium per day[11]. **WHO further recommends that salt intake be adjusted for children aged 2- 15 years old, based on their energy requirements, relative to those of adults.** Several national health organizations recommend limiting sodium

consumption to 2.3 g per day[12].Eating plenty of vegetable and fruit provide adequate amount of potassium which helps in sodium excretion. One should always avoid preserved food and snacks. World Health Organization also recommends to reduce free sugars to less than 5% of the total daily energy intake [10].

What not to be included ?

As adolescents become more independent, they start making their own decisions about what, when, where, and with whom to eat. Due to their busy after-school schedules, they often eat out, away from home. Fast food is a popular choice because it is convenient, affordable, hyper palatable, available 24x7, and provides social opportunities with peers at fast food venues. This trend is further fuelled by widespread advertising, especially on social media. These foods are typically high in fat, sugar, and salt (HFSS) and are ultra-processed foods (UPFs)[7].

Over the past few decades, the fast food industry has grown significantly, leading to a dramatic increase in the consumption of fast food, junk food, HFSS, and sugar-sweetened beverages (SSBs). A survey by the Centre of Science and Environment (CSE) found alarmingly high consumption rates of packaged foods and SSBs among children aged 9-14 years (93% and 68%, respectively) [13]. **The major effects of this consumption include overweight, obesity, and other noncommunicable diseases such as dyslipidaemia, hypertension, insulin resistance, metabolic inflammation, diabetes, arthritis, eating disorders, and mental health issues.** This increases overall morbidity and mortality, lowering the quality of life and limiting adolescents from reaching their full potential.

ICMR and NIN in their recent guidelines defined HFSS and UPF foods for the first time and explained how they are detrimental to the health

HFSS : Foods containing more than 15% of energy from cooking oils, ghee, butter, or other visible fats. These foods often have excessive amounts of cooking oils, fats, sugar, and salt. It is recommended to minimize the consumption of HFSS and UPFs as they are energy-dense but poor in vitamins, minerals, essential amino acids, fatty acids, and fibre. They contribute to obesity, anaemia, cognitive and memory issues, and increase the risk of other noncommunicable diseases.

High fat diet : Includes deep-fried foods, French fries, samosas, kachoris, puris, savouries, desserts, biscuits, cookies, cakes, and parathas.

High saturated fats (SF) : Includes ghee, butter, coconut oil, palm oil, vanaspati, red meat, full cream milk, and cheese.

High salt : Found in processed/prepackaged foods like chips, sauces, biscuits, bakery products, papad, savoury snacks, namkeen, and pickles, which increase the risk of hypertension and burden the kidneys.

High sugar : Foods containing sugar that contribute more than 5% of total daily energy, which can be completely eliminated.

Ultra-processed foods (UPFs) : These are extensively industrially processed foods and beverages with numerous additives like preservatives, sweeteners, colourings, flavourings, and emulsifiers. This extensive processing depletes micronutrients, and these foods are low

in fibre and nutrients, associated with negative health outcomes, noncommunicable diseases, and accelerated aging. Examples include sugary drinks, cookies, frozen processed meats, cold cuts, instant foods, cakes, and ice creams.

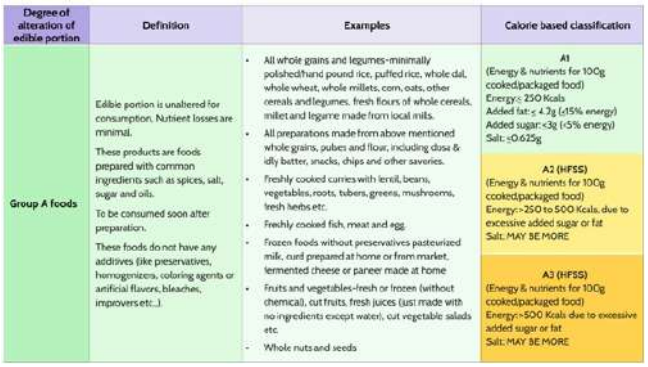
Instant foods - ready to eat soups, cake mixes, instant noodles and breakfast cereals fall under UPF category as they have undergone a lot of processing and often contain very high added sugar/salt/fats & additives.

Fast foods : like burger ,pizzas, cold shakes, milkshakes are unhealthy.

Street foods : sold by hawkers and vendors outside are healthy if they are wholesome and prepared fresh however food handling, contamination, use of recycled oil and refined products needs consideration.

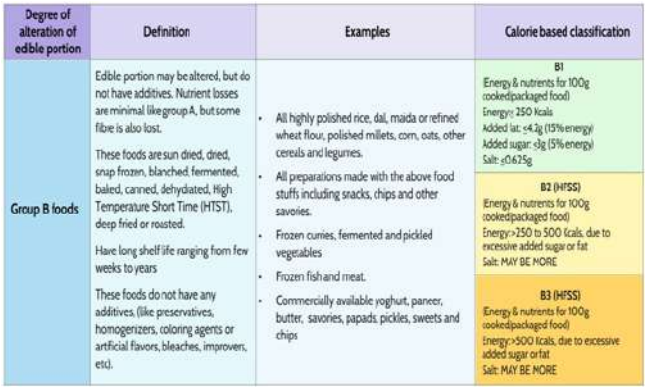
Categorisation of foods based on level of processing : ICMR NIN in their new guidelines have categorised the food products based on processing, nutrients content and additives, so as to make informed food choices for the 'My plate for the day'. ***Nutrient of concern threshold for 100 grams has been defined for food and beverages i.e. 70 kcal for liquids and 250 kcal for solids, 0.625 gram of salt, 3 gram added sugar, 4.2 gram added fats.***

Based on the level of processing and degree of alteration of edible portion, foods have been categorised into 3 groups (figure 6-8). **Group A** : Minimal processing, **Group B** : Moderate level of processing, **Group C** : Excessive processing with many additives (UPF). Now after classifying them into three groups, each group is further classified into 3 categories based on sugar, salt and fat content (fig6-8)



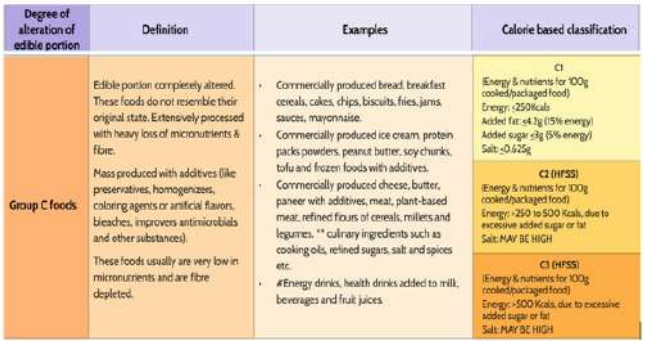
Degree of alteration of edible portion	Definition	Examples	Calorie based classification
Group A foods	Edible portion is unaltered for consumption. Nutrient losses are minimal. These products are foods prepared with common ingredients such as spices, salt, sugar and oils. To be consumed soon after preparation. These foods do not have any additives (like preservatives, homogenizers, coloring agents or artificial flavors, bleaches, improvers etc...)	• All whole grains and legumes-minimally polished/hand pound rice, puffed rice, whole dal, whole wheat, whole millets, corn, oats, other cereals and legumes, fresh flours of whole cereals, millet and legume made from local mills. • All preparations made from above mentioned whole grains, pulses and flour, including dosa & idly batter, snacks, chips and other savories. • Freshly cooked curries with lentil, beans, vegetables, roots, tubers, greens, mushrooms, fresh herbs etc. • Freshly cooked fish, meat and egg. • Frozen foods without preservatives pasteurized milk, curd prepared at home or from market, fermented cheese or paneer made at home • Fruits and vegetables-fresh or frozen (without chemical), cut fruits, fresh juices (just made with no ingredients except water), cut vegetable salads etc. • Whole nuts and seeds	A1 (Energy & nutrients for 100g cooked/packaged food) Energy: ≤ 250 Kcals Added fat: ≤ 4.2g (≤15% energy) Added sugar: ≤3g (≤5% energy) Salt: ≤0.625g A2 (HFSS) (Energy & nutrients for 100g cooked/packaged food) Energy: >250 to 500 Kcals, due to excessive added sugar or fat Salt: MAY BE MORE A3 (HFSS) (Energy & nutrients for 100g cooked/packaged food) Energy: >500 Kcals due to excessive added sugar or fat Salt: MAY BE MORE

Figure 6 : ICMR NIN 2024 Food categorisation based on extent of processing and nutrients (fat, sugar and salt) of concern.



Degree of alteration of edible portion	Definition	Examples	Calorie based classification
Group B foods	Edible portion may be altered, but do not have additives. Nutrient losses are minimal like group A, but some fibre is also lost. These foods are sun dried, dried, snap frozen, blanched, fermented, baked, canned, dehydrated, High Temperature Short Time (HTST), deep fried or roasted. Have long shelf life ranging from few weeks to years These foods do not have any additives (like preservatives, homogenizers, coloring agents or artificial flavors, bleaches, improvers, etc).	• All highly polished rice, dal, maida or refined wheat flour, polished millets, corn, oats, other cereals and legumes. • All preparations made with the above food stuffs including snacks, chips and other savories. • Frozen curries, fermented and pickled vegetables • Frozen fish and meat. • Commercially available yoghurt, paneer, butter, savories, papads, pickles, sweets and chips	B1 (Energy & nutrients for 100g cooked/packaged food) Energy: ≤ 250 Kcals Added fat: ≤4.2g (15% energy) Added sugar: ≤3g (5% energy) Salt: ≤0.625g B2 (HFSS) (Energy & nutrients for 100g cooked/packaged food) Energy: >250 to 500 Kcals, due to excessive added sugar or fat Salt: MAY BE MORE B3 (HFSS) (Energy & nutrients for 100g cooked/packaged food) Energy: >500 Kcals, due to excessive added sugar or fat Salt: MAY BE MORE

Figure 7 : ICMR NIN Food categorisation 2024 based on extent of processing and nutrients(fat, sugar and salt) of concern



Degree of alteration of edible portion	Definition	Examples	Calorie based classification
Group C foods	Edible portion completely altered. These foods do not resemble their original state. Extensively processed with heavy loss of micronutrients & fibre. Mass produced with additives (like preservatives, homogenizers, coloring agents or artificial flavors, bleaches, improvers antimicrobials and other substances). These foods usually are very low in micronutrients and are fibre depleted.	• Commercially produced bread, breakfast cereals, cakes, chips, biscuits, fries, jams, sauces, mayonnaise. • Commercially produced ice cream, protein packs powders, peanut butter, soy chunks, tofu and frozen foods with additives. • Commercially produced cheese, butter, paneer with additives, meat, plant-based meat, refined flours of cereals, millets and legumes. ** culinary ingredients such as cooking oils, refined sugars, salt and spices etc. • #Energy drinks, health drinks added to milk, beverages and fruit juices.	C1 (Energy & nutrients for 100g cooked/packaged food) Energy: ≤250Kcals Added fat: ≤4.2g (15% energy) Added sugar ≤3g (5% energy) Salt: ≤0.625g C2 (HFSS) (Energy & nutrients for 100g cooked/packaged food) Energy: >250 to 500 Kcals, due to excessive added sugar or fat Salt: MAY BE HIGH C3 (HFSS) (Energy & nutrients for 100g cooked/packaged food) Energy: >500 Kcals, due to excessive added sugar or fat Salt: MAY BE HIGH

Figure 8 : ICMR NIN Food categorisation2024 based on extent of processing and nutrients (fat, sugar and salt) of concern

The IAP has made very apt recommendations related to unhealthy foods : The acronym in use is **JUNCS** to cover majority of unhealthy foods (**J** - Junk food, **U**

- Ultra processed food, **N** -Nutritionally inappropriate foods, **C** - caffeinated / carbonated food / beverages). Avoid consumption of JUNC or limit to only one serving per week not exceeding 50% of total daily energy intake. Fruit juices/ fruit drinks/ SSBs should be avoided. Even if given should be limited to 250 ml per day for adolescents and should preferably be fresh juice. Caffeinated energy drinks should not be consumed. Tea /coffee should not be more than 200 ml/day in adolescents if no other caffeinated products are being consumed [14].

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READING FOOD LABELS

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Food labeling is a crucial aspect of nutritional literacy & forms an important public health tool to enhance public health awareness,as it assists to understand nutritional value & compare nutritional value of similar food products for a healthier food choice based on relevant nutrition information.

The Role of International and National Bodies

To ensure the accuracy and consistency of food labels, international and national organizations set guidelines and standards. The World Health Organization (WHO) and the Food and Agriculture Organization (FAO) collaborate to advise the Codex Alimentarius Commission; the body responsible for establishing international food labeling standards. In India, the Food Safety and Standards Authority of India (FSSAI) sets science-based standards to regulate food manufacturing, storage,distribution,sale and import to ensure availability of safe and wholesome food.

Front-of-pack (FOP) labelcontains thecatchiest information andconstitutes the principal display,as information written is easily noticeable,it'sbetter understood and is more consumer friendly. An ideal FOP should be aligned with National public health policy,based on transparent and easily accessible principles,have interpretive based on Symbols/Colors/Quantifiable elements.It should have easy to understand design, nutritional criteria chosen should enable easy interpretation,help with appropriate comparisons in the food group and uniformlyapplicable,be consumer friendly, surpassliteracy/language/age barriers, and assist in quick assessment by clear information.

Nutritional information on the **Back-of-pack** is not consumer friendly as it's generally difficult to read and understand, as there are too many numbers which require decoding and complex calculation.

The primary purpose of FOP is informing the consumers, even impressing them. Back of pack information is more suited for compliance and enforcement. Ideally both Front & Back of pack should complement each other. Consumer education so is of prime value.

Critical Information on Food Labels

1. 'Date of Manufacture' & 'Date of Expiry' or 'Best Before' date for freshness.
2. List of ingredients to ensure that you are not purchasing the product with any of the constituents, you are allergic to. Common allergy-causing ingredients include casein in milk, tree nuts including peanuts, eggs, fish, shellfish, soybean, and proteins in wheat.
3. Most of the food packets come up with one or more claim/ declarations. It is observed that adding health claims to front labels makes people believe a product is healthier than the same product that doesn't list health claims, thus affecting

consumer's choices. Manufacturers maybe dishonest and use health claims that are misleading, while in some cases out-and-out false, e.g. claiming better growth and development in children, making a child strong/tall, reducing risk of diseases, help in weight reduction, etc. Further, fat-free / diet does not mean calorie-free, rather lower fat items may have as many calories as full-fat items. Please verify the claims such as fat free, zero cholesterol, sugar free, low sodium, trans fat free, etc. by carefully reading the Nutrient ingredient list and the Nutrient Profile table thoroughly to confirm its authenticity.

It is important to be aware that any "health claim," "nutrition claim," or "risk reduction" claim made on the label are thoroughly scrutinized by the FSSAI authorities & validated by test data. Following are the definitions of these terms:

- **'Health claim'** means any representation that states, suggests, or implies that a relationship exists between a food or a constituent of that food and health. This could include nutrition claims which describe the physiological role of the nutrient in growth, development, and normal functions of the body, other functional claims concerning the specific beneficial effect of the consumption of food or its constituents, in the context of the total diet. Also on normal functions or biological activities of the body and such claims relate to a positive contribution to health or the improvement of position or to modifying or preserving health, or disease. Risk reduction claim is about the consumption of a food or food constituents, in the context of the total diet, contributing to the reduced risk of developing a disease or health-related condition. To sum up,
- **'Nutrition claim'** means any representation that states, suggests, or implies that a food has particular nutritional properties which are not limited to the energy value but include protein, fat, carbohydrates, vitamins, and minerals.
- **'Risk reduction'** in the context of health claims means significantly altering a significant risk factor for a disease or health-related condition.

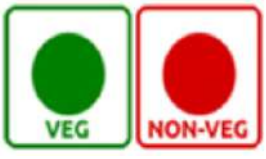
4. Look for logos of

a) FSSAI

b) ISI mark for packaged drinking and mineral water and certain processed foods such as infant food, milk and skimmed milk powder

c) AGMARK for all agricultural products such as vegetable oil, pulses, cereals, spices, honey, fruits and vegetables

d) GREEN dot for vegetarian food, BROWN dot for non-vegetarian food, including egg



e) Logo for fortified food. 'Fortified' food means essential nutrients such as vitamins and minerals have been added to the food. Eating fortified wheat flour, rice, milk, oil, and salt helps to meet our daily requirement for nutrients that help growth and good health.

A great way to help the environment, while fulfilling our food needs is by using products that can be recycled. The recyclable sign on the packet also can be identified.

FSSAI has launched an initiative called 'Jaivik Bharat' to ensure genuineness of food labelled and sold as 'organic'.The 'Jaivik Bharat' logo, a common identity for organic food, helps us identify authentic organic food.

5. INSTRUCTIONS FOR USE: Must be read& followed for best results.
6. STORAGE CONDITIONS: Must be read & followed where to keep food product & for how long.
7. SERVING SIZE & NET WEIGHT : The net weight of the packet is the total amount of product contained in packet. The serving size may be given as the number of servings per container/packet or the weight/volume in gm/ml.The Nutrition Facts Label information is generally based on one serving or per 100g /100ml. Hence, check how many servings/g/ml you are actually consuming to understand the number of calories, amount of sugar, salt and fat consumed.
8. USE NUTRITION FACTS TO CHOOSE PROCESSED FOODS. Nutrition Labels describe the nutrient content of a food to help the consumer make healthier food choices and the recommendations are for healthy people. They are also helpful to those who live with health conditions that require diet changes. For e.g., someone with renal disease/hypertension who needs to monitor his sodium, or someone with diabetes counting his carbohydrates can read the label and know whether a certain food can fit in his diet or not.

In May 2010, the WHO released a set of recommendations on the marketing of foods and non-alcoholic beverages to children and called on governments worldwide to reduce the exposure of children to marketing that promotes unhealthy foods and beverages. As the definition of 'unhealthy' is debatable, an objective method of describing foods as healthy or unhealthy was needed. A **nutrient profile model** does just that and therefore, a nutrition profile model for South East Asia was developed. The model is consistent with international guidance for preventing chronic disease and is a simple system with clear cut-offs for defining which foods are not suitable for advertising to children.

The WHO Population Nutrient Intake Goals for preventing diet-related chronic diseases provides the acceptable levels of consumption of specific nutrients as a percentage of daily energy requirements. These goals are also useful as a guide for healthy diets. The nutrients for which thresholds have been set are: total fat, saturated fat, total sugars, added sugars and sodium. These guidelines and goals are aimed at guiding overall daily food intake rather than individual food consumption. The detailed rationale for thresholds for each food category is provided in the document.

ENERGY : WHO Nutrient profile model for south-east Asia region. Threshold criteria for nutrients in most food categories in the model are based on two main assumptions- first: daily energy requirement is approximately 2000-2150 kcal for a 10–11-year-old, moderately active female and male child respectively. Therefore, an average of 2000 kcals is used as the energy intake for calculation of Thresholds. Second: **approximately 25% of energy requirement is from each main meal (3 meals/day) and 10-12% from snacks (2 snacks/day).** Therefore, thresholds have been calculated on the basis that each 100 g of product provides approximately 230 kcals. This energy level also aligns with the threshold energy content of foods defined as energy dense by various agencies.

SODIUM : A soft, silver-white element found in salt; 1 g of sodium equals about 2.5 g of salt. **Sodium (mg) to Energy content (kcal) equal to or higher than 1:1 is considered excessive in sodium,hence maximum RDA of 2000 mg of sodium is consistent with energy intake 2000 kcal.**

SUGARS Total sugars refers to the total sugar content of the food product, which may be composed of intrinsic sugars incorporated within the structure of intact fruit and vegetables; sugars from milk (lactose and galactose), sugars naturally present in honey, fruit juices, etc. and all additional monosaccharides and disaccharides added to foods by the manufacturer, cook or consumer. **'Added sugars'** refer to monosaccharides and disaccharides added to foods and beverages by the manufacturer, cook or consumer during processing or preparation. For the purpose of nutrient profile model, the term 'added sugar' is used for consistency with available data in food composition tables. The WHO guidelines on sugars are for **free sugars**, covering monosaccharides (such as glucose or fructose) and disaccharides (such as sucrose or table sugar) added to foods by the manufacturer / cook / consumers in addition to sugars naturally present in honey, syrups, fruit juices and fruit concentrates. In this case, intrinsic sugars in, for example, fruits and vegetables are not considered free sugars.

Sugar, if amount of energy (kcal) from free sugars [free sugars (g) x 4 kcal] is equal to or higher than 10% of the total energy (kcal) for the product, it is excessive, though a lower threshold of 5% is preferred and used for sugar sweetened beverages.

TOTAL FAT : The total fat content of a food product composed of fatty acids from the three main groups (saturated fatty acids, mono-unsaturated fatty acids, and poly-unsaturated fatty acids), which these groups are differentiated based on their chemical formula and structure.

TOTAL FAT : The total fat content of a food

product composed of fatty acids from the three main groups (saturated fatty acids, mono-unsaturated fatty acids, and poly-unsaturated fatty acids), which these groups are differentiated based on their chemical formula and structure.

Trans-fat : A form of fat that results from the hydrogenation of unsaturated fatty acids or occurs naturally in the milk and meat of certain animals. **If amount of energy (kcal) from total fats [total fats (g) x 9 kcal] is equal to or higher than 30% of the total energy (kcal), it is excessive.**

Saturated fats are fat molecules with no double bonds between carbon molecules. The saturated fatty acids used most often in current food products are C14, C16, and C18. In the case of milk and coconut oil, however, saturated fatty acids range from C4 to C18. **If amount of energy (kcal) from saturated fats [saturated fats (g) x 9 kcal] is equal to or higher than 10% of the total energy (kcal), then there is an excess of saturated fats.**

Processed food : Food products manufactured by industry in which salt, sugar, fat and/or other culinary ingredients have been added to unprocessed or minimally processed foods to preserve them or make them more palatable. Processed food products are derived directly from natural foods and are recognized as a version of the original foods. The processes used in the manufacture of these food products may include different methods of preparation, cooking, preservation and, in the case of cheeses and breads, nonalcoholic fermentation. Food-grade additives may be used to preserve the sensory properties and safety of these products.

Unhealthy food : Individual or composite foods and beverages that are high in energy, sodium, sugar and/or low in other beneficial nutrients such as protein, vitamins, minerals, fibre ,non-nutrient compounds. These foods and beverages mostly have strong salty and/or sweet taste and rich mouth feel from fat.

All calculations of nutrients are done according to the cut offs mentioned above, hence the calculations on the Labels do not apply to children <10 years

GUIDELINES FOR DAILY ALLOWANCE (GDA) or DAILY VALUE % (DV%)

- Some foods display Guidelines for Daily Allowance or Daily Value%,which informs us the percentage of daily requirements of the particular nutrient fulfilled by that food.
- **DV is based on a 2000-calorie diet. If a nutrient's DV is listed as 10% then it meets 10% of the total amount of that nutrient you need per day to function properly.**

  THE 5-20 RULE - If a nutrient gives less than 5% of daily requirement (Daily Value), it's considered to be low in that nutrient. A nutrient that has more than 20% of daily requirement, the food is high in that nutrient. [The daily value for fiber is set at 28g, and it's suggested we should get at least this much to maintain good health. A product contains 9g of fiber/100g which makes it a high fiber product.] This is a helpful way to check if the food is high or low in a nutrient value. **A DV of 5% or less means the food item is low in that nutrient and 20% or more means it is high in that nutrient.**

BACK OF PACK :

LISTING OF INGREDIENTS in the pack, in the order of its quantity from highest to lowest amount of its presence in the food, is displayed on the back, commonly in very small font, often under the folds ! The weight of ingredients is often not mentioned.

FOOD ADDITIVES (FA) are substances which normally are not consumed as food by themselves oras typical ingredients, but added intentionally to a food for specific technical functions, maybe with or without nutritive value. FA do not include any substances added to food for maintaining or improving its nutritive value (Food fortification).

Processing of foods includes adding preservatives, coloring agents, artificial flavors, along with fat, salt and sugars, to ensure cheap & convenient food handling, safe transport with prolonged shelf life with improved freshness / texture / appearance while making it hyperpalatable. They maintain the pH needed to prevent growth of bacteria, fungi or any pathogenic organisms.

FA can be derived from plants, animals, or minerals, or they can be synthetic.

-Natural, e.g., from beetroot juice used as a coloring agent, salt, or Vitamin C;

-Synthetic e.g., benzoic acid (E210),used as a preservative, Nisin (E 234)used as a preservative in some dairy products, semolina and tapioca puddings.

FA can be Direct and Indirect Food additives.

Direct - which are added to a food for a specific purpose. Most direct additives are identified on the ingredient labels. E.g. xanthan gum used to add texture

Indirect - that come into contact with food as part of packaging, holding, or processing food. e.g., processing aids, food contact materials, packaging materials, cleaning agents,

ion exchange resins, enzyme preparations, microorganisms, utensils, working surfaces,

equipment, metal, plastic, paper, wood, detergents, sanitizers.

FAs are classified with codes internationally.

Preservatives-compounds to prevent/retard microbial spoilage of foods are of 2 types-Class 1

Preservatives : include natural substances, e.g. salt, sugar, honey, vegetable oils, and spices. Their addition to foods is usually not restricted.

Class 2 preservatives : include chemical substances like benzoic acid, and sorbic

acid, which can usually be added only in small amounts.

Overall, Class I preservatives are preferred over class II.

Classification of additives is based on criteria of their technological functions & physical characteristics

Coloring Agents - substances used to modify / stabilise coloring characteristics of a food include dyes, pigmentsor substances to impart color to the food.

They could be natural colors like turmeric, orsynthetic colors derived from fruits, vegetablesand chemicals like tartrazine and sunset yellow.

Artificial sweeteners - are sugar substitutes e.g. saccharin and aspartame.

Antioxidants - are added to oils and fats to

prevent oxidative rancidity, e.g. ethyl propyl,

octyl gallates.

Flavoring Agents - include natural and synthetic compounds like menthol and vanillin.

Emulsifiers, Stabilizers & Thickeners- e.g. guar gum, gelatin, agar-agar.

Humectants - are moisture retention agents which control viscosity, texture, bulking, retention of moisture, reduction of water activity, control of crystallization and improvement of softness, e.g. polyhydroxyl alcohols.

Flour improvers - are bleaching and maturing agents used to bleach and mature flour, e.g. benzyl peroxide.

Curing Agents - are additives used to preserve meats, give them desirable color and flavor and discourage microbial growth, e.g. sodium nitrite.

Chelating Agents - act as scavengers of metals which catalyze oxidation, e.g. ethylene diamide tetra acetic acid.

Leavening agents - cause expansion of dough and batter by releasing gases and giving a porous structure, e.g. yeast, baking powder and baking soda.

Emulsifiers : Substances that allow maintenance or formation of a homogeneous mixture of two or more non-miscible phases, e.g. water and oil.

Thickeners : macromolecules that preserve food textures such as viscosity or gelling

effect, e.g. adding E-406 (agar-agar) to a jam preserves its texture.

Anti-caking agents : substances that prevent formation of clumps/lumps that affect product homogeneity& usually used in soups, sauces,juices or dairy products.

Acidity correctors : substances that control or alter the pH of food, to ensure there is no proliferation of undesirable bacteria which could health risks.

Antioxidants : are additives added mainly to fatty foods to delay or prevent rancidity due to oxidation can be natural / synthetic.

Flavor enhancers : substances that enhance taste and/ or aroma of a food without

altering its own flavor,widely used in sauces and soups. Monosodium glutamate

is one of the most popular enhancers processed foods.

Aromatic substances : that provide a new aroma and/ or correct

the aroma of a food or beverage and obtained from extracts of vegetable origin.

Improvers & correctors - additives used in baking, wine making, or meat products, or to regulate the maturation of dairy products, such as cheese.

CODING OF FOOD ADDITIVES :

E numbers - are number codes for food additives mentioned on food labels throughout

the European Union. In the 1960s,regulators made a standardized list of food additives, with Europe formalizing E numbers (E for Europe) to replace the chemical or common names of particular food additives in the ingredients list of packaged foods. The fact that an additive has an assigned E number gives the assurance that the additive has passed safety controls, and been approved for use in European Union. The details of E codes including all side effects are available as apps on Android

International Number System (INS) - numbers are assigned to identify food additives, and generally correspond to E

numbers for the same compound, e.g. INS102 (tartrazine) is also E102. INS numbers are not unique and in fact, one number may be assigned to a group of similar compounds, e.g. vitamin C would be called E300 in Europe.

FA/E codes to be avoided -

E120-Carmine (red color obtained from cochineal beetle)

E129-Allura red (red azodye)

E414-Gum Arabic (stabilizer)

E 202-Potassium sorbate (preservative)

E 338-Phosphoric acid (antioxidant sequestrant)

E 621-MSG (Flavor enhancer)

E200-Sorbic acid

E150-Caramel colorE 250-Sodium Nitrite

E 6 5 3 - Disodiumribonucleotide(flavorenhancer)

READING FOOD LABELS PRACTICALLY

To better understand food labels, let's perform an exercise using real product packaging.

Goal: To know about the fat, salt/sodium, sugar content per serving size /amount consumed)

Take 2Empty food packets-one salty [eg. bhujia/soup packet] and one sweet [chocolate/any fruit/fizzy drink/lassi/ yoghurt/ sweet biscuit

Read follow the following steps sequentially

1)weight /volume of the packet

2)Serving size written on packet

3) Calculate the number of calories per serving size/you generally consume in reference to the daily permissible limits.

4) Calculate the amount of sugar per serving size/you generally consume in reference to the daily permissible limits

5)Calculate amount of salt & sodium per serving size/you generally consume in reference to daily permissible limits.

Remember : Search for sodium content of sweet foods and Sugar in Salty snacks

An example for demonstration [back of pack of a popular soup powder pack

a) read sodium and/or salt content in it

b) compare the amount to the daily permissible limit of sodium and salt

c) convert sodium into Salt or vice versa as the case maybe

Read this back of label:

a)This product has 4936 mg Sodium in 100 gms

b) This pack of 44 gms serves soup for 4 [Once labelled healthy its unlikely 4 people will take itmight be consumed by even one or two persons]

If 4 people take --11gms per serve will provide 543 mg sodium

If one person takes --44gms,it will provide 2172 mg sodium

c) To convert sodium to salt,you need to multiply amount by 2.5 i.e.

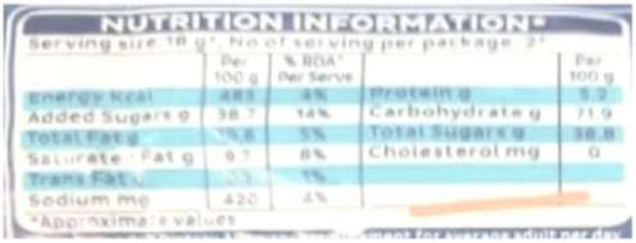
543 x 2.5= 1357 mg salt =1.4 gm salt in 11 gms of powder!!

2172 x2.5= 5430 mg salt =5.4 gm saltin 44gms of powder!!

Understand the amount in relation to your daily permissible limits of salt and sodium ie.5 gms & 2 gms respectively.

6) Pick up one popular biscuit packet and follow the same sequence as above-

An example for demonstration pack of a popular BISCUIT pack



a) The sodium content in it is 420 mg in 100 gms,in one pack of 46.3 gms=195 mg

b) Compare the amount to daily permissible limit of sodium & salt=195/2000=one tenth of sodium req

c) Convert it into Salt- 195x2.5=488 mg salt.See the salt in supposed-to-be-sweet biscuits!!

d) Read sugar content in it 38.4 gms in 100 gms,in one pack of 46.3 gms= 18 gms=~4tsf sugar

e) Compare the amount to the daily permissible limit of sugar=18/25 gms already consumed in just this small pack of biscuit. So much of sugar in this pack!!

LET'S TAKE SOME EXAMPLESTO READ ABOUT FOOD ADDITIVES ON BACK OF PACK

Materials:Empty food packets, cans, bottles

Additives are written on the back of above biscuit pack as E codes/International Number System (INS).The E-code on a popular biscuit pack is 122 and these are its details from the Food Codesapp.You can google it too.

E122 is added to your favorite biscuit just to give it your favorite colour!! Read the harms of this additive!!

Another commonly used additive is E 338present in many fizzy drinks

LET'S REMEMBER-OUR HEALTH IS IN OUR HANDS:

OUR SLOGAN - JUNCS IN BIN, NOT WITHIN!!

Suggestions for further reading-

1.For details about clarifications on claims, please refer to Pink Book by FSSAI.

2. Regional Office for South-East Asia, World Health Organization. (•2016)•. WHO nutrient profile model for South-East Asia Region. WHO Regional Office for South-East Asia. https://iris.who.int/handle/10665/253459

3. 'Indian Organic Integrity Database' is available through the Jaivik Bharat portal at www.jaivikbharat.fssai.gov.in.

Sports Nutrition & Adolescence

Dr. Elizabeth K E

Dr. Bindusha S

Sports/Performance nutrition is a science that provides and maintains the food or dietary aids necessary for health, growth and physical performance. It deals with nutrients, such as vitamins, minerals, other supplements and organic substances, such as carbohydrates, proteins and sugars in athletes of all sorts who want to make use of nutrition for their benefit.

Sports nutrition is defined as the study and practice of nutrition and diet as it relates to athletic performance. Although an important part of many sports training regimens, it used to be considered only in strength sports like weightlifting and body building and endurance sports like cycling, running and triathlon. But, now work out at home or at gymnasiums has become a lifestyle to many and hence, widespread interest is there in this subject, especially among adolescents.

To many, sports nutrition means eating more proteins. Athletes should not eat high-protein with low-carbohydrate diets as carbohydrates are the primary fuel for intense muscular effort. Keeping fit by healthy eating and good exercise is the best for best performance. Most experts agree that moderate exercise for 30 min every alternate day. This amount of exercise has been linked with improving cardiovascular function, lowering cholesterol and blood pressure, losing or maintain weight, and reducing stress. Intermittent exercise, several 10-minute sessions a day, may be the best way to reduce the risk of heart disease in busy individuals.

Water is the most essential ingredient to a healthy life. Water has many important functions in the body including:

1. Transportation of nutrients and elimination of waste products
2. Lubricating joints and tissues
3. Temperature regulation through sweating
4. Facilitating digestion

General Guidelines for Fluid Needs During Exercise

While specific fluid recommendations are not possible due to individual variability, most athletes can use the following guidelines as a starting point, and modify their fluid needs accordingly.

Hydration Before Exercise

- Drink about 2 glasses, 2–3 hrs before exercise.
- Drink 1 glass, 10–15 min before exercise.

Hydration During Exercise

- Drink 1 glass every 10–15 min during exercise.
- If exercising longer than 90 min, drink 1 glass of a sports drink, with no more than 8% carbohydrate, every 15–30 min.

Hydration After Exercise

- Weigh oneself before and after exercise and replace fluid losses.
- Drink 2–3 glasses of water for every i/2 kg loss.
- Maintain 4:1 ratio of carbohydrate to protein in the supplements within 2 hrs after exercise to replenish glycogen stores.

Sports Supplements/ Sports Drinks

Most supplements that are supposed to build muscle do not work. But some, such as creatine, fluid and electrolyte replacers, carbohydrate supplements and liquid meal replacers may offer some benefits among strength training athletes.

Energy bars and sports drinks may be helpful, if exercise lasts longer than 1 hr. Carbohydrate supplements can be useful to get adequate carbohydrates into a busy day, with no time to eat a meal. Consuming a meal-replacement beverage just after muscle-building exercise is convenient, but one can do the same thing with a tuna sandwich, a banana or other food snack. Consuming protein and carbohydrate after workout help to fuel muscle growth and replenish glycogen stores for the next workout.

Sports drinks can be helpful to athletes who are exercising at a high intensity for 60 min or more. Fluids supplying 60–100 kcal per 1 glass help to supply the needed calories required for continuous performance. It is not necessary to replace losses of sodium, potassium and other electrolytes during exercise since it is unlikely to deplete the body's stores of these minerals during normal training. If, however, for exercising in extreme conditions over 3 or 5 hrs like marathon, ironman or ultra-marathon, a complex sports drink with electrolytes. Can be taken

Vegetarians can get adequate amounts of essential amino by eating a variety of plant proteins. Vegetarian athletes are at risk for being deficient in Vitamins B12, D, riboflavin, iron, zinc and calcium.

Summary & Conclusion

- Sports drinks are most often abused due to lack of information,
- Athletes should not eat high-protein, low-carbohydrate diets because carbohydrates are the primary fuel for intense muscular effort.
- Keeping fit by healthy eating and good exercise is the best for better performance.

EATING DISORDERS

Dr. Newton Luiz

Introduction

This article focuses on Anorexia Nervosa (AN), Bulimia Nervosa (BN) and Binge-Eating Disorder (BED), three major eating disorders that share a common psychopathology, with the patient occasionally shuttling from one to the other disorder. They are all caused by an irrational craving for an excessively slim figure. The patient has a distorted body image, is intensely dissatisfied with her own weight and body shape, and takes extreme steps to lose weight. This may seriously impact her health, her emotional status, and hersocial life. In developed countries, eating disorders rankthirdamong the major chronic mental illnesses of adolescent females.

Types Of Eating Disorders (EDs)

ANOREXIA NERVOSA

The patient (typically a female adolescent) is convinced that she is obese, and drastically reduces her food intake. Even after she becomes severely undernourished, she insists that she is overweight, and may rarely starve herself to death. She is fanatically concerned about thinness, and may complain that her abdomen is protuberant or her thighs are not slim. The severity of this psychiatric ailment is assessed by the degree of malnutrition i.e., whether mild, moderate, severe or extreme. An occasional patient who was initially obese may rapidly lose weight and present with a normal weight ('Atypical AN').

Restricting Type of AN : She takes very little food at every meal, mostly low-calorie food like salads, fruits and vegetables, and strictly avoids snacks. She counts her calories obsessively. She may exercise compulsively, and may excel in long-distance running. She may occasionally chew food and then spit it out.

Binge-eating/Purging type of AN : In addition to the food restriction, she indulges in recurrent secretive episodes of binge eating and purging. Binge-eating refers to episodes of uncontrolled and excessive food intake, consumed rapidly and uncontrollably, whichend only when nausea and abdominal pain prevent further intake. Purging often follows, hoping to get rid of the extra calories by self-induced vomiting and/or by the misuse of laxatives, diuretics, and enemas.

Emaciation may cause her to feel cold, tired and weak all the time, to experience faints or palpitations, to lose scalp hair loss while lanugo type hair grows on her face, and she may have constipation. Anxiety and obsessive-compulsive symptoms are common.

BULIMIA NERVOSA

The dominant symptom is very frequent episodes of binge-eating occurring over a period of at least 3 months, usually associated with weight loss maneuvers like purging, fasting, or excessive exercise. There are two variants of BN: (a) Purging type, engaging primarily in induced vomiting or misuse of laxatives and enemas, and (b) non-purging type, preferring fasting and excessive exercise. Severity is assessed by the frequency of inappropriate

compensatory strategies: it is considered mild if it occurs 1-3 times a week, moderate if 4-7 times, severe if 8-13 times, and extreme if 14 or more times.

Secretive and guilt-ridden binge-eating of calorie-rich food is the essential feature. She vomits after a prolonged binge, but this is futile as most of the food has already reached the small intestine. She uses laxatives and enemas, but they act only on the large bowel, while absorption occurs in the small intestine. Diuretics result in loss of fluids, not calories. She persists with these ineffective weight loss strategies to relieve her guilt by punishing herself.

Unless the diagnosis is kept in mind, it is likely to be missed. Weight loss is often mild or absent, but she is extremely fearful of gaining weight. The quality and quantity of her food intake is normally unremarkable, but she goes on binges when unhappy, angry, or lonely.She snacks occasionally, and this often precipitates a binge. She is not strict about counting calories. She claims that she is too weak to follow a strict diet, and her dieting is often impulsive, brief and erratic.

Forceful vomiting may result in acid erosion of the lingual side of the teeth, subconjunctival bleeds, loss of gag reflex, and calluses over the proximal joints of the dominant hand due to recurrent incisor bites. There may be abdominal discomfort after a binge, and cramps from laxative use. The parotids may enlarge. She may have depressive symptoms and self-injurious behavior, and may rarely be suicidal.

BINGE-EATING DISORDER

This is characterized by frequent binge-eating with infrequent purging behavior, and intense shame and guilt about bingeing. She is often overweight, but she is less concerned about her weight and body image than in BN. Persons who binge regularly at least once a week for 3 months are labelled as having BED.

Other forms of disordered eating (that are not discussed in this article) include purging without bingeing; night eating syndrome (where a person often wakes up unexpectedly in the middle of the night, and raids the refrigerator before going back to bed); Avoidant / Restrictive Food Intake Disorder (ARFID), Pica and Rumination Disorder.

Etiology

The onset of Eds is usually in adolescence, and this may be related to their rapidly evolving physique, hormonal changes, sexuality, and increasing intelligence and independence.

EDs are more prevalent in adolescents who suffer from psychiatric illnesses. AN typically affects adolescent girls in early to middle adolescence who are prone to anxiety and obsessive-compulsive disorder, and often above average in intelligence and socioeconomic status. BN tends to occur in late adolescence and is generally associated with depressive symptoms.

There is a familial tendency to EDs, which is due to genetic factors like a proneness to anxiety, depression or obsessive-compulsive disorder, and environmental factors like the food habits of the family and its attitude towards physical activity. Parental and sibling teasing or criticism of overweight may precipitate or aggravate any psychiatric illness, but do not cause Eds.

Epidemiology

In developed nations, anorexia nervosa, bulimia nervosa and binge-eating disorder affect approximately 0.5-1%, 2.0% and 4% of adolescent girls. Girls are affected 5-10 times more commonly than boys in AN, while BN and BED are at least twice as common in girls as in boys. This gender difference probably reflects the greater concern of females about their body shape and weight. The prevalence of eating disorders has increased in recent decades in parallel with the rapid rise in the prevalence of obesity.

Modern society characterizes beauty as a tall and unusually thin girl with big breasts. Though the recommended BMI in adults is 18.5-25, female models are expected to have a BMI in the 15-18 range. Adolescents do not realize that the slim and trim figures sported by models and influencers on Instagram are attained by intense daily exercise and strict diet control. Eating disorders are more common in professions that demand thinness, such as models, dancers, and gymnasts.

In Asian and African countries, thinness is associated not with beauty but with poverty, TB or HIV. Hence EDs are rare, though this is changing with increasing obesity and economic progress. In 2019, a comprehensive review of all studies on eating disorders published in India in the previous five decades uncovered only 15 studies and 24 case reports or case series. Most of the cases were adolescent females with Restrictive AN. Of the 5 cases of BN, only 2 cases were typical. No cases of BED were reported. Mammen et al from CMC Vellore had only 6 cases of AN in their Child and Adolescent Psychiatry Unit between 2000 and 2005.

Diagnosis

Early diagnosis is important. During routine HEEADSSS screening, enquire about present weight, recent weight gain or loss, ask "what would you like your weight to be?" and body image concerns. Ask about usual diet, eating habits, have they ever been on a diet, bingeing and purging, and exercise, in the adolescent and the family.

Differential Diagnosis

Unlike adolescents with Eds, the patient with anorganic illnessis extremely unhappy about her anorexia and weight loss. In addition, ESR is high in inflammatory diseases like SLE, and in malignancies. Hormone tests rule out Diabetes mellitus, thyroid diseases and adrenal insufficiency. However,

- It may not be possible to differentiate between AN and an intelligent and planned dietary program until weight loss becomes excessive. The patient may justify her behavior by pointing out the benefits of exercise, mention that a close relative has high cholesterol levels or had a heart attack, and discuss her desire to be successful in sports.
- Chronic drug use may be missed.
- Brain tumors like craniopharyngioma that damage the hypothalamic appetite center tend to cause chronic anorexia and severe weight loss without symptoms of hunger.

Complications

These chronic health disorders can harm every single organ. Importantly,

- Amenorrhea is common in females, and erectile dysfunction in males.

- Depression is common, and Suicide is the commonest cause of death.
- Osteoporosis is common, and may be irreversible if osteopenia occurs during the period of post-pubertal bone accretion.
- Starvation can rarely cause fatal ventricular arrhythmias.
- Refeeding syndrome during treatment may be fatal.

Investigations

There is no confirmatory lab test. There may be nonspecific changes like anemia, hypokalemia, mildly elevated liver enzymes and blood urea and cortisol, and low glucose and gonadotrophin levels. ECG may show low voltage, and may detect bradycardia or arrhythmia.

Management

Therapy is a multi-disciplinary task. Recovery should be not only physical (normal weight and health parameters) but also behavioral (no more food restriction, bingeing, purging) and psychological.

Psychotherapy : A nurturant-authoritative approach is best. The clinician should describe the illness as a coping mechanism to stress rather than as stubborn behaviour of the patient. One should explain the diagnosis but accept that she feels fat; the instinctive tendency to point out that she is too thin is counterproductive. One should emphasize that troublesome symptoms like tiredness, lack of concentration, and insomnia will be relieved by modest weight gain. One should avoid criticism, and compliment the patient on her progress in health and appearance with treatment.

Cognitive Behaviour Therapy is effective. There is controversy about whether pharmacotherapy helps, but comorbidities like Depression should be treated.

Family therapy is vital. The parents, who are necessarily the primary caretakers for these chronic disorders, are highly stressed by what they conceive as deliberate starvation, and need proper guidance.

Nutritional correction requires expertise to prevent refeeding syndrome. Food should be described as the fuel that improves energy. It should be 15-20% from proteins, 55% from carbohydrates, and 25-30% from fats. Multiple small feeds are preferred. There should be a structured meal plan, with at least three main meals a day (especially breakfast) and snacks 1-3 times a day. Food may be increased by 200 calories twice weekly and the long-term goal is to increase weight by 1-2 kg a month. Calcium should be supplemented to provide 1300 mg. Vitamin D supplementation is also required. If purging is suspected, the bathroom should be locked for 2 hours after each meal. Constipation caused by low food intake may require stool softeners initially, but laxatives and enemas should not be permitted.

Exercise improves mood and compliance, but should be restricted to a single 30-minute period daily. Maintain a daily record of weight, food intake, exercise and mood.

Inpatient care is essential for patients with weight <80% of the expected weight for height, suicidal intent, coexisting psychiatric disorders, dehydration, hypothermia, bradycardia, hypotension, postural hypotension, fainting, arrhythmias, low serum potassium or glucose, or hepatic/renal/cardiac complications.

Prognosis

Most persons with eating disorders do not seek therapy until they have suffered in secret for many years. They deny ill-health, as punitive behaviours like purging, fasting and exercising cause relief from guilt and result in a feeling of self-control. They may seek help for weight reduction rather than their eating disorder. When they do seek care, they often drop out due to the cost and the prolonged therapy required.

For females aged 15-24, the mortality rate is 12 times the baseline rate in AN, and double in BN, but is not significantly different in BED. 70% of AN recover eventually, of whom one-third recover in 3years, one-third in 6 years, and one-third in 12 years. The overall mortalityis less than 4%.

Acknowledgment : This article is an abridged and modified version of a chapter published in the IAP Textbook of Adolescent Medicine.

ADOLESCENT OBESITY: A CASE BASED MANAGEMENT APPROACH

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Rahul, a 15 years old boy, was brought to the OPD with Chief complaints:

Excessive weight gain x 5-6 years, Poor school performance 3-4 years

Has snoring while sleeping, also complains of foot pain while walking

Birth Weight: 3.0 Kg, No Perinatal issues, No significant past illness

H: Home- living with parents and elder sister. Nuclear family. Father businessman, Mother, house wife, sister in college. Paternal grandmother was living with them and had pampered him a lot. She passed away a year back. Father is the main decision maker and is authoritative.

Family	Mother	Father	Siblings
Age	43	47	18 F
Occupation	house wife	Business	in college
Education	+2	+2	
Height (cm)	155	170	157
Weight (kg)	75	95	55
BMI (kg/m2)	31.2	32.9	20.2

E : Eating - All family members eat at their own times. Usually no family meals except on weekends or special occasions

Diet : 24 hours recall (waking up to bedtime)

- wakes up at 7:30am; Glass of milk / Tea with 2 tsp sugar
- Breakfast: 2 Paratha + veg / Stuffed Paratha with butter
- School 8am - 3pm, Tiffin: 2 Parathas &tuck money, buys Juice / cold drinks/Chips/patties
- Lunch: 3 Chapattis with Ghee + veg (1/2 katori) + Curd 1 katori with sugar
- 5pm: Milkshake / cold coffee/ Namkeen/ pack of biscuits
- 7:30pm: Snacks / Chaat / Burger / Coke/ other drinks eg mountain dew etc

-9pm Dinner: 1-2 Chapattis with ghee + Dal 1 katori, Ice cream / Sweets.

Rarely fruits, Loves non veg food, frequently order food from outside viz Pizza, Pasta, Burgers, Chicken & paratha etc almost every 2-3 days or eat outside eateries near home.Studies till late, often 1-2 packs of Maggi at night/bedtime

Total Calories: 3500+

E : Education - Studying in class 10, School performance: Below average 1-2 years, earlier ok.

A : Activity - Nil, uses Scooter to go to school and for going outetc., at home busy with mobile/computer, does not participate in any home activities

D : Drugs / Substance abuse - Denies any smoking or any other abuse

S : Sexuality - No girlfriends, would like to have but no one pays any attention. Watches videos. Has virtual girlfriends.

S : Suicidal/Depression - Lonely, very few friends, onechildhood friend with whom he chats frequently

S : Spirituality - Not very religious, does visit the temple infrequently, usually before the exams!

S : Screen Media use : Computer 1 -2hours, Mobile 3-4 hours, TV 1-2 hour (Total-5-6 hours/ day

EXAMINATION :

Height 165 cms; 105centile
Waist circumference:97cms; >95%tile
Weight 100kgms; 99 centile
BMI 36.7 kg/m2; 106%

Pulse 90/ min, RR 20/min, BP130/94 mmHg; 95thcentile for age & height for both SBP &DBP

Comfortable, No respiratory distress, Has

hyperpigmentation over neck & axillae, Mild acne on face, No pallor, jaundice, edema. Oral cavity Normal

SMR 5, Has Gynecomastia,

Systemic exam: Normal except for mild hepatomegaly, Musculoskeletal system: Has flat feet.

CLINICAL DIAGNOSIS :

§ Obesity Class II
§ Hypertension
§ Acne
§ Acanthosis Nigricans
§ Gynecomastia
§ Metabolic syndrome
§ ? Obstructive Sleep Apnea,
§ Parental obesity

INVESTIGATIONS :

Ø Complete blood count
Ø Complete Lipid profile
Ø FBS,PPBS, Hb1AC
Ø Ultrasound abdomen
Ø Liver function tests
Ø Polysomnography, if possible
Ø Orthopedic consult

RESULTS:

HB 10.8gm/dl, TLC 11,000/cumm, P65, L30, E5, Platelets 180000/cumm, PBF: Microcytic Hypochromic, WBC & Platelets Normal

TEST	Observed value(mg/dl)	Cut - off(mg/dl)	Interpretation
Cholesterol	220	>=200	Increased
Triglycerides	150	>=130	Increased
LDL	125	> =130	Within range
HDL	35	<40	Low
Fasting blood sugar	120	>=126	Value of concern
Hb1AC	6.2	>=6.5	Value of concern
ALT	30	>=60	Value of concern

Abdominal ultrasound: Mildly echogenic liver

FINAL DIAGNOSIS :

· Obesity gradeII
· Hypertension
· Hypertriglyceridemia
· Prediabetic
· MASLD
· Metabolic syndrome
· Acne
· Mild Anemia

MANAGEMENT :

GOALS OF TREATING ADOLESCENT OBESITY

§ Reduce adiposity,

§ Prevent/improve and monitor related physical co-morbidities,

§ Prevent / improve psychosocial complications,

§ Prevent the development of chronic diseases,

§ Improve lifestyle pattern for lifelong prevention /relapses and

§ Provide ongoing medical support.

Family based intensive lifestyle behavior modification using Motivational interviewing and non- stigmatizing communications using staged treatment approach.

Rahul has Class 2 obesity, with Metabolic syndrome and threshold derangements. No life threatening conditions. Plan to start Stage 1(Prevention Plus) treatment and monitor closely.

Treatment prescription for Rahul :

Indoctrination of Rahul and family regarding Obesity being a disease which needs serious treatment commitment. Explain the consequences and risks of the disease over a period of time and the need for a higher level of treatment.

After a motivational interviewing session with Rahul and parents, following were agreed upon :

Diet : No butter/ghee/oil on rotis, decrease added sugar to 1tsp, no SSBs & outside foods except 1day/ week. Avoid all deep fried/fried foods. Replace midnight snacks with fruits. Daily consume 5 servings of fruits/vegetables. Add iron rich foods in the diet.

Activity : Replace 1 hour of mobile with 1hour of any activity viz Cycling, play any physical game, dancing etc. Sleep hygiene to be maintained.

Screen time : Reduce by 1 hour/day (Mobile use).

Medication : Iron supplementation

Family advice : All family members to follow the above diet plan, have 1 family meal eg dinner sitting together, join Rahul for any activity on few days. No household stocks of SSB, ready to eat foods, Biscuits/Chocolates/ Sweets or similar items to be maintained. Minimal ordering in of foods.

Follow up schedule : Monthly follow up with parent/s.

On 2 month review, No weight loss-weight steady, self -monitoring inadequate, adherence to lifestyle modification 40-50%.

Advised to adhere to the dietary and activity schedules. Reinforcement by motivational interviewing; negotiated goals- Zero SSB, 1 hour of physical activity 5days/week, decrease screen time by 1 hour, mother to involve him in household activities. Parental compliance to be improved.

On review after 3 months, no weight loss, adherence to lifestyle modification still 50%. Repeat biochemical parameters still deranged, BP elevated

Problem areas: Minimal physical activity & prolonged screen time. Lack of Positive supportive parenting

Upgraded to Stage 2 (Structured weight management - SWM)1. Referred the family to a dietitian for structured meal plans, 2. Join a gym or a sport game group of choice/dance classes (mandatory). 3. Commitment for decreasing screen time in writing on the monitoring sheet. 4. Positive parental support & involvement to be enhanced. 5. Strict monthly follow up.

The plan would be to obtain a weight loss of 0.5-1 kg/month initially and scaling up to ½ kg/week after 1 month. Follow up for 3-6months andif target not achieved, will need upgrade to Stage 3 or 4 with consideration for pharmacotherapy, if acceptable.

STAGED TREATMENT OF OBESITY

Stage 1 Prevention Plus (PP)	At primary care office.Promoting a healthy lifestyle on the principle of "5-2-1-0" .The expected outcome is reduced BMI. Monthly follow up of child and family. Failure to respond after 6 months of this strategy indicates an intensification of intervention to stage 2.
Stage 2: Structured Weight Management (SWM)	In the primary care office with support. Focus continues on target behaviors such as structured daily meals, healthy snacks, reduced screen time and physical activity. The goal is no more than half kg of weight loss per month for children 2–11 years of age and no more than one kg of weight loss per week for adolescents. If there is no change in BMI after 6 months, management should move to stage 3.
Stage 3: Comprehensive Multidisciplinary Intervention (CMI)	At a pediatric weight management center with a multidisciplinary team. Focuson a structured behavior modification program includes 'short-term' diet plan, physical activity as per individually set goals and parental involvement, especially if child is 12 years or younger. The outcome expected is weight loss or reduction in BMI with a goal of BMI maintenance below the overweight cut off. Frequent office evaluation visits for a minimum of 8–12 weeks.Failure to achieve these goals will need stage 4 care.
Stage 4: Tertiary Care Intervention (TCI)	In a tertiary care center. Child may have significant comorbidities requiring hospitalized care. Focus is on continued diet and physical activity counselling. May be offered a very low-calorie diet and medications in some cases of severe obesity when there is no response to behavioral interventions.

Case study on Eating Disorder

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15-year-old Manjula was brought for extreme weight loss over the past 6 months. She was originally 50 kg (50-75th centile, IAP growth chart) with a height of 150 cm(10-25th cent), BMI 22.2(50-75th cent) but now weighs 35 kg(3-10th cent) BMI 15.5(3-5th cent)She has no fever or cough. She had history of poor appetite and mild anemia for which she received treatment. She was extensively evaluated with blood counts, electrolytes, renal, liver, thyroid function tests, Vitamin D(low, treated), B12, Anti TTG (for celiac disease) and ANA which were all negative. Her chest X-ray, ultrasound abdomen, pelvis and CT abdomen were normal. Screen for tuberculosiswas negative repeatedly. She was referred for further evaluation of occult malignancy / chronic disease.

HEEADDSSS psychosocial history revealed she was well adjusted at home with loving parents (working) and a younger sister, 6 yrs old. Both her parents were proponents of healthy eating and fitness and were normal weight. She was doing well in school (90 % in last major exam) and studies in the 10th std. However, over the past 4 months she has become withdrawn, avoids talking to family and friends and prefers being alone in her room. Her test grades have fallen and she is hardly eating, has difficulty sleeping and has lost interest in meeting/talking with family/friends. She gets angry with her parents when they force her to eat any kind of food, even her favourite dishes. She insists on eating alone and refuses to join family meals. She also locks her room door for prolonged periods and spends excessive time in the bathroom. She was always fond of skipping and continues to skip. However, her parents feel she is also secretly skipping in the bathroom. Her parents revealed no knowledge of romantic relationships or bullying/teasing at school. She has also missed her period for 4 months. Manjula herself was very irritable and unwilling to meet/ talk to any new doctor. She was brought reluctantly for an opinion.

Initial impression :

Manjula is likely to have depression with disordered eating, very likely an eating disorder like Anorexia nervosa (AN).

Discussion of history :

Clues in the case pointing to an eating disorder are: Manjula gives no reason for food refusal, maintains secrecy about what and how much is eaten, gets angry when topic is brought up, has behaviour that indicates irrational attempts at burning calories (obsessive exercising) and secrecy about the same. As per DSM 5 TR criteria, Anorexia nervosa is a type of eating disorder where there is: restriction of intake relative to needs, leading to a weight that is less than minimally normal/ expected, intense fear of gaining weight or persistent behavior that interferes with weight gain, even though at a low weight, disturbance in the way in which one's body weight or shape is experienced or lack of recognition of the seriousness of the current low body weight (1). Amenorrhea is no longer a necessary criterion for diagnosis.

In Manjula's case, her eating disorder could be masked by the co-morbid depression. The diagnosis required a high index of suspicion and further exploration by history

and observation as both the teen and her parents may not reveal all clues to the diagnosis because of the inherent secrecy of the behaviours.

The adolescent with an eating disorder could be distressed about his/her body image (weight, shape/size of body parts like thigh, arms, face etc.). Manjula was given time to share her difficulties after patient rapport building and revealed that she had been teased at home (by relatives who compared her to her fit parents) and at school for being overweight. She had attempted to skip meals and exercise for long hours in her bedroom/bathroomfor several months. She was satisfied with her current weight (revealing poor insight about her health status) and wasvery unhappy about the shape of her thighs and abdomen. She was paranoid about increasing even a gram above 35 kg and claimed she had put in a lot of effort to get to her current weight.

On Examination : Pulse: 80/mt, BP: 90/60, RR:16/mt, Temperature:98.4F. SE: Normal, Blood counts: Normal. Repeat LFT, RFT, TFT, Urine: normal. ECG: normal

Mandatory admission criteria include: Bradycardia below 50/mt, hypotension, hypokalemia, hyponatremia, hypoglycemia, hypothermia, or cardiac compromise. These are late manifestations of prolonged/untreated AN.In view of repeated cycles of poor response to multiple fragmented medical interventions, Manjula and her family were persuaded to get admission for initial psychological and psychiatric evaluations.

Treatment : Eating disorders require qualified psychiatry guided pharmacotherapy and interventions along with counselling and can be associated with depression and/or anxiety. (2,3) Manjula needs specialized care with an experienced team comprisingpaediatrician, psychiatrist, clinical psychologist, nutritionist and social worker. The paediatrician's role is in early diagnosis, treatment and preventing severe emotional and physical complications, while specifically to rule out other diseases with weight loss, to stabilize heart rate, blood pressure, organ functions and metabolic abnormalities.

Eating disorders often emerge during adolescence and are increasing in India. If left untreated, eating related problems can lead to severe complications and in rare cases mortality. Preventive strategies include early screening, building positive body image and self-esteem, changing media portrayals and destigmatizing treatment.

Diagnostic challenges and treatment strategies :

There are many differentials for weight loss and the possibility of an eating disorder may not be considered as the adolescent is secretive. Parents may attribute the poor eating to fussy eating, stubbornness, rebelliousness, or peer influence. Many a time there is a gradual transition from dieting or careful food choices (seen as desirable in an overweight adolescent) to a florid eating disorder with extreme distress. The co-morbidities also have overlapping symptoms as in this case. Clues for a pediatrician include falling weight curves, not necessarily severe underweight. A background of obesity, being teased for being overweight, family being very preoccupied with eating related discussions (heathy/unhealthy foods, low carb diets, keto diets, workouts etc), dysfunctional families, poor interpersonal

relationships, anankastic personality etc. could be a risk factor. After rapport building an enquiry on the adolescent's own knowledge about energy needs, normal weight for age/gender, role of food in health, problems related to excessive preoccupation with food, restricted food choices etc are explored and addressed with a nonjudgmental compassionate approach. The goal is to instill insight into the problem and suggest and implement strategies for developing a healthy relationship with food/ eating and a reduction in distress associated with weight gain.

Counselling (in this case, first contact counselling, prior to early referral to a competent treating team/adolescent paediatrician with experience in managing eating disorders)

Rapport building :

Manjula is likely resentful for being forced to see a doctor and is a difficult candidate for rapport building. You could start by greeting her and parents and reacting with an understanding smile even to a negative body language response. You could start by saying you understand she could be irritated with these medical visits and it is ok for her to feel the way she does. You need to also introduce yourself and explain what you are planning to do in the session. Eg.'I am a Paediatriciancaring for adolescents and I will spend some time with Manjula and you to understand the problem. I can also reassure you that I will try to help Manjula find some relief from her difficulties. Maybe with your inputs (Her'sand parents') we can plan out the next steps.' Confidentiality should be spelt out and reinforced to facilitate sharing without fear/stigma.

Practical tips for Assessment, treatment,and goal setting

Severity :

You need to assess the physical health status by asking for symptoms like extreme fatigue, breathlessness, fainting to decide on urgency for early inpatient referral.

Strength based Psychosocial history(HEEADDSSS) for goal setting :

The purpose of this is to identify 'strengths and priorities for goal setting based on the adolescent's identified priorities that align with improved health. Ex. The adolescent shares that her mother is her favourite but is too busy and has no time for her. This makes her very sad and unloved. A priority goal could be to encourage shared time by suggesting a mother - daughter meal time or evening walk, if it is acceptable to both. Manjula shares that she is concerned with her low-test marks in this crucial 10th Std. You could suggest her return to school is conditional to her complying with a minimum meal plan(incentive for a behavior change)

Eating itself causes extreme distress in AN. There is a need to make a detailed daily diet contract (timing, number of meals, choice of food, quantity).Only once a week weight check (to minimize distress related to weight gain) is done with electronic scale, wearing same dress, pre breakfast. Treatment includes cognitive behavioral therapy (CBT), which focuses on changing negative patterns of behavior and family-based therapy (FBT). FBT also referred to as the Maudsley approach, has been shown to be very effective (4) It involves initially giving the family complete control over the patient's food choices to allow weight gain, then gradually giving control back to the adolescent and addressing other

behavioral issues.

Minor changes in diet proceed week on week balancing the distress associated with eating and the fear of gaining weight. Doctors need to understand the 'total diet approach' in their management of the problem. (5) The total diet approach suggests a variety of foods in moderation with no rigid restrictions on choices. The focus is on a sustainable healthy relationship with food and eating practices. That said, in the initial days of treatment the focus is on getting the adolescent to start to eat, the priority is to let her choose any food types of her choice with the goal of increasing calories (In her case from a baseline of 250cals/day to 1000cals/day by week 3). It is prudent not to encourage glucose, sugared fruit juices initially in view of the potential for severe hypophosphatemia with cardiac dysfunction.

Calories are also built up gradually with a 10-15 % hike per day from baseline. In cases with self-induced vomiting there is likely hypochloremic, hypokalemic metabolic alkalosis requiring correction.

It is important to focus on non- food related talk and activities that will help distract her from 'food only thoughts' to other important functions like studies and enjoyable activities (like craft, in her case).

Manjula needs pharmacotherapy for depression once her vitals are stable (heart rate, BP, ECG, electrolytes, etc.).

Summary of goals :

Daily activities :

Schedule pleasurable activities with Manjula's inputs ex. More quality time with her mother (especially shared eating) and going for a leisurely evening walk together. Introduce craft work. Plan to read her curricular books in preparation for school. Arrange a daily counselling session to share her feelings. Initially complete bed rest is recommended to conserve calories with gradual return to daily activities over 2-3 weeks.

Eating related :

A timed 4 meals a day plan starting with 15% increase of calories/day. (from baseline). Include healthy choices after drawing up a daily contract. Use incentives like 'more time for a walk' for compliance and removal of privileges if not. Target weight gain of not more than 1kg/wk, Link improvements in eating (not weight) to plan return to school.

Follow-up sessions :

Duration of follow-ups generally depend on duration of symptoms. Ex. An illness of 6 months duration requires frequent follow-up for at least 6 months, and continued follow-ups for 2-5 yrs.Referral to a psychiatric social worker for home visits is a useful strategy.

Termination :

To be planned once empowerment of the adolescent is complete. However, some long term followup is indicated as the relapse rate can be very high. (4)

Referral, collaboration, and transition :

Collaboration with psychologist, nutritionist, psychiatric social worker and treating doctor is important for recovery. Early diagnosis and appropriate referral minimize morbidity and mortality and reduces recovery time. Transitioning to adult services will have to be initiated by age 16 yrs. By 18 yrs the adolescent should be empowered to handle responsibly not only the medical problem but also adapt to

changing demands of education and career.

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Unshackling the Chains of Hunger and Hardship

Dr. Ashok Banga
Consultant Pediatrician

Despite significant social and economic progress, malnutrition and poverty continue as global challenges.

The Problem: A Cycle of Poverty and Malnutrition

Malnutrition weakens individuals physically and mentally, reducing productivity and trapping them in poverty. Poverty, in turn, fuels malnutrition through food insecurity and poor food quality. This cycle is perpetuated across generations, with malnourished mothers giving birth to malnourished children.

Does this not mean that if we are able to reduce malnutrition, we will possibly reduce poverty and vice-versa?

Therefore, to break free, we must address both issues simultaneously.

Poverty

Poverty is deprivation of basic amenities that restricts individuals from leading a good and healthy life. This includes systemic disparities within a country and multiple deprivations, including but not limited to: assets, living standards, education, sanitation & hygiene, health and nutrition.

Countries, especially those afflicted by conflict, poor governance, and natural disasters, continue to experience a skewed burden of poverty

How Poverty Affects Nutrition

Poverty restricts access to nutritious food in several ways:

- **Food insecurity :** Poverty leads to hunger and insufficient food intake.The term "food insecurity" means the situation in which people do not have adequate physical, social or economic access to sufficient and nutritious food.
- **Poor food quality :** Cheap, calorie-dense options become staples, lacking essential vitamins and minerals.
- **Hidden hunger :** Is micronutrient deficiencies, despite adequate calorie intake. This is an important component of malnutrition. This can exist in all age groups and in any socioeconomic bracket. Iron, folate, vitamin A, iodine, and zinc deficiencies are among the most common and wide spread among women and children. Many of these co-exist.

While macro- and micro- nutrient deficiencies may cause sub optimal mental and physical development, recurrent infections and growth retardation; micro-nutrient deficiencies may also result in adverse birth outcomes including LBW babies. LBW in babies can contribute to the vicious cycle of malnutrition since maternal nutrition status especially maternal stature is inversely associated with offspring mortality, underweight, and stunting in infancy and childhood.

- **Overnutrition :** Financial constraints lead to the consumption of cheap, high-energy staple foods, primarily carbohydrates, and fats rather than

nutritionally dense food. Because of this energy level spike, nutritional quality becomes compromised, leading to subsequent obesity.

Family spending on food

Food is a major household expenditure for the poor households. Data from African countries indicate that close to half of household income is spent on food. When people living in poverty get a chance to spend more on food; they often prefer to buy better tasting food, rather than good quality food.

In family spending in India, the share of non-food items has increased slowly over the years, reflecting changing lifestyles as well as increased private spending for health, education and entertainment. Non-food expenditure has overtaken spending on food in urban areas (59% and 41%), while for rural households, food continues to be the major avenue for spending (57%).

Magnitude of the Problem :

- Approximately 800 million people globally are undernourished, with 780 million residing in low-to-middle-income countries (particularly Sub-Saharan Africa and South Asia).
- Children under 5 are especially vulnerable: 144 million were stunted (short for their age) in 2019, with 47 million wasted (thin for their height) and 38 million overweight.
- Over a third of the world's poor live in India, as do over a third of the world's malnourished children.
- Anaemia prevalence in young children continues to remain over 70% in most parts of India
- Some 40 % of low birth weight (LBW) babies in the developing world are in India.
- Poverty was highest among agricultural labourers in rural areas (50%) and casual labourers in urban areas (47%).
- Migration from rural to urban settings ensures that migrants continue to live in food insecure situations.
- While food production has for the most part kept pace with the increasing population in India, it has been with regard to cereal rather than that of pulses and millet production. Oil seeds, sugar cane and horticultural crops, along with non-food crops are also being promoted, which do not address nutrition security.

Next Steps : Breaking the vicious cycle : A multi-pronged approach

There is an urgent need to recognize the burden of poverty and malnutrition and to take immediate steps to break the ongoing cycle.

Beneficial effect of 10: evidence-based nutrition specific interventions on lives saved in the 34 countries (that have 90% of the world's children with stunted growth) proves that the current total of deaths in children < 5 can be reduced by 15%.

Here are key strategies :

- **Early childhood interventions** are crucial to maximize effectiveness and break the inter g enerational cycle. First 1000 days of life are most important.
- **Evidence-based nutrition**

interventions like vitamin A supplementation and breastfeeding promotion can significantly reduce child mortality.

- **Reaching the most vulnerable :** Interventions must target the poorest populations and incorporate disease prevention strategies.
- **Nutrition-sensitive interventions** to address underlying causes like access to sanitation, education, and healthcare.
- **Women's empowerment** improves nutrition and overall well-being.
- **Bio-fortification and Agricultural biodiversity** enhance food quality and dietary diversity.
- **Addressing income disparity and gender inequality** are crucial for long-term success.

All these interventions need to run in parallel.

To ensure sustainability, nutritional interventions should be context-specific and cost-effective since these issues concern low-and middle- income countries.

Conclusion

Ending poverty in all its forms is the first of the 17 Sustainable Development Goals and ending hunger, reducing food insecurity and improved nutrition and agriculture is the second goal. Furthermore, at least 12 of the 17 goals contain indicators that are highly relevant to nutrition. **It is estimated that with the elimination of malnutrition, about 32% of the worldwide disease burden could be removed**

Recent debates over the state of nutrition in India have centred on the proposed National Food Security Bill (NFSB), that entitles every citizen to the right to food security. Giving free rations to 800 million citizen is a big step towards that.

Political rhetoric apart, looking into the history of the world and to the seriousness of sustained efforts undertaken by different Governments to eliminate poverty and malnutrition, the fear that poverty is becoming everybody's business, but nobody's responsibility, seems not entirely baseless.

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"BALANCING ACT : NAVIGATING THE IMPACT OF JUNK FOOD ON ATHLETIC PERFORMANCE AND THE ELITE ATHLETE'S DIET"

Kriyash Chaitra

My name is Kriyash, and I love food, but the bad types i.e., junk food. Kids like me love to eat junk food as it pleases our taste buds with the flavors we like, may it be sweet or savory. We prefer to eat junk food due to the way it smells, looks and tastes.Junk food compared to home cooked meals looks more appetizing, the way they are plated, and they taste and smell better due to the ingredients used and the various different cooking methods used by restaurants and cafés to prepare them.

Me and my friends prefer to eat food from restaurants when we meet due to the ease of availability and more effect method to do lesser work and one lesser worry to prepare food for one of us to provide food for everyone. Fast foods nowadays are becoming more appealing and accessible due to the various offers they put up to attract more customers like us. We can now afford meals from pocket money we earn from parents which makes children like us want to have it more.Junk foods are mostly associated with fried foods; fried foods made in restaurants like KFC or McDonalds are more crunchy and juicy rather than fried foods made at home, the ingredients used will be different as well as the equipment and cooking methods which will favor the restaurants to make their foods taste better than the ones made at home. Taste enhancers like MSG used commonly in Asian food is added as an ingredient to make the food taste better, and makes it addictive for children. The food's texture depends upon the style it is cooked with and usually cafés and restaurants nail that cooking style to make the food have a better texture and appearance giving the said food a better stamp of quality in the eyes of youngsters. Foods made at home aren't as appetizing for us due to us already loving junk foods and their taste making us want to consume it more than home cooked food even though we are educated on it not being especially healthy for us.

I play basketball and will be playing at a collegiate level in America in 2 months' time, so my diet plays a vital role in my performance on the court. To play I need good amounts of macronutrients like carbs, proteins and controlled amounts of healthy fats like ghee etc., and micronutrients like vitamins and minerals to provide me energy on the court, and so I can recover faster and play at a hundred percent the following day as well. A typical diet for athletes like me consists of about 5 meals a day, breakfast before training, light snacks like fruits or protein bars during training breaks, lunch after training, and more fruits or snacks after a second session of training and finally dinner after my third session of training.While all this is happening, I make sure to be hydrated with plenty amounts of water as well as additional electrolytes and juices if required.

To keep me going strong, mostly coaches recommend foods that are rich in proteins for better recovery for example more meats and eggs and if vegetarian, have more

millets and pulses as they are rich in proteins and also mealsthat include a wide variety of foods like wholegrain breads and cereals, vegetables (particularly leafy green varieties), fruit, lean meat and low-fat dairy products to enhance long term nutrition habits and behavior. They enable the athlete to achieve optimal body weight and body fat levels and carbs for better performance. For an athlete, energy should come more from complex carbs rather than simple carbs for example having more beans and whole grain food.Fats for an athlete is also important for their diet, its major roles are to provide energy, help balance hormones, form cell membranes and help the brain and nervous systems and this should consist about 30% of their calorie intake.

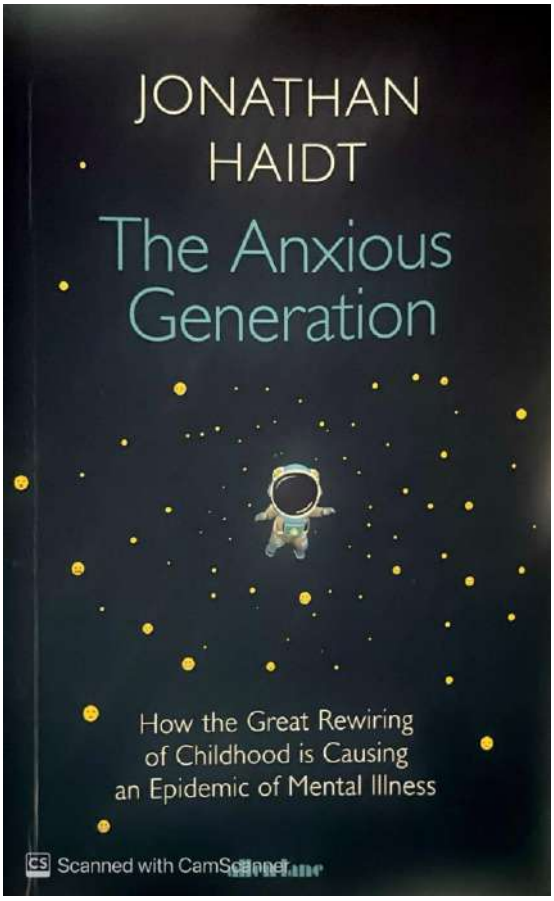
To conclude this article, junk foods are an evil essential in the life of children in today's day and age, as it can be used as bribes or rewards for completing tasks or chores which will help the children's lifestyle in the future, but all is well under control.Consumed out of control as discussed, junk food will have adverse effects on the child's lifestyle practically ruining it from a health perspective i.e. physically, mentally as well as their social needs.

Kriyash is a sports enthusiast who plays basketball, cricket and snooker. Just turned 18, he's completed his CBSE 12th grade in Economics/Accounts/Business studies and Physical Education. His love for pizza and paneer competes with his passion for sports. He's off to the US soon for a 3 month basketball coaching camp before starting college there. We wish him all the best!

THE ANXIOUS GENERATION

How the Great Rewiring of Childhood is Causing an Epidemic of Mental Illness
JONATHAN HAIDT

Dr. Gowri Somayaji



Would you allow your 11-year-old daughter to travel to Mars because a visionary billionaire selected her to be among the first human settlement there? With no evidence that they understand children, child development or the effects of that atmosphere on the Child? Then how did we allow children free access to social media and the entire virtual world without checking its consequences or their safety? Thus begins this very engaging and thought provoking book by social psychologist Jonathan Haidt.

His focus is on GenZ (born after 1995), "the first generation in history to go through puberty with a portal in their pockets that called them away from the people nearby and into an alternative universe that was exciting, addictive, unstable and unsuitable". Haidt identifies a parallel problem of overprotective parents who restrict the child's autonomy and free play in the real world resulting in a Phone-based childhood as opposed to a Play-based childhood.

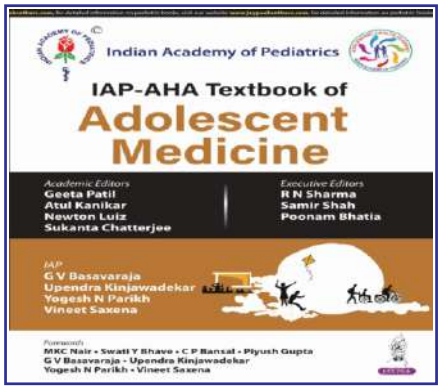
With loss of play, children fail to develop physical, emotional and social skills in Discover mode and are constantly in Defence mode. The incidence of anxiety, depression and self-harm has increased exponentially since the introduction of smartphones. Social media also appears to have harmed girls more (body image issues) where as gaming and pornography affect boys more (aggression). The combination of these and the loss of traditional coming-of-age rituals has resulted in a Puberty-blocking syndrome with teens failing to transit smoothly into adulthood. Haidt goes on to discuss the fundamental harms -social deprivation, sleep deprivation, attention fragmentation and addiction caused by this technology.

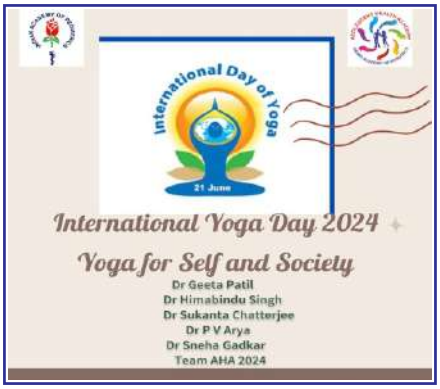
The final section of the book focuses on what we can do collectively and individually to bring children back from this abyss. There are solutions recommended for governments to legislate, regulations for tech companies to follow, recommendations for schools and parents to ensure online safety and regulated use. The solutions are not just to restrict time or access online but also to encourage play and discovery in the real world, giving children both freedom and responsibilities as they grow.

Though Haidt's references are to the Anglosphere, I could identify with all the problems he enumerated and feel that his recommendations are equally adaptable to the Indian scenario. We are, after all, one global village connected by the world wide web!

AHA ACTIVITIES : NATIONAL

Adolescent Immunization





MEDIA OUTREACH

ಕರಂದು ಹದಿಹರೆಯದವರ
ಆರೋಗ್ಯ ಉಪನ್ಯಾಸ

શુક્રવાર, તા.૩૧ મે,૨૦૨૪

વિશ્વ તમાકુ નિષેધ દિવસ

હવે ૧૫થી ૨૫ વર્ષની છોકરીઓમાં પણ સિગારેટ પીવાનું ચલણ વધ્યું

એક દાયકામાં છોકરીઓમાં સ્મોકીંગના પ્રમાણમાં ૩.૮ ટકાનો વધારો જ્યારે છોકરાઓમાં ૨.૩ ટકાનો વધારો

દિવ્ય ભાસ્કર સુરત-સિટી આવૃત્તિ 19-04-2024

HPV વેક્સિનેશન વિશે ડો. પ્રણાંત કારિયાએ માર્ગદર્શન આપ્યું

'15 વર્ષની ઉંમર પહેલા HPV રસી આપી 80% દીકરીને કેન્સરથી બચાવી શકાય'

HPV વાયરસનો ચેપ સામાન્ય રીતે જાતીય સંબંધથી ફેલાય

परीक्षा परिणाम से उत्पन्न तनाव को दूर करने के बताए तरीके

युद्ध से यूक्रेन के 25 लाख बच्चे डिप्रेशन में; किशोरों को दोस्ती कराने ले जाते हैं पैरेंट्स

जो बच्चे नॉर्मल भी दिखते हैं, हमले का सावन यहां से सिहर जाते हैं

AHA ACTIVITIES - SOUTH ZONE

Bangalore Sensitisation to Adolescent Health

Bangalore

Belgavi Beyond the Basics Workshop

Bengaluru, Navigating Adolescence

Beyond Basics Workshop at Bengaluru Pedicon

Cyber Bullying Panel Discussion Bengaluru Pedicon

Mysore Adol Changes and Challenges

Mysore Adolescent Sex Education

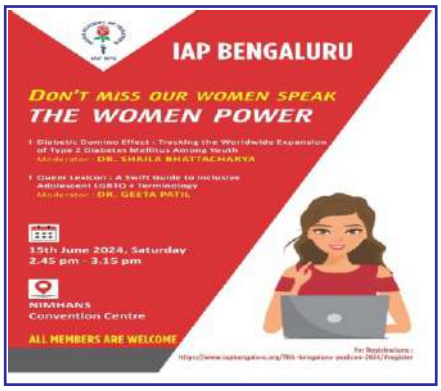
Mysore Mental Health issues

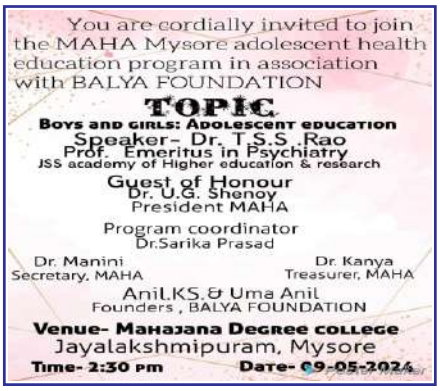
Mysore

Teachers Training Bengaluru

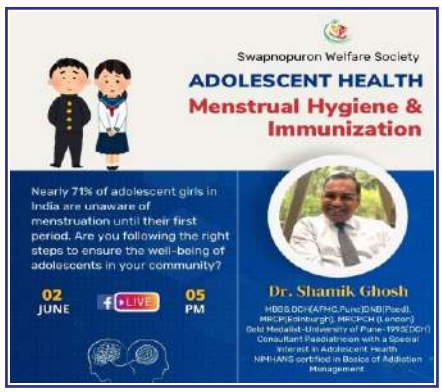
AHA ACTIVITIES - SOUTH ZONE

Endowment Lecture





AHA ACTIVITIES - EAST ZONE



Bhuvaneshwar

AHA ACTIVITIES - WEST ZONE

Jaipur Adol Obesity Webinar

Mumbai Adolescent CME

Nagpur 2

Nagpur 3

Nagpur 4

Nagpur 5

Nagpur Webinar

Nagpur

Nasik

Raigad

AHA ACTIVITIES - CENTRAL ZONE

Chatthisgarh Exam Stress

Chattisgarh Thal

Chattisgarh

Gwalior 2

Gwalior

Menstrual Hygiene Awareness at an Orphanage , Marripalem, Visakhapatnam

AHA ACTIVITIES - NORTH ZONE

HPV Awareness Session, Amritsar

Ludhiana HIV Awareness and Life skills

Jalandhar

Lucknow

WEBINARS

Stress

Adol Counselling Series

Adol Parenting

CG Obesity

Depression

Emotional Literacy

Obesity

Reaching the Unreached

Sleep

WEBINARS

Sports

UPCOMING / ONGOING EVENTS

1. Orientation Program
2. Adolescent Counselling by CGAHA
3. South Zone Mid-Term Adolescent CME, Coimbatore
4. Adolescon 2024, Nashik

IAP-AHA RKSK Orientation Program

SCIENTIFIC PROGRAM

DATE	TIME	TOPIC	FACULTIES
9th July	2.30 pm to 4.30 pm	Inauguration	
		Introduction to Adolescent Health Care	Dr Prashant Kariya Dr R N Sharma
		Adolescent Friendly Approach: Qualities and Skills	Dr Nishchal Bhatt Dr P V Arya
10th July	2.30 pm to 4.30 pm	Nutrition and Anaemia in Adolescents	Dr Samir Shah Dr R G Patil
		Promoting Healthy Lifestyle, Prevention of Noncommunicable Diseases	Dr Geeta Patil Dr Deepa Janardhanan
11th July	2.30 pm to 4.30 pm	Adolescent Mental Health	Dr Sukanta Chatterjee Dr Ashim Ghosh
		Sexual and Reproductive Health during Adolescence	Dr Himabindu Singh Dr Shalini Bhasin
12th July	2.30 pm to 5.00 pm	Substance Misuse in Adolescents	Dr Latika Bhalla Dr Ranjit P
		Prevention and Redressal of Injuries and Violence	Dr Prema R Dr Sudhir Mishra
		Promotion of safe use of the Internet, Gadgets and Social Media	Dr Manmeet Sodhi Dr Ramesh Dampuri

Program Name: AHA -IAP Adolescent Health Orientation Program

Dates: July 9th to July 12th, 2024

Introduction: The Adolescent Health Academy (AHA) in collaboration with the Indian Academy of Pediatrics (IAP) is pleased to announce an insightful and comprehensive orientation program dedicated to Adolescent Health. This virtual program will take place from July 9th to July 12th, 2024, and will cover a broad range of topics essential for healthcare professionals working with adolescents. The program aims to enhance the understanding and skills required to effectively address the unique health needs of adolescents.

Program Agenda:

Day 1: July 9th, 2:30 PM - 5 PM

- **Inauguration**
- **Introduction to Adolescent Health Care**
  - Speakers: Dr. Prashant Kariya, Dr. R. N. Sharma
- **Adolescent-Friendly Approach: Qualities and Skills**
  - Speakers: Dr. Nishchal Bhatt, Dr. P. V. Arya

Day 2: July 10th, 2:30 PM - 4:30 PM

- **Nutrition and Anemia in Adolescents**
  - Speakers: Dr. Samir Shah, Dr. R. G. Patil
- **Promoting Healthy Lifestyle and Prevention of Noncommunicable Diseases**
  - Speakers: Dr. Geeta Patil, Dr. Deepa Janardhanan

Day 3: July 11th, 2:30 PM - 4:30 PM

- **Adolescent Mental Health**
  - Speakers: Dr. Sukanta Chatterjee, Dr. Ashim Ghosh
- **Sexual and Reproductive Health During Adolescence**
  - Speakers: Dr. Himabindu Singh, Dr. Shalini Bhasin

Day 4: July 12th, 2:30 PM - 5:00 PM

- **Substance Misuse in Adolescents**
  - Speakers: Dr. Latika Bhalla, Dr. Ranjit P.
- **Prevention and Redressal of Injuries and Violence**
  - Speakers: Dr. Prema R., Dr. Sudhir Mishra
- **Promotion of Safe Use of the Internet, Gadgets, and Social Media**
  - Speakers: Dr. Manmeet Sodhi, Dr. Ramesh Dampuri

Objectives:

- To provide healthcare professionals with an in-depth understanding of the diverse aspects of adolescent health.
- To develop skills and qualities necessary for an adolescent-friendly approach.
- To promote healthy lifestyle practices and prevention strategies for noncommunicable diseases among adolescents.
- To address mental health issues, substance misuse, and sexual and reproductive health in adolescence.
- To discuss the safe use of the internet, gadgets, and social media to prevent associated risks.

Attendance and Participation: Daily attendance will be monitored through a Google form. Participants are required to keep their video on throughout the four-day session to ensure active participation and engagement.

Certification: Participants who attend all sessions and complete post test exam will receive an online certificate of completion. This certification will acknowledge their commitment to improving adolescent health care and their updated knowledge and skills in this critical field.

Conclusion: The IAP-AHA Orientation Program is a vital opportunity for healthcare providers to gain practical knowledge and skills in adolescent health. With expert speakers and a well-structured agenda, this program promises to be a transformative experience, ultimately benefiting the health and well-being of adolescents.

Join Us: We invite all healthcare professionals to join this enriching program and contribute to enhancing the quality of adolescent health care in our communities. First come first 60 delegates will be allowed to participate in the training

UPCOMING / ONGOING EVENTS