

DIET BYTE

E-newsletter of Indian Dietetic Association- Delhi Chapter

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From the Convenor's Desk

Dear Reader,

It gives us immense pleasure to publish the 1st edition of newsletter on behalf of the newly elected IDA Delhi Chapter Committee (2019-2021). The team includes: Ms. Anita Jatana (Convenor); Ms Richa Jaiswal (Co-convenor); Ms Shilpa Thakur (Secretary); Ms Ritika Samaddar (Joint Secretary); Ms Vasundhara Singh (Treasurer) and Executive Committee Members: Dr Alka Mohan Chutani; Ms Charu Dua; Ms Rupali Dutta; Ms Kanika Narang, Ms Suhani Seth and Ms Neelanjana Singh (Ex-convenor, IDA Delhi Chapter).



In these years that have passed, the Delhi Chapter of IDA has grown considerably and is proud to have large number of members from various domains including academia, clinical practice, research and the industry.

True health begins with selecting the food that one eats, which is why the business of eating right is so crucial. In order to highlight the importance of nutrition and diet, Dietetics Day is celebrated across India on the 10th of January. To mark this day, theme-based nutrition programs are organized and for the year 2019, 'Anemia Mukh Bharat' was chosen as the theme for the public awareness campaign. It involved a multi-sectoral coverage including camps at PHC's, nutrition activities (like nursing student classes on prevention of anemia, making of iron rich recipes, quiz competitions) in hospitals and Corporate talks at various MNC's by the Dietitians of Various hospitals. The Anemia Mukh Bharat-intensified Iron-plus Initiative which was aimed to strengthen the existing mechanisms and foster newer strategies for tackling anemia. The event was aimed in spreading awareness about anemia and its prevention and the activities were spread over a week for more impact.

The event was followed by wide variety of activities related to nutrition and dietetics.

- CNE-IDA on 6th April 2019, provided information on role of nutrition for good health and well-being and also provided an overview on treatment and management of Diabetes.
- CNE 'Hidden Hunger-A challenge' on 18th May 2019: gave insight to malnutrition (over, under and micronutrient deficiency) and with specific focus on food fortification.
- Workshop- Sports Nutrition Decoded on 13th July 2019-focused on nutritional requirements for sports.

All the events were well implemented with the objective of outreaching the budding nutritionist and practicing dietitians, enlightening them with recent scientific updates. The sessions were presented by renowned professionals in the field of dietetics and allied sciences. All the Nutrition updates were well attended and were very interactive. The experts shared scientific knowledge and data in the realm of nutrition in simple and practical ways that the audience could comprehend and put into practice.

The aim is to plan more of such informative, educational activities in order to upgrade the knowledge of the practicing dietitians, which will help them in their professional curriculum and will in turn improve patient's outcome. The focus is on having such nutritional forums on more frequent basis for IDA members across NCR and encourage active participation.

I would like to also take this opportunity to appraise you all of the IDA website (simplified and convenient to use) which gives detailed information on process of becoming IDA members. It also provides an outline for taking up the RD examination

I do hope that the newsletter serves as a good medium for all of us to stay connected.

Anita Jatana

Chief Dietitian
Indraprastha Apollo Hospital, Delhi
Convenor IDA Delhi Chapter



From Editor's Desk

Dear Readers

On behalf of the newly elected IDA, Delhi chapter and editorial board team, I wish all the members, students a very happy harmonious year 2019 and Happy "PoshanMah" to all.

"Dite Byte" newsletter aims to provide you with diverse nutrition information and the activities held by IDA Delhi Chapter.

Dietetics-day was celebrated on 10th January 2019 with the theme of 'AnemiaMukt Bharat'.

IDA professionals being a major stakeholder in creating awareness about nutrition among public; took the initiative in educating the communities and school children in Delhi and NCR region. Posters, banners and a pledge specially designed in accordance with the theme was displayed at all prominent locations in offices, colleges, organizations. Various activities using screen kiosks was on display at various hospital OPDs.

The first article is on the same theme by Ms Suhani Seth, Associate Editor.

She has provided an insightful introduction on "nutritional Anemia" with causes, symptoms, intervention & government-initiated strategies for prevention of Anemia.



In this edition, we have presented articles by speakers from the various workshops held since January 2019.

- "MNT in Gestational Diabetes: Time to move forward" by, Dr Parmeet Kaur, Chief Dietician. AIIMS. She has discussed the complications of GDM and medical nutrition therapy for this group of patients with emphasis on splitting the breakfast and providing individualized counselling to these patients for better outcome.

- The next article on "Severe acute malnutrition" by Ms Anuja Agarwala, Senior Dietician, AIIMS & Ms Shivani Rohtagi gave a detailed overview on the subject elaborating upon the definition, identification, screening and management. In addition, the standard recipes for F75 & F 100 for SAM management are provided.

- Dr Pulkit Mathur, Assistant professor, Lady Irwin College, evaluated "Micronutrient Deficiencies –Relevance in the Clinical Setting". She has emphasized on the subclinical deficiency state & its interaction with various disease condition. In addition, it is also pertinent to understand those clinical conditions in which the patient is more susceptible to micronutrient deficiencies. Thus, appropriate measures need to be taken in terms of supplementation, fortification or food diversity.

- Another evolving area in the field of nutrition is fortification. Dr Rohini Saran, Deputy Lead, FFRC, FSSAI describes "combating micronutrient malnutrition through food fortification". She has elaborated upon the food system transitions towards the aspects of fortification, the need for regulations, scaling up of food fortification sector, educating public as one of the ways to combat micronutrient malnutrition

- In another upcoming area of nutrition & sports; the next article, is on "Nutrient Periodisation for high performance sports" by Dr Priti Rishi Lal, Scientist E (Sports Nutrition), MYAS-NIN, Dept of Sports Sciences, NIN. She has explained the term nutrient periodization, its goals, components and cycles clearly emphasizing the impact of proper nutrition on sports performance.

On behalf of the editorial team, I would like to thank our contributors for their inputs and efforts and hope our readers continue to find useful and interesting information in this edition of newsletter. I also encourage all the readers to contribute by submitting articles or interesting case studies for the forthcoming newsletter.

In the spirit of continuous improvement, any constructive inputs on streamlining our processes are always welcome

With best wishes and season's greetings

Dr Alka Mohan Chutani
Editor in chief and executive member
IDA, Delhi Chapter

Nutritional Anemia

Nutritional anemia, the most widespread nutritional disorder in the world, affects mainly developing countries. Anemia is the world's second leading cause of disability and thus one of the most serious global public health problems. It is estimated that 500 million to 1 billion individuals in the world are affected by nutritional anemia. Anemia affects half a billion women of reproductive age worldwide, nearly, half of pre-school children in developing countries and at least 30-40% in industrialized countries.



The most common cause of anemia worldwide is iron deficiency, resulting from prolonged negative iron balance, caused by inadequate dietary iron intake or absorption, increased needs for iron during pregnancy or growth periods, and increased iron losses as a result of menstruation and helminth (intestinal worms) infestation. Other important causes may include infections, other nutritional deficiencies (especially folate and vitamins B12, A and C) and genetic conditions (including sickle cell disease, thalassemia).

Anemia and iron deficiency reduce individuals' well-being, cause fatigue and lethargy, and impair physical capacity and work performance. During adolescence, iron deficiency anemia may impair the immune response, decrease resistance to infection, decrease cognitive functioning and short-term memory. In women, it impairs their health and well-being and increases the risk of maternal and neonatal adverse outcomes. Anemia is interlinked with the five other global nutrition targets (stunting, low birth weight, childhood overweight, exclusive breastfeeding and wasting).

Failure to reduce anemia worldwide consigns millions of women to impaired health and quality of life, generations of children to impaired development and learning, and communities and nations to impaired economic productivity and development.

Since, the greatest burden of anemia falls on the most "hard-to-reach" individuals, therefore, primary health care policies and programme must be a cornerstone of health care systems.

Anemia interventions span multiple sectors:

- Agriculture and food processing: Increased production and consumption of nutrient rich foods, bio-fortification, food fortification, promotion of food safety.
- Disease control: Prevention, control and management of malaria and soil transmitted helminths.
- Education: Health and hygiene education in school.
- Genetics: Counselling and management of genetic blood disorders leading to anemia.
- Nutrition: Dietary diversification, micronutrient supplementation and maternal, adolescent infant and young child nutrition.
- Reproductive health: Appropriate care during pregnancy, delivery and postnatal period.
- Water, sanitation and hygiene: Use of appropriate and safe sanitation facilities.

Government driven initiative for prevention and management of anemia: The POSHAN Abhiyaan launched in March 2018 aims at reduction of anemia. Complying with the targets of POSHAN Abhiyaan and National Nutrition Strategy set by NITI Aayog, the Anemia Mukht Bharat strategy has been designed to reduce prevalence of anemia by 3 percentage points per year among children, adolescents and women in the reproductive age group (15–49 years), between the year 2018 and 2022.

Therefore, a multifactorial and multisectoral approach is thus required, to recognize the complexity of anemia and its prevention.

Suhani Seth

Dietician, Indraprastha Apollo Hospital, Delhi
Executive Committee Member-IDA Delhi Chapter
Associate-Editor

MNT in Gestational Diabetes: Time to Move Forward

Dr. Parmeet Kaur
Chief Dietician
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Gestational diabetes mellitus (GDM) is a serious pregnancy complication, in which women without previously diagnosed diabetes develop chronic hyperglycemia in 2nd or 3rd trimester of pregnancy. According to the most recent (2017) International Diabetes Federation (IDF) estimates, GDM affects approximately 14% of pregnancies worldwide, representing approximately 18 million births annually. Optimal dietary intake of macro and micro nutrients during pregnancy, includes consuming appropriate amounts of carbohydrates, protein, fat, vitamins and minerals. The beginning of pregnancy starting from conception with balanced diet provides the baby and the mother the best possible health outcomes. GDM poses a formidable threat to both mother and the child. Universal screening for GDM is done at 24-28 weeks. Risk factors of developing GDM are older maternal age > 30 years, BMI > 25 kg/m, sedentary lifestyle, a family history of type 2 diabetes, from an aboriginal and Torres Strait Islander or some Asian backgrounds, GDM before, previous polycystic ovarian disease (PCOD) and large baby before. Some of the consequences of GDM for mothers are pre-eclampsia, macrosomia, increased fat mass, and their offsprings are prematurity, perinatal asphyxia, hyperglycemia, hypocalcemia, polycythemia, hyperviscosity, low iron stores, hyperbilirubinemia and cardiomyopathy.

As a part of the medical nutrition therapy, pregnant diabetic women are advised to wisely distribute their calorie consumption especially the breakfast. This implies splitting the usual breakfast into two equal halves and consuming the portions with a two-hour gap in between. By this the undue peak in plasma glucose levels after ingestion of the total quantity of breakfast at one time is avoided. For example, if 4 idlis/ chappathi / slices of bread (applies to all types of breakfast menu) is taken for breakfast at 8 am and two hours later plasma glucose at 10 am is 140 mg; the same quantity divided into two equal portions i.e., one portion at 8 am and remaining after 10 am, the two hours postprandial plasma glucose at 10.00 am falls by 20 – 30 mg. This advice has scientific basis as the peaking of plasma glucose is high with breakfast (due to Dawn phenomenon) than with lunch and dinner. Further, in a normal person, insulin secretion is also high with breakfast than with lunch or dinner. GDM mothers have a deficiency in first phase insulin secretion and to match this insulin deficiency the challenge of quantity of food at one time should also be less.

Medical nutrition therapy (MNT) for GDM is an individualized nutrition plan developed between the woman and a dietician familiar with the management of GDM. The recommended composition of the GDM woman's diet is 50-60% of energy from carbohydrates, 15-10% from protein and 25-30% from fat. In the overall distribution of calories, carbohydrates play an important role in the postprandial blood sugar levels. Dietary intake of low glycemic index foods and glycemic load of the diets need to be emphasized.

Therefore, all women with GDM should receive nutritional counseling. MNT assists the woman with GDM in meeting her blood glucose targets, meeting her weight targets, contributes to a well-balanced food intake and promotes fetal and maternal well-being.

Severe Acute Malnutrition (sam)

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Introduction

Severe acute malnutrition (SAM) is a major public health problem in children who are under 5 years of age. Malnutrition is a consequence of several key social and economic factors such as lack of awareness & education, inadequate health care services and poor cultural behaviours. According to National Family Health Survey-4 2015-2016, the prevalence of wasting (21.0%) and severe wasting (7.5%) remain very high in India; these figures have been consistent since last decade.

Definition and identification of SAM

To identify SAM, look for visible signs of severe malnutrition. Child with very low weight-for-height/ length (Z- score below -3 SD of the median WHO child growth standards), and/or a mid-upper arm circumference < 115 mm (used for <5), and/or by the presence of nutritional oedema, is defined/ identified as SAM.

Screening of SAM

WHO and UNICEF recommends two approaches for the treatment of children with SAM:

- Inpatient care/ facility based approach for the management of complicated SAM, and
- Community/ home based approach for children without medical complication.

In the presence of good community-based management, the vast majority (85–90%) of children with SAM may be managed in the community while only a minority, those with poor appetite and/ or medical complications (10–15%), will need hospitalization or facility-based care.

Management of SAM

Ten Essential Steps		
	Stabilization	Rehabilitation
	Day 1-2	Days 3-7
Hypoglycemia	----->	
Hypothermia	----->	
Dehydration	----->	
Electrolytes	----->	
Infection		----->
Micronutrients	----->	
Cautious feeding		----->
Catch-up growth		----->
Sensory stimulation	----->	
Prepare for follow-up		----->

A Stabilization Phase (Starter Formula F – 75)

- Start feeds immediately – prevent death
- Contains 75 Kcal/ 100 ml and 0.9 g Protein/ 100 ml
- Feeds high in easily digestible Carbohydrates
- Avoid aggressive feeding with high proteins or sodium content
- Started cautiously, frequently and in small amounts

B Transition phase (period between stabilization and rehabilitation)

- Usually lasts for 2 – 7 days.
- Shifting of stabilization to rehabilitative phase by gradual introduction of F-100 diet
- Give time to child to adjust. Monitor closely.
- Appetite of the child improves and medical complications get stabilized.
- Remember - If transition is too rapid, heart failure may occur. Look for the following signs of readiness for transition,
- usually after 2 -7 days:

C. Catch Up Growth / Rehabilitation Phase (F-100 formula)

- Feed freely on Catch-up (F-100) diet and reach to an upper limit of 220 kcal/ per kg/day.
- Any amount less than 150 Kcal/ kg/ day indicates that the child is not being fed freely or is unwell.
- Encourage the child to eat as much as he wants
- Proteins are increased upto 2.9 g/ 100ml but not exceeding 4g/ kg/ day.

Use F- 75 and F- 100 reference card which provides calculated range of intakes suitable for children of different weights up to 10 kg.

Besides active feeding of SAM children,daily care, sensory stimulation and involving mothers in care is also very important.

STANDARD F-75 RECIPES

Contents (per 1000 ml)	Starter (F-75) diet (Milk based)	Starter (F-75) diet (Milk + Cereal based)
Fresh Cow's milk or equivalent milk (e.g. toned cow's milk) (ml)	300	300
Sugar (g)	100	70
Cereal flour: Powdered puffed rice** (g)	--	35
Vegetable oil (ml)	20	20
Water: make up to (ml)***	1000	1000
Energy (kcal/100 ml)	75	75
Protein (g/100 ml)	0.9	1.1
Lactose (g/100 ml)	1.2	1.2

STANDARD F-100 RECIPES

Contents (Per 1000 ml)	F-100 Milk based diet	Low lactose feed	Lactose free feeds
Cow's milk/ toned dairy milk (ml)	900	250	-
Egg white (g)	-	120	50
Cereal flour: Puffed rice Powder (g)	-	120	70
Sugar (g)	75	-	-
Glucose (g)	-	-	35
Vegetable oil (g)	20	40	40
Water to make up to (ml)	1000	1000	1000
Energy (kcal/100 mL)	100	100	75
Protein (g/100 mL)	2.9	2.9	1.0
Lactose (g/100 mL)	4.2	1.0	-

*Egg white may be replaced by chicken or commercially available pure protein like casein. **Powdered puffed rice may be replaced by commercial pre-cooked rice

Other proteins that can be used are ground nut, soy or locally used pulses: however, they can increase the viscosity of the diets and need cooking.

Micronutrient Deficiencies –Relevance in the Clinical Setting

Dr Pulkit Mathur

Assistant professor, Department of Foods & Nutrition, Lady Irwin college, New Delhi



Malnutrition in India is a public health problem with undernutrition, overnutrition and micronutrient deficiencies (the triple burden) existing side by side, sometimes in the same families. In a clinical setting, patients may be admitted with pre-existing malnutrition or may become malnourished during their stay in the hospital. It's important for the clinical nutritionist to screen and monitor patients to identify signs and symptoms of malnutrition and accordingly treat the patients.

Although undernutrition is simpler to identify, micronutrient malnutrition, also referred to as hidden hunger, is more complicated to diagnose. Frank symptoms of deficiencies are not that common. Most patients present with subclinical deficiency or suffer from non-specific symptoms which can't be attributed with confidence to a single micronutrient deficiency. This is probably because the functions performed by many vitamins/minerals are similar. For instance, thiamine, niacin, folate, vitamin B6, vitamin B12, calcium and magnesium are all important for nerve function. Neurological disturbances are seen in deficiencies of all these vitamins. Usually all of these would need to be supplemented in the diet if deficiency of either is suspected. Reduced cross-linking of skin collagen and impaired wound healing is seen in deficiencies of riboflavin, vitamin C and zinc. The dietician hence needs to study the clustering of all symptoms and, combined with biochemical tests which are specific for deficiency of a micronutrient, arrive at a diagnosis.

It is important to also know who all are susceptible to developing a micronutrient deficiency. Certain disease conditions may precipitate a deficiency and the dietician needs to be aware about associations between micronutrients and diseases/conditions. Malabsorption syndromes can result in several micronutrient deficiencies. Premature infants are susceptible to vitamins E and K deficiency. Anyone undergoing a major surgery and on heavy doses of antibiotics can develop vitamin K deficiency and must be given supplements. Alcoholics can develop thiamine deficiency known as Wernicke Korsakoff syndrome, with symptoms akin to a typical picture of uncontrollable drunken stupor. Women on oral contraceptives may develop a relative deficiency of pyridoxine and vitamin C.

Diagnosed deficiencies are usually treated with supplements and once corrected the patient is given dietary advice to include rich sources of the nutrient in the diet. Care needs to be taken that the patient doesn't go home with the impression that he can continue therapeutic doses of the micronutrient lifelong rather than improve his diet! Most of the micronutrients if eaten in high doses for a long period of time can show symptoms of toxicity. Being aware of Tolerable Upper Intake Levels (ULs) and signs of chronic toxicity can help the dietician identify the cause of symptoms seen. For instance, consumption of high doses of vitamin A may lead to dry skin, hair loss, joint and muscle pain, increased liver size, nausea and vomiting.

Importance of recommending a diverse diet cannot be overemphasized. No one food can magically provide all the vitamins, minerals and protective phytochemicals the body needs. Hence all the food groups and a variety from each food group needs to be consumed to ensure a healthy intake of micronutrients and other bioactive compounds. Food fortification helps by making commonly consumed food items and staples micronutrient rich. A multi-pronged strategy of supplementation, fortification and dietary diversity is the way forward in alleviating micronutrient malnutrition.

COMBATING MICRONUTRIENT MALNUTRITION THROUGH FOOD FORTIFICATION

Rohini Saran (Deputy Lead, FFRC Food Safety and Standards Authority of India)

Under-nutrition among children has been a key concern in India. Despite the evident economic growth trends, India is still struggling with poverty, malnutrition and poor public healthcare. India ranks at a 103th of the 119 countries on the Global Hunger Index, 2018. Micronutrient deficiencies can have far-reaching consequences impacting the nation's economic output owing to increased public healthcare costs, high mortality and morbidity rates, lower literacy rates, etc.

As per National Family and Health Survey (NFHS) 4, Iron Deficiency Anaemia is still prevalent in over 50 per cent of women and children under 5 years of age. In order to achieve targeted outcomes over the next five years (2022), envisioned by the National Nutrition Strategy, food fortification has been identified as one of the key areas for implementation.



Fortification – the silver lining

Nutrition based strategies to improve the status of the population includes consuming a diverse diet, in a balanced manner. In the recent times, with either lack of food security or diet patterns, sufficient nutrient intake is compromised. Food fortification is the process of increasing the content of essential micronutrients, that is, vitamins or minerals in a food, irrespective of whether the nutrients were originally in the food before processing or not, so as to provide a health benefit with minimal risk to health. Fortification does not alter the colour, taste, odour, and appearance of the carrier food.

In India, as per the request of the three line ministries, FSSAI had operationalised standards on Food Fortification for five staples namely wheat flour, and rice (fortified with Iron, Vitamin B 12, Folic Acid), milk and edible oil (fortified with Vitamin A and Vitamin D), and salt (fortified with Iron and Iodine). These commodities were chosen due to their mass consumption at every household level. The micronutrients identified for fortification are backed by science in terms of their bioavailability, stability in the vehicle chosen and the dosage which is set to provide 30-50 percent of the RDAs. The vitamins and minerals identified use vegetarian sources keeping the sensitivity of consumers in view.

Numerous scientific studies conducted to examine the effect of consumption of fortified foods on Indian population have shown positive impact on the health of people. This has been in terms of improved immunity, plasma vitamin B-12 level, improving iron status, increase in haemoglobin concentrations, reducing the prevalence of anaemia (iron deficiency anaemia) and enhancing the cognitive performance in Indian children.

Fortified foods are regularly tested by FSSAI notified NABL labs with the test procedures as approved by the Scientific Panel for testing of fortificants in food. This ensures the safety of the food and also adds to the nutrient density of the diet. Food fortification comes as a low-cost solution to fight this hidden hunger offering the advantage of delivering essential nutrients to large segments of the population.

India's fortification story

Globally, fortification is accepted as a credible, sustainable and effective way of addressing public health concerns. In India, the salt iodisation programme, where salt was fortified with iodine initiated in the 1950s, was aimed at reducing the incidences of Iodine Deficiency Disorders (IDD). Later in 1998, fortification of salt with iodine was mandated by the government for wider reach and impact. With an impetus from both the government and the private sector, the salt iodization programme is presently delivering iodized salt to about 1.2 billion Indians.

In October 2016, FSSAI operationalized the Food Safety and Standards (Fortification of Foods) Regulations, 2016 and the '+F' logo was notified for identification of fortified foods. In August 2018, these standards have been gazette notified as Food Safety and Standards (Fortification of Foods) Regulations, 2018. With the regulations being notified in the Gazette of India, FSSAI has firmly placed food fortification on the national agenda.

The progress has been tremendous in voluntary fortification of edible oil and milk with the industry taking up fortification as a best practice to meet micronutrient malnutrition. There has been tremendous traction in the oil and milk industry, with 47 percent packaged refined edible oil industry and 35 percent of the organized milk industry fortifying as per FSSAI standards. 70 top companies and 113 brands of fortified staples are presently catering to the open market with a PAN India and regional presence. The vision is to make sure that the affected groups have access to fortified staples in the open market. For the vulnerable sections of our population, introduction of fortified staples in the safety net programmes of the Government of India, ensures that the meals provided to the beneficiaries are nutrient dense. As of now, 17 States and 4 UTs have adopted fortification of chosen commodities at the district or at scale in ICDS, MDM and PDS.

Scaling up food fortification

In the last two years, several efforts have been made to scale up fortification efforts across India. We have received fair amount of success in sensitizing consumers and businesses alike about the role of fortification in meeting the nutritional requirements. However, for a greater impact, lot more is and needs to be done with the involvement of government, development partners, food businesses and consumers. For instance, how can the people be sensitized towards the benefits of adequate nutrition? How to ensure they have proper access to nutritious food? Recently initiated projects 'The Eat Right Movement' and NetProFan are envisaged to encourage the masses to trade unhealthy foods, high in fat, salt and sugar with nutritious food through professional networks as well. Such mass awareness programmes are the need of the hour to create the right balance of responsiveness and acceptance for a wider reach and sustained outcomes.

If we are serious about ending hidden hunger, it is important to ramp up support for fortification programmes, from ensuring that staple food producers have easy access to micronutrient mixes to facilitating quality fortified food production to educating consumers about the benefits of choosing fortified foods and enabling the private sector to do its part. Evidence shows that making food fortification mandatory and vigorously enforcing quality and compliance is key to ensuring a healthier future for millions of people. Although the long term approach for prevention and elimination of nutritional deficiencies should aim at encouraging people to adopt a diversified and wholesome diet, fortification is one strategy that can have a far-reaching impact.

For our children to be healthy and well-nourished, we need nutrition-specific interventions like food fortification to provide them with essential nutrients.



Nutrient Periodisation for High Performance Sports

Dr Priti Rishi Lal, Scientist E(Sports Nutrition), MYAS-NIN, Deptt of Sports Sciences,

The term “**periodisation**” in sports, refers to the process of dividing an annual training plan into specific time blocks, where each block has a particular goal and provides the trainee with various stimuli needed for development of these goals, for enhancement of sports-performance.

Nutrient periodisation has been defined as the strategic combined use of exercise training and nutrition, or nutrition only, with the overall aim to obtain adaptations that support exercise performance. It is also called “Nutrition training”, “Nutrition periodisation”, or, “Nutrition for work” and emphasises the role of nutrition, not only as an adjunct to training, but also as a singular variable, that may affect performance, when applied judiciously, over a period of time.



The main **goals** of nutrition periodisation are: To enhance health, to improve performance and to bring out necessary changes in body size and composition. Various **components** of nutrition periodisation that enable realisation of its goals, therefore, include : changes in body weight, alteration of body composition, improvement in metabolic efficiency, promoting a healthy immune system and supporting physical periodization.

The main **cycles of periodisation** include the yearly macrocycle, within which training is planned for 2-6 week **mesocycles** and is executed minutely within weekly micro-cycles.

Nutrition for the macro-cycle has the primary goal of improved health, and a secondary goal of improved performance. The focus on an yearly basis remains on the oxidative Stress (reactive oxygen species) due to sport-training and provision of antioxidants: beta-carotene, vitamin C, vitamin E, selenium, zinc, various phytochemicals, avoiding saturated and trans-fatty acids, provision of mufa and w3pufa to minimize cellular/DNA damage. Sweat-losses of nutrients, especially iron, sodium & potassium, need replenishment along with other important micronutrients, i.e. calcium, copper, iodine, magnesium, manganese, and phosphorus. Supplementation of nutrients remains a constant concern of athletes and trainers, and should be allowed on need/ case/ situation basis, considering the adverse effect of over-supplementation of one micro-nutrient on the pool of other nutrients, a classical example being that of iron supplementation on zinc and copper levels of the body.

Nutrition goals for the Macro- and micro-cycles, usually include body composition correction(if appropriate), replenishing nutrients lost during training, identifying “GI friendly” foods before, during, and after workouts and improving metabolic efficiency: e.g. fat utilisation, glycogen storage. Nutritional inputs to meet these goals focuses on altering daily quantities of proximates as under:

Pre- season: Carbohydrates(Carbs): 3–4 or 5-7 g/kg bodyweight, Proteins(Pr): 1.2–1.6 or 1.7- 2.5 g/kg, max 3g/kg and Fats:0.8–1 or 0.9-1.3 g/kg

In-season: Carbohydrates 5–12 g/kg bodyweight, Proteins: 1.6–2 g/kg, and Fats:1 to 1.5 g/kg

Transition/taper: Carbohydrates: 1-3 g/kg bodyweight, Proteins: 1.4–1.6 , Fats:0.8–1 g/kg

Off-season: Since athletes do not follow a structured off-season training plan, they must have a well-planned nutrition program that is aligned with their annual training plan as well as specific off-season activities and that meets their changing energy expenditure needs, to avoid deterioration in any of the anthropometric/physiological parameters. Sufficient amounts of antioxidants and phyto-nutrients to support rehabilitation(if applicable), ensures faster recovery and better participation in the forthcoming pre-season training.

A sound, periodised nutritional plan and adequate rest, in combination with appropriately periodised training schedules can ensure peak performance of athletes participating in high performance sports.

QUIZ

1. Logo used to represent a fortified product is

- 1) F+
- 2) **+F**
- 3) F+
- 4) F+

2. Strategies used to address the high burden of micronutrient malnutrition include

- 1) Fortification
- 2) Supplementation
- 3) Diet diversity
- 4) **All of the above**

3. Wheat is fortified with

- 1) Iron, folic acid, zinc
- 2) Iron, vitamin B12
- 3) Vitamin B12, folic acid
- 4) **Vitamin B12, iron, folic acid**

4. Liquid milk is fortified prior to

- 1) Pasteurization
- 2) Ultra-heat treatment
- 3) **Both 1 and 2**
- 4) None of the above

5. The edible oil fortification standards for Vitamin D as established by FSSAI are

- 1) 0.10- 0.16µg per gram of oil
- 2) 0.12- 0.15µg per gram of oil
- 3) **0.11- 0.16µg per gram of oil**
- 4) 0.09- 0.16µg per gram of oil

6. Fortified products used in ICDS include

- 1) Rice, wheat, oil
- 2) Rice, oil, salt
- 3) Oil, salt, wheat
- 4) **Wheat, rice, oil, salt**

7. Benefits of food fortification

- 1) Cost effective strategy
- 2) Safe method of improving nutritional status
- 3) Does not alter the characteristics of the food
- 4) **All of the above**

8. Rice is fortified using

- 1) Dusting
- 2) Coating
- 3) Extrusion technology
- 4) **All the above**

9. The ____ which is the by-product of fibre fermentation, helps in regulating blood glucose level.

- a. Carbon dioxide
- b. Methane
- c. **Short Chain Fatty Acid**
- d. Bioactive peptides

10. Soluble fibre acts by _____ in the GLP-1 level and thereby, _____ the insulin sensitivity.

- a. **Increases, decreases**
- b. Decreases, increases
- c. **Increases, increases**
- d. Decreases, decrease

11. WHO recommends special attention to which 3 micronutrients?

- a. Iron, Folate and Zinc
- b. **Vitamin A, Iron, Iodine**
- c. Folate, Vitamin A and Zinc
- d. Iron, Iodine and Vitamin D

12. Skin lesions and digestive problems are the first symptoms of ____ which is a disease caused by too little niacin in the diet.

- a. **Pellagra**
- b. Anemia
- c. Malnutrition
- d. Hypertension

Specify if the following statements are true or false

1. Food fortification is a mandatory process. **False**
2. Food fortification is a cost-effective strategy used to Address the issue of malnutrition. **True**
3. The fortification logo can only be used if the staple is fortified as per the regulations. **True**
4. Food fortification is the only strategy used to addresses the issue of micronutrient deficiencies. **False**
5. Fortification leads to a complete change in product. **False**
6. Food Fortification is a replacement to dietary deficiency. **False**

Announcement



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IDA Delhi Chapter Wishes all the Dieticians & Clinical Nutritionist **Happy Dietetics Day**



Activity Through the Year





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