DHYEYA IAS
most trusted since 2003

DHYEYA'S KURUKSHETRA GIST

AUGUST 2023

THEME:

Nutrition

ADEQUATE NUTRITION FOR WOMEN AND CHILDREN

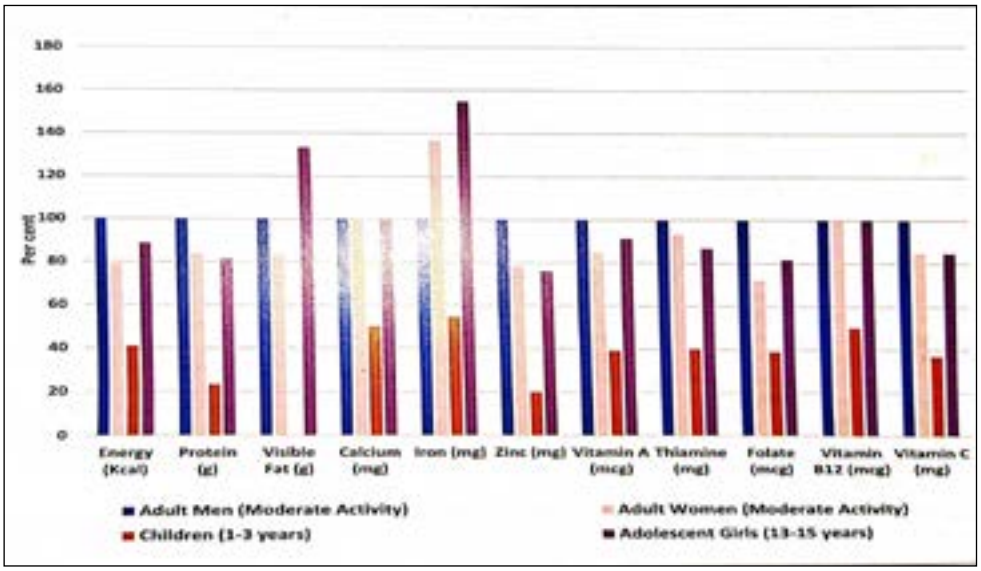
Adequate Nutrition for Women and Children

Adequate nutrition for women and children is critical. Women's nutritional well-being, especially during their reproductive years, plays a paramount role in shaping their pregnancy outcomes. Malnutrition among women before and during pregnancy can contribute to a significant occurrence of low-birth weight (LBW), pre-term deliveries, stillbirths, abortions, and elevated maternal mortality rates. Furthermore, malnutrition during infancy and childhood can impede a child's growth and development.

Adequate nutrition for women and children is essential. Women's health directly impacts their own well-being, as well as their children and families. Malnutrition and poor health can result from insufficient, balanced diets, leading to various ailments and reduced life expectancy. Poor maternal health can cause low birth weight, stillbirths, and high maternal mortality. Many Indian women are underweight or overweight, both posing risks during pregnancy. Mental and emotional healthcare also crucial during and after pregnancy. In Telangana, efforts to improve maternal nutrition include weight monitoring, nutrition counselling, anaemia prevention, and mental health screening during routine antenatal check-ups.

The Significance of Adequate Nutrition for Women and Children

- **Influence on Pregnancy Outcome:** Women's nutritional well-being, especially during reproductive years, significantly affects pregnancy outcomes, impacting their own health and that of their children and families.



- **Addressing Gender Bias:** Widespread awareness about nutrition and health is essential to overcome gender bias in intra-household food distribution and rectify nutritional imbalances.
- **Nutritional Deficiencies:** Insufficient dietary intake during reproductive years can lead to nutritional deficiencies that adversely impact women's health and their children's growth and development.
- Universal Nutrition Education: Imparting nutrition education emphasizing balanced diets and proper eating habits is vital for all, disregarding age, gender, education, class, and belief.
- **Impact on Generations:** Women's undernourishment during childbearing often results in undernourished mothers and subsequently undernourished children, perpetuating a cycle of malnutrition and poor health that must be broken.
- **Critical Phases:** Adequate nutrition gains paramount importance during rapid growth phases such as pregnancy, lactation, early childhood, and adolescence.
- **Vulnerable Groups:** Due to unique physiological and developmental needs, women and children are particularly vulnerable to the consequences of malnutrition.

- **Indian Scenario:** Women in India face significant nutritional challenges. According to the latest National Family Health Survey 2019-21 (NFHS-5), 18.7% of women in the reproductive age group (15-49 years) have a body mass index below normal (BMI<18.5 kg/m2), and 57% of them suffer from anaemia.
- **Children's Nutrition:** NFHS-5 data also reveals alarming prevalence of malnutrition among Indian children. Nearly 35.5% of children aged less than five years are stunted (low height-for-age), 19.3% and 7.7% are wasted/severely wasted (low weight-for-height), and 32.1% are underweight (low weight-for-age).

Ensuring adequate nutrition for women, children, and especially girls becomes crucial in breaking the cycle of malnutrition and improving the overall health and well-being of generations to come.

Adequate nutrition for children in the early years of life, especially during the first 1000 days from conception to the child's second birthday, holds a significant influence over their future health and well-being. Proper intake of both macro and micronutrients during these crucial early years is essential for their optimal growth and cognitive development. Inadequate dietary intakes, either in terms of quantity or quality, during this period can lead to stunted growth, impaired brain development, and weakened immune function. This makes children more susceptible to infections and exposes them to the long-term consequences of compromised cognitive development, reduced learning capacity, hindered educational attainment, lower productivity, and diminished earning potential in their adulthood.

- **Nutrient Comparison by Age and Gender**
  - **Moderately Active Adult Women vs. Men:** Nutritional needs of women are either higher (iron) or equal to (calcium, vitamin B12), or slightly lower than those of men, despite having a lower body weight (approximately 85% of men's weight).
  - **Nutritional Needs during Pregnancy and Lactation:** During pregnancy and lactation, women's nutritional requirements increase substantially compared to non-pregnant, non-lactating (NPNL) women.

Estimated Average Daily Requirement of Energy, Protein and Visible Fat for Men, Women, Children & Adolescent Girls *(Adapted from ICMR-NIN, 2020; 2023)*

Age Group		Body Weight (kg)	Estimated Average Requirements (EAR)					
			Energy		Protein		Visible Fat	
			(kcal/day)	Kcal/kg body wt./ day	(g/day)	g/kg body wt./day	(g/day)	g/kg body wt./day
Adult Men	Sedentary activity	65 *(100%)**	2110	32	43.0	0.66	25	0.38
	Moderate activity		2710	42			30	0.46
	Heavy activity		3470	53			40	0.61
Adult Women	Sedentary activity	55 *(84.6%)**	1660	30	36.0	0.66	20	0.36
	Moderate activity		2130	39			25	0.45
	Heavy activity		2720	49			30	0.54
Children (1-3 yrs)		12.9 *(19.8%)**	1110	83	10.0	0.79	Not listed	Not listed
Adolescent Girls (13-15 yrs)		49.6 *(76.3%)**	2400	49	35.0	0.70	40	0.81

* These figures indicate body wt. of adult women, children and adolescent girls expressed as % of adult man's body wt.

- **Nutrient Comparison by Nutrient Type (Per kg Body Weight/Day)**
  - **Energy, Protein, and Visible Fat:** Women's needs for energy, protein, and visible fat, when adjusted per kg of body weight per day, may be lower than those of men, but the emphasis should be on improving the quality of their diets.

The nutritional needs of women are unique and may vary at different life stages, particularly during pregnancy and lactation when their requirements increase significantly. Hence, it is crucial to ensure not only the quantity but also the quality of their diets, which becomes even more pertinent for the well-being of both the mother and the child.

Nutritional Requirements for Children and Adolescents

- **Early Nutrition Impact:**
  - The initial 1000 days of a child's life, spanning conception to 2 years, profoundly shape their future health and well-being.
  - Inadequate intake of essential nutrients during this period can result in stunted growth, impaired brain development, and weakened immunity.
- **Elevated Nutritional Needs:** Children and adolescents have significantly higher nutrient demands due to their rapid growth compared to adult men and non-pregnant, non-lactating (NPNL) women.
- **Body Weight-Based Nutrient Requirements:** Despite their lower body weight, children and adolescents require a proportionally greater amount of nutrients per kilogram of body weight.

Initiatives to Enhance Women and Children's Nutrition

- **Challenges in Nutritional Patterns:** Unhealthy dietary practices and nutritional deficiencies persist as major public health concerns in India, affecting food, nutrition, and overall health security.
- **Essential Intervention Areas:** Implementing interventions encompassing improved dietary quality and quantity, mitigation of micronutrient deficits, better access to health and nutrition services, education, sanitation, and empowerment of women.
- **Policy and Programme Endeavours:**
  - India has formulated policies and programs over time to address nutrition and health challenges among women and children.
  - Noteworthy initiatives like the "National Nutrition Strategy" and "POSHAN Abhiyan" have been pivotal in driving nutrition-related advancements.

POSHAN Abhiyan and Beyond

- **POSHAN Abhiyan Impact:**
  - The "Prime Minister's Overarching Scheme for Holistic Nutrition" (POSHAN Abhiyan) stands as a flagship program dedicated to enhancing nutritional outcomes for children, pregnant women, and lactating mothers.
  - It integrates various programs and initiatives to create a comprehensive approach to nutrition enhancement.
- **Integrated Nutrition Support Programme:**
  - The "Saksham Anganwadis and POSHAN 2.0" program targets malnutrition challenges in children, adolescent girls, pregnant women, and lactating mothers.
  - Focused on nutrition content, service delivery, and wellness through AYUSH practices.
- **Complementary Initiatives:**
  - Initiatives like the National Iron plus Initiative, Vitamin A Deficiency Prevention, and PM-POSHAN (formerly Mid-day Meal Scheme) synergize to combat malnutrition.
  - The National Policy for Women and POSHAN Tracker app enhance nutrition service delivery and monitoring capabilities.

Effective Implementation for Long-term Impact

- **Implementation Dynamics:** The successful execution of initiatives remains a challenge, necessitating consistent monitoring, evaluation, and adaptability at the grassroots level.
- **Empowering Women's Nutrition:** Prioritizing women's adequate nutrition and health significantly improves household dietary practices and the overall health status of children, families, and the nation.

Conclusion

In essence, the importance of adequate nutrition for women and children is indisputable. It impacts pregnancy outcomes, shapes future health, and has far-reaching implications for generations to come. India's initiatives like the POSHAN Abhiyan demonstrate a commitment to addressing these challenges. Early nutrition impact and the unique nutritional needs of children and adolescents underscore the significance of tailored interventions. By focusing on gender bias, education, and effective implementation, India can pave the way for a healthier, more prosperous future for all.

PROMOTING HOUSEHOLD FOOD AND NUTRITIONAL SECURITY

Introduction

Promoting household food and nutrition security encompasses a multifaceted endeavour that demands collective contributions from diverse stakeholders. This initiative addresses factors like food availability, accessibility, utilization, and stability, while also ensuring nutritional adequacy and dietary diversity. Through various government interventions, including food distribution, nutritional supplementation, agricultural support, and capacity building, these programs strive to attain sustainable development goals and create a healthier and more prosperous society.

Food security signifies that all individuals, consistently and under all circumstances, should possess physical, social, and economic access to sufficient, safe, and nutritious food that caters to their dietary requirements and preferences, promoting an active and healthy life (FAO, 2000, reaffirmed in 2009). Nutrition security, on the other hand, extends beyond food security. It is accomplished when individuals consistently consume food of adequate quantity and quality, encompassing variety, diversity, nutrient content, and safety, alongside a hygienic environment, proper health care, education, and nurturing (FAO, 2012).

Food security and nutrition are intrinsically intertwined. The causes of food and nutrition insecurity are intricate, interconnected, and stem from structural and economic limitations. At the core of nutrition insecurity lies poverty. Insufficient access to education, affordable housing, healthcare, transportation, employment, and fair wages can all impede a household's ability to acquire sufficient and nutritious sustenance.

According to the UN FAO, 'food and nutrition security prevails when all individuals, consistently, possess physical, social, and economic access to food. This food is consumed in quantities and qualities sufficient to cater to their dietary requisites and preferences, complemented by a setting of proper sanitation, health services, and care, fostering a life of health and vitality.

'Pillars of Household Food and Nutrition Security:

- **Availability of Food:** Concentrating on securing a consistent supply of diverse food choices.
- **Access to Food:** Encompassing factors like affordability, physical access to markets, storage and transportation facilities, and social safety nets.
- **Utilisation of Food:** Prioritising the optimization of nutritional value from food for improved health outcomes.
- **Stability of Food:** Denoting households' ability to maintain food access even during shocks or crises.
- **Governance and Policy:** Involving the formulation and execution of coherent policies, strategies, and programmes addressing all facets of food security.
- **Empowerment and Capacity Building:** Playing a pivotal role in enhancing household food and nutrition security. This can include training in sustainable farming practices, nutrition education, entrepreneurship, and leadership skills.

Approaches to Achieve Food and Nutritional Security:

- **Sustainable Agricultural Practices:** Encouraging sustainable farming methods that boost agricultural output while mitigating environmental impact.
- **Diversification of Food Production:** Advocating for traditional and lesser-utilised crops, along with horticulture, agroforestry, and aquaculture.
- **Facilitating Access to Inputs and Technologies:** Promoting the creation and distribution of improved crop varieties, resilient seeds, and suitable technologies for small-scale farmers.
- **Social Protection Programs:** Implementation of targeted social protection initiatives to address immediate food requirements and lower vulnerability.
- **Nutrition Education and Behavioural Change:** Promoting education on nutrition and communication to foster better dietary habits within households.
- **Strengthening Health and Nutrition Services:** Enhancing availability to quality health and nutrition services, with special focus on women, children, and vulnerable segments.
- **Policy and Governance Enhancements:** Developing and enforcing policies and governance frameworks that give precedence to food and nutritional security.
- **Research and Innovation:** Engaging in research concerning climate-smart agriculture, nutrition-sensitive interventions, and sustainable food production systems.

Food & Nutritional Security and Sustainable Development Goals (SDGs):

Securing household food and nutrition in India holds immense significance in attaining the objectives laid out by the Sustainable Development Goals (SDGs).

- **SDG 1:** Eradicating Poverty: Household food and nutrition security stands as a pivotal instrument in diminishing poverty. By ensuring equitable access to nourishing sustenance, vulnerable households can break free from the cycle of impoverishment.
- **SDG 2:** Eliminating Hunger: India can substantially combat hunger and malnutrition by guaranteeing universal access to nutritious food throughout the year.
- **SDG 3:** Ensuring Health and Well-being: The foundation of health improvements lies in access to a varied and nutrient-rich diet.
- **SDG 5:** Promoting Gender Equality: Household food and nutrition security can contribute to addressing gender disparities.
- **SDG 12:** Fostering Responsible Consumption and Production: India can curtail food waste, safeguard biodiversity, encourage sustainable farming practices, and minimize agricultural impact on the environment by endorsing the consumption and cultivation of diverse and locally sourced foods.
- **SDG 13:** Climate Action: Strategies for household food and nutrition security should align with climate action goals.
- **SDG 17:** Nurturing Partnerships for the Goals: Strong multi-stakeholder partnerships are indispensable for achieving household food and nutrition security.

Comparative study of Nutritional value of Millets vs. Wheat & Rice

Grain (Millet/ Cereal)	Carbohydrates(g)	Protein (g)	Fat (g)	Energy (Kcal)	Dietary Fibre (g)	Ca (mg)	Mg (mg)	Zn (mg)	Fe (mg)	Thiamin (mg)	Riboflavin (mg)	Niacin (mg)	Folic acid (mg)
Sorghum	67.7	10.0	1.7	334.1	10.2	27.6	133.0	2.0	4.0	0.4	0.1	2.1	39.4
Pearl Millet	61.8	11.0	5.4	348.0	11.5	27.4	124.0	2.8	6.4	0.3	0.2	0.9	36.1
Finger millet	66.8	7.2	1.9	320.7	11.2	364.0	146.0	2.5	4.6	0.4	0.2	1.3	34.7
Kodo millet	66.2	8.9	2.6	331.7	6.4	15.3	122.0	1.7	2.3	0.3	0.2	1.5	39.5
Proso millet	70.4	12.5	1.1	341.1	-	14.0	153.0	1.4	0.8	0.4	0.3	4.5	-
Foxtail millet	60.1	12.3	4.3	331.0	-	31.0	81.0	2.4	2.8	0.6	0.1	3.2	15.0
Little millet	65.6	10.1	3.9	346.3	7.7	16.1	91.4	1.8	1.3	0.3	0.1	1.3	36.2
Barnyard millet	65.6	6.2	2.2	307.1	-	20.0	82.0	3.0	5.0	0.3	0.1	4.2	-
Wheat	64.7	10.6	1.5	321.9	11.2	39.4	125.0	2.9	4.0	0.5	0.2	2.7	30.1
Rice	78.2	7.9	0.5	356.4	2.8	7.5	19.3	1.2	0.7	0.1	0.1	1.7	9.3

(IIMR; IFCT NIN - 2017)

Enhancing household food and nutrition security in India hinges on the pivotal aspect of dietary diversification. This entails incorporating a wide array of foods from diverse food groups to ensure a well-rounded and nutrient-abundant diet. Here, we outline strategies for fostering dietary diversification:

- **Nutrition Education and Awareness:** Public campaigns, school initiatives, and community workshops are pivotal avenues for disseminating nutrition knowledge and raising awareness.
- **Promotion of Local and Traditional Foods:** By organizing events that celebrate local culinary traditions and their cultural and nutritional significance, in collaboration with local food producers, the utilization of indigenous foods can be championed.
- **Innovative Recipes and Cooking Demonstrations:** Showcasing the versatility and nutritional value of local and traditional ingredients through cooking demos and the creation of innovative recipes is paramount.
- **Cultivation of Diverse Crops:** This involves advocating for the growth of traditional and underutilized crops, along with practices like home gardening and sustainable farming.
- **Nutrition-Sensitive Policies:** The development and implementation of policies prioritizing nutrition-centric agriculture, food production, and distribution can systematically bolster dietary diversification.

- **Food Fortification Initiatives:** Enriching staple foods like rice, wheat flour, and edible oils with essential nutrients through fortification programs elevates their nutritional content and tackles prevalent micronutrient deficiencies.

By adopting these measures, India can effectively promote dietary diversification, thereby enhancing household food and nutrition security, and proactively addressing the challenges tied to malnutrition and diet-related ailments.

Food fortification constitutes a vital strategy to amplify the nutritional value of food by infusing indispensable vitamins, minerals, and nutrients. It occupies a crucial role in achieving household food and nutrition security, substantiated by the following facets:

- **Augmented Nutrient Profile:** The enrichment process bolsters the nutritional content of food items.
- **Mitigation of Micronutrient Deficits:** Food fortification is adept at addressing deficiencies in essential micronutrients.
- **Enhanced Accessibility and Affordability:** The approach ensures that nutrient-rich foods are accessible and economically viable.
- **Tailored Precision:** Fortification can be customized to target specific nutrient deficiencies in particular demographics.
- **Effective Public Health Measure:** As a proactive intervention, it significantly contributes to public health improvements.
- **Sustainability in the Long Run:** The enduring impact of fortified foods makes it a sustainable solution.
- **National and Global Endorsement:** The strategy garners support and acknowledgment at both national and global levels.

Incorporating these strategies fortifies India's endeavour to diversify diets, bolster household food security, and effectively counter the multifaceted issues posed by malnutrition and diet-related diseases.

Key Governmental Initiatives aimed at Promoting Food and Nutrition Security

- **National Food Security Act (NFSA, 2013):** The NFSA aims to ensure access to quality food at affordable prices, leading India's transition from a food-deficit nation to a self-sufficient food producer.
- **Pradhan Mantri Garib Kalyan Anna Yojana (PMGKAY):** PMGKAY provides free food grains to Antyodaya Anna Yojana (AAY) and Primary Household (PHH) beneficiaries, bolstering the provisions of NFSA.
- **National Food Security Mission (Sub-Mission for Millets):** This initiative promotes millet cultivation and their inclusion in the Targeted Public Distribution System (TPDS) to diversify food sources.
- **Pradhan Mantri Matru Vandana Yojana:** Registered women receive Rs 5000/ for wage support, nutritious food during pregnancy, and the post-delivery period to ensure maternal well-being.
- **Poshan Maah:** An annual event promoting a nationwide movement (Jan Andolan) to address malnutrition through awareness and community engagement.
- **Saksham Anganwadi and Poshan 2.0:** This integrated program targets malnutrition in children, adolescent girls, pregnant women, and lactating mothers, emphasizing nutrition content and delivery.
- **Mission Poshan 2.0:** A comprehensive strategy focusing on transparency, accountability, balanced diets, diet diversity, quality, and sustainable practices.
- **Diet Diversity and Food Fortification:** By leveraging traditional knowledge and promoting millet consumption, this initiative aims to diversify diets and enhance nutritional value.
- **Pradhan Mantri Poshan Shakti Nirman (PM POSHAN):** Providing hot cooked meals to pre-school and primary school children, addressing hunger and improving educational outcomes.
- **Poshan Vatikas or Nutri-Gardens:** Establishing gardens to supply fresh, locally produced fruits, vegetables, and medicinal plants to women and children, enhancing nutrition accessibility.

These initiatives collectively aim to enhance food and nutrition security in India, addressing the multifaceted challenges related to malnutrition and improving the overall health and well-being of its citizens.

Conclusion

Promoting household food and nutrition security is a multifaceted endeavour that requires concerted efforts from various stakeholders. Through a range of governmental interventions such as food distribution, nutritional supplementation, agricultural support, and capacity building, these programmes strive to achieve sustainable development goals and ensure a healthier and more prosperous society.

NUTRITION AND HEALTH IN SCHOOL EDUCATION

Introduction

The crucial connection between good health, proper nutrition, and education forms the cornerstone for fostering a sustainable and inclusive future for children. This interplay serves as a potent catalyst for enhancing educational outcomes, empowering learners to flourish, and cultivating inclusivity and equity in both education and health domains. A multitude of studies have underscored the profound correlation between health and education. Not only do sound health and adequate nutrition contribute to children's learning, but they also holistically enhance their overall well-being. Moreover, these factors play an instrumental role in unlocking the fullest educational potential within each child. The convergence of health and education holds the key to optimal learning, fostering a positive environment where children's improved well-being translates to more effective learning experiences. Prioritizing the health and nutrition of children within educational settings represents a multifaceted investment that enriches their education, health, nutrition, and general welfare concurrently. The ripple effects of such interventions extend not only to homes and communities but also play a pivotal role in enrolling and retaining children in schools, particularly those who are most vulnerable to educational disparities. By nurturing the health and happiness of children, we create a fertile ground for enhanced learning, equipping them with the tools they need to lead healthy, fulfilling lives.

Status of Health and Nutrition in Schools

The nexus of health, nutrition, and education is pivotal in shaping children's educational potential. Optimal physical and mental well-being equips children to excel academically and lead healthier lives. However, malnutrition, comprising stunting, underweight, or wasting, poses a global challenge to children's development, affecting cognitive growth and economic progress. To address this concern, numerous countries, including India, have instituted school health and nutrition programs.

- **Global Prevalence:** Around 90% of countries globally have implemented school health and nutrition initiatives, serving as widely adopted strategies for delivering health and social support to school-age children. These programs play a pivotal role in safeguarding and enhancing children's holistic development within the school ecosystem.
- **Crucial Development Window:** The first 1,000 days of a child's life are paramount for cognitive and physical growth. However, ensuring sustained progress necessitates continuous support for health, nutrition, and development during middle childhood and adolescence.
- **Global School Health and Nutrition Goals:** The Global School Health and Nutrition initiative aims to protect and promote the health, nutrition, well-being, and development of students and the broader school community. Key components encompass:
  - Formulating policies and laws that foster supportive environments across levels.
  - Integrating health and well-being education into curricula and activities.
  - Cultivating safe, inclusive, and conducive school environments that nurture health and learning.
  - Offering school health and nutrition services, along with effective interventions and nutritious school meals.
- **Impact and Urgency:** The report 'Ready to Learn and Thrive' underscores the transformative effects of comprehensive school health and nutrition programs:
  - Approximately 90% of countries have operational School Health and Nutrition programs.
  - Food and nutrition education is included in three out of five countries' curricula.
  - Over 100 countries conduct school-based vaccination programs.
  - Mandatory physical education is a norm in 90% of countries.
  - School feeding policies are enacted in 80% of countries.
  - Nearly 388 million primary school students across 161 countries benefit from school meal programs.
- **Progress in India:** India has achieved commendable strides in enhancing key nutritional indicators for children:
  - Stunting reduced from 38.4% to 35.5%.
  - Wasting decreased from 21.0% to 19.3%.
  - Prevalence of underweight cases declined from 35.8% to 32.1%.

These indicators underscore the persistent challenge of chronic under nutrition, often stemming from poverty, maternal health, and early-life practices. Addressing these concerns is pivotal for unlocking children's physical and cognitive potential.

Policy Perspective on Health and Nutrition in Schools

- **Integration of Health and Education:**
  - Governments worldwide invest in school health and nutrition policies to improve students' well-being, learning outcomes, and community development.
  - Combining health and education investments offers transformative benefits, promoting equity, inclusion, and educational system recovery post-Covid-19.
- **Aligned with Sustainable Development Goals (SDGs):**
  - SDG Goal 3 emphasizes healthy lives and well-being for all ages, while Goal 4 focuses on equitable, quality education and lifelong learning.
  - National Health Policy 2017 and National Education Policy (NEP) 2020 advocate for health education, preventive care, and well-being across ages.
- **NEP 2020's Emphasis on Holistic Development:**
  - NEP 2020 mandates health and nutrition, physical education, wellness, fitness, and sports education for students.
  - It encourages early childhood care, extending mid-day meal programs and proposing breakfast provisions.
  - NEP integrates key health topics: nutrition, mental health, sanitation, hygiene, and physical well-being, fostering holistic development.

Government Initiatives for Children's Health and Nutrition in Schools

- **Pradhan Mantri Poshan Shakti Nirman (PM POSHAN)**
  - Aligned with NEP 2020, this initiative combines education and nutrition.
  - Provides food and nutrition support to children in government and aided schools.
  - Aims to improve nutritional status, enhance attendance, and aid concentration.
  - Covers 12 crore children in 10.84 lakh schools across India.
  - Fosters social values and equality alongside education.
- **School Health and Wellness Programme**
  - A joint initiative by Ministry of Health and Family Welfare and Ministry of Education.
  - Appoints Health and Wellness Ambassadors (HWA) in public schools.
  - Focuses on disease prevention, iron-folic acid supplementation, and nutrition counseling.
  - Addresses anaemia prevention, tobacco awareness, and life skills education.
  - Aims to foster healthy lifestyles and integrated learning.
- **Mission Saksham Anganwadi and Poshan 2.0**
  - Led by Ministry of Women and Child Development (MoWCD).
  - Integrates Anganwadi Services, Scheme for Adolescent Girls, and Poshan Abhiyan.
  - Addresses malnutrition among children, adolescent girls, and pregnant women.
  - Focuses on nutritional support, early childhood care, and Anganwadi infrastructure.
  - Covers beneficiaries through robust ICT-enabled platform "Poshan Tracker."
- **POSHAN Abhiyaan**
  - Prime Minister's flagship scheme for holistic nutrition launched in 2018.
  - Aims to reduce malnutrition and improve nutritional status of children, adolescent girls, pregnant women, and lactating mothers.
  - Targets achievement of 'Suposhit Bharat' (Well-Nourished India) through mission mode.
- **Poshan Bhi, Padhai Bhi**
  - Launched under Mission Saksham Anganwadi and Poshan 2.0.

- Focuses on Early Childhood Care and Education (ECCE) in 13 lakh Anganwadis.
- Aims to make Anganwadi centres nutrition hubs and education-imparting centres.
- Aims for holistic development of children under 6, aligned with NEP domains.

Way Forward

A nation's progress hinges on its youth, as the health of children forms the bedrock of a robust society. Recognized globally, schools play a pivotal role in nurturing children's physical, emotional, and social skills. Interventions for school health and nutrition not only benefit the most vulnerable youngsters but also bolster the community's human capital foundation.

Optimal health and nourishment enhance students' learning capabilities. Enabling consistent attendance and preparedness for learning empowers individuals to fully realize their life potential. Investing in health and nutrition programs within educational institutions fosters a populace that is well-fed, healthy, and educated, fostering sustained growth and economic advancement. Streamlined collaboration and integration are vital to ensure children across India receive requisite nutrition and healthcare. By prioritizing and actively contributing to the well-being of schoolchildren, we unlock a unique opportunity to revolutionize education.

FOODS THAT ADDRESS NUTRITIONAL DEFICIENCIES

Introduction

In recent years, India has undertaken various nutrition interventions as a core component of its national strategy to combat malnutrition and its associated risks. These interventions encompass diverse measures, including the provision of food supplements, Iron and Folic Acid (IFA) supplementation for pregnant women, breastfeeding advocacy, access to clean water, sanitation facilities, and more. While nutritional deficiency has traditionally been linked to poverty, the prevailing understanding now acknowledges that malnutrition extends beyond economic disparities. Research highlights that even in urban and affluent segments; malnutrition is prevalent due to poor dietary choices. The influx of Western dietary patterns has contributed to the consumption of nutrient-poor foods rich in fats, refined carbohydrates, and sugars, offering little substantive nourishment. Despite on-going governmental actions and collective endeavours to address this challenge, continued efforts are essential. Economic inequality and low socio-economic status continue to undermine the dietary quality and quantity of a significant portion of the population, leading to a cycle of adverse consequences. The repercussions of malnutrition extend beyond personal health, affecting societal well-being. Both under nutrition and over nutrition pose substantial risks, resulting in various health ailments, reduced productivity, and overall societal inefficiency.

Vitamin Deficiencies and their Impact on Health

- **Vitamin D Deficiency**
  - **Role:** Essential for bone health, preventing certain cancers, and aiding various bodily functions.
  - **Effects:** Can lead to osteoporosis, fractures, muscle weakness, impaired cell functions.
- **Vitamin A Deficiency**
  - **Role:** Vital for vision, metabolism, cell development, and maintaining intestinal and urinary tract linings.
  - **Effects:** Causes vision loss, heart, lung, skin, tissue issues, immune system complications.
- **Vitamin C Deficiency**
  - **Role:** Necessary for blood vessel health, iron absorption, and well-being of teeth, gums, skin, and tissue.
  - **Effects:** Leads to blood vessel problems, iron deficiency, compromised oral and skin health.
- **Vitamin B_{12} Deficiency**
  - **Role:** Critical for nervous system health, DNA stability, and red blood cell production.
  - **Effects:** Results in issues like atrophic gastritis, Crohn's disease, neurological symptoms.
- **Protein Deficiency**
  - **Role:** Acts as body's building blocks, maintaining muscle mass, and supporting overall health.
  - **Effects:** Triggers edema, mood changes, slow wound healing, weakness, fatigue.
- **Calcium Deficiency**
  - **Role:** Vital for strong bones and teeth, often associated with dairy, but available in plant-based sources too.
  - **Effects:** Can lead to brittle bones, dental problems, and increased risk of fractures.
- **Iron Deficiency**
  - **Role:** Common issue causing iron deficiency anaemia, leading to fatigue, paleness, breathlessness.
  - **Effects:** Impairs oxygen transport, reduces physical endurance, and impacts cognitive function.
- **Folate Deficiency (Vitamin B_9)**
  - **Role:** Essential for DNA and RNA synthesis, crucial for cell division and growth.
  - **Effects:** Can lead to anaemia, birth defects, and impaired cellular processes.
- **Iodine Deficiency**
  - **Role:** Required for proper thyroid function, its deficiency causes symptoms like weight gain, fatigue.
  - **Effects:** Impairs thyroid hormone production, leading to metabolism disruption and related issues.

Nutritional Considerations in a Vegetarian Indian Diet

- **Protein Deficiency**
  - **Role:** Essential for muscle repair, hormone production, and enzyme functions.
  - **Addressing:** Include protein-rich plant-based foods like lentils, chickpeas, beans, soy products, and dairy.
  - **Strategy:** Combine complementary protein sources for essential amino acids; incorporate foods like tempeh, tofu, and seitan.
- **Calcium Sources Beyond Dairy**
  - **Importance:** Crucial for strong bones and teeth.
  - **Alternatives:** Leafy greens (spinach, kale), broccoli, nuts, seeds (almonds, sesame), fortified tofu.
  - **Benefits:** Support bone health by meeting calcium needs without relying solely on dairy.
- **Iron Intake Enhancement**
  - **Approach:** Consume iron-rich plant foods (spinach, legumes, nuts, seeds), paired with vitamin C-rich foods for better absorption.
- **Zinc and Essential Fatty Acids**
  - **Sources:** Whole grains, legumes, nuts (zinc); flaxseeds, chia seeds, walnuts (omega-3 fatty acids).
  - **Balance:** Reduce omega-6 fatty acids from vegetable oils to maintain a healthy ratio.
- **Fibre-rich Diet**
  - **Significance:** Promotes digestive health, prevents chronic diseases.
  - **Incorporation:** Whole grains (oats, barley, brown rice, quinoa), fruits, vegetables, nuts, seeds.
- Vitamin B_{12}
  - **Challenge:** Mostly found in animal products.
  - **Solutions:** Fortified plant-based milk, breakfast cereals, B_{12} supplements.
- **Vitamin D and Riboflavin**
  - **Vitamin D:** Essential for calcium absorption; obtain from sunlight, fortified foods, supplements.
  - **Riboflavin:** Found in dairy, fortified cereals, vegetables like spinach and mushrooms.
- **Micronutrient Deficiencies in India**
  - **Scenario:** Nutrition transition, prevalent overweight and underweight issues.
  - **Micronutrient Gap:** Persistent challenge causing nutritional deficiencies.
  - **Government Initiatives:** Food fortification, dietary diversification, nutritional education, micronutrient supplementation, hygiene promotion.

Blue Foods

Utilizing aquatic resources for food, known as "blue foods," holds the potential to alleviate nutritional deficiencies, boost employment opportunities, and enhance export revenue in India. Blue foods, derived from aquatic environments, play a significant role in various nations' economies, cultures, and nutritional security. Additionally, these foods have a smaller environmental footprint compared to land-based meats, making them a sustainable option. Leveraging aquatic resources can contribute to the overall health, well-being, and livelihoods of rural communities. Notably, India can effectively utilize aquatic foods to tackle deficiencies in nutrients like B12 and omega-3, as indicated by available data.

Government Initiatives

- The Indian Council of Agricultural Research (ICAR) has developed 79 biofortified crop varieties with high nutritional content.
- ICAR launched programs like Nutri-sensitive Agricultural Resources and Innovations (NARI) and Value Addition and Technology Incubation Centres in Agriculture (VATICA) to upscale biofortified crops through Krishi Vigyan Kendras.

- Millets, known as "nutri-cereals," are gaining attention due to their nutritional value and are grown mainly in dry regions of Asia and Africa.
- Millets, including sorghum, pearl millet, finger millet, and others, offer energy, carbohydrates, fats, proteins, fibre, antioxidants, iron, zinc, and vitamins, addressing micronutrient deficiencies.
- The United Nations declared 2023 as the "International Year of Millets," recognizing their significance.
- India initiated the 'Mainstreaming Millets for Nutrition Security' program in 2021, aiming to strengthen the value chain and promote millet cultivation.
- The Indian Ministry of Agriculture and Farmers Welfare is actively promoting millets across rural areas to enhance food security and nutrition.
- Millets contribute to achieving United Nations' Sustainable Development Goals (SDGs) and can positively impact the sustainable food supply chain.
- India's agricultural and food security policies are moving beyond calorie sufficiency to ensure access to a balanced and diverse diet, aiming to improve the nutrition profile of undernourished populations.

Conclusion

In recent years, India has demonstrated a comprehensive approach to tackle malnutrition through various interventions, transcending economic disparities. While nutritional deficiencies are no longer confined to poverty, the influence of Western dietary patterns has aggravated the issue, impacting even affluent segments. Governmental actions, coupled with grassroots efforts, have been made to address this challenge, yet sustained endeavours remain crucial. The consequences of malnutrition, whether under-nutrition or over-nutrition, extend beyond individual health, affecting overall societal well-being and productivity. Initiatives like bio-fortification and the resurgence of millets showcase promising steps towards achieving nutritional security. By addressing micronutrient gaps and promoting balanced dietary practices, India strives to uplift the health of its population.

MILLETS: FUTURE FOOD

Introduction

Millet, a type of cereal grain belonging to the Poaceae family, is widely consumed across Africa and Asia, particularly in developing countries. Despite its seed-like appearance, millet shares a nutritional profile similar to sorghum and other cereals. Shifting away from its previous designation as "mota anaj," millet is now recognized as "shree anna" or nutri-cereal. This super-food is rich in iron and calcium, aligning well with global climate concerns. Millet boasts a minimal water requirement, low carbon footprint, and adaptability to arid conditions. Millet qualifies as a smart food choice, benefitting individuals, the environment, and farmers. Packed with nutrients like calcium, iron, zinc, protein, and fibre, it boasts a low-glycaemic index. Its versatility is remarkable, serving as food, fodder, sugar source, and even biofuel. Thriving in high temperatures, minimal rainfall, nutrient-poor, and saline soils, millets have a reduced environmental impact. Their various consumption methods align with familiar culinary practices.

Millets: Super foods

A Resilient Crop with Climatic and Economic Significance: Millets, originally cultivated in Asia and Africa, have become a symbol of resilience in the face of climate variability.

- As the world grapples with unpredictable weather patterns and water scarcity, millets stand tall as a drought-resistant crop that requires minimal water and thrives even in poor soil conditions.
- Their ability to flourish in arid environments makes them a vital food source for millions of smallholder dry land farmers in these regions.

Economically, millets play a significant role by offering farmers a sustainable alternative to traditional crops.

- With their low water requirements and suitability for a range of soils and climates, millets serve as a smart risk management strategy for farmers.
- By embracing millet cultivation, these farmers reduce their carbon footprint and contribute to a more resilient agricultural system, ultimately improving their livelihoods.

IMAGE

Efforts to Promote Indian Millets Internationally

- **Initiation and Collaboration**
  - The push for global recognition of Indian millets began in October 2017 during the Committee on Food Security event in Rome.
  - Collaborative meetings involving the Government of India (GOI), International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), and other stakeholders were held at the UN's Food and Agriculture Organization (FAO).
  - These discussions aimed to promote the idea of an International Year of Millets through FAO departments and the Indian Embassy in Rome.
- **Collaborative Pursuit and Success**
  - Despite the typical five-year process for such initiatives, various entities, including GOI, ICRISAT, ICAR, and Indian Institute of Millets Research (IIMR), worked together.
  - Their efforts bore fruit, and the proposal gained traction, leading to the declaration of 2023 as the International Year of Millets.
- **Addressing Global Challenges**
  - Amid concerns about depleting natural resources like arable land and water, millets offer a solution.
  - Traditional staple crops like rice and wheat are water-intensive; diversifying cropping systems becomes essential.

- **Government Initiatives in India**
  - **Year of Millets (2018)**
    - In 2018, the Indian Government marked the "Year of Millets" to encourage millet production and consumption.
  - **UNGA Resolution (2023)**
    - Building on the Year of Millets, the Government of India spearheaded a resolution in the UN General Assembly (UNGA) to declare 2023 as the International Year of Millets.
    - The UNGA accepted the proposal, dedicating 2023 to raising awareness about millets.
  - **Resolution Details**
    - The UNGA resolution emphasizes raising awareness about millet consumption's nutritional benefits.
    - It highlights millets' adaptability to adverse and changing climatic conditions.
    - The resolution also underscores the importance of enhancing value chain efficiencies.

Iron Deficiency

Causes of Iron Deficiency

- **Global Rise in Iron Deficiency Anaemia:** Iron deficiency anaemia is increasing globally, affecting a large number of individuals.
- **Lack of Dietary Iron:** Inadequate intake of dietary iron, especially in regions where diverse and nutrient-rich food sources are limited.
- **Micronutrient Deficiencies:** Iron deficiency is one of the top three micronutrient deficiencies worldwide.
- **Bioavailability Concerns:** Misconceptions about the bioavailability of iron from certain foods, including millets.

Remedial Measures Taken

- **Study on Millets and Iron Levels:** A comprehensive study involving 22 human studies and 8 laboratory experiments was conducted on millet consumption's impact on iron deficiency anaemia.

- **Research Findings:** The research indicated that regular consumption of millets can improve haemoglobin and serum ferritin levels, thus reducing iron deficiency anaemia.
- **Daily Dietary Iron Requirement:** Millets were found to provide a substantial portion of daily dietary iron requirements for the average person.
- **Bioavailability Confirmed:** Contrary to belief, the study confirmed that iron from millets is bioavailable when included in a balanced diet, effectively improving haemoglobin status.
- **Health Initiatives:** Initiatives such as the National Millet Mission and Poshan Gyan by the Indian Government focus on promoting millet consumption to combat malnutrition and anaemia.
- **Educational Efforts:** Efforts to include millets in mid-day meal schemes and promoting their consumption in diverse settings are being encouraged.
- **Government Support:** Government support for healthy foods, including millets, is sought to ensure their availability and accessibility to the public.
- **Entrepreneurial Engagement:** Millet entrepreneurs emphasize the importance of promoting healthy foods and millet-based products, even during and after lockdowns.
- **Sustainability Advantage:** Millets' cultivation requires less water compared to traditional cereals like rice, making them a sustainable food alternative.
- **Recognizing Millet's Potential:** Governments recognize the value of millets in improving nutrition and are taking measures to integrate them into mainstream diets.
- **Global Implications:** The rising burden of iron deficiency anaemia underscores the need to integrate millets into diets globally, with potential to impact under-nutrition.
- **Future Research:** Calls for further research on various millet varieties, processing methods, and their impact on anaemia to design effective interventions.
- **Promotion of Agribusiness:** Support for agribusiness and agriculture is deemed crucial for successful and profitable agriculture, especially considering challenges like the COVID-19 pandemic.
- **Societal Awareness:** Awareness campaigns, quizzes, contests, and events are organized to promote millets' benefits and raise awareness about their significance.
- **Upcoming Events:** World Food India 2023 will focus on the potential of millets and India's food processing industry in contributing to global food security.
- **Non-Profit Initiatives:** Organizations like the DHAN Foundation work towards mainstreaming small millets in regular diets to enhance nutrition security.
- **Sustainable Development Goals:** Millets' potential aligns with the objectives of Sustainable Development Goals, aiming to improve global nutrition and living standards.

NUTRITIONAL MANAGEMENT FRAMEWORK FOR RURAL INDIA

Introduction

The effectiveness of national nutritional initiatives relies on their harmonization with broader domains such as food, education, health, agriculture, and rural development. Ongoing real-time data collection and efficient institutional mechanisms are vital for enduring benefits. Nutrition's pivotal significance in human development is evident through its integration into numerous United Nations Sustainable Development Goals. Addressing nutrition challenges necessitates a comprehensive approach spanning various levels.

Why is Nutrition important?

- **Nutrition Essentials:** Nutrition involves consuming food and converting it into energy and vital nutrients, including protein, carbohydrates, fats, minerals, vitamins, and fibre.
- **Healthy Diet:** A balanced diet is crucial for overall health, strengthening immunity, and reducing the risk of deficiencies and diseases.
- **Changing Landscape:** India's nutritional situation is shifting due to socio-economic changes, demographic shifts, and developmental initiatives by various entities including government, NGOs, and private corporations.
- **Malnutrition Challenges:** Malnutrition, in all forms, poses health and economic challenges, affecting health, livelihoods, and contributing to fiscal imbalance.
- **Altered Consumption:** Consumption habits have shifted towards processed and snack foods, leading to imbalances, obesity, diabetes, and related health issues.
- **Aggravating Factors:** Intensive agriculture, unhealthy habits, modern lifestyles, and environmental pollution worsen nutrition-related problems.
- **Preventive Actions:** Understanding nutrition is vital for disease prevention, demanding a comprehensive approach.
- **Vulnerable Groups:** Nutrition interventions are critical for women, children, lactating mothers, and adolescents.
- **Disparities:** Malnutrition prevails in rural, tribal, and urban slum areas, impacting those below the poverty line disproportionately.
- **Health Impact:** Malnutrition weakens immunity, productivity in adults, and causes high mortality and morbidity in children.
- **Early Importance:** The first 1,000 days of a child's life are pivotal for proper nutrition management and lifelong health.
- **Holistic Approach:** Effective nutrition management is vital, particularly for rural Indian women and children, emphasizing a comprehensive approach to health, productivity, and immunity.

Government Initiatives

- **Integrated Child Development Services (ICDS):** ICDS, including the ICDS-CAS software, is a pivotal intervention in tracking health and nutritional services, enabling data-driven decision-making at the grassroots level.
- **Anganwadi Workers (AWWs):** Over 14 lakh Anganwadi Centres work across India's states and union territories, delivering nutrition services through ICT-based platforms and mobile apps, enhancing real-time monitoring and facility utilization.
- **POSHAN Abhiyaan:** Launched in 2018, POSHAN Abhiyaan and its strengthened version, POSHAN Abhiyaan 2.0, focus on community-based interventions to improve nutritional outcomes for children, women, and adolescents. POSHAN Abhiyaan targets beneficiaries including children below 6 years, pregnant and lactating women, severely acute malnourished children, and adolescent girls, with a special focus on rural areas.

- **ICDS-CAS Implementation:** POSHAN Abhiyaan leverages ICDS-CAS, a mobile-based and web-enabled software application, for effective nutritional outcomes, using an extensive network of Anganwadi Centres and Workers.
- **POSHAN Tracker:** The Ministry of Women and Child Development utilizes the POSHAN Tracker as a digital tool, providing a 360-degree view of activities, beneficiaries, and AYUSH concepts, integrating traditional health practices.
- **National Nutrition Mission (NNM):** NNM operates across approximately 583 districts with the goal of enhancing nutritional outcomes for pregnant women, lactating mothers, and children, addressing under-nutrition and related diseases.
- **Nutrition Atlas and Nutrify India Now:** The 'National Institute of Nutrition (NIN)'s Nutrition Atlas' compiles data from various sources, while the 'Nutrify India Now' mobile app aids in assessing nutrient intake.
- **Dashboards for Awareness:** Dashboards like 'Anaemia Mukt Bharat Dashboard,' 'Jan Andolan Dashboard,' and 'Nutrition India' offer critical information about malnutrition and awareness of best practices.
- **Collaboration and Transformation:** Collaborations with NGOs, corporate entities, and CSR projects are essential in this comprehensive approach, significantly transforming the nutrition management ecosystem for vulnerable groups in India.

Nutritional Management Framework

- **Comprehensive Approach:** Beyond addressing hunger, prioritizing health, nutrition, and well-being is essential across all sections of society.
- **Rural Focus:** With around 70% of the Indian population in rural areas, there's a substantial opportunity to tackle nutritional deficiencies and enhance health management, thereby fostering productivity and sustainable livelihoods.
- **Holistic Nutrition Framework:** Given the SDGs-2030 agenda and long-term growth, a robust nutritional framework is crucial, requiring real-time and reliable data at all levels.
- **Policy Interventions:** Initiatives like POSHAN Abhiyaan, ICDS-CAS Dashboard, National Institute of Nutrition's Nutrition Atlas, and Nutrify India Now mobile app aid in forming a strong nutritional ecosystem.
- **Technology's Role:** Technology aids data collection, analysis, and interpretation, benefiting strategic planning and policy making.
- **Customized Interventions:** Developing evidence-based nutrition interventions that span lactation, childhood, adolescence is vital, with stakeholder integration.
- **Diverse Categories:** Holistic nutrition management involves distinct approaches for under-5 children, pregnant/lactating women, young women, and adolescents.
- **Monitoring and Surveillance:** Regular monitoring assesses program impact and acts as an early warning system for corrections.
- **Nutritional Education:** Government initiatives promote proper dietary intake and healthy lifestyles, particularly in rural, tribal, and urban slum areas.
- **Capacity Building:** Training enhances managers' and functionaries' capacity, integral to nutrition programs.
- **Addressing Challenges:** Challenges include poverty, illiteracy, poor nutrition awareness, family support, social taboos, lack of data for policy, and operational challenges due to local governance and NGO funding constraints.
- **NGO Contribution:** NGOs play a significant role but face declining donor funding, relying on CSR grants for operations.

Conclusion

National development and nutritional management are closely intertwined, encompassing sustainable development through balanced health and nutritional practices. Governments, along with private sector involvement, NGOs, and communities, have progressively managed health and nutrition, benefiting from successful people-centric NGOs' efforts. The effectiveness of these initiatives relies on stakeholder engagement, digital infrastructure, governance, and policy interventions. A sustainable outcome-based model can ensure impactful interventions, promoting holistic rural development. Such success hinges on synchronized food, education, health, agriculture, and rural policies, underpinned by real-time data, structured mechanisms, and long-term benefits. These initiatives are pivotal for utility-driven, impact-focused, people-centric interventions, contributing to comprehensive rural development.

SHREE ANNA FOR NUTRITIONAL WELLBEING

Introduction

Millets, often referred to as 'smart food' or 'super food,' play a transformative role in global agri-food systems. They contribute significantly to sustainable and nutrient-rich food value chains, offering abundant nutrients, resource efficiency, and carbon neutrality. The declaration of 2023 as the 'International Year of Millets' by the United Nations General Assembly emphasizes their global promotion. Millets encompass various small-seeded grasses, known as nutri-cereals or dryland-cereals, including Sorghum (Jowar), Pearl Millet (Bajra), Finger Millet (Ragi), Little Millet (Kutki), Foxtail Millet (Kakun), Proso Millet (Cheena), Barnyard Millet (Sawa), Kodo Millet (Kodon), and others.

Millets: Properties and Benefits

- **Properties of Millets**
  - **Nutritional Superiority:** Millets stand out due to their higher protein content with a balanced amino acid profile compared to wheat and rice.
  - **Dietary Fiber Rich:** They boast greater dietary fiber levels than some staple cereals.
  - **Phytochemicals:** Millets contain phytochemicals known for their anti-inflammatory and antioxidant properties.
  - **Rich Nutrient Profile:** Millet grains are abundant sources of carbohydrates, protein, dietary fiber, and quality fats. They also offer substantial amounts of essential minerals, including calcium, potassium, magnesium, iron, manganese, zinc, and B complex vitamins.
  - **Health Benefits:** Millets are gluten-free and have a low glycemic index, making them suitable for managing health challenges such as obesity and diabetes.
- **Benefits of Millets**
  - **Positive Impact on Health:** A study by ICRISAT revealed that incorporating millets into the diet resulted in a 13.2% increase in haemoglobin levels and a significant average rise of 54.7% in serum ferritin levels, addressing iron deficiency.
  - **Transformation of Agri-Food Systems:** Recognized as 'smart food' or 'super food,' millets play a vital role in reshaping global agri-food systems. Their nutrient richness, carbon neutrality, and resource efficiency make them key contributors to sustainable and nutrient-sensitive food value chains.
  - **Resilient and Climate-Adaptable Crops:** Millets, often referred to as 'miracle grains' or 'crops of the future,' form the backbone of dry-land agriculture. Their resilience to high temperatures, adaptability to poor soils, minimal pest susceptibility, and independence from chemical fertilizers make them valuable in mitigating climate challenges.
  - **Identity as 'Shree Anna' in India:** Millets hold the identity of 'Shree Anna' in India, symbolizing prosperity for small farmers, nutritional advantages, and climate change resilience.
  - **Climate-Resilient Alternative to Wheat:** Research demonstrates that Jowar, a type of millet, serves as a sustainable alternative to wheat in the face of climate change. It shows better resilience to temperature increases and requires less water compared to wheat.
  - **Alignment with Government Focus:** The renewed emphasis on Jowar aligns with the Government's commitment to promoting millets for their nutritional benefits and climate resilience, particularly benefiting marginal farmers in India's agricultural landscape.

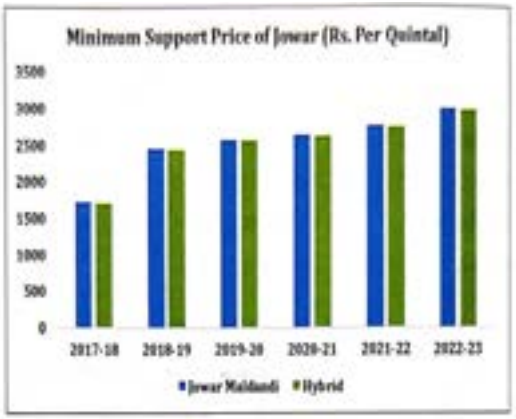
Aspects	Information
Millet Production in India	India produces all nine common millets. It ranks fifth globally in millet exports. Most Indian states cultivate one or more millet varieties.
Millet Production Statistics	India produces over 17 million tons (MT) of millets, accounting for 8096 of Asla's and 20% of global production. In 2021-22, millet production saw a 2796 growth compared to the previous year
Major Millet Varieties Produced	Pearl Millet (6096), Sorghum (279%), Finger Millet (1196), and Small Millets (296) are the prominent millet varieties cultivated in India.

Leading Millet- Producing States	Rajasthan, Uttar Pradesh, Haryana, Gujarat, Madhya Pradesh, Maharashtra, Karnataka, Tamil Nadu, Andhra Pradesh, and Telangana are major millet-producing states.
Millet Exports from India	India exported millet products worth USD 34.32 million in 2021-22, showing an Increase from USD 26.97 million in 2020-21 and USD 28.5 million in 2019-20.
Top Export Destinations for Indian Millets	The primary export destinations for Indian millets include the U.A.E, Nepal, Saudi Arabia, Libya, Oman, Egypt, Tunisia, Yemen, the UK, and the U.S.A.
Major Exported Millet Varletles	India exports various millet varieties, including Bajra, Ragi, Canary, Jawar, and Buckwheat.
Leading Millet-Importing Countries	Indonesia, Belgium, Japan, Germany, Mexico, Italy, the U.S.A, the United Kingdom, Brazil, and the Netherlands are major global Importers of millets.
Potential for Export Growth	India could expand its millet exports by targeting markets in these Importing countries.

Government Initiatives for Millets

India is actively promoting millet production, consumption, and export. Millets were recognized as nutri-cereals in April 2018, and efforts have been made at various levels to raise awareness among farmers and develop a millet market.

- **Increased Consumption:** Despite millets being cultivated in about 12 Indian states, their consumption used to be around 2-3 kg per person per month. This consumption has now risen to 14 kg per month, accompanied by a 30% increase in the sale of millet-based products.
- **Growing Popularity:** Millets have gained popularity on social media and in cafes. They have been adopted by at least 19 districts under the 'One District, One Product' scheme.
- **Awareness through NFSM:** Under the National Food Security Mission (NFSM), farmers are being educated about millets through demonstrations and training, fostering a growing market that directly benefits around 2.5 crore small farmers engaged in millet production.
- **Supply Chain Development:** Millets are now reaching various retail outlets across India, thanks to efforts from self-help groups, Food Producer Organisations, and the strengthening of the millet product supply chain. This not only supports farmers but also generates job opportunities.
- **Support for Millet Farmers:** Farmers growing millets receive support through remunerative Minimum Support Price (MSP) and procurement. During the Kharif season of 2021-22, the Government procured 6.29 lakh tonnes of coarse cereals like Bajra, Jowar, Maize, and Ragi from various states.



- **Expected Increase in Procurement:** The procurement of millets is expected to double to 13.56 lakh tonnes in the year 2022-23, providing further momentum to millet farmers and the millet industry.
- **Start-up Ecosystem:** Over 500 start-ups are engaged in the millet value-added chain. The Indian Institute of Millets Research has incubated 250 start-ups under the Rashtriya Krishi Vikas Yojana - Raftar.
- **Production-Linked Incentive Scheme:** The Production-Linked Incentive Scheme for the food processing sector can benefit the millet industry by encouraging companies to develop millet products.
- **Pradhan Mantri Poshan Shakti Nirman (PM POSHAN):** The Union Government is implementing PM POSHAN from 2021-22 to 2025-26, promoting the use of millets in States/UTs. Millets are provided to States/UTs at subsidised rates under Anganwadi Services. Several states have launched exclusive Millet Missions.
- **Nutritional Enhancement:** The Central Government encourages the introduction of millets under the PM POSHAN Scheme to enhance the nutritional status of children, especially in culturally accepted regions. NFSM has launched a special programme on millets in 212 districts across 14 States.
- **NITI Aayog's Efforts:** NITI Aayog signed an agreement with UN World Food Programme to promote millets globally. The organization published a Compendium showcasing best practices for promoting millets in diets, covering State Missions, inclusion in ICDS, and R&D with technology.
- **APEDA's Strategy:** The Agricultural and Processed Food Products Export Development Authority (APEDA) has developed a comprehensive strategy to boost Indian millet exports from December 2022.
- **Union Budget Support:** The Union Budget 2022-23 focuses on post-harvest value addition, domestic consumption enhancement, and branding millet products. Prime Minister Narendra Modi called on the corporate sector to promote Indian millets.
- **International Recognition:** During the launch of the International Year of Nutri-cereals, Prime Minister Modi emphasized the importance of millets as a future food choice and their role in climate resilience.

Proposed Initiatives

- **Health Awareness Programs:** Implement awareness campaigns highlighting the health benefits of different millet grains.
- **Millet Events and Melas:** Organize millet events and melas at the State and District levels to promote their inclusion in daily diets.
- **Farmer Training:** Conduct training and campaigns on millet cultivation for farmers and Farmer Producer Organizations at various levels.
- **Gram Panchayat Awareness Sessions:** Set up chaupals for millet awareness sessions at the gram panchayat level.
- **Improved Production and Technology:** Spread awareness about advanced millet production, seed production, mechanization, and technologies at village clusters.
- **Seed Distribution:** Distribute seed mini kits to farmers to encourage millet cultivation.
- **Branding and Export:** Orient farmers on modern practices for branding, labeling, packaging, and accessing export markets.
- **Fallow Land Cultivation:** Promote millet cultivation on fallow and degraded lands.
- **Nutritional Programs Integration:** Incorporate millets into Integrated Child Development Services, Mid-Day Meal, Public Distribution System, and State-funded programs.
- **'Shree Anna' in Public Distribution:** Encourage more States to include 'Shree Anna' (millets) in their Public Distribution System.
- **Hotel Associations Engagement:** Collaborate with hotel associations to popularize millet recipes and enable value addition in their menus.

COMBATING MALNUTRITION: ACHIEVING PROSPERITY

Introduction

Promoting nutrition education and behavioural change at the community level is essential to raise awareness about balanced diets and healthy eating habits. Collaboration between the public and commercial sectors can significantly amplify efforts to improve nutrition. Despite India's rapid economic growth, malnutrition remains a critical challenge, especially among children and women. Ranking 101 out of 116 on the Global Hunger Index 2021 underscores the severity of the issue. Malnutrition's impact reaches beyond health, straining finances. Poverty, limited access to nutrient-rich food, inadequate healthcare, and sanitation contribute to malnutrition. Its consequences encompass education, productivity, and overall economic growth. This article focuses on malnutrition's economic implications, urging coordinated efforts among policymakers, stakeholders, and communities to allocate resources for effective interventions that foster well-being and nutrition.

Losses of Malnutrition

- **Human Capital Loss:** Malnutrition leads to stunted growth and cognitive impairments in children, resulting in reduced learning abilities and lower productivity as adults. India loses around 2-3% of GDP annually due to decreased productivity from malnourished workforce.
- **Increased Healthcare Expenditure:** Malnutrition elevates disease burden and healthcare costs. Malnourished individuals are more prone to infections and chronic illnesses. Research indicates malnutrition contributes to 15-20% of diseases in India, straining families and healthcare systems financially.
- **Education and Skill Development:** Malnutrition hampers cognitive development, affecting education. Malnourished children struggle with concentration and academic performance. NFHS-4 reports 38.4% of Indian children under five are stunted, hindering schooling and perpetuating poverty.
- **Impact on Agricultural Productivity:** Malnutrition links closely to agricultural productivity. Undernourished farmers face challenges in sustaining effective agricultural activities. Lack of nutrition impacts physical strength, endurance, and crop yields, reducing agricultural GDP by 3-8% annually.
- **Long-Term Economic Implications:** Beyond individual impact, malnutrition leads to reduced earning potential, limited job opportunities, and higher dependence on welfare programs. This negatively affects economic growth, diverts government resources, and hinders overall development.

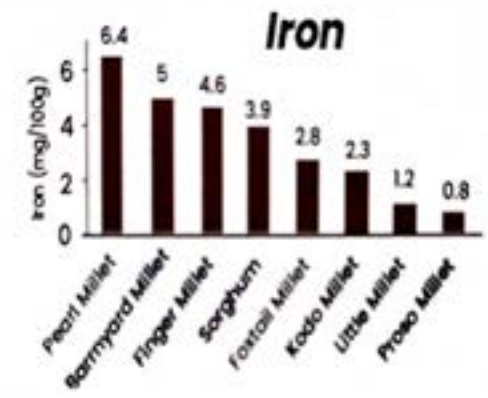
Strategies to Address Malnutrition in India

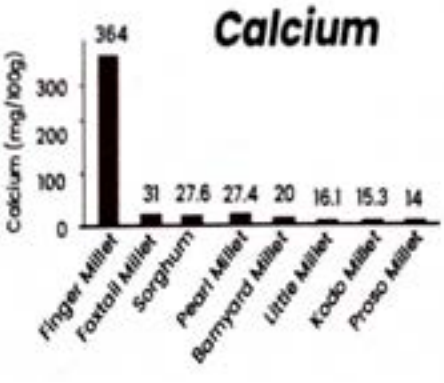
- **Strengthening Health Systems:**
  - **Enhance Healthcare Infrastructure:** Invest in rural healthcare facilities like primary care clinics and community health centres for better accessibility and quality services.
  - **Ensure Qualified Personnel and Supplies:** Ensure availability of trained medical staff, medical supplies, and medications.
  - **Nutritional Screening and Assessment:** Implement routine nutritional screening using techniques like Mid-Upper Arm Circumference (MUAC) measurement for early detection of malnutrition.
  - **Maternal and Child Healthcare:** Focus on maternal and child health by promoting antenatal care, healthy pregnancy, and exclusive breastfeeding.
  - **Capacity Building and Training:** Invest in educating healthcare professionals for nutrition assessment, counselling, and treatment of malnutrition cases.
  - **Multi-Sectoral Collaboration:** Emphasize a collaborative approach involving health, agriculture, education, and social welfare sectors to address malnutrition.
  - **Integration of Nutrition Services:** Integrate nutrition assessment, counselling, and interventions into routine healthcare visits. Incorporate nutrition education in medical and nursing school curricula.

By strengthening healthcare systems and integrating nutrition services, India can effectively detect, treat, and prevent malnutrition, leading to improved health outcomes and reduced economic costs associated with malnutrition-related issues.

❖ **Enhanced Nutrition Interventions to Address Malnutrition**

- **Food Fortification:** Enrich staple foods with vital micronutrients like iron, vitamin A, iodine, and zinc, e.g., iodized salt and iron-fortified wheat flour.
- **Promotion of Breastfeeding:** Advocate exclusive breastfeeding for six months and support continued nursing and proper complementary feeding.
- **Micronutrient Supplementation:** Provide tailored supplements to vulnerable groups, improving maternal health and child growth.
- **Nutrition Education and Behaviour Change:** Raise awareness and cultivate healthy eating habits through campaigns, workshops, and school curricula.
- **Public-Private Partnerships:** Collaborate for healthier food options, nutrient-rich products, and ethical marketing to empower consumers.





❖ **Enhancing Agricultural Practices to Address Malnutrition:**

- **Diversification of Crops:** Promote a range of crops like fruits, vegetables, legumes, and millets for dietary diversity and vitamin intake. Encourage smallholders to diversify, boosting micronutrient access and income.
- **Sustainable Farming Techniques:** Embrace practices like organic farming and conservation agriculture to reduce reliance on chemicals. Improve soil health, biodiversity, and climate resilience for stable food production.
- **Irrigation and Water Management:** Invest in reliable irrigation like drip systems and harvest rainwater. Efficient water management ensures agricultural productivity, even in water-scarce regions.
- **Support for Smallholder Farmers:** Empower smallholders with funding, quality seeds, modern tech, and training. Cooperatives and market links offer fair prices, enhancing their well-being.
- **Research and Development:** Invest in R&D for resilient crops and innovative farming methods. Collaborate with farmers and extension agencies for effective adoption.

❖ **Addressing Malnutrition through Social Protection**

- **Cash Transfer Programs:** Initiatives like the PDS and National Food Security Act provide affordable and diverse food options, reducing malnutrition risk.
- **Maternal & Child Welfare:** ICDS and PMMVY offer financial aid, nutrition counselling, and healthcare for optimal maternal and infant nutrition.
- **School Feeding:** Mid-Day Meal Scheme improves child nutrition, attendance, and learning with nutritious meals and education.
- **Employment & Livelihood:** MGNREGA generates rural livelihoods, boosting economic status and access to nutritious food.
- **Behaviour Change Communication:** Strategies promote health and hygiene awareness through community involvement.
- **Monitoring & Evaluation:** Robust systems track food security, dietary diversity, child growth, and maternal health for informed policy decisions.

Conclusion

Malnutrition bears substantial economic ramifications, impacting human capital, healthcare costs, education, agricultural productivity, and long-term economic progress. A collaborative approach among the Government, civil society, and business sector is imperative to invest in both nutrition-specific and nutrition-sensitive strategies. By placing the battle against malnutrition at the forefront, India can unlock its complete economic potential, enhance societal welfare, and secure a healthier and more prosperous future for its entire population.

Dhyeya IAS Now on Telegram

Join Dhyeya IAS Telegram Channel from link the given below

https://t.me/dhyeya_ias_study_material

नोट : पहले अपने फ़ोन में टेलीग्राम App Play Store से Install कर ले उसके बाद लिंक में क्लिक करें जिससे सीधे आप हमारे चैनल में पहुँच जायेंगे।

You can also join Telegram Channel through our website

www.dhyeyaias.com

www.dhyeyaias.com/hindi

ध्येय IAS
most trusted since 2003

Address: 635, Ground Floor, Main Road, Dr. Mukherjee Nagar, Delhi 110009
Phone No: 9205274741, 9205274742, 9205274744