



Revisiting the dietary guidelines for Indians (ICMR–NIN 2024): Evidence, changes and implementation challenges

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Abstract

The Dietary Guidelines for Indians (ICMR–NIN, 2024) represent a comprehensive and updated framework designed to address India's evolving nutritional challenges, including persistent under nutrition, over nutrition, and the increasing burden of diet-related non-communicable diseases. This article critically revisits the 2024 guidelines, tracing their evolution from earlier editions and highlighting the scientific rationale behind the current recommendations. Developed within the broader Food Based Dietary Guidelines (FBDG) approach, the guidelines emphasize dietary diversity, balanced nutrient intake, safe food practices, sustainability, and culturally relevant eating patterns. The paper compares India's guidelines with global WHO/FAO frameworks, noting significant alignment in principles of adequacy, moderation, balance, and diversity. Key advancements in the 2024 edition include the introduction of the "My Plate for the Day" model, strengthened focus on environmental sustainability, and integration of updated evidence from RDA 2020. Despite their scientific robustness, the effective implementation of these guidelines faces challenges related to affordability, regional dietary diversity, rising consumption of ultra-processed foods, limited nutrition literacy, and weak multi sectoral coordination. The review underscores the need for enhanced policy integration, targeted communication strategies, and regular updates to ensure that the guidelines remain practical, accessible, and impactful for India's diverse population.

Keywords: Dietary guidelines, icmr–nin 2024, food-based dietary guidelines, nutrition policy, sustainable diets, public health nutrition

Introduction

Persistent nutritional disparities in India are clearly reflected in the National Family Health Survey (NFHS-5) data, which highlight the coexistence of undernutrition and overnutrition across different population groups. Among women of reproductive age, 18.7 % were reported as underweight, 24 % as overweight or obese, and nearly 57 % as anaemic. Likewise, among children under five years, stunting (35.5 %), wasting (19.3 %), and anaemia (67.7 %) remain alarmingly high, signalling enduring challenges in achieving optimal nutrition and health outcomes (IIPS and ICF, 2021). In 2016, unhealthy diets were recognized as the second major contributor to global deaths and disability-adjusted life years (DALYs) (WHO, 2012) ^[21]. Addressing these complex issues requires an integrated, evidence-based approach that promotes balanced dietary practices, nutrient adequacy, and food diversity. In this context, the 17 Dietary Guidelines for Indians (ICMR–NIN, 2024) ^[6] serve as a vital framework to guide individuals and policymakers toward healthier, sustainable, and culturally relevant eating patterns. The effective adoption and implementation of these guidelines are essential for mitigating both undernutrition and the rising burden of diet-related non-communicable diseases in India (ICMR–NIN, 2024; Passi, 2024) ^[1, 6] (Figure. 1).

The Dietary Guidelines for Indians (DGI), as part of the broader Food-Based Dietary Guidelines (FBDGs) framework, translate nutrition science into practical, culturally appropriate advice by focusing on food groups

rather than individual nutrients. This approach facilitates public understanding and implementation, taking into account India's diverse cultural, regional, and economic contexts that influence dietary habits and food availability. Evidence suggests that adherence to such guidelines can reduce the risk of obesity, cardiovascular disease, diabetes, and certain cancers, while supporting sustainable food systems (Herforth *et al.*, 2019) ^[3]. The ICMR–NIN (2024) ^[6] guidelines exemplify this strategy by promoting dietary diversity, balanced portions, and lifestyle modifications to improve national nutrition and health outcomes. In this review, we revisit the ICMR–NIN Dietary Guidelines for Indians 2024, examine the scientific evidence and rationale behind their updates, critically assess key changes relative to earlier editions, and discuss barriers and strategies for effective implementation in India's real-world socio-cultural and policy context. And also, the comparison of Indian guidelines with other countries globally available in online repository developed by FAO.

Historical Evolution of Dietary Guidelines for Indians

The Dietary Guidelines for Indians (DGIs) have evolved through three major editions 1998, 2011, and 2024 each reflecting India's changing nutritional priorities and advances in scientific understanding. The initial 1998 guidelines, formulated by the Indian Council of Medical Research (ICMR) and the National Institute of Nutrition (NIN), primarily aimed to address the prevailing issues of undernutrition and micronutrient deficiencies that

characterized India’s nutritional scenario during the late 20th century. This foundational edition represented the country’s first systematic attempt to translate nutrient-based recommendations into food-based guidance for the general population. The 2011 revision marked a significant shift, recognizing the emerging dual burden of malnutrition, wherein undernutrition persisted alongside a growing prevalence of overnutrition and non-communicable diseases (NCDs).

It placed greater emphasis on dietary balance, moderation in the intake of fats and sugars, and the importance of physical

activity and lifestyle factors in disease prevention. The most recent 2024 edition integrates current scientific evidence, updated Recommended Dietary Allowances (RDA 2020), and global perspectives on sustainability and food system resilience. With 17 comprehensive and evidence-informed guidelines, it promotes dietary diversity, food safety, and environmental sustainability, aligning with India’s evolving nutritional needs and the broader objectives of the United Nations Sustainable Development Goals (SDGs) (ICMR–NIN, 1998; ICMR–NIN, 2011; ICMR–NIN, 2024) [4, 5, 6].



Fig 1: Dietary guidelines released by ICMR–NIN, 2024 [6]

Table 1: Comparative Overview of the Three Editions of the Dietary Guidelines for Indians (1998–2024)

Edition	Year	No of Guidelines	Primary Focus	New Inclusions / Highlights	Overall Theme
1 st	1998	15	<ul style="list-style-type: none"> Combating undernutrition and micronutrient deficiencies Promoting balanced diets using local foods Safe food and water practices 	<ul style="list-style-type: none"> Simple, food-group based approach Focus on vulnerable populations (children, pregnant women) Emphasis on dietary adequacy and hygiene 	Food Security and Nutrient Sufficiency
2 nd	2011	16	<ul style="list-style-type: none"> Addressing the double burden of malnutrition (under nutrition and over nutrition) Preventing NCDs through diet and lifestyle Ensuring food safety and sanitation 	<ul style="list-style-type: none"> Inclusion of fat, sugar, and salt moderation Promotion of physical activity Life-stage based dietary guidance 	Preventive and Lifestyle Nutrition
3 rd	2024	17	<ul style="list-style-type: none"> Integrating nutrition, health, and sustainability Ensuring dietary diversity and environmental resilience Enhancing public health nutrition literacy 	<ul style="list-style-type: none"> Introduction of “My Plate for the Day” model Emphasis on sustainability, climate resilience, and food safety Alignment with RDA 2020 and United Nations Sustainable Development Goals 	Sustainable and Holistic Nutrition

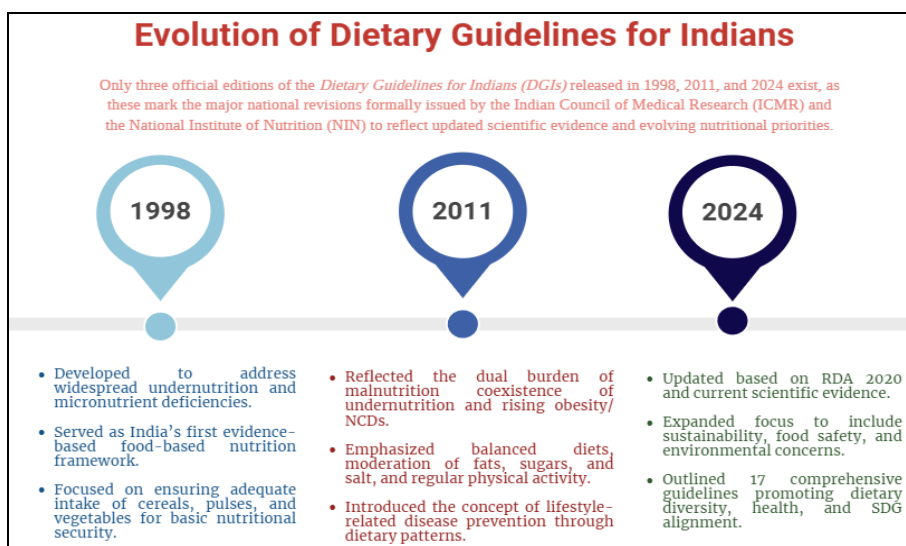


Fig 2: Progression of Dietary Guidelines for Indians across Editions (1998–2024)

Overview of the 2024 Guidelines

The Dietary Guidelines for Indians (DGIs), developed by the ICMR–NIN, provide evidence-based, culturally appropriate advice to promote healthy eating, prevent malnutrition, and reduce diet-related non-communicable diseases. Focusing on food-based recommendations rather than isolated nutrients, the guidelines emphasize dietary diversity, safe and sustainable practices, and lifestyle modifications suitable for all age groups. Tools like the “MyPlate” (Fig) model help translate these recommendations into balanced daily meals.

The 17 guidelines address key aspects of nutrition and health, including consumption of fruits and vegetables, protein adequacy, moderation of fats, sugar, and salt, hydration, safe food practices, breastfeeding, complementary feeding, physical activity, and mindful eating. They provide a practical framework for policymakers, health professionals, and the public to improve nutritional status, foster healthy habits, and support long-term well-being across the population. The following section provides an overview of the 17 Dietary Guidelines for Indians, outlining each recommendation along with its rationale and practical significance for promoting health and preventing diet-related diseases.

1. Eat a Variety of Foods for a Balanced Diet

A balanced diet requires choosing foods from all groups—cereals, millets, pulses, dairy, fruits, vegetables, fats, and sugars. The ICMR–NIN plate recommends: half fruits and vegetables, one-quarter cereals, and one-quarter protein foods, with small amounts of healthy fats and dairy for dietary diversity and portion control.

2. Extra Food and Healthcare During Pregnancy and Lactation

Pregnant and lactating women need more nutrient-dense foods for extra energy, protein, iron, folate, calcium, and B12. Regular antenatal care, supplements, and monitoring help prevent anaemia, low birth weight, and complications, supporting maternal health and optimal fetal development.

3. Exclusive Breastfeeding for 6 Months; Continue up to 2 Years

Exclusive breastfeeding for six months provides complete nutrition and strong immunity. After six months, continue breastfeeding along with nutritious complementary foods to support growth, development, and adequate nutrient intake up to two years or longer.

4. Introduce Homemade Semi-Solid Foods After 6 Months

At six months, breast milk alone is insufficient. Start nutrient-rich homemade semi-solid foods like mashed cereals, pulses, fruits, and vegetables while continuing breastfeeding. This prevents stunting, deficiencies, and encourages healthy eating habits.

5. Ensure Proper Diets for Children and Adolescents in Health and Illness

Rapid growth requires adequate energy, protein, vitamins, and minerals. Nutritious, age-appropriate foods support immunity, learning, and growth, especially during illness when easily digestible, nutrient-rich foods are essential.

6. Eat Plenty of Fruits and Vegetables

Fruits and vegetables supply essential vitamins, minerals, fibre, and antioxidants that prevent deficiencies and chronic

diseases. Consuming about 400 g daily improves immunity, digestion, and long-term health.

7. Use Oils/Fats in Moderation; Choose Healthy Sources

Fat is essential but should be consumed moderately. Prefer healthier sources like oilseeds, nuts, millets, and legumes, and use low-oil cooking methods to reduce the risk of obesity and heart disease.

8. Obtain Quality Protein Naturally; Avoid Supplements

Get proteins from balanced combinations of foods like cereals-pulses and animal sources for complete amino acids. Natural foods are safer and more balanced than protein supplements, supporting muscle and metabolic health.

9. Adopt a Healthy Lifestyle to Prevent Obesity

Maintain healthy weight through balanced eating, calorie control, physical activity, regular meals, reduced screen time, and good sleep. Avoid high-fat, high-sugar, and refined foods to prevent abdominal and overall obesity.

10. Be Physically Active and Exercise Regularly

Engage in 30–60 minutes of moderate physical activity daily, such as walking, cycling, yoga, or household chores. Regular movement improves metabolic health, fitness, and reduces the risk of chronic diseases.

11. Restrict Salt Intake

Limit total salt to less than 5 g/day. Avoid high-salt packaged foods and use herbs and spices to flavour meals. Lower salt intake helps control blood pressure and reduces cardiovascular and kidney disease risk.

12. Consume Safe and Clean Foods

Eat fresh, hygienically prepared foods to prevent infections and foodborne illnesses. Proper washing, cooking, storage, and use of safe water are essential for good health.

13. Use Appropriate Pre-Cooking and Cooking Methods

Washing, soaking, fermenting, and sprouting improve nutrient absorption. Healthy cooking methods like steaming, boiling, and pressure cooking reduce nutrient loss, while avoiding deep-frying and overcooking ensures better safety and nutrition.

14. Drink Adequate Water

Drink 2–3 litres of clean, safe water daily to support digestion, temperature regulation, and waste removal. Avoid sugary beverages that contribute to obesity and metabolic disorders.

15. Minimise High Fat, Sugar, Salt Foods and Ultra-Processed Foods

Limit HFSS and UPF items like sugary drinks, packaged snacks, and processed meats. They are calorie-dense but nutrient-poor, increasing risk of obesity and NCDs. Choose fresh, minimally processed foods instead.

16. Include Nutrient-Rich Foods for the Elderly

Older adults need easily digestible, nutrient-dense foods rich in protein, calcium, vitamin D, B-vitamins, and fibre to maintain muscle mass, bone health, and immunity. Reduce salt, sugar, and saturated fats while ensuring hydration.

17. Read Food Labels for Healthy Choices

Check labels for calories, fat, sugar, salt, trans fats, and serving sizes. Understanding labels helps avoid unhealthy

packaged foods and supports informed, nutritious food choices.



Fig 3: My plate of the Day

Table 2: Recommended Daily Food Group Intake and Energy Contribution (ICMR–NIN 2024) [6]

Food group	Examples of the food group	Foods to be consumed raw (g/day)	Approximate proportion of the food (%)	% of energy from each food group/day (Kcal)	Total energy from each food group (Kcal)	Remarks/tips	References
Cereals and millets	Rice, wheat, maize, ragi, jowar, bajra, barley, oats	250	20	42	843	Emphasize the inclusion of whole and minimally processed cereals, particularly those retaining their bran fraction, as they provide valuable nutrients, bioactive compounds, and dietary fibre that support digestive and metabolic health; include millets, which are rich in fibre and micronutrients; limit refined/grain staples where possible	(Preeti <i>et al.</i> , 2025) [7] (Kittur <i>et al.</i> , 2024) [8] (Jetawat <i>et al.</i> , 2025) [14]
Pulses	Lentil (masoor, moong, Toor). Green gram, chickpea, rajma. Cow pea	85	7	14	274	Combine plant and animal protein sources; ensure good complementary combinations (e.g., cereal + pulses) for better essential amino acids; include eggs/fish lean meats if available.	(Marinangei <i>et al.</i> , 2022) (Kumar <i>et al.</i> , 2025) [16]
Dairy	Milk/curd	300	25	11	216	Use low-fat or moderate-fat options; include dairy daily for calcium + vitamin D; in lactose-intolerant persons use alternatives (plant-based products) or fermented dairy.	
Vegetables	Spinach,	400	33	9	174	Everyday healthy diet	(Butryee,

green leafy vegetables	fenugreek, carrot, beetroot, gourds, beans					<p>should include a wide variety of vegetables, encompassing greens, roots, excluding starchy tubers, and gourds to ensure a broad spectrum of essential nutrients. Preference should be given to seasonal and locally available produce, as these options are fresh, more affordable, with higher nutrients but available in shorter period and transport times. Vegetables consumed in both raw and cooked forms raw vegetables help retain heat-sensitive vitamins like vitamin C and folate, while cooking enhances digestibility and improves the bioavailability of phytonutrients (carotenoids) and other fat-soluble nutrients. Using minimal oil and avoiding overcooking helps preserve colour, flavour, and nutritional quality, making vegetables a vital component of a balanced diet that supports overall health and disease prevention. Vegetables (≥ 400 g/day) helps reduce risks of chronic diseases and improves lipid profile.</p>	2020) ^[11] (Sari <i>et al.</i> , 2020) ^[12] (El-Shaheed <i>et al.</i> , 2024) ^[13]
Fruits	Mango, Banana, Papaya, apple, guava, citrus fruits, berries, pomegranate	100	8	3	56	<p>Fruits are vital for a balanced diet as they provide essential vitamins, minerals, fibre, and antioxidants. Prefer fresh, seasonal, and locally available fruits like guava, papaya, banana, and citrus varieties. Whole fruits are healthier than juices due to their fibre content, which aids digestion and satiety. Consuming two to three servings daily (11 am and 3pm), supports immunity and overall health. Avoid canned or sugar-added fruits, and wash all fruits thoroughly to ensure safety and hygiene.</p>	(Boneya <i>et al.</i> , 2024) ^[17]
Nuts and seeds	Walnut, almond, hazelnut, pumpkin seeds, watermelon seeds	35	3	9	181	<p>Nuts and seeds are rich in healthy fats, protein, fibre, and micronutrients that support cardiovascular and metabolic health. A daily intake of about 30 g of unsalted, natural varieties such as almonds, walnuts, and flaxseeds is recommended. Regular consumption aids lipid regulation and reduces oxidative stress, though</p>	(Arnesen <i>et al.</i> , 2023) ^[9] (Balakrishna <i>et al.</i> , 2022) ^[10]

						moderation is advised due to their high energy content.	
Fats and oils	Vegetable oils (mustard, ground nut, sesame, rice bran), ghee, butter	27	2	15	243	Use mixed oils with ideal ratio of omega-3 to omega-6 fatty acids in the blend (1:5); limit visible fats; consume nuts and oilseeds rather than only oils; avoid trans fats; use visible fats (cooking oil, ghee, butter) sparingly (4-6 teaspoons).	

Comparison with Global FBDG

The regulation and coordination of Food-Based Dietary Guidelines (FBDGs) at the global level are primarily undertaken by the Food and Agriculture Organization (FAO) and the World Health Organization (WHO). These organizations jointly provide the scientific framework and technical guidance for developing, implementing, and monitoring national dietary guidelines through initiatives such as the FAO Global FBDG Repository and the WHO’s nutrient reference frameworks (FAO, 2022) [18]. While FAO and WHO do not enforce FBDGs, they establish global principles and standards that ensure national guidelines align with evidence-based nutrition, public health, and sustainability goals. Additionally, the Codex Alimentarius Commission, a joint FAO/WHO program, develops international food standards, labelling norms, and safety regulations, which serve as a foundation for translating dietary guidance into safe and nutritious food environments (Codex Alimentarius Commission, 2023) [19]. Collectively, these institutions form the backbone of the global governance framework for dietary guidance, ensuring consistency between scientific recommendations and national food policies.

In 2024, the World Health Organization (WHO) and the Food and Agriculture Organization (FAO) jointly released the report “What Are Healthy Diets?”, which provides an updated global framework for defining and promoting healthy dietary patterns. This document establishes the scientific foundation for developing and revising national Food-Based Dietary Guidelines (FBDGs), emphasizing the importance of aligning nutrition policies with current evidence-based health principles. It advocates for a comprehensive perspective that integrates nutritional adequacy, cultural relevance, food safety, and environmental sustainability to support population health and sustainable food systems worldwide (WHO and FAO, 2024) [20].

The 2024 joint statement by the World Health Organization (WHO) and the Food and Agriculture Organization (FAO), provides a contemporary global framework for defining the principles of a healthy diet. The importance of diets in preventing all forms of malnutrition, promoting health, and reducing disease risk is increasingly recognized. To advance these interconnected goals linking food production, nutrition, and environmental sustainability the Food and Agriculture Organization (FAO) and the World Health Organization (WHO) have established key principles defining healthy diets. It identifies four core pillars adequacy, balance, moderation, and diversity as essential components for achieving optimal nutrition and overall well-being. The document underscores that healthy diets

should be culturally appropriate, safe, and grounded in locally available and affordable foods, reflecting the diversity of food systems across regions. Furthermore, it serves as a strategic reference for policymakers, nutrition experts, and health professionals to harmonize national Food-Based Dietary Guidelines (FBDGs) with the latest scientific evidence and global nutrition objectives. By integrating health, cultural relevance and sustainability, the WHO–FAO framework supports the formulation of dietary recommendations that are both nutritionally sound and environmentally responsible (World Health Organization and Food and Agriculture Organization of the United Nations, 2024) [20].

The FAO and WHO recently outlined 16 guiding principles for sustainable healthy diets (SHDs), which form the basis for national Food-Based Dietary Guidelines (FBDGs). These principles address three key areas health, environmental, and sociocultural considerations. The guidelines emphasize that FBDGs should be evidence-based, culturally relevant, practical for public use and centered on food groups rather than individual nutrients. Sustainable healthy diets refer to eating patterns that support overall health and well-being, minimize environmental impact, remain affordable and accessible to all, ensure safety and equity, and align with cultural preferences and traditions (Martini *et al.*, 2021, Meltzer *et al.*, 2024) [22, 23].

Implementation Challenges

Implementation of Food-Based Dietary Guidelines (FBDGs) in India faces several interconnected challenges. Affordability remains a major barrier, as studies show that diets meeting national dietary recommendations are often too costly for low-income households (Raghunathan *et al.*, 2020) [24]. India’s enormous regional and cultural diversity further complicates adoption, since food habits, locally available ingredients and culinary traditions vary widely, requiring continuous adaptation of guideline messages. At the same time, the country is undergoing a rapid nutrition transition, marked by high penetration of ultra-processed foods driven by marketing, urban lifestyles and easy availability factors shown to reduce adherence to healthy dietary patterns (Mediratta *et al.*, 2023) [25]. Implementation is also hindered by limited policy coherence and weak multisectoral coordination, making it difficult to translate FBDGs into agricultural, market, school-meal, and public-health actions (Gabe *et al.*, 2021) [27]. In addition, widespread low nutrition literacy and behavioural constraints especially in rural and underserved communities reduce the impact of educational campaigns (Mankar *et al.*, 2025) [26]. Lastly, food-environment constraints, including inconsistent availability, seasonality, and limited access to

diverse nutritious foods, restrict the practical application of the guidelines. Together, these structural, cultural, and economic factors make the nationwide implementation of India's FBDGs complex and uneven.

Conclusion

The WHO/FAO and Indian dietary guidelines exhibit substantial alignment in their emphasis on dietary diversity, balanced nutrient intake, and the prevention of nutrition-related disorders. The Indian guidelines effectively adapt global principles to local cultural, economic, and nutritional contexts, particularly in addressing micronutrient deficiencies and the dual burden of malnutrition. Nonetheless, scope remains for further enhancement through stronger integration of sustainability considerations, improved regional and socio-cultural tailoring, more rigorous implementation frameworks, and more frequent evidence-based revisions. While the convergence between global and national recommendations provides a robust foundation, continuous refinement informed by emerging scientific evidence and evolving dietary patterns is essential for maximizing their long-term public health relevance and effectiveness.

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Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this review article.

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