

SUMMARY OF **YOJANA** SEPTEMBER 2026



NOURISHING INDIA

TOPIC 1: MAXIMISING INDIA'S DEMOGRAPHIC DIVIDEND — INVESTING IN THE EARLY YEARS

Early Childhood Development (ECD), NFHS-6 Health & Nutrition Indicators, Navchetana and Aadharshila Frameworks, Family Engagement, Creche Services, and Foundational Learning for Viksit Bharat 2047 (By Rajib Kumar Sen, Programme Director, NITI Aayog & Vedeika Shekhar)

DEMOGRAPHIC DIVIDEND AXIOM: *"India's demographic advantage is often discussed in terms of the size of its young and working-age population. But a large young population becomes an economic advantage only when children grow up healthy, well-nourished, confident and ready to learn. The foundations for this are laid much before a child enters school." — Rajib Kumar Sen*

1. Executive Summary & The Importance of Early Childhood Development

In the September 2026 special edition of Yojana themed 'Nourishing India: Nutrition, Health and a Sustainable Future', the opening feature article titled 'Maximising India's Demographic Dividend: Investing in the Early Years' is authored by Rajib Kumar Sen (Programme Director of Women and Child Development at NITI Aayog) and co-authored by Vedeika Shekhar (Consultant in Women and Child Development at NITI Aayog) [cite: 69, 70, 71]. The authors emphasize that India's demographic advantage depends critically on the health, nutrition, and foundational capabilities developed during early childhood.

The paper stresses that the first six years of life represent a period of rapid cognitive, language, physical, and socio-emotional development. A child who lacks adequate nutrition, stimulation, responsive care, or early learning opportunities begins formal schooling at a severe disadvantage, which subsequently affects school progression, skill acquisition, and adult productivity. Therefore, Early Childhood Development (ECD) is fundamentally an investment in India's human capital.

2. Progress in Maternal and Child Health (NFHS-6 Insights)

India has achieved notable progress across key maternal and child health indicators, as documented in the National Family Health Survey-6 (NFHS-6) covering 2023-24:

- Institutional Deliveries: Increased from 88.6% in NFHS-5 to 90.6%.
- Full Immunization: Coverage among children aged 12–23 months rose from 83.8% to 87.1%.
- Early Breastfeeding: The proportion of children breastfed within one hour of birth increased from 41.8% to 50.1%.
- Child Stunting Reduction: Stunting among children under five years declined significantly from 35.5% to 29.3%.

3. National Policy Framework: Navchetana and Aadharshila

To address foundational learning and developmental needs systematically, the Ministry of Women and Child Development has introduced dedicated national frameworks:

- Navchetana: The National Framework for Early Childhood Stimulation for Children from Birth to Three Years. This framework focuses on the 0–3 age group, where learning occurs primarily through everyday 'serve-and-return' interactions with caregivers (talking, singing, playing, responding, and sharing attention) to build emotional security and language skills.
- Aadharshila: The National Curriculum for Early Childhood Care and Education for Children from Three to Six Years. This framework ensures that early learning for 3–6 year olds remains play-based, age-appropriate, and rooted in local surroundings, fostering curiosity, early numeracy, motor skills, and problem-solving without prematurely introducing formal schooling.

4. Family Engagement, Creche Services, and Community Roles

- Family and Home-Based Engagement: Programs such as Maharashtra's Aarambh and Odisha's Aama Kuni Pila demonstrate how home visits and caregiver meetings integrate ordinary household activities into learning opportunities.
- Quality Creche Services: Access to safe crèches is vital for working mothers. Models like Haryana's State Creche Policy-2022 and Karnataka's Koosina Mane provide essential nutrition, care, and safe environments for young children.
- Role of Community Platforms: ECCE Days, Village Health, Sanitation and Nutrition

Committees (VHSNCs), Self-Help Groups (SHGs), Panchayati Raj Institutions (PRIs), and Mothers' Groups help mobilize communities, utilizing local storytelling, toy-making, and games to make early learning a shared responsibility.

5. Economic Rationale and Strategic Priorities

Citing a report by the Economic Advisory Council to the Prime Minister, the authors note that effective investment in foundational literacy and numeracy could generate economic gains equivalent to 7.39% of GDP over a 20-year period under modelling assumptions. To convert these ideas into outcomes, three strategic areas require targeted focus:

ECD Domain	National Framework / Policy	Key Intervention / Program	Developmental Outcome
Birth to 3 Years	Navchetana Framework.	Home visits, caregiver meetings, 'serve-and-return' interactions.	Builds foundational emotional security, language, and cognitive skills.
3 to 6 Years	Aadharshila Curriculum.	Play-based early learning in Anganwadis, local toy-making.	Fosters curiosity, early numeracy, motor skills, and social interaction.
Working Caregivers	State Creche Policies (Haryana, Karnataka).	Koosina Mane and structured crèche services.	Provides safe environments, nutrition, and care while parents work.
Systemic Convergence	Meghalaya ECD Mission & NITI Aayog guidelines.	Multi-departmental coordination, digital monitoring, and ECCE Days.	Drives holistic human capital gains and foundational learning outcomes.

7. Civil Services Examination Focus (GS Paper II)

For candidates preparing for UPSC Civil Services and State Public Service examinations, this analysis delivers critical high-yield substance across human capital, social sector policies, and governance papers:

Relevance for General Studies Paper II (Issues Relating to Development & Management of Social Sector / Services relating to Health, Education & Human Resources)

- **Early Childhood Development as Human Capital:** Demonstrates how investing in the first six years of life (via Navchetana and Aadharshila) forms the bedrock of

- Inter-departmental convergence around the child.
- Rigorous evaluation of promising state-level interventions (such as Meghalaya's Early Childhood Development Mission).
- Adopting evidence-based approaches to scale human capital investments for Viksit Bharat 2047.

6. Analytical Matrix: ECD Pillars, Interventions & Developmental Outcomes

The table below synthesizes the core pillars of early childhood development, policy frameworks, key interventions, and developmental outcomes:

foundational learning and long-term economic productivity.

- **Convergence & Community Participation:** Highlights the necessity of multi-departmental coordination and grassroots community engagement (PRIs, SHGs, Anganwadis) in translating national policies into measurable human development outcomes.

MAINS DEMOGRAPHIC DIVIDEND PERSPECTIVE:

"The journey towards Viksit Bharat therefore begins much earlier than the workplace. It begins in the first years of life, in the home, in the community and at the Anganwadi centre. Strengthening these foundations is the most important investment India can make in the human capital of the future." — Rajib Kumar Sen & Vedeika Shekhar

TOPIC 2: A LIFE-COURSE APPROACH TO MALNUTRITION IN INDIA

Anaemia Mukht Bharat Abhiyaan, 7x7x7 Framework, The First 1,000 Days Window, Child Stunting and Wasting, Adult Obesity, and the Double Burden of Malnutrition (By Dr. Rakesh Kumar, Former IAS Officer & Senior Policymaker)

MALNUTRITION PREVENTION VISION:

"Malnutrition is inter-generational; therefore, despite best efforts, we may not succeed in our mission unless we adopt a life-course approach while effectively implementing the programmes in letter and spirit." — Dr. Rakesh Kumar

1. Executive Summary & The Shift in Community Medicine

In the September 2026 special edition of Yojana, the second feature article titled 'A Life-Course Approach to Malnutrition in India' is authored by Dr. Rakesh Kumar (former IAS officer of the 1992 batch and senior policymaker). The paper evaluates India's public health evolution—transitioning from historic vertical disease eradication campaigns (smallpox, polio, neonatal tetanus) toward securing comprehensive population well-being and tackling malnutrition across the life course.

The author emphasizes that because malnutrition is fundamentally inter-generational, isolated disease-control interventions will fail unless national programs adopt a rigorous life-course approach. Today, India faces a complex double burden comprising persistent undernutrition in early childhood and soaring rates of adult obesity and non-communicable diseases (NCDs).

2. Anaemia: The Unfinished Agenda and the T4 Framework

- **Prevalence:** WHO estimates (2019) ranked India fifth highest for anaemia prevalence among reproductive-age women. NFHS-5 reported 57% of reproductive-age women and 67.1% of children aged 6–59 months were anaemic.
- **16th Central Council of Health & Family Welfare (June 2026):** Relaunched the Anaemia Mukht Bharat Abhiyaan with revised operational guidelines transitioning from a 6x6x6 strategy to a 7x7x7 framework (incorporating low-birth-weight babies aged 0–6 months as the 7th beneficiary group, 'Eating Right' as the 7th intervention, and strengthened monitoring).

- **T4 Approach:** Shifting from T3 (Test, Treat, Talk) to T4 (adding Track), alongside a clinical transition from prophylactic distribution to therapeutic case-based management, including intravenous iron therapy for severe cases.
- **Data Integrity Note:** NFHS-6 omitted capillary-blood-based anaemia estimates due to inflation concerns, awaiting precise venous-sample data from ICMR's Diet and Biomarkers Survey.

3. The First 1,000 Days Window and Child Stunting

- **Critical Window:** The first 1,000 days (270 days of pregnancy plus the first 730 days of life) represent the most sensitive period for brain development, immune architecture, and metabolic programming. Damage sustained during this window from poor feeding or repeated infections is largely irreversible.
- **NFHS-6 Improvements:** Child stunting declined by 6 percentage points from 35.5% (NFHS-5) to 29.3% (NFHS-6). Severe wasting dropped from 7.7% to 5.2%, underweight eased to 31.8%, exclusive breastfeeding reached 95.6%, and complementary feeding improved from 45.9% to 59.5%.
- **Remaining Gaps:** Only 15.3% of children aged 6–23 months receive an adequate diet, and nearly one in three children remains stunted, underscoring that coverage has not fully translated into diverse, age-appropriate feeding.

4. From Early Malnutrition to Adult Metabolic Health (The Double Burden)

- **Intergenerational Link:** Infants surviving early malnutrition carry an elevated long-term risk of insulin resistance, obesity, and cardio-metabolic diseases.
- **Surge in Adult Obesity:** NFHS-6 recorded a sharp rise in adult obesity among individuals aged 15–49—climbing from 24% to 30.7% in women, and from 22.9% to 27.3% in men within five years.
- **NCD Crisis:** Non-communicable diseases now account for approximately 63% of all deaths in India, with nearly a quarter of Indians facing premature mortality before age 70.

5. Institutional Architecture and Policy Recommendations

- **Ayushman Arogya Mandirs (AAM):** Over 1.85 lakh reoriented Health and Wellness Centres screen citizens above 30 for hypertension, diabetes, and common cancers, backed by PM-ABHIM's Rs 64,180 crore outlay.
- **Deep Convergence Required:** Future success depends on fostering institutional convergence between Anganwadis and AAMs, ASHA household visits and NCD screening registers, and rural livelihood missions.

- **Jan Bhagidari & BCC:** Behaviour Change Communication (BCC) and community participation are essential, as no digital dashboard can replace family-level dietary practices during the 1,000-day window.

6. Analytical Matrix: Malnutrition Dimensions, Interventions & Strategic Outcomes

The table below synthesizes the core dimensions of malnutrition, current status, policy frameworks, and strategic outcomes:

Malnutrition Dimension	Current Status / NFHS Evidence	Policy Intervention & Framework	Strategic Outcome & Impact
Anaemia	High prevalence among reproductive women and young children.	Anaemia Mukht Bharat 7x7x7 framework and T4 approach (Test, Treat, Talk, Track).	Shifts from prophylactic distribution to therapeutic case management.
The First 1,000 Days	Stunting declined to 29.3%; adequate diet gap remains high (15.3%).	POSHAN Abhiyaan, PMMVY, Mission Indradhanush, and IYCF promotion.	Protects critical brain development and prevents irreversible damage.
Adult Obesity (Double Burden)	Rapid increase in adult obesity (women 30.7%, men 27.3%).	Ayushman Arogya Mandirs (AAM) population-based NCD screening.	Enables early detection and management of non-communicable diseases.
Systemic Convergence	Historically fragmented health and nutrition interventions.	Convergence of Anganwadis, AAMs, ASHA workers, and Livelihood Missions.	Bridges prevention and population well-being across the life course.

7. Civil Services Examination Focus (GS Paper II)

For candidates preparing for UPSC Civil Services and State Public Service examinations, this analysis delivers critical high-yield substance across public health, malnutrition eradication, and social sector governance paper:

Relevance for General Studies Paper II (Issues Relating to Development & Management of Social Sector / Services relating to Health & Human Resources)

- **Life-Course Approach to Malnutrition:** Highlights that malnutrition is inter-generational, requiring coordinated multi-

sectoral interventions spanning maternal health, early childhood (1,000 days), and adult metabolic health.

- **Addressing the Double Burden:** Explores the co-existence of early undernutrition (stunting/anaemia) and soaring adult obesity/NCDs, emphasizing primary healthcare strengthening via Ayushman Arogya Mandirs.

MAINS MALNUTRITION PERSPECTIVE:

"Malnutrition is inter-generational; therefore, despite best efforts, we may not succeed in our mission unless we adopt a life-course approach while effectively implementing the programmes in letter and spirit." — Dr. Rakesh Kumar

TOPIC 3: COMBATING HIDDEN HUNGER — MICRONUTRIENT DEFICIENCY CHALLENGE

Micronutrient Deficiencies, CNNS 2016-18 Evidence, Anaemia Prevalence, Dietary Diversity Gaps, Biofortification, SEHAT Mission (ICMR-ICAR), and Curbing Junk Food & Obesity (By Dr. Shweta Khandelwal, Senior Public Health Nutrition Expert, CCDC, Delhi)

HIDDEN HUNGER VISION: *"You might not feel it in the belly, but it strikes at the core of your health and vitality." — Kul C. Gautam, former Deputy Executive Director of UNICEF*

1. Executive Summary & The Concept of Hidden Hunger

In the September 2026 special edition of Yojana, the third feature article titled 'Combating Hidden Hunger: Micronutrient Deficiency Challenge' is authored by Dr. Shweta Khandelwal (Senior Public Health Nutrition Expert at the Centre for Chronic Disease Control - CCDC, Delhi). The paper examines how hidden hunger—the chronic deficiency of essential vitamins and minerals—silently undermines human health, cognitive potential, and productivity despite adequate caloric intake.

The author highlights that individuals can consume enough food to feel full while remaining deficient in key micronutrients such as iron, folate, vitamin B12, vitamin A, iodine, and zinc. While India has made immense strides in food security, progress in South Asia regarding nutrition security remains too slow to meet Sustainable Development Goal 2 (Zero Hunger) by 2030 without deliberate intervention.

2. Prevalence: CNNS 2016-18 and Dietary Quality Gaps

Comprehensive National Nutrition Survey (CNNS 2016-18) and dietary data reveal widespread micronutrient gaps across Indian populations [cite: 76]:

- **Micronutrient Deficiencies:** Vitamin A deficiency affects 18% of preschool children, 22% of school-age children, and 16% of adolescents. Zinc, vitamin B12, and folate deficiencies affect up to 32%, 31%, and 37% of adolescents respectively, while vitamin D deficiency spans 70–100% of the population
- **Dietary Gaps:** Nearly half of all protein intake comes from cereals, while pulses contribute

a meager 11% (against a recommended 19%). Coarse-grain consumption has declined by ~40%, average fat intake has reached 2.5 times the RDA, 42% of households fail to meet fibre requirements, and salt consumption averages 11 g/day (more than double WHO recommendations).

3. Global Lessons and India's Policy Response

- **Global Lessons:** South and Southeast Asian programs combining homestead gardening, backyard poultry, biofortification, and school meal enhancements have successfully curtailed hidden hunger
- **Anaemia Mukht Bharat (AMB):** Linking nutrition interventions with screening, follow-up, and community awareness to improve micronutrient utilisation
- **Food Fortification & Supplementation:** Distributing vitamin A and iron-folic acid (IFA) supplements alongside industrial fortification standards for rice, wheat flour, milk, edible oil, and double-fortified salt
- **Social Protection Platforms:** Leveraging PM POSHAN, Mission POSHAN 2.0, and PDS to deliver nutrient-dense Take-Home Rations (THR) and Hot Cooked Meals (HCM).

4. Policy Roadmap for Combating Hidden Hunger

1. **Institutionalising Inter-Ministerial Convergence:** Aligning the Ministries of Women and Child Development, Health and Family Welfare, Agriculture, and Consumer Affairs so public procurement supports nutrient-dense crops.
2. **Diversifying Public Food Systems:** Systematically incorporating millets (ragi, bajra), pulses, and fortified commodities into PDS and Anganwadi baskets
3. **Scaling Biofortification and SEHAT Mission:** Accelerating biofortified staples (high-iron pearl millet, zinc-dense wheat) and implementing the 'SEHAT' (Science Excellence for Health through Agricultural Transformation) mission jointly launched by ICMR and ICAR.
4. **Curbing Overweight, Obesity, and Junk Foods:** Restricting commercial marketing of HFSS (high in fat, sugar, and salt) junk foods targeting children, enforcing Front-of-Pack Labelling (FoPL), levying health taxes on

sugar-sweetened beverages, and removing empty-calorie items from school vicinities.

5. **Dietary Diversity & Bioavailability Education:** Promoting household processing techniques (germination, soaking, fermentation, combining iron with vitamin C) to enhance absorption.
6. **Decentralized Screening and Digital Tracking:**

Expanding the T4 framework (Test, Treat, Talk, Track) across primary healthcare tiers.

5. Analytical Matrix: Micronutrient Deficiencies, Impacts & Policy Solutions

The table below synthesizes key micronutrients, deficiency impacts, primary causes, and strategic policy solutions:

Nutrient / Issue	Deficiency Impact / Disease	Primary Causes	Policy Solutions & Interventions
Iron	Anaemia, fatigue, impaired cognitive function.	Inadequate intake, blood loss, poor intestinal absorption.	Anaemia Mukh Bharat (AMB), IFA supplements, and iron-fortified staples.
Iodine	Goitre, hypothyroidism, cognitive impairment.	Low iodine in soil and water resources.	Universal iodised salt and double-fortified salt mandates.
Zinc & Vitamins	Growth retardation, weakened immunity, night blindness.	Low dietary variety and limited micronutrient-dense foods.	Biofortified crops (SEHAT mission), millets, and diverse diets.
Junk Food & Obesity	Double burden of micronutrient deficiency and overweight.	Proliferation of ultra-processed, empty-calorie foods.	FoPL labelling, HFSS ad bans, and health taxes on sugary drinks.

6. Civil Services Examination Focus (GS Paper II)

For candidates preparing for UPSC Civil Services and State Public Service examinations, this analysis delivers critical high-yield substance across public health, food security, and social welfare governance papers:

Relevance for General Studies Paper II (Issues Relating to Development & Management of Social Sector / Services relating to Health, Hunger & Food Security)

- **Shifting from Food Security to Nutrition Security:** Explores how overcoming hidden hunger requires looking beyond caloric sufficiency (PDS/rice-wheat dominance) to ensure dietary diversity, micronutrient adequacy, and biofortification.
- **Multi-Sectoral Convergence & Regulatory Measures:** Highlights the institutional necessity of converging agricultural research (SEHAT mission) with public health interventions and enacting stringent regulatory policies against junk foods (FoPL and health taxes).

MAINS HIDDEN HUNGER PERSPECTIVE:

"Our 'Kuposhan Mukh Bharat' vision can be fully realised if all stakeholders are committed to the health and well-being of our nation by transforming food ecosystems and moving beyond the dominance of empty-calorie ultra-processed foods." — Dr. Shweta Khandelwal

TOPIC 4: GESTATIONAL WEIGHT GAIN — EVIDENCE AND ACTION

Gestational Weight Gain (GWG), IOM Standards, Maternal Nutrition, FOGSI Guidelines, POSHAN Tracker Monitoring, WINGS & MAI Cohort Studies, Rajasthan Cash-Plus Intervention, and SBCC Strategy (By Aamir Siddiqui, Senior Research Analyst, IPE Global Limited, Delhi)

GWG VISION: *"Gestational weight gain (GWG) is a critical indicator of maternal nutrition and pregnancy health, but its importance is not yet fully recognised in India. Evidence highlights the potential of counselling, nutrition and lifestyle interventions, and behaviour change approaches to support healthy weight gain." — Aamir Siddiqui*

1. Executive Summary & The Concept of GWG

In the September 2026 special edition of Yojana, the fourth feature article titled 'Beyond the Weighing Scale: Strengthening Gestational Weight Gain through Evidence and Action' is authored by Aamir Siddiqui (Senior Research Analyst at IPE Global Limited, Delhi). The paper examines how gestational weight gain (GWG)—the total weight gained during pregnancy—is a natural and necessary response to accommodate the growing fetus and an essential indicator of maternal nutrition and pregnancy health.

The author emphasizes that GWG is no longer viewed simply as a marker of pregnancy progression, but as an important and modifiable predictor of birth and longer-term health outcomes for both women and children. Inadequate or excessive GWG contributes significantly to short- and long-term health complications.

2. Standards and Guidelines: IOM Benchmarks and Indian Guidance

- **IOM Recommendations:** The 2009 Institute of Medicine recommendations provide widely used BMI-specific GWG ranges: 12.5–18 kg for underweight, 11.5–16 kg for normal BMI, 7–11.5 kg for overweight, and 5–9 kg for women with obesity. However, these are derived from high-income populations and may not fully represent LMIC diversity
- **Indian Guidance:** While India lacks nationally derived population-specific GWG standards, FOGSI follows global IOM ranges. The Ministry of Health and Family Welfare recommends an average weight gain of ~9–11 kg, while the Ministry of Women and Child Development (POSHAN Abhiyaan) recommends at least 10–12 kg (including ~1 kg/month during the last six months). Routine weight measurement during ANC is recommended, and GWG was included as a monitoring indicator in the POSHAN Tracker in 2024.

3. Determinants and Health Consequences of GWG

- **Determinants:** GWG is shaped by maternal

genetics, pre-pregnancy BMI, age, socioeconomic status, dietary intake, physical activity, psychosocial environments, and food security.

- **Complications:** Excessive GWG increases risks of gestational diabetes, hypertensive disorders, macrosomia, and caesarean deliveries; inadequate GWG is associated with low birth weight (LBW), small-for-gestational-age (SGA) births, and preterm births.
- **Indian Evidence:** The WINGS study in North India and the MAI cohort in Maharashtra confirmed that GWG strongly predicts birth weight, birth length, and newborn growth, with sub-optimal gain significantly raising LBW and stunting risks.

4. Evidence on Interventions: WINGS Trial and Rajasthan Cash-Plus Model

- **Behavioral Trials:** Haryana behavioral trials combining lifestyle counselling, supervised exercise, and pedometers helped women maintain weight gain within recommended ranges and reduced postpartum weight retention.
- **Rajasthan Cash-Plus Approach:** Integrating direct benefit transfer (DBT) with a comprehensive Social and Behaviour Change Communication (SBCC) strategy significantly improved GWG and birth outcomes. Economic Survey data showed 54% more women utilizing cash specifically for nutrition, a 35% reduction in myths, a 71.3 g increase in mean birth weight, and a 7.4 percentage point decline in low birth weight (LBW).

5. Analytical Matrix: GWG Standards, Determinants & Intervention Impact

The table below synthesizes the standards, determinants, health consequences, and intervention impacts related to gestational weight gain:

GWG Dimension	Standards / Guidelines	Key Determinants & Complications	Intervention & Evidence
GWG Standards	IOM (2009) BMI ranges; India MoHFW (9-11 kg) & MoWCD (10-12 kg).	Pre-pregnancy BMI variations and population-specific characteristics.	ICMR supporting pooled cohort data to inform Indian reference standards.
Health Outcomes	Excessive GWG leads to GDM/caesarean; Inadequate GWG leads to LBW/SGA.	Maternal factors, energy balance, genetics, and environment.	Influences infant body composition, long-term obesity risk, and neurodevelopment.
Behavioral Trials (Haryana)	Diet, exercise, pedometer use, and text message reminders.	Sedentary habits and lack of physical activity during pregnancy.	Helps maintain weight within recommended ranges and reduces postpartum retention.
Cash-Plus (Rajasthan)	DBT combined with comprehensive SBCC strategy.	Economic constraints and sociocultural taboos around maternal nutrition.	7.4 percentage point reduction in LBW and 71.3 g increase in birth weight.

6. Civil Services Examination Focus (GS Paper II)

For candidates preparing for UPSC Civil Services and State Public Service examinations, this analysis delivers critical high-yield substance across maternal healthcare, welfare schemes, and social sector governance papers:

Relevance for General Studies Paper II (Welfare Schemes for Vulnerable Sections, Maternal & Child Health Governance)

- **Integrating GWG into Antenatal Care:** Highlights how moving beyond routine weight measurement to regular GWG monitoring under POSHAN 2.0 and PMMVY helps identify nutritional risks early and reduce low birth weight.
- **Cash-Plus Interventions & Behaviour Change:** The success of combined financial transfers and Social and Behaviour Change Communication (SBCC) in Rajasthan demonstrates the effectiveness of multi-pronged public health strategies in altering household nutritional norms.

MAINS GWG PERSPECTIVE: *“Integrating GWG into routine antenatal care provides a practical means of identifying nutritional risks early, delivering timely counselling and support, and improving the quality of maternal nutrition services.” — Aamir Siddiqui*

TOPIC 5: GUT HEALTH AND NUTRITION — THE SCIENCE OF THE HUMAN MICROBIOME

Human Microbiome, Gastrointestinal Ecosystem, Short-Chain Fatty Acids (SCFAs), Dysbiosis, Indian & South Asian Context (Prevotella and Bifidobacterium), Probiotics/Prebiotics, and Limitations of Faecal Microbiota Transplantation (FMT) (By Dr. Anurag Agrawal, Dean of BioSciences, Ashoka University & Dr. Anindya Dasgupta)

MICROBIOME VISION: *“The microbiome has reshaped our understanding of human physiology, but clinical translation must remain disciplined. A healthy gut cannot yet be reduced to a diversity score, a single bacterium or a capsule. The strongest current prescription is a varied, culturally appropriate, minimally processed diet; regular physical activity and adequate sleep; and prudent medication use.” — Dr. Anurag Agrawal & Dr. Anindya Dasgupta*

1. Executive Summary & The Human Microbiome Ecosystem

In the September 2026 special edition of Yojana, the fifth feature article titled ‘Gut Health and Nutrition: The Science of the Human Microbiome’ is authored by Dr. Anurag Agrawal

(Dean of BioSciences and Health Research at Ashoka University and former Director of CSIR-IGIB) and co-authored by Dr. Anindya Dasgupta (Associate Professor at Ashoka University). The paper examines how the human gastrointestinal tract operates as a co-evolved ecosystem rather than a passive digestive tube.

The authors note that the bacterial population in a reference adult is approximately 40 trillion cells, slightly exceeding human cell numbers. These predominantly anaerobic organisms break down indigestible dietary substrates, synthesise vitamins, resist pathogen colonisation, and educate the immune system. Fermentation of dietary fibre produces Short-Chain Fatty Acids (SCFAs)—specifically acetate, propionate, and butyrate—which nourish colonocytes and maintain epithelial barrier integrity.

2. Dysbiosis and Clinical Associations

- **Disease Associations:** Altered gut microbial communities (dysbiosis) have been reported in Irritable Bowel Syndrome (IBS), Inflammatory Bowel Disease (IBD), colorectal cancer, coeliac disease, obesity, diabetes, and immune conditions. However, the direction of causality is often uncertain as disease, medication, diet, and inflammation can themselves reshape the microbiome.
- **Contextual Definitions:** Because the microbiome varies widely with environment and habits, there is no universal 'healthy' gut microbiome, making consumer commercial 'good/bad' bacterial reports unreliable.
- **SIBO:** Bacterial load and type matter throughout the gut; increased bacterial load in the upper gut (Small Intestinal Bacterial Overgrowth - SIBO) can lead to inflammation regardless of whether bacteria are classified as 'good' or 'bad'.

3. The Indian and South Asian Context

- **Heterogeneous Populations:** Indian populations offer critical insights because dietary patterns, geography, sanitation, medication exposure, urbanisation, and socioeconomic conditions vary widely.

- **Prevotella & Bifidobacterium:** Plant-based, higher-fibre cohorts show Prevotella-enriched communities, while animal-protein and fat diets associate with Bacteroides patterns. Notably, certain Indian tribal populations exhibit Prevotella copri abundance exceeding 25% of the gut bacterial population. High dairy consumption in India also correlates with greater abundance of Bifidobacterium.
- **Ultra-Processed Foods:** Rapidly changing food environments involving ultra-processed foods risk adverse microbial exposures alongside established cardiometabolic harms.

4. Microbiome Therapies and Food-First Approach

- **Probiotics & Prebiotics:** Taken as wellness strategies, evidence supporting their role in treating symptomatic clinical disease is limited; they are not frontline clinical options.
- **Faecal Microbiota Transplantation (FMT):** A purely medical intervention (not a wellness procedure) whose clearest evidence-based role is preventing recurrent Clostridioides difficile infection after standard antibiotics. For IBD and other indications, FMT should remain within clinical trials due to severe infection risks.
- **Food-First Prescription:** The strongest prescription is increasing dietary diversity through minimally processed foods. Adults should aim for at least 25 g of naturally occurring dietary fibre per day (whole grains, millets, pulses, vegetables, fruits, nuts, seeds) consistent with WHO guidance, increased gradually with hydration. Traditional fermented foods (curd with live cultures, kanji) may contribute beneficial compounds.

5. Analytical Matrix: Microbiome Dimensions, Indian Context & Therapies

The table below synthesizes the core dimensions of the human microbiome, Indian population specifics, clinical evidence, and dietary guidance:

Microbiome Dimension	Scientific Feature / Mechanism	Indian Context & Specifics	Clinical View & Prescription
Gastrointestinal Ecosystem	40 trillion bacterial cells producing Short-Chain Fatty Acids (SCFAs).	Highly heterogeneous across sanitation, geography, and diet.	Supports epithelial barrier integrity and immune regulation via fibre fermentation.
Dysbiosis & Disease	Altered microbial communities in IBS, IBD, obesity, and diabetes.	Causality is often uncertain; disease states alter the microbiome.	Avoid commercial consumer gut-testing kits lacking clinical validation.
Indian Context	Prevotella (plant-based) and Bifidobacterium (dairy-rich) abundance.	Tribal cohorts show Prevotella copri >25%; high dairy intake boosts Bifidobacterium.	Emphasise traditional, culturally appropriate, diverse diets and avoid UPFs.
Microbiome Therapies	Probiotics, prebiotics, and Faecal Microbiota Transplantation (FMT).	FMT restricted to recurrent C. difficile and clinical trials.	Food-first approach: min. 25 g fibre/day, diverse whole foods, and prudent medication.

6. Civil Services Examination Focus (GS Paper III)

For candidates preparing for UPSC Civil Services and State Public Service examinations, this analysis delivers critical high-yield substance across biotechnology, human physiology, and public health science paper:

Relevance for General Studies Paper III (Science & Technology — Biotechnology, Health Applications & Human Physiology)

- **Human Microbiome & Metabolism:** Explains how the gut microbiome functions as an active co-evolved organ influencing immunity, metabolism, and chronic disease pathways, moving beyond simplistic 'good vs bad' bacterial classifications.
- **Evidence-Based Medicine vs Commercial Hype:** Differentiates rigorous clinical interventions (such as FMT for C. difficile) from unverified commercial gut-testing kits and wellness supplements, emphasizing a food-first dietary diversity approach.

MAINS MICROBIOME PERSPECTIVE:

"The microbiome has reshaped our understanding of human physiology, but clinical translation must remain disciplined. Precision microbiome care is a compelling future direction, but it will require further scientific exploration." — Dr. Anurag Agrawal & Dr. Anindya Dasgupta

TOPIC 6: TOWARDS A HEALTHIER INDIA — COMBATING LIFESTYLE DISEASES THROUGH NUTRITION, ACTIVITY, AND POLICY

Non-Communicable Diseases (NCDs), NP-NCD Programme, Ayushman Arogya Mandir (AAM), FSSAI's 'Eat Right India' Movement, Physical Inactivity, and Changing Dietary Patterns (By Dr. Rupali Roy, Assistant Director General, Directorate General of Health Services, MoHFW)

LIFESTYLE DISEASES VISION: *"Causes of lifestyle diseases extend beyond personal behaviour and are connected to food environments, physical inactivity, socioeconomic conditions, urbanisation and access to healthcare. Healthy diets and regular physical activity remain important foundations of prevention."* — Dr. Rupali Roy

1. Executive Summary & India's Health Transition

In the September 2026 special edition of Yojana, the sixth feature article titled 'Towards a Healthier India: Combating Lifestyle Diseases Through Nutrition, Activity, and Policy' is authored by Dr. Rupali Roy (Assistant Director General in the Directorate General of Health Services - Dte. GHS, Ministry of Health and Family Welfare, Government of India). The paper examines

India’s major health transition—achieving improvements in life expectancy and infectious disease control while facing a rapidly growing burden of Non-Communicable Diseases (NCDs).

The author emphasizes that conditions such as cardiovascular diseases, diabetes, hypertension, obesity, and metabolic syndrome (collectively known as lifestyle diseases) are shaped by changing diets, physical inactivity, nutritional challenges, and gaps in preventive healthcare. They are not merely individual choices but are driven by rapid urbanisation, sedentary occupations, and changing food environments.

2. Changing Dietary Patterns and Physical Inactivity

- **Dietary Shifts:** While traditional Indian diets provide good nutrition when they include whole grains, pulses, vegetables, and fruits , changing lifestyles have escalated the consumption of highly processed foods and sugar-sweetened beverages.This creates a complex double burden where undernutrition and micronutrient deficiencies coexist with overweight and diet-related NCDs.
- **Physical Inactivity:** Sedentary work, urban living, and digital device usage have significantly reduced everyday movement. Physical activity must be supported by safe publicspaces, walking/cycling infrastructure, and safe play opportunities for children.

3. Existing Health and Nutrition Programs

India has strengthened its public health response through comprehensive primary healthcare and national initiatives:

- **NP-NCD Programme:** Launched initially as NPCDCS in 2010 and expanded into the National Programme for Prevention and Control of Non-Communicable Diseases (NP-NCD), providing a national framework for health promotion, population-based screening (for those aged 30 and above), early diagnosis, treatment, and referral.
- **Ayushman Arogya Mandirs (AAM):**

Integrating prevention into primary healthcare by providing education on healthy diets, yoga, exercise, tobacco cessation, screening, and treatment.

- **FSSAI’s ‘Eat Right India’ Movement:** An autonomous statutory body setting science-based standards under three themes—Eat Safe, Eat Healthy, and Eat Sustainable—involving consumers, food businesses, and government bodies:

4. Future Recommendations for Policy and Practice

To make sustained progress in preventing NCDs, the author outlines five key recommendations:

1. **Making Healthier Diets Easier:** Improving access to affordable and diverse nutritious foods, including whole grains, pulses, vegetables, fruits, and appropriate proteins:
2. **Embedding Physical Activity:** Incorporating movement into everyday environments through schools, workplaces, and safe walking/cycling infrastructure:
3. **Strengthening Early Screening:** Identifying and managing conditions like hypertension and diabetes before complications develop, backed by trained health workers and reliable diagnostics:
4. **Early Nutrition Education:** Beginning nutrition education early, involving families, schools, and communities to address undernutrition and unhealthy dietary patterns simultaneously:
5. **Coordinated Community-Based Approach:** Aligning government agencies, healthcare workers, schools, and local organisations to deliver culturally appropriate and realistic health messages:

5. Analytical Matrix: Lifestyle Disease Challenges, Programs & Strategic Priorities

The table below synthesizes lifestyle disease risk factors, existing public health programs, and future strategic priorities:

Challenge / Dimension	Primary Risk Factors & Causes	Existing Public Health Programs	Future Strategic Priorities
Dietary Patterns	High consumption of processed foods and sugar-sweetened beverages.	FSSAI's 'Eat Right India' movement and Poshan Abhiyaan:	Improving access to affordable, diverse, and nutritious whole foods:
Physical Inactivity	Urban living, sedentary work, and digital device reliance.	National Health Mission (NHM) health promotion frameworks.	Developing safe walking/cycling infrastructure and active environments:
Early Detection Gaps	Silent progression of hypertension and diabetes without symptoms.	NP-NCD programme and Ayushman Arogya Mandirs (AAM).	Universal population-based screening for citizens aged 30 and above.
Community Approach	Socioeconomic conditions and food environments influencing health.	Ayushman Bharat primary healthcare wellness approach.	Coordinated community-based health education and family engagement:

6. Civil Services Examination Focus (GS Paper II)

For candidates preparing for UPSC Civil Services and State Public Service examinations, this analysis delivers critical high-yield substance across public health, NCD management, and social welfare governance papers:

Relevance for General Studies Paper II (Issues Relating to Development & Management of Social Sector / Services relating to Health & Preventive Healthcare)

- **Combating Non-Communicable Diseases (NCDs):** Demonstrates how addressing lifestyle diseases requires integrating primary healthcare (Ayushman Arogya Mandirs), population screening (NP-NCD), and food safety regulation (FSSAI).
- **Preventive Healthcare & Health Promotion:** Highlights that individual health choices must be supported by structural policy changes, including safe urban spaces for physical activity, accessible nutrition education, and affordable wholesome food.

MAINS LIFESTYLE DISEASES PERSPECTIVE:

"A healthier India will depend not only on individual choices, but also on making nutritious food, physical activity, preventive health care and timely screening easier and more accessible to people." — Dr. Rupali Roy

TOPIC 7: THE TRANSFORMATIONAL JOURNEY OF SWACHH BHARAT MISSION (GRAMEEN)

Open Defecation Free (ODF) to ODF Plus (Model) Villages, Individual Household Latrines & Community Sanitary Complexes (CSCs), SBM(G) 2.0 Solid and Liquid Waste Management, GOBARdhan Initiative, Jan Bhagidari, and WHO/UNICEF Health Impact Estimates (By Aishvarya Singh, Joint Secretary & National Mission Director, SBM, Ministry of Jal Shakti)

SWACHH BHARAT VISION: *"A Swachh Bharat, Swasth Bharat with empowered communities contributing to nation-building, is an integral part of the vision of Viksit Bharat 2047. These communities safeguard public health by sustaining sanitation assets, reducing disease burden, and promoting healthier living environments." — Aishvarya Singh*

1. Executive Summary & SBM(G) Phase-1 (2014-2019)

In the September 2026 special edition of Yojana, the seventh feature article titled 'The Transformational Journey of Swachh Bharat Mission (Grameen)' is authored by Aishvarya Singh (Joint Secretary & National Mission Director, Swachh Bharat Mission, Department of Drinking Water and Sanitation, Ministry of Jal Shakti, Government of India). The paper examines how the launch of SBM(G) on 2

October 2014 transformed rural sanitation and restored dignity to crores of rural women.

The author highlights that strong political will, inclusive policymaking, and Jan Bhagidari transformed a national sanitation program into a mass Jan Andolan. During 2014–2019, over 10 crore household toilets and more than one thousand Community Sanitary Complexes (CSCs) were constructed, raising rural sanitation coverage from 39% in 2014 to 100% in 2019, with every district declaring itself Open Defecation Free (ODF) by 2 October 2019.

2. SBM(G) 2.0 and the Transition to ODF Plus (Model) Villages

Launched in 2020 and extended through FY 2026-27, SBM(G) 2.0 shifts focus from basic sanitation infrastructure toward ODF sustainability and visual cleanliness through Solid and Liquid Waste Management (SLWM). Cumulative figures since 2014 show over 12.17 crore household toilets and 2.78 lakh Community Sanitary Complexes constructed across rural areas.

- **SLWM Pillars:** Scientific waste management at household and community levels, greywater management, plastic waste management, faecal sludge management, and GOBARdhan (Galvanizing Organic Bio-Agro Resources dHAN).
- **Decentralized Framework:** Giving States and UTs the flexibility to choose localized solutions while adhering to scheme norms.

3. Grassroots Governance, GPDP Integration, and Transparency

- **Gram Panchayat Development Plan (GPDP):** Integrating sanitation and waste management priorities through the Gram Panchayat and Village Water & Sanitation Committee (VWSC), strengthened by the eGramSwaraj portal.

- **Financial Convergence:** Aligning SBM(G) 2.0 with Fifteenth/Sixteenth Finance Commission Grants and VB-G RAM G (Viksit Bharat Guarantee for Rozgar and Aajeevika Mission).
- **Digital Governance:** Mandatory geo-tagging of sanitation assets, mobile verification, Public Financial Management System (PFMS), and SNA-SPARSH to ensure transparency and accountability.

4. Public Health Impacts and Independent Evaluations

Independent studies corroborate the profound public health transformation achieved by the Mission:

- **World Health Organization (WHO):** Estimated that nearly 3 lakh diarrhoeal deaths were averted between 2014 and 2019
- **UNICEF:** Found that households in ODF villages saved close to Rs 50,000 annually through reduced healthcare costs and faced lower groundwater contamination risks.
- **Nature Research:** Published findings estimating that the Mission prevented tens of thousands of child deaths every year.
- **ODF Plus Achievement:** As of 24 July 2026, over 5.18 lakh villages have declared themselves ODF Plus (Model).

5. Analytical Matrix: SBM(G) Phases, Interventions & Public Health Impact

The table below synthesizes the phases, core interventions, operational scale, and public health outcomes of the Swachh Bharat Mission (Grameen):

SBM(G) Dimension	Core Focus & Phase	Operational Scale & Achievements	Public Health & Social Impact
SBM(G) Phase-1 (2014-19)	Open Defecation Free (ODF) villages and toilet infrastructure.	10+ crore individual household toilets and 1 lakh+ CSCs built.	Restored dignity to rural women and broke faecal-oral transmission cycles.
SBM(G) Phase-2 (2020-27)	ODF sustainability and Solid & Liquid Waste Management (SLWM).	12.17+ crore toilets; 5.18+ lakh villages declared ODF Plus (Model).	Ensures visual cleanliness, greywater, and faecal sludge management.
Governance & Convergence	GPDP planning, eGramSwaraj portal, and Finance Commission grants.	Empowered Panchayats with financial transparency and digital tracking.	Strengthens decentralized local governance and asset O&M.

Public Health Impact	Preventing diarrhoeal deaths and reducing healthcare costs.	WHO (3 lakh deaths averted) and UNICEF (Rs 50,000 annual savings) estimates.	Builds healthy, empowered communities essential for Viksit Bharat 2047.
----------------------	---	--	---

6. Civil Services Examination Focus (GS Paper II)

For candidates preparing for UPSC Civil Services and State Public Service examinations, this analysis delivers critical high-yield substance across governance, sanitation, public health, and Panchayati Raj institutions:

Relevance for General Studies Paper II (Governance, Sanitation, Public Health & Panchayati Raj Institutions)

- **Public Health & Sanitation Linkage:** Demonstrates how SBM(G) evolved from infrastructure creation to an effective public health intervention, averting lakhs of diarrhoeal deaths and lowering household healthcare burdens.
- **Jan Andolan & Decentralized Governance:** Highlights the administrative success of transforming citizens from mere beneficiaries into active stakeholders (Jan Bhagidari) through GPDP planning, eGramSwaraj, and ODF Plus sustainability.

MAINS SWACHH BHARAT PERSPECTIVE:

"When citizens are seen no longer as just beneficiaries of a government programme, but become equal partners and stakeholders in implementation, in its O&M, in spreading the message of Swachhata as in the case of SBM(G), that is true citizen empowerment." — Aishvarya Singh

TOPIC 8: RABIES — A FATAL, YET VACCINE-PREVENTABLE DISEASE

Rabies Virus Transmission, Stray Dog Menace (1.5 Crore), PEP and PrEP Approaches, First Aid (Washing with soap for 15 mins), Intradermal vs Intramuscular Vaccination, Equine/Human RIG and Monoclonal Antibodies (RmAbs), National Action Plan for Rabies Elimination (NAPRE), and Zero by 2030 Goal (By Dr. M.K. Sudarshan, Founder President & Mentor, APCRI)

RABIES VISION: *"Rabies is an almost universally fatal disease, as there is still no cure for it anywhere in the world. It is caused by the rabies virus... Although rabies is practically almost universally fatal, it is also preventable through timely and correct use of rabies vaccines." — Dr. M.K. Sudarshan*

1. Executive Summary & Nature of Rabies Transmission

In the September 2026 special edition of Yojana, the eighth feature article titled 'Rabies: A fatal, yet vaccine-preventable disease' is authored by Dr. M.K. Sudarshan (Founder President & Mentor of the Association for Prevention and Control of Rabies in India - APCRI, and former Dean/Director of Community Medicine). The paper examines how rabies remains universally fatal once clinical symptoms appear, yet is completely preventable through timely post-exposure prophylaxis.

The author notes that dogs transmit nearly 97% of human rabies cases in India, with cats accounting for 2% and wild animals (mongooses, jackals, foxes) for 1%. Common house rats and bats in India do not transmit rabies. Transmission occurs primarily when virus-laden saliva enters a bite wound or scratch. Once inside, the virus travels along nerves to the brain, causing fatal encephalitis.

2. Clinical Types, Incubation Period, and Notifiable Disease Status

- **Clinical Forms:** Furious rabies occurs in ~80% of cases (characterized by hydrophobia, aerophobia, photophobia, leading to death within 3–7 days); paralytic rabies occurs in ~20% (characterized by gradual paralysis over 2–3 weeks).
- **Incubation Period:** Typically ranges from 1 to 3 months but can extend to a year or more depending on bite site and severity (bites on the face, head, neck, and hands are high-risk).
- **Notifiable Disease:** Since 2022, most Indian states and UTs have classified human rabies as a notifiable disease, making reporting mandatory for all public and private hospitals.

3. Prevention Approaches: PEP and PrEP

- **Post-Exposure Prophylaxis (PEP):** Life-saving treatment administered after exposure. Involves three critical steps: physical removal (washing), chemical neutralisation (antiseptic), and biological neutralisation (vaccines + immunoglobulins).
- **First Aid:** Thoroughly flush and wash all bite wounds with soap and running water for at least 15 minutes. Avoid traditional practices like applying turmeric, chili powder, or branding with hot irons
- **Vaccination Routes:** Modern purified cell-culture vaccines are given via Intradermal (IDRV: 0.1 mL at two sites on days 0–3–7–28, highly cost-effective and WHO-approved in government centres) or Intramuscular (IM: full vial on days 0–3–7–14–28).
- **RIGs and Monoclonal Antibodies (RmAbs):** For Category III (severe/bleeding) wounds, Rabies Immunoglobulins (Equine or Human RIG) or modern lab-developed Rabies Monoclonal Antibodies (RmAbs) must be infiltrated around wounds. RmAbs avoid animal/human serum reactions and require no skin test.
- **Pre-Exposure Prophylaxis (PrEP):**

Administered to high-risk groups (veterinarians, animal handlers, security personnel) on days 0, 7, and 21/28, requiring only two booster doses if bitten later.

4. Stray Dog Menace and National Action Plan for Rabies Elimination (NAPRE)

- **Stray Dog Menace:** India has an estimated 1.5 crore stray dogs (~1 per 100 persons), posing significant public safety and rabies transmission risks. Following Supreme Court rulings (2025), key public areas like hospitals, schools, and bus stations are designated as 'stray dog free' safe zones.
- **NAPRE (2021):** Launched by the Government of India in September 2021, the National Action Plan for Rabies Elimination aims to achieve zero human deaths from dog-mediated rabies by 2030 (aligning with the global 'Zero by 30' goal set by WHO, WOAAH, FAO, and GARC) through mass dog vaccination and free PEP.

5. Analytical Matrix: Rabies Prevention Pillars, Protocols & Elimination Goals

The table below synthesizes transmission modes, PEP/PrEP protocols, biologicals, and national elimination goals for rabies:

Rabies Dimension	Transmission & Clinical Features	Medical Management & Protocols	National Policy & Elimination Goal
Transmission	97% of human cases transmitted by dogs via saliva into wounds.	Immediate washing of wounds with soap and running water for 15 minutes.	Public awareness and compulsory annual vaccination of pets and strays.
PEP (Post-Exposure)	Furious (80%) and paralytic (20%) clinical forms of rabies.	Cell-culture vaccination (IDRV / IM) plus RIGs/RmAbs for Category III bites.	Ensuring free and complete post-exposure prophylaxis for all bite victims
PrEP (Pre-Exposure)	Administered to high-risk professionals (vets, animal handlers, security).	3 primary doses on days 0, 7, 21/28; only 2 boosters needed upon future exposure.	Safeguarding occupational risk groups against potential exposure.
NAPRE Goal (2030)	India accounts for nearly one-third of the global rabies burden.	State Action Plans (SAPRE) and notifying human rabies under infectious disease acts.	Achieving zero human deaths from dog-mediated rabies by 2030 (Zero by 30).

6. Civil Services Examination Focus (GS Paper II)

For candidates preparing for UPSC Civil Services and State Public Service examinations, this analysis delivers critical high-yield substance across public health, zoonotic disease control, and administrative governance papers:

Relevance for General Studies Paper II (Public Health, Zoonotic Diseases & Disease Control Strategies)

- **Rabies Control & 'One Health' Approach:** Highlights how a 100% fatal disease like rabies is entirely preventable through structured PEP protocols, intradermal vaccination economics, and the National Action Plan for Rabies Elimination (NAPRE).
- **Stray Animal Management & Public Safety:** Examines the administrative challenges of managing 1.5 crore stray dogs, balancing animal welfare (ABC programme) with public safety mandates in urban and institutional zones.

MAINS RABIES PERSPECTIVE: *"Although rabies is practically almost universally fatal, it is also preventable through timely and correct use of rabies vaccines for both post-exposure prophylaxis... and pre-exposure prophylaxis."* — Dr. M.K. Sudarshan

TOPIC 9: PLANT-BASED LIVING — TOWARDS HEALTHIER AND MORE SUSTAINABLE CHOICES

Plant-Based Diets and Veganism, Health and Nutrition Benefits, EPIC-Oxford Study Findings, Environmental Footprint (Greenhouse Gas Emissions, Land and Water Use), Traditional Indian Food Systems, and Community Engagement (By Hema Gopi, Holistic Living Promoter & Co-Director, UV PDS Foundation)

PLANT-BASED LIVING VISION: *"Plant-based living stems from a simple ethical value that respects every form of life and every species equally. Honouring the fact that every living being has its own life's purpose and should have the autonomy to pursue its own life's journey."* — Hema Gopi

1. Executive Summary & The Concept of Plant-Based Living

In the September 2026 special edition of Yojana, the ninth feature article titled 'Plant-Based Living: Towards Healthier and More

Sustainable Choices' is authored by Hema Gopi (Holistic Living Promoter, Co-Director at UV PDS Foundation, and animal cruelty advocate). The paper examines how plant-based diets and veganism connect with nutrition, public health, and environmental sustainability.

The author highlights that plant-based eating emphasizes foods derived from plants—including vegetables, fruits, pulses, whole grains, nuts, and seeds—while veganism is a broader ethical philosophy seeking to avoid animal exploitation. This perspective advocates minimizing cruelty and moving away from an anthropocentric mindset that normalizes exploiting other species.

2. Nutrition, Health, and EPIC-Oxford Study Findings

- **Health Benefits:** Diets rich in vegetables, fruits, legumes, whole grains, nuts, and seeds provide essential dietary fibre, vitamins, minerals, and protective phytochemicals.
- **EPIC-Oxford Study:** Analyzing a UK cohort of over 65,000 participants, researchers found that vegans had lower average blood pressure and a lower prevalence of self-reported hypertension compared to meat-eaters, largely associated with differences in body mass index (BMI).
- **Nutritional Adequacy:** While minimally processed plant foods form a healthy foundation, individuals adopting fully plant-based diets must pay careful attention to nutritional adequacy, particularly for vulnerable groups such as children, adolescents, pregnant women, and older persons.

3. Food Choices and Environmental Footprint

- **Food production** has profound implications for land use, water consumption, greenhouse-gas emissions, and biodiversity. Citing a Nature Food study spanning 55,504 participants and over 38,000 farms across 119 countries:
- **Environmental Impact Reduction:** Vegan diets were associated with approximately 75% lower greenhouse-gas emissions and land use compared to diets containing high meat consumption (>100g/day).

- Sustainable Food Systems: Sustainability requires attention not only to the type of food consumed but also to food processing, transportation, packaging, and waste reduction.

4. Traditional Indian Diets and Community Engagement

- Traditional Indian Systems: India’s traditional diets already contain a substantial variety of plant foods (pulses, millets, vegetables, fruits). Policy should encourage diverse, nutritious, and sustainable diets rather than a rigid binary choice.

- Community Initiatives: Programs by organizations like the UV PDS Foundation (Ubuntuverse), including community potlucks known as ‘Compassion Celebrations’, provide peer support and practical alternatives for individuals transitioning to plant-based lifestyles.

5. Analytical Matrix: Plant-Based Living Dimensions, Health & Sustainability

The table below synthesizes the core dimensions of plant-based living, health evidence, environmental impacts, and policy directions:

Lifestyle Dimension	Core Concept & Definition	Research Evidence & Findings	Environmental & Social Impact
Definitions & Distinction	Plant-based diets (fibre, whole foods) vs Veganism (ethical philosophy against animal exploitation).	Dietary choices vary widely across individuals, communities, and cultures.	Maintains conceptual clarity in policy discussions without rigid binaries.
Health & Nutrition	Diets rich in vegetables, legumes, whole grains, nuts, and seeds.	EPIC-Oxford study: Vegans exhibit lower blood pressure and reduced hypertension prevalence.	Highlights the need for nutritional adequacy, particularly for vulnerable groups.
Environmental Footprint	Agricultural impact on land, water, greenhouse gases, and biodiversity.	Nature Food study: Vegan diets show ~75% lower greenhouse gas emissions and land use .	Reduces pressure on natural resources and mitigates climate change [cite: 89, 90].
Traditional Systems	Locally available pulses, millets, vegetables, and fruits in Indian households.	Traditional Indian diets provide a robust existing foundation for diverse plant-based living.	Leverages indigenous culinary wisdom to foster resilient food systems.

6. Civil Services Examination Focus (GS Paper III)

For candidates preparing for UPSC Civil Services and State Public Service examinations, this analysis delivers critical high-yield substance across environmental conservation, sustainable development, and food security papers:

Relevance for General Studies Paper III (Environment Conservation, Sustainable Development, Biodiversity & Food Security)

- Environmental Footprint of Food Systems: Demonstrates how dietary choices significantly impact natural resource utilization, greenhouse gas emissions, and

land degradation, making sustainable diets integral to climate action.

- Sustainable Agriculture & Indigenous Diets: Highlights the importance of integrating traditional Indian dietary knowledge (millets, pulses, local produce) into contemporary nutrition policies to build resilient and ecologically responsible food ecosystems.

MAINS PLANT-BASED LIVING PERSPECTIVE:

“Healthier people and a healthier planet are not separate objectives. The choices made across the food system, from farm to household and from production to consumption, with kindness and compassion, can help advance both.” — Hema Gopi