POLICY BRIEF #42

Action Points for the Ministry of Health and Family Welfare (MoHFW)

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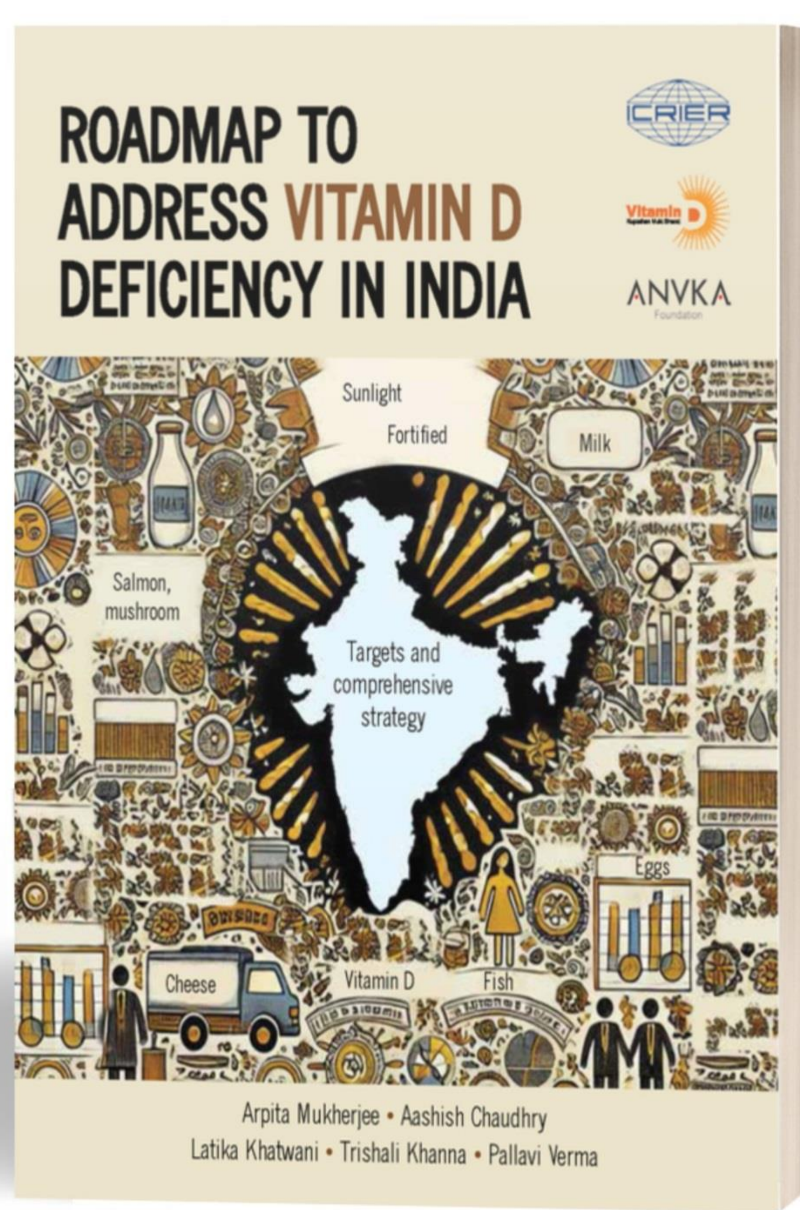

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Abstract

India, the world's most populous country, suffers from widespread micronutrient deficiencies, with Vitamin D deficiency emerging as a silent epidemic. The ICRIER-ANVKA Foundation 2025 report titled *"Roadmap to Address Vitamin D Deficiency in India"* found that one in every five Indians are Vitamin D deficient. This deficiency affects all sections of the population, regardless of age, occupation or geography. Vitamin D deficiency poses a lifelong health risk with far-reaching consequences, including rickets in children, osteomalacia/osteoporosis in adults and poor foetal bone development during pregnancy.

This policy brief highlights the key role that the Ministry of Health and Family Welfare (MoHFW) can play as the nodal ministry in spearheading the national response to addressing Vitamin D deficiency and collaborating with other key ministries and departments to implement a unified and effective action plan which can lead to "*Vitamin D Kuposhan Mukt Bharat"*. The recommendations range from launching a nationwide awareness campaign, creating a multi-stakeholder platform to align ongoing efforts, including Vitamin D into existing healthcare programmes, leveraging national survey data for targeted interventions, and setting uniform guidelines for the testing and treatment for Vitamin D deficiency in India.

Timely and targeted action on Vitamin D deficiency will not only improve population health and life expectancy but also reduce healthcare costs, strengthen workforce productivity, and prevent long-term losses to economic growth.

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List of Abbreviations

AMB	Anaemia Mukt Bharat
AWWs	Anganwadi Workers
BCC	Behaviour Change Communication
CSR	Corporate Social Responsibility
DFS	Double Fortified Salt
FSSAI	Food Safety and Standards Authority of India
GAIN	Global Alliance for Improved Nutrition
ICDS	Integrated Child Development Services
ICMR-NIN	Indian Council of Medical Research – National Institute Of Nutrition
IFA	Iron And Folic Acid
MDM	Mid-Day Meal
MoCAF&PD	Ministry of Consumer Affairs, Food and Public Distribution
MoE	Ministry of Education
MoF	Ministry of Finance
MoFPI	Ministry of Food Processing and Industry
MoHFW	Ministry of Health and Family Welfare
MoWCD	Ministry of Women and Child Development
NHM	National Health Mission
NiFTEM	National Institute of Food Technology, Entrepreneurship and Management
NLEM	National List of Essential Medicines
PDS	Public Distribution System
SAMPADA	Survey for Assessment of Markers of Population Health Activity, Diet And Anthropometry
UHC	Universal Health Coverage

Action Points for the Ministry of Health and Family Welfare (MoHFW)

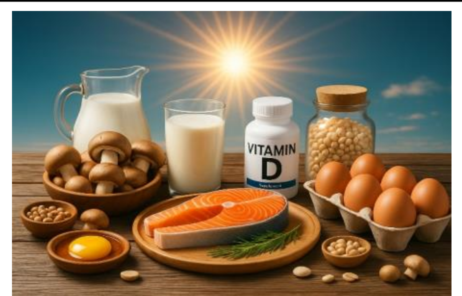
Arpita Mukherjee, Aashish Chaudhry, Trishali Khanna, Latika Khatwani and Pallavi Verma

1. Vitamin D Deficiency – A Silent Epidemic

- ***Widespread Vitamin D Deficiency:*** One in five Indians are Vitamin D deficient.[1]
- ***Significant Regional Variations:*** Most studies indicate a higher prevalence of the deficiency in North and East India as compared to South and West India.[2]
- ***Urban vs. Rural Discrepancy:*** The urban population, especially children and adolescents, show a higher prevalence of Vitamin D deficiency than the rural population.
- ***Gender Differences:*** Women are more prone to Vitamin D deficiency than men.

2. Most Vulnerable Groups

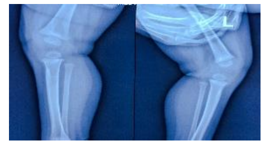
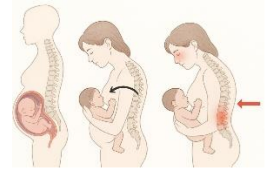
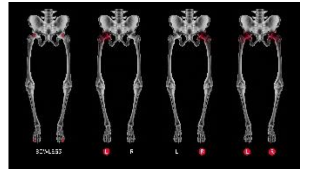
The deficiency now affects all sections of the population, regardless of age, occupation or geography – from sportspersons, soldiers, outdoor workers to doctors, nurses and healthcare professionals.[3] The most vulnerable groups are children and adolescents, pregnant women and lactating mothers, and the elderly (See Figure 1).



1. **Sunshine:** Vitamin D, also known as the 'sunshine vitamin,' is primarily obtained through exposure to sunlight.
2. **Foods:** Fish, eggs, mushrooms, cheese, etc., fortified products like milk, margarine, yogurt, juices and cereals. Food Safety and Standards Authority of India (FSSAI) has already allowed fortification in oil and milk. Fortified oil is given through the public distribution system.
3. **Vitamin D Supplements:** Vitamin D_2 (Ergocalciferol, mostly plant-based) and D_3 (Cholecalciferol, mostly animal-based).

[1] Results of meta-analysis of existing studies and surveys in Indian states between 2004 and 2024. Mukherjee et al. (2025).
[2] Chamcham et al., (2020); Ajmani et al., (2016); Hinduja et al., (2022); Sarma et al. (2019); Sundarakumar et al., (2021).
[3] Kaliya et al., (2022); Sowah et al., (2017); Gupta et al., (2021); Marwaha et al., (2011).

Figure 1: Vulnerable Groups and the Impact of Vitamin D Deficiency

Adolescents & Children 	**Prevalence:** About 46% of children (0–10 years) are prone to rickets due to Vitamin D deficiency (Reddy, 2020). **Impact:** Weak bones, stunted growth, bone deformities, delayed motor skills, dental issues, respiratory infections.
Pregnant Women & Lactating Mothers 	**Prevalence:** Around 61.9% of pregnant women are Vitamin D deficient (Nitish et al., 2024). **Impact:** Infertility, pre-eclampsia, gestational diabetes, Vitamin D deficient new-born, maternal muscle pain, depression.
Elderly 	**Prevalence:** Around 80 – 90% of older adults have osteoporosis due to Vitamin D deficiency (Mithal et al., 2013). In 2020, over 600,000 fracture cases were reported in India, a number projected to exceed one million by 2050 (Bhadada et al., 2021). **Impact:** Fractures, falls, sarcopenia, cognitive decline, infections, worsened comorbidities.

3. Reasons for the Deficiency

Despite abundant sunshine, increasing pollution, rapid urbanisation, use of sunscreen and modern indoor lifestyles are factors contributing to the rising prevalence of Vitamin D deficiency in India.

4. Impact of the Deficiency

Vitamin D deficiency poses a lifelong health risk with far-reaching consequences, including rickets in children, osteomalacia/osteoporosis in adults and poor foetal bone development during pregnancy. Studies have also highlighted the increased risk of a wide range of health conditions, including autoimmune disorders, cardiovascular diseases, type-2 diabetes, various cancers, respiratory infections and other emerging co-morbidities associated with Vitamin D deficiency.[4]

5. Cost of Treatment is High and the Government is Committed to Ayushman Bharat

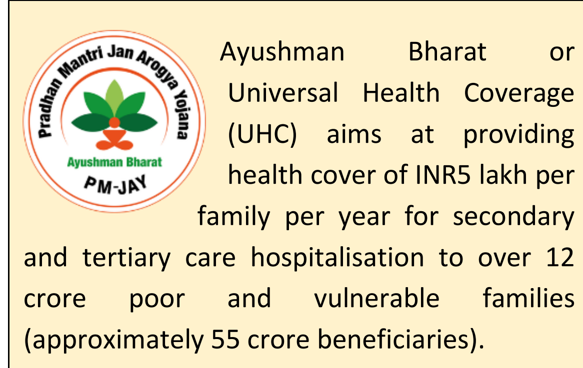
- The cost of Vitamin D supplements, such as Cholecalciferol (1000 IU), is regulated by the NPPA at INR4.31 per tablet. However, the overall expense increases significantly with the severity and duration of the deficiency. For example, prices can range from INR48 to INR130 for a pack of 10 tablets, and from INR2,000 to INR3,000 for a pack of 30 tablets of

[4] Kalra et al., (2025); Gupta et al., (2021); Marwaha et al., (2011).

Cholecalciferol (1000 IU). This cost escalation is partly due to the high GST of 18% and the exclusion of Ergocalciferol from price regulation.

- Treatment costs for Vitamin D deficiency related diseases are substantial. For example, a single hip fracture costs around US$772 (INR64,000) in public hospitals, with an average hospital stay of five days. [5]
- India's population aged over 50 is projected to increase by 416%, from 120 million in 2013 to 620 million in 2050, comprising one-third of the total population.[6] The burden of healthcare cost is expected to rise further.

The Ministry of Health and Family Welfare (MoHFW) is committed to Ayushman Bharat (providing universal health insurance coverage). Allocations under Ayushman Bharat were INR7,300 crore in FY 2024-25 while INR9,406 crore has been allocated for FY 2025-26.[7] However, Vitamin D deficiency and the diseases associated with it pose a significant burden on universal health coverage, not to mention the rising cost of treatment, which the healthcare system may not be able to handle.



Ayushman Bharat or Universal Health Coverage (UHC) aims at providing health cover of INR5 lakh per family per year for secondary and tertiary care hospitalisation to over 12 crore poor and vulnerable families (approximately 55 crore beneficiaries).

Proactive action can generate long-term savings and improved national productivity.

6. Time for MoHFW to Take Action

Ten steps by the MoHFW can help address the issue of Vitamin D deficiency:

6.1 Launch *"Vitamin D Kuposhan Mukt Bharat"* Campaign

MoHFW may launch the "Vitamin D Kuposhan Mukt Bharat" campaign to (a) build public awareness (b) bring together like-minded stakeholders and (c) mobilise resources from the private sector and international organisations to address Vitamin D deficiency. Learning from the success of campaigns like *Anaemia Mukt Bharat* (for details, see Box 1), it could serve as a national platform to co-ordinate efforts across multiple stakeholders and support implementation. It could also help bring in private sector resources like corporate social responsibility (CSR)

[5] International Osteoporosis Foundation (2013); https://www.osteoporosis.foundation/sites/iofbonehealth/files/2019-06/2013_Asia_Pacific_Audit_English.pdf (Last accessed on June 02, 2025).

[6] https://www.osteoporosis.foundation/sites/iofbonehealth/files/2019-06/2013_Asia_Pacific_Audit_English.pdf (Last accessed on June 02, 2025).

[7] https://www.indiabudget.gov.in/doc/eb/sbe46.pdf (Last accessed on May 30, 2025).

funding to the cause. Besides, it could serve as a co-ordination platform and promote year-round awareness of addressing Vitamin D deficiency through lifestyle changes, dietary guidance, community outreach, school-based interventions and social media platforms.

6.2 Constitute an Inter-ministerial Committee to Develop Targeted Action Plan for Different Ministries/Departments

The MoHFW may constitute an inter-ministerial committee with key representatives from central ministries such as the Ministry of Women & Child Development (MoWCD), Ministry of Education (MoE), Ministry of Food Processing and Industry (MoFPI), Ministry of Consumer Affairs, Food and Public Distribution (MoCAF&PD), Department of Pharmaceuticals (Ministry of Chemicals and Fertilisers), Ministry of AYUSH and Ministry of Finance (MoF), and state governments. Based on the report titled *"Roadmap to Address Vitamin D Deficiency in India"*, this committee can develop an action plan and set activities and targets for different ministries/departments at the centre and states, estimate fund requirements, scale up best practices/success stories and launch pilot projects (such as mass testing and/or targeted supplementation). The MoHFW should be the nodal ministry for this committee and responsble for monitoring the action plan. The successful framework of *Anaemia Mukt Bharat* (for details, see Box 1) can serve as a model to identify key interventions and institutional mechanisms.

Box 1: Key Takeaways from *Anaemia Mukt Bharat* (ANB) that, if Replicated, will Help Address Vitamin D Deficiency

Anaemia Mukt Bharat (AMB), launched in 2018 under the National Health Mission (NHM) by the MoHFW, aims to reduce the prevalence of anaemia by 3 percentage points per year among children, adolescents and women of reproductive age (15-49 years) between 2018 and 2022.

AMB is based on the 6x6x6 strategy, which targets six vulnerable groups through six key interventions and six institutional mechanisms to effectively reduce the prevalence of anaemia. It is implemented across the villages, blocks and districts of all states and union territories of India, using existing delivery platforms as outlined in the National Iron Plus Initiative (NIPI).

Key Features include the following:

a) Six Target Beneficiaries

1. Children (6-59 months)
2. Children (5-9 years)
3. Adolescents (10-19 years)
4. Women of reproductive age (15-49 years)
5. Pregnant women
6. Lactating mothers

b) **Six Core Interventions**

1. **Prophylactic Iron and Folic Acid (IFA) Supplementation:** Age-specific IFA supplementation is provided to all six target groups to prevent anaemia.
2. **Biannual Deworming:** Targeting children and adolescents to eliminate parasitic infections.
3. **Intensified Behaviour Change Communication (BCC):** Year-round campaigns promoting dietary diversity and iron-rich foods, and awareness of anaemia prevention through various platforms including social media, community outreach and school-based interventions.
4. **Anaemia Testing and Treatment:** Utilisation of digital hemoglobinometers for point-of-care testing, ensuring timely diagnosis and treatment.
5. **Provision of IFA-Fortified Foods:** Integration of iron and folic acid-fortified wheat flour, rice and double fortified salt (DFS) in schemes like the mid-day meal (MDM) scheme, Integrated Child Development Services (ICDS) and public distribution system (PDS).
6. **Addressing Non-Nutritional Causes:** Focused intervention in regions where malaria, hemoglobinopathies and fluorosis, which are significant contributors to anaemia, are endemic.

c) **Six Institutional Mechanisms**

1 **Inter-Ministerial Co-ordination**: Collaboration among ministries such as Health & Family Welfare, Women & Child Development, Education, Tribal Affairs, and Rural Development to streamline planning and implementation.

2 **Convergence with Other Ministries:** Integration with existing programmes like POSHAN Abhiyaan and the school health programme to streamline efforts.

3 **Strengthening Supply Chain and Logistics:** Ensuring uninterrupted availability of IFA supplements.

4 **Capacity Building:** Regular training for ASHAs, ANMs, anganwadi workers (AWWs), school teachers, and healthcare personnel to improve service delivery and counselling.

5 **Monitoring and Evaluation**: Use of *Anaemia Mukt Bharat* Dashboard to monitor indicators.

6 **Community Engagement**: Involvement of local bodies, NGOs and community leaders to foster awareness and participation at the grassroots level.

Source: https://www.nhm.gov.in/images/pdf/Nutrition/AMB-guidelines/Anaemia-Mukt-Bharat-Operational-Guidelines-FINAL.pdf; https://www.who.int/health-topics/anaemia#tab=tab_1; https://www.pib.gov.in/PressReleasePage.aspx?PRID=2122623 (Last accessed on May 26, 2025).

6.3 Set Uniform Guidelines for Assessment and Treatment

- *Standardised Methods for Assessing Deficiency:* There is no standardised method for assessing Vitamin D deficiency (see Table 1); different countries use different cut-off levels to define deficiency, insufficiency and sufficiency based on 25-hydroxyvitamin D [25(OH)D] levels. Under "*Vitamin D Kuposhan Mukt Bharat" Campaign,* MoHFW may adopt a single national standard for testing and defining Vitamin D deficiency, in co-ordination with the ICMR (Indian Council for Medical Research), specialist doctors[8] and others to avoid inconsistent identification and treatment.

Table 1: Examples of Select Countries Adopting Different Thresholds for Vitamin D Deficiency, Insufficiency and Sufficiency

	Organisations	Institute of Medicine (IOM), the USA	Endocrine Society, the USA	The Scientific Advisory Committee on Nutrition, the UK
Vitamin D Levels	Deficiency	Below 12 ng/ml (Below 30 nmol/litre)	Below 20 ng/ml (Below 50 nmol/litre)	Below 10 ng/ml (Below 25 nmol/litre)
	Insufficiency	Between 12-20 ng/ml (Between 30-50 nmol/litre)	Between 21-29 ng/ml (52.5-72.5 nmol/litre)	
	Sufficiency	Between 20-30 ng/ml (Between 50-75 nmol/litre)	Greater than 30 ng/ml (75 nmol/litre)	
Countries		Australia, Canada, Guatemala, Iraq, Ireland, Morocco, Oman,	Cambodia, Chile, Colombia, Mexico, Mongolia, Pakistan	Austria, Tajikistan, United Kingdom, Austria, Belgium, Malaysia, Thailand, Vietnam, West Bank and Gaza Strip

Source: Extracted and compiled by the authors[9]

- *Age-Specific Dosage Guidelines:* MoHFW should specify age-specific dosage for treatment of Vitamin D deficiency. While the ICMR-NIN (National Institute of Nutrition) provides nutrient requirements for Indians,[10] it does not specify doses for treating deficiency. As a result, patients with Vitamin D deficiency having the same symptoms may receive different treatments depending on the healthcare provider they consult.

[8] Including specialists in endocrinology, orthopaedics, obstetrics, gynaecology, paediatrics, geriatrics, etc.

[9] VNMIS, WHO database of 29 countries, https://platform.who.int/nutrition/micronutrients-database; Endocrine Society Clinical Practice Guideline, 2011 https://doi.org/10.1210/jc.2011-0385 and Institute of Medicine guidelines https://www.ncbi.nlm.nih.gov/books/NBK56056/?report=reader; SACN https://www.gov.uk/government/groups/scientific-advisory-committee-on-nutrition (Last accessed on May 30, 2025).

[10] https://drklbcollege.ac.in/wp-content/uploads/2020/03/DOC-20220614-WA0002_-1.pdf (Last accessed on June 02, 2025).

6.4 Use the "Survey for Assessment of Markers of Population Health, Activity, Diet, and Anthropometry" (SAMAPADA) for Targeted Interventions

The SAMPADA, conducted by ICMR – NIN, is India's first comprehensive survey to assess micronutrient deficiencies, including Vitamin D insufficiency (across all 36 states and union territories, with a sample size of 2.5 lakh and and a sub-sample of 30,000 for micronutrient analysis); the results will provide a strong evidence base for planning targeted interventions.

MoHFW may leverage SAMPADA data to identify high-risk districts and vulnerable groups for pilot projects focused on Vitamin D supplementation and fortification. Under the PM *Atmanirbhar Swasth Bharat Yojana* (PMASBY), such identified regions may also be prioritised for upgrading healthcare infrastructure, particularly in diagnostics and testing for nutritional deficiencies.

6.5 Create a Dashboard for *"Vitamin D Kuposhan Mukt Bharat"*

Once the "*Vitamin D Kuposhan Mukt Bharat"* campaign is launched, a centralised dashboard should be developed to track all activities related to Vitamin D testing, supplementation, treatment and outreach. This digital platform can used by central and state-level health officials to monitor progress, identify gaps and evaluate impact. Data reporting will enable evidence-based decisions and timely course corrections, and improve co-ordination.

6.6 Integrate Vitamin D Screening into Existing Health Programmes

Vitamin D testing may be added to *Anaemia Mukt Bharat* – blood samples collected to test for anaemia can also be used to test for Vitamin D Deficiency. This optimises resources, reduces costs, avoids duplicate procedures and improves patient comfort, especially for children and pregnant women. MoHFW may work with states to identify vulnerable districts and implement mass testing.

6.7 Make Vitamin D Supplements Affordable

- *Include D_2 in National List of Essential medicines (NLEM):* Around 30% of the Indian population is vegetarian; hence, Vitamin D_2 (ergocalciferol, plant-based-source of Vitamin D) may be included in the NLEM alongside Vitamin D_3 (cholecalciferol, which is animal-based). When D_2 is a part of NLEM, the National Pharmaceutical Pricing Authority (NPPA) will be able to regulate the price and make both supplements affordable.

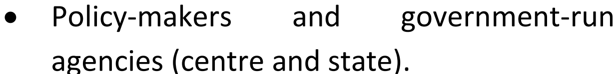
- *Work with the GST Council to Reduce GST from 18% to 12%:* India is a large producer of Vitamin D supplements. The MoHFW may work with the GST Council to reduce the GST from 18% to 12%, which will help make it more affordable.

6.8 Enhance Capacity Building and Training of Frontline Workers

Frontline workers such as accredited social health activists (ASHAs), auxiliary nurse midwives (ANMs), anganwadi workers (AWWs) and others may be trained on Vitamin D sources, deficiency symptoms, prevention strategies and referral systems. This will help strengthen community-level implementation and awareness.

6.9 Develop Multi-stakeholder Partnership for *"Vitamin D Kuposhan Mukt Bharat"*

Different stakeholders are working in a piecemeal manner in India to address Vitamin D deficiency. MoHFW may create a platform to bring together various stakeholders, including the following:



- Policy-makers and government-run agencies (centre and state).
- International organisations, such as the Global Alliance for Improved Nutrition (GAIN), the Gates Foundation, and others that have supported large-scale food fortification efforts in other countries (like Bangladesh and Nigeria).
- Think tanks, NGOs, research organisations, doctors, nutritionists, etc.

  This will help align and integrate ongoing efforts, launch pilots to raise resources for the cause and scale-up success stories.

6.10 Promote Research and Development (R&D) in Low-Cost Testing and Vitamin D Food Fortification

MoHFW may prioritise targeted R&D for development of low-cost testing kits, including self-testing kits (similar to those used to test diabetic patients), to improve early detection and accessibility.

R&D is required to fortify staples such as rice, flour, beverages and ready-to-eat foods. The **National Institute of Food Technology Entrepreneurship and Management** (NiFTEM) under the MoFPI is already working on Vitamin D food fortification and analysing the bioavailability, stability and absorption of different forms of Vitamin D (e.g., D_2 vs. D_3). Such efforts can be supported through targeted funding, innovation grants and public-private partnerships.

Overall, by utilising existing infrastructure, fostering multi-stakeholder collaboration, setting uniform guidelines for testing and treatment, and using national survey data for targeted interventions, the Ministry of Health and Family Welfare (MoHFW) can play a pivotal role in realising "*Vitamin D Kuposhan Mukt Bharat*".

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At the heart of ANVKA's mission is the promotion of innovative education that integrates the socio-political, economic, spiritual and aesthetic dimensions. The foundation advocates the re-education of relationships, challenging patriarchal norms and fostering mutual respect and dignity to build a more equitable society. ANVKA works to dismantle oppressive social structures, focusing on creating a future grounded in love, understanding and equality. Additionally, the foundation promotes environmental sustainability and livelihoods that are ecologically responsible and socially fair, recognizing the interconnectedness of all life and striving for harmony between humans and the environment. Their efforts also include promoting active citizenship by encouraging individuals to engage in participatory democracy and take an active role in shaping their communities.

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