



**Vitamin**  
Kuposhan Mukht Bharat



**ANVKA**  
Foundation

# ROADMAP TO ADDRESS VITAMIN D DEFICIENCY IN INDIA

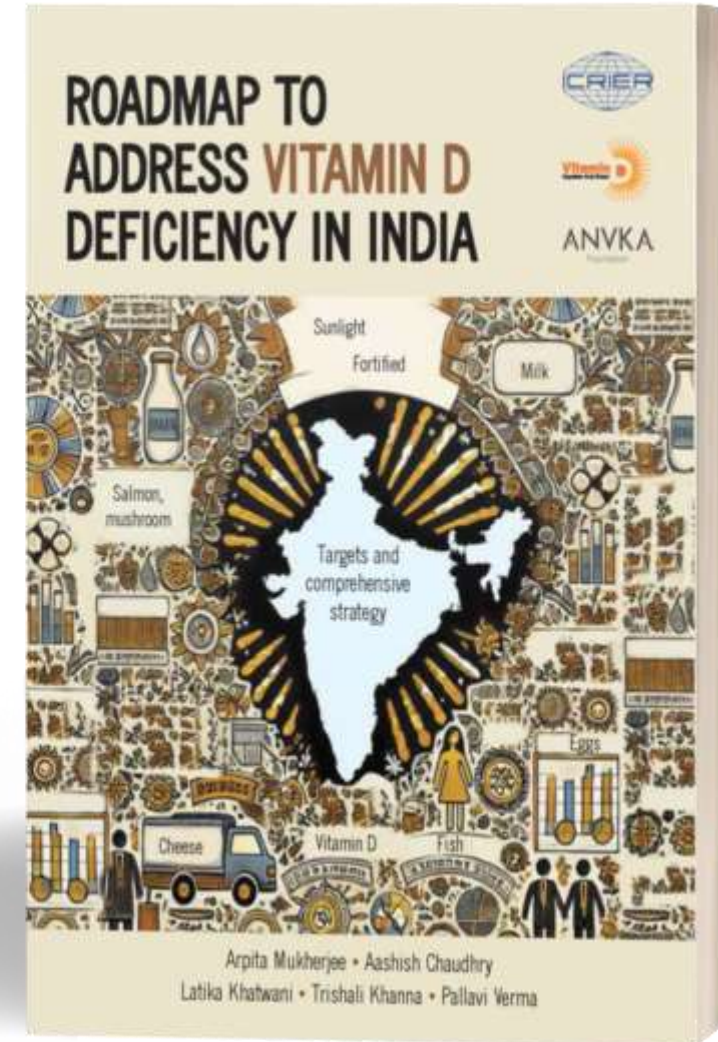
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by

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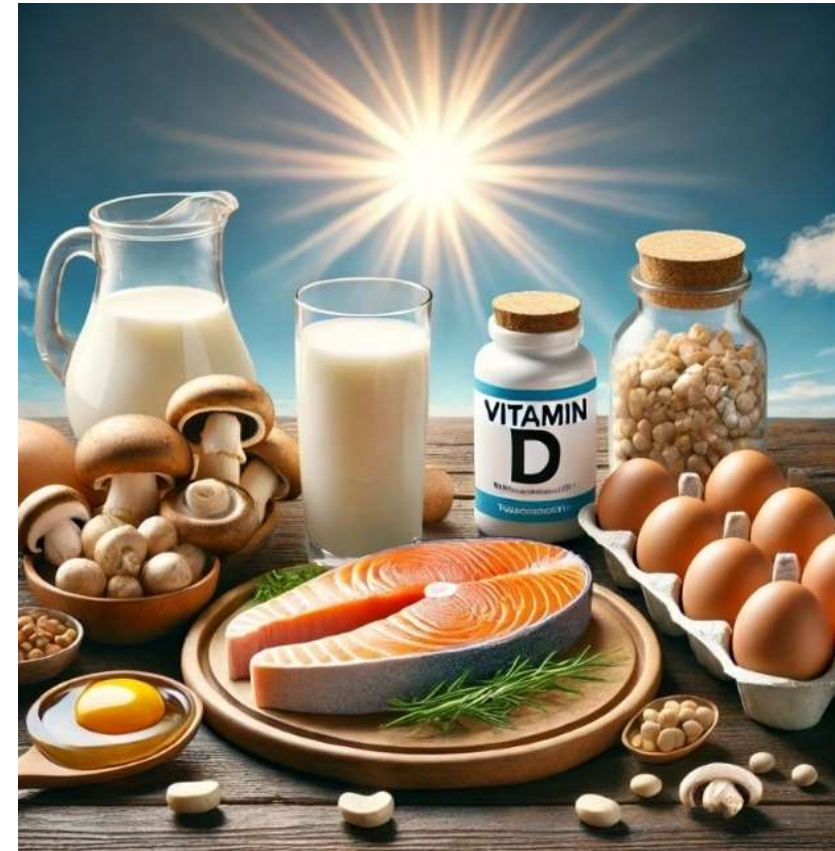
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# The Context

- India, with the world's largest population, suffers from widespread micronutrients deficiency.
- Among them, Vitamin D deficiency has emerged as a silent epidemic, impacting all sections of the population across age groups, irrespective of where they are located and what they do.
- The consequences are alarming.
- This deficiency threatens national productivity, reduces worker efficiency and is likely to significantly increase the healthcare expenditure. While the prevalence of the deficiency is well-known, there are limited efforts to address it as there is no comprehensive roadmap to address Vitamin D deficiency. This report aims to fill that lacuna.



Vitamin D, also known as the Sunshine Vitamin or Calciferol, exists in two forms: D<sub>2</sub> (Ergocalciferol) and D<sub>3</sub> (Cholecalciferol). It is primarily obtained through sun exposure, as well as from foods like fatty fish, eggs, mushrooms, beef liver, cheese, fortified products such as milk, margarine, yogurt, juices, and cereals and supplements.

# Objective

The objective of this report is to create a roadmap to eradicate Vitamin D deficiency and help India achieve the United Nations Sustainable Development Goals (UNSDGs) 2030, particularly SDG 3 of good health and well-being, and SDG 2.2, of eradicating all forms of malnutrition by 2030.

After examining the initiatives taken by international organisations, the best practices of other countries and a comprehensive review of literature on Vitamin D deficiency with a focus on its economic and health impact and the impact of policy interventions, this report presents an overview of the status of the deficiency in India. It then looks at the likely impact, identifies the reasons behind the deficiency, examines existing policies, and makes recommendations to address the deficiency so as to create a “*Vitamin D Kuposhan Mukh Bharat*”.

The report brings together the inputs of experts working in this area and seeks to initiate a dialogue among multiple stakeholders to collaborate and brainstorm on this issue.

# Layout

The report has 7 chapters:

1. Introduction
2. Reasons for, Prevalence of and Impact of Vitamin D Deficiency
3. Addressing Vitamin D Deficiency: Global Best Practices
4. Reasons, Status and Impact: Vitamin D Deficiency in India
5. An Overview of the Governance, Key Stakeholders, and Policy Framework in India
6. Challenges in Combating Vitamin D Deficiency in India
7. Recommendations and Way Forward

# Methodology

The report is based on secondary data and information analysis (qualitative and quantitative), systematic and meta-analysis of literature, key informant interviews (KIIs) and a stakeholder consultation.

# Key Findings of the Meta-Analysis

- 1 out of every 5 Indians is Vitamin D deficient.
- There is regional variation in the prevalence of Vitamin D deficiency, ranging from 9.4 per cent in North India to as high as 38.81 per cent in East India.
- Children, adolescents, pregnant women and the elderly are the most vulnerable to Vitamin D deficiency in India.
- Women across all age groups are more vulnerable than men.
- The indoor lifestyle of urban Indians is contributing to rising prevalence of Vitamin D deficiency.



# Reasons for Vitamin D Deficiency

- **Limited Sunlight Exposure:** Rising pollution levels block Ultraviolet B (UVB) rays, urbanisation reduces direct sunlight due to densely packed buildings, and modern indoor lifestyles minimises sun exposure. Extreme weather conditions further discourage outdoor activities.
- **Diet:** Majority of the Vitamin D rich food are non vegetarian and 30 per cent of the Indian population follows a vegetarian diet, limiting the access to Vitamin D rich diet. Additionally, these foods are often expensive, making regular consumption difficult.
- **Cultural and Social Practices:** Covering the entire body due to cultural norms, especially among women, limit skin exposure to UVB rays. A preference for fair skin leads to sun avoidance through umbrellas, sunscreen, and staying indoors.
- **Skin Pigmentation:** Higher melanin levels in Indian skin reduce the efficiency of Vitamin D synthesis, requiring three to six times longer sun exposure compared to lighter skin tones.

# What are International Organisations and other Countries Doing?

- The World Health Organization (WHO) and the Food and Agriculture Organization (FAO) issued the “Guidelines on Food Fortification with Micronutrients” in November 2006, providing a comprehensive framework for implementing and regulating food fortification programmes globally.
- The WHO’s Model List of Essential Medicines 2023 includes both forms of Vitamin D, ergocalciferol (Vitamin D2) and cholecalciferol (Vitamin D3).
- The United Nations Children’s Fund (UNICEF) issued a guidance note on “Large-scale Food Fortification for the Prevention of Micronutrient Deficiencies in Children, Women, and Communities”, in December 2023, which outlines potential Vitamin D food vehicles for large-scale fortification (LSFF).

## Select Examples of Country Level Initiatives

### Fortification

- Finland, Norway, Sweden, Canada, and the United States fortify milk, yoghurt, margarine and butter.
- Afghanistan, Yemen, Oman and Zimbabwe fortify edible oils.
- In the United States, fruit juices are fortified with Vitamin D, often alongside calcium.
- In Jordan, wheat flour is fortified with Vitamin D under National Wheat Flour Fortification in 2009.

### Targeted Supplementation

- The United Kingdom, in 2006, introduced the “Healthy Start” scheme, providing free Vitamin D supplements to pregnant women, new mothers and young children.
- Iran, in 2014, introduced the “National Program of Vitamin D Supplementation”, targeting children.
- Turkey, in 2005, introduced “Vitamin D Prophylaxis Program”, providing free Vitamin D supplements to all infants.
- New Zealand, in 2011, as a part of “National Falls Prevention Program”, provided free Vitamin D supplements for elderly (more than 60 years).

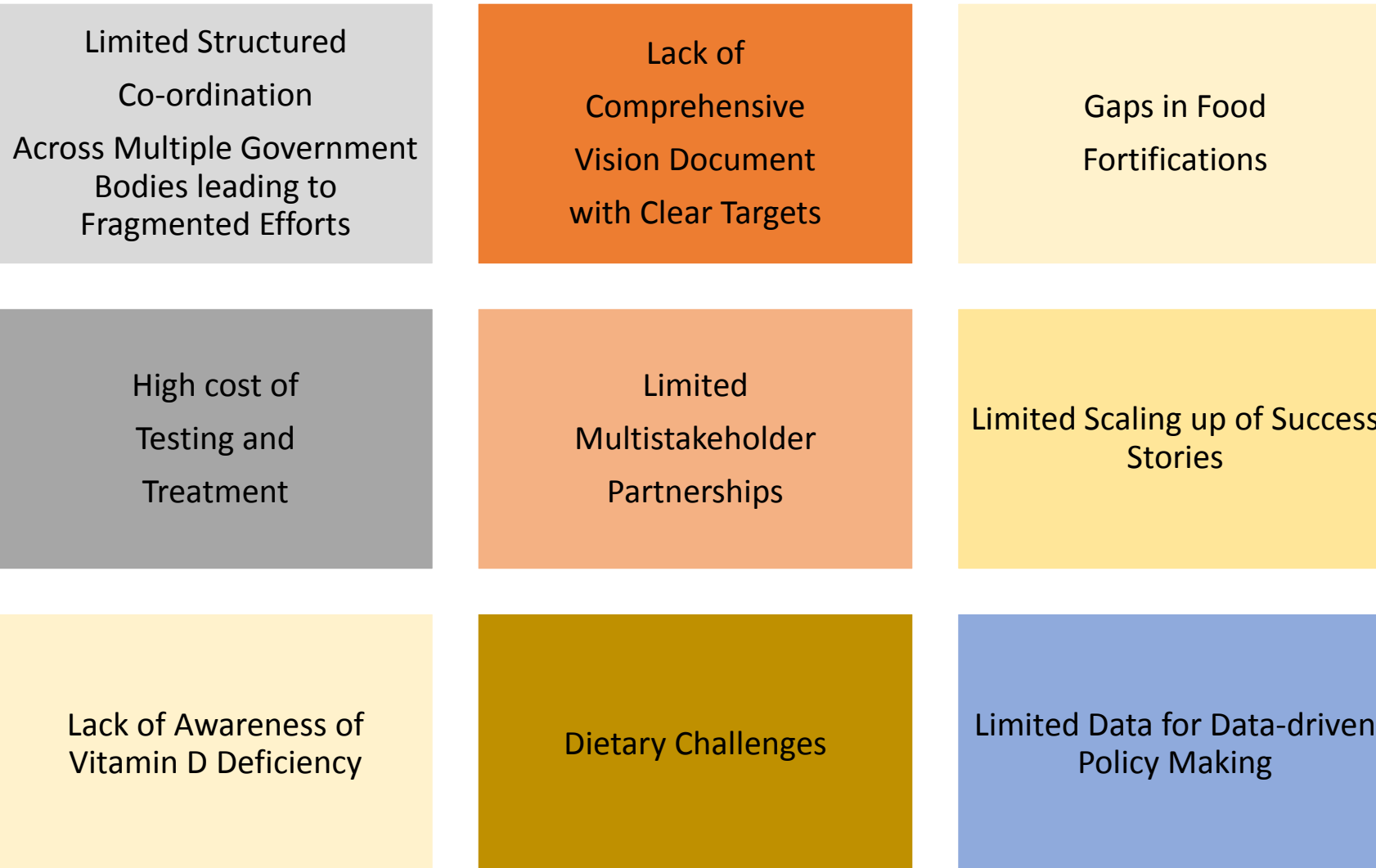
### Dietary Awareness

- Finland and Canada have launched dietary awareness programme, which includes making people aware of the various dietary sources of Vitamin D and encouraging the consumption of Vitamin D rich foods.

# What Has India Done So Far?

- The Food Safety and Standards Authority of India (FSSAI) allows voluntary fortification of milk and edible oil with plant-based sources of Vitamin D, with limits of 0.11–0.16 µg per gram for oil and 5–7.5 µg per litre for milk.
- Vitamin D<sub>3</sub> is included in the National List of Essential Medicine (NLEM) by the Ministry of Health and Family Welfare (MoHFW) which mandates the price regulation of the medicines by the National Pharmaceutical Pricing Authority (NPPA) to improve its affordability.
- The Indian Council of Medical Research–National Institute of Nutrition (ICMR-NIN) has published the “Nutrient Requirements for Indians” which provides the recommended dietary allowances (RDA) and estimated average requirements (EAR) of Vitamin D for children, adolescents, adults and pregnant/lactating women.
- ICMR-NIN have also published the “Dietary Guidelines for Indians” in 2024 which recommends 30 minutes of exposure to sunlight between 11:00-2:00 p.m. to maintain the Vitamin D status in the body. They are also conducting SAMPADA, a nationwide diet and biomarker survey which will provide the current status of micronutrient deficiency (including Vitamin D) in India by the end of 2025.

# Some Roadblocks in Addressing Vitamin D Deficiency in India



# Towards *Vitamin D Kuposhan Mukh Bharat*

Given the widespread prevalence of Vitamin D deficiency, no single policy or agency can solve this problem; hence, there is a need for multiple initiatives, partnerships and collaborations to drive the efforts towards “*Vitamin D Kuposhan Mukh Bharat*,”. As India navigates its way towards *Viksit Bharat* in 2047, a robust healthcare system becomes not just a necessity but the foundation for a healthier and more productive nation.

Enhance Inter-Ministerial Partnerships and Co-ordination

Develop a Comprehensive Vision Document

Launch a Nationwide “Vitamin D Kuposhan Mukh Bharat” Campaign

Bridge the Gaps in Food Fortification

Focus on Supplementation as a Targeted Intervention

Reduce the Cost of Treatment and Testing

Strengthen Funding and Research to Combat Vitamin D Deficiency

Strengthen the Data Infrastructure

Foster Multistakeholder Partnerships

# THANK YOU

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