



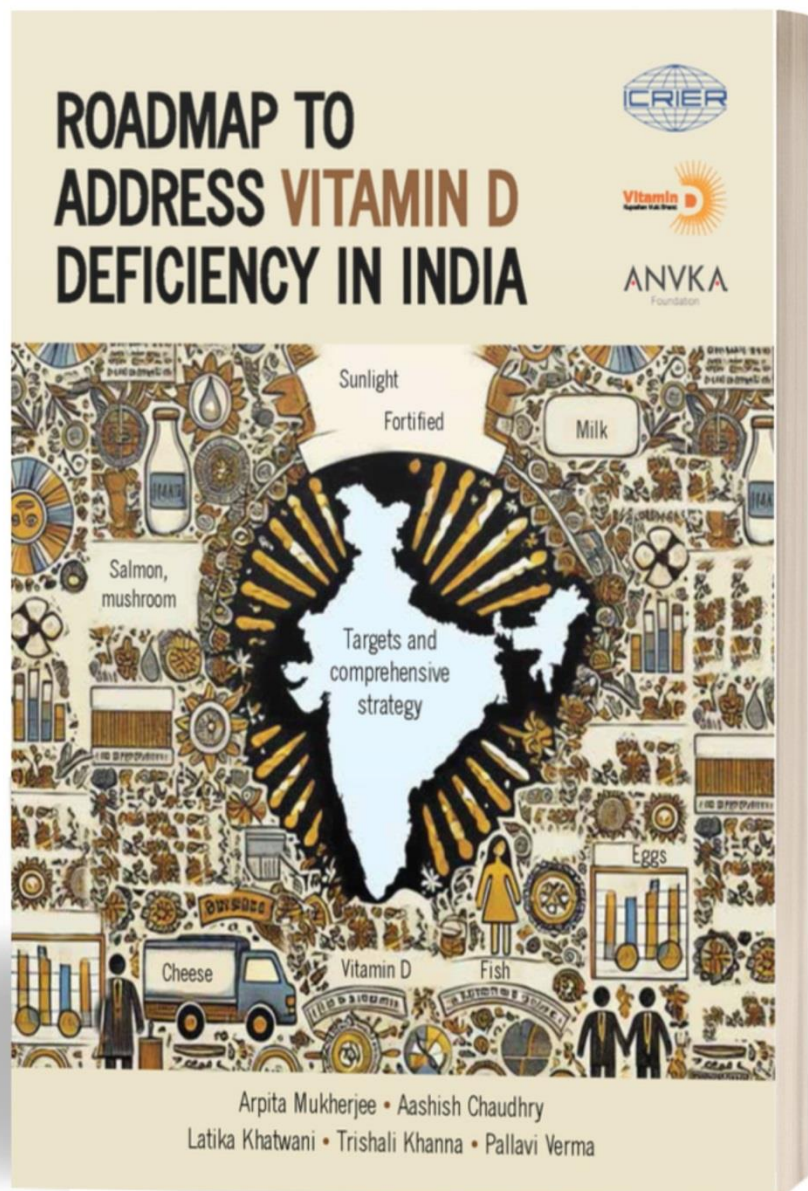
POLICY BRIEF #56

# Leveraging Schools to Address Vitamin D Deficiency among School Children: *Action Points for the Ministry of Education*

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## Table of Contents

Abstract .....	i
Acknowledgement.....	ii
List of Abbreviations.....	iii
<b>1. Bringing Health and Education Together to Address Vitamin D Deficiency in India.....</b>	<b>1</b>
<b>2. Factors Leading to Vitamin D Deficiency among Children and Adolescents in India.....</b>	<b>1</b>
<b>3. Schools Can be a Cost-effective and Efficient Platform to Address Vitamin D Deficiency among School Children – Best Practices from Other Countries .....</b>	<b>2</b>
<b>4. Leveraging School Meals to Address Vitamin D Deficiency in India: Insights from <i>PM POSHAN</i>.....</b>	<b>5</b>
<b>5. Strengthening the Efforts Taken by the Ministry of Education to Achieve the Goal of “<i>Vitamin D Kuposhan Mukh Bharat</i>” .....</b>	<b>7</b>
5.1 <i>Strengthening PM POSHAN – Enhancing School Nutrition through Fortification and Innovation .....</i>	<i>7</i>
5.2 <i>Making Sun Exposure a Part of the School Curriculum.....</i>	<i>8</i>
5.3 <i>Establishing a Micronutrients Board in Schools.....</i>	<i>8</i>
5.4 <i>Screening and Supplementation of Vitamin D in Schools .....</i>	<i>8</i>
5.5 <i>Identify the Most Vulnerable Groups and Implement Targeted Interventions to Address Vitamin D Deficiency .....</i>	<i>9</i>
5.6 <i>Build Awareness among Teachers and Students to Ensure “<i>Vitamin D Kuposhan Mukh Bharat</i>”.....</i>	<i>9</i>
5.7 <i>Promoting Behavioural Change through Social Media Campaigns.....</i>	<i>10</i>
<b>6. Conclusion .....</b>	<b>10</b>
References .....	11

## List of Tables

Table 1: Health Impact of Vitamin D Deficiency among Children and Adolescents.....	1
Table 2: Potential Food Vehicles and Their Fortifiable Micronutrients .....	3
Table 2: Impact of Vitamin D-Fortified Milk on Vitamin D levels, Growth and Bone Health in Beijing Girls .....	4
Table 3: Nutrition and Food Norms under the <i>PM POSHAN</i> .....	5

## List of Boxes

Box 1: Pradhan Mantri Poshan Shakti Nirman (PM POSHAN) .....	5
Box 2: School Health Programme (under Ayushman Bharat).....	9

## Abstract

Children are the foundation of India's future, and their health is inseparable from their ability to learn and succeed. Nearly 30% of India's population comprises children and adolescents, making their health, nutrition, and education central to the vision of *Viksit Bharat @2047*. However, this vision is under threat from widespread micronutrient deficiencies, particularly Vitamin D deficiency, which acts as a barrier to growth, learning and productivity. The ICRIER-ANVKA Foundation 2025 report, titled, "*Roadmap to Address Vitamin D Deficiency in India*" found that one in five Indians are Vitamin D deficient, with children and adolescents among the most vulnerable groups. Vitamin D deficiency among children can lead to rickets, stunting, weak bones, frequent respiratory infections and impaired cognitive performance, all of which undermine educational outcomes.

Globally, schools have been identified as one of the most cost-effective and sustainable platforms to address multiple micronutrient deficiencies, including Vitamin D deficiency, among children. Many countries such as Bangladesh, Iran, New Zealand, etc., have implemented large-scale fortification and supplementation programmes in schools.

In India, the Ministry of Education (MoE) has launched the *Pradhan Mantri Poshan Shakti Nirman (PM POSHAN)* scheme to improve the nutritional status of children. Under the scheme, the use of Vitamin D fortified milk and oil has been mandated by the Food Safety and Standards Authority of India (FSSAI). Despite these provisions, certain gaps remain. Current meals usually consists of cereals, pulses and vegetables, which are calorie-dense but low in micronutrients such as Vitamin D. Calorie targets require serving sizes that are often too large for children to finish in one sitting. Only five states provide Vitamin D-fortified oil, primarily due to limited supplier availability, while only eleven states provide fortified milk despite India being the world's largest milk producer with a substantial surplus.

To bridge these gaps, this policy brief offers seven key recommendations to strengthen the MoE's role in addressing Vitamin D deficiency. These include working with state education departments to ensure the availability of Vitamin D-rich and fortified foods in all schools, partnering with organisations such as GAIN, Tata Trusts and NDDDB to strengthen procurement and distribution of fortified foods, diversifying school meals to include foods that are rich in Vitamin D, relaunching "*Project Dhoop*" to promote safe sun exposure in schools, integrating screening and supplementation of Vitamin D in school health services, identifying the most vulnerable schools and regions to implement targeted interventions and building awareness among teachers and students to address Vitamin D deficiency in India.

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## **List of Abbreviations**

CDSCO	Central Drugs Standard Control Organisation
CNNS	Comprehensive National Nutrition Survey
FSSAI	Food Safety and Standards Authority of India
GAIN	Global Alliance for Improved Nutrition
HRQL	Health-Related Quality of Life
ICER	Incremental Cost-Effectiveness Ratio
ICMR-NIN	Indian Council of Medical Research – National Institute of Nutrition
MoA	Ministry of AYUSH
MoE	Ministry of Education
MoFPI	Ministry of Food Processing Industries
MoHFW	Ministry of Health and Family Welfare
NIFTEM	National Institute of Food Technology, Entrepreneurship and Management
NPPA	National Pharmaceutical Pricing Authority
PCOS	Polycystic Ovary Syndrome
PHFI	Public Health Foundation of India
PM POSHAN	Pradhan Mantri Poshan Shakti Nirman
PT	Physical Training
QALY	Quality-Adjusted Life Year
SAMPADA	Survey for Assessment of Markers of Population Health Activity, Diet and Anthropometry
STC	Special Training Centre
UNWFP	United Nation World Food Programme
UVB	Ultraviolet B Rays

## Leveraging Schools to Address Vitamin D Deficiency among School Children: *Action Points for the Ministry of Education*

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### 1. Bringing Health and Education Together to Address Vitamin D Deficiency in India

India, with a population of 1.46 billion, is home to nearly 0.44 billion (nearly 30%) children and adolescents (under 18 years).<sup>1</sup> Ensuring their health, nutrition, and education is central to realising the vision of *Viksit Bharat @2047*. Yet, this vision is under serious threat due to the widespread burden of micronutrient deficiencies, particularly Vitamin D deficiency, among children which acts as a barrier to their growth, learning and future productivity.

According to the ICRIER–ANVKA Foundation 2025 report, one in five Indians are Vitamin D deficient,<sup>2</sup> with children and adolescents being the most vulnerable group. The data from the Comprehensive National Nutrition Survey (CNNS, 2016-18) shows that 14% of pre-schoolers, 18% of school-age children and 24% of adolescents are Vitamin D deficient. Such widespread deficiency can have serious health consequences among children, including rickets, weak bones and skeletal deformities (for details, see Table 1).

**Table 1: Health Impact of Vitamin D Deficiency among Children and Adolescents**

Health Indicator	Impact of Vitamin D Deficiency
Skeletal Health	Rickets, weak bones, bone deformities, dental problems.
Growth & Development	Stunting, wasting, delayed motor abilities
Cognitive Learning	Fatigue, poor concentration, neurodevelopmental issues, depression
Immunity	Frequent respiratory infections
Long-term Risks	Osteoporosis, chronic pain, higher risk of diabetes and cardiovascular diseases.

Source: Khadilkar et al. (2022), Kapil et al. (2017), Basu et al. (2015).

The risks extend beyond childhood; for example, Vitamin D deficiency is linked to hormonal imbalances [Polycystic Ovary Syndrome (PCOS)], menstrual irregularities and reproductive health issues among adolescent girls.<sup>3</sup>

### 2. Factors Leading to Vitamin D Deficiency among Children and Adolescents in India

Various studies on school children in India have identified several factors that have led to widespread Vitamin D deficiency. These are the following:

<sup>1</sup> <https://data.unicef.org/how-many/how-many-children-under-18-are-there-in-india/> (Last accessed on August 26, 2025).

<sup>2</sup> Mukherjee et al., (2025).

<sup>3</sup> Rana et al. (2023).

- **Limited Sun Exposure:** A survey of 3,127 school children in Delhi, aged between 6 and 18 years, found that limited sun exposure was one of the key factors contributing to the prevalence of Vitamin D deficiency (Puri et al., 2008). Despite abundant sunlight in India, most children and adolescents have inadequate exposure to the sun. This is due to (a) long hours spend indoors at school wearing uniforms that cover most of their body, (b) limited time devoted to outdoor activities and (c) increased screen time for learning and recreational purposes (Marwaha et al., 2005; Puri et al., 2018; Mustafa et al., 2021). Additionally, increasing pollution levels in cities blocks ultraviolet B (UVB) rays, making it even more difficult for the body to synthesise Vitamin D (Agarwal et al. 2002).
- **Dietary Factors:** Most dietary sources of Vitamin D are non-vegetarian, like salmon, cod liver oil and eggs. These foods are expensive and not part of the regular Indian diet. About 43% of the Indian children are vegetarian and their staple diet primarily includes cereals, rice and pulses (which are low in Vitamin D), this further contributes to the deficiency (CNNS, 2019).
- **Maternal Deficiency:** Maternal Vitamin D deficiency during pregnancy or lactation directly lowers placental transfer and breast milk content, increasing the risk of deficiency in children from birth (Ajmani et al., 2015).
- **Increased Requirements during Growth and Adolescence:** As a child grows, the body's requirement of Vitamin D increases substantially to support rapid bone growth, making them more vulnerable to Vitamin D deficiency (Marwaha et al., 2005). Mustafa et al., (2021) found that this is more prevalent in adolescent girls – as they are nearly four times more likely to be Vitamin D deficient than boys.

### 3. Schools Can be a Cost-effective and Efficient Platform to Address Vitamin D Deficiency among School Children – Best Practices from Other Countries

Vitamin D deficiency is a global public health challenge. Schools provide a practical and scalable platform to combat Vitamin D deficiency among school children. By aligning education with health and nutrition policies, many countries have successfully implemented measures ranging from fortifying school meals to launching supplementation programmes and building awareness to address multiple micronutrients deficiency, including Vitamin D deficiency.

Schools are the primary platform for reaching school-age children and adolescents with essential nutrition interventions.

- UNICEF 2023

International organisations such as the World Health Organization (WHO), the Food and Agriculture Organization (FAO) and the United Nations International Children's Fund (UNICEF) recommend large-scale food fortification programmes to address multiple micronutrient deficiencies. For example, UNICEF's 2023 guidelines on *“Large-scale Food Fortification for Prevention of Micronutrient Deficiencies in Children, Women and Communities”*, recommends

wheat flour, maize flour, rice, oil and milk as appropriate vehicles for multiple micronutrients fortification, including Vitamin D (see Table 2).

**Table 2: Potential Food Vehicles and Their Fortifiable Micronutrients**

Food Vehicle	Vitamins and Minerals (Fortificant) that can be Added
<b>Wheat Flour</b>	Iron, Zinc, Selenium, Vitamins A, D, B <sub>1</sub> (Thiamine), B <sub>2</sub> (Riboflavin), B <sub>3</sub> (Niacin), B <sub>6</sub> (Pyridoxine), B <sub>9</sub> (Folate or Folic Acid) and B <sub>12</sub> (Cobalamin).
<b>Maize Flour</b>	Iron, Zinc, Vitamins A, D, B <sub>1</sub> (Thiamine), B <sub>2</sub> (Riboflavin), B <sub>3</sub> (Niacin), B <sub>6</sub> (Pyridoxine), B <sub>9</sub> (Folate or Folic Acid) and B <sub>12</sub> (Cobalamin).
<b>Rice</b>	Iron, Zinc, Selenium, Vitamins A, D, B <sub>1</sub> (Thiamine), B <sub>2</sub> (Riboflavin), B <sub>3</sub> (Niacin), B <sub>6</sub> (Pyridoxine), B <sub>9</sub> (Folate or Folic Acid) and B <sub>12</sub> (Cobalamin).
<b>Salt</b>	Iodine and, under special cases, fluoride, iron and folic acid.
<b>Oil</b>	Vitamins A, D and E.
<b>Milk</b>	Vitamins A, D, Iron and Folic Acid.

Source: UNICEF (2023).

Country-level studies highlight the positive impact of school meal programmes in reducing Vitamin D deficiency through Vitamin D fortified food. For example, in 2004, New Zealand launched “Project Energize”<sup>4</sup> to increase children's physical activity, improve nutrition and enhance their overall health. In this programme, primary school children were provided milk fortified with Vitamin D (60 IU per 300 mL). Graham et al. (2008) found that children (aged 7-8 years) who consumed fortified milk had around 5.8 nmol/L (2.3 ng/mL) higher Vitamin D levels than those in a control group who did not consume it.

In 2011, Bangladesh, with the support of the European Union (EU), introduced a school-based micronutrient fortification programme under which daily packets of 75g of biscuits fortified with essential micronutrients, including Vitamin D, were provided to children in rural primary schools. Adams et al., (2017) found that the programme had a significant positive impact on increasing mean levels of Vitamin D. Mean serum 25-hydroxyvitamin D [25(OH)D] levels increased 1.1 times. Fortified biscuits served as an effective vehicle for improving Vitamin D levels, as teachers and caregivers reported improved attentiveness, energy levels and classroom engagement among students.

In a two-year school-based trial in Beijing, 757 schoolgirls aged 10 years were divided into three groups. Group 1 received 330 mL of milk daily fortified with calcium; Group 2 received 330 mL of milk fortified with calcium and Vitamin D (3.33 µg/day) and Group 3 received no milk. After 24 months, girls receiving Vitamin D fortified milk had plasma 25(OH)D levels of 47.6 nmol/l, more than double that of the other groups. The trial also improved the growth and bone health of the children who consumed Vitamin D fortified milk. The girls grew about 1.2 cm taller, gained approximately 1.8–3.7 kg more weight, and showed a 2.4% greater increase in size-adjusted bone mineral content compared with girls who received milk with only calcium (see Table 2 for details).

<sup>4</sup> <https://cyhrc.aut.ac.nz/our-research/energize-project> (Last accessed on September 11, 2025).

**Table 2: Impact of Vitamin D-Fortified Milk on Vitamin D levels, Growth and Bone Health in Beijing Girls**

Outcome	Group 1	Group 2	Group 3
	Milk and Calcium only	Milk, Calcium and Vitamin D	No Milk
Daily milk intake	330 ml	330 ml	–
Vitamin D intake	–	3.33 µg/day	–
Plasma 25(OH)D (nmol/l)	17.9	47.6	19.4
Height after 2 years (m)	1.538	1.541	1.529
Weight after 2 years (kg)	45.5	45.3	43.5
Vitamin D deficiency rate at 24 months	19.6%	4.1%	16.0%

Source: Du et al., (2004)

In Morocco, Benjeddou et al. (2018) found that daily consumption of 200mL of multi-vitamin fortified milk (providing 120 IU of Vitamin D<sub>3</sub>, 4.2 mg of iron, 45 µg of iodine, and 800 IU of Vitamin A) among schoolchildren, aged 7–9 years reduced the prevalence of Vitamin D deficiency from 49.4% to 11.8% over nine months.

In 2014, in Iran, the Ministry of Health and Medical Education launched a national school-based Vitamin D supplementation programme, providing 50,000 IU per month for adolescents (11–18 years).<sup>5</sup> According to Jasemi et al. (2023), the cost per student ranged from USD 0.50 to USD 0.72, and the incremental cost-effectiveness ratio (ICER)<sup>6</sup> was approximately USD 1,528 per quality-adjusted life year (QALY)<sup>7</sup> gained.

In addition to fortification and supplementation, some countries have developed nutrition guidelines to reinforce healthy eating habits in schools. For example, in Finland, in 2017, the Finnish National Nutrition Council issued the “*Eating and Learning Together*” guidelines for school meals, focusing on balanced nutrition, encouraging the inclusion of fortified foods (such as dairy products fortified with Vitamin D), and integrating nutrition education at different levels of schooling.<sup>8</sup>

Thus, a combination of food fortification, supplementation and awareness building offers a cost-effective and scalable strategy to address Vitamin D deficiency among school children.

<sup>5</sup> Aghapour et al. (2023).

<sup>6</sup> ICER (Incremental Cost-Effectiveness Ratio) is used to compare the relative costs and outcomes (effects) of different interventions. It is calculated as the difference in cost between two possible interventions, divided by the difference in their effect.

<sup>7</sup> QALYs measure both the quantity and quality of life lived. One QALY equals one year of life in perfect health. It is calculated by multiplying the number of additional years of life by the health-related quality of life (HRQL) score, which ranges from 0 (equivalent to death) to 1 (perfect health). QALYs are useful for comparing different types of health interventions – for example, one that extends life but with side effects, and another that improves the quality of life without increasing lifespan.

<sup>8</sup> THL, (2017); Raulio et al., (2016).

#### 4. Leveraging School Meals to Address Vitamin D Deficiency in India: Insights from *PM POSHAN*

The *Pradhan Mantri Poshan Shakti Nirman (PM POSHAN)* is the flagship scheme of the Ministry of Education (MoE), which aims to improve the nutritional status of school-age children by bridging the protein and energy gap (for details see Box 1). The Food Safety and Standards Authority of India [under the *Food Safety and Standards (Fortification of Food) Regulation, 2018*]<sup>9</sup> endeavours to advise and promote the inclusion of Vitamin D fortified milk and edible oil in government-funded programmes of food distribution, such as PM POSHAN. According to the regulation, fortified milk, if given, must contain 5 to 7.5 µg of Vitamin D per litre (equivalent to about 200–300 IU per litre), while fortified edible oil must contain 0.11–0.16 µg of Vitamin D per gram (about 11–16 µg per 100 g).

##### Box 1: Pradhan Mantri Poshan Shakti Nirman (PM POSHAN)

Launched on March 08, 2018, the *PM POSHAN* scheme, also known as the mid-day meal scheme, is a centrally sponsored programme, implemented in partnership with the states and union territories (UTs). Under this scheme, one hot cooked nutritious meal is provided to all children studying in *Bal Vatika* (pre-primary class before Class I) and Classes I to VIII of government and government-aided schools.

The scheme covers nearly 11.8 crore children across 11.2 lakh schools. Its budget allocation increased from ₹12,467.39 crore in FY 2024-25 to ₹1,25,000 crore for FY 2025-26. The Food Corporation of India (FCI) is responsible for supplying food grains of the best available quality, meeting the prescribed fair average quality (FAQ) standards.

**Table 3: Nutrition and Food Norms under the *PM POSHAN***

S. No.	Items	Primary (before class I)	Upper Primary (between class I to VIII)
<b>A. Nutrition norm per child per day</b>			
1.	Calories	450	700
2.	Protein	12 gm	20 gm
<b>B. Food norms per child per day</b>			
1.	Food grains	100 gm	150 gm
2.	Pulses	20 gm	30 gm
3.	Vegetables	50 gm	75 gm
4.	Oil & fat	5 gm	7.5 gm
5.	Salt & condiments	As per need	As per need

Source:

[https://dse.education.gov.in/sites/default/files/schemes\\_guidelines/Guidelines\\_PM%20POSHAN\\_SCHEME.pdf](https://dse.education.gov.in/sites/default/files/schemes_guidelines/Guidelines_PM%20POSHAN_SCHEME.pdf);

<https://www.pib.gov.in/Pressreleaseshare.aspx?PRID=1812421#:~:text=The%20Government%20has%20approved%20the,by%20the%20Ministry%20of%20Education.> (Last accessed on September 11, 2025).

<sup>9</sup> [https://www.fssai.gov.in/upload/uploadfiles/files/Gazette\\_Notification\\_Food\\_Fortification\\_10\\_08\\_2018.p df](https://www.fssai.gov.in/upload/uploadfiles/files/Gazette_Notification_Food_Fortification_10_08_2018.p df) (Last accessed September 11, 2025).

When the mid-day meal scheme was first introduced, its primary aim was clear – to fight hunger and malnutrition. At that time, India was grappling with widespread undernutrition and school meals were designed to ensure that children received at least one hot, nutritious meal a day. The calorie benchmark then was modest and set at around 300 calories per child. Over the years, as the programme expanded, the calorific provision has been revised upwards. In 2013, it was increased to 450 calories for primary school children and 700 calories for upper primary students. This made sense when these meals were often a substitute for what children missed at home. However, the situation in India has fundamentally changed – the country has become largely food-secure. The fight is no longer hunger but the twin challenges of overnutrition, rising obesity and persistent micronutrient deficiencies, often referred to as hidden hunger. For most children today, school meals are no longer their only source of food but a supplement to what they already consume at home.

At present, to meet calorie targets, the meals usually comprise cereals, pulses and vegetables. However, the serving sizes to fulfil the calorie targets are too large for children to finish, and these foods, while calorie-dense, are low in essential micronutrients like Vitamin D. This underscores the need to not only revisit the calorie targets but also diversify the food offered. Eggs, which are natural sources of Vitamin D and protein, are already included in some school meals, but their coverage remains limited. Only 17 States and UTs, such as Andhra Pradesh, Tamil Nadu and Assam, provide eggs to school children (World Food Programme, 2024). This is despite India being the second-largest egg producer globally.

While the FSSAI mandates the use of Vitamin D-fortified edible oil for cooking, its uptake in PM POSHAN has declined over time. In 2017, as many as 14<sup>10</sup> states and union territories – Andhra Pradesh, Goa, Haryana, Karnataka, Madhya Pradesh, Maharashtra, Nagaland, Tamil Nadu, Uttar Pradesh, Andaman & Nicobar Islands, Dadra & Nagar Haveli, Daman & Diu, and Delhi – were distributing fortified oil. By 2024, however, this number had dropped sharply, with only 5 states continuing its use.<sup>11</sup> During KIIs, it was noted that many states are unable to find suppliers of Vitamin D-fortified oil, which could partly explain this low uptake. A similar gap exists in milk fortification: only 11 states and union territories (UTs), including Chhattisgarh, Uttar Pradesh, and Karnataka, provide Vitamin D-fortified milk (World Food Programme, 2024). This is despite India being the largest milk producer in the world with a huge surplus.

Thus, while PM POSHAN has made significant strides in addressing hunger, there is a pressing need to shift the focus towards tackling micronutrient deficiencies among school children by diversifying the food provided in school meals.

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<sup>10</sup> <https://sansad.in/getFile/loksabhaquestions/annex/171/AU2448.pdf?source=pgals> (Last accessed on September 25, 2025).

<sup>11</sup> <https://documents1.worldbank.org/curated/en/099041224184540055/pdf/P17869113518c10a718069136ea8f15e424.pdf?utm> (Last accessed on September 25, 2025).

## **5. Strengthening the Efforts Taken by the Ministry of Education to Achieve the Goal of “Vitamin D Kuposhan Mukh Bharat”**

The MoE can play a vital role in addressing Vitamin D deficiency among school children in seven key ways:

### **5.1 Strengthening PM POSHAN – Enhancing School Nutrition through Fortification and Innovation**

Since education comes under the ‘Concurrent List’, the responsibility is shared by both the centre and states. Therefore, the Ministry of Education can work with state education departments to ensure the provision of Vitamin D-fortified milk and edible oil across all states. This is highly feasible given that India is the world’s largest milk producer with substantial surplus. Existing initiatives such as the National Dairy Development Board’s (NDDB) *GiftMilk* programme funded through corporate social responsibility (CSR) funds – where 200 ml of fortified flavoured milk (with Vitamins A and D) is distributed to government school children aged 5–15 years on all school working days through dairy cooperatives – can be scaled up and integrated with PM POSHAN. The provision of fortified milk has been shown to significantly reduce Vitamin D deficiency among school children. For instance, in 2012, a study conducted in Delhi by Khadgawat et al. (2013) on healthy school children aged 10–14 years found that providing 200 mL of milk fortified with 600 IU of Vitamin D<sub>3</sub> daily for 12 weeks increased mean serum 25(OH)D levels from 11.42 ng/mL to 22.87 ng/ml. Before the intervention, 95% of the children were Vitamin D deficient; this fell to only 30% post-intervention.

The MoE may partner with organisations such as the UNICEF, Gates Foundation, GAIN, Tata Trusts, Akshaya Patra, the National Dairy Development Board (NDDB) and others to strengthen procurement and distribution systems, address supply-chain constraints and ensure the consistent, year-round availability of Vitamin D fortified foods across all states, especially in the case of fortified oil.

Considering that dietary patterns vary widely across Indian states, the MoE may work with FSSAI to extend fortification beyond milk and oil to staples such as wheat, maize, rice, etc., aligning with UNICEF’s 2023 guideline, global best practices and the dietary pattern in India. In addition to staples, innovative products that children commonly enjoy – such as biscuits and ladoos – can also be fortified with Vitamin D and included in school snacks, if given. This approach not only diversifies the food basket under PM POSHAN but also provides a child-friendly means of meeting both calorie and micronutrient requirements. For instance, in Bangladesh, giving children 75 g of fortified biscuits increased their Vitamin D levels by 1.1 times. Evidence from India also demonstrates the effectiveness of such interventions: for instance, a study conducted in Pune found that underprivileged children (aged 1–5 years) who consumed a laddoo fortified with 30,000 IU of Vitamin D<sub>3</sub> monthly for 12 months experienced an increase in mean serum 25(OH)D levels from 10 ng/mL to 25.7 ng/mL (Ekbote et al., 2011).

Given that these may be high in salt, sugar or fat, it is essential control both their composition and portion sizes given to children. A holistic approach to diet planning – tailored to local food habits and designed in consultation with doctors, nutritionists, and other experts – can ensure that fortified foods improve micronutrient intake without contributing to unhealthy dietary patterns.

Lastly, as school meals serve as a supplement to home diets in many regions, the MoE could consider customising calorie norms based on local needs. While the current targets may be maintained in food-insecure areas, such as aspirational districts, they could be adjusted downward in regions where children receive adequate nutrition at home.

## **5.2 Making Sun Exposure a Part of the School Curriculum**

Integrating safe sun exposure into the school curriculum and raising awareness among children about sunlight as a natural source of Vitamin D can play a key role in addressing deficiency. The ICMR–NIN Dietary Guidelines for Indians (2024) recommend approximately 30 minutes of daily sun exposure, preferably between 11:00 a.m. and 2:00 p.m.<sup>12</sup> This aligns with Project Dhoop, a campaign led by the FSSAI in partnership with National Council of Educational Research and Training (NCERT), New Delhi Municipal Corporation (NDMC), and North Municipal Corporation of Delhi (MCD) schools, which encouraged shifting school assemblies to midday to increase sunlight exposure.<sup>13</sup> The Ministry of Education could relaunch this initiative nationwide, linking it with school assemblies and physical training (PT) periods as a cost-effective strategy to improve Vitamin D status among children. Additionally, the Ministry of AYUSH could support this effort by promoting yoga practices such as *Surya Namaskar*, reinforcing the benefits of sunlight exposure and overall healthy living.

## **5.3 Establishing a Micronutrients Board in Schools**

In an effort to combat rising sugar consumption among students, the Central Board of Secondary Education (CBSE) under MoE has directed all affiliated schools to establish “Sugar Boards” – a dedicated initiative to monitor and educate students about the risks of excessive sugar intake. Building on this model, the MoE may establish a “Micronutrients Board” in schools to track the intake of essential micronutrients, including Vitamin D, and raise awareness among children about the importance of adequate micronutrient consumption for overall health.

## **5.4 Screening and Supplementation of Vitamin D in Schools**

The MoE can work with the Ministry of Health and Family Welfare (MoHFW) to strengthen the implementation of the School Health Programme under *Ayushman Bharat* (for details see Box 2), to ensure regular Vitamin D screening and timely supplementation, similar to the weekly iron and folic acid supplementation (WIFS) programme.

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<sup>12</sup> [https://nin.res.in/dietaryguidelines/pdfs/locale/DGI\\_2024.pdf](https://nin.res.in/dietaryguidelines/pdfs/locale/DGI_2024.pdf) (Last accessed on September 25, 2025).

<sup>13</sup> [https://fssai.gov.in/upload/media/5b447a9292065FSSAI\\_News\\_Project\\_Dhoop\\_Suryaa\\_10\\_04\\_2018.pdf](https://fssai.gov.in/upload/media/5b447a9292065FSSAI_News_Project_Dhoop_Suryaa_10_04_2018.pdf) (Last accessed on September 21, 2025).

### **Box 2: School Health Programme (under Ayushman Bharat)**

Launched in April 2018 by the Ministry of Education (MoE) and the Ministry of Health and Family Welfare (MoHFW), the School Health Programme promotes preventive healthcare among children aged 6–18 years in government and aided schools. The programme provides weekly health education, screening for 30 health conditions (including Vitamin D deficiency), micronutrient supplementation, yoga sessions and referral services for free treatment while also maintaining a digital health record for each student.

Source:

[https://nhm.gov.in/New\\_Updates\\_2018/NHM\\_Components/RMNCHA/AH/guidelines/Operational\\_guidelines\\_on\\_School\\_Health\\_Programme\\_under\\_Ayushman\\_Bharat.pdf](https://nhm.gov.in/New_Updates_2018/NHM_Components/RMNCHA/AH/guidelines/Operational_guidelines_on_School_Health_Programme_under_Ayushman_Bharat.pdf) (Last accessed on August 13,2025).

### **5.5 Identify the Most Vulnerable Groups and Implement Targeted Interventions to Address Vitamin D Deficiency**

Vitamin D deficiency may vary widely across regions and schools, so it is essential to identify children and adolescents that are most vulnerable. In this context, the Survey for Assessment of Markers of Population Health Activity, Diet and Anthropometry (SAMPADA)<sup>14</sup> may be used by the MoE to implement targeted school-based interventions to address Vitamin D deficiency. These may include routine screening, timely supplementation, promotion of Vitamin D-rich and fortified foods, and awareness building, ensuring a comprehensive approach to addressing the deficiency.

### **5.6 Build Awareness among Teachers and Students to Ensure “Vitamin D Kuposhan Mukta Bharat”**

In order to help every school build daily habits that help in preventing and addressing Vitamin D deficiency, the MoE can work with schools to develop a comprehensive manual for teachers, parents and students. This manual can provide:

- Timing and benefit of sun exposure for parents and children.
- Guidance in planning school meals that contain Vitamin D-rich and fortified foods.
- Clear instructions for incorporating safe sun exposure into school routines, by asking schools to schedule outdoor assemblies or physical training (PT) periods between 11 a.m. and 2 p.m. (in line with ICMR–NIN guidelines).<sup>15</sup>
- Simple checklists to help teachers and parents spot likely signs of Vitamin D deficiency (such as low academic performance, poor concentration, frequent fatigue, bone or

<sup>14</sup> SAMPADA survey, conducted by ICMR–NIN, is India’s first large-scale diet and biomarker survey, covering 36 states and union territories, with a sample size of 2.5 lakh (including a subsample of 30,000 for micronutrient deficiency), providing the current status of micronutrient deficiencies, including Vitamin D.

<sup>15</sup> <https://www.nin.res.in/dietaryguidelines/pdfs/locale/DGI07052024P.pdf> (Last accessed on August 13,2025).

muscle pain, and respiratory infections) among school children. When these signs are observed, teachers may inform their parents and advise a medical check-up.

The manual can be made available in local languages and on digital platforms for wider reach. In addition to this, Infographics in the form of posters, leaflets, short videos, etc., can be developed to make the content more engaging.

### **5.7 Promoting Behavioural Change through Social Media Campaigns**

Given that adolescents are highly active on social media platforms, the MoE may launch a nationwide social media campaign to promote awareness about the importance of safe sun exposure and consuming Vitamin D rich and fortified foods for maintaining adequate Vitamin D levels. Engaging content—such as short videos, student challenges, interactive quizzes, and collaborations with youth influencers—can be used to effectively reach and motivate this age group. This campaign can be implemented in partnership with the FSSAI, UNICEF and other organisations to ensure consistent messaging and wider outreach across schools and communities.

## **6. Conclusion**

By building awareness, providing Vitamin D rich and fortified food, regular screening and supplementation, and promoting safe sun exposure practices within schools, the Ministry of Education can shape healthier futures for India's children and contribute to the realisation of the vision of "*Vitamin D Kuposhan Mukh Bharat*".

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