



## Vitamin D Deficiency in India

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### Why in News

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Researchers have claimed that **vitamin D deficiency can negatively affect Covid-19 high-risk patients**, particularly those who are diabetic, have heart conditions, pneumonia, obesity and those who smoke.

It is also associated with **infections** in the **respiratory tract** and **lung injury**.

### Key Points

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- India has a large population suffering from vitamin D deficiency among the public **irrespective of their location (urban or rural), age or gender, or whether they are poor or even rich.**

This is **despite India being a tropical nation** getting abundant sunshine, which is a precursor to Vitamin D formation in the body.

- According to an analysis published in the Indian Journal of Endocrinology and Metabolism in 2017, the level of vitamin D in people from different states of India ranged between 3.15 nanogram/millilitre to 52.9 ng/ml, which was **considerably lower than the needed level of 30-100 ng/ml.**
  - Vitamin D level among south Indians is 15.74–19.16 ng/ml.
  - **Females showed consistently lower levels** than males.
- Vitamin D deficiency also occurs **among people of the Indian sub-continental origin settled in Great Britain.**

This suggests a **correlation between genetics of people of this region** and Vitamin D metabolism.

- According to data by the **National Nutrition Monitoring Bureau (NNMB)** over the last 50 years, the **calcium levels** in average Indian populations has plummeted from **700 units per day to 300-400**.
  - The normal, needed level of Calcium is **800-1,000 units per day. Vitamin D helps in absorption of Calcium by the body.**
  - The body needs calcium to **maintain strong bones**. It is also needed for **muscles to move** and **for nerves to carry messages** between the brain and every body part.
  - It also helps **release hormones and enzymes** that affect almost every function in the human body.
  - This deficiency of Calcium stands in contrast to the fact that India **produces the maximum amount of milk per day** in the world which is a **rich source of calcium**.

## Vitamin D

- Vitamin D is a **fat-soluble vitamin** which is **naturally present in very few foods** like fatty fish, and fish liver oils, beef liver, cheese, and egg yolks.
- It is also **produced endogenously** when **ultraviolet rays from sunlight strike the skin** and trigger vitamin D synthesis.
  - The sunlight triggers a chemical reaction to a cholesterol-based molecule, and converts it into **calcidiol in the liver** and **into calcitriol in the kidney**.
  - These molecules technically called **25-OHD are physiologically active**.
- **Role:**
  - Vitamin D **maintains** adequate **calcium and phosphate concentrations in blood**. It **prevents weakening of bones**.
  - Vitamin D has other roles in the body, including **cell growth, neuromuscular and immune function, and reduction of inflammation**.
- **Required Amount**

The level of **25-OHD** in the range **30-100 ng/ml** is thought to be **sufficient** for a healthy body; levels between 21-29 ng/ml are considered insufficient, and levels below 20 ng/ml mean the individual is deficient in the vitamin.
- **Effects of Deficiency:**
  - **Rickets** in children and **osteomalacia** (softening of bones) in adults.
  - **Bones can become thin, brittle, or misshapen (Effects of deficiency)**.
  - Vitamin D deficiency can cause **rickets** in children and **osteomalacia** in adults.
  - Bones can become thin, brittle, or misshapen (osteoporosis) Vitamin D.

## Nutrition in India

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- A major chunk of the population in India suffers from **hidden hunger** and **malnutrition** and **nutrition deficiencies**.

Hidden hunger occurs when the quality of food people eat does not meet their nutrient requirements, so the food is deficient in micronutrients such as the vitamins and minerals that they need for their growth and development.

- Over 80% adolescents in India suffer from **hidden hunger** according to UNICEF's report, 'Adolescents, Diets and Nutrition: Growing Well in a Changing World, 2019'.

In India, **63% of children below 5 years in urban areas (72% in rural areas) are found to be anaemic and 55% of women and 24% of men are found to be anaemic.**

- The production, procurement and distribution system for food in India has still not been able to address the **food security issues in India**.

For example, the **food being provided to the poor (Pradhan Mantri Garib Kalyan Yojana)** during Covid contains pulses and cereals but **lacks vegetables – raw or cooked.**

- **The balanced diet is still unaffordable for many Indians.**

As per **FAO's State of Food Security and Nutrition in the World 2020**, a **nutrient-adequate meal** costs **Rs. 25 per meal**, and a 'healthy diet' about **Rs. 100 per day**.

## Government Initiatives

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- **Mid-day meal scheme** has helped in combating nutrition deficiencies in poor school-going children.
- The feeding programmes for preschool children and pregnant women under the **Integrated Child Development Services** through anganwadis have been vital.
- The government is trying to ensure the food requirement of the poor section of society through the **National Food Security Act (NFSA)** and the Public Distribution System (PDS).
- **POSHAN Abhiyaan**, launched in 2017-18, aims to reduce stunting, under-nutrition, anaemia and low birth weight babies through synergy and convergence among different programmes, better monitoring and improved community mobilisation.
- **Biofortification** i.e improvement of the nutritional quality of food crops through agronomic practices, conventional plant breeding, or modern biotechnology is being promoted by the government for various crops like carrots (**Madhuban Gajar**), wheat (**MACS 4028**) etc. in order to ensure nutritional security.

## Suggestions

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- The Central and State governments need to **consult nutrition experts and institutions** to advise and suggest the type of nutritive items that can be added to the current 'ration' food given to the poor, and the meals given to school children.  
The **meals given to the poor or children should include vegetables** like spinach and other green leafy vegetables, beans, peas, carrots, tomato, potato, milk/curd and fruits like bananas, and omega 3 and 6 fatty acids (and an egg).
- Besides vitamin D and calcium, **food rich in other micronutrients** (such as B complex vitamins, plus Fe, Zn, I, Se, Zn) should be offered to the poor, so that **immunity against any infection is ensured**.  
Such an addition takes care of what is called '**hidden hunger**' in poorly nourished people.
- The government can **mass supply free-of-charge vitamin D, other vitamins and calcium**, in consultation with medical and public health experts to the public.  
Many indian pharmaceutical companies manufacture these. Procuring these supplements from indian companies will fall in line with the '**Make in India**' initiative of the government.
- The consumption of **Seaweed** can be very beneficial. Seaweeds are **vegetarian, and rich in vitamins, minerals, iodine and omega 3 fatty acids**. As India has a **long coastline**, these can be affordable **nutritional supplements** for Indians.
- Schools can have their **students stand in sunlight** for 20-30 minutes daily, and encourage physical exercise and games for an hour per day.
- Further, it is important to **raise awareness** about the importance of healthy eating and nutritional requirements of the human body.

## Way Forward

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Only when we ensure a healthy populace, we can imagine **developing immunity to battle a pandemic like Covid-19**. Dealing with Vitamin D and Calcium deficiency is the foremost step in meeting the **Sustainable Development Goals** of ending Hunger (SDG-2) and ensuring good health and well-being for all (SDG-3).

**Source: TH**