

## COVID-19: FUELLING THE HIDDEN HUNGER IN A RAVENOUS WORLD (A REVIEW PAPER)

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### Abstract

'Hidden hunger' or micronutrient deficiency is a term used to describe human deficiencies of key vitamins and minerals. COVID-19 pandemic that has spread rapidly and extensively around the world since late 2019 has profound implications for food security and nutrition. It has threatened India's food security landscape across all four indicators: availability, access, stability, and utilisation of resources. It could in turn further intensify the existing problem of malnutrition among women and children. COVID-19 pandemic and the subsequent lockdown has put almost 115 million children at the risk of malnutrition. The present paper is based on secondary data, with a focus on the most significant micronutrient deficiencies – iodine, Fe, vitamin A, Zinc, folate and Vitamin-B-12, vitamin-D – and interprets these in terms of health, analysis the prevalence of micronutrient status of globally and in India during the Covid-19 period. Also recommended some suggestion to prevent micronutrient deficiencies.

**Key words:- Hidden hunger, vitamins, mineral**

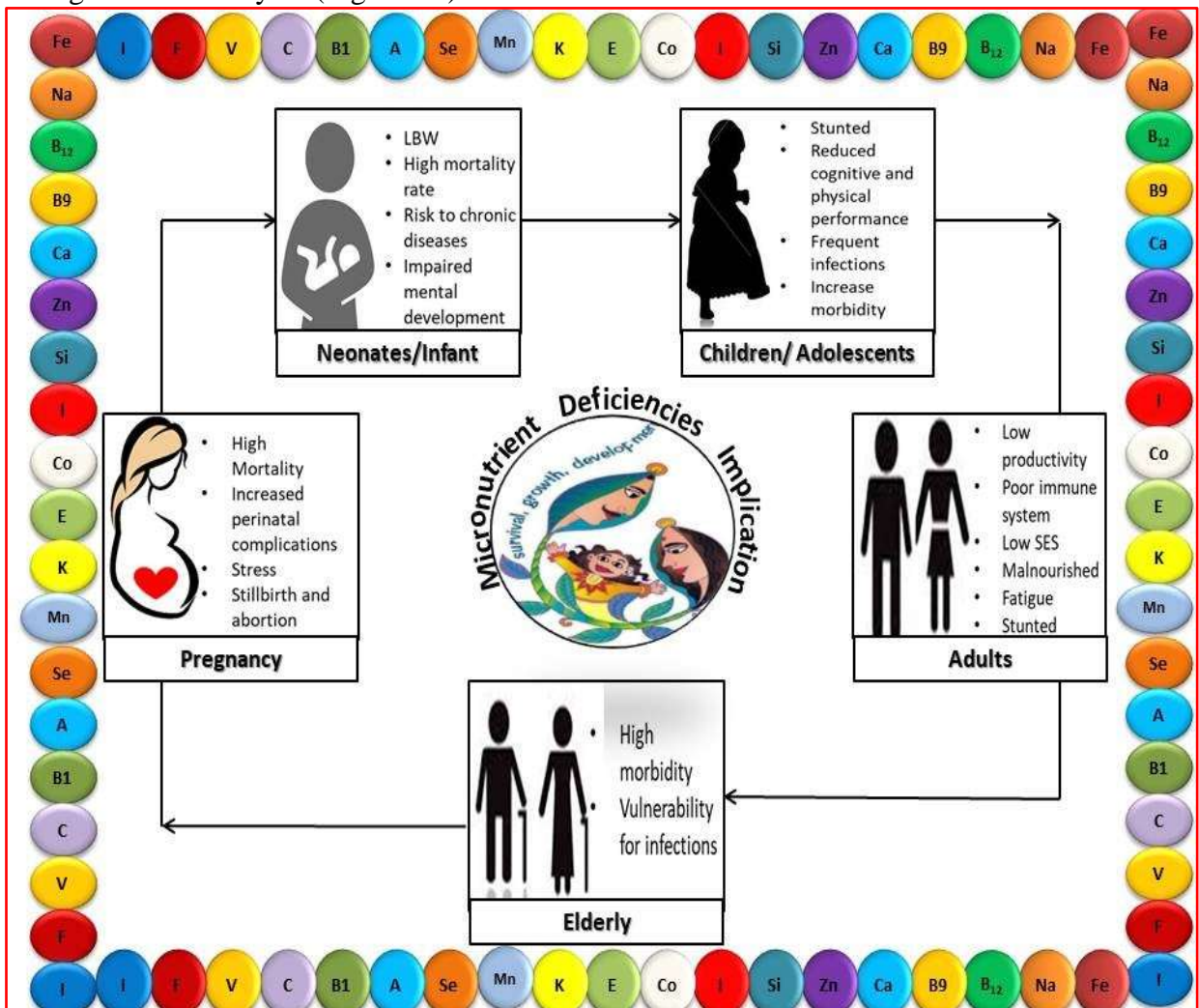
### Introduction:-

**Micronutrient deficiency** (also known as hidden **hunger**): a form of undernutrition that occurs when intake or absorption of vitamins and minerals (such as zinc, iodine, and iron) are too low to sustain good health and development in children and normal physical and mental function in adults. Worldwide, about 800 million people are chronically hungry, meaning that they are undernourished in terms of calories (FAO et al., 2017). More than 2 billion people are affected by hidden hunger, meaning that they suffer from micronutrient deficiencies (WHO, 2006). Factors that contribute to micronutrient deficiencies include poor diet, increased micronutrient needs during certain life stages, such as pregnancy and lactation, and health problems such as diseases, infections, or parasites. Its effects can be devastating, leading to mental impairment, poor health, low productivity, and even death. Its adverse effects on child health and survival are particularly acute, especially within the first 1,000 days of a child's life, from conception to the age of two, resulting in serious physical and cognitive consequences. Even mild to moderate deficiencies can affect a person's well-being and development. In addition to affecting human health, hidden hunger can curtail socioeconomic development, particularly in low- and middle-income countries. In India, over 80 per cent adolescents suffer from hidden hunger, according to UNICEF's 2019 report 'Adolescents, Diets and Nutrition: Growing Well in a Changing World'. There is a higher incident of adolescent girls suffering from micronutrient deficiency in comparison to boys of the same age

### **consequences of micronutrient deficiency throughout the lifecycle: -**

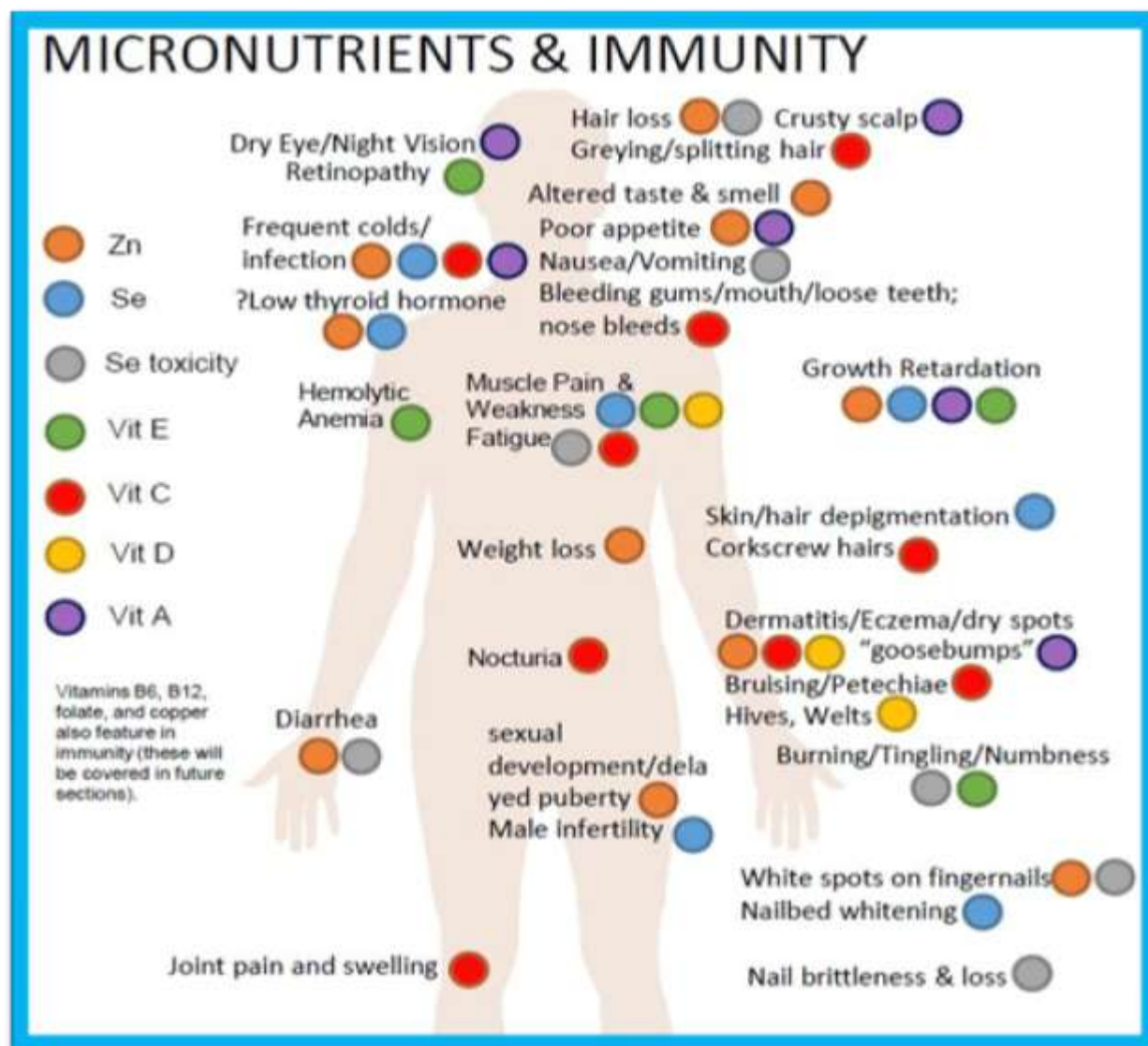
Malnutrition refers to the deficiencies, excesses or imbalances in an individual's intake of energy and/or nutrients. Presently, malnutrition remains the world's major public health problem. Over-nutrition (overweight and obesity), under-nutrition, and micronutrient or hidden hungry (vitamins and minerals) deficiencies are different forms of malnutrition that influence people across the globe. But pregnant women, children, and adolescents are often

cited as populations affected the most by hidden hunger, it impairs the health of people throughout the life cycle (Figure: -1).



Source: -Ms. Surabhi Singh (SIU JRF)

The above figure shows that **Maternal** nutritional status directly influences the **child's** nutritional status and poses intergenerational effects (fig 1). The mother with poor nutritional status gives birth to a low birthweight baby who grows up as an undernourished child with poor nutrient stores to meet the higher demands of growth and development, and later an unhealthy adolescent with chronic undernutrition. Further, as an **adult woman** with poor nutritional status she enters gestation less prepared physiologically, which leads to poor pregnancy and birth outcomes. Maternal and child micronutrients deficiency (MND)'s causes stunted growth, cognitive delays, weakened immunity, unacceptable high morbidity and mortality in children, especially under 5 years of age. (Singh Surabhi, 2020) Micronutrient deficiency during **adolescents** causes decrease in growth spurt for physical as well as mental health and performance, finally effecting the economic development of nation. An adult with MND's displays less working capacity, low productivity and low socio-economic status. Adequate micronutrients intake is important in elderly population as MND's poses risk to high morbidities, mortality and many age-related disorders such as cardiovascular diseases, cancers, diabetes, coeliac disease, immune dysfunction and Alzheimer's disease. Thus, prevention of micronutrient deficiencies is key to its successful management at all stages of life cycle and major contribution to reduce the burden of diseases globally. (Singh Surabhi, 2020)

**Micronutrient deficiencies: -**

**FIG:2**  
**Causes of Vitamin and Mineral Deficiencies**

Poor diet is a common source of hidden hunger. Diet based on staple foods such as rice, dal, maize, wheat, rice and cassava which provide a large share of energy but relatively low of vitamins and minerals which is frequently result in Hidden hunger. Intake of food depends on various factors include environmental, cultural, economic and seasonal factors. The victim of hidden hunger may not understand of a balance or nutritious diet. Also, they are not able to afford or access a wide range of nutritious foods such as animals -sources food like meat, fish, and dietary. Including all these factors poverty, food prices rise is a major factor that limits access to adequate nutritious foods that tend to be richer in micronutrients such as

**Iodine Deficiency Disorder (IDD), Goitre.**

Functional consequences are: -Permanent brain damage (Cretinism, -mental retardation and deaf mutism), reproductive failure and decreased child survival. Milder deficiency also adversely affects mental development. Parental deficiency of iodine is one of the most common causes of preventable brain damage in the world. It is recommended that iodine intake for adults should be 150 microgram a day; 220 micrograms per day in pregnantwomen and 290 micrograms a day in a lactating woman. (Gousia Gani et.al 2020)

Past surveys have shown that there is no state in India which is free from iodine deficiency disorder (IDD). Out of the 167 million people at risk of IDD, 54 million suffer from goitre and two million from cretinism. IDD is associated with many thyroid-related diseases like hypothyroidism, hyperthyroidism, goitre and cretinism. The government of India in 1962 launched a salt iodisation programme as National Goitre Control Program to replace ordinary salt with iodised salt, particularly in the goitre endemic regions. In 2005, universal salt iodisation was made mandatory in the country. However, only 71 per cent of households were consuming iodized salt in adequate amount, according to the results of the coverage evaluation survey conducted in 2009. This is mainly because of non-availability in the rural areas, poverty, poor knowledge of iodine deficiency diseases and faulty storage practices. (Down to earth 2021)

#### **Vitamin A Deficiency (VAD)**

The first symptoms of vitamin -A deficiency (VAD) is night blindness and Bitot spots on the white of the eye. Severe vitamin A deficiency leads to keratomalacia (ulceration and sloughing of the cornea) and total blindness. Though keratomalacia is no longer a public health problem, night blindness is prevalent particularly in pregnant mothers and subclinical deficiency (low Serum levels of Vitamin A), is still encountered. In addition to the ocular manifestations, vitamin A deficiency has been shown to cause growth retardation, decreased resistance to infections, and even death..(Gousia Gani et.al 2020)

#### **B-Complex Deficiencies**

Though there is marked dietary, biochemical and clinical evidence of riboflavin (vitamin B<sub>2</sub>) deficiency (metabolically a very important vitamin), it has not received adequate attention because its deficiency is neither a killer nor acrippler. Impaired psychomotor performance in school children and adults and impaired reproduction in animals associated with riboflavin deficiency has been reported. There is evidence of dietary and biochemical folic acid deficiency in India. It can cause megaloblastic anaemia due to impaired red cell maturation..(Gousia Gani et.al 2020)

#### **Folic acid deficiency**

It has also been implicated in congenital malformation (neural tube defects), Folic acid supplementation in early pregnancy or even pre-pregnant state has been shown to prevent it. Folic acid deficiency leads to raised levels of serum homocysteine – an independent risk factor for cardiovascular disease (CVD). Fragmentary evidence suggests that Indians do tend to have high levels of homocysteine which responds to treatment with folic acid. Till recently, vitamin B<sub>12</sub> deficiency was not considered to be a problem in India since its daily requirement is only 1 microgram. However, reports of vitamin B<sub>12</sub> deficiency in developing countries like India and its link with homocysteine anaemia, besides megaloblastic anaemia, have started appearing. Both folic acid and B<sub>12</sub>, besides vitamin B<sub>6</sub> and B<sub>2</sub> are required for homocysteine metabolism. In view of the rising incidence of CVD in India, B- complex vitamin deficiency needs to be taken more seriously and its link with homocysteine anaemia and CVD needs to be investigated. Research is also needed to examine the role and dosage of folic acid for prevention of neural tube defects- which are not uncommon in India. A balance of folic acid with vitamin B<sub>12</sub> has to be ensured. (Gousia Gani et.al 2020)

#### **Vitamin D Deficiency**

Main function of vitamin D is in bone calcification by facilitating calcium absorption and maintaining blood calcium levels. Since generation of vitamin D in the skin from its precursor 7-dehydrocholesterol is through exposure of skin to sunlight, adequacy of vitamin D in a tropical country like India was assumed. However, recent studies suggest

existence of vitamin D deficiency in all age groups in India. As mentioned earlier, osteoporosis associated with calcium and vitamin D deficiency is common in post-menopausal women. Low levels of vitamin D are also associated with chronic diseases like certain malignancies, and chronic inflammatory and autoimmune diseases like type 1 diabetes, and impaired resistance to infections. Gousia Gani et.al 2020)

### **Vitamin C Deficiency**

Vitamin C is a powerful antioxidant. Dietary vitamin C deficiency does exist, but severe clinical manifestation (scurvy) has become rare. Vitamin C is an iron absorption promoter and hence its deficiency can contribute to IDA. Antioxidants delay degenerative diseases. Gousia Gani et.al 2020)

### **Zinc Deficiency**

Zinc is essential for growth and development. Zinc supplementation has been reported to help linear growth, reduce severity and duration, of diarrhoeas, and respiratory infections and reduce child mortality. Large scale interventions through fortification, dietary diversification, biofortification, and supplementation of micronutrients to circumvent the devastating consequences of micronutrient deficiencies are showing a great progress by reducing the number of morbidity and mortality attributed to them. (Gousia Gani et.al 2020)

### **Review of literature**

According to Global Hunger Index following challenges of Hidden Hunger has been found from different case studies

It is difficult to describe the magnitude of deficits for most micronutrients. For many micronutrient deficits, prevalence data are scarce. Scientists have not reached a consensus on standard recommended intakes for many of the 19 micronutrients that directly influence physical and mental development and the immune system (Biesalski 2013)

The nutritional status of women around the time of conception and during pregnancy has long-term effects for fetal growth and development. Nearly 18 million babies are born with brain damage due to iodine deficiency each year. Severe anaemia contributes to the death of 50,000 women in childbirth each year. In addition, iron deficiency saps the energy of 40 percent of women in the developing world (UNSCN 2005; Micronutrient Initiative 2014).

Micronutrient deficiencies cause an estimated 1.1 million of the 3.1 million child deaths that occur each year as a result of undernutrition (Black et al. 2013; Black et al. 2008)

Vitamin A and zinc deficiencies adversely affect child health and survival by weakening the immune system. Lack of zinc impairs growth and can lead to stunting in children. Iodine and iron deficits prevent children from reaching their physical and intellectual potential (Allen 2001)

Women and children have greater needs for micronutrients (Darnton-Hill et al. 2005).

Interventions to fight hidden hunger and improve nutrition outcomes generally focus on women, infants, and young children. By targeting these populations, interventions achieve high rates of return by improving health, nutritional status, and cognition later in life (Hoddinott et al. 2013).

Low intakes of other essential micronutrients, such as calcium, vitamin D, and B vitamins, such as folate are also common (Allen et al. 2006).

### **Global hunger Index: -**

According to the Food and agriculture Organisation (FAO), “the Covid-19 pandemic may add between 83 and 132 million people to the total number of undernourished in the world in 2020.” As per the Global Hunger Index (GHI) calculated each year on the basis of four indicators (undernourishment, undernutrition, child wasting and child stunting) to assess progress and setback in combating hunger.

India has been ranked at 94 among 107 countries in the Global Hunger Index (GHI) 2020, lower than neighbour such as Bangladesh (75) and Pakistan (88). Globally, nearly 690 million people are undernourished which warns that Covid-19 pandemic could have affected the progress made on reducing hunger and poverty. “The world is nit track to achieve the second sustainable Development Goal – known as Zero Hunger for short-by2030.

#### **Niti Aayog report on National nutrition mission**

Launched in 2018, it is the Government of India's flagship programme to improve nutritional outcomes for children, pregnant women and lactating mothers. It is backed by a National Nutrition Strategy prepared by the NITI Aayog with the goal of attaining “Kuposhan Mukh Bharat” or malnutrition-free India, **by 2022**. But due to the pandemic situation is expected to down further

#### **Status of Micronutrient malnutrition: -**

Hidden hunger, or micronutrient deficiencies, occurs **when the quality of food that people eat does not meet their nutrient requirements**, so they are not getting the essential vitamins and minerals they need for their growth and development. It affects two billion people across the globe. Vitamins and minerals, known as micronutrients, are nutrients needed by our body for optimal function and often required in only small amounts. These micronutrients are not produced in the body and thus must be obtained from our food (CDC, 2020). Micronutrient deficiencies can have devastating outcomes. At least half of children globally under 5 experience vitamin and mineral deficiencies (UNICEF, 2020) and globally 2 million people suffer ‘hidden hunger’. Micronutrient deficiency is often referred to as ‘hidden hunger’ because they develop slowly over time and their impact is often invisible until permanent damage has been done (UNICEF, 2020)

Vitamin A, iron and zinc deficiency when combined constitute the second largest risk factor in the global burden of diseases; 330,000 child deaths are precipitated every year in India due to vitamin A deficiency; 22,000 people, mainly pregnant women, die every year in India from severe anaemia; 6.6 million children are born mentally impaired every year in India due to iodine deficiency; intellectual capacity is reduced by 15 per cent across India due to iodine deficiency; and 200,000 babies are born every year with neural tube defects in India due to folic acid deficiency.)*National Nutrition Monitoring Bureau. (NNMB) Hyderabad: National Institute of Nutrition; 2002.*)

According to NFHSIII data, 63% of children below 5 years in urban areas (72% in rural area) are found to be anaemic and 55% of women and 24% of men are found to be anaemic. Anaemia is found to increase with the number of children ever born and decreases with education and higher household wealth.

#### **Prevalence of Hidden Hunger:-(Global and India)**

##### **Globalstatus:**



Fig:-3

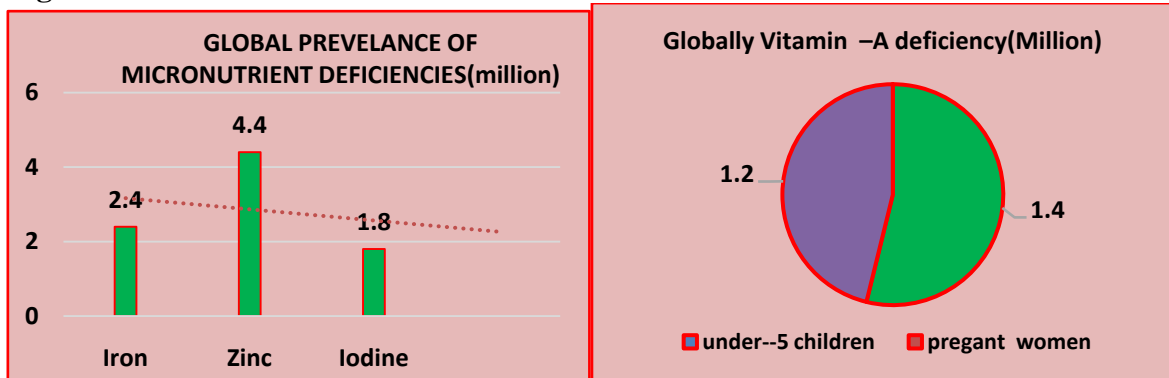


Fig:-4

Status in India:- National Family Health Survey(NFHS)

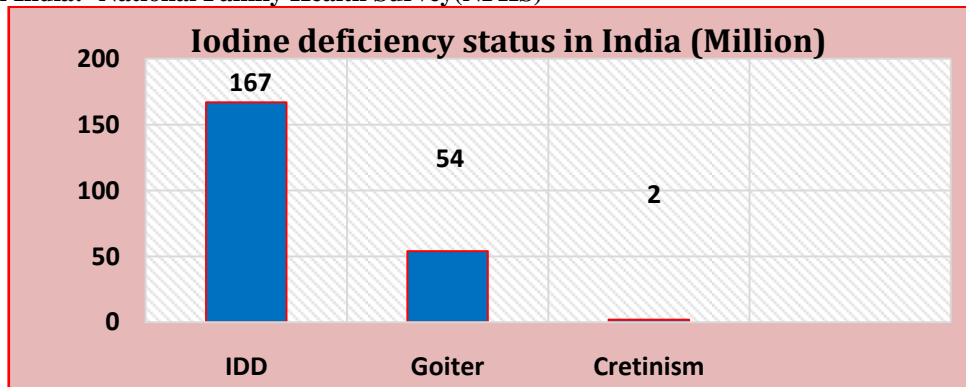


FIG:-5

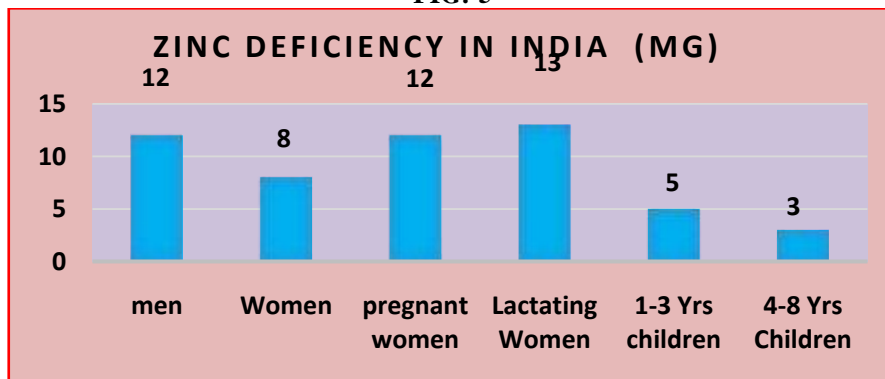


Fig:-6

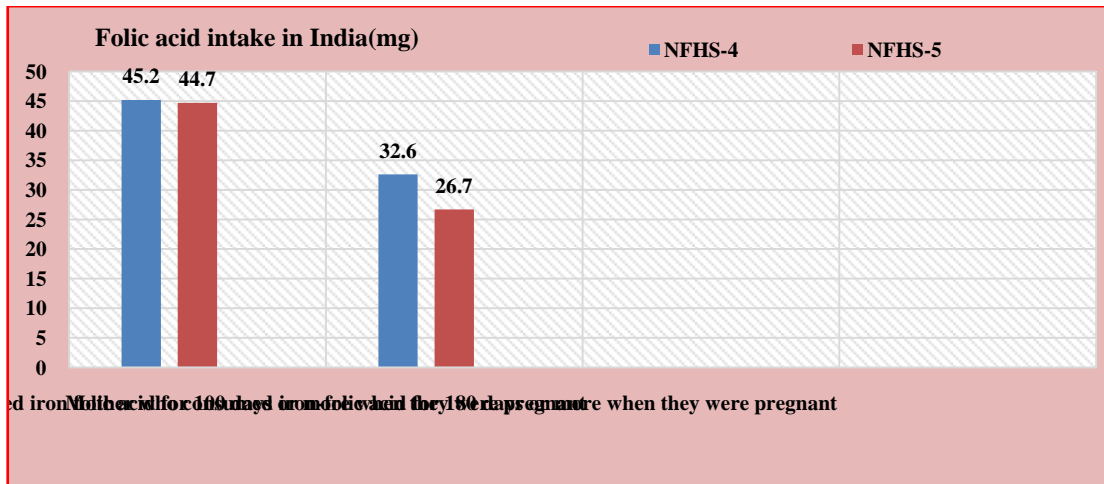


Fig:-7

According to the data , while quality of antenatal care continues to be poor, the proportion of women registering within the first trimester has increased 65.9% to 71% ,the proportion of pregnant women who consumed iron folic acid (critical for tackling anaemia) for 100 days or more during pregnancy has decreased from 45.2% to 44.7%. Mother who consumed iron folic for 180 days or more when they were pregnant fell from 32.6% to 26.7%.

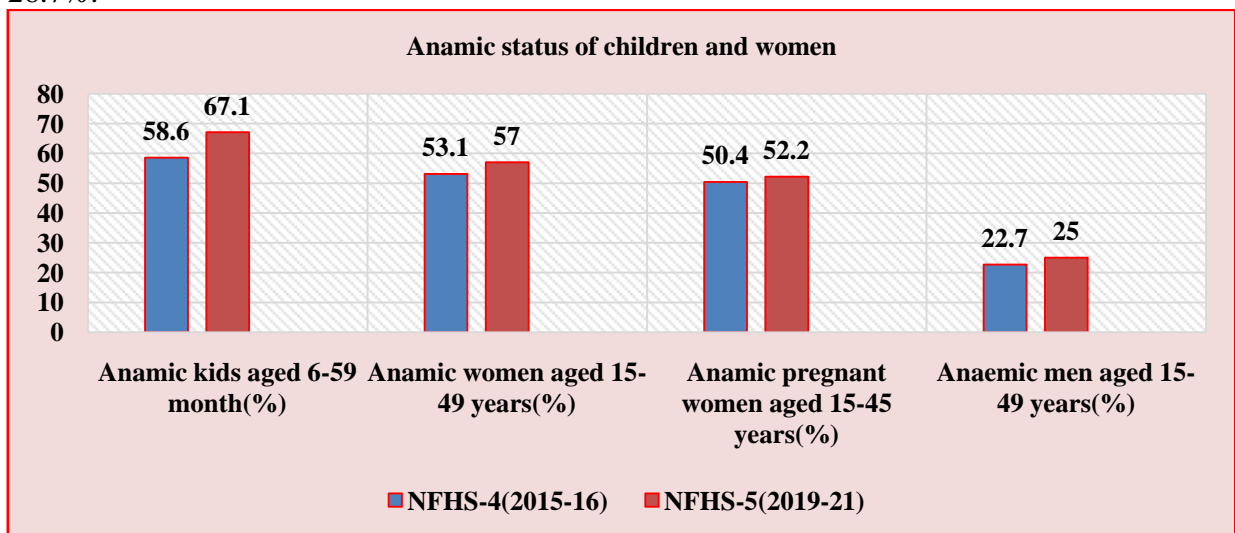


Fig:-8

The above figure shows the Anaemia status of different vulnerable group According to NFHS-5, there is decline in fertility rate and malnutrition but anaemia still a concern health problem in India

**Comprehensive national nutrition survey (CNNS-2019)**

**Iron deficiency and iron status of 1-19 years population (2019) in India: -**

Age	Iron Deficiency (%)		Anaemia status (%)	
	Male	Female	Male	Female
1-4	40.6	40.2	31.3	32.6
5-9	22.2	10.6	16.6	17.5
10-19	17.5	39.6	11.5	31.3



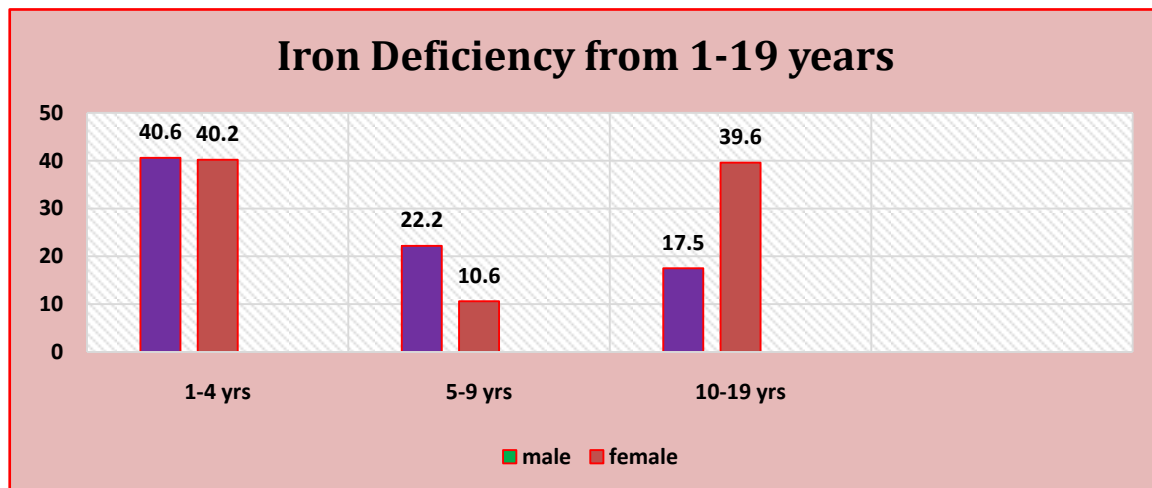


Fig:9(Source: -CNNS -2019)

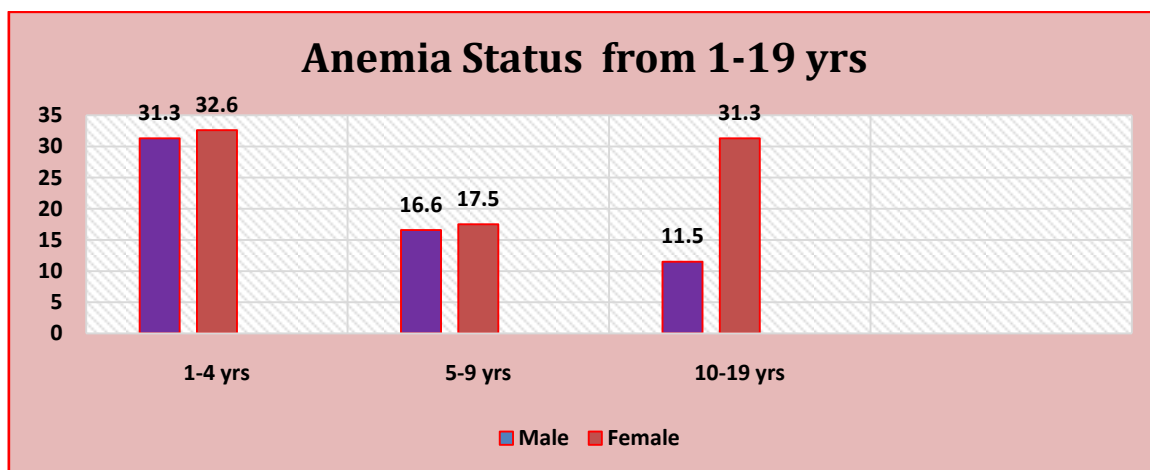


Fig: -10(Source: -CNNS -2019)

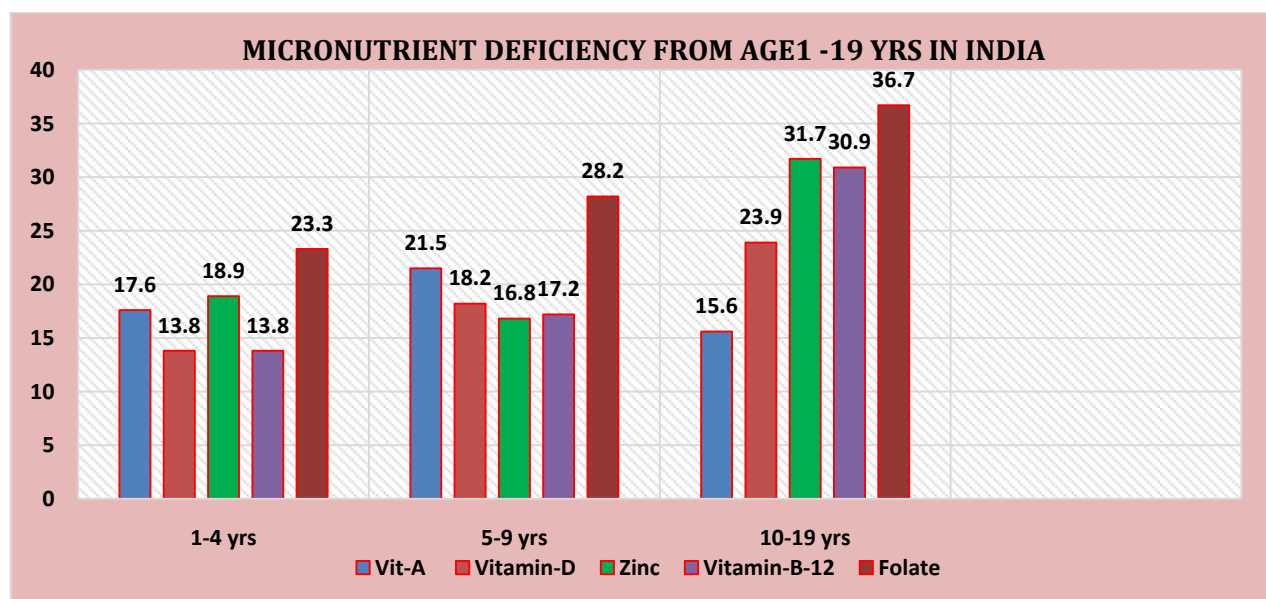
#### Key findings of iron deficiency and anaemia status By CNNS report ,2019

- Forty-one percent (41%) of pre-schoolers, 24% of school-age children and 28% of adolescents were anaemic
- Anaemia was most prevalent among children under two years of age
- Female adolescents had a higher prevalence of anaemia (40%) compared to their male counterparts (18%)
- Anaemia was a moderate or severe public health problem among pre-schoolers in 27 states, among school-age children in 15 states, and among adolescents in 20 states
- Thirty-two percent of pre-schoolers, 17% of school-age children and 22% of adolescents had iron deficiency (low serum ferritin)
- Female adolescents had a higher prevalence of iron deficiency (31%) compared to male adolescents (12%)
- Children and adolescents in urban areas had a higher prevalence of iron deficiency compared to their rural counterparts

**Micronutrient deficiency from 1-19 years population: -(CNNS report 2019)**

Years	Vitamin-A deficiency	Vitamin-D deficiency	Zinc Deficiency	Vitamin-B-12 deficiency	Folate
1-4	17.6	13.8	18.9	13.8	23.3
5-9	21.5	18.2	16.8	17.2	28.2
10-19	15.6	23.9	31.7	30.9	36.7

(Source: -CNNS -2019)

**Fig:-11**(Source: -CNNS -2019)

**The above table and figure depict the different micronutrient deficiency from the age 1-19 yrs**

Micronutrient deficiency is a major challenge in India, affected both by diet quality and inflammation/infection. A multipronged approach is needed to address deficiencies of key vitamins and minerals, such as vitamin A, iron, iodine and zinc, that continue to coexist and interact with protein and energy deficits (NITI Aayog, n.d.). In an academic review focused on the current scenario of micronutrients' status in the country (anaemia, vitamin A, iodine, vitamin B12, folate, ferritin, zinc, copper and vitamin C), Gonmei and Toteja have emphasized that deficiencies related to iron, vitamin A, iodine and zinc are of high public health importance among children and adolescents (Gonmei&Toteja, 2012).

Recent research also points to the significance of folate, vitamin B12 and vitamin D in maternal and child health. Global evidence suggests that micronutrient deficiencies are an important cause of morbidity and mortality, accounting for a considerable loss of Disability Adjusted Life Years (DALYs), especially in infants and pre-school children. Micronutrients deficiencies among children can also lead to impaired cognitive development, poor physical growth, increased morbidity and decreased work productivity in adulthood (WHO, 2009).

In this report we will look at the prevalence of vitamins A, D, B-12, folate and zinc deficiencies among 1 to 19-year-old children in India.

**Vitamin-A deficiency:-**

Vitamin A deficiency According to the CNNS results (2016-18), 22% school-age children (5–9-year-olds) were vitamin A deficient, as compared to 18% pre-school children (1–4-year-olds) and 16% adolescents (10–19-year-olds).

*State-wise data shows that among 1-4-year-old children, in Goa only 2% had vitamin- A deficiency, whereas in Jharkhand nearly 43% children in this age group were vitamin- A deficient, which is a serious public health concern. Among 5–9-year-olds, vitamin -A deficiency was most prevalent in Mizoram (47%), and among adolescents (10–19 years) it was most prevalent in Jharkhand (30%) and is considered a serious public health problem.*

**Vitamin D deficiency**

Vitamin D deficiency was noted to be lower among pre-school children (14% in 1–4-year-olds), as compared to school-going children (18% in 5–9-year-olds) and adolescents (24% in 10–19-year-olds) (CNNS results 2016-18).

*In the States of Punjab, Uttarakhand and Manipur, vitamin D deficiency was particularly high among children of all age groups*

**Vitamin B-12 & folate deficiencies**

Data from CNNS 2016-18 show that vitamin B-12 deficiency was higher among adolescents aged 10–19 years (31%) as compared to school-age children aged 5–9 years (17%) and pre-school children aged 1–4 years (14%). A similar pattern was noted for folate deficiency; 37% among 10-19-year-olds, 28% among 5–9-year-olds, and 23% among 1-4-year-olds.

*State-wise analysis shows that vitamin B-12 deficiency was highest in Gujarat among children aged 1–4 years (29%) and adolescents aged 10–19 years (48%); whereas for children aged 5–9 years it was highest in Punjab (32%). In Kerala and West Bengal, prevalence of vitamin B-12 deficiency was lowest. Folate deficiency was found to be highest in Nagaland among children aged 1–4 years (74%) and adolescents aged 10–19 years (89%); whereas for children aged 5–9 years it was highest in Andhra Pradesh (69%). In Sikkim and West Bengal, prevalence of folate deficiency was lowest*

**Zinc deficiency** According to CNNS results (2016-18), zinc deficiency was found in nearly one-third of adolescents aged 10–19 years (32%). Fewer pre-school children aged 1–4 years (19%) and school-age children aged 5–9 years (17%) were found to be zinc deficient.

*In Himachal Pradesh zinc deficiency is a serious concern; 41% of pre-school children (1-4-year-olds) and 38% of school-age children (5-9-year-olds) were found to be zinc deficient. States with a high burden of zinc deficiency among adolescents (10–19-year-olds) were Gujarat (55%), Manipur (53%), Himachal Pradesh and Punjab (both 52%*

**Covid-19 and hidden hunger: -**

From the last two years Covid-19 pandemic significantly impact on short- and long-term disruptions to food systems, resulting in decreased availability of nutritious foods, particularly for poor and vulnerable populations and a rise in the global prevalence of all forms of malnutrition, including micronutrient malnutrition or “Hidden Hunger”. (Saskia, et.al,2020) Covid-19 is pushing millions into poverty, reducing incomes of many more and disproportionately affecting the economically disadvantaged, who are also most vulnerable to malnutrition and food insecurities. The pandemic-prompted lockdowns disrupted essential services, such as supplementary feeding under Anganwadi centres, mid-day meals, immunisation, and micro-nutrient supplementation which exacerbated malnutrition.

**Steps Taken by Government**

**POSHAN Abhiyaan:** Poshan Abhiyaan was launched by Hon'ble Prime Minister on 8th March, 2018 in Jhunjhunu district of Rajasthan. The focus of Abhiyaan is to lay emphasis on nutritional status of adolescent girls, pregnant women, lactating mothers and children from 0-6 years age. The government of India has launched the National Nutrition Mission (NNM) or POSHAN Abhiyaan to ensure a “Malnutrition Free India” by 2022. The Ministry of Women and Child Development (MWCD) is implementing POSHAN Abhiyaan in 315 Districts in first year, 235 Districts in second year and remaining districts will be covered in the third year.

**Convergence of the other schemes** POSHAN Abhiyan ensures with various programs like-

- Anganwadi services
- Pradhan Mantri Matru Vandana Yojana (PMMVY)
- Scheme for Adolescent Girls (SAG) of MWCD Janani Suraksha Yojana (JSY)
- National Health Mission
- Swachh-Bharat Mission
- Public Distribution System (PDS)
- Department food and public distribution
- Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS)
- Ministry of Drinking Water and Sanitation

## **KEY NUTRITION STRATEGIES AND INTERVENTIONS OF HIDDEN HUNGER**

These are key Nutrition strategies and interventions IYCF (Infant and Young child feeding), Food and Nutrition, Immunization, Institutional Delivery, WASH (Water, Sanitation and Hygiene), De-worming, ORS-Zinc, Food Fortification, Dietary Diversification, Adolescent Nutrition, Maternal Health and Nutrition, ECD (Early childhood development)/ECCE (Early Childhood care and Education), Convergence, ICT-RTM (Information and Communication. Technology enabled Real Time Monitoring) and Capacity Building etc. (India.Govt.in)

- Anaemia Mukh Bharat Abhiyan: Launched in 2018, the mission aims at accelerating the annual rate of decline of anaemia from one to three percentage points.
- Mid-day Meal (MDM) scheme: It aims to improve nutritional levels among school children which also has a direct and positive impact on enrolment, retention and attendance in schools.
- The National Food Security Act (NFSA), 2013: It aims to ensure food and nutrition security for the most vulnerable through its associated schemes and programmes, making access to food a legal right.
- Pradhan Mantri Matru Vandana Yojana (PMMVY): Rs.6,000 is transferred directly to the bank accounts of pregnant women for availing better facilities for their delivery.
- Integrated Child Development Services (ICDS) Scheme: It was launched in 1975 and the scheme aims at providing food, preschool education, primary healthcare, immunization, health check-up and referral services to children under 6 years of age and their mothers.

**Suggestion and Recommendation:-**

**Recommendations for key actions are as follow**

- The most commonly used strategies to control micronutrient deficiency are supplementation and fortification, because they are cost-effective and relatively

easy to deliver as well as need a little emphasis has been placed on food-based approaches to address micronutrient malnutrition.

- To improve dietary quality for poor populations, more interactions are needed among the nutrition, agriculture and development communities (Allen, 2003).
- Inadequate dietary intake is also dependent on inadequate household food insecurity. Hence it is necessary to focus attention on improving household food security.
- It is also necessary to address other contributing factors of micronutrient deficiencies, like poverty, lack of purchasing power and limited knowledge about appropriate nutritional practices (Khan & Bhutta, 2010).
- In the context of India, micronutrient deficiencies are being addressed under the Anaemia Mukht Bharat initiative through the provision of iron and folic acid (IFA) fortified foods and IFA supplements.
- There are directives from central ministries for schemes/programs such as ICDS, MDM and PDS about the fortification of five staples - wheat flour, rice, oil, milk, and salt. In addition, the new initiatives such as the Bharat Poshan Kisan Kosh, led by the MWCD, will shed more light on local strategies for diversifying diets.
- Key recommendations to improve and strengthen actions on addressing micronutrient deficiencies, which emerged at a vision-setting exercise, with the consensus of key nutrition stakeholders, include the following (International Food Policy Research Institute & NITI Aayog, 2019)
- Improve policy guidance, policy coordination and monitoring of existing programs on supplementation and fortification.
- Standardize monitoring mechanisms for micronutrient interventions across States and have common targets.

### Conclusion: -

Covid-19 has significantly impact on every sector specially in health sector. The hidden factors of micronutrient malnutrition effect on the vulnerable group of people such as children and women. People suffering from hunger and poverty as there no jobs, salary issues, poor health etc. Despite all effort micronutrient malnutrition is still a serious concern and require continued and strengthen intervention on acute and especially chronic malnutrition and hidden malnutrition to have more impact on the underweight prevalence and other health issues to ensure a more optimal growth of all vulnerable group.

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