

## The Universal Vitamin A supplementation in India: Appropriate time for change in the Policy

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**ARTICLE CYCLE**

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India is promoting universal vitamin A supplementation (UVAS) on the grounds that it could result in a 23% decrease in overall mortality. However, this controversial claim has only been discovered in clinically vitamin A-deficient endemic areas with basic healthcare services. Apart from conjectures the exact metabolic mechanisms involved in bringing about this mortality reduction are unknown. The findings of researchers from the John Hopkins School provide the majority of the evidence for the mortality reduction claim.<sup>1</sup>

However, the investigations from two other prestigious schools- Harvard School of Public Health and the National Institute of Nutrition (NIN), India had failed to substantiate the mortality reduction claim. The National Institute of Nutrition's double-blind study, conducted in India under the country's epidemiological parameters, showed that the VA supplement by itself did not affect mortality<sup>2</sup>. If we consider all the positive and negative studies done in various parts of the world to assess this, the net evidence is in the negative. The possibility that the mortality reduction observed could be an artifact being the result of the Hawthorne Effect had been pointed out in Indian study. In the past, all reports from different parts of the world such

as those of NIN, Hyderabad, the Harvard Sudan study, and quite a few others had been either ignored, derided as being faulty in design and execution, explain away, or subjected to statistical alchemy (so called meta-analysis) that helped to convert the negative conclusions of the authors of the original reports into positive affirmations. Children who exhibit clinical symptoms of vitamin A insufficiency typically come from underprivileged backgrounds and experience several deficiencies in addition to VAD, which are unavoidable consequences of their poverty syndrome. They live in extremely unhygienic conditions, have limited access to basic healthcare, and typically consume diets that are deficient in calories, vitamin A, and other nutrients. A variety of synergistic causal elements are likely responsible for the relatively high mortality rate seen in children from such impoverished households. National Programmer for Prophylaxis against Nutritional Blindness (NPPNB) due to VAD involving massive doses of vitamin A was initiated by the Government of India in 1970, over 55 years ago, at a time when VAD was a major public health problem in the country. This approach was envisaged purely as a short-term emergency measure and as an adjunct to dietary improvement. To begin with, under the

programmer, the children in the age group of 1-5 years were provided a mega dose of Vitamin A (2 lakh International Unit) at six monthly intervals. The priority was given to be given to the geographical areas where cases of vitamin A deficiency were reported by the Health workers<sup>3</sup>.

#### **CURRENT STATUS OF VAD IN INDIA**

A decline in trends of VAD has been observed in the country during the last five decades. Currently, only a few geographic areas in the Nation are affected by VAD, despite significant variability within the states. A recent study conducted by Indian Council of Medical Research CMR, VAD assessment was carried out in 16 districts in different regions of the country. It was found that only 3 districts had VAD as a public health problem<sup>4</sup>.

Possible reasons for decline in VAD in the country During the last 30 years indicators of child health have shown remarkable improvement in different states in the country. The prevalence of severe malnutrition has come down from 15.0% in 1975 to 6.2% in 1996. Also, the immunization coverage for measles and other vaccine-preventable diseases has improved from earlier 5-7% in the seventies to presently 60-90%<sup>5</sup>. Similarly, there has been a significant improvement in the dietary intake of vitamin A-rich foods. The improved health infrastructure has significantly contributed to better healthcare facilities and decrease load of morbidity amongst children. All these factors jointly positively influenced the VA status of children and the reduction of losses of VA from the body thereby reducing the prevalence of VAD in the country.

#### **SIDE EFFECTS OF VA SUPPLEMENTATION TO YOUNG CHILDREN**

A significant part of the overall development of the brain takes place in young children below three years of age. It has been estimated that as many as 6,000 to 10,000 synaptic connections between neural cells, which determine behavior and overall mental development take place in young age. Scientists have documented that nearly 12 percent of young children given 50,000 IU

developed fontanelle bulging following vitamin A administration. In India, 47% of children suffer from moderate grades of under-nutrition. Subjecting these under-three children to repeated episodes of increased intra-cranial tension could contribute to further retardation of their brain development. We have no studies on the effects of repeated episodes of raised intra-cranial tension on the development of the brain in the post-natal period especially in infants who start their lives with psychomotor deficits as a result of intrauterine growth retardation. The observation of large increase in rate of pneumonia in well-nourished children who received 10000 IU of vitamin A weekly and reduced CD+3/ CD+4 cells in elderly vitamin A supplemented subjects<sup>6</sup>. Excessive Dietary Intake of Vitamin A is Associated with Reduced Bone Mineral Density and Increased Risk for Hip Fracture. The adequate data is not available on this aspect.

#### **CURRENT VA SUPPLEMENTATION STRATEGY**

Presently, the Vitamin A supplementation is done through the existing network of primary health centers, and sub-centers. The female multipurpose worker and other paramedics at the health centers are responsible for administering Vitamin A solution to all children aged 9 months and 59 months. The services of ICDS functionaries are also utilized for the implementation of the program. Monthly campaigns are conducted every six months to achieve complete coverage. Indian scientists do not endorse the campaign technique for vitamin A distribution since it fosters a culture of constant reliance on the health infrastructure to receive vitamin A for VAD control. Monthly campaigns are conducted every six months to achieve the complete coverage. Indian scientists do not recommend the campaign approach for distribution of vitamin A is not recommended as it creates the culture of perpetual dependence on the health infrastructure for receipt of vitamin A for control of VAD. Also, all the efforts of the health functionaries are more on delivery of vitamin A doses to achieve the targets allotted to them rather than giving health and nutritional education (to mothers of the

beneficiaries) for consumption of vitamin A rich food which is the 'main stay' of the National Programme for the Prevention of Nutritional Blindness due to vitamin A deficiency. The campaigning approach of VA administration involves all types of village level functionaries (trained and untrained). In a campaign strategy, workers' usual healthcare duties are disturbed. In Orissa, where vitamin A was linked to pulse polio immunization with significant resources and inputs from an international organization, more than 52% of mothers were unaware that the solution administered to their children was vitamin A, indicating inadequate health education activities in a vitamin A distribution campaign<sup>7</sup>. Also, despite a well-organized campaign approach, 21.4% of infants who were not the target beneficiaries also received vitamin A. Synthetic vitamin A administration is promoted by International developmental agencies in India as they receive funds from International donors. The mechanism of support is as simple. The agencies submit proposals to the donors mentioning specific activities to be carried out. The agencies have to undertake the activities as approved by the donors. The agencies have their limitations to do because of the mandate of donors (invariably who may at times have direct/indirect commercial interest). This is a vicious cycle in which agencies have to work. The agencies operate through scientists in government/ semi-government/ voluntary organizations to implement their projects. The data collected by scientists on a pre-designed protocol, questionnaire, and tools often help agencies to convince the administrators and planners in the country about the all possible benefits of VA supplementation.

#### **WHAT APPROACH SHOULD BE ADOPTED FOR VA SUPPLEMENTATION**

In India, the age of widespread vitamin A deficiency that causes blindness has passed. At this stage, we should supplement vitamin A to cover the remaining relatively less serious consequences of deficiency. Measles worsens vitamin A deficiency. It makes sense to ensure effective control of measles. The sustainable solution for preventing and controlling VAD is

through the promotion of the intake of green leafy vegetables (GLV) and locally available foods. The intake of GLV can address more than just the condition of VAD. GLV are rich in carotenes, folic acid, vitamin C, iron, and calcium, and can thus help to enhance children's overall nutritional status. Micronutrient deficits are frequently caused by a lack of routine food in the household, rather than a low quality of such meals. When overall food intake is sufficient to meet basic energy demands, other nutrient requirements will be covered to a large extent, even with current diets. The food-based approach to combat VAD in non-clinically deficient areas is the sustainable and cost-effective solution. Unfortunately, while having a solution, we are currently chasing a problem. We should look to our farmers, not pharmacies, to enhance our children's nutritional needs. VAD solutions must be based on food rather than drugs. We must resist the easy alternative of supplementing with mega doses of VA in order to avoid the responsibility of improving young children's diets.

Children in impoverished communities require more food rather than pills, tablets, or sprays. The administration of massive dosages of VA fosters a culture of constant reliance on the health system. The difference between the food-based approach and the universal synthetic VA supplement-based approach is analogous to the difference between teaching a man to catch the fish he requires from his own local pond, on the one hand and giving him a 'fish substitute' as a dole.

The former is 'time-consuming' while the latter may be 'immediate', but the 'beneficiary' will have to be probably dependent on the substitutes, even assuming that the 'substitute' is as good as food itself. The population where there is poor intake of food, provide them foods which provide all the micronutrients. This may be given high priority and simultaneously the states where no cases of VAD have been reported and overall immunization and food intake is high, the universal administration of vitamin A administration may be discontinued to have the most cost-effective utilization of limited resources available in the health sector<sup>3</sup>. In

India, for cost-effective utilization of limited resources available to the health sector, the 'Triple A' approach which is advocated by UNICEF for prevention and control of a disease i.e. Assessment, Analysis, and Action' should be adopted i.e. first assess the problem of VAD and then undertake the detailed analysis of causes of VAD and then decide the combination of approaches which should be adopted for prevention and control of VAD in the community. At the same time, the semi-annual administration of mega-doses of vitamin A is not without risks, particularly in relation to children's vaccination status. While a single dose is affordable, large-scale adoption of HDVA programs is costly, particularly in terms of the opportunity cost of reducing the amount of time health personnel must devote to other responsibilities. Balancing potential benefits, risks, and costs led us to advocate an immediate adjustment in India's universal distribution policy for MDVA<sup>8</sup>.

#### **DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS**

The authors haven't used any generative AI/AI assisted technologies in the writing process.

#### **REFERENCES**

1. Kapil U, Tyagi M. SCIENTIFIC RATIONALE FOR TARGETED VITAMIN A SUPPLEMENTATION TO CHILDREN IN INDIA. *Indian J Community Health*. 2011;23(1):1-3.
2. National consultation on benefits and safety of administration of Vitamin A to preschool children and pregnant and lactating mothers. *Indian Pediatr* 2001; 38(1):37-42.
3. Gupta P. India's Universal Mega-dose Vitamin A Supplement Program: Time to Bid Goodbye! *Indian Pediatr*. 2021;58(4):311-312.
4. Vitamin A deficiency disorders in 16 districts of India, Dr G S Toteja, Padam Singh, Bhupinder. Singh. Dhillon, *The Indian Journal of Pediatrics* 2002 ,69(7):603-5.
5. Massive dose vitamin A programme in India--need for a targeted approach. Umesh Kapil 1, H P S Sachdev *Indian J Med Res*. 2013;138(3):411-7.
6. Effect of vitamin A supplementation on childhood morbidity and mortality: Critical review of Indian studies. Gupta P, Indrayan A. *Indian Pediatr* 2002; 39(12):1099-1118.
7. Recent Issues in Vitamin-A Supplementation in India and Strategies for their Prevention and Control, *Indian Journal of Preventive Medicine*. 2015;3(2):81-88
8. Greiner, T., Mason, J., Benn, C.S. et al. Does India Need a Universal High-Dose Vitamin A Supplementation Program?. *Indian J Pediatr*. 2019;86:538-514