



Vitamin A Deficiency in Children Under Ten years - A Survey Among Mothers

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Accepted on: 20-07-2016; Finalized on: 30-09-2016.

ABSTRACT

The high child morbidity and mortality rate due to vitamin A deficiency can be attributed to lack of awareness among primary caregivers-the mothers. The deficiency, easily preventable by including vitamin A rich and fortified foods in the child's diet, supplements, and prophylaxis programmes, can be nipped at the bud, but only if the mothers are made aware of the various resources available to them. The goal of this study was to assess the level of awareness of Vitamin A deficiency among mothers of children less than ten years. A questionnaire to investigate the participants' awareness and knowledge was administered to 50 mothers over a span of two months from March to May 2016. The results showed some awareness, but lack of sound information on recommended daily allowances, need for supplementation, risk factors, dosage forms, and the National Prophylaxis programme. Overall, it indicates a need for increased awareness. The article could provide useful data which may be instrumental in formulation of more public health nutrition programmes aimed at increasing awareness, which, consequentially, will have a positive effect on prognosis and treatment.

Keywords: Vitamin A Deficiency, Awareness, Mothers, Children.

INTRODUCTION

Vitamin A (Retinol) is an essential, fat soluble micronutrient found in dietary sources such as leafy greens, milk, eggs and meat, required for various physiological functions such as maintaining growth, immunity and ophthalmic health¹. Vitamin A Deficiency (VAD) resulting as a consequence of chronically inadequate diets in developing countries poses as a major public health nutrition problem. The classic risk group includes young children, pregnant women and nursing mothers². VAD is particularly relevant to children under ten years as it is in this maximum period of growth that they have higher micronutrient requirements. Failure of including vitamin A in the child's diet or a vitamin A deficient mother having low serum retinol concentrations in her breast milk can result in clinically overt diseases such as night blindness, Xerophthalmia, anemia, and growth retardation or occult manifestations such as poor cellular manifestations and depressed immune response³. Apart from Prophylaxis programmes, supplements and vitamin A fortified foods, awareness could have a beneficial effect on child mortality and morbidity.

The study aims to assess the level of awareness of Vitamin A deficiency among mothers of children less than ten years.

METHODOLOGY

A study was designed to assess the level of awareness of Vitamin A deficiency among mothers of children under ten years. A predesigned questionnaire was administered to 50 mothers of under ten year olds, over a span of two

months from March to May 2016. Various aspects of the study focused on awareness of Vitamin A rich foods, Recommended Daily Allowance, symptom and risk factor associated with deficiency, supplements, dosage forms, National Prophylaxis Programme for Vitamin A, etc.

The data was compiled and analysed on EXCEL 2007 version.

RESULTS

A whopping 96% of interviewed mothers were aware of Vitamin A while 4% had not heard of the vitamin prior to completing this survey.

When questioned on their sources of information, General Practitioners or health care workers was the most popular choice, cited by 38% of the mothers, followed by School(32%), Media(26%), Community centre(12%) and lastly, Family and friends, cited by 10% (Fig. 1).

On a question regarding which Vitamin A rich foods they included in their child's diet, 98% included leafy greens, 96% Carrots, 95% Milk and 92% Cheese.

52% included Capsicum and the least popular options were Apricots (4%) and Liver and Kidney, by only 2%. 90% of the mothers included these foods everyday in their child's diet, 16% a few times a week and only 4% few times a month (Fig. 2).

When questioned if their child had the deficiency, 4% replied yes, 12% No, but 84% of them had not had their child tested (Fig. 3).



Only 4% of the mothers gave their child vitamin A supplements (Fig. 4). 52% were aware of Vitamin A drops as a dosage form, 14% knew of gel capsules, 34% knew of syrups, however none of them were aware of intramuscular injection as a means of administration of Vitamin A (Fig. 5).

56% of the mothers were unaware of VAD as the leading cause of blindness among children (Fig. 6).

Regarding knowledge about the symptoms, majority respondents knew of dryness of eye (82%), reduced night vision (74%) and corneal ulcers(63%), 13% knew of patches in the eye; 22% were aware of low immunity and only 8% knew of dry skin and broken nails associated with the deficiency (Fig.7).

88% were completely unaware of the risk factors, and a very small percentage knew of Crohn’s disease, Inflammatory Bowel Disease and Cystic fibrosis.

24% of the respondents were able to accurately pick the recommended daily allowance. A majority of the participants (62%) were unaware of the existence of National Vitamin A Prophylaxis Programme of the country (Fig. 8.0).

The most common suggested ways of raising awareness was use of Social media (78%), followed by TV/Newspaper (58%).

Other suggestions included healthcare workers (19%), Leaflets (16%) and Verbal information (12%). Home visits were the least popular choice at 6 %.

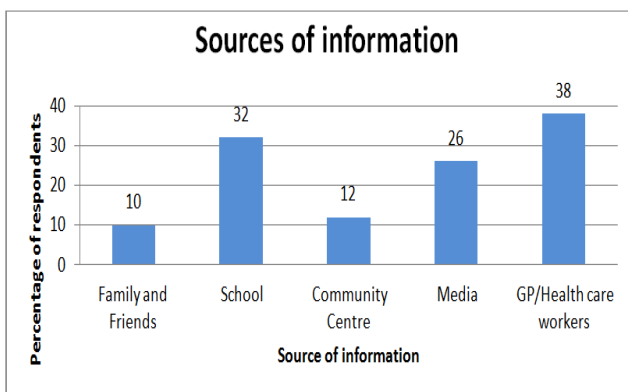


Figure 1: Source of Information

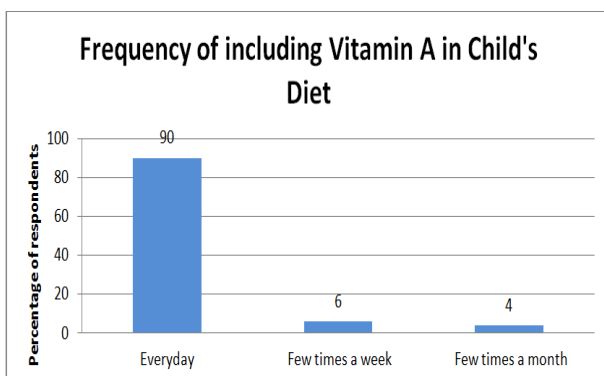


Figure 2: Frequency of including vitamin A in Child’s Diet

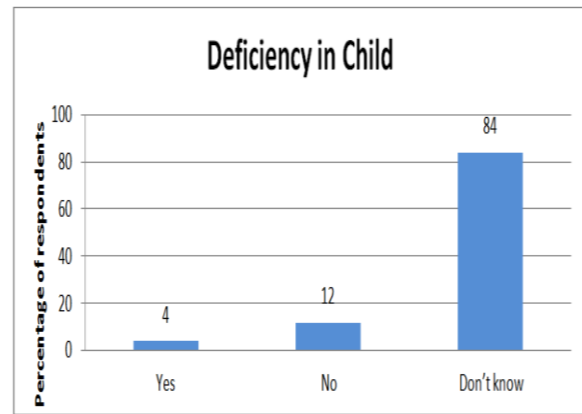


Figure 3: Deficiency in Child

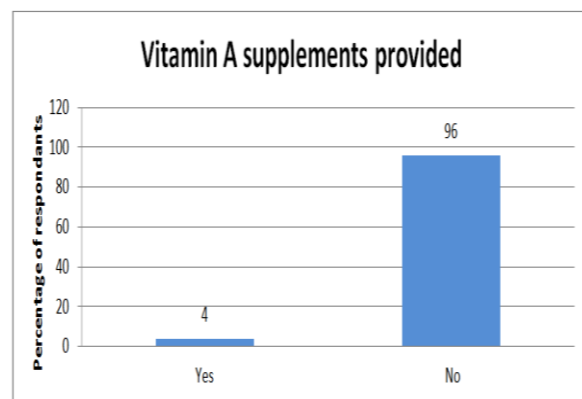


Figure 4: Vitamin A Supplements Provided

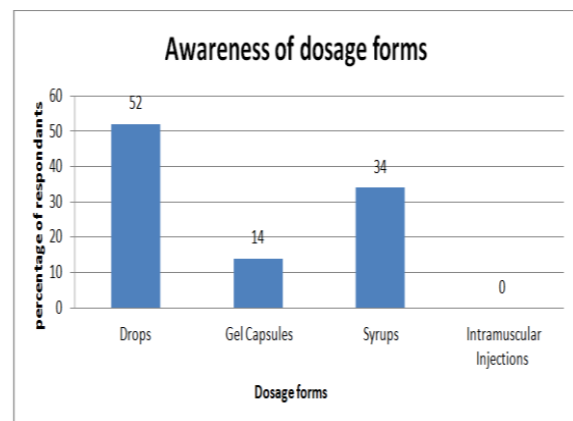


Figure 5: Awareness of Dosage Forms

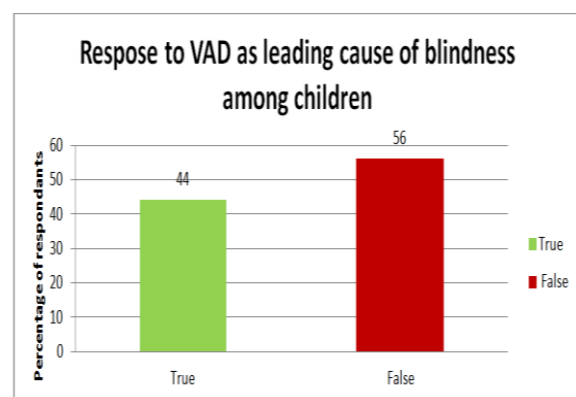


Figure 6: Response to VAD as Leading Cause of Blindness among Children

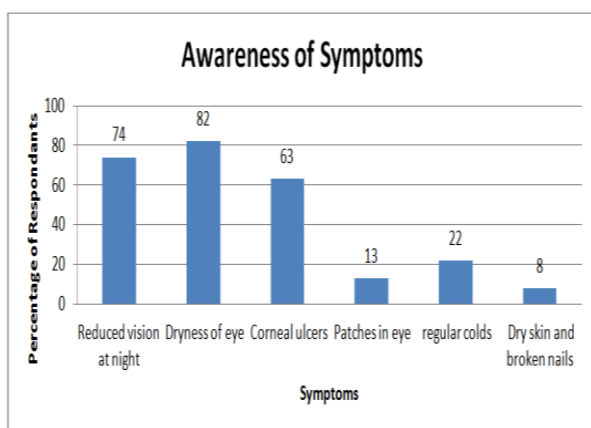


Figure 7: Awareness of Symptoms

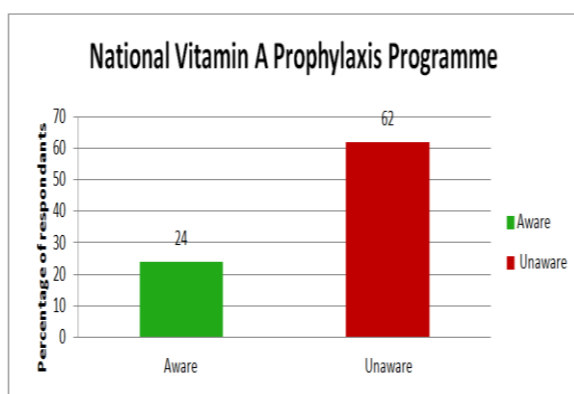


Figure 8: National Vitamin A Prophylaxis Programme

DISCUSSION

Out of 50 mothers interviewed, a prominent finding in this study is that 48 mothers were aware of the vitamin. A majority of the women received their information from a healthcare worker but only 24% in school. Hence emphasis must be placed on education about vitamin and deficiencies at the primary level of education itself.

The interviewed mothers were well equipped on various sources such as carrots, leafy greens, milk and cheese which majority said they included in their child's diet on a daily basis. However, only 2% included Liver/Kidney, an important source of preformed vitamin A, which is a better option for reaching full vitamin A requirements, as opposed to plant sources containing Provitamin in the form of Beta-Carotenoids, requiring more energy to be converted to vitamin A molecules in the body⁴. They should also be made aware of foods fortified with vitamin A such as cereal grains, oils, sugar and monosodium glutamate, which have proven to be an effective, low cost way of increasing micronutrient supply⁵. Studies show that programmes promoting food to food fortification such as adding carrot puree into a baby's rice porridge has proven to be effective intervention⁶.

A majority of the women did not know if their child had the deficiency or was predisposed to it. This not only shows a general lack of understanding that a pregnant vitamin A deficient mother could pass on the deficiency to her child due to low serum retinol concentrations, but

also shows lack of awareness that tests are available to confirm the deficiency. Mothers must be educated on tests involving measurement serum retinol concentration, which is the most common biomarker and population indicator⁷.

It is clear from the results that they were largely ignorant of the recommended daily allowance. A whopping 96% of the respondents also did not provide any means of supplements. Several studies support supplementation of vitamin A as an effective intervention to increase vitamin A status of mother and child^{3,8,9}. Studies also support its role in innate and adaptive immunity resulting in reduced susceptibility and/or severity of other infections, and as a result, its effect on reducing child mortality^{10,11}. From the responses, it was observed that, there was some awareness of Drops, Gel Capsules and Syrups as dosage forms; however none of them were aware of intramuscular injections.

It is important to implement awareness of parental administration of the vitamin to mothers, as it is the preferred dosage form if the child exhibits nausea or vomiting, and oral administration is not feasible.

Direct supplementation in the immediate postpartum period via breast milk is by far the safest choice⁸.

With regards to the symptoms, while most were aware of some ocular manifestations, a greater majority did not believe Vitamin A deficiency to be the leading cause of preventable childhood blindness which is in contrast to the facts provided by World Health Organization (WHO)¹.

It can be inferred from response that they have no sound information on the risk factors.

This disparity in knowledge between the symptoms and risk factors can be lessened if more emphasis is placed on nutrition education.

A majority (62%) were unaware of the existence of the National Vitamin A Prophylaxis programme. A previous study in New Delhi has yielded similar results¹². Established in 1970, it has since played a critical role in providing vitamin A supplements free of charge, along with routine immunizations in public health facilities¹³.

With a lot of attention on Vitamin D and B12 deficiencies in the country, it is crucial to bring vitamin A deficiency to the forefront.

With social media chosen as the most popular choice for suggested ways of awareness, it is important to use the platform to maximum benefit.

CONCLUSION

The results suggest that there is some awareness among the respondents, but they lack sound knowledge on the subject.

The women were clearly ignorant about the specifics of the vitamin such as recommended daily allowances, risk factors and the national prophylaxis programme.

It is evident that the deficiency has become a national concern, however, it is best combated by placing emphasis on prevention by means of Awareness, dietary diversification, Supplementation and fortification programs, rather than medical treatment after the deficiency has occurred.

REFERENCES

1. WHO (2009) Global prevalence of Vitamin A deficiency in populations at risk 1995-2005: WHO Global database on Vitamin A deficiency. Internet: whqlibdoc.who.int/publications/2009/9789241598019.eng.pdf.
2. Ribeiro-Silva Rde C, Nunes IL, Assis AM. Prevalence and factors associated with vitamin A deficiency in children and adolescents. *Assis.J. Pediatr (Rio J)*. 90, 2014, 486-92. Doi: 10.1016/j.jpmed.2014.01.014. PMID: 24886682.
3. Basu S, Sengupta B, Paladhi PK. Single megadose Vitamin A supplementation of indian mothers and morbidity in breastfed young infants. *Postgrad Med J*. 79, 2003, 397-402. Doi: 10.1136/pmj.79.933.397. PMID: 12897218.
4. Sommer A. Vitamin A Deficiency and Clinical Disease: An Historical Overview. *J. Nutr*. 138(10), 2008, 1835-1839. PMID: 18806089.
5. Dary O, Mora JO. Food Fortification to Reduce Vitamin A Deficiency: International Vitamin A Consultative Group Recommendations. *J.Nutr*. 132(9), 2002, 2927S-2933S. PMID: 12221271.
6. A Lorch. Is this the way to solve malnutrition? *Biotechnology and development monitor*. 2001: 44/45, 18-22. [<http://www.biotech-monitor.nl/4408.htm>].
7. Tanumihardjo SA. Vitamin A: biomarkers of nutrition development. *Am J Clin Nutr*. 94 (Suppl), 2011, 658s-65s. Doi: 10.3945/ajcn.110.005777. PMID: 21715511.
8. Christian P, West KP Jr, Khatry SK, Katz J, LeClerq SC, Kimbrough-Pradhan E, Dali SM, Shrestha SR. Vitamin A or Beta Carotene Supplementation reduces symptoms of illness in pregnant and lactating nepali women. *J Nutr*. 130, 2000, 2675-2682.
9. Bahl R, Bhandari N, Wahed MA, Kumar GT, Bhan MK. Vitamin A supplementation of women Postpartum and of their infants at immunization alters breast milk retinol and infant vitamin A status. *J Nutr*. 132, 2002, 3243-3248. PMID: 11053506.
10. Stephensen CB. Vitamin A, Infection and immune function. *Annual review of nutrition*, 21, 2001, 167-192. Doi: 10.1146/annurev.nutr.21.1.167. PMID: 11375434.
11. Ross AC. Vitamin A supplementation and retinoic acid treatment in the regulation of antibody responses in vivo. *Vitamins and hormones*. 75, 2007, 197-222. Doi: 10.1016/S0083-6729(06)75008-7. PMID: 17368317.
12. Matta S, Matta P, Gupta V. Knowledge among women regarding Vitamin A deficiency: A hospital based study. *Indian J. Prev. Soc. Med*. 37, 2006, 138-41. Doi: 10.5001/omj.2012.24.
13. Kapil U, Sachdev H.P.S. Massive dose vitamin A programme in India-Need for a targeted approach. *Indian J Med Res*. 138(3), 2013, 411-417. PMID: 24135191.

Source of Support: Nil, Conflict of Interest: None.

