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Research Article

Compliance and Barriers of Vitamin A Supplementation for Under Five Children: A Cross Sectional Study

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Abstract

Vitamin A is required for the normal functioning of the visual system, maintenance of cell function for growth, epithelial integrity, production of red blood cells, immunity and reproduction. Vitamin A Deficiency (VAD) increases vulnerability to a range of illness including xerophthalmia, keratomalacia, and blindness in children. Preventive program against Nutritional Blindness related to vitamin A insufficiency was initiated in India in 1970 with the purpose of protection against nutritional blindness as a result of keratomalacia. The present study was conducted for the assessment of Compliance and barriers of Vitamin A Supplementation Programme (VASP) among under five children associated with a teaching hospital of Thiruvananthapuram district of Kerala. A descriptive cross sectional study was conducted among 118 children. Consecutive cases were selected as sample based on the inclusion criteria. A structured interview schedule was used to collect data on compliance to VASP. The study revealed that47.46% of children had full compliance to VASP, 51.7% of children had partial compliance and 0.85% of children had noncompliance. Among the children who have partial compliance, majority (18.64%) have received only 3 doses of vitamin A. The major reason for partial and non-compliance were health related problems (33.4%) and 30.64% of the participants in partial or non-compliance group reported lack of awareness regarding the VASP as reason for noncompliance. Findings of the study reveal the necessity for strengthening of VASP at the implementation level to reduce the morbidity associated with VAD.

Keywords: Compliance; Barriers; Vitamin A

Introduction

Vitamin A is an essential nutrient needed in small amounts for the normal functioning of the visual system, growth and development, maintenance of epithelial cellular integrity, immune function and reproduction. Severe deficiency of vitamin A causes xerophthalmia, Keratomalacia and blindness in children. VAD is mainly seen among the young children as they have high requirements due to increased physical growth and low dietary intake. Diseases such as acute respiratory tract infection and measles which deplete vitamin A reserves from the body are common in this age group [1].

Privation of Vitamin A is an important child health problem in many developing countries, with consequences ranging from significant eye disorders to increased risks of infection and mortality [2]. This is considered as the most common preventable cause of blindness among children. Recently, it has become evident this particular vitamin plays important roles in ensuring protection against

infections and maintaining many normal body functions, especially body immunity. Mortality in childhood and infancy, as well as even intrauterine fetal loss, has been associated with the sparsity of that nutrient [3].

The National Supplementation Programme against Nutritional Blindness due to VAD was initiated in 1970 with the specific aim of preventing nutritional blindness due to keratomalacia [4]. Programme was started as a 100% centrally sponsored programme. Evaluation studies conducted by the National Institution of Nutrition, Hyderabad in 1976 in two states revealed positive results of the programme. In subsequent years, the programme was extended to all states in the country [5].

A cross sectional study was carried out to determine the prevalence of VAD in children between the age group of 6-9 years in northern Ethiopia. The data were analyzed for 824 (61.5%) out of 1339 eligible children. The prevalence of xeropthalmia was 5.8%; serum retinol levels were below 0.35 µmol/l in 8.4% and between 0.35 to 0.70 µmol/l in 51.1% of the children respectively. The high prevalence of severe VAD in children between 6-9 years indicated the need to re-evaluate the practice of targeting VASP on children under 6 years of age in areas where VAD is endemic [6].

India has the largest percentage or number of vitamin A deficient children in the world. However, the effectiveness of programme of vitamin supplementation at the population level has been rarely examined. Only 25% of children in India received vitamin supplementation, indicating a poor coverage [7].

Intensive social mobilization and communication should continue to be undertaken at the state, district, block, and village levels to raise community awareness about the benefits of VASP and mobilize mothers and families to bring their children to the nearest supplementation site. A clear division of workload among the frontline workers and constant supervision and monitoring of their work are essential for programme success.

Childhood blindness due to corneal ulceration has historically been prevalent among poor Indian children. To tackle this situation, the National Institute of Nutrition (NIN), Hyderabad, launched massive dose based national VASP. Over a period of time reduction in childhood mortality was also hailed as a beneficial effect of the programme. Data from the Indian Council for Medical research (ICMR) indicate that in most Indian states there has been a gradual reduction in the prevalence of Bitot's spots [8].

Vitamin A is vital for growth and development, cell recognition, normal vision, immune function, reproduction and also helps the heart, lungs, kidney and other organs to work properly. Blindness due to VAD is controlled by vitamin A supplementation program. During clinical practice and Community health nursing survey, investigators noticed that the compliance to vitamin A supplementationis less among children in the community.

This cross sectional study was carried out to assess the compliance to vitamin A supplementation among children of under 5 years of age and to identify the barriers.

Materials and Methods

The study was intended to assess the compliance to VASP for under five children and its barriers in implementation among children associated with a teaching hospital at Thiruvananthapuram. Compliance refers to the conformity to the regimen of VASP which is available as part of National Immunization programme for the age group of 9months to 5 years, which was evaluated using check list for evaluation of usage of VASP. Compliance to vitamin A supplementation up to 5years was evaluated among children of age group 5 to 7 years.

The process of VASP include oral administration of Vitamin A solution to children between 9 months to 5 years as per the following schedule. Total nine doses are available.

Age	Dose
9 months	1 lakh I U
1 1/2 years	2 lakhs IU
2 years	2 lakhs IU
2 1/2 years	2 lakhs IU
3 years	2 lakhs IU
3 1/2 years	2 lakhs IU
4 years	2 lakhs IU
4 1/2 years	2 lakhs IU
5 years	2 lakhs IU

Table 1: Regimen of Vitamin A Supplementation.

The research design adopted for the study was cross- sectional descriptive design. The study was conducted in the OPD (out patient department) and pediatric wards in SAT Hospital, Thiruvananthapuram. It is functioning as part of a teaching hospital and caters for the specialized treatment of women and children. Com-

pliance to VASP up to 5 years was evaluated from Mothers of children in the age group between 5 to 7 years who were willing to participate in the study. Mothers who do not know Malayalam or English as well as mothers whose children were too sick were excluded from the study. A total number of 118 participants were recruited for the study. Samples were selected consecutively from the mothers of children attending the OPD and pediatric wards of the selected hospital. Interview technique was used for data collection. Tools included structured interview schedule, which consists of the sections: **s**ocio personal data, checklist for assessment of compliance to VASP and the barriers in the usage of supplementation.

A pilot study it is conducted in 10% of the total sample. Data were collected from 12 samples to check the feasibility of study. After pilot study, the methods were found to be suitable. The researchers obtained prior permission from the Principal, Govt. College of Nursing, Thiruvananthapuram and Medical Superintendent, SAT hospital Thiruvananthapuram to conduct the study. Sample who met inclusion criteria and exclusion criteria were selected from the OP departments and wards of SAT hospital. They were explained about the purpose of the study. Informed consent was obtained. Interview of mothers were done on individual basis. Approximately 10 minutes were taken for collecting data.Data were analyzed using descriptive statistics. Socio-personal information, Compliance to VASP and the barriers were described using frequency and percentage.

Results

Sociodemographic characteristics of the participants are shown in table 2. Majority of the sample reside in rural areas. Economic status is above poverty line (APL) for 78% of the participants.

Characteristics	Frequency	Percentage
Place of residence		
Urban	3o	25.42
Rural	88	74.58
Economic status		
Above Poverty Line	78	66.10
Below Poverty Line	44	37.29
Education of mothers		
Up to high school	45	38.14
Higher secondary	48	40.68
Degree and above	25	21.19

Table 2: Socio demographic Characteristics of participants N = 118.

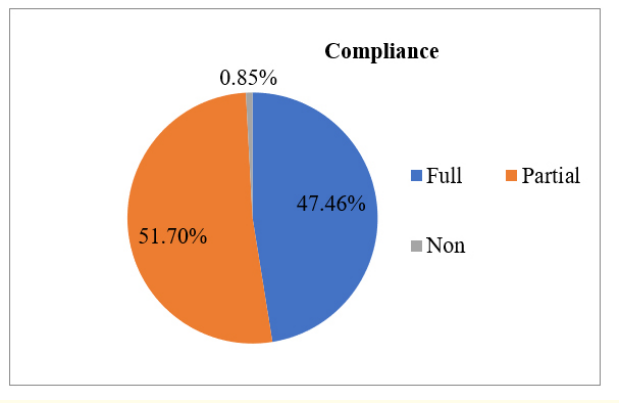

Figure 1: Distribution of children on the basis of compliance to VASP N = 118.

Figure 1 shows that 56 (47.46%) children have full compliance, 61 (51.70%) children have partial compliance and one (0.85%) child did not receive even a single dose of vitamin A supplementation.

Dose of vitamin A	0	1	2	3	4	5	6	7	8	9
Frequency of children	1	2	7	22	5	4	4	5	12	56
Percentage of children	0.84	1.69	5.93	18.64	4.24	3.39	3.39	4.24	10.17	47.5

Table 3: Distribution of participants based on the number of doses of vitamin A received.

From the table 2 it is clear that among the children who have partial compliance, majority (18.64%) have received only 3 doses of vitamin A.

Figure 2 shows that major reason for non-compliance to VASP was due to health related problem (N = 20, 32.26%), and due to lack of awareness (N = 19, 30.64%), 16 (25.8%) due to other reasons, 4 (6.45%) due to unavailability and 3 (4.84%) due to inaccessibility.

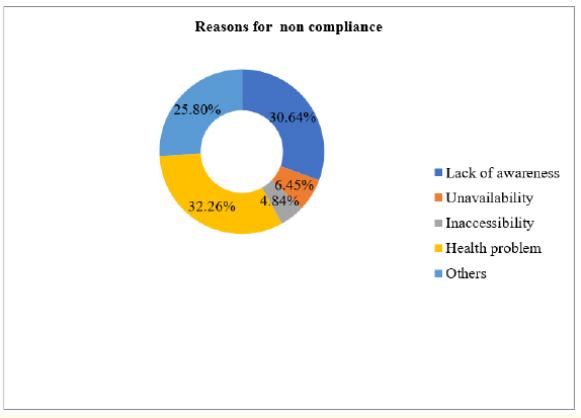

Figure 2: Distribution of study participants according to reason for noncompliance N = 62.

Discussion

The study focused on the assessment of compliance to VASP and its barriers. Among the study participants, 47.46% have full compliance, 51.7% have partial compliance and 0.85% has noncompliance to VASP. Among the children who have partial compliance, majority (18.64%) have received only 3 doses of vitamin A. Reasons for noncompliance were health related problems, lack of knowledge regarding vitamin A prophylaxis, inaccessibility and unavailability.

A similar study was carried out by Sutpa Agrawal and Praween Agrawal to find out the association between utilization of Vitamin A supplementation and socio economic status. The findings of the study revealed that in India, merely 25% of the children receive vitamin A supplementation. Better coverage was reported among children residing in rural areas. Usage rate was also more for children whose mothers were educated. Other factors associated with low consumption were high parity and low socio economic status [7].

An identical study was conducted in Nepal which evaluated the usage of VASP among pre- school children. Evidence of the study show that barriers of vitamin A supplementation include younger children, those affected with anemia, low educational status of parents, rural residence and families with increased infant and child mortality [9].

Corresponding evidence is available from an investigation carried out at Bangladesh to evaluate the factors associated with reduced usage of the vitamin A prophylaxis programme among children attending a diarrheal treatment centre located in the urban premises of Bangladesh. Data were obtained from 8649 children. Almost 68% of the children have received vitamin A prophylaxis in the previous six months. The barriers found out by the study include older children, absence of schooling for parents, families affected with more poverty, low income status of family and failure to receive measles vaccination [10]. This study throws light on the need to improve the knowledge of the mothers regarding VASP.

Conclusion

Evidence from the study shows that majority of children do not have full compliance to VASP. Even though the reason for noncompliance varies, the major reasons were health related problem, lack of awareness regarding the programme, unavailability and inaccessibility. In view of the present study there should be further interventions for improving the compliance to VASP. There is a need for mass health awareness campaign regarding VASP through mass media, community based health education programmes and health education in the hospital settings.

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