

# Implementation of December 2024 round of Vitamin-A Supplementation Program and awareness among Beneficiaries in a Teaching Hospital in Kolkata

Mausumi Saha<sup>1</sup>, Kakali Mondal<sup>1</sup>, Mousumi Datta<sup>2</sup>,  
Smita Dhar<sup>3</sup>, Pialy Sarkar<sup>3</sup>, Subhadip Biswas<sup>3</sup>

<sup>1</sup>Assistant Professor, <sup>2</sup>Associate Professor, <sup>3</sup>Junior Resident, Department of Community Medicine, RG Kar Medical College Kolkata.

**How to cite this article:** Mausumi Saha, Kakali Mondal, Mousumi Datta et. al. Implementation of December 2024 round of Vitamin-A Supplementation Program and awareness among Beneficiaries in a Teaching Hospital in Kolkata. Indian Journal of Public Health Research and Development / Vol. 16 No. 4, October-December 2025.

## Abstract

**Background:** Vitamin A (VA) deficiency is an important public health problem in India. According to NFHS-5 report of West Bengal, 34.6% children aged 6 to 59 months received a single dose of VA within last 6 months. Given the low coverage of VA, we planned a study to assess a round of biannual Vitamin A supplementation program conducted at the immunisation clinic of a teaching hospital. Additionally, we also assessed awareness of caregivers on VAS.

**Methods:** We recruited 104 children, aged 16-59 months coming for Vitamin A supplementation (VAS) dose unlinked to measles-rubella (MR) vaccine. Data collection was by interviewing caregivers accompanying the child using a structured schedule. We checked Mother and child protection card (MCPC) to gather information on age of the child and number of previous doses of VA.

**Results:** Median age of children was 28 months. There were 26% children who missed one or more dose of VA and 59.6% caregivers were aware of benefit of Vitamin-A. Most of the care givers (77.9%) got information about VAS round by providers at Immunisation Clinic. Association of children's age & respondents' awareness with missed dose was statistically significant (p-value = 0.002 and 0.02)

**Conclusion:** One out of every four children missed a VA dose while almost every second caregiver did not know about the benefits provided by VA. Repeated health talks on the danger of VA deficiency and benefits of supplementation may improve awareness and coverage of VA.

**Keywords:** Awareness, National Health Program, Preschool Children, Vitamin A, Dietary Supplement.

## Introduction

Vitamin A (VA) is a fat-soluble vitamin essential for vision, especially dark adaptation, functioning

of the immune system, integrity of skin and mucous membrane, and overall growth and development of children. Adequate amount of VA can be obtained

---

**Corresponding Author:** Subhadip Biswas, Junior Resident, Department of Community Medicine, RG Kar Medical College Kolkata.

**E-mail:** drsubhadipbiswas10@gmail.com

**Submission date:** February 12, 2025

**Revision date:** March 13, 2025

**Published date:** September 24, 2025

---

This is an Open Access journal, and articles are distributed under a Creative Commons license- CC BY-NC 4.0 DEED. This license permits the use, distribution, and reproduction of the work in any medium, provided that proper citation is given to the original work and its source. It allows for attribution, non-commercial use, and the creation of derivative work.

from diet. Yet, VA deficiency (VAD) is the leading cause of preventable childhood blindness and increases the risk of death from common childhood infections like measles and diarrhoeal diseases. In 2013, the World Health Organization (WHO) classified VAD as a public health problem, as it was affecting about one in three children aged 6 to 59 months. As with all other health conditions, in this case also vulnerable are the worst affected with highest rates of VAD in sub-Saharan Africa and South-East Asia. [1,2] VAD continues to be an important public health problem in India, with highest proportion of world's VA deficient children.[3,4]

As a strategy to combat VAD, WHO recommended routine vitamin A supplementation (VAS) in infants and children aged 6-59 months where VAD is a public health problem.[1] VAS has been shown to reduce the risk of all-cause mortality among these children by 12-24%. [5] VAS is a low-cost, highly effective, key child health intervention which is successfully linked with immunisation services. VA doses are given with first and second doses of measles containing vaccines (MCV), thereafter during biannual VAS rounds conducted in June and December among under-five children. Every child should receive nine mega dose of VA before their fifth birthday. [6]

Despite National and International will, only 14 among 70 VAS implementing countries achieved two-dose annual coverage at 80% or higher. While United Nations Children's Fund (UNICEF) provides information on VAS semesters till 2022, India has reported coverage till 2020, with two-dose coverage of mere 54%. Coverage was comparatively higher for the December round at 70%. [2] Moreover, National level data on VA coverage collected in National Family Health Survey (NFHS-5 conducted during 2019-21) reports between 49.8% to 74.9% children of 6-59 months receiving a dose of VA within last six months of survey. It was highest for 12-17 months age group. This value for the state of West Bengal (WB) is 34.6%. Data for VA dose in NFHS-5 was collected based on mother's recall although Mother and Child Protection Card (MCPC) informs on administered VA doses. Surprisingly, none of the mothers of children aged 36-59 months reported administration of VA dose during last six months. [7]

Another National level survey, The Comprehensive National Nutrition Survey (CNNS)

reported relatively low prevalence of sub-clinical VAD at 17.6% among children aged 1-4 years as assessed by the measure of serum retinol levels below 20 µg/dl. VAD can be considered as a severe public health problem with prevalence of  $\geq 20\%$  in 10 of the 30 states/union territories that were surveyed. [8] This finding has prompted The Expert Group constituted by the Ministry of Health, Government of India to recommend modification in the existing national programme with changing VAS from universal coverage of children to a geographically targeted approach. [9]

In a situation of incomplete data and possibility of change in VAS implementation, it is necessary to assess current status of VAS rounds. We planned the present study to assess the 2024-25 December-January biannual VAS program in terms of number of beneficiaries, doses administered, awareness of beneficiaries on benefit of Vitamin A and VAS at a tertiary level centre. We further examined demographic factors associated with awareness on benefit of Vitamin A and doses missed during VAS rounds.

## Methods

Present study was of descriptive type and cross-sectional design conducted from November 2024 - January 2025 at the immunisation clinic of RG Kar Medical College and Hospital, Kolkata. Data collection was conducted during the 2<sup>nd</sup> Semester of biannual VAS program during 10<sup>th</sup> December 2024 to 10<sup>th</sup> January 2025. Study population included all children aged 16-59 months coming for VAS dose unlinked to measles-rubella (MR) vaccine. If any caregiver accompanied two eligible children, both were included for data collection. Considering peak footfall and other competing departmental activities, the data collection time was restricted from 10am to 2pm. We estimated to cover at least 50% of beneficiaries by this strategy.

Data was collected by interviewing caregiver accompanying the child using a structured schedule. MCPC was checked to gather information on age of the child and number of previous doses of VA.

Variables included in the study were demographic variables related to the child and the respondent caregiver, number of VA doses received, number of

missed doses, source of information about VAS and awareness on VAS.

We defined 'awareness' as caregiver having correct information on benefit of VA. Awareness and missed doses were recoded and dichotomised into response categories- aware/not aware and doses missed/all doses received.

We obtained informed consent from all study participants.

**Statistical analysis:** We handled continuous and categorical data differently. We calculated measures of central tendency (mean and median) and measures of dispersion (standard deviation and interquartile ranges) for continuous data. Selection of measures was conditional on normal distribution of data. For categorical data frequencies and percentages were calculated followed by Chi-square test for association. Statistical significance was considered at  $p < 0.05$ . For statistical analysis Statistical package for social sciences (SPSS) version 23 (IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.) was used.

## Results

Bi-annual vitamin A supplementation campaign was conducted at R G Kar Medical College under West Bengal from 10<sup>th</sup> December, 2024 to 10<sup>th</sup> January, 2025. Total 185 beneficiaries attended in this round for taking VA in oil. Out of 185 beneficiaries, 104 children came during data collection time of 10 am to 2 pm and were selected as our study participants (participation rate of 56%). Majority of attended children lived in urban area (3.84%). Among them, 32 (30.8%) children attended ICDS centre, 19 (18.2%) attended school or pre-school and rest 52 (50%) did not attend any institute point where VA can be administered. At the beginning of the campaign there was stock of seven bottles of vitamin A oil. Out of these, four bottles were used during campaign period.

Table 1 shows the distribution of socio-demographic characteristics of children attending bi-annual vitamin A supplementation programme. The study revealed median age of participating children to be 28 months with IQR 24-38. Median age of respondents were 30 years with IQR 25 -33.8. Median was used as central tendency age for both children and respondents did not follow normal distribution (tested by Kolmogorov -Smirnov test). Most of the study participants were Hindu (70.2%) and in case of 85.6% mother was the respondent.

Table 2 shows supplementary VA doses and caregivers' awareness about Vit-A supplementation programme. There were missed doses of VA in 26.0% of children attending the campaign. 33.7% caregivers responded the benefits of VA supplementation can improve vision.

Table 3 shows association of missed supplementary VA doses with to respondents' awareness and sociodemographic factors by Chi-square test. The factors like gender, religion & family income of children did not play any significant role on missed dose. The result shows age of children & respondents' awareness has significant role on missed dose. Association of children's age & respondents' awareness with missed dose was found statistically significant ( $p$ -value = 0.002 & 0.02)

In Figure 1, Box-plots shows the distribution of children's age with VA doses clustered by respondents' awareness on benefit of Vit-A supplementation. Median age of children was higher for the group missing one or more doses both for aware and unaware respondent group. However, for the group where all doses were taken, median age was higher for the cluster where caregivers were aware about VA. Thus, it can be inferred, aware caregivers will come for VAS till higher age of children, but age is nevertheless a strong factor for dropping out from VAS rounds.

**Table 1: Socio-demographic characteristics of children attending Bi-annual vitamin A supplementation programme (December 2024 round) at R G Kar Medical College (n=104)**

Continuous variables	Median (IQR)	Mean (SD)
Age of child (in months)	28 (24-38)	31.38(10.72)
Age of respondent (in years)	30 (25-33.80)	29.93(6.61)
Monthly income (INR)	15000 (10000-25000)	20884.62 (17544.43)

Categorical variables		Frequency (%)
Sex of child	Male	52 (50)
	Female	52 (50)
Birth order	1 <sup>st</sup>	63 (60.6)
	2 <sup>nd</sup>	36 (34.6)
	≥3 <sup>rd</sup>	5 (4.8)
Religion	Hindu	73 (70.2)
	Muslim	31 (29.8)
Respondent	Mother	89 (85.6)
	Other	15 (14.4)
Gender of respondent	Male	10 (9.6)
	Female	94 (90.4)
Education of respondent	<Secondary	56 (53.8)
	≥Secondary	48 (46.2)

**Table: 2 Supplementary Vit- A doses and caregivers' awareness about Vit-A supplementation programme (n=104)**

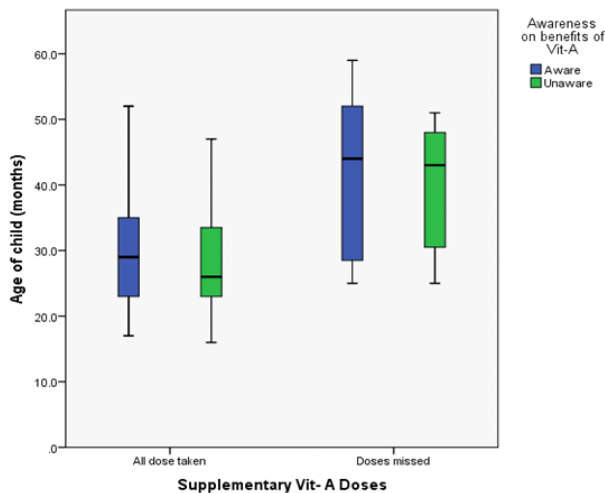
variable		Frequency (%)
Number of missed dose of Vit-A	No missed dose	77 (74.0)
	1 missed dose	13 (12.5)
	2 missed dose	6 (5.8)
	3 & more missed dose	8 (7.7)
Responses on benefits of supplementation**	Improves vision	35 (33.7)
	Prevents vitamin A deficiency	7 (6.7)
	Improves skin	3 (2.9)
	Improves immunity	14 (13.5)
	General wellbeing	8 (7.7)
Number of correct responses on benefits of supplementation	Any correct response/s	62 (59.6)
	1 correct response	28 (26.9)
	2 correct responses	10 (9.6)
	3 & more correct responses	4 (3.9)
Source of information on VAS round**	Immunisation Clinic	81 (77.9)
	MCPC record	21 (20.2)
	Health Care workers	3 (2.9)
	AWW	7 (6.7)
	Friends and family	6 (5.8)
Place of last dose	RG Kar immunisation clinic	91 (87.5)
	Other venue	11 (10.6)
	No dose taken before	2 (1.9)

\*\* Multiple responses were possible

**Table: 3 Association of missed supplementary Vit-A doses with respondents' awareness and sociodemographic factors (n=104)**

Variables		All doses taken according to age No. (%)	One or more Missed doses No (%)	X <sup>2</sup> Value (Degree of Freedom)	P value
Sex of child	Male child	36 (69.2)	16 (30.8)	1.25 (1)	0.26
	Female child	41 (78.8)	11 (21.2)		
Religion	Hindu	56 (76.7)	17 (23.3)	0.91 (1)	0.34
	Muslim	21 (67.7)	10 (32.3)		
Age of respondent (years)	≤ 30	50 (76.9)	15 (23.1)	0.75 (1)	0.39
	> 30	27 (69.2)	12 (30.8)		
Age of child (months)	≤ 28	46 (86.8)	7 (13.2)	9.15 (1)	0.002*
	> 28	31 (60.8)	20 (39.2)		
Education of Respondent	Below secondary	41 (73.2)	15 (26.8)	0.04 (1)	0.84
	Secondary or above	36 (75.0)	12 (25.0)		
Monthly Income	≤15000	44 (69.8)	19 (30.2)	1.47 (1)	0.23
	>15000	33 (80.5)	8 (19.5)		
Respondents' awareness	Aware	51 (82.3)	11 (17.7)	5.40 (1)	0.02*
	Unaware	26 (61.9)	16 (38.1)		

\* p&lt;0.05

**Figure 1: Box-plots showing distribution of children's age with Vit-A doses clustered by respondents' awareness on benefit of Vit-A supplementation**

### Discussion

During December January 2024-25 biannual VAS at the study site total 185 children were administered with supplementary VA. There were 104 children included in present study. Median age of children was 28 months. Mothers were respondent in most cases. Majority were urban population with monthly

income 15000 INR. There were 26% children who missed one or more dose of Vit-A and 59.6% were aware of benefit of Vit-A. Higher age of children and lower awareness of caregivers were associated with missing of Vit-A doses.

A study conducted in Ethiopia determined VAS coverage of the children at 58%, while another study conducted in Chandigarh showed 38.52% coverage of VA supplementation. Both studies report much lower coverage than the present study, where 77 (74.0%) children taken vit A supplementation at per their age [10,11]. This difference may be attributed to different settings of the study as our study was conducted at immunisation clinic during VAS program as opposed to community settings of two other studies.

The administration of vit - A supplementation significantly increases the survival rate and improves vision. In our study 35 (33.7%) caregivers of attending children were aware about effect of vit A on improved vision. A study conducted in Ethiopia showed 170 (48.2%) did not know the medical consequence of VAD whereas 37.1% of the respondent mentioned night blindness because of VA [10]. These finding is agreement with our study.

In the same study majority of mothers (72.2%) were living in a rural area and 64.8% mothers were

attending primary and secondary school. Whereas in our study majority of (96.2%) of study children were coming from urban area & education level of 56 (53.8%) caregivers was below secondary level and 48 (46.2%) caregiver was above secondary level. Regarding the economic status of the family 270 (57.3%) had less than 2000 Ethiopian birr monthly income but in our study 63 (60.57%) family has monthly income had < than 15000 INR [10]. Such demographic differences also attributed to differences in result.

In the Ethiopian study 247 (52.65%) mothers heard about vitamin A supplementation, among them 44.76% of them heard from health workers, followed by 29.03% from books and magazines and 24.6% from media. But majority caregiver of our study got information from immunization clinic (77.9%) and MCPC (20.2) [10]. This points out towards completely different channels of accessing health information. Our study shows participation of VAS round decreased with increase age of children. Drop out of first and second dose minimal as first and second doses were delivered with vaccine. Participation in VAS round depends on care givers belief on the benefit of VA. This is consistent with Health Belief model which consists of six primary cognitive constructs or "dimensions" that influence behaviour (perceived susceptibility, perceived severity, perceived benefits, perceived barriers, self-efficacy, and cues to action). In the present situation, perceived benefits and severity could have been motivators to participate in VAS program. The program itself may provide cues to action [12].

**Strengths:** Immunisation clinic-based study with comprehensive approach of data collection, education and future follow-up. This study directly assessed children who participated in VAS round & thus linking the study objectives with action (supplementation with vit A and health talk).

**Limitations-** Single centre study with a purposive sample limits generalisability to other settings. We recruited mostly urban children who were catered by the study hospital. Moreover, we included only those children who were coming for VAS and more vulnerable non-participating children were not covered.

### Conclusion

One out of every four children missed a vit-A dose while almost every second caregiver did not

know the benefit provided by vit-A. The dose of vit A given in VAS round unlinked with vaccine may be missed. However, caregiver's awareness can protect against this. Thus, repeated health talk on the danger of vit A deficiency and benefits of supplementation must be delivered at various point where mothers and children can be contacted.

### Implications of study findings:

In the present study, missed supplementary vitamin A doses were found to be significantly associated with the age of child and the responders' awareness (p value 0.002 and 0.02 respectively). This is because injectable vaccines are seen to be more vital than oral vitamin A oil, which is already found in food. It is crucial to do public health campaigns throughout the year to increase awareness about vitamin A oil supplementation rather than right before a supplementary program. Additionally, vaccination campaigns for younger children should be directed towards Anganwadi centres, while primary schools should concentrate on the same for older children.

**Credit Statement:** MD: Conceptualization, Methodology, Supervision, Software MS and KM: Data curation, Writing- Original draft preparation SD, PS and SB: Data collection, Investigation. SD: Software, Validation. MD, SD: Writing- Reviewing and Editing,

**Acknowledgement:** We acknowledge all study participants, PHNs, interns and other staffs of immunization clinic whose co-operation made this study possible. We are especially thankful to Sr PHN Ms Anita Chanda.

We are also thankful to Prof (Dr) Samir Kumar Ray, Head Department of Community Medicine, RG Kar Medical College Kolkata for his support.

**Consent:** Informed and written consent was taken from all study participants.

**Conflict of interest:** none

**Ethical Clearance:** The study protocol was approved by Institutional Ethics Committee, R. G. Kar Medical College with approval number RKC/IEC/1093 Dated 25/05/2024

**Funding Sources:** No external funding

## References

1. World Health Organisation (WHO). Vitamin A Supplementation. <https://www.who.int/teams/immunization-vaccines-and-biologicals/essential-programme-on-immunization/integration/linking-with-other-health-interventions/vitamin-a>
2. [https://data.unicef.org/topic/nutrition/vitamin-a-deficiency/#\\_ftn1](https://data.unicef.org/topic/nutrition/vitamin-a-deficiency/#_ftn1)
3. World Health Organization. Global prevalence of vitamin A deficiency in populations at risk: 1995–2005. WHO Global Database on Vitamin A Deficiency. Geneva: WHO; 2009.
4. West KP Jr. Extent of vitamin A deficiency among preschool children and women of reproductive age. *J Nutr.* 2002;132:2857–66.
5. Imdad A, Mayo-Wilson E, Herzer K, Bhutta ZA. Vitamin A supplementation for preventing morbidity and mortality in children from six months to five years of age. *Cochrane Database Syst Rev.* 2017 Mar 11;3(3):CD008524. doi: 10.1002/14651858.CD008524.pub3. Update in: *Cochrane Database Syst Rev.* 2022 Mar 16;3:CD008524. doi: 10.1002/14651858.CD008524.pub4. PMID: 28282701; PMCID: PMC6464706.
6. No.Z.28020/30/2003-CH, Government of India, Ministry of Health and Family Welfare, Department of Family Welfare, Child health division. Nirman Bhawan, New Delhi, Dated the 02<sup>nd</sup> November 2006. Subject: Vitamin A & IFA Supplementation-Regarding. By Under Secretary (CH)
7. International Institute of Population Sciences (IIPS and ICF) and Ministry of Health and Family Welfare, Government of India. National Family Health Survey (NFHS-5), 2019-21, India Report, 2021, pg 448-52: India. Mumbai: IIPS
8. Comprehensive National Nutrition Survey (CNNS). CNNS National Report 2016-18. New Delhi: Ministry of Health and Family Welfare, Government of India, UNICEF and Population Council; 2019.
9. Reddy GB, Pullakhandam R, Gosh S, Boiroju NK, Tattari S, Laxmaiah A, et al. Vitamin A deficiency among children younger than 5 y in India: an analysis of national data sets to reflect on the need for vitamin A supplementation. *Am J Clin Nutr.* 2021;113:939–47.
10. Berihun B, Chemir F, Gebru M, GebreEyesus FA. Vitamin A supplementation coverage and its associated factors among children aged 6–59 months in West Azernet Berbere Woreda, South West Ethiopia. *BMC pediatrics.* 2023 May 23;23(1):257.
11. Yadav R, Patial A, Bharti B, Attri SV, Bhatia P. Dietary Vitamin A Intake, Coverage of Vitamin A Megadose Supplementation, and Prevalence of Vitamin A Deficiency among Marginalized Children 6–59 Months in Anganwadis of Chandigarh: A Multistage Cluster Sampling Survey. *Indian Journal of Community Medicine.* 2021 Oct 1;46(4):692–6.
12. Sharma M. Theoretical foundations of health education and health promotion: Jones & Bartlett Learning; 2021.