ISSN 2564-0127 (Print)
ISSN 2564-0135 (Online)

Canadian Journal of Medicine 7(2025) 86-99

Canadian Journal of Medicine

WWW.CIKD.CA

journal homepage: https://www.cjm.cikd.ca

Original Research

Vitamin A Supplementation Among Children Attending Enugu State University Teaching Hospital Enugu: The Caregiver Perspective

Nduagubam Obinna C[1], Chime Onyinye H[2], Nzeduba Chiesonu D[3], Ogbuka Francis N[4], Chinawa Josephat M[5*]

[1,4]Department of Paediatrics, ESUCOM, Parklane, Enugu, Enugu State, Nigeria
[2,3]Department of Community Medicine, ESUCOM, Parklane, Enugu, Enugu State, Nigeria
[5]Department of Paediatrics, College of Medicine, University of Nigeria Ituku/Ozalla and University of Nigeria Teaching Hospital Ituku/Ozalla, Enugu, Enugu State, Nigeria

Keywords:
VAS, Supplementation, Vitamin A, Mothers, Children

Received
17 May 2025
Received in revised form
12 August 2025
Accepted
18 August 2025

***Correspondence:**
josephat.chinawa@unn.edu.ng

ABSTRACT

Vitamin A supplementation (VAS) is an important means of curbing Vitamin A Deficiency (VAD) related childhood morbidity and mortality. The aim of this study is to assess the knowledge, attitude and practice of caregivers regarding vitamin A supplementation as well as its uptake in their children. This was a descriptive cross-sectional study carried out among caregivers of children aged 6 to 59 months attending clinics in Enugu State University Teaching Hospital Parklane, Enugu. Multi-stage sampling technique was used to select the subjects while the data was collected and analyzed using the statistical package for social sciences (SPSS) software version 23.0 (IBM, USA). Over half of mothers were aware of what vitamin A was (56.3%) (95CI= 51 – 62) and its route of administration (76.6%) (95CI = 72–81). However, only 119 (37.2%) of respondents were aware of the recommended frequency of vitamin A supplementation. Three hundred and five (95.3%) (95CI = 93-98) of the respondents were aware that vitamin A was beneficial with 196 (61.3%) being aware that Vitamin A could prevent blindness. The majority of respondents knew that there was a WHO recommendation on VAS for children, 215 (67.2%). Over half of the respondents (163, 50.9%) felt that there was not enough information on vitamin A due to poor information dissemination (120, 37.5%). Predictors of good knowledge included higher educational qualification (AOR: 0.48; 95% CI: 0.29-0.81), having good attitude (AOR: .47; 95% CI: .25-0.87), and good uptake (AOR: .42; 95% CI: .24-.71). Having good knowledge was a predictor of uptake of VAS (AOR: .41; 95% CI: .24-.70). Significant gaps and challenges still exist in the knowledge, attitude and practice of caregivers on VAS as well as its uptake by children in Enugu.

Vitamin A is a fat-soluble micronutrient needed in small amounts and plays diverse roles in human physiology, ranging from vision pigment formation to regulating the expression of genes for growth hormones [1]. The World Health Organization (WHO) recommends that all children aged 6–59 months should receive supplements if they live in a community where vitamin A deficiency (VAD) is a public health problem. These are communities where the prevalence of night blindness is ≥ 1% in children aged 24–59 months, or where the prevalence of VAD is ≥ 20% in infants and children aged 6–59 months [2].

It has been established that VAD increases the risk of childhood morbidity and mortality [3]. An insufficient amount of vitamin A uptake decreases children's ability to fight childhood infection and increases the risk of childhood death and visual impairment [4-9]. Complications of conditions like malnutrition, measles, and diarrhea are commonly associated with VAD and rank amongst the leading causes of morbidity in Nigerian children [10]. Vitamin A deficiency is the leading cause of preventable childhood blindness and increases the risk of death from common childhood illnesses such as diarrhea [11]. Periodic, high-dose vitamin A supplementation is a proven, low-cost intervention that has been shown to reduce all-cause mortality by 12 to 24 percent and is therefore an important program in support of efforts to reduce child mortality [11].

Nigeria, with an under-five mortality rate of 132 per 1000 births, is a priority country for national Vitamin A supplementation (VAS) campaigns [2]. These campaigns are conducted biannually within the country, mainly during Maternal, Newborn and Child Health (MNCH) weeks, through a health facility-based approach [3]. Most countries, utilize the global recommendations from WHO on VAS. However, the level of utilization and implementation of these recommendations remains an issue for developing countries such as Nigeria. For instance, in a study conducted in Nigeria, the proportion of children who received at least one dose of VAS ranged from 2 to 59% over a six-month period. Similarly, VAS level was found to be as low as 41 percent, with Sokoto and four other States recording less than 15 percent coverage [12-14].

Addressing the poor VAS coverage among these vulnerable groups is key for child survival in Nigeria and critical for universal health coverage. To promote more equitable access to this life-saving intervention, WHO recommends that VAS be integrated into other public health programs that are aimed at improving child survival, as evidence suggests that integrating interventions for multiple diseases can increase coverage, improve health outcomes and could be cost-effective [15-19].

The aim of this study is to assess the knowledge, attitude and practice of caregivers regarding VAS in their children as well as its uptake in their children. It is expected that findings from this study may expose possible gaps and improve Vitamin A uptake among children in the area.

Method

Study Area

The study was carried out in Enugu State University Teaching Hospital (ESUTH), with a total facility catchment population for childhood vaccination of 10,554. The study was carried out in Antenatal Care Clinic (ANC), Immunization Clinic (IC) and Children Out-Patient Clinic (CHOP) of the selected facility

Study Design

This was a descriptive cross-sectional study carried out among caregivers of children aged 6 to 59 months attending selected clinics in ESUTH.

Study Population

The study involved caregivers of children within 6-59 months' age bracket, who came to the Antenatal Clinic (ANC), Immunization Clinic (IC) and Children Out-Patient Clinic (CHOP) of the Enugu State University Teaching Hospital. Caregivers who gave consent were included in the study. Indirect caregivers who could not provide information on the welfare of the child and those with very ill children were excluded.

Sample Size Determination

The sample size of 320 was determined using the Cochran formula for estimating a single proportion:

$n=Z^2pq/d^2$

Where:

- Z = 1.96 (standard normal deviate for 95% confidence)
- p = 0.411 (prevalence of VAS uptake from a similar study)[20]
- q = 1 - p = 0.589
- d = 0.05 (margin of error)

This gave a minimum sample size of 311, which was rounded up to 320 to account for potential non-response and ensure sufficient power for subgroup analysis.

Sampling Technique

The total sample size was proportionally allocated across the three clinics (ANC, IC, and CHOP) based on their average monthly attendance records. Each clinic contributed participants to the sample in proportion to the volume of caregivers attending per month, ensuring fair representation of each clinic in the overall study population.

Systematic sampling was used to select the participants in each clinic. The sampling interval was determined by dividing the total number of expected caregivers during the data collection period by the number allocated to that clinic. A sampling interval (n) was determined by dividing the total number of eligible caregivers presenting during the study period by the number allocated for each clinic. The first respondent was selected by simple random sampling, after which every n-th eligible caregiver was approached and invited to participate until the required number was achieved. The sampling process was carried out daily for three weeks to accommodate weekly variations in clinic attendance.

Data Collection and Analysis

An interviewer-administered questionnaire designed by the researchers was used for data collection. Content validity of the instrument was ensured through expert review by professionals in public health and pediatrics. It comprised four sections: Socio-demographic data of respondents, level of knowledge, level of attitude and level of uptake of vitamin A supplementation in children aged 5-59 months. A total of seven, four, and three questions were used to assess the level of knowledge, attitude, and uptake, respectively. Their mean scores were used to categorize the variables as good or poor variables.

The questionnaire was pre-tested on 10% of the sample (32 respondents) at the University of Nigeria Teaching Hospital (UNTH), a similar setting, to assess clarity, relevance, and coherence of the questions. Feedback from the pre-test led to necessary modifications to correct ambiguities and enhance understanding. The internal consistency was ascertained using Cronbach's alpha at .75 for the variables.

The data was analyzed using the IBM Statistical Package for social sciences (SPSS) software version 27.0 (IBM, USA). Frequencies and proportions were determined. Chi-square test of statistical significance, Student t-test and multivariate analysis using binary logistic regression analysis were used in the analysis. Level of statistical significance was set at a predetermined p-value of < .05. Variables that had a p-value of < .2 in the bivariate analysis were entered into the logistic regression model to determine the predictors of knowledge and uptake of vitamin A supplementation. Results were reported using the Odds ratio, Confidence Interval at 95% and level of significance was also set at < .05.

Ethical Consideration

Ethical approval for the research was obtained from the Health Research and Ethics Committee ESUTH with number: ESUTHP/C-MAC/RA/034/vol.3/59. A written informed consent was obtained from the study participants. The respondents were assured of their confidentiality and also allowed to withdraw from the study at any time during the study without any consequences for them.

Result

Three hundred and twenty (320) caregivers responded to the questionnaire. Majority of the children were between 12 and 35 months old, 130(40.6%), with a mean of 21.28 months ± 15.39 standard deviation. Majority of the children were female, 175(54.7%). One hundred and seven (33.4%) weighed between 11 and 15kg, while only 70 of them weighed more than 15kg. Almost all the children were Igbo, 307 (95.9%) (Table 1).

Table 1. Socio-demographics of the children

Variables	Frequency (n=320)	Percentage (%)	Mean ±S.D
Age of children (in months)			
<12 months	81	25.3	23.24±14.16
12-35 months	169	52.8	
36-59 months	70	21.9	
Gender			
Male	145	45.3	
Female	175	54.7	
Weight			
<10kg	143	44.7	14.39±11.85
11-15kg	107	33.4	
>15kg	70	21.9	
Tribe			
Igbo	307	95.9	
Hausa	4	1.3	
Yoruba	2	0.6	
Others	7	2.2	

As shown in Table 2, Most (282, 88.1%) of the caregivers were married while only 1 caregiver was widowed (0.31%). Almost all the caregivers (95.6%) who accompanied the

children to the facility were mothers. A total of 144 caregivers were salary earners, while only 14 of the caregivers were unemployed (4.4%). Majority (61.9%) of caregivers had a BSc/Degree as their current education, 198 (61.9%) while only 6 of the caregivers had primary level education (1.9%). Only 29.1% of caregivers' had an average family income above N100, 000, while only 2 of the caregiver (3.9%) had an average family income of less than N30, 000 which is less than the minimum wage in Nigeria as of 2022.

Table 2. Socio-demographics of the caregivers

Variables	Frequency (n=320)	Percentage (%)	Mean ± S.D
Caregivers' age			
Less than 21years	11	3.4	30.03±1.058
21-30 years	190	59.4	
31-40	113	35.2	
Above 40 years	16	5.0	
Gender of Caregiver			
Male	25	7.8	
Female	295	92.2	
Marital Status			
Single	34	10.6	
Married	282	88.1	
Divorced	3	0.9	
Widowed	1	0.3	
Relationship to child			
Mother	306	95.6	
Father	7	2.2	
Guardian	7	2.2	
Occupation			
Unemployed	14	4.4	
Self-employed	133	41.6	
Student	32	10.0	
Salary earned	141	44.0	
Highest Level of Education			
Primary	6	1.9	
Secondary	99	30.9	
BSc/Degree	198	61.9	
Masters and PhD	17	5.3	
Residence			
Rural	35	10.9	
Urban	285	89.1	
Religion			
Christian	311	97.2	
Muslim	7	2.2	
Others	2	0.6	

As presented in Table 3, Over half of respondents were aware of what vitamin A was (56.3%) (95CI = 51–62) and its route of administration (76.6%) (95CI = 72–81) However, only 119 (37.2%) (95CL = 32–43) of respondents were aware of the recommended frequency of VAS. Knowledge about Vitamin A was primarily obtained from health workers or health facilities (191; 59.7%). Three hundred and five (305, 95.3%) (95CI = 93–98) of the respondents were aware that vitamin A was beneficial with 196 (61.3%) being aware that Vitamin A could prevent blindness.

The majority of respondents were aware of the WHO recommendation on VAS for children, (215, 67.2%) and also that the National Program on 1mmunization (NPI) in Nigeria has in its schedule; VAS for children, (201, 62.8%). Generally, majority (202; 63.1%) of respondents was aware and had good knowledge of VAS.

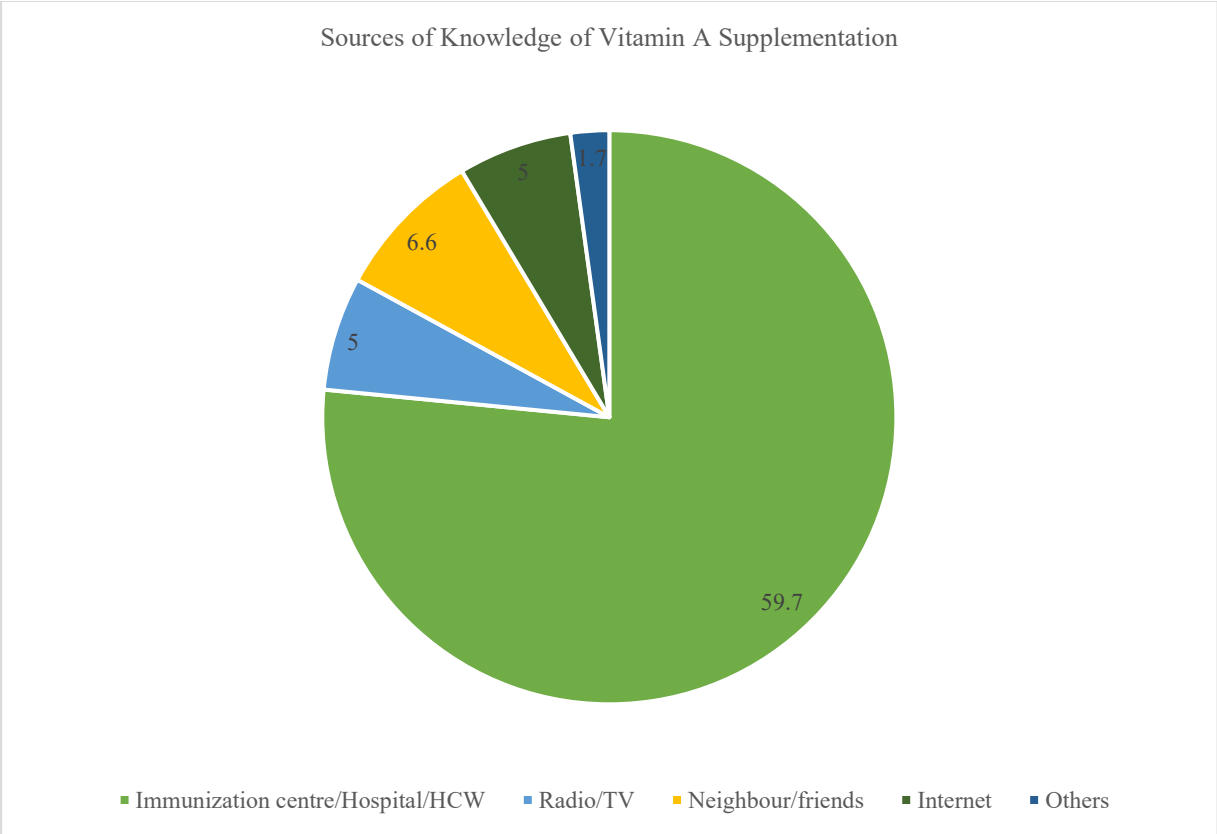
Table 3. The awareness of Vitamin A in children among respondents

Variables	Frequency (n=320)	Percentage (%)	95% CI
Awareness of vitamin A	180	56.3	.5–.6
Route of administration of vitamin A	245	76.6	.7–.8
Frequency of Administration of Vitamin A	119	37.2	.3–.4
Ever heard of Vitamin A supplementation	225	70.3	.7–.8
Vitamin A is beneficial to ward/child	305	95.3	.9–1.0
Knowledge of W.H.O. recommendation on VAS	215	67.2	.6–.7
Knowledge of NPI schedule on VAS	201	62.8	.6–.7
Overall Knowledge			
Good	202	63.1	
Poor	118	36.9	

Note. Good knowledge: ≥5, Poor knowledge < 5

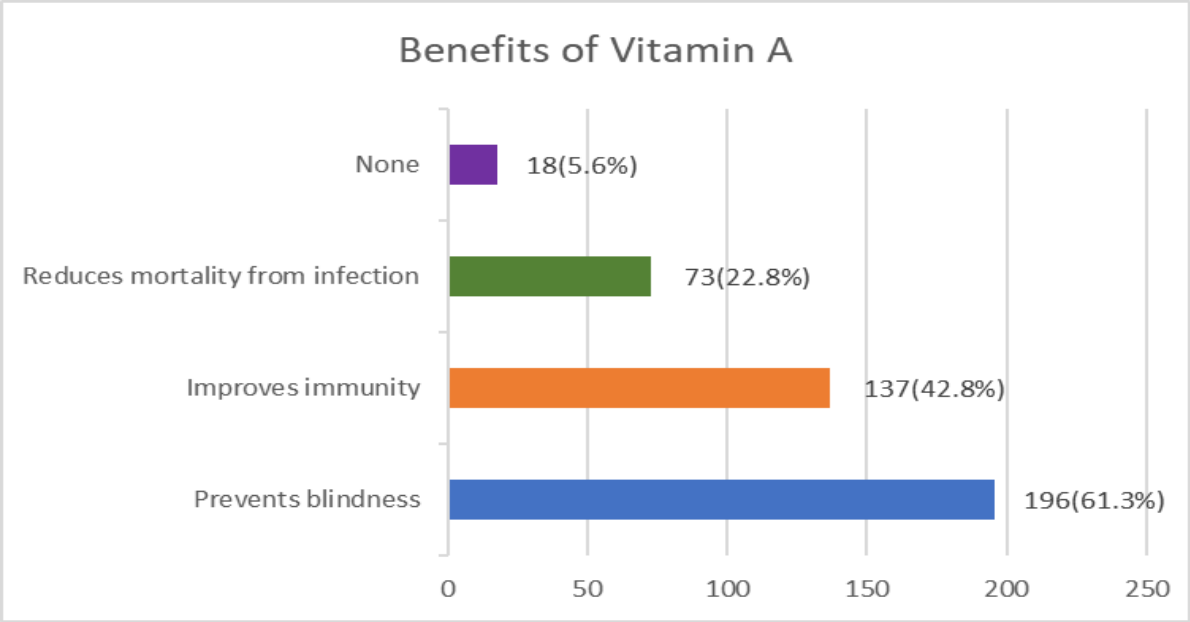
As shown in Figure 1, A majority of the respondents obtained information concerning VAS from neighbours and friends.

Figure 1. Sources of knowledge of VAS among respondents



As demonstrated in Figure 2, A majority of the respondents believe that Vitamin A prevents blindness (61.3%) and improves immunity (42.8%).

Figure 2. Caregivers perceived benefits of Vitamin A to ward/child



As presented in Table 4, three hundred and eleven (311, 97.2%) of the respondents were willing to give vitamin A to their wards. Almost all the respondents were willing to give vitamin A to their wards up to 5 years of life (301, 94.1%), and to tell others about vitamin A (303, 94.7%).

Table 4. Attitude of respondents regarding vitamin A supplementation

Variables	Frequency (n=311)	Percentage (%)	95% CI
Willingness to give vitamin A to child	311	97.2	0.9–1.0
Caregivers who are willing to give their child the number of doses of vitamin A required for age	24	7.5	0.0-0.1
Intends to continue giving child vitamin A until the child is 5 years	301	94.1	0.8–0.9
Willingness to tell other friends and relatives about the need to give vitamin A to other children	303	94.7	0.9–1.0
Overall Attitude			
Good	264	82.5	
Poor	56	17.5	

Note. Good attitude: ≥3, Poor attitude <3

Table 5 shows that 295 of the respondents (92.2%) immunize their child routinely, and 270 (84.4%) have given their ward at least one dose of supplemental vitamin A. However, only 175 (54.7%) have given the correct number of doses expected for their child's age. Most (245; 76.6%) of the respondents gave their wards the first dose of vitamin A at 6 months.

Table 5. Uptake of Caregivers of children regarding vitamin A and its level of uptake

Variables	Frequency (n=320)	Percentage (%)	95% CI
Immunized child routinely	295	92.2	0.9–1.0
Had ever given child Vitamin A	270	84.4	0.8–0.9
Age of child at first dose of vitamin A (6 months)	245	76.6	0.7–0.8
Correct number of doses of vitamin A given to the child/ward for age	175	54.7	0.5–0.6
Level of uptake			
Good	239	74.7	
Poor	81	25.3	

Note. Good uptake: ≥3, Poor uptake <3

As displayed in Figure 3, over half of the respondents (163; 50.9%) felt that there was not enough information on vitamin A. Poor information dissemination (120; 37.5%); lack awareness of the benefits of Vitamin A (98; 30.6 %) and Poor access to immunization centers and posts (46, 14.4%) were the major factors caregivers felt were affecting VAS efforts and coverage. Caregivers believed that sustained awareness creation through mass media (220; 68.8%) and schools and churches (199; 62.2%) was a viable measure to increase vitamin A uptake.

Figure 3. Reasons for low VAD coverage

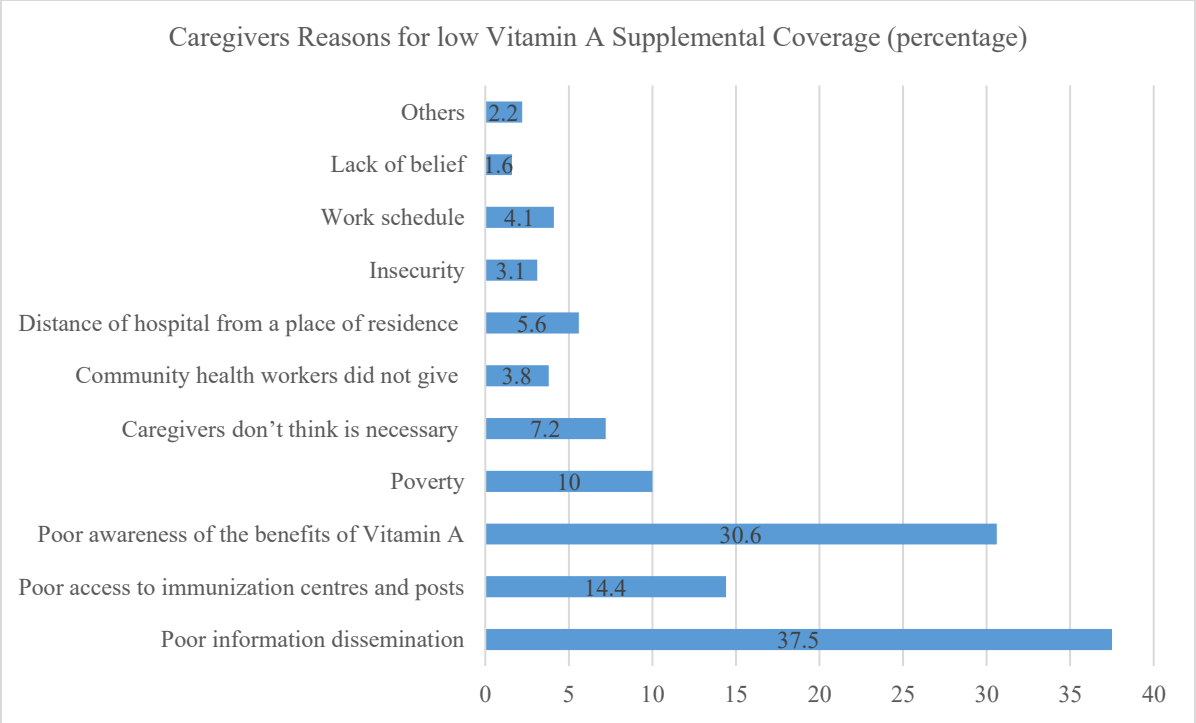


Table 6 indicates that respondents with secondary education were about twice less likely to have better knowledge than those with tertiary education and the difference in proportion was statistically significant (AOR: .48; 95% CI: .29-.81) $p < .001$. Residents in rural areas were about two times less likely to have better knowledge than those who reside in urban areas. (AOR: .47; 95% CI: .22-1.01) Those with a poor attitude were approximately twice less likely to have better knowledge than those with a good attitude (AOR: .47; 95% CI: .25-.87). This finding was statistically significant ($p = .004$). Also, respondents with poor practice were two times less likely to have better knowledge than those with good practice (AOR: .42; 95% CI: .24-.71).

Table 6. Predictors of knowledge

Variable	Knowledge		p-value	AOR [95% CI]
	Good n=202 (%)	Poor n=118 (%)		
Gender				
Male	14 (56.0)	11 (44.0)	.442	NA
Female	118 (63.7)	107 (36.3)		
Age of Caregiver				
≤ 30 years	126 (62.7)	75 (37.3)	.833	NA
> 30 years	76 (63.9)	43 (36.1)		
Marital status				
Single	21 (55.3)	17 (44.7)	.285	NA
Married	181 (64.2)	101 (35.8)		
Relationship to child				
Mother	194 (63.4)	112 (36.6)	.495	NA
Father	3 (42.9)	4 (57.1)		
Guardian	5 (71.4)	2 (28.6)		
Occupation				
Unemployed	30 (65.2)	16 (34.8)	.744	NA
Self-employed	104 (61.2)	66 (38.8)		
Salary earner	68 (65.4)	36 (34.6)		
Highest Level of Education				
Primary	2 (33.3)	4 (66.7)	<.001	0.28[0.05-1.61]
Secondary	49 (49.5)	50 (5.5)		0.48[0.29-0.81]
Tertiary	151 (70.2)	64 (29.8)		1
Area of residence				
Rural	15 (42.9)	20 (57.1)	.008	0.47[0.22-1.01]
Urban	187 (65.6)	98 (34.4)		1
Age of child				
< 12 months	56 (69.1)	25 (3.9)	.430	NA
12 – 35 months	103 (60.9)	66 (39.1)		
36 – 59 months	43 (61.4)	27 (38.6)		
Level of Attitude				
Poor Attitude	26 (46.4)	30 (53.6)	.004	0.47[0.25-0.87]
Good Attitude	176 (66.7)	88 (33.3)		1
Level of Practice				
Poor Practice	37 (45.7)	44 (54.3)	<.001	0.42[0.24-0.71]
Good Practice	165 (69.0)	74 (31.0)		1

Note. *p-value on bivariate, AOR-Adjusted Odds Ratio at 95% Confidence Interval, NA-Not Applicable (as only p-value < .2 at bivariate were logged into multiple logistic regression model)

As shown in Table 7, respondents less than 31 years were about 1.4 times less likely to have better uptake of VAS than older respondents (AOR: .69; 95% CI: .39-1.22). Those with poor knowledge were approximately two times less likely to have better uptake than those with good knowledge (AOR: .41; 95% CI: .24-.70). This finding was statistically significant ($p < .001$).

Table 7. Predictors of VAD uptake

Variable	Uptake		p-value	AOR [95% CI]
	Good n=239 (%)	Poor n=81 (%)		
Gender				
Male	19 (76.0)	6 (24.0)	.875	NA
Female	220 (74.6)	75 (25.4)		
Age of Caregiver				
≤ 30 years	145 (72.1)	56 (27.9)	.173	0.69[0.4-1.2]
> 30 years	94 (79.0)	25 (21.0)		1
Marital status				
Single	25 (65.8)	13 (34.2)	.179	0.63[0.3-1.4]
Married	214 (75.9)	68 (24.1)		1
Relationship to child				
Mother	230 (75.2)	76 (24.8)	.545	NA
Father	4 (57.1)	3 (42.9)		
Guardian	5 (71.4)	2 (28.6)		

Occupation				
Unemployed	38 (82.6)	8 (17.4)	.018	1.29[0.5-3.9]
Self-employed	116 (68.2)	54 (31.8)		0.56[0.3-1.1]
Salary earner	85 (81.7)	19 (18.3)		1
Highest Level of Education				
Primary	3 (50.0)	3 (50.0)	.012	0.35[0.6-1.9]
Secondary	65 (65.7)	34 (34.3)		0.78[0.4-1.4]
Tertiary	171 (79.5)	44 (20.5)		1
Area of residence				
Rural	25 (71.4)	10 (28.6)	.638	NA
Urban	214 (75.1)	71 (24.9)		
Age of child				
< 12 months	64 (79.0)	17 (21.0)	.391	NA
12 – 35 months	121 (71.6)	48 (28.4)		
36 – 59 months	54 (77.1)	16 (22.9)		
Level of Knowledge				
Poor Knowledge	74 (62.7)	44 (37.3)	<.001	0.41[0.2-0.7]
Good Knowledge	165 (81.7)	37 (18.3)		1
Level of Attitude				
Poor Attitude	41 (73.2)	15 (26.8)	.780	NA
Good Attitude	198 (75.0)	66 (25.0)		

Note. *p-value on bivariate, AOR-Adjusted Odds Ratio at 95% Confidence Interval, NA-Not Applicable (as only p-value < .2 at bivariate were logged into multiple logistic regression model)

Discussion

The overall purpose of the study was to explore the awareness, attitude, practice, level of uptake and factors affecting VAS in children among caregivers in Enugu state. Although caregivers generally demonstrated a good understanding of VAS, they had a poor perception of Vitamin A. The work being done in a health facility, increased awareness of the campaign, and awareness of the benefits of vitamin A, such as the prevention of night blindness, are plausible reasons adduced for the high level of awareness of VAS. The value obtained in this study was higher than that of Abdulmaleek et al [21], who noted awareness among their subjects. The difference in prevalence values could be due to differences in the sample size used in our study, variations in methodology and possibly due to discrepancies in cut-off values used to categorize the knowledge levels.

The current study also showed that the majority of respondents were aware of the WHO's (67.2%) and NPI (62.8%). recommendation on VAS for children. The WHO recommends high-dose vitamin A (every 6 months) in children 6 to 59 months of age (a total of 10 doses) [22]. Besides, WHO has classified VAD as a public health problem affecting about 30% of children aged 6 to 59 months, with the highest burden in sub-Saharan Africa and South Asia [11].

Most of the caregivers had a tertiary level of education, which could have contributed to the positive outcome of uptake. Studies have documented a strong link between level of education and uptake of VAS. For instance, Okyere et al [23] documented the existence of inequalities in VAS across various level of education. VAS was found to be consistently high in children born to mothers with secondary level of education and above. The findings of Okyere et al [23] were also in tandem with other authors who noted high uptake of Vitamin A among children whose mothers have secondary or higher education [21-25].

It is gratifying to note in the current study, a high level of uptake (74.7%) of VAS among children. This increase in the level of uptake may be attributed to the high-level education of the caregiver; improved access to immunization clinics and caregivers' willingness to ensure that the child gets VAS. In addition, vigorous information dissemination and campaign-based

outreach strategy on VAS are important factors that contributed to the high uptake seen in the study. This scheme has also enhanced VAS in other climes. For instance, Ethiopia has been implementing VAS through campaign-based and vertical Enhanced Outreach Strategy (EOS) since 2004. The scheme, according to World Bank data, in Ethiopia, brought the uptake level of Vitamin A to as high as 80% from 2006 to 2011 [26]. Nevertheless, a decline in campaign and information dissemination in Ethiopia after 2011 brought the coverage level lower than 80% [26].

A high vitamin A uptake rate was obtained in this study; higher than the uptake rate of 66% documented in a recent global nutrition report in 2020 [27]. However, the uptake rate seen in our study was lower than the Health Sector Transformation Plan I (HSTP I) goal of increasing the proportion of children who receive VAS to 95% by the end of 2020 [28]. Door-to-door VAS programs have been noted to be a potent tool in achieving higher coverage than fixed site models [29]. Door-to-door VAS resulted in a 30% rise in coverage compared with the fixed-site plus outreach delivery model. The fixed-site plus outreach model requires an intensive campaign of awareness and preparation of the closest health facility while the door-to-door delivery model places the burden on health personnel and the availability of the caregivers and children is not in doubt.

The study also showed that residents in rural areas were about two times less likely to have better knowledge than those who reside in urban areas. Similarly, respondents with a poor attitude were approximately twice as likely to have better knowledge than those with a good attitude, and respondents with poor practice were two times less likely to have better knowledge than those with good practice. These findings are in tandem with those of Hossain et al. [30], who noted the uptake rate of Vitamin A supplementation in urban and rural areas as 73.9% and 73.2% respectively. They also noted that in rural areas, children whose mothers had secondary education were about 24% more likely to take vitamin A supplementation than children whose mothers had no form of education. In addition, a meta-analysis on Vitamin A supplementation coverage in four sub-Saharan African countries showed that children in urban, compared to rural, areas had higher VAS coverage [31]. The findings above showed that sustainable development goals need to be targeted in rural areas and community-level efforts are key to ensuring the coverage of the Vitamin A supplementation programs.

This study reveals that respondents under 31 years old were approximately 1.4 times less likely to have a better uptake of VAS compared to older respondents. Janmohamed et al. [31] also documented that mothers who accepted Vitamin A supplementation were mainly within the age range of 30-39 years, while mothers who were above 40 years of age were the least likely to accept VAS. This study also showed that mothers with poor knowledge were approximately two times less likely to have better uptake than those with good knowledge. This finding aligns with a study where maternal knowledge of the VAS program was a key determinant of VAS, and poor maternal knowledge was noted as the main reason for non-supplementation [32]. This has been widely observed in other studies [32-34]. The importance of community awareness and health education in improving VAS cannot be downplayed. Several studies have shown caregiver awareness of supplementation activities as the strongest predictor of VAS in both door-to-door and fixed site [35].

Limitation
A cohort study where children who received VAS were followed over time to monitor adherence to the VAS schedule could have added more value to the study. This study is also limited by a recall bias due to personal dispensations.

Conclusion
Obvious gaps still exist in caregivers' knowledge, attitude and practice regarding VAS in children. Early detection of this public health issue, intensive and appropriate information dissemination and mobilization of health workers on a door-to-door VAS scheme are strategic in closing these gaps.

Recommendation
Timely and adequate dissemination of information (health campaign) by health workers, such as community health workers, on the WHO recommendation for supplementation, sources, and other benefits of VAS is crucial and must be sustained.

Declarations
Acknowledgements
Not applicable.

Disclosure Statement
No potential conflict of interest was reported by the authors.

Ethics Approval
Not applicable.

Funding Acknowledgements
Not applicable.

Citation to this article
Obinna CN, Onyinye HC, Chiesonu DN, Francis NO, Josephat MC. Vitamin A supplementation among children attending Enugu State University Teaching Hospital Enugu: The caregiver perspective. Canadian Journal of Medicine. 2025 August 18;7(2):86-99. doi: 10.33844/cjm.2025.6051

Rights and Permissions


References

[1] Bennasir H, Sridhar S, Abdel-Razek TT. Vitamin A from physiology to disease prevention. Int. J. Pharm. Sci. Rev. Res. 2010;1(1):68-73. https://www.globalresearchonline.net

[2] Vitamin A supplementation: who, when and how. Community Eye Health. 2013;26(84):71. 3.

[3] Sommer A, Hussaini G, Tarwotjo I, Susanto D. Increased mortality in children with mild vitamin A deficiency. The Lancet. 1983;10;322(8350):585-8. https://doi.org/10.1016/s0140-6736(83)90677-3

[4] Surman SL, Penkert RR, Sealy RE, Jones BG, Marion TN, Vogel P, Hurwitz JL. Consequences of Vitamin A Deficiency: Immunoglobulin Dysregulation, Squamous Cell Metaplasia, Infectious Disease, and Death. Int J Mol Sci. 2020;4;21(15):5570. https://doi.org/10.3390/ijms21155570

[5] Global prevalence of vitamin A Deficiency World Health Organization (WHO). https://www.who.int › Publications › i › item. [Accessed on 04/03/2024].

[6] Vitamin and mineral requirements in human nutrition, 2nd ... World Health Organization (WHO). https://www.who.int › Publications › i › item. [Accessed on 04/03/2024].

[7] Abidoye RO, Ihebuzor NN. Assessment of nutritional status using anthropometric methods on 1–4 year old children in an urban ghetto in Lagos, Nigeria. Nutrition and health. 2001;15(1):29-39. https://doi.org/10.1177/026010600101500104

[8] Hodges MH, Sesay FF, Kamara HI, Turay M, Koroma AS, Blankenship JL. High and equitable mass vitamin A supplementation coverage in Sierra Leone: a post-event coverage survey. Global Health: Science and Practice 2013;1(2):172-9. https://doi.org/10.9745/GHSP-D-12-00005

[9] Kamau MW, Makokha AO, Mutai JK, Mugoya IK. Factors influencing vitamin A supplementation among mothers of children under five years old at Mbagathi district Hospital, Kenya. East African medical journal. 2012;89(4):134-41. https://pubmed.ncbi.nlm.nih.gov

[10] Abidoye RO, Ihebuzor NN. Assessment of nutritional status using anthropometric methods on 1–4 year old children in an urban ghetto in Lagos, Nigeria. Nutrition and health. 2001;15(1):29-39. https://doi.org/10.1177/026010600101500104

[11] UNICEF: Vitamin A 2019. https://data.unicef.org/topic/nutrition/vitamin-a-deficiency [Accessed 03 March 2025.]

[12] National Population Commission. Federal Republic of Nigeria official gazette. Abuja, Nigeria: Federal Government Printer. 2006;96(2). https://archive.gazettes.africa

[13] National Bureau of Statistics of Nigeria. National Nutrition and Health Survey 2018. Report on the nutrition and health situation of Nigeria. UNICEF; 2018. https://www.unicef.org/nigeria/media/2181/file/Nigeria-NNHS-2018.pdf [Accessed 23 Dec 2024].

[14] Oresanya O, Phillips A, Okereke E, Ahmadu A, Ibinaiye T, Marasciulo M et al. Co-implementing vitamin A supplementation with seasonal malaria chemoprevention in Sokoto State, Nigeria: a feasibility and acceptability study. BMC Health Serv Res. 2022 Jul 5;22(1):871. https://doi.org/10.1186/s12913-022-08264-z. PMID: 35791014; PMCID: PMC9258179.

[15] UNICEF. Evaluation of the maternal, newborn and child health week in Nigeria 2016. https://www.unicef.org/nigeria/sites/unicef.org.nigeria/files/2018-09/Nigeria-evaluation-of-maternal-newborn-and-child-health-week_0.pdf [Accessed 23 Dec 2024].

[16] Guideline: Vitamin A Supplementation in Infants and Children 6–59 Months of Age. Geneva: World Health Organization; 2011. Recommendation. https://www.ncbi.nlm.nih.gov/books/NBK185160 [Accessed 23 Dec 2024].

[17] Kisinza WN, Kisoka WJ, Mutalemwa PP, Njau J, Tenu F, Nkya T, et al. Community directed interventions for malaria, tuberculosis and vitamin A in onchocerciasis endemic districts of Tanzania. Tanzan J Health Res. 2008;10(4):232–239. https://doi.org/10.4314/thrb.v10i4.45079

[18] The CDI Study Group Community-directed interventions for priority health problems in Africa: results of a multi-country study. Bull World Health Organ. 2010;88(7):509–518. https://doi.org/10.2471/BLT.09.069203

[19] Linehan M, Hanson C, Weaver A, Baker M, Kabore A, Zoerhoff KL, et al. Integrated implementation of programs targeting neglected tropical diseases through preventive chemotherapy: proving the feasibility at national scale. Am J Trop Med Hyg. 2011;84:5–14. https://doi.org/10.4269/ajtmh.2011.10-0411

[20] Dahiru T, Liman KH, Bashir SS, Suleiman NM, Zambuk Z, Mu'azu M, et al. Determinants of Vitamin A Uptake in Nigeria: The Role of Contextual Factors. Journal of Advances in Medicine and Medical Research. 2018;25(7):1-4. https://doi.org/10.9734/JAMMR/2018/38536

[21] Abdulmalek LJ, Benkhaial FS. Knowledge,attitude, and practice of parents regarding Vitamin A supplementation to children in Benghazi, Libya. Ibnosina J Med Biomed Sci. 2018;10:174-7.

[22] Marjan, N., Rahman, A., Rois, R. et al. Factors associated with coverage of vitamin A supplementation among Bangladeshi children: mixed modelling approach. BMC Public Health. 2021;21:648. https://doi.org/10.1186/s12889-021-10735-7

[23] Okyere, J., Azure, S.A., Budu, E. et al. Trends and inequalities in children aged 6–59 months who received Vitamin A supplementation: evidence from the 2003, 2008 and 2014 Ghana Demographic and Health Survey. Trop Med Health. 2022;50:99. https://doi.org/10.1186/s41182-022-00488-3

[24] Zegeye B, Olorunsaiye CZ, Ahinkorah BO, Ameyaw EK, Seidu AA, Budu E, Yaya S. Trends in inequality in the coverage of vitamin A supplementation among children 6–59 months of age over two decades in Ethiopia: evidence from demographic and health surveys. SAGE Open Medicine. 2022;10:20503121221094690. https://doi.org/10.1177/20503121221094688

[25] Srivastava S, Kumar S. Does socio-economic inequality exist in micro-nutrients supplementation among children aged 6–59 months in India? Evidence from National Family Health Survey 2005–06 and 2015–16. BMC Public Health. 2021;21(1):1–2. https://doi.org/10.1186/s12889-021-10601-6

[26] Kassa G, Mesfin A, Gebremedhin S. Uptake of routine vitamin A supplementation for children in Humbo district, southern Ethiopia: Community-based cross-sectional study. BMC Public Health. 2020;20(1):1–8. https://doi.org/10.1186/s12889-019-7969-5

[27] Ethiopia - Vitamin A Supplementation Coverage Rate (% Of Children Ages 6–59 Months) - 2023 Data 2024 Forecast 1999–2020 Historical. https://tradingeconomics.com/ethiopia/vitamin-a-supplementation-coverage-rate-percent-of-children-ages-6-59-months-wb-data.html

[28] FMOH E. Health Sector Transformation Plan (HSTP): 2015/16-– 2019/20. Addis Ababa. 2015. https://ephi.gov.et

[29] Janmohamed A, Klemm RD, Doledec D. Determinants of successful vitamin A supplementation coverage among children aged 6-59 months in thirteen sub-Saharan African countries. Public Health Nutr. 2017 Aug;20(11):2016-2022. https://doi.org/ 10.1017/S1368980017000684

[30] Hossain MM, Yeasmin S, Abdulla F, Rahman A. Rural-urban determinants of vitamin a deficiency among under 5 children in Bangladesh: Evidence from National Survey 2017-18. BMC Public Health. 2021 Aug 19;21(1):1569. https://doi.org/10.1186/s12889-021-11607-w

[31] Janmohamed A, Doledec D, Dissieka R, Jalloh UH, Juneja S, Beye M, Ndiaye F, Jumbe T, Baker MM. Vitamin A supplementation coverage and associated factors for children aged 6 to 59 months in integrated and campaign-based delivery systems in four sub-Saharan African countries. BMC Public Health. 2024;Apr 27;24(1):1189. https://doi.org/10.1186/s12889-024-18707-3. PMID: 38678255; PMCID: PMC11055222.

[32] 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 Pediatr. 2023;23:257. https://doi.org/10.1186/s12887-023-04059-1

[33] Kassa G, Mesfin A, Gebremedhin S. Uptake of routine vitamin a supplementation for children in Humbo district, southern Ethiopia: community-based cross-sectional study. BMC Public Health. 2020. https://doi.org/10.1186/s12889-020-09617-1

[34] Nigusse T, Gebretsadik A. Vitamin a supplementation coverage and ocular signs among children aged 6–59 months in Aleta Chuko Woreda, Sidama Zone, Southern Ethiopia. J Nutr Metab. 2021. https://doi.org/10.1155/2021/8878703

[35] Janmohamed A, Klemm RD, Doledec D. Determinants of successful vitamin a supplementation coverage among children aged 6–59 months in thirteen sub-saharan African countries. Public Health Nutr. 2017;20:2016–22. https://doi.org/10.1017/S1368980017000684