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Uptake of vitamin A supplement among children aged 6 to 59 months attending Kirumandagi health centre II, Luweero district, A Cross-sectional study.

***Aidah Nassolo, George Masete, Hasifa Nansereko, Immaculate Naggulu, Jane Frank Nalubega**
Mildmay Uganda School of Nursing and Midwifery

ABSTRACT

Background:

Vitamin A supplementation coverage has been inconsistent, as only slightly more than half of children aged 6–59 months receive the supplement. This study aimed to assess the determinants of Uptake of Vitamin A supplements among children aged 6 to 59 months attending Kirumandagi Health Centre II, Luweero district.

Methodology:

A descriptive cross-sectional study design employing quantitative methods was used to collect data among caregivers of children aged 6 to 59 Months attending Kirumandagi Health Centre II. Data collection was done within a period of 4 days by a convenience sampling technique using researcher-administered questionnaires, and data were analyzed using the Microsoft Excel (2019) program. Findings were presented in the form of tables, graphs, and pie-charts.

Results:

Out of 40 participants: (62.5%) were aged between 29 and 39 years, and (50%) of the respondents had attained secondary education. With caregiver-related factors (50%), the respondents did not know the benefits of Vitamin A for children, (65%) family needs made it hard to take their children, (75%) forgot, and (50%) families did not support them in taking their children for Vitamin A supplementation. Health facility–related determinants showed that (62%) reported inadequate staffing level, (70%) Vitamin A supplements were not always available at the health Centre and (65%) stated that health workers did not explain during Vitamin A visits.

Conclusion:

Forgetfulness, poor family support, and limited awareness were major barriers to the uptake of Vitamin A supplements. Many caregivers lacked knowledge about the benefits of Vitamin A, and some had mixed beliefs about its importance.

Recommendation:

The health facility management should improve health worker communication by encouraging brief but effective health education during child health visits. They should conduct regular community sensitization sessions to improve caregiver knowledge and awareness.

Keywords: *Vitamin A supplement, Children aged 6 to 59 months, Kirumandagi Health Centre II, Luweero district*
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Corresponding author: *Aidah Nassolo.*
Department of Nursing and Midwifery, Mildmay School of Health Sciences

BACKGROUND

Vitamin A Supplement (VAS) refers to the periodic provision of high-dose vitamin A capsules to children aged 6–59 months to prevent vitamin A deficiency (VAD), a condition that weakens immunity, impairs vision, and increases the risk of severe infections and death. (Fawzi & Wang, 2021). It is one of the most cost-effective child survival interventions, helping reduce child mortality by up to 24% in areas with high VAD prevalence. (McLean et al., 2020). Natural dietary sources of vitamin A include liver, dairy products, fish oils, and orange or dark green vegetables such as carrots, pumpkins, and spinach. (Alashry & Morsy, 2021). Lack of vitamin A in children leads to night blindness, frequent respiratory and diarrheal infections, and slowed growth. (Khalid et al., 2020).

Globally, about 190 million preschool-aged children are affected by VAD, and VAS coverage remains sub-optimal as only 64% of eligible children receive the two recommended doses of Vitamin A (Cohen et al., 2025). Due to factors such as limited knowledge, logistical challenges, logistical challenges and economic barriers, effective uptake. (Cohen et al., 2025). In South Asia, India recorded 58% coverage, which has resulted in high cases of preventable childhood illnesses and blindness, mainly due to poor caregiver awareness, competing family priorities, and weak community mobilization contributing to child malnutrition and infections. (Wadhwani et al., 2020).

In Sub-Saharan Africa, an average of 55% of children aged 6–59 months receive the Supplement, thus leaving many children at risk of malnutrition-related blindness linked to poor health worker follow-up and inadequate rural outreach, caregiver forgetfulness, and limited knowledge about the importance of the Supplement. (Obasohan et al., 2020). In Nigeria, only 42% of children received both doses, leading to high rates of recurrent diarrhea and measles attributed to maternal illiteracy, poor access to health facilities, and cultural misconceptions. (Majekodunmi et al., 2022).

In East Africa, particularly Kenya, only 51% of children received Supplement which has resulted in higher levels of stunting and under-five mortality, high risk of preventable infections, impaired growth, and long-term disability, mainly attributed to caregiver illiteracy and health worker shortages. (Agho et al., 2020). In Tanzania, coverage of VAS is 48%, leading to increased child hospital admissions for preventable infections worsened by transport difficulties, poor male involvement in child health, and limited awareness campaigns. (Mayige et al., 2022).

In Uganda, VAS coverage has been inconsistent, as only 58% of children aged 6–59 months receive the supplement below the national target of 80% affected by frequent stock-outs, lack of follow-up from health workers, cultural food preferences, and limited male participation in child health, which reduced compliance. (Janmohamed et al., 2024). In Luweero District, Vitamin A Supplementation coverage remains below the desired target, with district health records showing that less than 50% of eligible children received the recommended doses in 2023, leading to frequent child illnesses, increased health facility visits, and poor growth outcomes among under-fives (Luweero District Health Report, 2023). This study aimed to assess the determinants of uptake of vitamin A supplements among children aged 6 to 59 months attending Kirumandagi Health Centre II, Luweero District.

METHODOLOGY

Study Design and Rationale

A descriptive cross-sectional study design employing quantitative methods of data collection was used. This design allowed the collection of data from participants at a single point in time, making it less costly and time-efficient.

Study Setting and Rationale

The study was conducted at Kirumandagi Health Center II, located in Luweero District, Central Uganda, situated at approximately 68 kilometers north of Kampala City along the Kampala–Gulu highway. It lies about 12 kilometers east of Luweero Town. The geographical coordinates of Kirumandagi Health Center II are approximately 0.8456°N latitude and 32.4952°E longitude. This government-owned facility operates under the Ministry of Health and provides essential health services, including outpatient care, maternal and child health (MCH), immunization, nutrition services, and management of common illnesses. The child health and nutrition clinic at Kirumandagi Health Centre II runs weekly and provides services such as Vitamin A Supplement, deworming, growth monitoring, and immunization. On average, the clinic attends to between 15 and 25 children per clinic day, translating to over 100 children per month. The young children's clinic at Kirumandagi Health Centre II is well equipped with weighing scales, height boards, and vaccination fridges for proper storage of vaccines, examination couches, basic medical supplies such as thermometers, stethoscopes, and growth monitoring charts. The ward also has adequate seating for caregivers, designated play areas to keep children engaged, and proper record-keeping systems to track immunizations and growth progress. This setting is ideal for the study because it brings together children aged 6–59 months from households of varying socio-economic, cultural, and educational backgrounds, making it possible to explore both caregiver-related and health facility–related factors influencing Vitamin A Supplement uptake.

Study Population

The study targeted caregivers of children aged 6–59 months attending the Child Health and Nutrition Clinic at Kirumandagi Health Centre II, Luweero District.

Sample Size Determination

The sample size was determined using guidelines provided by Krejcie and Morgan's table (1970). According to Kirumandagi Health Center II Clinic Records, the child health and nutrition clinic receives a minimum of 10- 15 under-five-year-old children every day, which gives an assurance of 45 under-five children per month. Since the clinic is conducted only two days a week, obtaining 45 participants took four days. Given this number and using the Krejcie and Morgan's table, a population size of 45 respondents present assures a sample size of 40 participants, therefore, a sample size of 40 respondents.

Sampling Procedure

A convenience sampling technique was used to select participants. This method allowed easy access to caregivers who were present and willing to participate in the study, making it both practical and time-efficient within the health center setting. Caregivers of children aged 6–59 months attending the Child Health and Nutrition Clinic at Kirumandagi Health Center II were approached during routine visits. Those who met the inclusion criteria and provided informed consent were enrolled until the target sample size of 40 caregivers was reached. Data collection took place over 5 clinic days, with approximately 8 participants recruited per day.

Inclusion and Exclusion Criteria

Inclusion Criteria

Caregivers of children aged 6–59 months, who attended the Child Health and Nutrition Clinic at Kirumandagi Health Center II, and Ugandan nationals, both male and female. Those who knew how to read and write English, aged 18 and above, those willing to provide informed consent, and only those present during the period of data collection were enrolled.

Exclusion Criteria

The study excluded caregivers who were very ill and unable to respond, and those who consented but later withdrew due to emergencies or other personal reasons.

Definition of Variables

Independent Variables

Caregiver-related factors, for example, knowledge, attitudes, socio-economic status, and health facility–related factors, e.g., accessibility, service availability, and staff attitudes.

Dependent Variable

Uptake of Vitamin A Supplement among children aged 6–59 months, measured as whether a child received the supplement during the most recent round.

Research Instruments and Rationale

A structured questionnaire was used to collect data from respondents. The questionnaire was divided into three sections: Section **A** (socio-demographic characteristics of caregivers), Section **B** (caregiver-related factors), and Section **C** (health facility–related factors). The tool contained closed-ended questions for easy analysis. The questionnaire was pre-tested and reviewed before final use.

Data Collection Procedure

After obtaining proposal approval and clearance from the Institutional Research and Ethics Committee (IRC), permission was sought from the school administration. An introductory letter was obtained from the Dean, School of Nursing, Mildmay, Uganda, School of Nursing and Midwifery. Permission was also sought from the person in charge of Kirumandagi Health Center II, who authorized data collection and commencement of the study. Self-introduction, explanation of the purpose of the study to caregivers, and informed consent were obtained. Data collection took 5 days with 8 respondents sampled daily until the target of 40 participants was achieved.

Data Management and Data Analysis

Data Management

Completed questionnaires were reviewed on-site for completeness and accuracy before participants left. Verified questionnaires were stored securely in locked cabinets and later entered into a password-protected computer database to ensure confidentiality and proper record-keeping.

Data Analysis

Data was first sorted, coded, and entered into Microsoft Excel (version 2019) for descriptive statistical analysis, and then findings were presented using tables, pie charts, and bar graphs for clarity.

Quality Assurance – Validity and Reliability

Validity

Validity was ensured by designing questions that were directly aligned with the study objectives and relevant to the determinants of Vitamin A Supplement uptake. This helped to accurately measure the variables and provided results that guided meaningful interventions.

Reliability

Reliability was established through pre-testing the questionnaire at a nearby health center (Luwero Health Center IV) with 8 caregivers. Necessary corrections were made before the main study. The tool was re-tested among 4 respondents to refine clarity and consistency, as the feasibility of the questions was probed, and whether they were culturally appropriate and free from bias.

Ethical Considerations

Following the proposal approval by the institution's research and ethics committee (IRC), permission was got from the school administration, and an introductory letter was obtained from the Dean, School of Nursing, Mildmay Uganda School of Nursing and Midwifery. Thereafter, the person in charge of Kirumandagi Health Center II granted permission to carry out the study. The purpose of the study was explained to respondents before enrollment. Participation was voluntary, and only those who consented took part. Caregivers were reminded of their right to withdraw at any stage of the study without penalty. Confidentiality was assured by using codes instead of names, and information was kept private and secure.

RESULTS

Demographic information of respondents.

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Table 1 shows the socio-demographic data of respondents

Variables	Response	Frequency(n=40)	Percentage (%)
Age	18-28	10	25
	29-39	25	62.5
	40 and above	5	12.5
Gender	Male	13	32.5
	Female	27	67.5
Education level	No schooling	7	17.5
	Primary	13	32.5
	Secondary or above	20	50
Religion	Christian	17	42.5
	Muslims	9	22.5
	Others specify	14	35

Table 1 shows that the majority, 25 (62.5%) of the respondents were aged between 29 and 39 years, while the least, 5 (12.5%) were aged 40 years and above. Most 27 (67.5%) of the respondents were females, whereas 13 (32.5%) were males.

Half 20 (50%) of the respondents had attained secondary education or above, while at least 7 (17.5%) had never gone to school.

The majority, 17 (42.5%) of the respondents were Christians, 9 (22.5%) were Muslims, and 14 (35%) belonged to other religions.

Caregiver-Related Determinants of Uptake of Vitamin A Supplement among Children Aged 6 to 59 Months attending Kirumandagi Health Centre II, Luweero District.

Figure 1 shows that those respondents know the benefits of Vitamin A for children, *n=40*

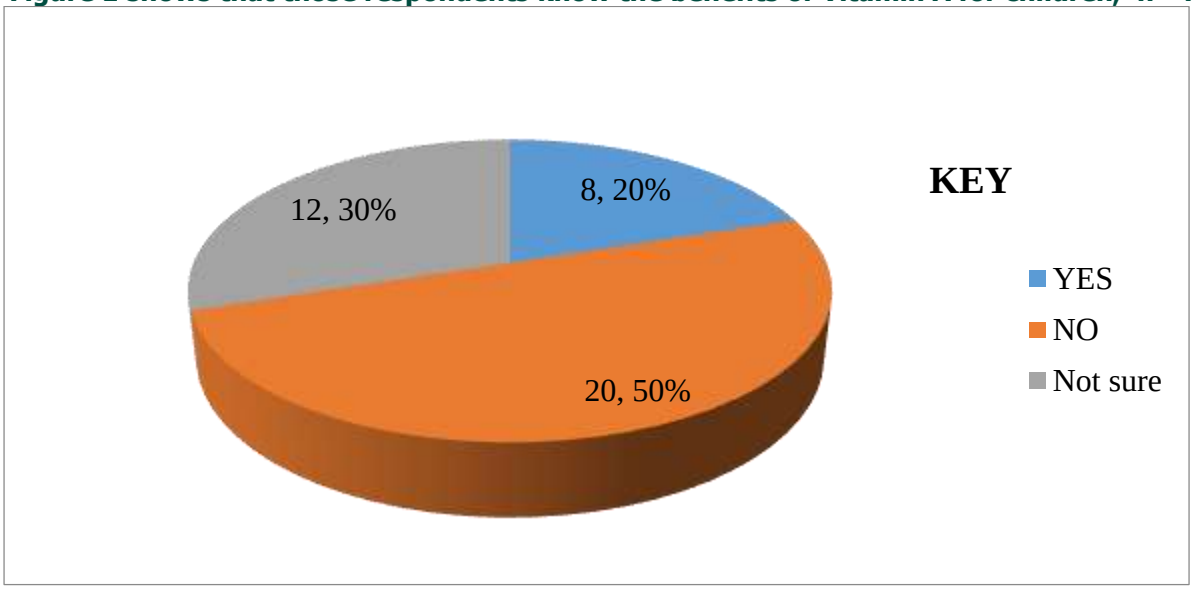

Figure 1 indicates that 20(50%) of the respondents did not know the benefits of Vitamin A for children, while a minority of 8 (20%) of the respondents knew the benefits of Vitamin A for children.

Table 2 shows other Caregiver-Related Determinants

Variables	Response	Frequency(n=40)	Percentage (%)
Whether Vitamin A Supplement is important	Very important	10	25
	Somehow important	25	62.5
	Not important	5	12.5
What made it hard to take their child for the Vitamin A Supplement	Transport costs	10	25
	Other family needs	26	65
	No challenge	4	10
What made respondents miss Vitamin A clinic days	I forget	30	75
	I am busy	7	17.5
	Other reasons	3	7.5
Whether family support helps respondents to take their child for Vitamin A	Yes and always	9	22.5
	Sometimes	11	27.5
	Not at all	20	50

Table 2 shows that the majority, 25 (62.5%) of the respondents considered Vitamin A supplements as somewhat important, while the least, 5 (12.5%), viewed them as not important. 26 (65%) of the respondents reported that other family needs made it hard for them to take their children for Vitamin A supplementation, whereas 4 (10%) reported having no challenge. The majority, 30 (75%) of the respondents stated that they missed Vitamin A clinic days because they forgot, while 3 (7.5%) missed due to other reasons. Half 20 (50%) of the respondents reported that their families did not support them in taking their children for Vitamin A supplementation, while only 9 (22.5%) said they were always supported.

Health Facility–Related Determinants of Uptake of Vitamin A Supplement among Children Aged 6 to 59 Months attending Kirumandagi Health Centre II, Luweero District.

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Figure 2 shows a description of the staffing levels at your health facility, *n=40*

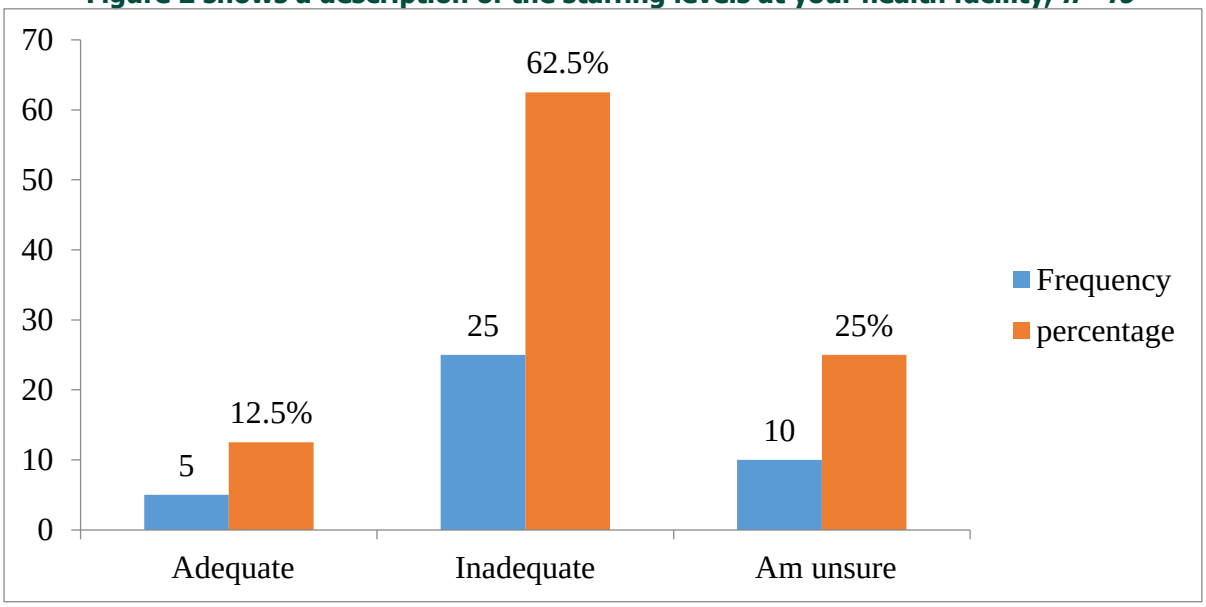

Figure 2 indicates that the majority of 25(62%) of the respondents reported inadequate staffing level while the minority of the respondents reported adequate staffing.

Table 3 shows other Health Facility–Related Determinants

Variable	Response	Frequency(n=40)	Percentage (%)
Vitamin A Supplements always available at the health Centre	Yes	12	30
	No	28	70
Health workers treat you during Vitamin A visits	Friendly and explains well	4	10
	They don't explain	26	65
	Rude	10	25
The distance from home to reach the health Centre for Vitamin A	<1km	10	25
	2-4km	18	45
	5km and above	12	30
often do health workers at your facility give you information about Vitamin A	Always	2	5
	Sometimes	18	45
	Rarely	20	50

Table 3 shows that the majority, 28 (70%) of the respondents reported that Vitamin A supplements were not always available at the health Centre while only 12 (30%) said they were always available. 26 (65%) of the respondents stated that health workers did not explain during Vitamin A visits, whereas 4 (10%) reported that the health workers were friendly and explained well. In terms of distance to the health Centre, nearly half18 (45%) of the respondents lived 2–4 km away while the least 10 (25%) lived less than 1 km away. Half 20 (50%) of the respondents mentioned that health workers rarely gave them information about Vitamin A, while only 2 (5%) said they always received such information.

DISCUSSION

Caregiver-Related Determinants of Uptake of Vitamin A Supplement among Children Aged 6 to 59 Months attending Kirumandagi Health Centre II, Luweero District

The purpose of the study was to determine the uptake of vitamin A supplements among children aged 6 to59 months at Kirumandagi Health Centre II, Luweero District, and the findings showed that 20 (50%) of the respondents did not know the benefits of Vitamin A for children. This was in line with the problem statement and was due to limited health education and inadequate community sensitization on the importance of Vitamin A, thus implying that lack of knowledge among caregivers hinders uptake of Vitamin A supplementation services. This is in agreement with a study conducted in Bangladesh, Marjan et al. (2021), on caregiver knowledge and Vitamin A Supplement, which revealed that 57% of mothers who had information about the benefits of Vitamin A took their children for the supplement.

The researcher found out that the majority, 25 (62.5%) of the respondents considered Vitamin A supplements as somewhat important. This could be due to partial awareness or mixed beliefs regarding the benefits of the supplement. This implies that more health education is needed to strengthen positive perceptions and improve utilization. This is in line with a case in Malawi, Powelson et al. (2024), where 47% of caregivers reported that they skipped Supplement visits because they did not see immediate benefits, leading to increased cases of child malnutrition.

The majority, 30 (75%) of the respondents stated that they missed Vitamin A clinic days because they forgot, attributed to a lack of reminder systems or poor record-keeping at the health facility. This implies that follow-up and reminder mechanisms should be strengthened to improve consistency in attendance. This is in full agreement with a study done in Ghana. (Daba et al., 2024) On caregiver forgetfulness, which reported that 36% of mothers missed Vitamin A Supplement because they forgot scheduled dates, contributing to poor coverage.

Half 20 (50%) of the respondents reported that their families did not support them in taking their children for Vitamin A supplementation. This could be due to low male involvement in child health activities or cultural beliefs that place child care responsibilities solely on women. This implies that family and community support are critical in improving Vitamin A uptake. This is in disagreement with a study conducted in Western Uganda, Abaasa et al. (2021), on family support, found that 34% of caregivers who had spousal or family support for child health visits got Vitamin A Supplement rounds.

Health Facility–Related Determinants of Uptake of Vitamin A Supplement among Children Aged 6 to 59 Months attending Kirumandagi Health Centre II, Luweero District

The results in the study indicated that the majority of the respondents reported inadequate staffing level citing a shortage of trained health personnel at lower-level health centers. This illustrates that limited staffing may result in poor service delivery and reduced access to Vitamin A supplementation. This misaligns with a study conducted in Iran, Rajaeieh et al. (2021), on health worker availability, which revealed that 48% of caregivers accessed Vitamin A Supplement because of adequate staffing during child health days, which reduced long waiting times and missed doses.

According to the study findings, the majority, 28 (70%) of the respondents reported that Vitamin A supplements were not always available at the health center, and this was due to inconsistent supply chains and delays in restocking by health authorities. This explains that stock-outs discourage caregivers from returning for subsequent supplementation visits. This is in line with a study in Bangladesh, Fahim et al. (2022), on drug availability, where 37% of children missed Vitamin A Supplement because the capsules were out of stock at health centers.

The study findings also indicated that 26 (65%) of the respondents stated that health workers did not explain during Vitamin A visits. This could be due to a heavy workload or inadequate communication skills among health staff. This implies that insufficient health education from providers limits caregivers' understanding and adherence to supplementation schedules. This is in disagreement with a study in China. Tian et al. (2025), on health worker attitudes, which revealed that 33% of caregivers returned for the supplement because health workers were friendly in explaining its importance clearly.

It was further found out that the majority, 18 (45%) of the respondents lived 2–4 km away. This could be due to the rural setting of the area where health facilities are sparsely distributed. This implies that distance remains a physical barrier that affects consistent attendance for Vitamin A supplementation. This is in line with a study in Tanzania, Shahid et al. (2022), on accessibility of health facilities, which showed that 42% of caregivers living more than 5 km from a facility missed Supplement opportunities due to transport challenges.

According to the study findings, half 20 (50%) of the respondents mentioned that health workers rarely gave them information about Vitamin A, citing limited time during health visits and lack of emphasis on preventive health education, thus showing that strengthening communication and counseling at health facilities can

significantly improve awareness and uptake of Vitamin A supplements. This is in support of a study done in Rwanda, where 32% of mothers reported that sensitization by health workers contributed to the uptake (Hezagira et al. 2022).

LIMITATIONS

The sample size was small and drawn from only one health facility, which limited the generalizability of the findings to other communities.

The study relied heavily on self-reported information from caregivers, which was affected by recall bias, especially regarding reasons for missing Vitamin A supplementation days.

Some respondents provided socially desirable answers, particularly on issues related to knowledge and family support.

CONCLUSION

Caregiver-related factors significantly influence Vitamin A uptake among children. Many caregivers lacked knowledge about the benefits of Vitamin A, and some had mixed beliefs about its importance. Forgetfulness, poor family support, and limited awareness were major barriers. Health facility factors greatly affected supplementation. Inadequate staffing, frequent stock-outs of Vitamin A capsules, poor health worker communication, and long distances to the facility all contributed to missed supplementation opportunities.

RECOMMENDATION

The Ministry of Health should strengthen the supply chain to ensure the timely availability of Vitamin A supplements at lower-level health facilities. They should recruit and deploy more trained health workers to reduce workload and improve service delivery.

The Health Facility Management should improve health worker communication by encouraging brief but effective health education during child health visits. They should conduct regular community sensitization sessions to improve caregiver knowledge and awareness.

Caregivers should actively seek information from health workers and prioritize child health visits.

Families should support mothers in taking children for Vitamin A supplementation, especially male involvement in child health.

Local Leaders and VHTs should mobilize communities and help caregivers remember clinic days through home visits and community announcements. They should support public health campaigns that reinforce the importance of Vitamin A.

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May God richly bless them all.

LIST OF ABBREVIATIONS

MoH: Ministry of Health
UHPAB: Uganda Health Professions Assessment Board
VAD: vitamin A deficiency
VAS: Vitamin A Supplement
WHO: World Health Organization

SOURCE OF FUNDING

The study was not funded.

CONFLICT OF INTEREST

The author declares no conflict of interest.

AUTHOR CONTRIBUTIONS

AN- Study developer and investigator
GM- Supervised the Study.
HN- Supervised the Study.
IN-Supervised the Study.
JFN-Supervised the Study.

DATA AVAILABILITY

Data is available upon request.

INFORMED CONSENT

There was full disclosure; full comprehension, and respondents voluntarily consented to participate in the study.

AUTHOR BIOGRAPHY

Aidah Nassolo is a student of Mildmay School of Health Sciences, pursuing a diploma in Nursing.

George Masete is a tutor and research supervisor at Mildmay Uganda School of Nursing and Midwifery

Hasifa Nansereko is a research supervisor at Mildmay Uganda School of Nursing and Midwifery Immaculate Naggulu is a research supervisor at Mildmay Uganda School of Nursing and Midwifery

Jane Frank Nalubega is a research supervisor at Mildmay Uganda School of Nursing and Midwifery

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