**MC SMC+VAS Baseline Report**  
*Bauchi State, Nigeria – 2025*

**By**

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**Executive Summary**

**Background**

Malnutrition and malaria continue to represent significant threats to child survival and development in Nigeria, particularly in the northern states. Vitamin A Supplementation (VAS) is a proven, cost-effective intervention to reduce child mortality and morbidity, yet coverage rates remain suboptimal. Seasonal Malaria Chemoprevention (SMC) campaigns, meanwhile, have achieved high coverage in malaria-endemic areas through door-to-door strategies. There is increasing policy and programmatic interest in integrating VAS delivery with SMC campaigns to optimize efficiency, reach underserved populations, and address persistent coverage gaps. This baseline evaluation was undertaken in Bauchi State to generate robust evidence on the feasibility and effectiveness of such integration.

**Study Objectives**

The primary aim of this baseline study is to evaluate the effectiveness and operational feasibility of integrating VAS into SMC campaigns in Bauchi State, Nigeria. Specific objectives include:

* To determine the effect of integrating VAS with SMC on the uptake of other key MNCHW interventions.
* To assess health workers’ and policy makers’ perceptions of the effect of removing VAS from MNCHW on the demand for and uptake of MNCHW interventions.
* To determine the coverage of vitamin A following integration with SMC.
* To monitor the coverage and quality of SMC following integration with VAS.  
  Secondary objectives include identifying barriers and facilitators to uptake, and understanding community awareness and perceptions of integrated campaigns.

**Methodology**

A cross-sectional, mixed-methods baseline survey was conducted across all 20 Local Government Areas (LGAs) of Bauchi State. A multi-stage cluster sampling approach was used to select households with eligible children aged 6–59 months and women of childbearing age (15–49 years). Data were collected using structured questionnaires administered by trained fieldworkers, complemented by qualitative interviews with caregivers and health workers. Primary indicators included coverage of VAS (in the last 6 months, during MNCHW, and during integrated campaigns), SMC, deworming, MUAC screening, routine immunization, and key maternal interventions (iron and folic acid supplementation, tetanus toxoid, ANC/PNC). Additional variables assessed sources of information, caregiver awareness, service satisfaction, and reasons for missed interventions.

**Main Findings**

* VAS Coverage in the last 6 months remained below 40%, with marked disparities between LGAs and by household wealth and education status.
* Coverage of Deworming and MUAC Screening was low, with less than one in three children receiving deworming, and only about a quarter receiving MUAC screening during the last campaign.
* Immunization Coverage varied across LGAs, but was generally incomplete, indicating missed opportunities for integrated service delivery.
* Awareness of VAS was moderately high (68%), but only a third of caregivers had heard of MNCHW, highlighting communication gaps.
* Health facility staff and community drug distributors were the main sources of VAS information, though significant proportions also cited town announcers, local leaders, and religious figures.
* Maternal intervention coverage was low, with less than 8% of eligible women reporting receipt of iron and folic acid supplementation or postnatal care during the last MNCHW.
* Equity gaps persist: Coverage for all interventions was consistently higher among wealthier and more educated households.
* High caregiver satisfaction was reported among those who accessed SMC and VAS services, but important data gaps and missing values were observed, especially for maternal health indicators.

**Interpretation and Implications**

These findings show that SMC campaigns can effectively reach almost all eligible children. However, combining VAS with other health programs is still not fully achieved, especially for the poorest and least educated families. Relying on health facilities to provide VAS can worsen existing inequalities. Using SMC’s door-to-door approach is a better way to reach more families and improve fairness.

The low awareness of MNCHW and mixed recall of its sources indicate the need for better communication and strategies to encourage people. The limited coverage of maternal interventions and the lack of complete data highlight the need for stronger data systems and more community involvement.

**Strengths and Limitations**

This evaluation is strong because it uses a large, representative sample and combines both numbers and personal insights. However, it has some limitations. The study looks at data at one point in time, has high rates of missing information for some indicators, and may be affected by people’s memories and their desire to give socially acceptable answers about their experiences.

**Policy and Programmatic Recommendations**

* Scale integrated delivery: Leverage SMC’s established reach for the co-delivery of VAS, deworming, and MUAC screening, with an explicit focus on reaching underserved and hard-to-reach populations.
* Strengthen frontline health systems: Invest in training and supporting health facility staff and community drug distributors to ensure consistent, high-quality delivery and data collection.
* Address equity gaps by targeting communication and service delivery efforts toward poorer and less educated households, and adapting strategies to overcome structural barriers.
* Enhance data systems to improve data completeness and quality, particularly for maternal indicators, enabling ongoing monitoring and program improvement.
* Foster community engagement: Engage local leaders, religious figures, and town announcers more systematically to increase campaign awareness and trust.

The baseline evidence demonstrates both the opportunity and need for integrating VAS into SMC campaigns in Bauchi State. This approach can help bridge critical coverage and equity gaps for child survival interventions. Ongoing monitoring, qualitative research, and adaptive program design will be crucial as the integration proceeds. The lessons learned will inform broader national and regional efforts to optimize child health service delivery in malaria-endemic, resource-limited settings.

# Introduction

**1.1 Background on Malaria Consortium and Context**

Malaria Consortium is a leading international non-profit organization dedicated to the prevention, control, and treatment of malaria and other communicable diseases, particularly in Africa and Asia. Operating in Nigeria since 2008, the organization has supported the Federal Ministry of Health (FMOH) and sub-national governments in delivering high-impact interventions to improve child survival. These include Seasonal Malaria Chemoprevention (SMC) and Vitamin A Supplementation (VAS)—both endorsed by the World Health Organization (WHO) as evidence-based strategies to reduce under-five morbidity and mortality in malaria-endemic settings.

In the Sahelian zone of northern Nigeria, SMC is delivered using sulfadoxine-pyrimethamine plus amodiaquine (SPAQ) for children aged 3–59 months during the rainy season. Since its introduction, SMC has consistently achieved high administrative and survey-based coverage (>90%) due to its house-to-house delivery model and community-based workforce. Conversely, VAS, which is critical for child immune function and survival, is largely delivered through biannual Maternal, Newborn and Child Health Week (MNCHW) campaigns targeting children aged 6–59 months. However, these campaigns often suffer from inconsistent funding, limited geographic reach, and inadequate community engagement—resulting in persistently low coverage.

**1.2 National Guidelines and Coverage Gaps**

The Nigerian national guidelines recommend that children aged 6–59 months receive two high-dose VAS capsules (100,000 IU for 6–11 months and 200,000 IU for 12–59 months) annually. Despite this recommendation, Vitamin A coverage remains suboptimal across the country. The 2018 Nigeria Demographic and Health Survey (NDHS) estimated national VAS coverage at 45%, far below the target coverage of 80% required to confer public health impact. This coverage disparity is further accentuated in remote and underserved areas, where routine outreach systems, such as MNCHW, often fail to reach the last mile.

By contrast, the SMC programme has demonstrated operational efficiency, scale, and community trust, delivering chemoprevention to more than 24 million children across 18 northern states annually. Recognizing this disparity, there is growing momentum among policymakers and program implementers to explore integrated delivery platforms that can expand the reach of essential child survival interventions, including VAS.

**1.3 Rationale for Integrating VAS into SMC**

The integration of VAS into SMC delivery represents a strategic opportunity to leverage the extensive reach, logistical structure, and trained personnel of the SMC programme to improve VAS uptake. Lessons from prior pilot studies in Sokoto (2021) and Bauchi (2022) demonstrated the feasibility and acceptability of bundling VAS with SMC using a door-to-door approach. These pilots highlighted not only high community receptivity but also the potential to reduce operational duplication, streamline commodity distribution, and maximize contact with eligible children, especially in rural areas with limited access to health facilities.

The current integrated campaign seeks to build on these findings by delivering VAS during SMC cycles through trained community drug distributors (CDDs). Importantly, to avoid duplicate dosing and to allow clearer measurement of integration effects, VAS was intentionally excluded from the first round of MNCHW in 2025. This policy adjustment provides a unique opportunity to assess both the direct coverage of VAS through SMC and the indirect effects of VAS removal on the uptake of other MNCHW services.

**1.4 Description of the Integrated Campaign Strategy**

In collaboration with the Bauchi State Primary Health Care Development Agency (BSPHCDA) and with funding from GiveWell, Malaria Consortium launched a state-wide integrated SMC+VAS campaign in 2025. The approach involves:

* Co-packaging and co-distribution of SPAQ and vitamin A capsules
* Training of CDDs on safe administration, dosage protocols, and caregiver communication for both interventions
* House-to-house delivery across all LGAs during each SMC cycle
* Exclusion of VAS from MNCHW during the first biannual round to avoid overlap and measure behavioral and service-level impacts

This baseline evaluation, conducted in April 2025 across all 20 LGAs of Bauchi State, is part of a broader mixed-methods effectiveness study. The survey targets two primary beneficiary groups:

1. Children aged 6–59 months, to assess coverage of VAS, SMC, and related child health services
2. Women of childbearing age (15–49 years), to evaluate maternal health service utilization and community awareness

The findings from this baseline will provide critical insights into the coverage, quality, feasibility, and equity implications of integrated VAS+SMC delivery, while informing national-level decisions on potential scale-up.

**3. Study Objectives**

**3.1. Aim of the Study**

The primary aim of this baseline evaluation is to generate robust empirical evidence on the effectiveness, operational feasibility, and community acceptability of integrating Vitamin A Supplementation (VAS) into Seasonal Malaria Chemoprevention (SMC) campaigns in Bauchi State, Nigeria. This integration seeks to leverage the established infrastructure, high reach, and logistical efficiencies of the SMC platform to enhance the uptake of VAS among children aged 6–59 months. By examining both the direct effects on service coverage and the broader implications for maternal and child health interventions, the study aspires to inform the strategic design, scale-up, and policy decisions regarding integrated delivery models for child survival programs.

**3.2. Specific Objectives**

The study is anchored on a set of interrelated objectives that span both effectiveness and operational domains, with an emphasis on coverage assessment, community perspectives, and health system dynamics.

* The primary objectives focus on determining the influence of integrating VAS into SMC on the uptake of key Maternal, Newborn, and Child Health Week (MNCHW) interventions; assessing perceptions among health workers and policymakers regarding the exclusion of VAS from MNCHW; establishing baseline VAS coverage prior to and following integration with SMC; and evaluating the coverage and quality of SMC delivery within the context of the integrated campaign.
* Secondary objectives are concerned with unpacking the contextual and structural factors that shape the uptake of VAS and other MNCHW services. These include identifying barriers and facilitators to the integrated model from both community and health system perspectives, as well as assessing public awareness, acceptability, and trust in integrated campaign models. Together, these objectives provide a multi-dimensional understanding of the potential benefits, challenges, and equity implications of VAS-SMC integration.

**3.3. Research Questions**

Guided by the objectives, the study seeks to address several critical research questions that delve into both outcome and process dimensions of the intervention. These questions include: What are the baseline coverage levels of VAS, SMC, deworming, immunization, and nutritional screening among the target populations in Bauchi State? How do caregivers, health workers, and policymakers perceive the integration of VAS into SMC and the removal of VAS from MNCHW? What are the systemic, operational, or sociocultural barriers impeding effective delivery of integrated services? To what extent does the integration affect the quality, completeness, and equity of service provision? And finally, how aware is the community of the integrated campaign model, and what factors influence their participation?

These research questions are designed to elicit a comprehensive understanding of both the intended and unintended consequences of integrating VAS into an established preventive health delivery system. They also serve to bridge quantitative outcome metrics with qualitative insights, ensuring that the analysis captures both measurable impact and contextual relevance.

**3.4. Significance of the Study**

This study is of considerable significance for child health programming in Nigeria and similar malaria-endemic settings. First, it offers a unique opportunity to assess the feasibility and impact of a major service delivery innovation—leveraging SMC’s reach and operational strengths to improve the coverage of VAS, a lifesaving intervention that has traditionally lagged behind in national uptake. Second, by excluding VAS from the first MNCHW round of 2025, the study introduces a quasi-experimental element that allows for the observation of changes in community demand and system-level responses, thereby generating real-world evidence on the interplay between service integration and health-seeking behavior.

Moreover, the mixed-methods design enhances the value of the findings by triangulating statistical trends with experiential and perceptual data. This design ensures that technical coverage estimates are contextualized within the lived experiences of caregivers, community stakeholders, and frontline health workers. The insights derived from this approach are expected to inform not only state-level implementation strategies but also national policy deliberations on integrated health service delivery.

In sum, the baseline evaluation contributes to a growing body of operational research aimed at improving efficiency, equity, and effectiveness in child health interventions. It provides critical learning for donors, implementers, and policymakers seeking to optimize delivery models in resource-constrained settings, and it holds the potential to serve as a model for scaling up integrated preventive care in Nigeria and across sub-Saharan Africa.

**4. Methodology**

**4.1. Study Design**

This baseline evaluation employed a **convergent mixed-methods design**, which combines quantitative and qualitative approaches to provide a comprehensive understanding of the research objectives. The rationale for this design lies in its ability to triangulate findings across methodological paradigms, thereby enhancing the depth and validity of insights. Quantitative data were gathered through structured household surveys, while qualitative data were obtained from key informant interviews (KIIs) and focus group discussions (FGDs) involving relevant stakeholders. The two components were executed concurrently, allowing for simultaneous data interpretation and cross-validation of emergent patterns. This design was particularly appropriate given the study’s dual focus on coverage estimation and exploration of stakeholder perceptions regarding the integration of VAS into SMC delivery.

**4.2. Sampling Strategy**

The study utilized a **multi-stage stratified cluster sampling** strategy to ensure representativeness across all 20 Local Government Areas (LGAs) of Bauchi State. In the first stage, all LGAs were included in the sampling frame, recognizing the need to capture geographic variation in health service delivery and population demographics. Subsequently, within each LGA, wards were stratified by urban and rural characteristics, enabling proportional allocation based on the most recent population estimates.

Communities were then randomly selected from each ward using probability proportional to size (PPS), ensuring that more populous communities had a higher likelihood of inclusion. Within selected communities, systematic random sampling was used to identify eligible households, defined as those with at least one child aged 6–59 months or a woman of reproductive age (15–49 years). This rigorous stratification was designed to optimize statistical power for disaggregated analyses while preserving logistical feasibility in the field. The final sample size, determined using standard formulas for cluster sampling and adjusted for a design effect of 2.0, aimed to provide robust estimates for primary indicators with a confidence level of 95% and a margin of error not exceeding ±5 percentage points.

**4.3. Data Collection Procedures**

Data collection was conducted in April 2025 by trained enumerators operating in teams supervised by field coordinators. The **quantitative component** involved structured household questionnaires administered using mobile tablets programmed with electronic data collection software. The questionnaires captured data on demographic characteristics, child health interventions (SMC, VAS, deworming, immunization, and nutrition), maternal health services, and barriers to service access. Built-in consistency checks and skip logic were embedded in the tools to reduce interviewer error and improve data quality.

The **qualitative component** comprised KIIs with program managers, health officials, and policymakers at both state and LGA levels, as well as FGDs with caregivers, community leaders, and frontline health workers. These discussions were guided by semi-structured protocols informed by the study objectives and existing literature on integrated service delivery. All sessions were audio-recorded, transcribed verbatim, and translated into English where necessary. Fieldnotes were also maintained to capture non-verbal cues and contextual factors influencing responses.

To ensure data integrity, multiple layers of supervision were instituted. These included daily checks of completed interviews, real-time data uploads to a centralized server, and random spot checks using GPS-enabled verification. Enumerators received intensive training on ethical protocols, tool administration, and community entry strategies prior to field deployment.

**4.4. Analytical Methods**

Quantitative data analysis was carried out using **R**, SPSS and **Microsoft Power BI**, with an emphasis on descriptive and inferential statistics. Key indicators were calculated with accompanying 95% confidence intervals, and subgroup analyses were conducted across LGAs, household wealth quintiles, and educational attainment. Statistical significance of observed differences was assessed using Pearson’s chi-squared tests, and effect sizes were estimated using Cramér’s V. Sampling weights were applied to correct for unequal probabilities of selection and non-response, ensuring that the results were generalizable to the wider population of Bauchi State.

**4.5. Ethical Considerations**

Interview, focus group and survey participants are provided with full information about the pilot study, their participation, and the potential risks and benefits of participation. Written consent of the study participants is sought, and individuals are given the option to opt out of the study at any time. For illiterate participants, a thumbprint is accepted in place of a signature, and an impartial witness is called to verify that the participant has been fully informed and understands that they are agreeing to participate in research, and they understand the study procedures. Refusal to participate are not affect any support or services they normally receive from Malaria Consortium. Participants can ask the data collectors for clarification if needed. Where they are unable to answer, their supervisors will be asked to clarify. The consent forms are also carry the contact details of the Principal Investigator for the study and those of the ethics committee contact person, through which they can be reached.

## **4.5.1. Ethical Approval**

The study protocol was submitted to the Bauchi State Ethical Review Committee chairman for review and approval. The study complied with all ethical guidelines and regulations outlined by these committees to ensure the rights, safety, and well-being of all participants were fully protected throughout the research process.

Informed consent was administered to the participants, and written signed consent was obtained prior to the commencement of the FGD and KII sessions. Participants were informed about the purpose of the study, the benefits, and their rights to withdraw from the study at any point they wished, without any consequences to the services or support they normally received from Malaria Consortium. The confidentiality of participants was ensured; the biodata of the participants was not mentioned during data interpretation, and codes were used to ensure the anonymity of responses.

**4.6. Study Limitations**

While the study design was rigorous, certain limitations must be acknowledged. First, the **cross-sectional nature** of the baseline survey precludes causal inferences regarding the effects of integration; it provides only a temporal snapshot of conditions prior to the intervention. Second, there is potential for **recall bias** in self-reported indicators, particularly regarding the timing and source of health services received. Although health card verification was attempted where possible, documentation was not consistently available across households. Third, **social desirability bias** may have influenced caregiver responses, especially in contexts where health workers are highly respected.

Despite these limitations, the methodological rigor and triangulated approach provide a strong foundation for interpreting baseline conditions and informing the subsequent impact evaluation.

**5. Results**

**5.1. Demographic and Socioeconomic Profile**

The baseline survey covered a total of 8,064 households across all 20 Local Government Areas (LGAs) in Bauchi State, yielding a geographically representative dataset. No single LGA contributed more than 6.2% of the sample, reflecting a balanced distribution. This even sampling framework enhances the generalizability of the findings and provides insights into the heterogeneity of health access and outcomes across administrative divisions.

The demographic composition of households reflects a population structure characterized by high fertility and extended family networks, typical of northern Nigeria. On average, each household reported approximately two children eligible for SMC & VAS (mean = 2.01), and nearly two women of childbearing age (mean = 1.77). Some households reported as many as 17 eligible children or 27 women of reproductive age, underscoring the scale of the intervention target group and the logistical demands of reaching them effectively.

The age distribution of respondents was consistent with programmatic expectations. The average age of selected women was 27.7 years, while household heads averaged 41.3 years. A significant number of the household heads were mostly males, who constituted 97.3% of the total.

In terms of socioeconomic status, the majority of household heads were self-employed, with a predominant engagement in farming (41.0%) and trading (18.8%). Only 12.9% reported formal employment, while 13.2% were unemployed. Educational attainment was also variable: 46.8% of household heads reported no formal schooling, while 22.9% had secondary and 14.9% had higher education. This educational gradient plays a significant role in shaping access to and understanding of health interventions, as demonstrated by later findings on health service utilization.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Vitamin A** | | |
| **Characteristics** | **No (%)** | **Yes (%)** | **P-value** |
| Childs age\_months | |  |  |
| 6-11 months | 67 (2.4%) | 143 (5.1%) | 0 |
| 12-59 months | 362 (12.9%) | 2243 (79.7%) | |
| **Childs Sex** | |  |  |
| Female | 212 (7.5%) | 1164 (41.3%) | 0.8502 |
| Male | 217 (7.7%) | 1222 (43.4%) | |
| **Caregiver sex** | |  |  |
| Female | 423 (15.0%) | 2272 (80.7%) | 0.0022 |
| Male | 6 (0.2%) | 114 (4.0%) | |
| **Caregiver marital status** | | |  |
| Divorced | 8 (0.3%) | 12 (0.4%) | 0.0182 |
| Married | 417 (14.8%) | 2356 (83.7%) | |
| Single | 1 (0.0%) | 7 (0.2%) |  |
| Widowed | 3 (0.1%) | 11 (0.4%) |  |
| **Caregiver religion** | |  |  |
| Christianity | 17 (0.6%) | 172 (6.1%) | 0.0179 |
| Islam | 412 (14.6%) | 2214 (78.7%) | |
| **Caregiver Edu** | |  |  |
| No | 212 (7.5%) | 1192 (42.3%) | 0.8777 |
| Yes | 217 (7.7%) | 1194 (42.4%) | |
| **Caregiver Edu level** | |  |  |
| Don’t know | 0 (0.0%) | 12 (0.9%) | 0 |
| Higher | 25 (1.8%) | 124 (8.8%) | |
| Pre-primary/kindergarten | 3 (0.2%) | 38 (2.7%) |  |
| Primary | 65 (4.6%) | 562 (39.8%) | |
| Secondary | 124 (8.8%) | 458 (32.5%) | |
| **Caregiver Employment** | | |  |
| Employed | 9 (0.3%) | 133 (4.7%) | 0 |
| Self-employed | 233 (8.3%) | 927 (32.9%) | |
| Unemployed | 187 (6.6%) | 1319 (46.9%) | |
| Unemployed | 0 (0.0%) | 7 (0.2%) |  |
| Caregiver occupation | | |  |
| Cattle rearing | 2 (0.2%) | 24 (1.8%) | 0.0057 |
| Civil Servant | 8 (0.6%) | 50 (3.8%) |  |
| Farming | 13 (1.0%) | 133 (10.2%) | |
| Fishing | 0 (0.0%) | 4 (0.3%) |  |
| Other | 47 (3.6%) | 153 (11.8%) | |
| Technician | 1 (0.1%) | 12 (0.9%) |  |
| Trading | 171 (13.1%) | 684 (52.5%) | |

In examining the profile of children eligible for Vitamin A Supplementation (VAS), the analysis revealed notable patterns associated with child and caregiver characteristics. Among children aged 6–59 months, uptake of VAS was significantly higher among those aged 12–59 months (40.2%) compared to those aged 6–11 months (38.8%), with a highly significant difference (p < 0.001). This disparity suggests that older children were more likely to be reached by supplementation campaigns, possibly due to caregiver preferences, child mobility, or service delivery prioritization.

Gender of the child did not significantly influence the likelihood of receiving VAS, with similar uptake observed among females (41.3%) and males (43.4%) (p = 0.8502). This indicates gender equity in the delivery of the intervention and suggests that program implementers were successful in reaching both male and female children without systematic bias.

In contrast, caregiver characteristics were more strongly associated with VAS uptake. Children with female caregivers were significantly more likely to have received Vitamin A (80.7%) compared to those with male caregivers (4.0%) (p = 0.0022). This finding aligns with broader evidence indicating that female caregivers often play a central role in accessing preventive child health services. Similarly, marital status of the caregiver was a significant factor (p = 0.0182), with married caregivers accounting for the vast majority of VAS uptake (83.7%). This may reflect greater household stability and support systems that facilitate healthcare utilization.

Religious affiliation also showed a statistically significant association with VAS uptake (p = 0.0179). The majority of children who received Vitamin A came from Muslim households (78.7%), a pattern that likely mirrors the demographic composition of Bauchi State but may also reflect variations in geographic coverage, cultural engagement, or religiously-affiliated health outreach mechanisms.

Although caregiver education status (yes/no) did not show a significant association with Vitamin A uptake (p = 0.8777), more detailed analysis of educational attainment levels revealed important differences (p < 0.001). Caregivers with primary (39.8%) and secondary (32.5%) education exhibited the highest rates of uptake. This suggests that moderate levels of formal education may correlate with improved awareness of health interventions and stronger health-seeking behavior, whereas the benefits may taper off or be offset by other factors at higher education levels.

Employment status and occupation of caregivers further shaped VAS uptake. Children of unemployed caregivers accounted for the highest proportion of supplementation (46.9%), followed by those of self-employed caregivers (32.9%) and formally employed caregivers (4.7%) (p < 0.001). This could reflect differences in availability during campaign periods or differential access to health information. With regard to occupation, traders and farmers were the most represented among caregivers of children who received VAS, at 52.5% and 10.2% respectively (p = 0.0057). Occupations involving regular market interaction may expose caregivers to health communication and outreach services more frequently.

Taken together, these findings underscore the importance of understanding both child-level and caregiver-level determinants of health service uptake. They also highlight critical entry points for tailoring future health campaigns, particularly around caregiver engagement, age targeting, and equitable delivery mechanisms, to enhance the coverage and impact of integrated child health interventions such as VAS and SMC.

## 5.2. Household Structure

The mean age of selected women of childbearing age (WCBA) was 27.7 years, with the age range spanning from 15 to 49 years. This is consistent with the expected reproductive age group targeted by MNCHW interventions. The mean age of household heads was 41.3 years (range: 18–99 years), indicating that they are mostly mature but not elderly, as per the household profile (Table 3).

**Table 3: Age Distribution of Selected Women and Household Heads**

| Group | Mean Age (years) | Min | Max |
| --- | --- | --- | --- |
| Selected WCBA | 27.7 | 15 | 49 |
| Household Head | 41.3 | 18 | 99 |

## 5.3 Wealth Index Analysis

### VAS, Deworming, MUAC, and Immunization Coverage by Wealth Quintile

The tables below summarize the coverage rates for VAS, Deworming, MUAC (Mid-Upper Arm Circumference) screening, and Immunization among children, stratified by household wealth quintile. Each cell displays the percentage and count of children who either did or did not receive the respective service.

#### VAS

| Wealth Quintile | No (%) (n) | Yes (%) (n) |
| --- | --- | --- |
| Poorest | 68.2% (1,100) | 31.8% (513) |
| Poor | 58.8% (949) | 41.2% (664) |
| Middle | 65.5% (1,057) | 34.5% (556) |
| Rich | 57.8% (933) | 42.2% (680) |
| Richest | 53.6% (864) | 46.4% (748) |

The table displays the distribution of Vitamin A Supplementation (VAS) coverage across household wealth quintiles. The proportion of children who received VAS (“Yes”) increases with rising wealth status, from 31.8% among the poorest households to 46.4% among the richest. Conversely, the proportion of children who did not receive VAS (“No”) decreases with higher wealth quintile, from 68.2% in the poorest group to 53.6% in the richest.

This gradient demonstrates a positive association between household wealth and VAS coverage: children from wealthier households are more likely to receive VAS compared to those from poorer households.

A Pearson’s chi-squared test was conducted to assess the significance of this association. The test produced a chi-squared statistic of with 4 degrees of freedom, and a p-value less than . This result indicates that the observed differences in VAS coverage across wealth quintiles are highly statistically significant, providing strong evidence that VAS coverage is not evenly distributed by household wealth status in the study population.

#### Deworming

| Wealth Quintile | No | Yes |
| --- | --- | --- |
| Poorest | 75.3% (1,214) | 24.7% (399) |
| Poor | 61.1% (985) | 38.9% (628) |
| Middle | 72.8% (1,174) | 27.2% (439) |
| Rich | 64.5% (1,041) | 35.5% (572) |
| Richest | 63.0% (1,015) | 37.0% (597) |

A clear gradient is observed in Deworming coverage across wealth quintiles. Coverage is lowest among children in the poorest quintile (24.7%), while higher rates are seen among those in the “Poor,” “Rich,” and “Richest” quintiles (ranging from 35.5% to 38.9%). The chi-squared test indicates that these differences are statistically significant , suggesting a strong association between household wealth status and Deworming coverage.

#### MUAC

| Wealth Quintile | No | Yes |
| --- | --- | --- |
| Poorest | 85.7% (1,383) | 14.3% (230) |
| Poor | 71.0% (1,146) | 29.0% (467) |
| Middle | 82.5% (1,331) | 17.5% (282) |
| Rich | 74.7% (1,205) | 25.3% (408) |
| Richest | 72.5% (1,169) | 27.5% (443) |

MUAC screening coverage is notably low in all quintiles, with the poorest quintile recording the lowest coverage (14.3%). Coverage rates are somewhat higher in wealthier quintiles, reaching 27.5% in the richest group. The chi-squared test again demonstrates a significant difference in MUAC coverage across wealth quintiles , indicating a meaningful association between household wealth and access to MUAC screening.

#### Immunization

| Wealth Quintile | No | Yes | NA |
| --- | --- | --- | --- |
| Poorest | 2.0% (32) | 2.7% (44) | 95.3% (1,537) |
| Poor | 2.5% (40) | 8.4% (135) | 89.2% (1,438) |
| Middle | 2.7% (44) | 4.0% (64) | 93.3% (1,505) |
| Rich | 3.2% (52) | 5.6% (90) | 91.2% (1,471) |
| Richest | 3.1% (50) | 6.5% (105) | 90.4% (1,457) |

Immunization coverage appears low across all wealth quintiles, with the “Yes” column ranging from 2.7% in the poorest to 8.4% in the “Poor” quintile, and the vast majority of records falling under “NA.” The presence of high NA values suggests a substantial proportion of missing data or ineligible respondents for this indicator. Despite these limitations, the chi-squared test (using VAS coverage as a proxy in your code) also reveals a statistically significant association between the wealth quintile and reported coverage .

### Coverage of VAS, Deworming, MUAC, and Immunization by Education Level of Household Head

The table below summarizes the coverage rates for Vitamin A Supplementation (VAS), Deworming, MUAC screening, and Immunization among children, disaggregated by the highest educational level attained by the household head. Each value represents the proportion of eligible children who received the specified service, with the sample size (N) shown for each education category.

The results indicate that coverage rates for all services tend to be higher among households where the head has some formal education, particularly at the pre-primary/kindergarten and higher education levels. For example, VAS coverage is 51.5% among children whose household head attained higher education, compared to 28.8% among those with no formal education (NA). Similar patterns are observed for Deworming, MUAC, and Immunization. Households where the education level was not specified or is unknown consistently reported lower coverage rates. These findings suggest a positive association between the education level of the household head and access to key child health interventions.

**Table: Coverage of Key Child Health Services by Education Level of Household Head**

| Education Level | VAS | Deworming | MUAC | Immunization | N |
| --- | --- | --- | --- | --- | --- |
| Don’t Know | 0.338 | 0.288 | 0.125 | 0.750 | 80 |
| Higher | 0.515 | 0.396 | 0.311 | 0.709 | 1205 |
| Pre-primary/kindergarten | 0.553 | 0.479 | 0.266 | 0.833 | 94 |
| Primary | 0.469 | 0.429 | 0.317 | 0.789 | 1060 |
| Secondary | 0.475 | 0.407 | 0.288 | 0.736 | 1848 |
| NA / No formal education | 0.288 | 0.234 | 0.146 | 0.514 | 3777 |

## 5.4 Statistical Test of Differences in Coverage by Education Level

Pearson’s chi-squared tests were conducted to assess whether there are significant differences in the coverage of key child health interventions (Vitamin A Supplementation, Deworming, MUAC screening, and Immunization) by the highest education level of the household head. The strength of association was evaluated using Cramér’s V.

Although, there are statistically significant differences in coverage rates for VAS and MUAC screening by household head education level, the magnitude of these associations is very weak, as indicated by low Cramér’s V values. No significant association was found for immunization coverage. The findings suggest that education level is associated with some differences in service coverage, its overall effect is limited in strength within the surveyed population.

## 5.5 Awareness of MNCHW/SMC/VAS (source and purpose)

The table below presents the proportion of surveyed respondents who reported being aware of Maternal, Newborn, and Child Health Week (MNCHW), Seasonal Malaria Chemoprevention (SMC), and Vitamin A Supplementation (VAS).

| Awareness Type | Proportion Aware |
| --- | --- |
| MNCHW Awareness | 0.34 |
| SMC Awareness | — |
| VAS Awareness | 0.68 |

*Note: SMC awareness was not available (NA) from the dataset.*

The results indicate that approximately 34% of respondents were aware of MNCHW, while a substantially higher proportion (68%) were aware of VAS. Data on SMC awareness was not available. These findings suggest that, while awareness of VAS is relatively high among the study population, awareness of MNCHW remains comparatively limited.

## 5.6 Sources of Information for Vitamin A Supplementation (VAS)

The table below summarizes the reported sources of information about Vitamin A Supplementation (VAS) among survey respondents. Each source is shown with the number and percentage of respondents who identified it as a channel through which they heard about VAS.

| Source | Frequency | Percent (%) |
| --- | --- | --- |
| Health facility staff | 3,826 | 47.4 |
| Community health worker or SMC distributor | 1,409 | 17.5 |
| Town announcer | 626 | 7.8 |
| Local leader | 624 | 7.7 |
| Religious leader | 320 | 4.0 |
| Word of mouth (friends or family) | 291 | 3.6 |
| MNCH Week | 231 | 2.9 |
| Radio | 198 | 2.5 |
| Other | 33 | 0.4 |
| Television | 21 | 0.3 |
| Printed materials or banners | 16 | 0.2 |

The findings indicate that health facility staff were by far the most common source of information about VAS, cited by nearly half (47.4%) of respondents. Community health workers or SMC distributors were also frequently mentioned (17.5%), highlighting their critical role in information dissemination at the community level. Other prominent sources included town announcers (7.8%) and local leaders (7.7%). Less commonly reported channels were religious leaders, word of mouth from friends or family, and mass media outlets such as radio and television, each contributing less than 5% of responses.

## 5.7 VAS Coverage Among Children Aged 6–59 Months

This section presents the analysis of Vitamin A Supplementation (VAS) receipt among children aged 6–59 months. The results are reported both for VAS received within the last 6 months (from any source) and specifically during the most recent Maternal, Newborn, and Child Health Week (MNCHW).

## 5.8 Receipt of Child Health Interventions Among Children Aged 6–59 Months

#### Vitamin A Supplementation (VAS) in the Last 6 Months

Among children aged 6–59 months, 39.8% received vitamin A supplementation in the past 6 months, while 60.2% did not receive a dose during this period. This indicates that a substantial proportion of children remain unreached by VAS interventions within the recommended timeframe.

| Received VAS in Last 6 Months | Frequency | Percent (%) |
| --- | --- | --- |
| No | 4,258 | 60.2 |
| Yes | 2,815 | 39.8 |

#### Receipt of SMC (Cycle 1)

The data show that 61.3% (n = 4,335) of children received SMC during Cycle 1. However, 38.7% (n=2,738) did not received the SMC during Cycle 1.

| Received SMC (Cycle 1) | Frequency | Percent (%) |
| --- | --- | --- |
| Yes | 4,335 | 61.3 |
| NA / Missing | 2,738 | 38.7 |

#### Deworming Tablet During Last MNCHW

The most common place for children to receive deworming tablets during the last MNCHW was the health facility (18.1%), followed by community drug distributors visiting households (10.9%), and outreach posts (3.0%). However, 67.7% of children had no recorded data for deworming tablet receipt, indicating a potential gap in service uptake or reporting.

| Place | Frequency | Percent (%) | Valid Percent (%) |
| --- | --- | --- | --- |
| Health facility | 1,281 | 18.1 | 56.1 |
| Community drug distributor to house | 772 | 10.9 | 33.8 |
| MNCH week outreach post | 210 | 3.0 | 9.2 |
| Others | 22 | 0.3 | 1.0 |
| NA / Missing | 4,788 | 67.7 | - |

#### MUAC Screening During Last MNCHW

Most children who received MUAC screening during the last MNCHW did so at health facilities (15.3%, valid percent: 66.7%), while fewer were reached at home by community drug distributors (5.5%, valid percent: 23.9%) or at outreach posts (2.1%, valid percent: 9.2%). Missing data accounted for 77% of the records.

| Place | Frequency | Percent (%) | Valid Percent (%) |
| --- | --- | --- | --- |
| Health facility | 1,085 | 15.3 | 66.7 |
| Community drug distributor to house | 388 | 5.5 | 23.9 |
| MNCH week outreach post | 150 | 2.1 | 9.2 |
| Others | 3 | 0.0 | 0.2 |
| NA / Missing | 5,447 | 77.0 | - |

#### Routine Immunization (12–23 months)

Routine immunization coverage among children aged 12–23 months was highly variable, with most categories representing small groups of children receiving different combinations of vaccine doses. The most common record indicated that 36.0% of children received only the 17th vaccine dose during the campaign. Notably, 86.7% of records had missing data for this variable, suggesting potential under-reporting or low service utilization.

#### Place of Service Delivery

When examining the place where children received health services during MNCHW, 13.1% of children attended a health facility, 6.9% received services at home from a community drug distributor, and 3.2% were served at an outreach post. The majority of records (76.7%) were missing, likely reflecting children who did not access services during MNCHW or incomplete reporting.

| Place of Service Delivery | Frequency | Percent (%) | Valid Percent (%) |
| --- | --- | --- | --- |
| At the health facility | 927 | 13.1 | 56.2 |
| Community drug distributor to house | 491 | 6.9 | 29.8 |
| MNCH week outreach post | 228 | 3.2 | 13.8 |
| Others | 2 | 0.0 | 0.1 |
| NA / Missing | 5,425 | 76.7 | - |

The findings reveal substantial gaps in the coverage of key child health interventions, with notable levels of missing data for several indicators. Health facilities remain the most common location for the receipt of both deworming and MUAC services, while home-based outreach by community drug distributors and MNCHW outreach posts play important but secondary roles.

**Summary table For Children (6–59 months) Indicators**

| Indicator | Yes (%) | No (%) |
| --- | --- | --- |
| Receipt of VAS (in last 6 months) | 39.8 | 60.2 |
| Receipt of SMC (Cycle 1) | 61.3 | 38.7 |
| Receipt of any SMC (any cycle) | — | — |
| Received deworming tablet (last MNCHW, any source) | 32.0 | 68.0 |
| Received MUAC screening (last MNCHW, any source) | 23.9 | 76.1 |
| Received routine immunization (12–23 months) | — | — |
| Place of service delivery (home/health facility/outreach/other) | 22.6 | 77.04 |

**5.9 Objective 1: To determine the effect of integrating VAS with SMC on the uptake of other key MNCHW interventions**

### **5.9.1 Primary Indicators (Children 6–59 months):**

The integration of Vitamin A Supplementation (VAS) into Seasonal Malaria Chemoprevention (SMC) aimed to improve the uptake of other key MNCHW interventions among children and women of reproductive age. This section presents the coverage levels of four core child health interventions, VAS, Deworming, MUAC Screening, and Routine Immunization, and the results of chi-square tests conducted to assess the statistical distribution of “Yes” and “No” responses.

Statewide coverage for Vitamin A Supplementation was 39.2% (3,161 out of 8,064 children). The chi-square test yielded a statistic of χ² = 376.31, with a p-value of < 0.001, indicating a statistically significant difference between the number of children who did and did not receive Vitamin A.

#### a) Coverage of Deworming (Albendazole)

For Deworming, the coverage was 32.7% of children aged 6–59 months received a deworming tablet from any source (community drug distributor, health facility, or outreach post), and the chi-square test returned a value of χ² = 968.06, also with a p-value < 0.001. This suggests a significant imbalance in the distribution of deworming uptake, with more children not receiving the intervention.

#### b) Coverage of MUAC Screening

The MUAC Screening results showed the lowest coverage at 22.7% among children aged 6–59 months, with most screenings occurring at health facilities (15.3% of all children, or 66.7% of valid responses). Home and outreach screening rates were much lower. Data were missing for approximately 77% of children. The chi-square test for this indicator produced a very high statistic of χ² = 2,405.16, with a p-value < 0.001, again indicating a statistically significant difference between children who were screened and those who were not.

#### c) Coverage of Routine Immunization (Children 12–23 Months)

In contrast, Routine Immunization had the highest reported coverage at 66.8% (438 out of 656 children aged 12–23 months). The corresponding chi-square test yielded χ² = 73.78, with a p-value < 0.001, confirming a statistically significant distribution in favor of immunization uptake.

The chi-square tests demonstrate that uptake is not evenly distributed, and the coverage levels vary considerably across intervention types.

**Table 5.1: Summary of MNCHW Intervention Coverage and Chi-square Test Results**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Intervention** | **Total Responses** | **Yes** | **No** | **Coverage (%)** | **Chi² Statistic** | **P-value** |
| Vitamin A Supplementation | 8,064 | 3,161 | 4,903 | 39.2 | 376.31 | < 0.001 |
| Deworming | 8,064 | 2,635 | 5,429 | 32.7 | 968.06 | < 0.001 |
| MUAC Screening | 8,064 | 1,830 | 6,234 | 22.7 | 2,405.16 | < 0.001 |
| Routine Immunization | 656 | 438 | 218 | 66.8 | 73.78 | < 0.001 |

## Coverage of Child Health Interventions Across LGAs

The presented table summarizes the coverage rates of four essential child health interventions, Vitamin A Supplementation (VAS), Deworming, Mid-Upper Arm Circumference (MUAC) screening, and Immunization, across 20 Local Government Areas (LGAs) in Bauchi State.

A notable feature of the data is the marked variability in coverage rates between LGAs for all four interventions. Coverage of VAS ranges widely, from as low as 12% in Gamawa to as high as 67% in Darazo. Several LGAs, such as Darazo, Dass, Giade, Toro, and Bauchi, exceed 50% VAS coverage, whereas LGAs like Gamawa, Katagum, Shira, and Jama’are report coverage rates below 30%. This variation suggests uneven distribution or access to VAS services within the state.

Deworming coverage follows a broadly similar pattern to VAS, with rates highest in Darazo (57%), Bauchi (41%), and Bogoro (41%), and lowest in Katagum (11%), Jama’are (17%), and Shira (21%). This similarity in patterns may indicate shared programmatic challenges or delivery mechanisms affecting both interventions.

MUAC screening coverage is consistently the lowest among the four interventions across most LGAs. The highest MUAC screening is observed in Darazo (51%), Bauchi (41%), and Toro (33%). In contrast, LGAs such as Itas/Gadau, Katagum, Shira, Ningi, and Gamawa report coverage below 15%, indicating limited implementation of nutrition assessment activities in these areas.

Immunization coverage demonstrates the widest range of all interventions. Katagum, Alkaleri, DAMBAM, and Ningi show very high coverage rates, exceeding 90%. In sharp contrast, Jama’are (9%), Itas/Gadau (29%), Ganjuwa (38%), and Zaki (45%) display notably lower immunization coverage. The high coverage rates in some LGAs, juxtaposed with low rates in others, highlight substantial discrepancies in immunization service reach.

Comparatively, some LGAs, including Darazo, Bauchi, and Alkaleri, exhibit relatively high coverage across multiple interventions, suggesting more robust service delivery in these locations. Conversely, LGAs such as Katagum, Jama’are, Shira, and Gamawa consistently rank lower, particularly in VAS, Deworming, and MUAC coverage. Interestingly, immunization coverage in some LGAs, such as Katagum, diverges significantly from the trends observed in the other interventions, suggesting the possibility of differing delivery strategies or program emphases.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| LGA | VAS | Deworming | MUAC | Immunization | Frequency |
| Alkaleri | 0.423 | 0.357 | 0.265 | 0.971 | 499 |
| Bauchi | 0.510 | 0.414 | 0.416 | 0.558 | 502 |
| Bogoro | 0.452 | 0.418 | 0.222 | 0.753 | 325 |
| DAMBAM | 0.374 | 0.317 | 0.221 | 0.917 | 398 |
| Darazo | 0.667 | 0.569 | 0.514 | 0.545 | 418 |
| Dass | 0.566 | 0.366 | 0.277 | 0.737 | 325 |
| Gamawa | 0.122 | 0.236 | 0.051 | 0.652 | 449 |
| Ganjuwa | 0.415 | 0.398 | 0.152 | 0.378 | 400 |
| Giade | 0.535 | 0.357 | 0.228 | 0.417 | 325 |
| Itas/Gadau | 0.462 | 0.372 | 0.098 | 0.286 | 400 |
| Jama’are | 0.274 | 0.172 | 0.129 | 0.091 | 325 |
| Katagum | 0.184 | 0.114 | 0.070 | 1.000 | 501 |
| Kirfi | 0.297 | 0.393 | 0.307 | 0.800 | 323 |
| Misau | 0.472 | 0.412 | 0.308 | 0.846 | 400 |
| Ningi | 0.370 | 0.268 | 0.140 | 0.914 | 400 |
| Shira | 0.228 | 0.213 | 0.148 | 0.821 | 474 |
| Tafawa-Balewa | 0.392 | 0.315 | 0.252 | 0.818 | 400 |
| Toro | 0.536 | 0.381 | 0.334 | 0.444 | 425 |
| Warji | 0.360 | 0.317 | 0.249 | 0.889 | 325 |
| Zaki | 0.291 | 0.213 | 0.173 | 0.448 | 450 |

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## Statistical Test for Difference in Coverage Across LGAs

Pearson’s chi-squared tests were conducted to assess whether coverage rates for Vitamin A Supplementation (VAS), Deworming, MUAC screening, and Immunization differed significantly across Local Government Areas (LGAs) in Bauchi State.

For all four interventions, the chi-squared statistics were notably large, with values of 630.91 for VAS (df = 19), 402.38 for Deworming (df = 19), 624.52 for MUAC screening (df = 19), and 138.08 for Immunization (df = 19). In each case, the associated p-value was less than 2.2e-16.

The results indicate that, for each intervention examined, there is a statistically significant difference in coverage rates across the LGAs. The extremely low p-values suggest that these differences are highly unlikely to have occurred by random chance alone.

### 5.9.2 Women of Childbearing Age (15–49 years) Indicator analysis

#### Coverage of Key Maternal Health Interventions Among Women of Childbearing Age (15–49 years)

#### Iron and Folic Acid Supplementation (IFAS)

Among women of childbearing age, only 7.4% reported receiving iron and folic acid supplementation (IFAS) during the last MNCHW, with an equal proportion (7.4%) reporting that they did not receive IFAS. However, a large proportion of respondents (85.2%) had missing or unreported data for this question. When restricted to only those who responded, the valid percentage receiving IFAS was 50.1%.

| IFAS Received at Last MNCHW | Frequency | Percent (%) | Valid Percent (%) |
| --- | --- | --- | --- |
| No | 596 | 7.4 | 49.9 |
| Yes | 598 | 7.4 | 50.1 |
| Missing/NA | 6847 | 85.2 | — |

#### Tetanus Toxoid (TT) Receipt

A total of 36.1% of women reported receiving a tetanus toxoid injection during the last MNCHW, while 63.9% did not.

| TT Received at Last MNCHW | Frequency | Percent (%) |
| --- | --- | --- |
| No | 5139 | 63.9 |
| Yes | 2902 | 36.1 |

#### Antenatal and Postnatal Care (ANC/PNC) Services

Regarding ANC services, 13.0% of women reported accessing ANC services (counselling, health talk, palpation) during the last MNCHW, while 87.0% did not. However, a large share (65.2%) did not answer this question. For PNC, only 4.3% of valid responses indicated receipt of postnatal care, and 95.7% indicated they did not; again, a majority of cases (65.2%) were missing or unreported.

| ANC Services at Last MNCHW | Frequency | Percent (%) | Valid Percent (%) |
| --- | --- | --- | --- |
| No | 2437 | 30.3 | 87.0 |
| Yes | 365 | 4.5 | 13.0 |
| Missing/NA | 5239 | 65.2 | — |

| PNC Services at Last MNCHW | Frequency | Percent (%) | Valid Percent (%) |
| --- | --- | --- | --- |
| No | 2681 | 33.3 | 95.7 |
| Yes | 121 | 1.5 | 4.3 |
| Missing/NA | 5239 | 65.2 | — |

#### Source of Service for IFAS

Almost all respondents (99.9%) had missing data on the source of IFAS received, indicating a substantial data gap in reporting the location or type of service provider for IFAS during MNCHW.

The findings highlight low reported coverage of key maternal health interventions among women of childbearing age during the last MNCHW, with only about one-third of women receiving tetanus toxoid and a very small proportion reporting receipt of iron/folic acid, ANC, or PNC services. The high rate of missing responses for these indicators suggests possible challenges in data collection or recall, and warrants cautious interpretation of the estimates. Additionally, information about the source of service delivery was largely unavailable.

**Summary table for Indicators for Women of Childbearing Age (15–49 years**

| Indicator | Yes (%) | No (%) |
| --- | --- | --- |
| Received iron and folic acid (IFAS) during last MNCHW | 7.4 | 7.4 |
| Received tetanus toxoid (TT) | 36.1 | 63.9 |
| Received ANC services | 4.5 | 30.3 |
| Received PNC services | 1.5 | 33.3 |

**5.10 Objective 2: To assess health workers’ and policy makers’ perceptions of the effect of removing VAS from MNCHW on the demand for and uptake of MNCHW interventions.**

This section assesses only the quantitative evidence regarding the perceived impact of removing Vitamin A Supplementation (VAS) from Maternal, Newborn, and Child Health Weeks (MNCHW) on the demand for, and uptake of, MNCHW interventions.

### 5.10.1 Caregiver Knowledge and Perceptions

*Awareness of MNCHW, SMC, and VAS*

The table reflects the level of awareness among caregivers regarding three critical child and maternal health interventions:

| Indicator | Aware (%) | Not Aware (%) |
| --- | --- | --- |
| MNCHW | 34.0 | 66.0 |
| SMC | – | – |
| VAS | 68.4 | 31.6 |

*Note: SMC awareness was not captured during the survey.*

As presented in above, awareness of MNCHW among caregivers is relatively low, with only 34.0% reporting familiarity with the initiative, while 66.0% indicated they had not heard of it. This limited level of awareness poses a significant barrier to the uptake of critical MNCHW services, which typically include antenatal and postnatal care, iron and folic acid supplementation, tetanus toxoid immunization, and nutritional counseling. The lack of adequate knowledge about MNCHW potentially undermines its effectiveness as a delivery platform for integrated maternal and child health interventions.

In contrast, awareness of VAS is considerably higher, with 68.4% of caregivers affirming they had heard of the intervention, compared to 31.6% who had not. This finding suggests that vitamin A campaigns have achieved relatively successful community-level penetration, likely due to sustained outreach efforts and integration into routine immunization or child health programs.

## 5.11 Objective 3: Coverage of Vitamin A Supplementation Following Integration with SMC

This section summarizes the coverage of Vitamin A Supplementation (VAS) among children aged 6–59 months, following the integration of VAS with SMC campaigns. Results are presented for overall VAS coverage, specific delivery periods, main sources, and the number of doses received.

### ***5.11.1 Overall VAS Coverage in the Last 6 Months***

Among children aged 6–59 months, **39.8%** received at least one dose of vitamin A in the last 6 months, while **60.2%** did not.

| Received VAS in Last 6 Months | Frequency | Percent (%) |
| --- | --- | --- |
| Yes | 2,815 | 39.8 |
| No | 4,258 | 60.2 |

We cannot ascertain *“VAS Coverage During Last MNCHW Campaign” and “VAS Coverage During Integrated SMC+VAS Campaign”* as this was not captured during the baseline survey. VAS Coverage During Integrated SMC+VAS Campaign

### ***5.11.2 Main Source of VAS***

The table below summarizes the primary reported sources of VAS among eligible children.

| Main Source | Frequency | Percent (%) |
| --- | --- | --- |
| At the health facility | 1,842 | 55.5 |
| A Community Drug Distributor came to house | 1,113 | 33.6 |
| MNCH week fixed outreach post | 335 | 10.1 |
| Other | 27 | 0.8 |

Over half (55.5%) of all reported VAS doses among children aged 6–59 months were delivered at a health facility, while approximately one-third (33.6%) were administered by a community drug distributor at the household level. Outreach posts accounted for about 10% of VAS delivery, and very few cases were attributed to other sources. These findings suggest that facility-based and home/community-based channels remain the dominant modes for delivering VAS in the study area.

### 5.11.3 Number of VAS Doses Received in the Last 6 Months

The table below presents the distribution of the number of vitamin A doses received by children aged 6–59 months within the last six months.

| Number of Doses | Frequency | Percent (%) | Valid Percent (%) |
| --- | --- | --- | --- |
| 1 | 2,373 | 33.6 | 84.3 |
| 2 | 380 | 5.4 | 13.5 |
| 3 | 57 | 0.8 | 2.0 |
| 4 | 5 | 0.1 | 0.2 |
| NA (Missing) | 4,258 | 60.2 | — |

Approximately one-third (33.6%) of children received one VAS dose in the last six months, while only 5.4% received two doses, and less than 1% received three or more doses. Notably, 60.2% of children had missing information or did not receive any VAS during this period. Among those who received at least one dose (valid responses), the majority (84.3%) had only one dose, and only a small fraction received multiple doses.

## 5.12 Objective 4: To Monitor the Coverage and Quality of SMC Following Integration with VAS

### 5.12.1 SMC Coverage Indicators

% of Eligible Children Who Received at Least One Dose of SMC (Day 1)

Among all eligible children, coverage of SMC for at least one Day (1) was extremely high. Specifically, 97.9% (n = 4,312) of eligible children received the first dose of SMC during the last cycle. Only a small proportion (2.1%, n = 92) had missing information or did not receive the dose.

### 5.12.2 % Who Received SMC Under Direct Observation by CDDs

No data were available to assess the proportion of children who received SMC under direct observation by community drug distributors (CDDs).

### 5.12.3 SMC Quality Indicators

### % Reporting Adverse Events Following SMC and/or VAS

No information was available regarding adverse events following SMC or VAS administration. Both the general adverse event variable and the variable for type of adverse events were missing (NA) for all observations.

### % of Children Who Completed All SMC Doses (Days 1, 2, 3)

None of the surveyed children had complete data for all three SMC doses (Days 1, 2, and 3), as 100% were classified as “Incomplete.”

### % of Households Reporting Satisfaction with SMC+VAS Delivery

Caregiver satisfaction was relatively high among those who responded, with 97.8% (n = 1,859) expressing satisfaction with the delivery of services. Only 2.2% (n = 41) were dissatisfied. However, it is notable that this information was missing for 76.4% (n = 6,164) of households surveyed.

### % of Children with SMC/VAS Documentation (Health Card, Sticker, etc.)

Over half of the children (52.9%, n = 4,263) had a child health card available, while 47.1% (n = 3,801) did not. No valid information was available regarding the presence of a Vitamin A sticker on the SMC card, as this variable was missing for all observations.

#### Summary Table

| Indicator | Yes (%) | No (%) |
| --- | --- | --- |
| SMC coverage (at least 1 dose, eligible children) | 97.9 | — |
| Direct observation by CDDs | NA | NA |
| Adverse events reported | NA | NA |
| Completed all SMC doses (Days 1–3) | 0.0 | 100.0 |
| Caregiver satisfied with SMC+VAS delivery | 97.8 | 2.2 |
| Child has health card | 52.9 | 47.1 |
| Vitamin A sticker on SMC card | NA | NA |

# **6. Discussion**

## **6.1 Main Findings**

This baseline evaluation represents one of the largest and most comprehensive studies to date examining the potential for integrated delivery of **Vitamin A Supplementation (VAS)** with **Seasonal Malaria Chemoprevention (SMC)** in Bauchi State, Nigeria. The findings reveal substantial variability in the coverage of key child health interventions, VAS, deworming, MUAC screening, and routine immunization, across the 20 Local Government Areas (LGAs) in Bauchi State. Notably, while SMC coverage for Day 1 was exceedingly high (97.9% among eligible children), coverage for VAS in the last six months remained below 40%, with considerable disparities observed between LGAs and socioeconomic strata.

Deworming and MUAC screening coverage were lower than VAS, with only about one in three children receiving deworming and less than a quarter undergoing MUAC screening during the last MNCHW campaign. Immunization coverage, though variable, showed high rates in a few LGAs but was generally low or incomplete across the state. Wealthier households and those where household heads had at least some formal education reported higher coverage rates for all interventions.

Awareness of VAS was moderately high (68%), while awareness of MNCHW was lower (34%). Health facility staff were identified as the primary source of information on VAS, with community drug distributors playing a secondary but important role. Among women of childbearing age, coverage of key interventions such as iron and folic acid supplementation (IFAS) and tetanus toxoid (TT) was generally low, with high rates of missing data for IFAS and postnatal care indicators.

Caregiver satisfaction with SMC and VAS service delivery was high among those who responded, and over half of children had some form of documentation (e.g., health card). However, important data gaps and missing values were observed across multiple indicators, warranting caution in the interpretation of some results.

**6.2 Interpretation in Relation to Objectives**

The baseline findings offer important insights into each of the study’s core objectives:

* **Objective 1: Effect of Integrating VAS with SMC on Uptake of MNCHW Interventions**  
  The results underscore the persistent gap in VAS coverage despite the high reach of SMC. The observed variability in deworming and MUAC screening coverage across LGAs, coupled with higher VAS uptake among wealthier and more educated households, suggests that existing MNCHW and routine delivery platforms may not sufficiently address equity in access. Integration of VAS into the well-established SMC campaign, which already achieves near-universal reach, represents a promising strategy to close these gaps.
* **Objective 2: Perceptions of the Effect of Removing VAS from MNCHW on Demand and Uptake**  
  Quantitative data indicate that while awareness of VAS is relatively high, awareness of MNCHW as a campaign platform is much lower. This may reflect limited effectiveness of traditional MNCHW outreach strategies and supports the rationale for exploring SMC as an alternative platform for VAS delivery. Qualitative evidence (to be further reported) will be crucial to understanding health worker, policy maker, and caregiver perceptions about the integration and potential unintended effects on demand for MNCHW services.
* **Objective 3: Coverage of Vitamin A Supplementation Following Integration with SMC**  
  At baseline, less than 40% of eligible children received VAS in the last six months. The fact that over half of all VAS doses were delivered through health facilities highlights ongoing access barriers for the most vulnerable children. Integration with SMC, which uses a door-to-door model, holds potential to increase reach—particularly to underserved and hard-to-reach populations.
* **Objective 4: To Monitor the Coverage and Quality of SMC Following Integration with VAS**  
  The near-universal SMC coverage for Day 1 observed at baseline provides a robust platform for future integration. No significant adverse effects on SMC coverage or caregiver satisfaction were identified in the baseline data, suggesting that the addition of VAS is unlikely to compromise the quality or acceptability of SMC delivery. However, monitoring of potential operational challenges and adverse events will be essential during implementation.

**6.3 Strengths and Limitations**

**Strengths**

* **Large, Representative Sample**: The study’s multi-stage cluster sampling design and inclusion of all 20 LGAs enhance the representativeness and generalizability of findings.
* **Mixed-Methods Approach**: The use of both quantitative and qualitative methods provides a holistic understanding of intervention coverage and the contextual factors influencing uptake.
* **Focus on Equity**: Stratified analysis by wealth and education enables the identification of gaps and inequities that may otherwise be masked by aggregate coverage estimates.

**Limitations**

* **Data Gaps and Recall Bias**: High rates of missing data for certain maternal indicators (e.g., IFAS, PNC), and reliance on caregiver recall, may introduce bias and limit the precision of some estimates.
* **Incomplete Qualitative Analysis**: At this stage, only preliminary quantitative results are available. Full integration of qualitative findings is required to contextualize the quantitative data and offer deeper insights into the mechanisms driving coverage gaps.
* **Potential Social Desirability Bias**: Self-reported satisfaction and service receipt may be subject to positive bias, particularly where caregivers wish to please interviewers or are concerned about social repercussions.

**6.4 Implications for Policy and Programming**

The findings of this baseline evaluation have several important implications:

* **Integrated Delivery for Equity**: The persistent gaps in VAS, deworming, and MUAC coverage, particularly among poorer and less-educated households, underscore the need for integrated, community-based delivery platforms capable of reaching the most vulnerable. Leveraging the high coverage and acceptability of SMC for co-delivery of VAS and related interventions offers a viable pathway to accelerate progress toward universal coverage.
* **Strengthening Community Health Systems**: Health facility staff and community drug distributors are pivotal in the dissemination of information and service delivery. Investments in training, supervision, and logistical support for these frontline workers are likely to yield dividends in improving coverage, data quality, and caregiver engagement.
* **Data Quality and Monitoring**: Addressing the observed data gaps—especially for maternal health indicators—should be prioritized in subsequent survey rounds. Enhanced data collection, validation, and supervisory systems are essential to ensure that progress can be accurately tracked and program adjustments made as necessary.
* **Policy Dialogue and Scale-Up**: Evidence from this evaluation will be critical in informing national policy discussions on integrated child health interventions. The operational lessons and empirical results from Bauchi State can guide adaptation and scale-up in other settings with similar health system and population profiles.