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Multiple Micronutrient Supplementation Coverage among Under-two Children in Nafada Local Government Area, Gombe State

Lanem Law Kuma[1], Amos Dauda Nunghe[1], Bashir Bappah[2], Ekundayo Loko[3], Sesugh Nongu[1], Timilehin Ayodele[1], Ebun Christiana[1], Kehinde Adeniyi[4], Ojuolape Solanke[4] & Joan Oluwafunmilola Olotu[1]

[1]National Social Safety-Net Coordinating Office (NASSCO), Abuja
Corresponding author: lanemkuma@gmail.com
[2]Primary Health Care Department, Nafada LGA, Gombe State
[3]National Cash Transfer Office (NCTO), Abuja
[4]Accelerating Nutrition Results in Nigeria (ANRiN), Abuja

Abstract

Micronutrient deficiencies remain a significant public health challenge among under-two children in northern Nigeria, contributing to poor growth and developmental outcomes. This study assessed the coverage of multiple micronutrient powder (MNP) supplementation among children under two years in Nafada Local Government Area (LGA), Gombe State—one of three LGAs selected for the Accelerating Nutrition Results in Nigeria (ANRiN) intervention due to its high burden of malnutrition. Utilizing secondary data from the LGA's Health Department Monitoring and Evaluation Unit, we conducted a descriptive analysis of MNP coverage across ten wards. The projected under-two population was estimated at 8% of each ward's total population. This projection was compared with the actual number of children who received MNP during the 2024 intervention period to determine coverage rates. Findings revealed alarmingly low overall MNP coverage (19.4%), with significant disparities between wards—ranging from 0.6% in Birnin Fulani West to 74.7% in Birin Bolawa. Data visualization highlighted stark inequities in program implementation, with remote wards showing particularly poor uptake. The results align with existing evidence on challenges in rural nutrition interventions and underscore systemic barriers in equitable health service delivery. This study emphasizes the urgent need for targeted strategies to improve MNP distribution, particularly in hard-to-reach areas, to effectively address micronutrient deficiencies among vulnerable under-two children in northern Nigeria.

Keywords: Micronutrient powder, under-two children, supplementation coverage, ANRiN, Nafada LGA

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Introduction

Micronutrient deficiencies (MNDs) remain a significant public health challenge globally, particularly among children under two years of age, who are in a critical period of growth and development (World Health Organization [WHO], 2021). Micronutrients such as vitamin A, iron, zinc, and iodine play vital roles in immune function, cognitive development, and overall survival (Bailey, West, & Black, 2015). Despite global efforts to combat malnutrition, an estimated 340 million children under five suffer from micronutrient deficiencies, with the highest burden in sub-Saharan Africa and South Asia (UNICEF, 2020). Additionally, Horton & Steckel (2013) in their analysis on the cost of malnutrition opined that Africa and Asia

losses 11 percent of GDP each year to the scourge and this equals about $149 billion of productivity losses.

In Nigeria, the situation is particularly dire, with approximately 42% of under-five children experiencing stunting, 27% underweight, and 68% suffering from anaemia—a key indicator of iron deficiency (National Demographic and Health Survey [NDHS], 2018).

Gombe State, located in northeastern Nigeria, faces significant nutritional challenges, with high rates of child malnutrition and micronutrient deficiencies. According to the NDHS (2018), 56% of children under five in the Northeast region are stunted, and Gombe State has one of the highest rates of vitamin A deficiency (VAD) among children (32%) (Nigeria Food and Nutrition Report, 2019). Additionally, infant and child mortality rates in the state remain high, with malnutrition contributing to nearly 50% of under-five deaths (WHO, 2020). Micronutrient deficiencies exacerbate susceptibility to infections, impair physical and cognitive development, and increase mortality risk (Black et al., 2013).

Despite existing interventions such as routine vitamin A supplementation, iron-folic acid distribution, and maternal-child health programs, coverage remains suboptimal in rural and hard-to-reach areas like Nafada Local Government Area (LGA) (Akinyele, Adeyemo, & Ogbimi 2017). Limited access to healthcare services, poor maternal education, and socio-economic barriers hinder effective supplementation programs (Adekanmbi, Kayode, & Uthman, 2019). There is a need for localized data on micronutrient supplementation coverage to identify gaps and improve intervention strategies.

This study seeks to assess the coverage of micronutrient supplementation among children under two years in Nafada LGA, providing critical insights into the effectiveness of current nutrition interventions. Understanding the extent to which these children receive essential micronutrients will help identify systemic gaps and inform policy adjustments to enhance supplementation programs. The key research question guiding this study is: What is the coverage rate of micronutrient supplementation among under-two children in Nafada LGA?

By focusing on Nafada LGA, this research contributes to the broader effort to reduce micronutrient deficiency-related morbidity and mortality in Gombe State. The findings will be valuable for policymakers, healthcare providers, and nutrition program planners in designing targeted strategies to improve child health outcomes.

Methods

The study utilized secondary data obtained from the Monitoring and Evaluation (M&E) Unit in the Health Department of Nafada Local Government Area (LGA). Based on the available data, we implored the descriptive analysis to examine the coverage rate of micronutrient supplementation among under-two children in Nafada LGA. The LGA is in the northern senatorial zone of Gombe State. It is one of the three LGAs selected for ANRiN Intervention owning to its high poverty rate in the zone.

The projected under-two population is obtained by taking 8% of the population across the ten wards in the Local Government. These projected figures were compared with the actual number of under two that received Micronutrient Powder (MNP) to obtain the percentage coverage within the study period of 2024. Data visualization was also used for additional insight on the findings of the study

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Results

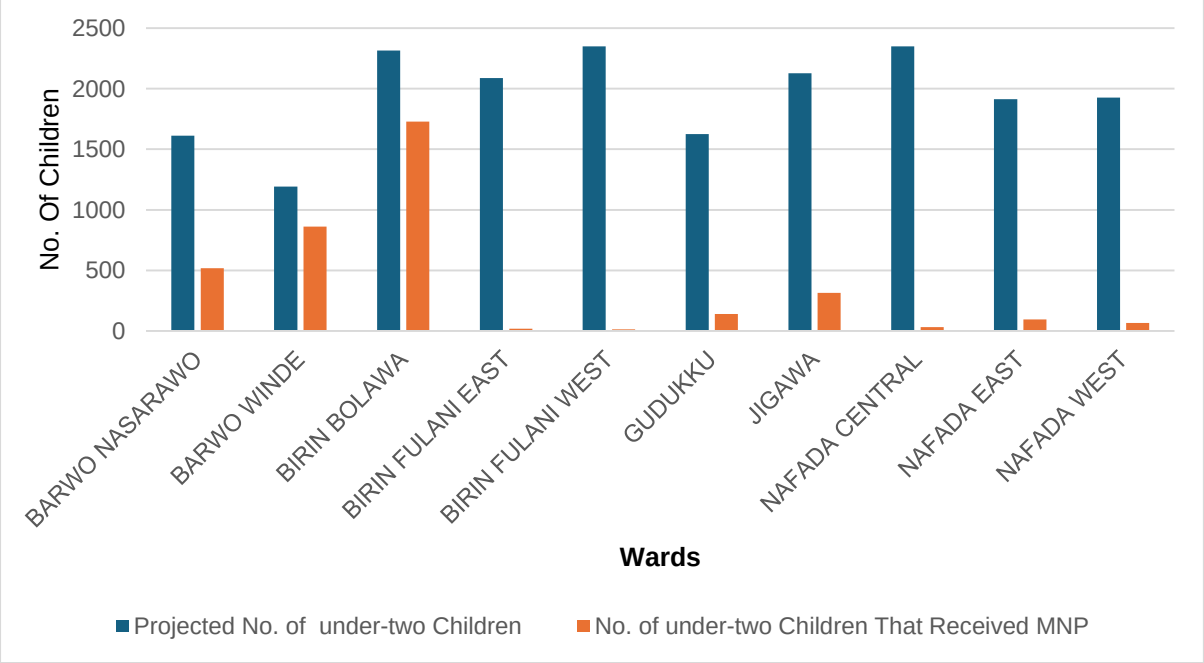
Table 1 below captures the Projected under two children across the ten wards which are the eligible category of children to receive the Micronutrient powder and the number of the target children population that received the MNP. The Birin Bolawa ward has the highest number of children that received the MNP with 1727 children while Birin Fulani ward has the lowest number with only 14 children reported to have received the supplementation. These submissions are visually displayed in Figure 1

Table 1: Number of under-two children that received the supplementation

Ward	Total Population (Tp)	Projected <2Children (8% Of Tp)	No. of under two Children that Received MNP
Barwo Nasarawo	20,142	1611	517
Barwo Winde	14,890	1191	862
Birin Bolawa	28,918	2313	1727
Birin Fulani East	26,076	2086	18
Birin Fulani West	29,372	2350	14
Gudukku	20,295	1624	139
Jigawa	26,575	2126	315
Nafada Central	29,356	2349	31
Nafada East	23,911	1913	96
Nafada West	24,075	1926	67
Total	243,610	19489	3786

Source: M&E Unit of Health Department of Nafada LGA

Figure1: Number Of Children Under-Two That Received MNP By Ward



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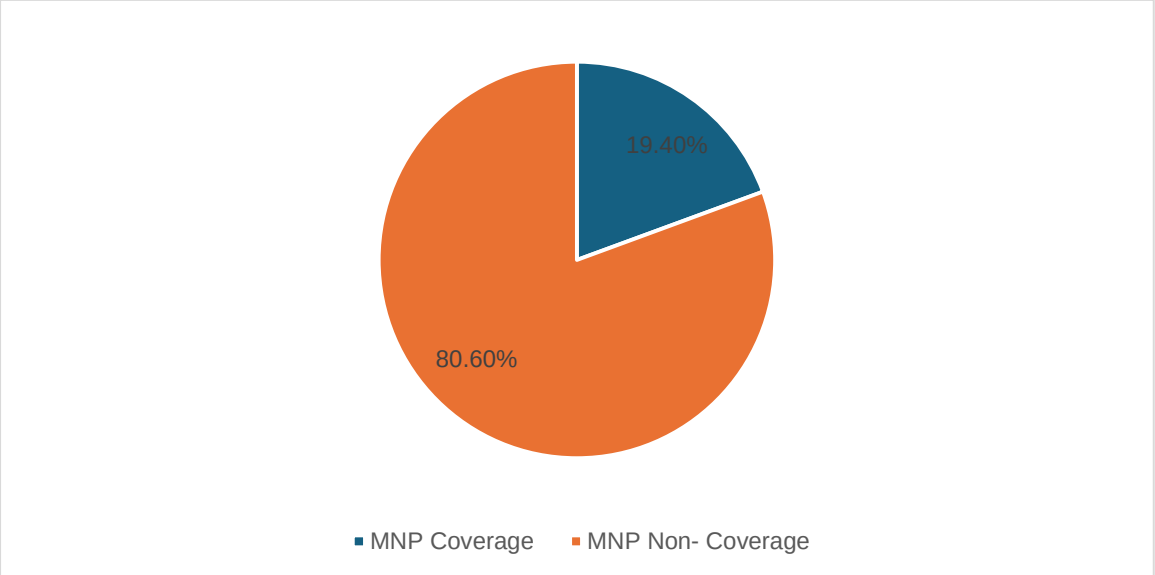
Interpreting the result from the percentage point of view, which is captured in Table 2, the Birnin Fulani west and Birnin Fulani East recorded the lowest coverage as only 0.6% and 0.9 % of under two children received the MNP as compared to the projected population respectively. On the other hand, Barwo Winde and Birin Bolawa ward returned the highest MNP intake with 72.4% and 74.7% recorded respectively. The average percentage coverage for the entire Local Government is seen to be 19.4% which is alarming as seen in Figure 2

Table 2: Percentage Coverage of Under-two Children that Received MNP

Ward	Percentage Coverage (%)
Barwo Nasarawo	32.1
Barwo Winde	72.4
Birin Bolawa	74.7
Birin Fulani East	0.9
Birin Fulani West	0.6
Gudukku	8.6
Jigawa	14.8
Nafada Central	1.3
Nafada East	5.0
Nafada West	3.5
Total (LGA)	19.4

Source: Author's Computation

Figure 2: MNP Supplementation Coverage



Discussions

The findings from this study reveal concerning disparities in micronutrient powder (MNP) supplementation coverage among children under two years in Nafada Local Government Area, Gombe State. The overall coverage rate of 19.4% falls substantially below the recommended thresholds for effective micronutrient deficiency control (WHO, 2021) which is 80%. This low coverage is particularly alarming given the well-documented benefits of MNP in reducing childhood anaemia and improving developmental outcomes (Bhutta et al., 2013).

The wide disparities observed by ward ranging from Birnin Fulani West (0.6%) and Birin Bolawa (74.7%) are consistent with observations from similar regional studies in northern Nigeria. A similarly inequitable picture was seen in Sokoto State with coverage of nutrition interventions ranging from between 65% to 80% in urban wards, and less than 15% in remote rural areas (Adekanmbi et al., 2019). These patterns indicate systemic barriers to outreach and access for hard-to-reach populations, which echo similar wider literature about disparities in health interventions in West Africa and elsewhere (Black et al., 2013).

Several factors may explain these coverage gaps. The success in Birin Bolawa and Barwo Winde wards (72-75% coverage) demonstrates what can be achieved with proper implementation, aligning with evidence from Ethiopia where community-based delivery systems achieved over 70% coverage (Menon et al., 2017). Conversely, the abysmal performance in Birnin Fulani wards (<1% coverage) reflects documented challenges in Nigeria's rural health systems, including supply chain weaknesses and health worker shortages (FMOH, 2021).

The study's findings gain particular significance when considering the high prevalence of micronutrient deficiencies in northeast Nigeria. Recent nutrition surveys indicate 32% vitamin A deficiency and 68% anemia rates among under-five children in Gombe State (NDHS, 2018), making effective MNP supplementation crucial. The current coverage gaps therefore represent missed opportunities to address these pressing health challenges.

Conclusion and Recommendations

This study highlights critical deficiencies in MNP program implementation in Nafada LGA, with overall coverage far below targets needed to impact micronutrient deficiency rates. The dramatic ward-level disparities reveal inequitable access to this vital nutrition intervention, particularly affecting remote communities. These findings underscore the urgent need for programmatic reforms to ensure all eligible children benefit from MNP supplementation

To address the identified gaps in MNP coverage, several strategic actions should be prioritized. First, targeted outreach programs should be implemented in the lowest-performing wards, with particular attention to Birnin Fulani East and West. These efforts should include enhanced community engagement and education to increase awareness and acceptance of MNP supplementation. Second, the health system should strengthen its supply chain management to ensure consistent availability of MNP supplements across all health facilities in the LGA. Third, the local government should consider integrating MNP distribution with other high-contact maternal and child health services to improve coverage. Finally, regular monitoring and evaluation systems should be established to track coverage rates and identify implementation challenges in real-time. These recommendations, if implemented effectively, could significantly improve MNP coverage and contribute to reducing micronutrient deficiencies among children under two in Nafada LGA.

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