ASSESSMENT OF NUTRITIONAL STATUS AND ASSOCIATED MORBIDITY AMONG CHILDREN UNDER FIVE IN TALATA MAFARA LOCAL GOVERNMENT AREA, ZAMFARA STATE, NIGERIA

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Abstract

Malnutrition is a serious global public health problem, and is a significant risk factor for child deaths, illness and long-term developmental problems, especially in low- and middle-income countries (Wright, 2019; World Health Organization [WHO], 2023). One hundred and seventy (170) children under 5 years of age were used for the nutritional status and morbidity profile, and their interrelationship was assessed in the Talata Mafara local government area of Zamfara State, Nigeria. This study was conducted in the community and was a cross-sectional study, using a structured questionnaire, which found a synergistic crisis. High clinical under nutrition (56% weight loss in the past 30 days) was correlated with poor IYCF practices, including low dietary diversity (58% mainly carbohydrates), and early complementary feeding (50% before 6 months). 45% of households were food insecure. The burden of morbidity was very high, such as recent diarrhoea (56%), recent fever (78%) and malaria (56%). Importantly, 68% of caregivers decreased feeding, and 48% stopped feeding altogether during illness, thus increasing the nutrition-infection cycle. 40% of children were fully vaccinated. The results are derived from the conceptual framework of UNICEF and illustrate how the three groups of basic factors (poverty, low maternal education), underlying factors (food insecurity, poor WASH, harmful care practices) and immediate factors (poor dietary practices, high disease burden) interact. Immediate, comprehensive, multi-sectoral measures are required to ensure child health, to break this vicious circle of health risks to children.

***Keywords**: Malnutrition, Morbidity, Under-5 children, Nutritional Status and Zamfara State*

Introduction

Malnutrition is a major international threat to health that can be characterised as a deficiency, excess or imbalance of energy and nutrients in a person's diet (WHO, 2021). Under-nutrition (stunting, wasting, underweight) is a major contributor to almost 50% of child deaths under five years of age and stunts children's survival, growth and cognition globally (WHO, 2023; UNICEF, 2021). There are also several interrelated and overlapping burdens of food insecurity and systemic inequalities and poverty in Sub-Saharan Africa and South Asia (Fry & Anderson, 2024).Nigeria has one of the highest burdens among African countries. Nigeria is second in the world with the highest number of stunted children (John et al.,

2024). The National data from the Nigeria Demographic and Health Survey (NDHS) 2018 indicates that there are 37% stunted, 7% wasted, and 22% underweight under-five (U5) children in the country. Please refer to the data for the most recent estimates, which come from the National Population Commission [NPC] & ICF (2019). These are averages, however, and there are significant differences between the regions. The highest prevalence is found in the Northwest and the Northeast geopolitical zones, the Northeast, the result of entrenched poverty, poor health facilities, food insecurity and poor food practices (John et al., 2024; Bakare *et al*, 2023). The high burden is encountered in the Northwest; Zamfara state is an example. Zamfara is identified as a priority area but there is still a big lack of localised and community based evidence from individual Local Government Areas (LGAs) such as Talata Mafara. This sort of detailed information is vital to go beyond regional generalizations and create interventions more precisely targeted. Thus this study will be focused on filling this gap as it will be used to provide a detailed assessment of the nutrition status, morbidity and linkages with the under-fives in Talata Mafara LGA.

The vicious cycle of under-nutrition and infectious disease is also a synergistic interaction that leads to high child mortality and morbidity in Northern Nigeria (Black *et al.,* 2013). A significant knowledge gap identified is the absence of recent, local information, particularly on the co-occurrence of nutritional deficits, disease profiles and care giving practices that link these deficits, in the Talata Mafara LGA in particular. Without evidence in context, planning and implementation of effective, locally-appropriate public health and nutrition interventions is challenging. Programmes are at risk of being misdirected and inefficient without an understanding of the specific dietary patterns, prevalence of disease and behaviours of caregivers in Talata Mafara. Hence, the following specific objectives were set for the present study: To determine the nutritional status of children aged 0-5 years in Talata Mafara LGA; To examine the nutritional status, morbidity profile (prevalence of common childhood illnesses) and associated health-seeking behaviours of the caregivers of children aged 0-5 years in Talata Mafara LGA during episodes of child illness.

Literature Review

This paper examines the nutritional status and IYCF practices at a national and regional level. Child malnutrition has been documented in Nigeria; it is a ‘triple burden' of under nutrition, micronutrient deficiencies and emerging over nutrition (John et al., 2024). The study by John, et al (2024), shows that there are significant differences in the prevalence of underweight, ranging from 5.9% in Osun (Southwest) to 42.6% in Kano (Northwest). This north-south gradient is accentuated by the result of the studies carried out in Kebbi State which showed that the prevalence of stunting, wasting and iron deficiency among the children was higher in the rural areas than in the urban areas, which was related to low dietary diversity and low education level of the caretakers (Yusuf et al., 2025). Sub-optimal IYCF practices are one of the modifiable drivers. In Ibadan, however only, 16.3% of children were observed in the Minimum Dietary Diversity (MDD), and differences between urban and rural children were observed in exclusive breastfeeding (Bakare et al., 2023). Thenarangam *et al*, (2025) emphasised that the high association of dietary diversity with the risk for stunting and zinc deficiency, as adherence to MDD was seen to have a protective effect. However, there was no association of low adherence to the IYCF guidelines and anthropometric deficits in less burdened areas such as Kaduna, while the opposite is true for the more burdened areas such as Kano (Effiong, & Agha, 2020; Taiwo, *et al*, 2024).

The contextual factors of morbidity profile and health-seeking approaches are explored. Determinants of morbidity profile in the context of health-seeking behaviour are analysed. In resource-limited areas,

child health is characterised by high levels of infectious diseases such as diarrhoea, malaria and acute respiratory infections (ARI). These are exacerbated by a lack of WASH and immunisation coverage. The pathways from the point of illness recognition to getting the right care are complicated and there are multiple barriers. Research on the health-seeking behaviour (HSB) of other vulnerable groups, such as older people in Nigeria and India, shows that financial constraints, low educational status, gender and cultural factors are strong predictors of inappropriate or delayed care (Effiong, 2019; Iloh & Chukwuonye, 2023; Soren et al., 2022; Patnaik, et al., 2022). These are immediate and directly relevant to the realm of child health, and similar structural and socio-economic constraints can probably impede action even if they are aware of the disease.

Care-giving and Nutrition-Morbidity: The Nexus

Malnutrition and infection have a bi-directional relationship which is fundamental to public health (Black et al., 2013). Due to malnutrition, the immune system is weak, and people become vulnerable and susceptible to infections. Infections, on the other hand, would result in higher nutrient needs and intake/absorption would be decreased, increasing the nutritional status. Care-giving in sickness is one of the most crucial and under-rated elements of this cycle. Harmful practices, such as food withdrawal, can have catastrophic effects and aggravate the nutritionally stressful effects of an infection. It reflects an important disconnect between knowledge and practice which needs to be closed using specific behaviour change communication.

Theoretical Framework

The theoretical basis of this study was gained from the other literature of its kind, that malnutrition is a multi-faceted problem. Wright (2019) emphasizes malnutrition as a single morbid risk factor for poor hospital outcomes and the importance of systemic weaknesses in screening and management, particularly in low/middle income countries (LMICs). To support this, Wright (2019) provides evidence that some patterns of nutrient intake are linked to long-term risk of multi-morbidity, which therefore indicates that the quality of the diet is important for the long term and has important biological implications and consequences. These views would reinforce the need for a comprehensive multigenic approach, like the UNICEF model, to the assessment of multigenic determinants of malnutrition, namely the most immediate ones, the biological determinants and the most entrenched ones, social and economic determinants.

The study is based on the UNICEF Conceptual Framework for the Causes of Malnutrition in Children (1990) that offers a structured way of understanding the hierarchical and interconnected causes of malnutrition in children. The framework sets out three levels of causes: immediate, underlying and basic. There are poor diet and disease as immediate causes. The underlying causes are at the household/community level: household food insecurity, less than optimal feeding and care practices, poor environment and lack of health care. Basic causes are more general socio-economic and political factors such as poverty, lack of education, political instability and poor governance.

The basic causes of malnutrition are observed in the study area of Talata Mafara, to mention high poverty (high poverty in Talata Mafara is 71% of people living below the poverty line) and low level of education of the mother (in Talata Mafara 24% of mothers have no formal education). Household food security (45% of families), sub-optimal infant and young child feeding (IYCF) practices, harmful illness-related feeding practices, unhealthy environment (poor WASH and limited access to health care) – recorded as root causes. Poor dietary intake, characterized by low dietary diversity and high intake of carbohydrates, coupled with a high burden of infectious diseases such as diarrhoea, malaria and fever, is

an immediate cause. All of these are factors of the clinical presentation of malnutrition, such as weight loss and oedema. UNICEF framework is not only used when designing this study (systematically taking into account variables at all three levels of causal chain), but also guides analysis, discussion and multi-level recommendations. Thus, the research is based on this model and can focus on malnutrition as a complex phenomenon and a problem which requires integrated interventions in different sectors.

Methodology

The study was a descriptive cross-sectional type and a community-based approach was used in the study in Talata Mafara Local Government Area (LGA) of Zamfara State, Nigeria, in January 2026. This study population included primary carers (principally mothers) of children aged 0-59 months who lived in the LGA. Based on Yamane's formula (Yamane, 1967) which assumes a malnutrition prevalence of 11%, 95% confidence level, and 5% margin of error, the sample size was calculated to be 170. A multi-stage random sampling method was used. Initially, wards were randomly drawn from the LGA and then communities (clusters) were randomly drawn from these wards. Finally, a systematic random sampling was used to select eligible households in selected communities and one caregiver in each community was interviewed. A four-part structured and face-to-face questionnaire was used to obtain primary data. Caregiver and Household Socio-demographic (Section A); Part B is on Nutritional status and Infant and Young Child Feeding (IYCF); Association of child morbidity, health-seeking behaviour and immunization status (Section C). Perceptions and practices of caregivers on the nutrition-morbidity relationship (Section D).

The questionnaire was examined and validated for content and face validity by the three experts in the field of public health and nutrition. It has been pre-tested in a non-sample community and Cronbach's alpha coefficient was calculated as 0.82 which is very good. The data collected were entered, cleaned and analysed by SPSS Statistics version 20 of IBM. Descriptive statistics (frequencies and percentages) were used to summarise the variables. The results are displayed in tables and narrated. The Research Ethics Committee of Zamfara State University Talata Mafara, approved the study (implied). All the caregivers involved in the study signed an informed consent form after they were informed of the purpose, procedure, risks and benefits of the study. Identification codes were used to ensure confidentiality and anonymity, and participants were briefed on the right to withdraw at any time without repercussions.

Discussion of Findings

The purpose of this module is to identify indicators of Systemic Failure in terms of nutrition status and IYCF practices. The findings reveal a shocking state of nutrition. The inadequate household food access is directly related to the low consumption of animal-source food and vitamin A-rich food (45%) and of the monotonous diet (58%), which are direct causes of poverty. This is similar to the national profile which reveals that the Northwest has the lowest dietary diversity (Yusuf et al., 2025; John et al., 2024). High early complementary feeding (50% before 6 months) coupled with a high proportion of exclusive breastfeeding (78%) indicates that there is a gap in adequate care and feeding practices. Exposure to pathogens and replacement of breast-milk, rich nutrients with low-quality food and early complementary feeding results in increased susceptibility to infections and malnutrition (WHO, 2020). The main clinical symptoms – weight loss (56%) and oedema (25%) – are directly related to the inadequate intake and poor quality of the diet and are typical of the clinical features of PEM across Northern Nigeria as described by Francis et al. (2020).

Morbidity Profile and Health-Seeking: An Environment of Risk

Diarrhoea, fever and malaria carry a very high burden (56% for diarrhoea, 78% for fever and 56% for malaria), and form a very powerful “disease” component of the immediate causes of the UNICEF framework. This is a direct effect of the unsafe surroundings and absence of health facilities, low WASH (only 15% pipe borne water and 10% open defecation) and the extremely low immunisation coverage (40%). There is a blend of patronage of government services (61%) and pharmacies (39%) for health-seeking. This hospitalisation rate is relatively high (50%) and consistent with prior studies of vulnerable groups (Supriya, et al., 2024; Soren et al., 2022) which show that illnesses tend to become more severe before access to care is sought, a pattern related to basic causes like low health literacy and economic barriers.

The Interrelationship: A Practice to be amplified

The most significant finding of this study is the empirical evidence that provides an important amplifier of the malnutrition-infection cycle. It assumes that when people are sick, they are more likely to be malnourished, but the behaviour of not eating (48%) or eating less (68%) during illness is a major challenge for nutrition at the most vulnerable time. This harmful practice, according to Effiong and Ekpenyong, (2017), is directly challenging the WHO guidelines on IYCF which would otherwise be a significant step backwards in nutrition for a simple illness (Black et al., 2013). The understanding of the relationship between poor feeding and illness was 78% among caregivers, but did not necessarily correspond to ill health when the children were ill. In addressing the "inadequate care practices", it is essential to build on the general nutrition education and move to specific behaviour change communication to specific life-saving behaviour in the case of illness which is termed the "know-do gap".

Conclusion and Recommendations

This study has confirmed that child under nutrition is one of the most difficult and complex situations in Talata Mafara LGA, and the conceptual framework of UNICEF is very appropriate to explain this situation. It is not a simple food deficit problem, but a combination of underlying factors (food insecurity, low education, poor WASH, harmful care practices), immediate factors (poor diet, high disease burden) and basic factors (poverty) in a vicious circle. One of the most important remedial factors that can exacerbate these cycles is the withdrawal of food when children are ill. As a result, multi-sectoral and multi-level interventions are needed to break this vicious cycle that affects all levels of the causal chain.

The following integrated multi-sectoral interventions are highly recommended to break the vicious cycle and improve child health outcomes in Talata Mafara LGA based on the critical findings of this study which reveals a synergistic malnutrition situation, high burden of infectious diseases and poor care-giving practices linked to poverty and poor living conditions. Immediate scaling up and re-concenting of Community-based Infant and Young Child Feeding (IYCF) programmes are needed to directly impact the documented poor feeding practices and diets, and to address them in the community. 68% of parents/ caregivers decrease food consumption and 48% stop feeding children when they are sick – practices must shift from awareness to action to change behavior, and practices need to shift from awareness to action to change behaviour, these practices are directly counter to WHO recommendations. Once supportive counselling is provided, the most important intervention is to reiterate the need for ongoing feeding and fluids, or "feeding the sick child. Additionally, affordable solutions that will have to be

integrated into children's daily diet will need to be put forward and explained through counselling to help overcome the poor dietary diversity (58% of children only eat carbohydrates).

Secondly, there is a need to reinforce the health system to provide nutrition and disease management services in an integrated manner in order to tackle the high number of days of morbidity that lead to under nutrition. Less than half of children are fully immunised, and more than half have been diagnosed with malaria or have suffered diarrhoea in the last three months, thus, reinforcing the need for prevention and curative services. This involves running immunization drives, tracking and tackling of immunization defaulters and including routine nutrition screening in all child contact points (primary health care centres and immunization outreach activities) along with distribution of Ready to Use Therapeutic Food (RUTF). Health workers need to be involved in service delivery aimed at eliminating both illnesses and malnutrition, and to give clear instructions about supportive feeding during illness.

Thirdly, coordinated WASH (Water, Sanitation, and Hygiene activities are essential to address the causes of the diseases in the environment. Poor sanitation was associated with high prevalence of diarrhoea (56%) and 10% of the households defecate in the open, highlighting the need for timely action. Community-Led Total Sanitation (CLTS) programs and interventions aimed at reaching open defecation-free systems and in-house water treatment are vital public health interventions that will help curb transmission of pathogens and subsequent morbidity and malnutrition.Last but not least, to tackle the root causes of this crisis, such as poverty, food insecurity and low-level maternal education. Social and economic interventions are needed in the long-term that are nutrition-sensitive.

A policy framework for nutrition-sensitive agriculture with a mix of various crops, including nutrition-sensitive crops, and social safety nets should be implemented to address the household food insecurity (45% of families). In the meantime, to augment their reach and acceptability in the communities, particularly among lowly educated mothers, who might also enjoy listening to messages delivered through community media (as religious and traditional leaders) and local radios, can also help to make these interventions more effective. Such an all-encompassing approach, which addresses immediate, underlying and basic causes of the vicious cycle of malnutrition and morbidity in TalataMafara, is the only way to break the cycle.

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