



RESEARCH ARTICLE

SEASONAL VARIATION IN UNDERNUTRITION OF UNDER-FIVE CHILDREN IN KANO STATE

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ABSTRACT

Child undernutrition is affecting the modest gains achieved in previous decades in child health and survival and have persisted despite several curbing efforts depleting the meagre resources of the government and populace in a state with 2million poor children. The study examine the role of seasonality in nutrition management by collecting data from nutrition management centres (CMAMs) and hospitals in Kano State over a period of 10years (2009-2018). The data variables used where diagnosis, month and year. Descriptive statistics was used in analysing the data to produce trend patterns over the months and years. A total of 1,869 inpatient and 40,411 outpatient records were used for the analysis. Findings from the yearly trend reveals an increase in the number of both in-patient and out-patient records. The years 2016, 2017 and 2018 featured among the highest number of reported cases meaning the current management strategies are not effectively addressing undernutrition issues in the state. The monthly trend shows several peaks, the highest peak for out-patient is July and the months with the highest cases are June, July, August and September. For the inpatients the highest peak is in August and the highest cases are in June, July, August, and September consecutively denoting a long period of undernutrition crises and corresponding to the rainy season in the study area. Therefore child undernutrition is affected by the rainy season due to food shortage and high cost of food items coupled with limited livelihood options (due to the weather condition). It is recommended that the Government and donor agencies should raise awareness and consider providing palliatives and food aid during rainy season.

Keywords: Seasonality, rainy season, undernutrition, management strategies

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1.0. INTRODUCTION

In African society seasons are known to guide, control and influence human activities and different seasons are linked to different occurrences such as poverty, abundance, hunger and diseases to the extent that certain human activities are only possible in particular seasons and not year-round. Many diseases like malaria, typhoid, and flu are seasonally associated. However, it is not just the seasons but rather the interplay of the environmental factors and processes which accompany the seasons that influence human activities and diseases. Interestingly the seasons are not always restricted to specific calendar months in areas with high climate variability.

Seasonality, a systematic periodic occurrence of events over a year, is a well-known phenomenon in human health conditions manifested by marked fluctuations in the incidence of diseases (Naumova, 2006). Though infectious diseases provide some of the best-studied examples of the role of seasonality in shaping population fluctuations (Altizer, 2006) there is a general perception of the relationship between malnutrition and seasons but without documented evidence. The acknowledgement of seasonality as a significant contributor to temporal variability is evident in various fields, including ecology, anthropology, biology, food systems, and both animal and human health. Surprisingly, there has been relatively little focus on establishing a strong evidence base regarding the seasonal aspects of malnutrition, even though nutrition outcomes are influenced by multiple factors from diverse disciplines.

Seasonality has been identified as the missing link or gap in the fight against malnutrition (Baye and Hirvonen (2020), Mallet (2014) and Young (2020) and this gap must be filled to achieve the Sustainable Development Goal (SDG) No. 2 of ending hunger, achieving food security and sustainable agriculture by the year 2030 (just less than half time remaining). We must also recognize that, in certain contexts, we continue to witness persistently high levels of malnutrition, reaching the threshold of a humanitarian emergency, despite the absence of an acute crisis (FAO and Tufts 2019). Therefore, it is imperative to underscore and more comprehensively quantify the role of seasonality in shaping nutrition outcomes (Marshak, 2021).

Studies have been conducted on the seasonality of undernutrition mostly focusing on specific time periods such as a single month, 2-3 weeks, pre and post-harvest and this type of data might be capturing a different thing from the intended especially when the periods are tied to fix calendar months in environments with high seasonal variability (Marshak, 2021). This study uses continuous year-round severe acute malnutrition records of under-5 children from malnutrition management centres in order to provide more insight into the actual time of occurrence throughout the year and over the years.

Despite several efforts by the government to tackle undernutrition, child malnutrition are still highly endangering the life of millions of children due to the high population of under-5s in the state (0-4 years constitute 20 percent of the entire population). Therefore, this study examines the role of seasonality in child malnutrition management in order to provide effective management strategy and improve child health and survival to achieve SDG No. 2 of ending hunger, achieving food security and sustainable agriculture by the year 2030.

2.0. DESCRIPTION OF THE STUDY AREA

Kano is located in the dry lands of Northern Nigeria, it lies between Lat. 7°30' E – 9°25' E and Lon 10°30' N - 12°40' N, bordered by Jigawa (North and East), Bauchi (South and Southeast), Kaduna (Southwest), and Katsina (Northwest). Its land area covers 20,131.21 km². Kano is known for its commercial activities hence the slogan “Centre of Commerce” consisting of 44 LGAs. It is the most populous state in the country according to the 2006 census (NBS, 2007) with a projected population of 16,580,463 as of 2022.

Fertility is high 6.5% more than the national average of 5.25% five children per woman (NDHS, 2018). There is also high population of women within reproductive age and under 5 populations. The major occupation of the people is agriculture (both rainfed and irrigation) widely practiced across the state mainly at the subsistence level. The majority of the people are Muslims from Hausa and Fulani tribes. According to the Nigerian Multidimensional Poverty index over 10million people and 2million children living in the state are poor (NBS, 2022). There are two distinct seasons in the state; rainy season from May to October and dry season from November to April (Liman, Idris and Mohammed).



Figure 1: Study Area.

Source: Cartography Laboratory, Bayero University, Kano.



There are no fixed and exact months for the beginning and end of the various seasons due to climate variability. Child Nutrition is part of the primary healthcare package as defined by the National Primary Health Care Development Agency (NPHCDA) all over the country. It is thereby managed in primary healthcare facilities except for cases requiring admission which are referred to stabilization centres (selected general hospitals with inpatient facilities and paediatric units).

Together CMAM centres and stabilisation centres are saddled with the responsibility of managing child malnutrition cases in the state. The CMAMs started with two LGAs and later expanded to 13 LGAs in 2018. The CMAMs ideally hold clinics twice a week when RUTF is available. Admission cards and patient folders are used to record and track patients' malnutrition condition and success or otherwise of management.

3.0. RESEARCH METHODS

Purposive sampling was used in selecting CMAMs and stabilization centres in existence before the year 2018. Primary data on Severe Acute Malnutrition (SAM) cases were extracted from the admission cards and case folders of the CMAMs and the stabilization centres distributed across the state over a period of 10 years (2009-2018). Diagnosis, date of admission comprising Months and year were extracted and used for the analyses.

Descriptive statistics such as frequency was used to produce trend patterns over the months and years. Due to the confidentiality attached to hospital records, ethical clearance was collected from the Ministry of Health and the Primary Healthcare Board to access the health records. The data analysed only covers data captured by CMAMs and stabilization centres with complete date (month and year). Disruption of outpatient services in CMAMs due to stock-out of RUTF causes omission of some cases.

4.0. PRESENTATION OF RESULTS AND DISCUSSION

This section presents the data and discusses the results.

4.1. Evaluation of Annual Trend of Undernutrition

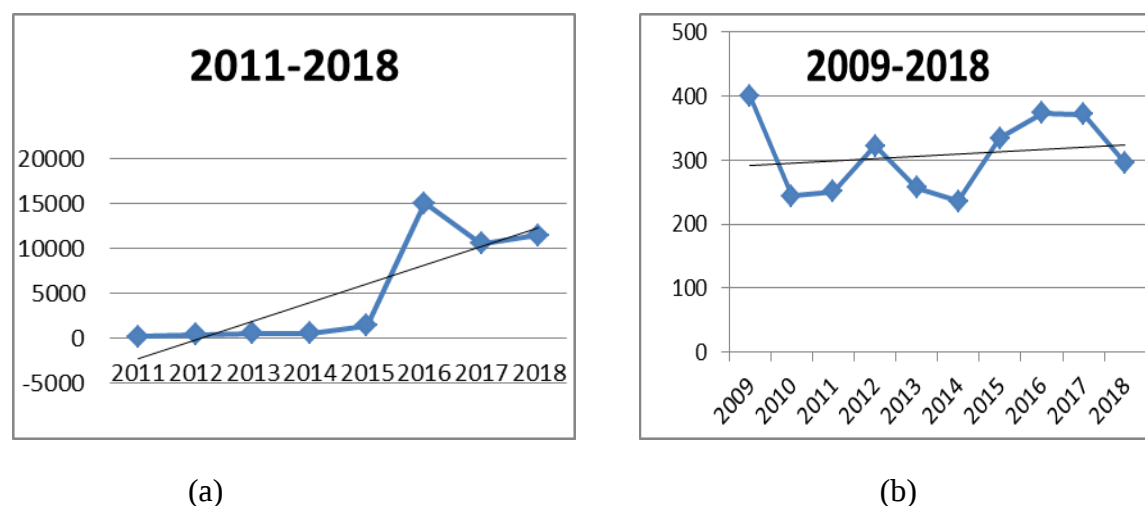


Figure 2: Annual Trend of Undernutrition. (Source: CMAMs and Stabilization Centres 2018)

The annual trend shows the number of reported cases per year (figure 2) and the trend line shows the overall direction of the data. The trend line reveals an increase in the number of undernutrition cases over the years for both out-patients (figure 2a) and inpatients (figure 2b) and this is in line with the findings of NNHS, (2018). In figure 2a years 2011-2014 have less than 1000 reported cases per year, year 2015 have 1,446, year 2016 recorded the highest reported cases of 15052, year 2017 10540 and year 2018 11,480. From figure 2b, year 2009 have the highest in-patient reported cases of 400 followed by 2016 and 2017 with 373 and 372 respectively the lowest reported cases are between 236-300. The fluctuations may be as a result of out of stock of the RUTF.

This means the current management strategies of providing RUTF and milk to malnourished children and creating awareness about child malnutrition have not yielded the expected result for over a decade. Despite the huge human and capital investment in CMAMs and stabilization centres undernutrition in the state is increasing. Therefore, a new approach is needed most probably a preventive measure not just from the dietary angle but perhaps from the seasonality viewpoint. This is because parents generally believe they can only give what is available regardless of its nutritional value and sufficiency for the children during hard times. Therefore such hard times should be targeted and adequate provisions made. Also, there are higher out-patient cases simply because they are the first point of contact and only cases with oedema or severe dehydration are referred for in-patient services.

4.2. Assessment of Monthly Trend of Undernutrition

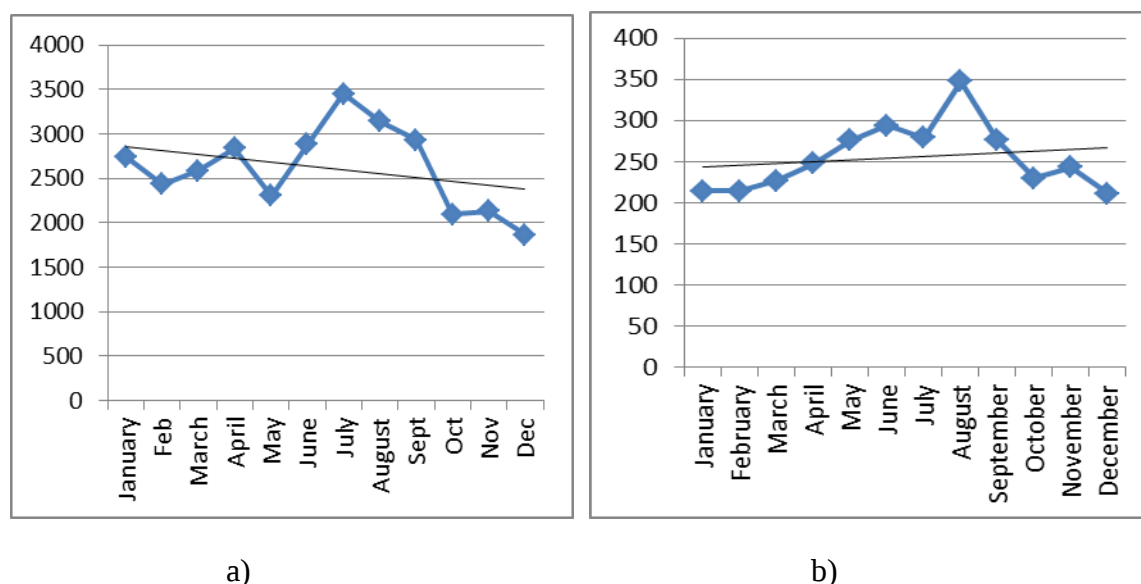


Figure 3: Monthly Trend of Undernutrition. (Source: OTP and Stabilization Centres, 2018).

The monthly trend line shows a reduction in outpatient undernutrition cases (Figure 3a) towards the end of year-end, and a slight increase in inpatient cases (Figure 3b) from mid-year. This trend may result from stock shortages and unavailability of outpatient clinics, which could lead to worsened child malnutrition conditions requiring admission or increased referrals from other paediatric units of the various hospitals in the state. In a nutshell, it denotes undernutrition crises requiring prompt and emergency measures. The monthly trend shows several peaks, the highest peak for out-patient is July



and the months with the highest cases are June, July, August and September consecutively denoting a long period of undernutrition crises and corresponding to the rainy season in the study area. For the inpatients (figure 3b) the highest peak is in August and the highest cases are in June, July, August, and September (same months with 3a).

The rainy season is characterized by food shortages, limited lively options and epidemics of some diseases. People consider it a season of poverty and sickness for both adults and children. In line with this Mallett (2014), reported that in Sierra Leone (though happening all over the world) while the risk of a child becoming malnourished may be perennial, it appears to spike during certain periods of the year (June to September). And, that rainy season poses a great threat to food security and increases malnutrition because during that period; there are low levels of food access and limited coping strategies available to most families.

It is a transitional period when the silos are empty, food for the previous season already exhausted and for the present season not ready and many a times the children eats more during rainy season. Environmental hygiene is worse during the rainy season and there is higher labour demand for many women as they have to do all the house chores of cooking and taking care of the children (which are more difficult during a rainy season). Some women also cultivate land and harvest crops alongside men.

The lowest peak for out-patients (figure 3a) is December and the months with the lowest cases are October, November and December, while the lowest peak for in-patients is also December and the months with the lowest cases are December, January and February (the yearly trend shows the same). This period corresponds to the dry season, a post-harvest period characterized by food abundance, better livelihood opportunities and a reduction in childhood diseases and sickness when the people mostly engage in wedding festivities and construction or renovation of houses.

5.0. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

The interplay of environmental factors that made up the season is greatly affecting child undernutrition in Kano State. The highest undernutrition cases for a period of 10 years (2009-2018) are reported in the peak of rainy season in the months of July and August and the lowest in the dry season in the months of December. The rainy season is marked by food shortage and hunger especially in the rural areas, disease epidemics and limited livelihood options coupled with increased labour demand on mothers, hygiene and sanitation that affect child-caring practices in a population already stricken by poverty.

While dry season is a post-harvest period of friendly weather with lower food prices and abundance, more livelihood opportunities, reduction in diseases and sickness that impacts undernutrition, and better child feeding and caring practices. The number of undernourished children is increasing as shown by the yearly trend line for both in-patients and out-patients cases therefore the current management strategies are not adequately addressing the problem.



5.2. Recommendations

Governments and donor agencies should proactively raise awareness about the seasonal nature of undernutrition and support poor families in preparing for food-scarce periods. Timely distribution of palliatives and aid can be crucial for at-risk families.

Also, the environmental factors contributing to epidemic of diseases during rainy season should be adequately addressed.

Conflict of Interest

The author declares that no conflict of interest exist in this manuscript

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