Assessment of Morbidity Status of Children Aged 6-59 Months in Kericho County, Kenya

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Abstract

Background: The growth and well-being of a child is dependent on their eating habits. One of the leading causes of morbidity and mortality in Kenya and countries worldwide is poor nutritional status. There are few studies on factors affecting the nutritional status among children aged 6 and 59 months in Kenya, even though malnutrition is a major cause of illness and mortality in these groups. Consequently, this research set out to identify the factors that influence the nutritional status of children in Kericho County, Kenya, ranging from six months to five years.

Methods: The study utilized a cross-sectional analytical design to uncover factors influencing the nutritional status of children attending outpatient child welfare clinics at Kericho County Referral Hospital and Kapkatet Sub-County Hospital.

Results: A sample of 172 children was chosen through systematic random sampling, and data was collected using a structured questionnaire. Analysis involved ENA for SMART for anthropometric data and Statistical Package for Social Sciences version 27 for all other variables. Findings revealed that 75 (43.6%) children were aged between 24 and 59 months, and 88 (51.2%) were male. Additionally, approximately two-thirds of caregivers had attained secondary education (n=77, 44.8%). Stunting was prevalent in 25% of the children, while both wasting and underweight affected 23.8%. Morbidity data revealed that 45.3% of children had been sick in the past month, with varying durations of symptoms. Children whose caregivers lacked formal education were more likely to be underweight (AOR=0.70, 95% CI: 1.82-2.99, p = 0.01). Delayed introduction to complementary food reduced the likelihood of wasting and stunting (AOR = 0.25, 95% CI: 0.05-0.91, p = 0.03) and (AOR = 0.44, 95% CI: 0.16-1.08, p = 0.04) respectively. Children experiencing symptoms for over 6 days were more likely to be underweight (AOR = 1.27, 95% CI: 0.98-2.66, p = 0.01), and those not sick in the past month were less likely to be stunted (AOR=0.56, 95% CI: 0.27-0.89, p = 0.03).

Conclusion: Caregiver education level, childbirth method, timing of complementary feeding, and illness duration significantly influence child nutrition. Hence, implementing targeted nutrition interventions for children aged 6 to 59 months in Kericho County is imperative.

Keywords: Nutritional, Children, Caregiver, Malnutrition and Morbidity

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1. Introduction

A child's growth and well-being depend on proper nutrition. According to the World Health Organization (2017), our nutritional status is determined by the nutrient composition of the food we consume, our nutritional demands, and our body's capacity to digest, absorb, and utilize those nutrients. Malnutrition can also predispose such children to a number of cognitive and impairments and infectious diseases. It has also been linked with chronic diseases, exacerbating high mortality and morbidity rates among young children (The Mother and Child Health and Education, 2022; UNICEF, 2022). Worldwide, around 148.1 million children under the age of five were stunted in 2022, 45.0 million were wasting, and 37 million were overweight, according to the 2023 edition of the UNICEF-WHO-World Bank Group Joint Malnutrition Estimates (UNCEF& WHO, 2023). According to Bayih et al. (2022), a significant number of children in Asia and Africa succumb to complications related to vitamin A deficiency, which affects 7 million women. As a result, malnutrition is responsible for nearly half of all child deaths, particularly in societies with low levels of poverty. Additionally, 55 out of every 1,000 live births occur as a consequence of malnutrition in children aged 6-59 months (Bayih, Arega, & Motbainor, 2022).

During sickness, the majority of people often experience changes in appetite. Conditions such as infections, chronic diseases, or gastrointestinal issues can lead to reduced appetite due to factors like altered taste perception, nausea, or pain. Consequently, individuals may consume fewer nutrients and calories than their body requires, leading to decreased nutrient intake. Additionally, illness often cause metabolic alterations within the body. Fever increased metabolic rate, and inflammation have been reported to increase the body's demand for certain nutrients (Kluger et al., 1998). Other studies have also reported impaired absorption of nutrients during sickness which leads to a deficiency even if food intake remains constant (Balli et al., 2022). For instance, gastrointestinal disorders like Crohn's disease or celiac disease are the commonly reported diseases which hinder nutrient absorption, potentially leading to malnutrition even with adequate nutrient intake.

A nationwide survey conducted by Macharia et al. (2019) examined the inequalities and trends in the mortality of zero to

fifty-nine months old children in Kenya. This research was based on three national census and ten household surveys, with data regarding children's birth histories being undertaken from 1989 to 2014. The study assigned the birth histories with their respective counties while applying demographic techniques to estimate under five mortalities (U5M) for each country through a survey. The results revealed that U5M declined from 141.7 in the year 1965 to 54.5% in the year 2013 (Macharia et al., 2019). However, such decrease in U5M was uneven because it ranged from 19% as the lowest to 80% as the highest. Twenty-five counties had accomplished the goals established by the World Summit for Children as of 2000 (Macharia et al., 2019). While there was a significant reduction of magnitude in inequality among county governments, the discrepancy persisted.

A study by Ohiokpehai et al., (2007) among children aged 6-59 months found increased incidence of various illnesses in households and the children. The most commonly reported illnesses were typhoid/diarrhoea, stomachache, upper respiratory tract infections, and malaria (Ohiokpehai et al., 2007). These researchers recommend that an in-depth study needed to be conducted within same area of study so as to find out the rate of morbidity, magnitude of malnutrition and their causes and consequences. Cross-sectional research found that 42.1% of children in the non-project area and 46.5% of children under the World Vision programme had stunted development. Compared to the national prevalence, the number of underweight and stunted children was higher (Macharia, Kogi-Makau, & Muroki, 2005).

Previous studies conducted in Kenya did not provide a full picture of the morbidity status in the country. Particularly, studies were lacking on the prevalence of stunting, wasting, and underweight in other counties, including Kericho. Some of the studies were also conducted more than 15 years ago. The nutritional statuses of children kept on changing over time and thus the findings of these older studies did not accurately describe the recent current nutritional status in the country. The research intended to determine the morbidity status of six to fifty-nine months old in Kericho County there being no similar study found before this one. Scanty data exist about the factors that predict the nutritional status of children younger than five years in Kericho County. Hence, the research to determinants the nutritional condition of children in Kericho County, Kenya, ranging from 6 to 59 months old.

2. Materials and methods

2.1 Study site

The research was done at Kericho County Referral Hospital (0.3713° S, 35.2801° E) and Kapkatet Sub-County Hospital.

2.2 Study design and sample collection

The cross-sectional design allowed the researcher to examine data from both the children and the caregivers of 6-59-month-old children at one particular moment in time. Children aged 6-59 months in Kericho, County Kenya. All children aged between 6 and 59 months who attended both the outpatient clinic and child welfare clinic in both hospitals during the study period were considered.

2.3 Inclusion criteria and exclusion inclusion criteria

Primary caregivers included everyone who was in charge of the child's daily care and well-being. Only caregivers who gave their informed consent were included in the study.

2.4 Data collection

The study was based on systematic random sampling technique. The target population included all the caregivers of children aged 6-59 months and their children attending child welfare clinic in both Kericho County Hospital and Kapkatet Sub-County Hospital in the study day. Thus, the total sample size determined was 172. The researcher-administered structured questionnaire was employed in data collection of the primary caregivers' socio-demographic and economic characteristics and children's morbidity status. Pretesting was conducted in Longisa County Referral hospital in Bomet County, Kenya among 17 participants which was about 10% of the sample size expected.

2.5 Data Analysis

Anthropometric indices including underweight, stunting, and wasting were assessed using height, weight and age parameters. However, these variables were transformed to generate Z-scores which were then used to determine these indices. Children were categorized as stunted if their HAZ score was < -2SD, and as severely stunted if the HAZ score was < -3SD. Similarly, wasting and severe wasting were determined by WHZ scores of < -2SD and < -3SD, respectively. Underweight classification was based on a WAZ score of < -2SD (WHO, 2007).

2.6 Ethical approval

Mount Kenya University's Institutional Scientific and Ethical Review Committees (ISREC) were consulted in order to get ethical clearance. We also made sure to get a research authorization from NACOSTI (the National Commission for Science, Technology and Innovation) before we started our study. The Kericho County Government and the administrative units of the participating health institutions also gave their stamp of approval to the research.

3. Results

3.1 Morbidity status

The results on morbidity status of the children are reported in table 4.5. The findings revealed that 78 (45.3%) of the children had been sick in the past 1 month. They experienced various symptoms including cough (n=53, 68%), fever (49, 62.8%), diarrhoea (n=38, 48.7%), vomiting (n=27, 34.6%), rashes (n=14, 18.0%) and others (n=10, 12.8). The symptoms lasted for 1 to 3 days for 43 (55.1%) of the children, 4 to 6 days for 10 (12.8%) of the children, and >6 days for 15 (19.2%) of the children. Majority of the children (n=73, 93.6%) had received medical assistance and 71 (91%) of them

sought assistance from health facility, 5 (6.4%) from pharmacy or chemists and 2 (2.6%) from herbalist. Additionally, 170 (8.8%) had received vaccination up to date.

3.2 Binary logistic regression analysis of nutritional status and morbidity status

The logistic regression analysis results in table 2 showed that children who experienced symptoms for >6 days had higher likelihood of being underweight (OR = 1.83, 95% CI: 1.12-2.44, p = 0.03). Similarly, who experienced duration of illness for 4 to 6 days had a higher likelihood of being wasted (OR = 2.00, 95% CI: 0.32-12.59). On the other hand, children who were not sick in the past 1 month had lower chances, OR = 0.43 (95% CI: 0.22-0.75, p = 0.01) indicating that they were less likely to be stunted compared to those who were sick. Additionally, children who had been sick in the last 1 month had higher chances of being underweight (OR = 1.77, 95% CI: 0.87-3.58, p = 0.03), while those children whose caregivers had not sought medical assistance had higher chances of being underweight (OR = 0.91, 95% CI: 0.38-3.12, p = 0.04).

In the adjusted logistic regression model presented in table 3, duration of sickness and a child being sick in the past one month were the two variables that were associated with nutritional status. Duration of sickness lasting for more than six days was significantly associated with likelihood of underweight among children (aOR = 1.27, 95% CI: 0.98-2.66, p = 0.01). On the other hand, child being sick in the last month was associated with decreased chances for wasting, aOR = 0.56 (95% CI: 0.27-0.89, p = 0.03). Medical assistance was not significantly associated with nutritional status after adjusting for factors.

Table 1: Morbidity status of the children aged 6 to 59 months

Variable	N (172)	% (100)
Child sick in the past 1 month		
Yes	78	45.3
No	94	54.7
Symptoms (multiple responses)		
Fever	49	62.8
Cough	53	68.0
Vomiting	27	34.6
Diarrhea	38	48.7
Rashes	14	18.0
Other symptoms	10	12.8
Duration of symptoms		
1 – 3 days	43	55.1
4 – 6 days	10	12.8
>6 days	15	19.2
Medical assistance		
Yes	73	93.6
No	5	6.4
Where assistance was sought		
Health facility	71	91.0
Pharmacy or chemist	5	6.4
Herbalist	2	2.6
Immunization up to date		
Yes	168	97.7
No	4	2.3

Other symptoms; nasal congestion, chest congestion, sweating at night, abdominal distention.

Table 2: Logistic regression analysis of nutritional status and morbidity status

Variables	Underweight [a]	Wasting [a]	Stunting [a]
Duration of sickness			
1-3 days	0.34 (0.10-1.12)	1.60 (0.39-6.66)	0.34 (0.10-1.12)
4-6 days	1.20 (0.66-1.81)	2.00 (0.32-12.59) *	0.48 (0.09-2.51)
>6 days	1.83 (1.12-2.44) *	-	-
Child sick in the past 1 month			
Yes	1.77 (0.87-3.58) *	0.81 (0.40-1.65)	2.00 (0.99-4.01)
No	0.65 (0.32-1.61)	-	0.43 (0.22-0.75) *
Medical assistance			
Yes	2.27 (0.76-5.86)	1.57 (0.88-2.93)	2.12 (0.65-4.77)
No	1.91 (0.38-3.12) *	2.67 (1.01-4.32)	7.83 (5.43-9.14)

Normal nutritional status is the reference category, [a] Crude chances ratio, * statistically significance, - no respondents

Table 3: Logistic regression analysis of nutritional status and morbidity status

Variables	Underweight [a]	Wasting [a]	Stunting [a]
Duration of sickness			
1-3 days	0.36 (0.11-1.19)	1.71 (0.41-7.12)	0.34 (0.10-1.12)
4-6 days	0.28 (0.05-1.73)	2.00 (0.32-12.59)	0.48 (0.09-2.51)
>6 days	1.27 (0.98-2.66) *	-	-
Child sick in the past 1 month			
Yes	2.24 (1.31-2.77)	1.11 (0.56-1.89)	2.46 (0.65-4.43)
No	0.82 (0.43-2.24)	-	0.56 (0.27-0.89) *
Medical assistance			
Yes	2.99 (0.87-4.79)	2.33 (1.12-4.26)	2.12 (0.65-4.77)
No	0.65 (0.21-3.28)	3.13 (0.98-4.74)	3.10 (1.28-9.94)

Normal nutritional status is the reference category, [a] Model adjusted for all the variables in the table, * statistically significance, - no respondents.

4. Discussion

Bivariate logistic regression analysis on association between morbidity status and nutritional status, revealed that duration of symptoms of sickness, particularly more than six days, and absence of sickness in the past one month were associated significantly with underweight and stunting in children, respectively. This study found that children who had symptoms of sickness for a duration of more than six days were 1.83 times more likely to be underweight compared to those who had symptoms for a duration of one to three days. These findings were consistent with a study in Western Kenya that reported that the children under five years who had experienced illness such as diarrhea, upper respiratory infections and other illnesses or symptoms for a duration of a week or more were 3.19 times, 3.10 times and 2.55 times more likely to be underweight compared to those who had no illness symptoms less than a week, respectively (Bloss et al., 2004). Furthermore, another study in South Ethiopia revealed that children who had diarrhea in the past two weeks prior to the data collection were 4.0 times more likely to develop underweight compared to children without diarrheal disease (Asfaw et al., 2015).

A child's risk of stunting was much reduced if he or she had not been unwell during the previous month. Asfaw et al. (2015) found that stunting was three times more common in children who had diarrhea in the previous two weeks compared to those without diarrhea, and our findings are in accordance with that. These results were in line with those of an Ethiopian research that found that under-five stunting was more common in children who were unwell than in children who were not (Teshome et al., 2009). According to Sonu et al. (2019), the nutritional condition of children under the age of five is significantly affected by sickness. According to many research, including those by Abdulahi et al. (2017), Hasib et al. (2020), and Setiawan (2020), stunting is more common in children less than five years old when there is a history of sickness and the time it lasts. This shows how important it is to treat diseases and encourage healthy eating in order to guarantee that kids grow and develop to their full potential.

Conclusion

The impact of recent illnesses on stunting emphasized the critical role of morbidity factors in child malnutrition. The findings stressed the need for targeted interventions and adherence to evidence-based guidelines to optimize child growth. Further research is warranted to explore potential trends in underweight and the duration of illness, contributing to a broader understanding of integrated health and nutrition programs for child well-being. These findings align with existing research, thus emphasizing the need for integrated health and nutrition programs.

Recommendations

The current study yields four key recommendations. Firstly, it underscores the necessity of establishing a nutrition-specific intervention program in Kericho County, specifically targeting children aged 6 to 59 months. This program should comprehensively address both acute and chronic malnutrition among these children. Secondly, the study highlights the importance of intensifying efforts to promote and support exclusive breastfeeding during the first six months of life. This should be followed by the introduction of safe complementary foods while continuing breastfeeding up to two years of age or beyond. Thirdly, there is a pressing need for further research into the relationship between nutritional status and morbidity among children. Understanding this association can inform more effective health interventions and policies.

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Conflicts of interest

There were no competing interests declared or recorded by the authors

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