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RESEARCH ARTICLE

DIETARY PRACTICES AND NUTRITION STATUS OF CHILDREN AGED 6–59 MONTHS IN KAJIADO CENTRAL, KENYA

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ABSTRACT

Nutrition status reflects a child's health as influenced by nutrient intake, absorption, and utilization. In Kajiado Central Sub-County, Kenya, optimal nutrition remains a challenge despite interventions being put in place. This study examined how dietary practices determine the nutrition status of children aged 6–59 months. A community-based cross-sectional study was conducted using multistage random sampling across rural and urban households. Data were collected via semi-structured questionnaires. Nutrition indicators were computed using WHO Anthro and statisticaal analyses were performed in SPSS v26. Ethical clearance was obtained (KUREC: 11024; NACOSTI: 964871) as well as informed consent. Caregivers had a mean age of 28.6 years; most of whom were female (97%), married (78.3%), unemployed (61.1%), and earned KES 13,833/month. Only 48% had secondary education, and 83.3% scored ≥81% in nutrition knowledge. Continued breastfeeding, Minimum Meal Frequency (MMF), Minimum Dietary Diversity (MDD), and Minimum Acceptable Diet (MAD) were based on WHO IYCF indicators for children 6-23 months. For children above 24 months, higher meal frequency and food group consumption were analyzed in relation to nutrition status. Breastfeeding rates were high at one year (86%) but dropped to 56% by age two. MMF was met by 17.7% of children and MAD by only 4.5%. Majority of the children (6-59 months) consumed foods from less than 5 food groups (69.7%). Of the children, 24-59 months majority consumed only 3 meals (56.6%). Diets consisted mostly of cereals (91%) with limited fruits/vegetables. Anthropometric data showed 5.5% wasting, 6.6% underweight, 21.3% stunting, 4.5% overweight, and 2.5% obesity. Continued breastfeeding ($\chi^2 = 7.97$, $p = 0.019$), MMF ($\chi^2 = 18.35$, $p = 0.019$), and MAD ($\chi^2 = 6.54$, $p = 0.011$) were associated with HAZ, WHZ, and WAZ respectively. Meal frequency of children above 24 months positively correlated with HAZ ($r = 0.216$, $p = 0.013$) and WAZ ($r = 0.254$, $p = 0.003$). These results highlight the poor dietary practices of children 6-59 months in Kajiado Central. Further longitudinal research is needed to assess the association of the significant factors with nutrition status over a long period of time. All dietary determinants found to be significantly associated in the initial analysis were further examined using both unadjusted and adjusted regression models; however, none remained statistically significant upon adjustment.

Keywords: Children aged 6-59 months, Dietary practices, Kajiado Central Sub-County, Nutrition status

INTRODUCTION

Nutrition during early childhood is important for physical and cognitive development, with lasting effects on health outcomes throughout life (Soliman et al., 2021; Waruguru, 2024). Nutrition status varies from optimal nutrition status to poor nutrition status. Poor nutrition status that presents vas either under nutrition or over nutrition is a global problem (WHO, 2024). In 2020, approximately 149 million children under five were stunted, 45 million were wasted, and 39 million were overweight. Moreover, malnutrition contributes to 45% of deaths among children under five, with most cases occurring in low- and middle-income countries (WHO, 2022). Achieving optimal nutrition status among children aged 6–59 months remains a serious challenge globally, including in Kajiado Central, Kenya (KDHS, 2022). Factors such as food insecurity and poor feeding practices have widely been linked to malnutrition (Amare et al., 2019). In Kenya, among children aged 6–59 months, 5% are wasted, 18% are stunted, 3% are overweight, and 10% are underweight (KDHS, 2022). The ideal situation is not only the reduction but also the eradication of all forms of malnutrition among children.

In Kajiado, there is high rate of malnutrition among children aged 6–59 months with 14% being stunted, 1.3% have severe wasting, 7.6% have mild wasting, 9.6% are moderately underweight, and 1.3% are severely underweight (KDHS, 2022). The arid and semi-arid climate of Kajiado exacerbates under nutrition in this region through recurrent droughts and food scarcity (Kemboi et al., 2021). Despite several interventions such as supplementary feeding programs and nutrition education initiatives being put in place in Kajiado, malnutrition persists in this area, pointing to unaddressed factors contributing to malnutrition (KDHS, 2022). The age period from 6 to 59 months is particularly important, as it encompasses the transition from exclusive breastfeeding to complementary feeding, influencing growth and nutrition status of the children. Infant and Young Child Feeding (IYCF) practices, as outlined by World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF), play a crucial role in ensuring optimal growth, development, and survival of children, particularly through breastfeeding and appropriate complementary feeding. Understanding these determinants is important for addressing the persistent burden of malnutrition and promoting optimal child health and development. Therefore, the objective for this study was to assess the dietary practices and their association to nutrition status of children aged 6–59 months in Kajiado Central, Kenya.

METHODOLOGY

Research Design

A community based cross-sectional study design was employed, giving a snapshot of the population's dietary practices and nutritional status at a specific point in time.

Study Location

The study was carried out in Kajiado Central Sub-County in Kenya, which is part of Kajiado County. Kajiado Central is located in the southern region of the nation, sharing borders with Kajiado North and Kajiado East as well as Tanzania to the south. The climate of the area is arid and

semi-arid, with unpredictable rainfall patterns and periodic droughts. The average annual temperature in Kajiado County is 18.9°C. The area receives about 500mm of rainfall annually, most of it falling in April. In particular, the study was undertaken in randomly selected nine village units namely: Duka Moja, Kilorityi, Majengo a1, Majengo a2, Nalepo, Osimilai, Saina a, Saina b and Sajiloni. Kajiado Central was chosen due to its unique socio-economic and environmental characteristics that impact child nutrition. The region's arid and semi-arid climate contributes to food insecurity, limiting access to diverse and nutrient-rich diets (Kemboi et al., 2021). Additionally, the pastoral lifestyle of the Maasai often leads to poor dietary diversity (Chege et al., 2015).

Population

The study population included children between 6-59 months and their caregivers who had lived in Kajiado Central for more than 6 months and had voluntarily consented to participating in the study.

Sample size

A sample size of 198 caregiver-child pairs was computed using the Fisher et al.'s formula (Jung, 2014) based on a 95% confidence level and a 5% margin of error to ensure adequate power for statistical inference.

Sampling Techniques

Multistage random sampling approach was used. First, a comprehensive list of all wards and village units within the sub-county was obtained from local official sources. Based on this nine rural units were selected for sampling. These units included Duka Moja, Kilorityi, Majengo A1, Majengo A2, Nalepo, Osimilai, Saina A, Saina B, and Sajiloni. These units represented both urban and rural settings to ensure geographic diversity. Secondly simple random sampling was used to recruit caregivers with children aged 6–59 months from various households in the selected village units.

Data Collection and Instrumentation

A semi-structured questionnaire divided into two sections, A and B was used to collect data. Section A, focused on the social-demographic and socio-economic characteristics while section B collected data on dietary practices of the children. Questions on dietary practices comprised of continued breastfeeding, duration of breastfeeding, complementary feeding, meal frequency, and food group consumption. For children 6–23 months, four core IYCF indicators were evaluated (continued breastfeeding (CF), minimum meal frequency (MMF), minimum dietary diversity (MDD), and minimum acceptable diet MAD. Frequency of meals was measured by questioning how many meals of solid, semisolid or soft foods the child had eaten compared to the minimum required by specific ages of children in WHO (e.g., 2–3 meals for breastfed 6–8 months, and 4 meals for non-breastfed children 6–23 months). Dietary diversity was measured using a checklist of eight main food groups fed the day before; with minimum of five food groups being consumed representing the MDD score. The combination of MMF and MDD formed the basis for determining whether a child met the criteria for a minimum acceptable diet. For children aged 24–59

months, information was collected on the number and timing of main meals (breakfast, lunch, dinner) and snacks consumed during the previous day. Additionally, dietary diversity was assessed by documenting food groups consumed. Anthropometric measurements were taken to determine the children's nutritional status (using weight-for-height, weight-for-age, and height-for-age). The validity of the questionnaire was assessed through review by three child nutrition experts. To further assess the reliability of the questionnaire, Cronbach alpha coefficient was calculated, yielding an average value of 0.83. Anthropometric measurements were collected by trained research assistants under the supervision of the primary investigator (PI). Standard WHO-recommended procedures were followed, including the use of recumbent length for children less than 2 years and standing height for those aged 2 years and above, using calibrated equipment to ensure accuracy. Age-in-months and z-scores for height-for-age, weight-for-age, and weight-for-height were later computed according to WHO growth standards

Data Analysis

Data analysis was conducted using SPSS version 26. Anthropometric data were analyzed using WHO Anthro software to compute nutrition status z-scores for underweight (WAZ), stunting (HAZ), and wasting (WHZ). Descriptive statistics, including counts and percentages were used to summarize socio-demographic and socio-economic characteristics. Results were presented in summary tables. Dietary practices were assessed using IYCF indicators continued breastfeeding, minimum meal frequency (MMF), minimum dietary diversity (MDD), and minimum acceptable diet (MAD) based on UNICEF definitions for children aged 6–23 months (UNICEF, 2021). For children over 24 months, the number of food groups consumed and number of meals were analyzed. Descriptive statistics were used and presented in tables.

To examine associations between nutrition status and dietary practices, chi-square tests assessed associations between categorical variables, while Pearson correlations were used for continuous or ordinal variables. Variables showing significant associations were further analyzed using binary or multinomial logistic regression, as appropriate, to control for confounding factors. WHZ was categorized into three groups: wasted, normal, and overweight, and analyzed using multinomial logistic regression. HAZ and WAZ were binary outcomes stunted vs. not stunted and underweight vs. normal and analyzed using binary logistic regression. Both unadjusted and adjusted odds ratios (ORs) with 95% confidence intervals (CIs) were reported. Statistical significance was set at $p < 0.05$.

Ethical Considerations

The study received ethical clearance from the Kabarak University Scientific Research and Ethics Committee (KUSREC) (KUREC-11024) and the research license from the National Commission for Science, Technology, and Innovation (NACOSTI) (Ref No: 964871). Informed consent and child assent was obtained from all participants, and data confidentiality was prioritized.

RESULTS

Socio-demographic and Socio-economic characteristics of the Caregivers of Children aged 6-59 months in Kajiado Central, Kenya

Table 1 presents the distribution of household sizes and caregiver characteristics for the study sample. The average household size was six members, with a median of five and a range from 2 to 26 household members. Most households (38.4%) had 4–5 members. Caregiver age ranged from 18 to 68 years, with a mean of 28.6 years. The majority (57.6%) were aged between 20–29 years. Nearly half of caregivers (48%) had completed secondary or higher education, while 12% had no formal education. Most caregivers were unemployed (61.1%), with 29.3% self-employed and 9.6% formally employed. Household income was categorized into quintiles, with an average monthly income of Ksh 13,833; 29.3% of households earned ≤5,000 Ksh. The majority of children (89.9%) were primarily cared for by their mothers. Fathers (4.5%), grandparents (4.0%), and others (1.5%) were fewer. Most caregivers were married (78.3%), with 19.3% single and 2.5% separated. Male children comprised 56.6% of the sample and females 43.4%, yielding a sex ratio of 1.3. The mean, median, and mode of child age were 32.2 months, 32.5 months, and 48 months, respectively.

Table 1: Socio-Demographic and Socioeconomic Characteristics of Children 059 Months

Variable	Frequency (n)	Percentage (%)
Household Size		
Less than 3	34	17.2
4–5	76	38.4
6–7	37	18.6
8–10	34	17.2
More than 11	17	8.6
Caregiver Age		
15–19	10	5.05
20–24	64	32.32
25–29	50	25.25
30–34	38	19.19
35–39	23	11.62
40–44	7	3.54
Above 45	6	3.03
Caregiver Education		
No formal education	23	12
Primary incomplete	8	4
Primary	71	36
Secondary	70	35
Post-secondary	26	13
Employment Status		

Employed	19	9.6
Self-employed	58	29.3
Unemployed	121	61.1
Income quintiles		
Q1 (Lowest)≤ 5,000	58	29.3
Q2 5,001 – 7,000	23	11.6
Q3 7,001 – 12,200	38	19.2
Q4 12,201 – 20,000	46	23.2
Q5 (Highest) > 20,000	33	16.7
Relationship with Child		
Mother	178	89.9
Father	9	4.5
Grandmother/Grandfather	8	4
Other	3	1.5
Marital Status		
Single	38	19.2
Married	155	78.3
Separated	5	2.5

Figure 1 shows household distribution. Households were evenly distributed between rural (49.5%) and urban (50.5%) areas.

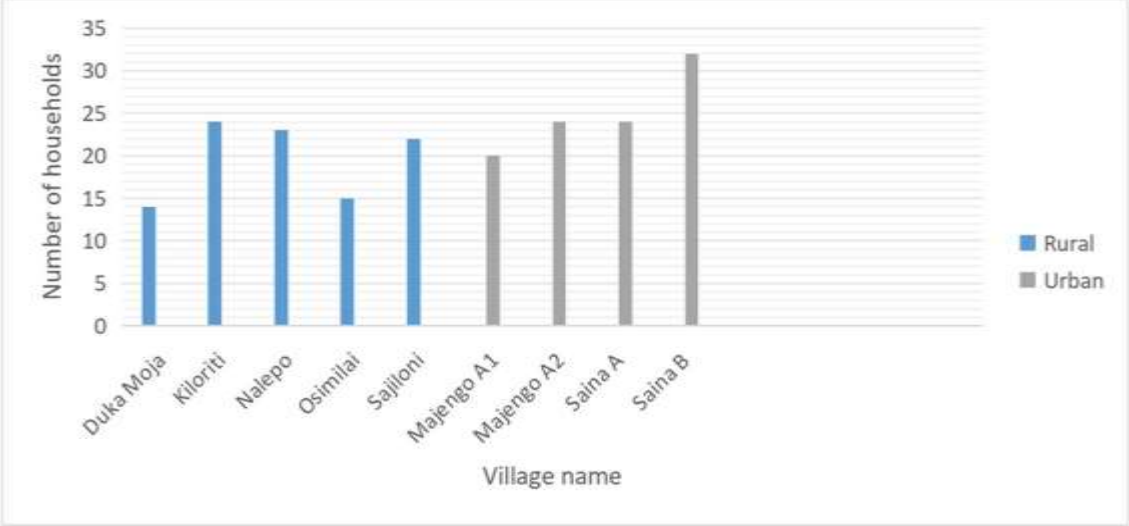

Figure 1: Household Distribution by Village Units

Dietary Practices among Children Aged 6–59 Months in Kajiado Central Sub-County

Table 2 shows the feeding practices and if recommendations were met or not. Breastfeeding rates remained high at one year (86%) but declined to 56% by two years, indicating moderate continu-

ation beyond infancy. Only 17.7% of children aged 6–23 months met the Minimum Meal Frequency (MMF) recommended by WHO, reflecting suboptimal feeding frequency. Among children aged 24–59 months, the majority (56.5%) had three meals in the previous 24 hours.

Dietary diversity was limited, with 69.3% of children aged 6–59 months consuming fewer than five food groups. Their diets were largely based on cereals (91%) and animal products (62%), with poor intake of fruits, vegetables, and legumes. Only 4.5% of children aged 6–23 months met the Minimum Acceptable Diet (MAD) criteria which is extremely low compared to the findings by KDHS of 31% (KDHS, 2022). This low compliance is a concern, as children who do not meet MAD are at a greater risk of malnutrition, stunting, and micro nutrient deficiencies.

Minimum Dietary Diversity (MDD) was calculated as the proportion of children aged 6–23 months who consumed food and beverages from at least five of eight defined food groups in the previous day. MMF was determined based on the age and breastfeeding status of the child, considering the minimum number of solid, semi-solid, or soft food feeds (including milk feeds for non-breastfed children) during the prior day. MAD was computed as the proportion of children aged 6–23 months who met both MDD and MMF criteria—plus at least two milk feeds for non-breastfed children—as defined by UNICEF (2021).

Table 2: Dietary Practices of Children 6-59 Months

Item	Frequency (n)	Percentage (%)
MMF Compliance (Children 6–23 months)		
Meets recommendation	41	61.2
Does not meet recommended	26	38.3
Meal Frequency (Children 24–59 months)		
2 meals	3	2.3
3 meals	74	56.5
4 meals	45	34.4
5 meals	9	6.9
Dietary Diversity (Children 24–59 months)		
2 food groups	22	16.8
3 food groups	43	32.8
4 food groups	35	26.7
5 food groups	22	16.8
6 food groups	7	5.3
7 food groups	2	1.5
Dietary Diversity Score (6–59 months)		
Score of 2	27	13.6
Score of 3	51	25.8

Item	Frequency (n)	Percentage (%)
Score of 4	60	30.3
Score of 5	39	19.7
Score of 6	15	7.6
Score of 7	6	3.0
Dietary Diversity Status (6–59 months)		
Low dietary diversity (less than 5 food groups)	138	69.7
High dietary diversity (5 or more food groups)	60	30.3
MAD (6–23 months)		
Met recommendations	9	4.5
Did not meet recommendations	189	95.5

Table 3 presents the distribution of consumption of the eight food groups consumed in the 24 hours preceding the study.

Table 3: Food Group Consumption of children aged 6-59 Months

Item	Frequency (n)	Percentage (%)
Group 1: Breast milk	68	34
Group 2: Grains, Roots, and Tubers	193	97
Porridge, bread, rice, noodles, or other grains	180	91
White potatoes, yams, cassava, etc.	89	45
Group 3: Legumes and Nuts	73	37
Group 4: Dairy Products	122	62
Infant formula	3	2
Milk (tinned, powdered, fresh)	105	53
Yogurt or drinking yogurt	10	5
Cheese or other dairy products	0	0
Group 5: Flesh Foods	59	30
Liver, kidney, heart, or other organs	16	8
Beef, pork, lamb, goat, chicken, or duck	36	18
Fish, shellfish, seafood (fresh/dried)	13	7
Grubs, snails, or insects	2	1
Group 6: Eggs	37	19
Group 7: Vitamin A Fruits & Vegetables	52	26
Pumpkin, carrots, sweet potatoes (orange)	37	19
Dark green leafy vegetables	98	49

Item	Frequency (n)	Percentage (%)
Mangoes, papayas, musk melon	57	29
Group 8: Other Fruits & Vegetables –bananas, pears, grapes, oranges, cabbage, eggplant, bell peppers.	122	62

Nutritional Status of Children

4 Table 14 below summarizes the nutrition status of the children 6-59 months based on z-scores, MUAC measurements and gender. Assessment of nutrition status using the Weight-for-Height Z-score (WHZ) revealed that 87.4% of the children fell within the normal range (>-2 to ≤+2 SD). A small proportion were classified as overweight (4.5%) and obese (2.5%), while 4.5% were moderately wasted (>-3 to <-2 SD) and 1.0% were severely wasted (<-3 SD). Thus, the overall prevalence of wasting (moderate and severe combined) was 5.5%, which is below the WHO public health threshold of 10%, indicating a relatively low burden of acute malnutrition in this population. The Weight-for-Age Z-sore (WAZ) results showed that the majority of children (93.4%) were within the normal range (≥-2 to ≤+1 SD), while 6.6% were moderately underweight (≥-3 to <-2 SD). Notably, there were no cases of severe underweight recorded. This low prevalence suggests that under nutrition, in terms of body weight relative to age, is not a significant concern among the sampled children. When assessing Height-or-Age Z-score (HAZ), which reflects chronic malnutrition or stunting, 78.8% of children were found to have normal height-for-age values (> -2 SD). However, 15.2% were moderately stunted (≤ -2 to > -3 SD) and 6.1% were severely stunted (≤ -3 SD). Together, 21.3% of children were stunted, indicating a level of chronic malnutrition that still warrants public health attention, as per WHO criteria. Finally, the vast majority of children (99.5%) had normal MUAC values (>12.5 cm). Only one child (0.5%) fell within the moderate acute malnutrition (MAM) range (11.5–12.5 cm), and no children were found to have severe acute malnutrition (SAM) based on MUAC. This further supports the finding that acute malnutrition is uncommon in this sample.

Table 4: Nutrition Status of children 6-59 Months

Category	Frequency (n)	Girls (n = 86)	Boys (n = 112)
WHZ Classification			
> +3 (Obese)	5 (2.5%)	1	4
> +2 to ≤ +3 (Overweight)	9 (4.5%)	6	3
> –2 to ≤ +2 (Normal)	173 (87.3%)	75	98
> –3 to < –2 (Moderately wasted)	9 (4.5%)	3	6
< –3 (Severely wasted)	2 (1.0%)	1	1
WAZ Classification			
≥ –2 to ≤ +1 (Normal)	185 (93.0%)	79	106
≥ –3 to < –2 (Moderately underweight)	13 (7.0%)	7	5
HAZ Classification			

Category	Frequency (n)	Girls (n = 86)	Boys (n = 112)
> –2 SD (Normal)	156 (78.8%)	69	88
≤ –2 to > –3 SD (Moderately stunted)	30 (15.2%)	12	17
≤ –3 SD (Severely stunted)	12 (6.1%)	5	7
MUAC Classification			
11.5–12.5 cm (MAM)	1 (0.5%)	0	1
> 12.5 cm (Normal)	197 (99.5%)	86	111

Association between Dietary Intake and Nutritional Status of Children Aged 6 to 59 Months in Kajiado Central Sub-County

Table 5 presents the relationships between dietary practices and nutritional status among children aged 6–59 months, analyzed using chi-square and Pearson correlation tests. A chi-square test revealed a statistically significant relationship between continued breastfeeding of children aged 6–23 months and height-for-age Z-score (HAZ) (χ^2 = 7.97, p = .019). However, continued breastfeeding was not significantly associated with weight-for-height Z-score (WHZ) (χ^2 = 8.86, p = .065) or weight-for-age Z-score (WAZ) (χ^2 = 0.32, p = .573). Achieving Minimum Dietary Diversity (MDD) among children 6–23 months showed no significant association with any nutrition status indicators: WHZ (χ^2 = 3.63, p = .163), HAZ (χ^2 = 0.015, p = .903), or WAZ (χ^2 = 1.33, p = .249). Similarly, among children aged 24–59 months, dietary diversity showed no significant association with WHZ (χ^2 = 2.78, p = .249), HAZ (χ^2 = 0.427, p = .514), or WAZ (χ^2 = 1.466, p = .226). Pearson correlation analysis confirmed these findings, with no significant linear association observed between dietary diversity and WHZ (r = 0.005, p = 0.954), HAZ (r = 0.053, p = 0.550), or WAZ (r = 0.044, p = 0.620). A significant association was found between meeting the Minimum Meal Frequency (MMF) and WHZ score among children 6–23 months (χ^2 = 18.35, p = .019), while no significant relationships were observed for HAZ (χ^2 = 4.45, p = .348) or WAZ (χ^2 = 0.93, p = .629). Among children aged 24–59 months, Pearson correlation analysis showed that meal frequency was positively and significantly correlated with both HAZ (r = 0.216, p = 0.013) and WAZ (r = 0.254, p = 0.003), though the correlation with WHZ was not statistically significant (r = 0.099, p = 0.260). For Minimum Acceptable Diet (MAD), chi-square analysis indicated a significant association with WAZ (χ^2 = 6.54, p = .011), but no significant relationship with WHZ (χ^2 = 0.97, p = .324) or HAZ (χ^2 = 1.03, p = .598).

These findings suggest selective associations between specific dietary indicators and child nutritional outcomes, highlighting the complex and multifactorial nature of malnutrition in this population.

Table 5: Association between Dietary Practices and Nutrition Status of Children 6-59 Months

Variable	WHZ	HAZ	WAZ
CBF	χ^2= 8.86, p = .065	χ^2 = 7.97, p = .019	χ^2 = 0.32, p = .573

Variable	WHZ	HAZ	WAZ
MDD (6-23 months)	$\chi^2 = 3.63$, p = .163	$\chi^2 = 0.015$, p = .903	$\chi^2 = 1.33$, p = .249
DD (24-59 months)	$\chi^2 = 2.780$, p = 0.249	$\chi^2 = 0.427$, p = 0.514	$\chi^2 = 1.466$, p = 0.226
MMF (6-23 months)	$\chi^2 = 18.35$, p =. 019	$\chi^2 = 4.45$, p = .348	$\chi^2 = 0.93$, p = .629
MF (24-59 months)	r = 0.099, p = 0.260	r = 0.216, p = 0.013	r = 0.254, p = 0.003
MAD (6-23 months)	$\chi^2 = 6.54$, p = .011	$\chi^2 = 1.03$, p = .598.	$\chi^2 = 6.54$, p = .011

Note: X^2 = Chi-square; p= 0.05; WHZ= Weight-for-Height Z-score (WHZ), HAZ= Height-for-Age Z-score (HAZ), and WAZ= Weight-for-Age Z-score (WAZ).

Table 6 shows the association between significant variables and nutrition status indicators done by regression analysis. Logistic regression analyses were conducted to examine associations between significantly associated variables and nutritional status indicators. Variables adjusted for included location, education level, occupation, household, income, household size, marital status, MMF, MAD, caregiver gender, diarrhea and caregiver nutrition knowledge. WHZ was analyzed using multinomial logistic regression, while HAZ and WAZ were assessed using binary logistic regression. Both unadjusted and adjusted odds ratios (ORs) were presented in table 18 as well as reference categories. Unadjusted ORs represent the between each variable and the nutrition indicators without accounting for other influencing variables. Adjusted ORs represent control for potential confounding variables. None of the dietary practices variables remained statistically significant upon adjustment.

Table 6: Association between dietary determinants and Nutrition Status of Children 6-59 Months

Outcome	Predictor	Categories (Reference in parentheses)	Unadjusted OR (95% CI)	Adjusted OR (95% CI)
WHZ	MMF	Met (vs. Not met)	1.14 (0.50 – 2.60)	1.12 (0.55 – 2.28)
	MAD	Met (vs. Not met)	0.95 (0.39 – 2.29)	0.87 (0.40 – 1.88)
HAZ	Meal Frequency	1 (vs. 5 meals/day)	1.12 (0.28 – 4.49)	0.91 (0.21 – 3.89)
		2 (vs. 5 meals/day)	1.03 (0.30 – 3.49)	1.10 (0.33 – 3.63)
		3 (vs. 5 meals/day)	0.95 (0.38 – 2.35)	0.98 (0.39 – 2.48)
		4 (vs. 5 meals/day)	1.09 (0.45 – 2.64)	1.06 (0.42 – 2.68)
WAZ	MMF	Met (vs. Not met)	0.97 (0.47 – 2.00)	0.91 (0.44 – 1.87)
	MAD	Met (vs. Not met)	1.02 (0.48 – 2.16)	1.04 (0.49 – 2.20)

Note: CI= confidence interval, OR= odds ratio; WHZ= Weight-for-Height Z-score (WHZ), HAZ= Height-for-Age Z-score (HAZ), and WAZ= Weight-for-Age Z-score (WAZ). P=0.05. Significant associations ($p < 0.05$*) are marked with an asterisk (*).*

DISCUSSION

Breastfeeding Practices

According to the study, 56% of children continued to breastfeed after the age of two, while 86% were still doing so at one year. The moderate continuing rate after two years, however, indicates that some caregivers may have stopped early. Kajiado Central's lower post-two-year breastfeeding rate might also be related to pastoralist lifestyles, which frequently introduce other milk sources early on. Chege et al. (2015) found that Maasai cultural beliefs promote the early introduction of milk, blood, and herbs to infants—even before six months—which can undermine exclusive breastfeeding and shorten breastfeeding duration. According to the 2022 Kenya Demographic and Health Survey (KDHS), over 46% of Kenyans were still breastfeeding at age two (KDHS, 2022). The results of research conducted in rural Isiolo, where 94% of children were breastfed at one year but only 64% remained after two years, are similar to these study findings (Amunga et al., 2022). Misconceptions regarding milk adequacy, societal views, or obstacles at work may all have an impact on early withdrawal. The observed variances may also be explained by differences in urbanization and maternal work. Kajiado Central's lower post-two-year breastfeeding rate might also be related to pastoralist lifestyles, which frequently introduce other milk sources early on.

Minimum Meal Frequency (MMF)

Compared to the national average of 71%, just 17.7% of the children in this research study met MMF (KDHS, 2022). Studies have shown that poverty, low maternal education, and food insecurity are the main obstacles to similar low MMF rates in Uganda and the Gambia (Scarpa et al., 2022; Terefe et al., 2023). The fact that 58.6% of the households in this survey made less than 10,000 Ksh a month suggests that affordability may play a role. On the other hand, because of increased food availability and dietary awareness, research conducted in metropolitan areas reports higher MMF compliance. Families may be forced to decrease the frequency of feeding due to limited nutritional variety and financial constraints.

Minimum Dietary Diversity (MDD)

Just 30.3% of children had attained the recommended MDD, and the majority only ate three to four food groups rather than the WHO's recommended five out of eight. Compared to the national rate of 37%, this is significantly lower (KDHS, 2022). The most common food group was cereals (91%), which is in line with Demographic Health Survey (DHS) data from 31 sub-Saharan African nations where children's high reliance on staple foods resulted in low MDD scores (Belay et al., 2022). Because animal food sources are valued more highly than plant-based sources, the pastoralist lifestyle of Kajiado populations may account for the high consumption of animal foods but low intake of fruits and vegetables. Dietary diversity may also be impacted by limited market access and seasonal food scarcity. This is emphasized in a study by Waruguru, (2024) which noted

that in order to improve dietary diversity it needs addressing infrastructural barriers alongside nutrition education. The study emphasized for holistic interventions in improving dietary diversity. In addition, a study done in Kakamega found that dietary diversity was significantly affected by seasonal variations (Waswa et al., 2021) reinforcing the role of environmental factors in shaping dietary patterns.

Minimum Acceptable Diet (MAD)

Poor overall nutrition adequacy was evident in the fact that just 4.5% of children met MAD. In rural African settings, MAD compliance usually ranges between 10% and 30%, which is much lower than the global and regional rates while in sub-Saharan Africa, children between the ages of 6 and 23 months who met MAD guidelines ranged from 3.10% to 20.40% (Belay et al., 2022). Poor MAD adherence may result from a lack of financial means, household size, and seasonal weather changes.

Dietary practices of children 24-59 months

Meal frequency was significantly associated with improved HAZ ($r = 0.216$, $p = 0.013$) and WAZ ($r = 0.254$, $p = 0.003$) among children aged 24–59 months, suggesting that more frequent meals support better growth and weight status. However, it was not significantly related to WHZ ($r = 0.099$, $p = 0.260$), indicating limited impact on acute malnutrition.

In contrast, dietary diversity showed no significant association with WHZ, HAZ, or WAZ (all $p > 0.2$), possibly due to the generally low dietary diversity in the sample. This suggests that while meal frequency supports growth, improving dietary diversity alone may not be sufficient unless overall diet quality is addressed.

Nutritional Status of Children

In the study, 78.8% of children were classified as not stunted, with 21.3% stunted (15.2% moderately and 6.1% severely). In comparison, KDHS 2022 reports that 18% of children under five are stunted in Kenya, while global data from the World Health Organization (WHO) shows that 22% of children worldwide are stunted. This suggests that the study sample has a relatively lower prevalence of stunting compared to the national and global averages. The study found that only 2% of children were severely wasted, which is notably lower than the 4.2% prevalence of wasting reported in KDHS, (2022)for children under five. On the global scale, WHO data reports a prevalence of 7.3% for severe wasting. This indicates that the study population is doing better than both national and global averages in terms of acute malnutrition. However, the study also highlighted that 13.1% of children were at risk of being overweight, an emerging issue that aligns with global trends of rising obesity and overweight in younger populations and double burden of malnutrition.

The study observed that 6% of children were moderately underweight. This figure is slightly lower than the 7.1% of children under five who are underweight according to (KDHS, 2022). Globally,

the WHO reports a 5.7% prevalence of underweight in children under five. Thus, the study's prevalence of underweight is somewhat similar to the national and global figures but still represents an area of concern. The MUAC results were good in the study, with 99.5% of children having normal MUAC measurements, and only one child (0.5%) falling into the borderline category. This is significantly better than global data, where the prevalence of severe acute malnutrition (SAM) is around 2.4% according to UNICEF. This suggests that acute nutrition deficiencies are rare in the study population, which is a positive outcome and reflects good overall nutrition health among the children.

Association Between Dietary Intake and Nutritional Status

A significant association was found between continued breastfeeding and HAZ. Findings reinforce global recommendations by WHO for breastfeeding up to 2 years or beyond. Literature consistently shows its role in promoting nutrition status in children (Hong et al., 2023). For both age groups (6–23 months and over 24 months), no statistically significant association was found between dietary diversity and any nutrition indicators. A significant relationship was found between meeting MMF recommendations and WHZ. Significant positive correlations were found between feeding frequency for children 24-59 months and HAZ and WAZ. Frequent meals continue to support growth, especially in weight-for-age and height-for-age, underlining the importance of age-appropriate feeding even into the preschool years. This supports prior findings that energy requirements remain high in toddlers and that continued attention to feeding frequency is important beyond the critical first 1,000 days. The significant association between MAD and WAZ supporting its use as a composite indicator for IYCF monitoring. It is important to note that other unmeasured factors such as recent child morbidity, maternal nutritional status, and household food security may have also influenced children's nutritional outcomes, potentially confounding the observed associations.

CONCLUSION

This study examined the association between socio-demographic and socio-economic characteristics, caregiver nutrition knowledge, dietary practice, hygiene practices and the nutrition status of children aged 6–59 months in Kajiado Central Sub-County. , the results showed that 86% of infants at one year old and 56% of children at two years old were still breastfeeding. While the one-year breastfeeding rate is high, the continuation rate after two years is moderate. Only 17.7% of children (6-23 months) met the recommended Minimum Meal Frequency (MMF), which is far less than what the WHO recommends. Majority of the children between 24-59 months had 3 meals in the previous 24 hours (56.5%). The majority of the children (6-59 months) had a dietary diversity score of less than 5 (69.3). With a focus on staple foods and a lack of variety in fruits, vegetables, and legumes, the primary food groups consumed were cereals (91%) and animal products (62%). Only 4.5% of children 6-23 months met the Minimum Acceptable Diet (MAD). 87.4% of children had normal Weight-for- Height Z-scores (WHZ), with only 5.5% wasted and a small proportion overweight or obese. Underweight prevalence (based on WAZ) was also low at

6.6%, with no severe cases. However, 21.3% of children were stunted (based on HAZ), indicating a significant burden of chronic malnutrition. MUAC results were mostly normal, further confirming low acute malnutrition levels.

RECOMMENDATION

Programs should enhance access to locally available diverse foods to increase meal frequency and diet diversity. Future research should conduct longitudinal studies to track growth trajectories and identify statistically significant determinants of stunting over time.

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