

# Relationship Between Nutrition Knowledge of Caregivers and Dietary Practices of Children Under Five in Kajiado County, Kenya

Peter Maina Chege,<sup>1,\*</sup> and Elizabeth Nafula Kuria<sup>1</sup>

<sup>1</sup>Department of Food, Nutrition and Dietetics, Kenyatta University, Nairobi, Kenya

\*Corresponding author: Peter Maina Chege, P. O. Box 43844, 00100 Nairobi, Kenya. Tel: +254-722642356, E-mail: chegepeterm@gmail.com

Received 2016 November 16; Revised 2017 January 19; Accepted 2017 January 28.

## Abstract

**Background:** Poor nutrition status has been reported among children from pastoralist communities with dietary practices being a key determinant. One of the major determinants of dietary practices adopted among the children is the nutritional knowledge of the caregivers. There is minimal information on how nutritional knowledge level among caregivers is associated with dietary practices of children.

**Methods:** A cross-sectional analytical design was adopted on a randomly selected sample of 138 caregivers from 2 randomly selected sub-locations in Kajiado County, Kenya. An open-ended questionnaire was used to collect information on the caregiver's nutritional knowledge and the dietary practices of children. The caregivers' responses on knowledge were scored and analyzed using a likert scale. Data on dietary practices collected using a 24-hour recall was analyzed using the Nutiri-survey computer software.

**Results:** The nutritional knowledge level for the majority (92.7%) of the caregivers was low (< 40% score). In addition, the dietary practices among the children were poor as depicted by < 3 meals per day taken by 76.1%, low dietary diversity of < 6 food groups per day by 95.7%. This translated to 15.2% not taking adequate energy and over 70% of the children consuming less than the recommended dietary allowances for vitamin A, iron, and zinc. The nutritional knowledge level among caregivers was significantly associated with the dietary practices ( $P < 0.05$ ).

**Conclusions:** The dietary practices adopted by the caregivers are poor and are as a result of their low nutritional knowledge on child feeding. This study recommends initiation of programs to educate the caregivers on good nutritional practices.

**Keywords:** Nutrition Knowledge, Dietary Practices, Caregiver, Under-Five Children

## 1. Background

Children under the age of 5 are among the most vulnerable groups to undernutrition and micronutrients deficiency mainly due to poor dietary practices (1). Child survival, growth and development depends not only on food intake and health but also on the caregiver's behavior (2). One of the components of the caregiver's behaviors is the feeding of young children (3). The most prominent provider of the primary care for children are women and their understanding of basic nutrition and health practices has a great influence on the care they provide to their children and family (4).

Poor feeding practices have been associated with low caregivers' nutritional knowledge (5). Low levels of nutrition education have repeatedly been found among women with poor maternal practices (6) and malnourished children (7). Studies have shown that the caregiver's level of nutritional knowledge is a predictor of feeding practices and consequently affects the nutrition status of their children (8). Lack of nutritional knowledge on child feeding among caregivers contributes significantly to poor dietary practices of children under-five years of age (9). Dietary

practices among children in Kajiado County have been found to influence their nutrition status. The rates of malnutrition in rift valley region, (where Kajiado is one of the Counties) is 35.7% for stunting, 8.9% for wasting, and 19.1% for underweight. A study in Kajiado found that about 60% of the children were stunted, 9% wasted, and 28% underweight (1). Despite all of these, there is minimal information on how nutritional knowledge level among caregivers translates to dietary practices adopted among children.

## 2. Objectives

This study aimed to determine the nutritional knowledge of caregivers and how it influences the dietary practices of children under five months in Kajiado County, Kenya.

## 3. Methods

### 3.1. Research Design

The study adopted a cross-sectional analytical study design on a randomly selected sample of 138 caregivers

with a child aged 24 - 48 months in 2 randomly selected villages in Sajiloni sub-location in Kajiado County. The County is one of the arid lands in Kenya and is mainly occupied by the Maasai community whose main livelihood is pastoralism. Data were collected using a pre-tested semi-structured questionnaire. The questionnaires were translated into the Maasai language by use of experts from the Maasai community. The tools were all validated by using a panel of experts as well as a field test. This was done by assessing if the questionnaire is measuring what it was intended to measure, whether it represent the content, its appropriateness for caregivers, and whether it was comprehensive enough to collect all the information needed to address the objectives. This was completed to reduce measurement errors. To test for reliability, a pilot study was conducted on a sample of 15 respondents. A Cronbach' alpha value of 0.82 was obtained, which indicates proof that the tools were reliable. Focus group discussion guides were used to collect more information.

The nutritional knowledge of caregivers was determined through a nutrition test given to the caregivers using a set of 10 questions. The test was pretested among 10 caregivers from a neighbouring village. Test-retest method was done with appropriate adjustments to ensure that there is reliability and validity. The questions focused on sources and content of nutrition training and the knowledge on dietary practices of children. The information was provided by the caregiver. This included knowledge on the frequency of feeding, balance of the food and nutrition action taken when the child is sick. The scores were rated as a percentage; 0 - 20 (very low), 21 - 40 (low), 41 - 60 (moderate), 61 - 80 (high), and > 81 (very high).

Dietary assessment among children was conducted using a 24-hour recall and food frequency with the caregivers being the key respondents. Food diversity score was established by assessing the number of food groups consumed by the children from a set of 12 food groups. A dietary diversity score cut off-point of 6 food groups was used (10). The study was approved by the Kenya Medical Research Institute (KEMRI) ethical review committee.

### 3.2. Data Analyses

Data were analyzed by the SPSS (version 20.0) software. Nutritional knowledge was analyzed using a likert scale where a ratio scale numbered 1 - 10 was formulated. The scores of correct answers as given by the caregiver were ranked on this scale. The dietary data was analyzed using the Nutri-survey software to establish the amount of energy, vitamin A, iron, and zinc consumed per day. Recommended dietary allowances (RDAs) by age and sex were compared to those recommended by FAO (11) to assess the adequacy of diets and the child's nutrient intake. Pearson

product moment correlation ( $r$ ) was used to determine the relationship between nutritional knowledge level and dietary practices while Chi-square was used to assess relationship between nutritional knowledge level and age sub-group. The level of significance was at 0.05.

## 4. Results

### 4.1. Characteristics of the Caregivers

Results show that the majority (77.5%) of the caregivers were mothers. The ages of the caregivers ranged from 16 to 55 years. About 53.6% were between the ages of 25 - 34 years. The study noted a significant relationship between nutritional knowledge level and the age sub-groups of caregivers ( $\chi^2 = 78.66$ ;  $P$  value = < 0.001). The majority (90.6%) were married. Most of the caregivers (78.3%) had primary education. The main occupation was herding by 38.4% of caregivers (Table 1).

### 4.2. Nutrition Knowledge Among Caregivers

The content of nutritional knowledge among the caregivers was mainly on a balanced diet (31.2%). Others were on food hygiene (18.1%), food preparation methods (8.7%), and food diversification (6.5%). The training and counseling received by caregivers were conducted mainly through health talks given by health workers when one attended the health facility. The caregivers in the study area had minimal knowledge on nutritional issues with more than half of the caregivers having low nutritional knowledge (57.2% while about 35.5% had very low nutritional knowledge score (Table 2). The mean nutritional knowledge score was  $21.0 \pm 1.3$  SD.

### 4.3. Dietary Practices Among Children

#### 4.3.1. Number of Meals and Dietary Diversity

The majority of the children, 76.1% consumed < 3 meals per day. The average number of meals consumed was  $3.07 \pm 0.05$ . The food groups mainly consumed by > 50% were cereals, milk, and legumes. Only 4.4% consumed more than the recommended 6 food groups (Table 3). The mean dietary diversity score (DDS) was  $3.65 \pm 1.2$ .

#### 4.4. Frequency of Food Consumption and Nutrient Intake

The frequency of food consumption was established using a 7 day food frequency guide. The commonly consumed foods groups were cereals (80.4%), legumes (58.7%), and milk, which was mixed with water and tea leaves (67.4%). A small proportion of <20% consumed foods regularly from the rest of the food groups namely fruits, meat, and vegetables. Fruits and vegetables were also not frequently consumed (Table 4).

**Table 1.** Characteristics of the Caregivers of Children Under Five in Kajiado County

Variables	N (138)	N. %
<b>Nature of the caregiver</b>		
Mother	107	77.5 <sup>a</sup>
Stepmother	18	13
Grandmother	13	9.4
<b>Age of caregiver, y</b>		
16 - 24	27	19.6
25 - 34	74	53.6
35 - 44	26	18.8
> 45	11	8
<b>Marital status</b>		
Married	125	90.6 <sup>a</sup>
Single	6	4.3
Separated	4	2.9
Widowed	3	2.2
<b>Education level</b>		
None	3	2.2
Primary	108	78.2 <sup>a</sup>
Secondary	20	14.5
Tertiary	7	5.1
<b>Occupation</b>		
Herding	53	38.4 <sup>a</sup>
Small business	27	19.6
Casual labourer	19	13.8
Farming	17	12.3
Housewives	15	10.9
Formal employment	7	5.1

<sup>a</sup>Majority of the caregivers were married mothers, between the age of 25 - 34 years, were herding cattle.

**Table 2.** Nutrition Knowledge Score Among Caregivers<sup>a</sup>

Score, %	N (138)	N. %
0 - 20 (very low)	49	35.5
21 - 40 (low)	79	57.2
41 - 60 (moderate)	8	5.8
61 - 80 (high)	3	2.2
> 81 (very high)	0	0.0

<sup>a</sup>Majority had low nutrition knowledge.

The mean intake of energy, protein, vitamin A, iron, zinc was 1440 ± 124 SD, 14.3 g ± 3.74 SD, 312 RE ± 54 SD, 6.62

± 0.01 and 2.6 ± 0.03 SD, respectively. This was below the recommended dietary allowance of 1350 kcal, 16g, 10 g, 250 g, 12 g for energy, protein, vitamin A, iron, and zinc, respectively.

From the findings, it was evident that there was adequate intake of energy and low intake of micronutrients. Most of the children (84.8%) consumed adequate kilocalories while over 70% of the children consumed less than the RDAs for vitamin A, iron, and zinc (Table 4).

#### 4.5. Relationship Between Nutrition Knowledge and Dietary Practices

Pearson correlation shows significant direct relationships (P < 0.05) between the nutritional knowledge score

**Table 3.** Dietary Practices Among the Children<sup>a</sup>

Variables	N (138)	N. %
<b>Number of meals</b>		
2	32	23.2
3	73	52.9
4	24	17.4
5	9	6.5
<b>Number of food groups</b>		
2	14	10.1
3	56	40.6
4	44	31.9
5	18	13.0
6	3	2.2
7	3	2.2

<sup>a</sup>Majority of the children consumed 3 - 4 food groups a day.

and DDS, number of meals consumed, energy intake, and protein intake (Table 5). The relationship between the nutritional knowledge score and the frequency of fruit consumption, frequency of vegetable consumption, amount of vitamin A, iron, and amount of zinc consumed.

## 5. Discussion

Women were found to get married at a very young age since most of them do not go beyond primary school education. In addition, the culture does not encourage education for young girls, which contributes to a high number of caregivers with low education. The significant relationship between nutritional knowledge and education level is similar to a study in Australia where children of caregivers with secondary or higher education are likely to have better nutritional knowledge (9). This is due to better child-care practices, especially on better food choices.

Engagement in income generation activities led to caregivers not visiting the clinics where health and nutrition talks are provided. The number of meals consumed per day was below the recommended number for this age group, which is 3 main meals with snacks in between (11). Food intake as assessed using food frequency reflected a high intake of carbohydrate rich foods. There was low consumption of fruit and vegetables among children despite its presence in the nearby market and its low cost, highlighting the lack of awareness as one of the causes. Foods from animal sources except for milk were consumed less frequently despite this being a pastoralist community.

**Table 4.** Frequency of Food Consumption and Nutrient Intake

Variables	N (138)	N. %
<b>Proportion of children consuming the various food groups</b>		
Fruits	24	17.4
Leafy vegetables	27	19.6
Other vegetables	12	8.7
Nuts	6	4.3
Roots	9	6.5
Tubers	12	8.7
Legumes	81	58.7 <sup>a</sup>
Cereals	111	80.4 <sup>a</sup>
Meats	24	17.4
Milk	93	67.4
Eggs	9	6.5
Sugar	12	8.7
<b>Proportion of children consuming adequate nutrient</b>		
Energy, kcal	117	84.8
Protein, g	106	76.8
Vitamin A, RE	41	29.7
Iron, mg	34	24.6
Zinc, mg	28	20.3

<sup>a</sup>Legumes, cereals and milk are the most consumed items.

**Table 5.** Relationship Between Nutritional Knowledge Score and Dietary Practices

Variables	r	P Value
<b>Number of meals</b>	0.274	0.014
<b>Dietary diversity score</b>	0.403	< 0.001
<b>Frequency of fruit consumption</b>	0.496	< 0.001
<b>Frequency of vegetable consumption</b>	0.421	< 0.001
<b>Amount of energy consumed</b>	0.478	< 0.001
<b>Amount of protein consumed</b>	0.301	0.003
<b>Amount of vitamin A consumed</b>	0.403	< 0.001
<b>Amount of iron consumed</b>	0.425	< 0.001
<b>Amount of zinc consumed</b>	0.401	< 0.001

Lack of adequate maternal education (1) and nutritional knowledge among caregivers has been cited as a potential explanation for unhealthy dietary habits for the

children (12). Nutritional knowledge of caregivers is a determinant of the type and quality of diet provided to the children (13), which affects the nutrition status (10). The rates of malnutrition were higher for stunting and underweight compared to the prevalence in rift valley region, (where Kajiado is one of the Counties) 35.7% for stunting, 8.9% for wasting, and 19.1% for underweight (1).

### 5.1. Conclusion

The nutritional knowledge level of caregivers was low, whereby they did not know the correct foods, right amounts, good food combinations, food preparation methods, and frequency of feeding the children. The dietary practices were poor as depicted by consumption of few meals per day, intake of small amounts of food, meals that lacked balance and lack of diversified diets. Thus, a caregiver who has nutritional knowledge is more likely to adopt good dietary practices and therefore ensure good child nutrition of children. The study noted some nutrition awareness gaps to be addressed.

### Acknowledgments

Kenyatta University for logistical support.

### Footnote

**Recommendations:** This study recommends continued communication of nutrition messages to caregivers as a strategy towards behavior change on dietary practices.

### References

1. Abuya BA, Ciera J, Kimani-Murage E. Effect of mother's education on child's nutritional status in the slums of Nairobi. *BMC Pediatr.* 2012;**12**:80. doi: [10.1186/1471-2431-12-80](https://doi.org/10.1186/1471-2431-12-80). [PubMed: 22721431].
2. Jacquier EF, Gatrell A, Bingley A. Caregiver experiences, attitudes and perceptions about feeding toddlers and preschool children in Switzerland: a qualitative study. *BMC Nutrition.* 2016;**2**(1) doi: [10.1186/s40795-016-0099-x](https://doi.org/10.1186/s40795-016-0099-x).
3. Ickes SB, Hurst TE, Flax VL. Maternal Literacy, Facility Birth, and Education Are Positively Associated with Better Infant and Young Child Feeding Practices and Nutritional Status among Ugandan Children. *J Nutr.* 2015;**145**(11):2578–86. doi: [10.3945/jn.115.214346](https://doi.org/10.3945/jn.115.214346). [PubMed: 26377762].
4. Nti CA, Lartey A. Effect of caregiver feeding behaviours on child nutritional status in rural Ghana. *Int J Consum Stud.* 2007;**31**(3):303–9. doi: [10.1111/j.1470-6431.2006.00553.x](https://doi.org/10.1111/j.1470-6431.2006.00553.x).
5. Ali S, Chaudry T, Naqvi QU. Effect of maternal literacy on child health: Myth or reality. *Ann PIMS-Pak Inst Med Sci.* 2011;**7**:100–3.
6. Gregory JE, Paxton SJ, Brozovic AM. Maternal feeding practices, child eating behaviour and body mass index in preschool-aged children: a prospective analysis. *Int J Behav Nutr Phys Act.* 2010;**7**:55. doi: [10.1186/1479-5868-7-55](https://doi.org/10.1186/1479-5868-7-55). [PubMed: 20579397].
7. Chakraborty A, Dasgupta U, Mondal K, Das I, Sengupta D, Mundle M. Poor maternal education and incomplete immunization status are key predictors in development of under nutrition—a descriptive study among under five children attending a tertiary care hospital in kolkata, west bengal. *Indian J Prev Soc Med.* 2014;**45**(1-2):43.
8. Imdad A, Yakoob MY, Siddiqui S, Bhutta ZA. Screening and triage of intrauterine growth restriction (IUGR) in general population and high risk pregnancies: a systematic review with a focus on reduction of IUGR related stillbirths. *BMC Public Health.* 2011;**11** Suppl 3:S1. doi: [10.1186/1471-2458-11-S3-S1](https://doi.org/10.1186/1471-2458-11-S3-S1). [PubMed: 21501426].
9. Williams L, Campbell K, Abbott G, Crawford D, Ball K. Is maternal nutrition knowledge more strongly associated with the diets of mothers or their school-aged children?. *Public Health Nutr.* 2012;**15**(8):1396–401. doi: [10.1017/S1368980011003430](https://doi.org/10.1017/S1368980011003430). [PubMed: 22230490].
10. Fekadu Y, Mesfin A, Haile D, Stoecker BJ. Factors associated with nutritional status of infants and young children in Somali Region, Ethiopia: a cross-sectional study. *BMC Public Health.* 2015;**15**:846. doi: [10.1186/s12889-015-2190-7](https://doi.org/10.1186/s12889-015-2190-7). [PubMed: 26330081].
11. FAO. Human Vitamin and Mineral Requirements. Report of a Joint FAO/WHO Expert Consultation. Food and Agriculture Organization (FAO)/World Health Organization (WHO) 2002. Available from: <http://www.fao.org/3/a-y2809e.pdf>.
12. Saaka M. Relationship between mothers' nutritional knowledge in childcare practices and the growth of children living in impoverished rural communities. *J Health Popul Nutr.* 2014;**32**(2):237–48. [PubMed: 25076661].
13. Peiris TDR, Wijesinghe D. Nutritional status of under 5 year-old children and its relationship with maternal nutrition knowledge in Weeraketiya DS division of Sri Lanka. *Trop Agric Res* 2011. Available from: <http://tar.sljol.info/article/10.4038/tar.v21i4.3309/>.