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Original Research Article

Positive deviance approach in improving child health outcomes: assessment of child feeding practices in Marsabit County, Kenya

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ABSTRACT

Background: Child feeding practice is considered one of the determinants of malnutrition in under-fives. In Kenya, inadequate infant and young child feeding practices contribute to high rates of malnutrition. In Marsabit County, undernutrition prevalence varies in different sub-counties. There are areas where malnutrition is very high whereas other areas are relatively low. This study aimed to assess maternal knowledge of child-feeding practices and to determine the deviant child-feeding practices among mothers of children aged 6-24 months.
Methods: This study adopted a cross-sectional study design. Three-stage sampling technique was used to randomly select 278 eligible households with children aged 6-24 months for participatory assessment of child feeding practices. A questionnaire was used for quantitative data and Focus Group Discussion and guides for qualitative data. Univariate analysis was used to obtain the frequency distribution of maternal knowledge and deviant practices.
Results: The study found that maternal knowledge has a significant effect on child-feeding practices in Marsabit County, Kenya. Mothers have a good understanding of the changing food systems. Due to the scarcity of cow's milk, brought about by drought, unavailability in the market, and increasing food prices, other affordable substitutes are being given like, porridge, fruits, soup (meat), and eggs.
Conclusions: The study concludes that maternal knowledge has a significant effect on child-feeding practices in Marsabit County, Kenya. The study concludes that deviant child-feeding practices have a significant effect on child-feeding practices in Marsabit County, Kenya.

Keywords: Deviant child feeding practices, Maternal knowledge, Positive deviance approach in improving child health outcomes

INTRODUCTION

Childhood malnutrition results from several factors that are related to sub-optimal nutrition and recurrent infectious diseases such as diarrhea and acute respiratory infection.[1] These factors can be worsened by the caregiver's lack of knowledge of feeding and lack of effort to put the knowledge into practice.[2] Inadequate or limited maternal knowledge on what to feed a child on, when and how to feed a child is often a major cause of malnutrition compared to food unavailability.[3] In addition, the nutrition and health outcomes of a child depend on the level of nutrients consumed in daily food intake. Consumption level is determined by the quality and quantity of a dish. High quality and enough quantities to meet body needs results in good health whereas consumption of poor quality and inadequate quantity results in health deficits.[4]

However, amidst these poor child-feeding behaviors, there are a few positive deviant mothers who use

uncommon practices to ensure their children remain healthy even in adversity. This concept of the Positive Deviant (PD) approach points out best care practices from mothers of well-nourished children and transfers such positive practices to mothers of malnourished children in the same setting.[5] It aims to promote multiple behavior changes which include the development of new skills and refining caregivers' current practices.[6,7] A study in a rural South Atlantic identified positive practices from the PD mothers, which included exclusive breastfeeding for six months, kitchen gardening, keeping cooked foods covered, and the addition of lime and orange juice to flavor the child's food.[8] These practices have the potential to help children from resource-limited settings grow healthily. Caregivers who provided fish as animal protein in addition to other feeds had a high positive deviance score of 91.7% and consequently, their children had good health status compared to their counterparts whose caregivers had low scores.[9] In a different study in India, 52.3% of positive deviant children had dietary diversity compared to their underweight counterparts.[10] Other studies have shown that some caregivers offer nutritious foods that have medicinal value and are locally available and cheaper than modern medicine to their children to boost or fasten recovery from ailments.[11,9] These medicinal foods are widely used to treat diseases and to improve and maintain good health.[12] In India for instance, mothers offer their children turmeric milk mix every day at bedtime because they know turmeric is anti-inflammatory and boosts immunity.[13] It is of great importance, therefore, to ensure mothers have the required knowledge on healthy child feeding behaviors which they can translate to practice to promote child health. Promoting appropriate caregiver behavior and providing adequate and high-quality children's diets results in improved health outcomes.[14] In resource-limited settings, the presence of children with good health and nutritional status could be attributed to caregivers successfully applying positive deviant child-feeding practices. According to social cognitive theory, these positive child-feeding practices can be learned. The theory suggests that people can learn by observation, imitation, and positive reinforcement of beneficial behaviors that other people are practicing.[15]

Over the years, child malnutrition at the population level has received attention and recognition in developing countries, especially in resource-limited settings. Poor areas are often considered to be lacking food resources, ASAL regions in Kenya for instance. Poor nutrition status reported across the ASAL counties is majorly due to poor dietary intake coupled with inappropriate feeding practices. Marsabit County, in particular, poor feeding practices because of food insecurity brought about by prolonged drought contribute to the limited availability of varieties of food in the community. Such situations continue to undermine the health and nutrition status of young children. Although exclusive breastfeeding rates are very high in Marsabit, (84.54%), malnutrition rates are very high. According to Standardized Monitoring and Assessment of Relief and Transitions (SMART) survey findings conducted annually in the county, varying trends of undernutrition prevalence have been reported in different sub-counties. There are areas where malnutrition is very high whereas other areas are relatively low. In the year 2022 for instance, severe acute malnutrition prevalence in Laisamis was 5.5%, in North Horr it was 4.4%, in Moyale it was 2.2% and in Saku sub-county, it was 1.2%.[16] However, in the same sub-counties, within the same environment, there are children with optimal health and nutrition status. This could be attributed to caregivers successfully applying positive deviant child-feeding practices that the caregivers of undernourished children are not practicing.

Therefore, this study aimed to determine positive deviant child feeding practices of children 6-24 months that should be promoted to improve child health and nutrition outcomes in Marsabit County, Kenya. Specifically, the study sought to assess maternal knowledge of child-feeding practices for children aged 6 to 24 months in Marsabit County, Kenya, and to determine the deviant child-feeding practices among mothers of children aged 6 to 24 months in Marsabit County, Kenya.

METHODS

Study design

A cross-sectional study design was used to collect data. Both quantitative and qualitative approaches were employed.

Study duration

The study was conducted between May 2023 to August 2024.

Study population

The study population consisted of mothers/ caregivers of children aged 6 to 24 months from a total population of 77,495 caregivers in Marsabit County.

Inclusion criteria

Mothers or caregivers of children 6-24 months and mothers/caregivers of children 6-24 months who were residents of Marsabit County for at least 6 months and mothers or caregivers of children 6-24 months who consented to the study were included.

Exclusion criteria

Absent mother/caregiver of 6-24 months' children in a household during the study period.

Sample size determination and sampling procedures

Sample size determination for study population

The sample size was determined by the formula used by Fisher et al[17]

$$n = \frac{z^2 p(1-p)}{d^2}$$

Where: n = Sample size, z = Level of confidence interval (usually 1.96 corresponding to 95%), p=Estimated proportion of mothers on timely introduction of complementary foods (79.2% as reported in a study done in Marsabit County, Mutuku, 2020)[18], d=Relative desired precision (5.0%).

Therefore; $n = \frac{1.96^2 0.792(1-0.792)}{0.05^2}$

n=253

In order to provide for additional allowance to cater to potential non-response subjects, a 10% allowance was added to the minimum sample size of 253 (Bujang et al, 2021).[19]

Non-response rate = 10% of n

$= \frac{10}{100} \times 253$

= 25

Therefore, n= nonresponse rate + n

=25+253

=278 participants

Table 1 presents the sample size distribution table indicating the sampled wards, villages and number of households proportionate to study participants.

Data collection tools

Focus group discussion guides

Focus Group Discussion (FGD) guides were used to obtain information on maternal knowledge of child feeding, and deviant child feeding practices. The guides were translated into the local language.

Questionnaire

A semi-structured questionnaire was used to obtain information on maternal knowledge of child-feeding practices and deviant child-feeding practices. An interview guide was used to collect data on positive deviant child feeding practices from the positive deviant mothers.

Table 1: Sample size distribution table.

Sub-county/population	Wards	Villages	Sample size	Percentage
Saku	Sagante/ Jaldesa	lorora	1	0.4
		Manyatta	1	0.4
Moyale	Sololo	Funanyatta	16	5.8
		Gimbe	11	4.0
		Hadesa	21	7.6
	Butiye	Sessi Butiye	100	36.1
		Iladhu	20	7.2
		Kulapesa	12	4.3
	Obbu	Lemara/Manyatta	2	0.7
		Manyatta Lemora	4	1.4
		Manyatta Lomera	1	0.4
		Manyatta Lorara	1	0.4
North Horr	Dukana	Manyatta lorora	4	1.4
		Sidaimwita	3	1.1
		Thahaleyo	5	1.8
		Upane	8	2.9
	Maikona	Mayata	1	0.4
		Kalacha	19	6.9
		El Gade	13	4.7
Laisamis	Loiyangalani,	Sambamba	13	4.7
		Sidaimuri	11	4.0
	Logologo	Soweto	11	4.0
Total	8	22	278	100.0

Data collection procedures

Focus group discussion

Qualitative data was collected through free uninterrupted conversations between the women during focus group discussions. The FGDs were based on narrative interviews that were recorded in totality for later transcription. The FGD discussants were identified through the snowball sampling technique, with the entry point being the women groups from various communities in the county.

Questionnaire

A semi-structured questionnaire with a maternal knowledge section and a deviant child-feeding practices section was used to obtain information on maternal knowledge of child-feeding practices, and deviant child-feeding practices respectively.

Pre-testing

Data collection tools were pretested in Archers Post which was not included in the study. A total of 10% (27) data collection tools were used.[20] This was done to check on the consistency of the collected data with the expected results and to also help reframe the questions.

Data analysis

Qualitative data from recorded FGDs was transcribed to texts by a local translator. The transcripts were then translated back to English. Two coders read the text files and then developed codes from the patterns found in the data independently. Differences in coding were discussed and resolved by consulting other researchers with experience in qualitative research.

Data was managed using SPSS version 25.[21] Descriptive data was analyzed using means, standard deviations, frequencies, and percentages. Inferential statistics was conducted using correlation and regression analysis to show the relationship between the independent variables and the dependent variable.

RESULTS

Maternal knowledge of child feeding practices

The first objective of the study was to assess maternal knowledge of child feeding practices for children aged 6 to 24 months in Marsabit County, Kenya. The respondents were requested to answer various questions about maternal knowledge and child-feeding practices for children aged 6 to 24 months in Marsabit County, Kenya. The results indicate that 75.5% of the mothers have adequate knowledge of child feeding whereas 24.5% of the mothers have inadequate knowledge of child feeding.

Table 2 shows the level of maternal knowledge of child-feeding practices. From the results, 34.7% of the mothers rightly stated that the recommended period for breastfeeding was 24 months and beyond. Only 1.4% of the mothers did not know the period. There was a significant association between the recommended period of 24 months or more and good child-feeding practices. The majority of mothers, 94.4%, introduced complementary feeds at the recommended age of six months. A significant association was established between the introduction of complementary feeds at 6 months and child feeding practices in the study area. While 83.4% of the respondents knew the right consistency of feeds to give to a child only 52.1% indicated food diversity as the reason for the thick consistency of child feeds. There was a significant (x^2=4.223, df=1, p=0.000, CI=95%) association between consistency of thick porridge and child feeding practices. On responsive feeding, 84.6% of the mothers knew ways to encourage their children to eat.

Table 2: Maternal knowledge and child feeding practices.

Variable	N (%)	Chi-square
Recommended period for breastfeeding (n=278)		
Six months or less	15 (5.4)	x^2=2.133, df=1, p=0.060, CI=95%
6-11 months	20 (7.2)	x^2=3.121, df=1, p=0.060, CI=95%
12-23 months	59 (21.3)	x^2=4.563, df=1, p=0.070, CI=95%
24 months and more	96 (34.7)	x^2=4.184, df=1, p=0.000, CI=95%*
Don't know	84 (30.0)	x^2=5.763, df=1, p=0.100, CI=95%
Other	4 (1.4)	x^2=1.165, df=1, p=0.056, CI=95%
Age of introduction of complementary feeds (n=278)		
At six months	269 (96.7)	x^2=7.160, df=1, p=0.000, CI=95%*
Don't know	6 (2.2)	x^2=2.183, df=1, p=0.060, CI=95%
Other	3 (1.1)	x^2=1..113, df=1, p=0.070, CI=95%
Reason for introducing complementary feeds (n=278)		
Breast milk alone is not enough	60 (21.6)	x^2=5.169, df=1, p=0.000, CI=95%*
More nutrients are needed for growth	208 (74.8)	x^2=8.555, df=1, p=0.000, CI=95%*

Continued.

Variable	N (%)	Chi-square
Don't know	6 (2.2)	x^2=4.164, df=1, p=0.060, CI=95%
Others	4 (1.4)	x^2=1.163, df=1, p=0.000, CI=95%
Consistency of feeds (n=278)		
Shows thick porridge	231 (83.1)	x^2=4.223, df=1, p=0.000, CI=95%*
Shows watery porridge	41 (14.7)	x^2=2.163, df=1, p=0.055, CI=95%
Don't know	6 (2.2)	x^2=1.179, df=1, p=0.059, CI=95%

*Statistical significance.

Most of the mothers, 99.9% reported they enriched their children's porridge to make it more nutritious. Of this, 63.9% indicated they enriched maize porridge with pulses and nuts whereas 36% enriched with oil, butter/ghee. A significant association was established between enriching porridge to make it more nutritious and child-feeding practices (x^2=58.223, df=7, p=0.000, CI=95%) as shown in Table 3.

Table 3: Introducing food to a child.

Variable	Frequency (%)
Add sugar	1 (0.4)
Cook food, add soup and milk	1 (0.4)
Demonstrate by opening your mouth wide	7 (2.5)
Liquid meals before solid meals	100 (35.6)
Make it easy to swallow	1 (0.4)
Make it palatable	1 (0.4)
Make it soft,	146 (52.7)
Make it watery and nutritious	2 (0.7)
Making it soft, adding spices	1 (0.4)
Mashed potatoes	14 (5.1)
Milk and porridge followed by other foods	2 (0.7)
Use of spoon	2 (0.7)
Total	(100.0)

From the focused group discussions, the mothers reported that the common child food is porridge from a mixture of flour (maize, sorghum, millet, barley, beans, omena, groundnuts, fenugreek, terere, cassava). In addition, they offer other soft foods including Potatoes, pumpkin, green bananas, beans/'njahi', ugali with stew, kales, and moringa. They also indicated that porridge is given interchangeably with these soft foods at least 2-3 times a day.

Deviant child feeding practices

The second objective of the study was to determine the deviant child-feeding practices among mothers of children aged 6 to 24 months in Marsabit County, Kenya. The study sought answers to different questions concerning the deviant child-feeding practices among mothers of children aged 6 to 24 months in Marsabit County, Kenya. From the analysis, 75.1% of the mothers in Marsabit County possess positive deviant child-feeding practices whereas 24.9% have negative deviant feeding practices. Deviant child feeding practices results were as shown in the subsequent sections.

Introduction of complementary food

From the results, 96.7%, of the mothers introduced complementary feeds at 6 months. Only 1.1% did not know when they started complementary feeding for their children.

Within the period of 6-24 months and more 83.4% of the respondents were still breastfeeding whereas 16.6% had stopped.

Most mothers, 81.9%, reported they added some additives when preparing or after cooking their child's food. These include 121 (43.7%) blue band, 47 (17.0%) ghee, 215 (77.6%) sugar, 79 (28.5%) oil, 139 (50.1%) milk, 37 (13.4%) onion and tomatoes, 49(17.7%) Salt, 199 (71.8%) milk and 132 (47.6%), eggs. The study findings indicated a significant association between the addition of additives and child-feeding practices (x^2=5.394, df=1, p=0.000, CI=95%).

Food preparation

A greater proportion of the mothers, 91.7% prepared child food by adding oil, salt, and sugar (used in moderation). There was no association between food preparation and child-feeding practices (x^2=6.084, df=1, p=0.058, CI=95%).

Table 4: Frequency of feeding the child per day.

Variable	Frequency (%)	Chi-square
Less 3 times	33 (11.9)	x^2=4.184, df=1, P=0.061, CI=95%
3-4 times	67 (24.1)	x^2=3.184, df=1, P=0.070, CI=95%
5-6 times	178 (64.0)	x^2=4.414, df=1, P=0.000, CI=95%*
Total	278 (100)	

*Statistical significance.

Introducing food to a child

Regarding ways to introduce food to a child, 52.7% of the mothers introduced complementary food by making it soft. 91.7% confirmed to be giving small meals in

between main meals of which 50.9% gave milk/porridge, 27.4% eggs and 33.2% other snacks. Chi-square results indicated a significant association between the introduction of food to a child and child feeding practices (x^2=74.184, df=12, p=0.000, CI=95%) (Table 5).

Table 5: Correlation coefficients.

		Child feeding practices	Maternal knowledge of child feeding	Deviant child feeding practices
Child feeding practices	Pearson correlation	1		
	Sig. (2-tailed)			
	N	278		
Maternal knowledge of child feeding	Pearson correlation	0.805*	1	
	Sig. (2-tailed)	0.003		
	N	278	278	
Deviant child feeding practices	Pearson correlation	0.815*	.297	1
	Sig. (2-tailed)	0.000	.060	
	N	278	278	278

*Statistical significance.

Frequency of feeding a child per day

Chi-square was used to assess whether there was any significant relationship between the frequency of feeding a child in Marsabit County. Results are shown in Table 4.

From the results, 8.4% of the mothers fed their children daily with fruits, 15.7% fed them weekly, 20.4%, monthly, and 22.3% rarely whereas the majority, 33.2% do not offer their children fruits.

Regarding the respondent's frequency of feeding the children on vegetables, 17 (6.2%) feed them daily (x^2=1.466, df=1, p=0.000, CI=95%), 138 (50.2%) weekly (x^2=4.018, df=1, p=0.059, CI=95%), 28 (10.2%) monthly (x^2=2.404, df=1, p=0.077, CI=95%), 56 (20.4%) rarely (x^2=3.005, df=1, p=0.056, CI=95%) and 36 (13.1%) do not (x^2=2.211, df=1, p=0.059, CI=95%).

Other foods that respondents fed their child were snacks, 226 (82.2%) while 49 (17.8%) did not offer other foods.

From the results of the focused group discussions, mothers reported that their understanding of the concept of a balanced diet helps them offer highly nutritious locally available foods to their children, for example pounding potatoes with beans selected from Githeri (family food-mixture of beans and maize), 'ugali' served with meat stew and kales; in absence of meat stew, 'ugali' can be served with milk and kales/moringa/spinach. Other traditional well-balanced diets served to children include 'Koche' (mixture of meat, roasted barley, and 'mandazi'-with eggs, milk, and margarine added).

Correlation analysis

This research adopted Pearson correlation analysis to determine how the dependent variable (child feeding practices in Marsabit County, Kenya) relates with the independent variables (maternal knowledge on child feeding and deviant child feeding practices) (Table 5).

Regression analysis

Multivariate regression analysis was used to assess the relationship between independent variables (maternal knowledge and deviant practices) and the dependent variable (child feeding practices in Marsabit County, Kenya) (Table 6).

The regression model was as follows:

$$Y = 0.335 + 0.345X_1 + 0.361X_2 + \varepsilon$$

The model summary was used to explain the variation in the dependent variable that could be explained by the independent variables. The r-squared for the relationship between the independent variables and the dependent variable was 0.769 (Table 7). This implied that 76.9% of the variation in the dependent variable (child feeding practices in Marsabit County, Kenya) could be explained by independent variables (maternal knowledge and deviant practices).

Table 6: Regression coefficients.

	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	**Std. error**	**Beta**		
(Constant)	0.335	0.085		3.941	0.000
Maternal knowledge on child feeding	0.345	0.088	0.344	3.920	0.001
Deviant child feeding practices	0.361	0.092	0.362	3.924	0.000

Table 7: Model summary.

Model	R	R square	Adjusted R square	Std. error of the estimate
1	0.877[a]	0.769	0.768	0.10412

a. Predictors: (Constant), maternal knowledge, and deviant practices

Table 8: Analysis of variance.

Model		Sum of squares	df	Mean square	F	Sig.
1	Regression	102.028	2	25.507	510.14	.002[b]
	Residual	13.653	275	.0500		
	Total	115.681	277			

a: Dependent Variable: child feeding practices in Marsabit County, Kenya; b: Predictors: (Constant), maternal knowledge and deviant practices

The ANOVA was used to determine whether the model was a good fit for the data. F calculated was 510.14 while the F critical was 2.405. The p value was 0.002. Since the F-calculated was greater than the F-critical and the p value 0.002 was less than 0.05, the model was considered a good fit for the data. Therefore, the model can be used to predict the influence of maternal knowledge and deviant practices on child-feeding practices in Marsabit County, Kenya (Table 8).

DISCUSSION

From the results, there was a strong relationship between maternal knowledge of child feeding and child feeding practices in Marsabit County, Kenya (r = 0.805, p value =0.003). The relationship was significant since the p value of 0.003 was less than 0.05 (significant level). The findings are in line with the findings of Suleiman who indicated that there is a strong relationship between maternal knowledge and child feeding practices.[22]

Moreover, there was a strong relationship between deviant child-feeding practices and child-feeding practices in Marsabit County, Kenya (r = 0.815, p value =0.000). The relationship was significant since the p value 0.000 was less than 0.05 (significant level). The findings are in line with the findings of Siraneh et al, who indicated that there is a strong relationship between deviant and child-feeding practices.[23]

Inadequate complementary feeding practices still remain a key problem in Kenya, with one of the greatest contributors being inadequate knowledge and low attitudes towards complementary feeding among caregivers in rural areas. From the study findings, about 122 (44%) did not know when exactly to introduce complementary feeds although when propped further 94.4%, (p=0.000), indicated that they introduced complementary feeding at six months of age. According to a study on child feeding, children whose mothers were knowledgeable about complementary feeding were more likely to attain the recommended minimum meal frequency, minimum dietary diversity, and minimum acceptable diet compared with those with low knowledge.[24] After 6 months, breast milk alone is insufficient to meet the baby's nutrient requirement. Solid feeds i.e. complementary feeds must be gradually introduced into the infant's diet.[25] Porridge is one of the best feeds to start the baby in the early days of weaning because it is rich in protein, and iron, and a slow-release energy. In terms of micronutrients, depending on the age of the child, a half cup of porridge provides between 64-73% of vitamin A needs and 12-19% of daily iron needs.[26] From the study findings, concerning the consistency of porridge to be given to a child, 83.4%, (p=0.000) of respondents indicated one that shows thickness. Study findings further indicated that caregivers enriched porridge to make it more nutritious, maize porridge was enriched with, animal-source foods (meat, poultry, fish, liver/organ meat, eggs, etc.), pulses, and nuts: flours of groundnut and other legumes (peas, beans, lentils, etc.), sunflower seed, peanuts, soybeans, vitamin-A-rich fruits and vegetables (carrot, orange-fleshed sweet potato, yellow pumpkin, mango, papaya, etc.), green leafy vegetables (e.g. spinach) and energy-rich foods (e.g. oil, butter/ghee). To improve infant feeding practices mothers/caregivers should have access to objective, consistent, and complete information about appropriate feeding practices that are free of commercial influence, and that consider the prevailing social, cultural, and environmental circumstances.[3]

Positive and negative deviance studies attempt to identify and transfer good health behaviors from positive deviant mothers in disadvantaged households to negative deviant mothers in the same setting.[10] The study area is resource-stressed with a high poverty level among households coupled with low literacy levels and harsh climatic conditions. From the study findings the majority, 96.7%, introduced complementary feeds at 6 months. Despite being resource-stressed, 83.4%, were still breastfeeding though 16.6%, had stopped.

Most, 81.9%, respondents reported that they added some additives when preparing or after cooking a child's food. Among the additives include, blue band, ghee, sugar, oil, milk, onion and tomatoes, Salt, and eggs. The study established that the majority prepared child food by adding oil, salt, and sugar used in moderation while most, 64.3% of the respondents fed their child 5-6 per day.

According to WHO's recommendation, caregivers to infants (6-23 months) should continue breastfeeding, introduce solid, semisolid, or soft at 6 months, appropriate food diversity (at least five food groups per day), appropriate frequency of meals: 2-3 times between 6-8 months, increasing to 3-4 times a day between 9-24months, with nutritious snacks offered once or twice a day as desired and feeding in response to cues. [27] It is recommended to gradually increase food consistency and variety as the infant gets older, adapting to the infant's requirements and abilities. Infants can eat pureed, mashed, and semi-solid foods beginning at six months. By 8 months most infants can also eat "finger foods" (snacks that can be eaten by children alone). By 12 months, most children can eat the same types of foods as consumed by the rest of the family (keeping in mind the need for nutrient-dense foods).[25,28,29]

One of the limitations of this study is that it relied on self-reported data from mothers and caregivers, which may be subject to recall bias or social desirability bias, where respondents may over-report positive behaviors or under-report negative practices. Additionally, the study was limited to mothers and caregivers residing in Marsabit County for at least six months, potentially excluding those who may have relocated recently or those in more remote areas. The cross-sectional design of the study also means that it can only provide a snapshot of child feeding practices and maternal knowledge at a specific point in time, without accounting for temporal changes in feeding behavior or health outcomes. Furthermore, the study's findings may not be generalizable to other regions with different cultural or environmental contexts.

CONCLUSION

The study found that maternal knowledge has a significant effect on child-feeding practices in Marsabit County, Kenya. Mothers have a good understanding of the changing food systems. Due to the scarcity of cow's milk, brought about by drought, unavailability in the market, and increasing food prices, other affordable substitutes are being given like, porridge, fruits, soup (meat), and eggs.

This study therefore concludes that deviant child-feeding practices have a significant impact on child-feeding outcomes in Marsabit County, Kenya. The findings suggest that the positive deviant approach serves as an effective intervention in promoting better child-feeding practices, particularly in resource-constrained areas such as the study region. The use of locally available, nutritious food for enriching children's diets has proven to be a practical and successful strategy, as demonstrated by certain mothers within the community. These practices, which have already been adopted by some, should be further promoted and shared with the broader community. This study advances our understanding of how culturally relevant and resource-efficient child-feeding practices can improve nutritional outcomes in marginalized regions, offering a sustainable solution to address malnutrition and promote child health.

Recommendations

Based on the findings this study recommends that the Marsabit County government should implement community-based nutrition education programs focused on affordable and nutritious alternatives to traditional child feeding practices. These programs should emphasize the importance of balanced diets using locally available and affordable foods such as porridge, fruits, soup (meat), and eggs. Additionally, they should provide practical guidance on preparing these substitutes to ensure they meet the nutritional needs of young children, particularly during periods of drought and food scarcity. By equipping mothers with knowledge of sustainable and adaptive feeding practices, the programs can help mitigate the effects of changing food systems and improve child health outcomes in Marsabit County.

In addition, the Marsabit County government should scale up the Positive Deviant Approach through community-led workshops and peer-to-peer learning to promote locally adapted, nutrient-rich child-feeding practices. These workshops should focus on identifying and disseminating the successful feeding strategies already being used by mothers within the community, such as enriching meals with locally available ingredients. By empowering mothers to share these effective practices with others in the community, this approach can enhance knowledge, encourage behavior change, and improve child nutrition outcomes in resource-constrained settings like Marsabit County. Additionally, involving local health workers and community leaders can help sustain and expand the impact of these interventions.

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