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FEEDING PRACTICES OF CHILDREN LESS THAN TWO YEARS WITH STUNTING IN URBAN AND RURAL TURBO SUB-COUNTY, UASIN GISHU

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Abstract

This study sought to find out feeding practices of children less than two years with stunting in urban and rural Turbo Sub-County, Uasin Gishu. The data analysis was by SPSS for windows version 20. Mixed feeding was most practised at 43.5 per cent (n=27). Exclusive breastfeeding was at 40. Continued breastfeeding was at 67.3 per cent and 47.1 per cent at 1 and 2 years, respectively. Cereals, roots and tubers foods were eaten most in urban at 97.2 per cent/n=196 and in rural areas at 94.3 per cent/n=83. There were no differences in consumption of all food groups between urban and rural children except intake of vitamin A-rich foods with a significant difference χ^2 (p=0.001). The relationship between place of residence and dietary diversity score showed a significant relationship with a Chi-square value of ($\chi^2$13.467, p=0.004). Only 28.3%/n=76 of the children had a dietary diversity score of four and above, with urban and rural having 23.2%/n=42 and 38.6%/n=34 correspondingly. In conclusion, infant and young child feeding practices indicated exclusive breastfeeding was below the national average, and mixed feeding was the most practised mode of feeding in children below 6 months. This study recommends that the health ministry, in collaboration with the ministry of agriculture, should promote the growth of a variety of foods in rural areas and promote the use of home-grown foods for complementary feeding.

Key terms: Children 0-23 months, DDS, foods, infant, Nutrition.

1.0 INTRODUCTION

Poor nutrition status among children is a global challenge, which has been addressed over the years. Addressing child nutrition was given a new focus through Sustainable Development Goal 2, which needs to be achieved by 2030, ending hunger, achieving food security, good nutrition and promoting agriculture (Prendergast et al., 2017). Globally stunting was estimated at 22.2 per cent in 2017a reduction from 32.6 per cent in 2000. In Africa stunting rate was at 39 per cent, (UNICEF, WHO, IBRD and Development/The World Bank, 2018). In Kenya, the prevalence of stunting was at 26 per cent in 2014, a drop from 35 per cent in 2008/09, where slightly more than a quarter of Kenyan children were shorter for their age, a factor that adversely affects their future health, and well-being and reduces total individual output. Levels of stunting were highest in West Pokot and Kitui counties, which had 45.9 per cent and 45.8 per cent, respectively. Uasin Gishu County was at 31.2 per cent (Kenya Demographic and Health Survey (KDHS) 2014).

Optimal growth in children is achieved by the foods they consume, besides other factors that include environmental, social, economic, cultural or individual differences that have a direct or indirect effect on the types of foods given, intake and utilisation of the same. (Herforth & Ahmed, 2015). When children receive sufficient nutrients, they grow among other body measures in their height and weight with strong immunity (Njiru & Matiri, 2013). However, when this is not met, stunting occurs in children when they do not achieve their required height for their age.

Despite a report that households in Uasin Gishu had better food access with an acceptable Food Consumption Score(FCS)and an average household dietary diversity score(HDDS) of 6.7, it recorded wasting prevalence of 3 per cent, which is acceptable, stunting was the "serious stage", a prevalence of 31.2 per cent for children under five,(Comprehensive Food Security and Vulnerability Analysis, (CFSVA), Kenya 2016); Leroy et al., 2015). This indicates that about a third of the children are at risk of the negative effects of stunting.

Since the effects of stunting are permanent and response to intervention is found to be more effective in the first 1000 days of life (Ghosh, 2016; Prendergast et al., 2017), prevention of stunting should be given priority. This will help reduce the negative effects of stunting and ensure healthy, productive individuals. This study, therefore, seeks to determine the possible contributors to stunting in Turbo Sub-County, Uasin Gishu County.

2.0 LITERATURE REVIEW

Under nutrition has been recognised as having one of the largest negative outcomes in relation to the growth and development of countries, and this is because it not only poses a challenge to the health of people but also to the productivity of populations (Sorgho et al., 2016). The health risks include high morbidity and mortality due to poor immunity in stunted children as a result of low-fat mass (Briendet al., 2015; Yaméogo et al., 2017). Stunting also resulted in obesity, with a higher prevalence of diabetes, hypertension and cardiac diseases in adults of short stature and reduced intellectual performance due to poor brain cell development (Hassen et al., 2017; Prendergast et al., 2017). Though the reduction in stunting has been seen over the years, indicating the effectiveness of interventions employed, these achievements were not seen in some continents as Asia, which reduced stunting rates from 38.1 per cent in 2000 to 23.2 per cent in 2017, while in Africa, it reduced from 38.3 per cent to 30.3 per cent during the same period.

Eastern Africa had the highest stunting rates at 35.6 per cent, while North Africa was lowest at 17.3 per cent in 2017 (UNICEF, WHO, World Bank Joint Malnutrition Estimates, 2018). Demographic health surveys conducted in East African countries in three consecutive years indicated that Tanzania had the highest stunting rates at 34.5 per cent in 2015, Uganda at 28.9 per cent in 2016 while Kenya was lowest at 26.2 per cent in 2014 (UNICEF Expanded Global Databases 2019).

Although Africa reduced stunting by 8.0 per cent, it failed to achieve the set target of reducing stunting by half (19.2%) by 2015. This reduction was not seen much in Africa, but countries like Ghana reduced stunting from 30 per cent in 2008 to 19 per cent in 2014. This was attributed to Ghana's fast economic growth and political stability, which led to fewer social disruptions (International Food Policy Research Institute (IFPRI), 2016). In some parts of east African countries stunting was found to be at 33.3 per cent in sugar growing in east central Uganda, indicating producing food is not always positively correlated with good nutrition for children (Lwanga et al., 2015). This low reduction in Africa calls for the more focused intervention of individual countries such as Kenya in addressing the causes of stunting in agricultural-rich regions.

In 2015, countries were given the challenge to work towards ending all forms of malnutrition and reduction in stunting by 40 per cent by 2025. These efforts are geared towards attaining the Sustainable Development Goals (SDGs) 2 and 3, focus on hunger, the status of food security, nutrition, agriculture, healthy lives and well-being for all ages (Research Institute (IFPRI), 2016), The SDGs, Post-2015 Agenda). Stunting has also been included as one of the indicators for measuring hunger globally and food insecurity (Index, 2015). Out of 7293 children assessed nationally, 1597(21.9%) had a HAZ score of less than minus 2 and the proportion of children stunted increased with age, where only 10 per cent of children less than 6 months were stunted and 35.5 per cent for 18 to 23 months indicating a problem with child care, (Kenya Demographic and Health Survey (KDHS) 2014). Efforts have therefore been put in place by the international community, NGO's and governments towards improving the nutrition status of children that, included addressing the four pillars of food security. These pillars are food availability, consistency in the supply of food, easy food access and proper utilisation of the ingested food by the body (FAO, 2009).

Comparing Uasin Gishu stunting rates(31.2%) to other food-producing counties like Nandi 29.9 per cent and Trans Nzoia 29.2 per cent, the findings indicate other factors other than household food security could be contributing to stunting in children in agricultural rich zones (Comprehensive Food Security and Vulnerability Analysis (CFSVA), Kenya 2016). Therefore, studies to establish contributing factors and ensure informed interventions by both National and County governments. This is not true for all agricultural-rich counties, with an example of Nyeri County, which is food secure, and had the lowest stunting rates of 15.1 per cent. Turkana, which is relatively drier, had a stunting rate of 23.9 per cent, which was lower than some food-producing regions (Survey & Indicators, 2014). There seems to be a major research gap in some counties that have shown to have food-secure households in Kenya on factors that contribute to stunting and more so in the Turbo Sub-County.

3.0 METHODOLOGY

A comparative cross-sectional survey was used in this study. The study was conducted in the Huruma and Ngenyilel wards of Turbo Sub-County, Uasin Gishu County. The target population was all children less than two years in the Turbo Sub-County, with a sampling frame of 4840 children from the two selected wards. A sample size of 331 children less than two years was derived using the Fishers formula ($n=z^2pq/d^2$), Fisher et

al. (1991). Using a multistage systematic, community units were selected from the two wards from which villages were randomly sampled. Every nth child was selected from the villages and studied. Reliability was ensured by carrying out training the data collectors and clarifying questions. Exclusion from the study was done for caregiver, children or both who were not at home at the time of the study, sick and mentally disabled caretakers who could not give reasonable information about their children and children who were not stunted. Pre-testing of the study instruments was done in the Kapsaos ward, Turbo Sub-County and corrections and clarifications were made on the questionnaires. Data was collected by asking questions and filling in the questionnaires. The length of the children was taken using a length board and tallied in the weightage growth chart from which stunting was determined. Permission to collect data was sought from Kabarak University's ethics research committee and the National commission for science and technology.

4.0 RESULTS AND DISCUSSION

Demographic Information

This section presents data on respondents' information. Children who participated in the study were distributed from ages 0-23 months, with 30.5 per cent being between 18-23 months and 18.7 per cent at 0-6 months. There was a significant difference in the distribution of stunting across different age groups with χ^2 (p=0.041) between urban and rural children and distribution between males and females at χ^2 (p=0.001) with more females stunted than males. Most of the children were taken care of by their biological mothers (92.1%). The average household number was 4 persons in urban and 5 persons in rural areas. Highest achieved education level for caregiver was primary level, and most caregivers subscribed to the Christian religion with no difference in their distribution between urban and rural areas.

Table 1: Respondents' Demographic Information

		Residence			Chi-square results P value =0.05	Fisher exact test P value =0.05
		Urban n=215 n (%)	Rural n=116 n (%)	Total n=331 n (%)		
Child's age group	0-<6	34(15.8)	28 (24.1)	62(18.7)	**0.041***	***
	6-11	60 (27.9)	22 (19.0)	82(24.8)		
	12-17	55 (25.6)	31 (26.7)	86(26.0)		
	18-23	66 (30.7)	35 (30.2)	101(30.5)		
Child's gender	Males	96(44.7)	52(44.8)	148(44.7)	**0.001***	***
	Female	119(55.3)	64(35.0)	183(55.3)		
Caregivers relationship to a child	Mother (female parent)	199(92.6)	106(91.4)	305(92.1)	**	***
	Father (male parent)	4(1.9)	5(5.3)	9(2.7)		
	Grandmother	5(2.3)	3(2.6)	8(2.4)		
	Other	7(3.3)	2(1.7)	9(2.7)		
Caregivers education	No formal education	1 (0.5)	6(5.2)	7(2.1)	**	***
	Primary	84 (39.1)	71(61.2)	155(46.8)		
	Secondary	104 (48.4)	33(28.4)	137(41.4)		
	College	26 (12.1)	6(5.2)	32(9.7)		

Number of household members	2	2(0.9)	2(1.7)	4(1.2)	**	***
	3	68(31.6)	15(12.9)	83(25.1)		
	4	64(29.8)	25(21.6)	89(26.9)		
	5	50(23.3)	26(22.4)	76(23.0)		
	6	25(11.6)	21(18.1)	46(13.9)		
	7	6(2.8)	16(13.8)	22(6.6)		
	8	0(0.0)	9(7.8)	9(2.7)		
	9	0(0.0)	2(1.7)	2(0.6)		
Mean HH		4	5	4.5	**	
Religion	Christian	213(99.1)	116(100.0)	329(99.4)	**	0.543
	Muslim	2(0.9)	0(0.0)	2(0.6)		

*Significant value
** Not applicable for chi-square analysis (cells with less than 5 counts)
*** Only for 2*2 tables

Foods Consumed by Children

Analysis of foods consumed was done for children less than 6 months and children 6-23 months. Foods consumed by children 0-6 months indicate that mixed feeding was the most practised mode of feeding (43.5%) for both urban and rural respondents, followed by exclusive breastfeeding (40.3%). Exclusive breastfeeding rates were higher at 42.9 per cent in rural and 38.2 per cent in urban areas. More children in urban areas received liquids and water in addition to breast milk as predominant breastfeeding was at 17 per cent compared to rural areas at 7.1 per cent.

Table 2: Breastfeeding Type for Children Less than 6 Months by Residence

Residence	Age 0-<6 months	Breastfeeding type				Total
		Exclusive Breastfeeding	Predominant Breastfeeding	Mixed Feeding	No breastfeeding	
	(n)	n(%)	n(%)	n(%)	n(%)	N
Urban	(34)	13(38.2)	6(17.6)	14(41.2)	1(2.9)	34
Rural	(28)	12(42.9)	2(7.1)	13(46.4)	1(3.6)	28
Total	(62)	25(40.3)	8(12.9)	27(43.5)	2(3.2)	62

Key: Exclusive breastfeeding (Breast milk alone and no other food, liquid or water except prescribed medication)
Predominant breastfeeding (Breast milk plus clear liquids, fruit juice, ritual liquids and water)
Mixed feeding (Breast milk plus other foods, including non-human milk)

Results on continued breastfeeding at one year and 2 years for stunted children were determined. Continued breastfeeding at one year was 67.3 per cent and at two years was 47.1 per cent.

Table 3: Continued Breastfeeding at One to Two Years

Continued breastfeeding	Child's age		Children who received breast milk the previous day and night

		n	n (%)
At 1 year	12 -15 months	55	37(67.3)
At 2 years	20-23 months	68	32(47.1)

Results on breastfeeding of children 6-23 months were presented as breastfed or not breastfed. Children 6-23 months who received breast milk the previous day were 69.5 per cent, and those not breastfed were 30.5 per cent. There was a highly significant difference χ^2 (p=<0.001) between children who were being breastfed in urban and rural with more children in the urban having been breastfed the previous day than in rural areas.

Table 4: Breastfeeding for Children 6–23 Months

Residence	Child's age 6-23 months	Breastfeeding		Chi-square results
		Breastfeeding	Not breastfeeding	P value =0.05
	(n)	n (%)	n (%)	
Urban	(215)	131(72.4)	50(27.6)	**0.001***
Rural	(116)	56(63.5)	32 (36.4)	
Total	(331)	187(69.5)	82 (30.5)	

*Significant value

WHO guidelines on assessing infant and young child feeding give seven food groups from which a child should measure against. A child is expected to eat a minimum of four food groups to achieve minimum acceptable nutrient diversity. The individual foods are grouped into 7 groups, namely carbohydrate sources (grains, roots and tubers), legumes and nuts, milk and milk products (cheese, yoghurt, traditionally fermented milk), flesh foods, eggs, vitamin A-rich foods (yellow fleshed foods), and fruits and vegetables. The results show the proportion of children who ate from each food group. Carbohydrates foods were eaten most in urban at 97.2 per cent/n=196 and in rural areas at 94.3 per cent/n=83. Eggs were eaten the least, with 7.2 per cent urban and 12.5 per cent rural. There were no differences in consumption of all food groups between urban and rural children except intake of vitamin A-rich foods with a significant difference χ^2 (p=0.001). Vitamin A-rich foods were eaten more in rural areas compared to urban areas at 14.4 per cent.

Table 5: Individual Food Groups Consumed by Children 6-23 Months

Individual food groups	Response	Urban N =181 n(%)	Rural N=88 n(%)	Chi-square P=0.05
Cereals, roots, tubers	Yes	176(97.2)	83(94.3)	0.338
	No	5(2.8)	5(5.7)	
Legumes, nuts	Yes	31(17.1)	19(21.6)	0.282
	No	150(82.9)	69(78.4)	
Milk and milk products	Yes	102(56.4)	54(61.4)	0.725

	No	79(43.6)	34(38.6)	
Flesh foods	Yes	40(22.1)	15(17.0)	0.481
	No	141(77.9)	73(83.0)	
Eggs	Yes	13(7.2)	11(12.5)	0.250
	No	168(92.8)	77(87.5)	
Vitamin A-rich foods	Yes	26(14.4)	31(35.2)	**0.001***
	No	155(85.6)	57(64.8)	
Fruits and vegetables	Yes	126(69.6)	64(72.7)	0.862
	No	55(30.4)	24(27.3)	

*Significant difference

Dietary diversity scores for children 6-23 months show the total number of food groups consumed by a child in the last 24 hours. The dietary diversity score (DDS) of 3 was highest for both urban (42.0%/n=76) and rural at 35.2 per cent/n=31. The number of children who had a DDS of 5 was 5.2 per cent, and the DDS of 6 were the least at 1.5 per cent. No child received 7 food groups.

Table 6: Dietary Diversity score for Children 6-23 Months

Residence	Dietary diversity score for children 6-23 months							
	DDS=1 n(%)	DDS=2 n(%)	DDS=3 n(%)	DDS=4 n(%)	DDS=5 n(%)	DDS=6 n(%)	DDS=7 n(%)	n
Urban	10(5.5)	53(29.3)	76(42.0)	33(18.2)	7(3.9)	2(1.1)	0(0.0)	181
Rural	10(11.4)	13(14.8)	31(35.2)	25(28.4)	7(8.0)	2(2.3)	0(0.0)	88
Total	20(7.4)	66(24.5)	107(39.8)	58(21.6)	14(5.2)	4(1.5)	0(0.0)	269

Results on the minimum acceptable dietary diversity score show the number and proportion of children who consumed at least four food groups the previous day within different age groups. The total number of children who had a dietary diversity score of four and above was 28.3 per cent/n=76, with urban and rural having 23.2 per cent/n=42 and 38.6 per cent/n=34, correspondingly.

Table 7: Low and Minimum Dietary Diversity Score for Children 6-23 Months

Residence	Child's age in months	Dietary diversity score				
		1 n(%)	2 n(%)	3 n(%)	≥4 n(%)	n
Urban	6-11	5(8.8)	12(21.1)	29(50.9)	11(19.3)	57
	12-17	4(6.6)	24(39.3)	20(32.8)	13(21.3)	61
	18-23	1(1.6)	17(27.0)	27(42.9)	18(28.6)	63
	6-23	10(5.5)	53(29.3)	76(42.0)	42(23.2)	181
Rural	6-11	1(4.8)	5(23.8)	7(33.3)	8(38.1)	21
	12-17	5(15.2)	2(6.1)	16(48.5)	10(30.3)	33
	18-23	4(11.8)	6(17.6)	8(23.5)	16(47.1)	34

	6-23	10(11.4)	13(14.8)	31(35.2)	34(38.6)	88
Total	6-11	6(7.7)	17(21.8)	36(46.2)	19(24.4)	78
	12-17	9(9.6)	26(27.7)	36(38.3)	23(24.5)	94
	18-23	5(5.2)	23(23.7)	35(36.1)	34(35.1)	97
	6-23	20(7.4)	66(24.5)	107(39.8)	76(28.3)	269

The relationship between place of residence and dietary diversity score showed a significant relationship with a Chi-square value of (χ^2 13.467, p=0.004). This means the place of residence influenced the number of food groups eaten, with rural children being fed better than urban children are. Children who received a minimum acceptable diet of ≥4 food groups the previous day and night were at 38.6 per cent/n=34, rural and 23.2 per cent/n=42, urban. More of the urban children were fed between 2 and 3 food groups at 29.3 per cent/n=53 and 42.0 per cent/n=76, respectively.

Table 8: Dietary Diversity Scores for Rural and Urban Areas

Dietary Diversity Score (DDS)	Residence		Chi-square value	P value
	Urban n=181 n(%)	Rural n=88 n(%)		p=0.05
DDS = 1	10(5.5)	10(11.4)		
DDS = 2	53(29.3)	13(14.8)		
DDS = 3	76(42.0)	31(35.2)	13.467	**0.004***
DDS ≥ 4	42(23.2)	34(38.6)		

***Significant value**

The relationship between the severity of stunting and dietary diversity score was determined, and no relationship was observed for both urban and rural children.

Table 9: Severity of Stunting and Dietary Diversity Score

DDS	Urban			Rural		
	Stunted n=139 n (%)	Severe stunting n=76 n (%)	Chi-square results P=0.05	Stunted n=79 n (%)	Severe stunting n=37 n (%)	Chi-square P=0.05
DDS=1	5(4.3)	5(7.6)		5(8.3)	5(17.9)	
DDS=2	35(30.4)	18(27.3)		8(13.3)	5(17.9)	
DDS=3	50(43.7)	26(39.4)	p=0.707	20(33.3)	11(39.3)	0.266
DDS=4	25(21.7)	17(25.8)		27(45.0)	7(25.0)	

The study in children less than two years indicated that there were stunted children in Turbo, Uasin Gishu County. There was a strong significant difference in the child's gender distribution, with the study having more females than males in both urban and rural areas. This agrees with a study carried out in Baringo, Kenya, that found more females than males to be stunted (Walingo & Sewe, 2015). Although an analysis of demographic survey data indicated Kenya, among other countries, had a stunting prevalence in males than

females (Jonah et al., 2018). Most of the stunted children were between eighteen to twenty-three months and least seen in children between zero to six months, with a large difference in their distribution between urban and rural, which concurs with the survey results (Survey & Indicators, 2014). Stunting in these children can be attributed to the cumulative effect of lack of nutrients and lack of correct interventions when children present with wasting earlier. These results also agree with Ekpo et al. (2008) study that found that rates of stunting were found to be highest in children twelve to twenty-three months. A similar observation was made by Herrador et al. (2014), who reported that the probability of being stunted in children increased with age, with more wasting seen at 6-11 months and stunting as children progressed in age.

Stunting was observed in some children less than 6 months. This can be attributed to the poor feeding of children within this age group since exclusive breastfeeding rates were low in this group. This observation agrees with the findings of a longitudinal study that observed that growth faltering in length in some children in developing countries occurred in the first few months after birth as a result of poor feeding (Prendergast et al., 2017). This can could be due to poor breastfeeding techniques that include wrong positioning and attachment of the baby to the mother's breast. When breastfeeding is done correctly, a child gets enough breast milk which has been found to supply all required nutrients with changing composition from colostrum, transitional and mature milk that occurs within the first weeks after birth, meeting the different physiological needs as the child grows, (Sundekilde et al., 2016). Other studies also show exclusive breastfeeding benefits a child by increasing the colonisation of a child's gut with beneficial microorganisms, which is less seen in mixed-fed children. This ensures the maintenance of the guts' structural integrity, control of a child's immune reaction and protection against harmful microbes (Martin et al., 2016; Walker & Walker, 2013). Since mixed feeding was practised for children below six months in this study, it implies that they are not receiving the required nutrition for growth in length and the other benefits of exclusive breastfeeding.

Although exclusive breastfeeding contributes to an increase in length in children 0-6 months, it has also been seen to be positively associated with the length for age z scores of children 6-11 months than predominant breastfeeding and mixed feeding (Kamudoni et al.,2014). In addition to this, a child's gastrointestinal system has been found not ready to digest other foods other than breast milk or breast milk substitutes when necessary at this age. Thus, early introduction of food to children less than 6 months, as observed in this study and the use of liquids in addition to breast milk for the predominantly breastfed children interferes with the intake of sufficient breast milk, optimal nutrient digestion and absorption, affecting child growth as indicated by (Martin et al., 2016). Therefore, interventions focused towards the promotion of exclusive breastfeeding are required for children 0-6 months to reduce stunting.

Comparing dietary diversity scores by residence, there was a significant difference between rural and urban scores, with rural children fed better than urban children. This may be attributed to rural families easily accessing some foods from their farms and neighbourhood at a cheaper price in comparison to urban areas that rely mainly on purchasing foods. In addition to this, about a third of children six to twenty-three months had ceased breastfeeding. In a systematic review of studies on complementary feeding, breast milk was found to provide about half of the energy requirements for children 6-11 months and a third of the energy requirements for 12-23 months; therefore, lack of this supply as observed in this study denies a child required nutrients for growth, (Dewey & Brown, 2003). Other studies further observed

that sub-optimal breastfeeding and early cessation of breastfeeding increased morbidity in children, especially diarrhoea and pneumonia, hampering nutrient intake and absorption and leading to stunting in the long run (Sankar et al., 2015). Kasai & Republic (2009) agrees that early stoppage of breastfeeding was established to be among the causes of stunting in food-secure areas. Since the place of this study is classified as food secure, with most households consuming at least six food groups, Security (2016), poor breastfeeding practices could be a contributor to stunting.

In addition to early cessation of breastfeeding, about two-thirds of the children six to twenty-three months did not receive a minimum acceptable diet, yet studies have shown that insufficient supply of nutrients between ages 6-11 months causes repeated wasting occurrences that later result in stunting due to poor or lack of interventions, (Briend et al., 2015). This is further explained by Motbainor et al. (2015), who found out that children above six months who were exclusively breastfed became stunted if they consumed a less diverse diet. A dietary diversity score that was used in this study that recalls food groups taken within 24 hours has been established to be a good measure of nutrient adequacy and affects a child's height and weight (Steyn et al., 2017). Yet the study found most of the children had dietary diversity scores of less than four food groups. This, therefore, shows inadequate nutrient supply in the study group resulting in stunting, has been linked more to the diversity of food than food security, as the latter was seen to contribute more to wasting in children (Motbainor et al., 2015).

Intake of certain foods has been linked to a higher increase in children's height, which includes eggs, fish, chicken liver and milk. This is because these foods supply essential amino acids and provide iron, calcium and zinc (Dewey & Adu-afarwuah, 2008). Zinc has also been found to be an important growth component for height, where children with low height had low plasma zinc concentrations and, in addition, micronutrients such as calcium, magnesium, and iron (Hess, 2017). Results from this study indicated a low intake of animal-source foods, with eggs being the least consumed food. Nevertheless, there was a significant difference in milk consumption between urban and rural children, with rural children consuming more milk than urban. This could be because most rural households produce milk as part of their economic activities, and milk is more available at a low cost in the rural area than in urban. Therefore, most children in this study did not receive enough food that supplies essential nutrients needed for linear growth, and this could be one of the explanations for stunting.

Vitamin A is an important nutrient in boosting immunity and improving sight and cell regeneration. From the study, about two-thirds of the children from both urban and rural areas did not receive vitamin A-rich foods such as yellow-fleshed sweet potatoes, carrots, mangoes and pumpkins, among others. Therefore they miss the potential benefit of vitamin A in the body of reducing morbidity and mortality (Stevens et al., 2015). Although vitamin A is an important nutrient, its effect on the length of children has both positive and no correlation but has shown a proven effect in reducing disease (Kimani-murage et al., 2012). Since frequent illness leads to wasting and recurrent wasting has been observed to result in stunting, then deficiency of Vitamin A may be contributing indirectly to increased rates of stunting in this study group.

5.0 CONCLUSION AND RECOMMENDATIONS

Conclusion: The findings on stunting in children less than two years indicate that exclusive breastfeeding rates were low. Most stunted children received less diverse foods. Since stunting was also observed in

children less than six months, with the study showing sub-optimal breastfeeding, feeding of stunted children 0-23 months was found to be sub-optimal.

Recommendations: This study recommends that health workers, community health volunteers, and caregivers should be educated on child nutrition. Sample menu preparation using locally available foods to help caregivers achieve at least four food groups should be developed at the community level. This will help the county to achieve SDG 2, which targets good nutrition for all. Promotion of exclusive breastfeeding and continued breastfeeding of children to at least 2 years of age at all levels of care. The health ministry, in collaboration with the ministry of agriculture, should promote the growth of a variety of foods in rural areas and promote the use of home-grown foods for complementary feeding. This will ensure food security aspect of ensuring food is available is met in line with the big four agenda of achieving food security and nutrition for all Kenyans.

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