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Caregiver Characteristics Associated With Malnutrition in Children Aged Between 6 and 59 Months in a Pastoral Community in West Pokot County, Kenya

Anthony Kipkoech Koross[1], Gordon Nguka[2] (PhD), Everlyne Morema[3] (PhD)
1 Department of Health, County Government of West Pokot, Kenya
2 Departments of Nutrition and Dietetics, Masinde Muliro University of Science and Technology, Kenya
3 Departments of Community Health Nursing and Extension, School of Nursing, Midwifery and Paramedical Sciences (SONMAPS), Masinde Muliro University of Science and Technology (MMUST), Kakamega, Kenya

Abstract
Introduction:*The Joint Child Malnutrition Estimates inter-agency group estimates that 149.2 million under-fives are stunted, 45.4 million are wasted and 13.6 million are severely underweight. Fatalities following these adversities are mainly witnessed in low and middle income countries. It is therefore imperative to measure the nutritional status and distribution of nutritional disorders in these communities to inform program planning, and intervention. The Northern Frontier regions in Kenya, beyond the pastoralist lifestyle, face diverse perennial food security problems. Surveys in West Pokot County have shown high prevalence of malnutrition. These surveys are programmatic thus have not been made available for wider reference. This study seeks to establish the prevalence of under-five malnutrition in the pastoralist and Northern frontier community of West Pokot, how it is distributed according to types and how it is influenced by the socio-demographic factors.*
Methods: *This was a cross sectional study and multistage cluster sampling was applied. The anthropometric measures of 420 children aged between 6 to 59 months were assessed.*
Results: *About 22% were moderately stunted and 13.6% was severely stunted. Sex differences for stunting were adverse for the boys as compared to the girls across the spectrum of stunting with boys having a twofold risk of stunting than girls (OR:2.1, CI:1.3-3.1, P<0.001). Prevalence of underweight in the was 28.6% with boys being at a higher risk than the girls (OR: 1.9, CI: 1.3-3, P=0.002). Severely underweight population was 12.6% with boys being more at risk than the girls (OR:3.1, CI:6.5-8, P<0.001). Global acute malnutrition (GAM) in the sampled population was 25.2% and boys had a significantly higher risk of GAM than girls (OR:1.5, CI:1-2.3, P=0.046), 13% of the population sampled had moderately acute malnutrition (MAM) with no statistically significant sex difference in proportions. Severe acute malnutrition (SAM) was 12.1% with a more risk of SAM among the boys (OR:2.1, CI:1.1-3.9, P=0.012). Majority (88.6%) of the caregivers were married when they were of legal consenting age even though 15% had their first pregnancy when they were below 18 years. Being a first wife in a polygamous marriage arrangement and caregiver being employed reduced the risk of GAM among their under-five, (OR:0.1; 95% CI: 0.1 - 0.7; P=0.008) and (OR: 0.5; 95% CI: 0.2 – 1; P=0.031), respectively. A majority (61.4%) of the caregivers had formal education ranging from primary to tertiary. Those with no formal education 38.6% of the caregiver population while primary, secondary and tertiary level of education achieved was 29.8%, 19.5%, and 12.1%, respectively. Children under caregivers who had no formal education and primary level of education had an approximate 2-fold risk of GAM, (OR:1.8; 95% CI:1.1-2.8; P=0.007) and (OR:2.1; 95% CI:1.1-3.9; P=0.012), respectively. There was a relatively lower risk of GAM among children of caregivers who had attained tertiary level education as compared to the rest (5.9% versus 24.6% OR:0.2; 95% CI:0.1-0.6; P=0.001)*
Conclusion: *there are several caregiver characteristics which influence the nutritional status of children aged between 6-59 months in this pastoral community*

Keywords: *Malnutrition, Children aged 6 to 59 months, Pastoralist community*

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I. Introduction

Globally estimates of 2021 show that there were 144 million stunted children, 47 million wastedand 14.3 severely wasted. In the Sub-Saharan region, the prevalence of malnutrition in childrenaged between 6 and 59 months went up from 181 million in 2010 to 222 million in 2016. Despitethe incidences of stunting among children having decreased between 2000 and 2017, the total number of affected children shot up from 50.6 to 58.7 million due to population growth. The prevalence of wasting in 2017 was 13.8 million children, of whom 4

million were severely wasted (WHO et al., 2020). Malnutrition in Kenya has remained a major public health concern due to its adverse effects on the health of children. The national outlook of malnutrition as per KDHS of 2015 shows that the prevalence of stunting of children aged between 6 months and 59 months was 6% and those who were severely stunted 8%. Children between 18 and 23 months were at 36%, with stunting in rural areas having prevalence of 29%. Incidence of underweight and wasting at national level was 11%and 4% respectively (KNBS, 2015).KDHS of 2014, West Pokot has recorded a prevalence of 46% of stunted children, being the highest in the country. Wasting had a prevalence of 11% while underweight children aged between6 and 59 months had an incidence of 25% in the county (KNBS, 2015).The Kenya's Standardized Monitoring and Assessment in Relief and Transition (SMART) survey shows that the prevalence of malnutrition was high in West Pokot County. The survey reported stunting rates of 42.8%,wasting 11.9% and underweight 30.7%. The study reports overall malnutrition as 11.9% (MOH etal., 2022).. Otira. and. Margaret (2019) and Laksono. et. al,(2019).reported that. children. whose. mothers. were. married. had. reduced. chances. of. developing. malnutrition.Amadu. et. al.,(2021). reported. that. children. from. unmarried. mothers. were. likely. to. develop. stunting. unlike. children. from. mothers. who. were. married.Teenage. mothers. had. children. who. had. a. higher. risk. of. developing. malnutrition,unlike. the. children. who. had. adult. mothers (Wemakor. et. al., 2018). Maternal. level. of. education. predicted. stunting.asilliterate. mothers. or. those. who. had. less. education. were. more. likely. to. have. children. who. were. malnourished(Ma'alin. *et. al.*(2016). Umme. *et. al.*,. (2017). found. that. among. other. factors,illiteracy. is. a. top. three. leading. cause. of. malnutrition. while. Arendt. (2021). reported. that. there. was. an. association. between. lower. maternal. level. of. education. and. poor. feeding. practices. which. eventually. causes. malnourishment. in. children. and. that. mothers. with. greater. education. were. more. likely. to. make. sure. that. their. children. receive. good. nutrition. and. treatment. The current study sought to assess the caregiver characteristics which are determinants of children in children aged between 6 and 59 months in the pastoralist community of West Pokot County in Kenya

II. Materials and Methods

This was a descriptive cross-sectional study based in Pokot North Sub County in Kenya. This is a Western frontier Sub County that borders Uganda with a largely pastoralist population (KNBS, 2019). the research study targeted households with children aged between 6-59 months regardlessof their nutritional status. All the children in a chosen house hold were assessed for their nutritionalstatus. The respondents were the mothers or immediate caregivers of the said children

Study Design: Descriptive cross-sectional study design
Study Location: Pokot North Sub-county of West Pokot County, Kenya
Study Duration: March 2022 to October 2022
Sample Size:420
Sample Size calculation: Sample was estimated based on Fischer's formula $N=(Z^2pq)/d2$ where *Z* is the critical value associated with level of significance usually 1.96 corresponding to 95%, *P* is proportion of target population estimated to have a particular characteristic, i.e. 46% (0.46), *d* is the margin of error i.e., 5%=0.05 and q=1-p. The population census of 2019 with a growth factor of 0.03 which estimates the number of children aged between 6-59 months in Pokot North Sub County to be 22,820 (KNBS, 2019). The KDHS 2015 estimated the prevalence of malnutrition among children aged between 5 and 59 months in the West Pokot County stood at 46% (KNBS, 2015).

Subjects and selection method: Multistage cluster sampling was used in this research. This is because the study involves a wideand spanning geographical area. Clusters were formed based on the 6 existing administrative units called wards within the sub-county. Each ward has several other smaller units called Community Health Units as per the County's CHS Act (2020). The total number of the Community Health Units (CU) in the Sub-County is 70 (West Pokot Community Health Services Act, 2020). In each cluster, the sample was estimated proportionately to the number of households per ward. The numerator was the total number of households in a given ward. The result is multiplied by 420 (total sample) to get the proportionate sampled per ward. The sample was proportionately distributed to the wards as follows; Saum 90, Kodich 72, Kapchok 41, Kasei 41, Kiwawa 62, and Alale 98. To obtain the number of children sampled per CU, the proportionate sample per ward was further divided by the number of CUs in that ward (Saum 7, Kodich 11, Kapchok 8, Kasei 12, Kiwawa 15, and Alale 9).Households were then conveniently sampled as guided by the Community Health Volunteers (CHV) based on their knowledge of the houses that have under-five children.

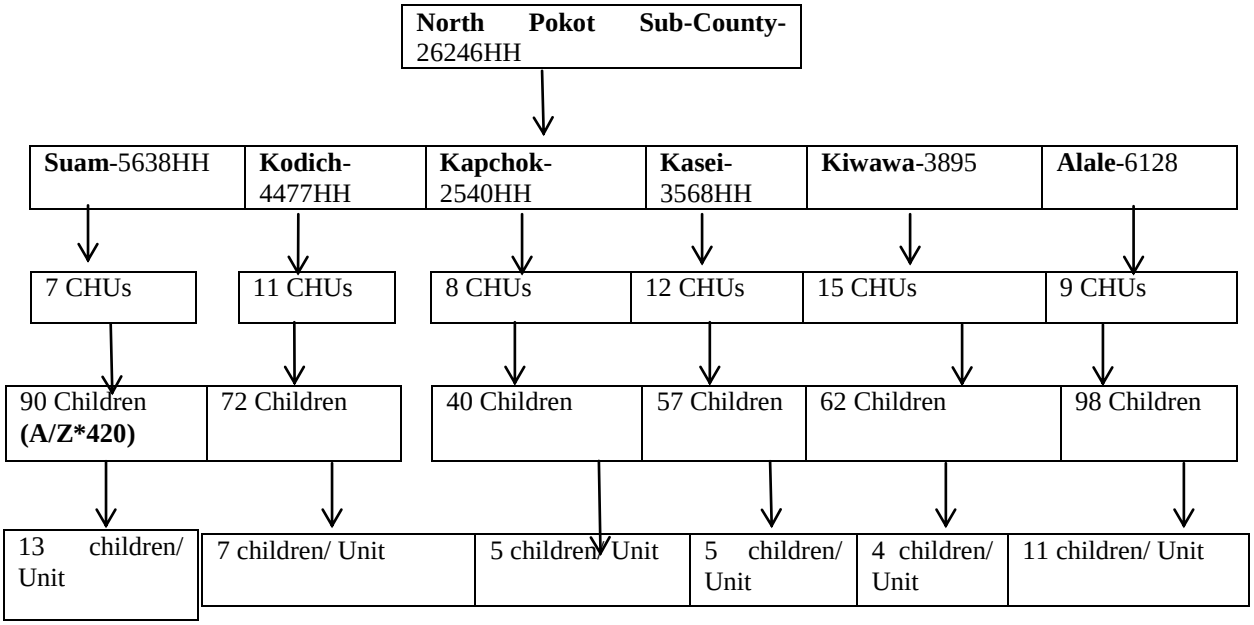

Figure 1: *Schematic presentation multistage cluster sampling procedure*

Inclusion criteria: All children within households who were aged between 6-59 months were eligible to participate through the anthropometric measures. Their mothers or the immediate caregivers also consented to be study respondents

Exclusion criteria: Mothers or caregivers with children who have a notable cause of malnutrition for example chronic illnesses like renal failure, hepatic disease or congenital heart diseases were excluded from the study. Mothers or caregivers whose children are aged between 6-59 months who reported to have been admitted in the hospital within one week preceding the study were excluded because illness affect feeding habits of the child hence exposing them to malnutrition. Furthermore, those whose mothers or caregivers who did not consented to the study were excluded

Procedure methodology:A structured KoBo Collect based questionnaire with both open and close ended questions was usedto collect the data from the respondents. The questionnaire had four parts: Demographic data and anthropometric measures. The questionnaire was pre-tested for its validity and reliability in Central Pokot sub-county. The research assistants were chosen from within the community in the sub-county. There were a total of 12 research assistants, two from every ward. They were assisted a CHV from each CU who guided them to the households with under-five children. They were trained for 2 days on data collection methods using the Kobo Data collect kit The data collection of anthropometric measures was done as stipulated by WHO (2019) for children who are between 6 and 24 months, the weight of the child was measured by weighing the mother and the child together, and then the mother was weighed separately and the differences in weight in kilograms (kgs) was done to determine the weight of the child. Children between 25 and59 months who were able to stand upright were weighed alone. Theheight/length of the child was also determined using a height board. The height for children over 2 years was measured in centimeters while upright and without shoes while for children under 2 years their lengths was measured in centimeters when the child was in horizontal position on the height board. The MUAC was measured in centimeters using a MUAC tape on the left or less dominant hand, at themidpointbetween the tip of the elbow and the scapula while the arm is at a right angle (WHO, 2019).The equipment was sourced from the Nutrition Department of the County. These included the weighing scale, the height board and the MUAC tape. The weighing scale, A Seca®, was portable with precision to ±100g. The wooden height board had an accuracy of 2mm.The response rate was 100 based on the validations and skip logics inputted in the KoBo collect form used.

Statistical analysis: Data collected was analyzed using SPSS software Version 20. WHO Anthro-Software Version3.22 was used to analyze anthropometric data to obtain the Z-scores (WHO, 2020). Chi-Square test was used for statistical inference with P value threshold of ≤0.05 for significant difference in proportions and OR and 95 CI used to estimate the magnitude of the deference.

III. Results

Socio-demographic data: the socio-demographic data are shown on the table 1 below. The mean age of the respondents was 29.9±16.0 months with over 60% being below the 35 weeks. Age was regrouped into 5 age groups of approximately 12 months each. The age group with the least representation in the sample is 6 to 11 months (15%) and 12 to 23 months had the highest representation (25.7%). The binary groupings of birth position, number of siblings, age of immediate younger and immediate older sibling was by median while age difference between immediate older and immediate younger siblings was based on recommended birth spacing for optimal infant and maternal health. Most of the sampled under-fives had other siblings with 50% having older siblings, 38% having both older and younger siblings and 3.3% having younger siblings. The mean number of other siblings is 4±2. Most of the under-fives (82.4%) had one younger sibling the rest had more than 1 younger sibling.

Table 1: Socio-demographic characteristics of the under-fives

Socio-demographic aspect		Frequency	Percent
Age group	5-11 months	64	15.2
	12-23 months	108	25.7
	24-35 months	89	21.2
	36-47 months	74	17.6
	48-59 months	85	20.2
Child sex	Male	214	51.0
	Female	206	49.0
Child birth position	Up to 3rd	202	48.1
	More than 3rd	218	51.9
Child has other siblings	Yes	372	88.6
	No	48	11.4
Child has older siblings	Yes	209	49.8
	No	211	50.2
Child has both older and younger siblings	Yes	162	38.6
	No	258	61.4
Child has only younger sibling	Yes	14	3.3
	No	406	96.7
Number of older siblings	More than 5	270	64.3
	Up to 5	150	35.7
Number younger siblings	Up to 1	346	82.4
	More than 1	74	17.6
Age immediate older sibling	More than 5 years	229	54.5
	Up to 5 years	130	31.0
Age difference older sibling	More than 24 months	267	63.6
	Less than 24 months	92	21.9
Age immediate younger sibling	Up to 30 months	134	31.9
	More than 30 months	28	6.7
Age difference immediate younger sibling	24 months and above	93	22.1
	Less than 24 months	69	16.4

Prevalence of malnutrition: Table 2 below shows the prevalence of malnutrition as distributed across under five age groups. Global acute malnutrition (GAM) was distributes across the five under-five age groups is as shown in table 9. There was a 1.9 risk of GAM among those aged between 12 to 23 months (35.2%; OR:1.9; 95% CI: 1.2-3.1; P=0.005) as compared to the other age groups (21.8%). The age group of 36-47 months had a lesser risk of GAM(9.5%; OR:0.3; 95% CI: 0.1-0.6; P<0.001) in comparison to the rest of the groups. The other groups did not have statistically difference in proportions of underweight.

Table 2: Distribution of GAM by age

Age Groups		Global Acute Malnutrition		OR	95% CI	P Value
		Yes	No			
6 - 11 Months	Yes	19(29.7)	45(70.3)	1.3	.7-2.4	0.229
	No	87(24.4)	269(75.6)			
12 - 23 Months	Yes	38(35.2)	70(64.8)	**1.9**	**1.2-3.1**	**0.005**
	No	68(21.8)	244(78.2)			
24 - 35 Months	Yes	19(21.3)	70(78.7)	0.8	.4-1.3	0.209
	No	87(26.3)	244(73.7)			
36 - 47 Months	Yes	7(9.5)	67(90.5)	**0.3**	**.1-.6**	**<0.001**
	No	99(28.6)	247(71.4)			
48 - 59 Months	Yes	23(27.1)	62(72.9)	1.1	.7-1.9	0.380
	No	83(24.8)	252(75.2)			

Caregiver characteristics associated with child malnutrition: table 3 shows the caregiver characteristics which are associated with child malnutrition. Most of the caregivers were females (98%) with 53% being above 30 years and 93% married. Majority (88.6%) of the caregivers were married when they were of legal consenting age even though 15% had their first pregnancy when they were below 18 years. Being a first wife in a polygamous marriage arrangement and caregiver being employed reduced the risk of GAM among their under-five, (OR:0.1; 95% CI: 0.1 - 0.7; P=0.008) and (OR: 0.5; 95% CI: 0.2 – 1; P=0.031), respectively.

Table 3: Caregiver characteristics and Global Acute Malnutrition

Characteristic		Global Acute Malnutrition		OR	95% CI	P Value
		Yes	No			
Caregiver sex	Male	2(28.6)	5(71.4)	1.2	0.2 - 6.2	0.562
	Female	104(25.2)	309(74.8)			
Caregiver age	≤ 30 Years	56(28.4)	141(71.6)	1.4	0.9 - 2.1	0.097
	> 30 Years	50(22.4)	173(77.6)			
Marital status	Married	99(25.4)	291(74.6)	1.1	0.5 - 2.7	0.500
	Not married	7(23.3)	23(76.7)			
Wife position in polygamy	First	1(4)	24(96)	**0.1**	**0.1 - 0.7**	**0.008**
	Not first	10(32.3)	21(67.7)			
Caregiver religion	Christian	98(24.8)	297(75.2)	0.7	0.3 - 1.7	0.278
	Muslim	8(32)	17(68)			
Caregiver age at marriage	≥ 18 Years	96(25.8)	276(74.2)	1.3	0.6 - 2.8	0.290
	< 18 Years	10(20.8)	38(79.2)			
Caregiver age at first child	≥ 18 Years	93(26.1)	264(73.9)	1.4	0.7 - 2.6	0.228
	< 18 Years	13(20.6)	50(79.4)			
Employed	Yes	9(15)	51(85)	**0.5**	**0.2 - 1**	**0.031**
	No	97(26.9)	263(73.1)			
Farmer	Yes	4(20)	16(80)	0.7	0.2 - 2.2	0.401
	No	102(25.5)	298(74.5)			
Housewife	Yes	33(28.7)	82(71.3)	1.3	0.8 - 2.1	0.190
	No	73(23.9)	232(76.1)			
Not employed	Yes	46(26.7)	126(73.3)	1.1	0.7 - 1.8	0.316
	No	60(24.2)	188(75.8)			
Self-employed	Yes	14(25.9)	40(74.1)	1	0.5 - 2	0.509
	No	92(25.1)	274(74.9)			
Caregiver average monthly income	> KE 5000	25(21.2)	93(78.8)	0.7	0.4 - 1.2	0.142
	≤ KE 5000	81(26.8)	221(73.2)			
Number of children caregiver has	≤ 5	80(28.3)	203(71.7)	**1.7**	**1 - 2.8**	**0.025**
	> 5	26(19)	111(81)			
Caregiver lost child	Yes	9(33.3)	18(66.7)	1.5	0.7 - 3.5	0.216
	No	97(24.7)	296(75.3)			

IV. Discussion

Prevalence of malnutrition: The assessment of the nutritional status of a community is done to obtain information about the distribution of nutritional disorders within a community or a specified population group. This can be used to identify high-risk groups and to identify the role of different factors in nutritional status.
Assessment of the nutritional status aids in establishing the prevalence of nutritional disorders,
Planning corrective measures, and evaluating the effectiveness of the implemented strategies simultaneously (Shrivastava et al., 2014). The current study has elucidated distribution of nutritional status of a pastoralist community using anthropometric measures taken within the community.
More girls were classified as moderately or severely wasted compared to boys, while more boys classified as just wasted than girls (Tadesse et al., 2017). In a study in India, it was established that MUAC among boys was higher than girls tough there were no significant sex differences observed over the ages. Equally the study reported high moderate and severe MUAC based MAM and SAM among boys than girls (Biswas et al., 2010). These findings are comparable to the current study. There was no significant sex difference in MUAC status girls being slightly more adequately nourished. In an Ethiopian pastoralist community, the prevalence of stunting was 39.5% with the odds of stunting were increasing with age (Gebreayohanes & Dessie, 2022). The

Ethiopian study corroboratesprevalence of stunting in the current study, 35.5%. Some of the reasons for the high stunting rates in these communities are poor weaning practices, lack of dietary diversity. The Ethiopian study also established age difference in stunting with progressive stunting as age among the under-fives advanced. The current study did not register consistently pervasive trend of stunting based on age. A systematic review and meta-analysis by Thurstans et al., (2020)established that boys had higher odds of being stunted than girls.These findings are corroborated by an earlier studies that established that boys are more stunted than girls in sub-Saharan Africa (Bork & Diallo, 2017; Wamani et al., 2007). A study in Karamoja sub region in Uganda which has pastoral, and agro-pastoral ecological zones and neighbors the study area estimated higher risks of stunting among male under-fives compared to girls of the same age(Okidiet al., 2022). The current study revealed a high risk of stunting for the boys for the whole spectrum stunting. None of these earlier studies and others give concrete reasons for these differences except for conjectural social reasons that have not been researched like preferential feeding, early weaning of boys or girls staying closer to the homes where they have more access to food than boys. Studies in similar regions as the current study region have ascertained prevalence of underweight to be between 20% and 45%. With the higher rating being in an urban slum area with attendant urban water and sanitation and poverty problems. The prevalence of underweight estimated by the current study is synonymous with these earlier findings. Equally, males in the earlier mentioned studies were seen to be more at risk of underweight as is the case with the current study (Fenta et al., 2020; Gebre et al., 2019; Murarkar et al., 2020; Nigatu et al., 2018; Okidi et al., 2022). Whereas Fenta et al., (2020) study established an association between child's age and underweight, the current study did not elicit any age related trends in underweight. The studies reviewed had varied levels of GAM ranging from 16.2% in an Ethiopian study to 18%in a Nigeria to 28.2% in Ghana and 33% in Uganda (Akombi et al., 2017; Ali et al., 2017; Gebreet al., 2019; Okidi et al., 2022). These findings of prevalence of GAM were similar to those of the current study. Only the Nigerian study by Ali et al., (2017) disaggregated malnutrition into GAM and SAM while the other studies reported GAM only. The Nigerian study reported slightly lower SAM than the current study. The study went ahead to mention geopolitical aspects as key determinants of malnutrition. This could be explanatory of the difference between the Nigerian findings of SAM with the current study. Three of the above quoted studies reported more risk formal under-fives of having global acute malnutrition which is in unison with the current study findings of a 2-fold risk among the male under-fives compared to their female counterparts. Only Okidi et al., 2022 and Gebre et al., (2019) demonstrated significant risk based on age different on the under-fives and GAM (Gebre et al., 2019; Okidi et al., 2022). The current study showed reduced age related risk for GAM within the age group of 36-47 months.

Influence of Caregiver Characteristics on Child Malnutrition

Age of the Caregiver: The age of the caregiver and the age of having the first child were known to contribute to child malnutrition in this study. Caregivers who had 30 years and below had their children having higher chances of developing malnutrition (28.4%) compared to those who were older than 30 years (22.4%). A study done in Ghana to determine the maternal age and child malnutrition found that there was increased underweight in children of teenage mothers. The study further reported that the risk of under nutrition in children of teenage mothers was at least three times higher than the children of adult mothers (Wemakor et al, 2018). The results are also in line with a study in Bangladesh which found children of adolescent mothers had malnourished children compared to the children of adult mothers (Nguyen et al, 2017). The reason behind these scenarios is that the young mothers, teenage mothers included, may be poorly empowered to provide adequate nutrients to their children owing to their ages. Additionally, adolescent women might not be psychologically prepared to nurse their child after delivery. Premature pregnancies associated with teen mothers and dropping out of school can cause personal stress for the teenage mothers. These issues could hinder their children's development and growth, leading to malnutrition (Santosa et al, 2022).

Marital Status of the Caregiver: The current study showed that caregiver marital status was a predictor of child malnutrition. The study revealed that children of married caregivers had a higher chances of getting malnourished (25.4%) compared to the children of the unmarried counterparts (23.3%). Moreover, children polygamous marriage had higher prevalence of malnutrition (32.3%). The results contradicts those of Laksono et al (2019) who reported that children of married mothers were protected from stunting and that of Mwamba et al, (2020) which found that single motherhood was associated with child stunting. Another study done in several sub-Saharan countries found that a child born in a polygynious family structure was associated with nutritional deficiencies on the part of the child (Anjorin et al, 2020)

Employment and Income of the Caregiver: The employment status and income of the caretaker can also be attributed to the nutritional status of the child in a given household. The research found that caregivers who were employed somewhere had low chances of their children developing malnutrition (15%) compared to 27% of malnourished children whose caregivers were not employed. Further the study found that caregivers who earned more than Kshs. 5000 had 21% of their children being malnourished unlike 27% of the children from caregivers

who earned Kshs. 5000 and below. The results are consistent with those of Nankinga et al (2019) which found that children of mothers who were in a formal employment had better nutritional outcome compared to children whose mothers were not in formal employment. This may be because the caretakers spend little time with the children, which in turn reduces the attention in terms of feeding and nutrition monitoring leading to malnutrition. However, the results contradict those of Katema et al (2022) and Eshete et al (2017) who found that children of employed mothers had a higher chances of being malnourished at 40% compared to of unemployed mothers who had 31% chances of being malnourished. The study found that children of mothers who earn more money have fewer exposures to malnutrition, similar to a study by Tette et al (2016) which found that mothers who earn less than $250 had their children exposed than those who earned more than $250. Chronic malnutrition in Ethiopia was also linked to low family income (Demissie and Worku, 2013). Families with sufficient monthly income have access to adequate amounts of nourishing foods for the children, as well as to facilities for health care and education.

Parental Education: Education has been reported to influence child nutritional status. In this research, caregiver and household head level of education has been used the variables. Further, since most mothers were the caretakers the mothers and the household heads were mainly the fathers in the household, the study assumed that the paternal education level is equivalent to the household head's level of education and the maternal level of education was taken to be the caregiver level of education. Thus in the study, it was found that caregivers who had no formal education had children who were at higher risk of developing malnutrition at 32.1% prevalence compared to the children of opposite mothers (20.9%). The children of mothers who had tertiary level of education had lowest prevalence of malnutrition (5.9%). Hossain and Khan (2018) found that mothers who had any level of education had children who were less predisposed to malnutrition. It further found that the prevalence of malnutrition in children reduced as the maternal level of education increased. Another study found that the association between childhood under nutrition and maternal education was quite significant (Hossain and Khan, 2018). The same results were also posted by Akhter and Haque, (2018)in their study in Bangladesh that children whose mothers lack formal schooling were more likely to be underweight. As a mother's education level rises, the prevalence of underweight declines.

Paternal educational level was also reported to have had an impact on child's nutritional status. A study found that higher paternal education is associated with lower risk of child malnutrition (Vollmer et al, 2017). A contrary finding in a study reported that a lower level of children's severe acute malnutrition was substantially correlated with a higher level of father education (Musa, 2017). The variance may likely be because the later study was done in hospital settings while the former were conducted in the community.

Low parental literacy level has been linked to malnutrition in young children under the age of five and can lead to parents having a poor awareness of their children's health-related issues. Uneducated parents are less likely to convey their child's symptoms to the health worker in a way that will ensure that their child receives the best care available. The health information presented to parents in booklet form will be difficult for them to read and comprehend (Khattak and Iqbal, 2017). Education increases knowledge on nutritional matters

V. Conclusion

The study revealed that several caregiver characteristics influence a malnutrition status in children aged between 6 and 59 months in pastoral community in West Pokot county of Kenya

References

[1]. Akhter, H., &Haque, M. E. (2018).Education of Household Members and Nutritional Status of Children in Bangladesh.Dhaka University Journal of Science, 66(1), 1-7.

[2]. Akombi, B. J., Agho, K. E., Merom, D., Hall, J. J., Renzaho, A. M., Agho, K. E., Au, (K E A, Merom, D. E., & Au, D M. (2017). Multilevel Analysis of Factors Associated with Wasting and Underweight among Children Under-Five Years in Nigeria. Nutrients 2017, Vol. 9, Page 44, 9(1), 44. https://doi.org/10.3390/NU9010044

[3]. Ali, Z., Saaka, M., Adams, A. G., Kamwininaang, S. K., &Abizari, A. R. (2017). The effect of maternal and child factors on stunting, wasting and underweight among preschool children in Northern Ghana.BMC Nutrition, 3(1), 1–13. https://doi.org/10.1186/S40795-017-0154-2/Tables/11

[4]. Amadu, I.; Seidu, A.A.; Duku, E.; Okyere, J.; Hagan, J.E., Jr.; Hormenu, T. and Ahinkorah,B.O (2021) The Joint Effect of Maternal Marital Status and Type of Household Cooking Fuel on Child NutritionalStatus in Sub-Saharan Africa: Analysis of Cross-Sectional Surveys on Children from 31 Nutrients Journal

[5]. Anjorin, S. S., Uthman, O. A., Ameyaw, E. K., Ahinkorah, B. O., Chattu, V. K., Bishwajit, &Yaya, S. (2020). Undernutrition, polygynous context and family structure: a multilevel analysis of cross-sectional surveys of 350 000 mother– child pairs from 32 countries. BMJ global health, 5(10), e002637.

[6]. Arendt, J. N., Christensen, M. L., &Hjorth-Trolle, A. (2021). Maternal education and child health: Causal evidence from Denmark. Journal of Health Economics, 80, 102552.

[7]. Biswas, S., Bose, K., Mukhopadhyay, ; Ashish, & Bhadra, M. (2010). Mid-upper Arm Circumference Based Undernutrition among Bengalee Children of Chapra, West Bengal, India. In Iranian Journal of Pediatrics (Vol. 20, Issue 1).

[8]. Bork, K. A., & Diallo, A. (2017). Boys Are More Stunted than Girls from Early Infancy to 3 Years of Age in Rural Senegal. The Journal of Nutrition, 147(5), 940–947. https://doi.org/10.3945/JN.116.243246

[9]. Demissie, S., &Worku, A. (2013). Magnitude and factors associated with malnutrition in children 6-59 months of age in pastoral community of Dollo Ado district, Somali region, Ethiopia. Sci J Public Health, 1(4), 175-83.

[10]. Eshete, H., Abebe, Y., Loha, E., Gebru, T., &Tesheme, T. (2017). Nutritional status and effect of maternal employment among children aged 6–59 months in WolaytaSodo Town, Southern Ethiopia: a cross-sectional study. Ethiopian journal of health sciences, 27(2), 155-162.

[11]. Fenta, H. M., Tesfaw, L. M., &Derebe, M. A. (2020). Trends and Determinants of Underweight among Under-Five Children in Ethiopia: Data from EDHS. International Journal of Pediatrics, 2020.https://doi.org/10.1155/2020/3291

[12]. Gebre Abel, Reddy P. Surender, MulugetavAfework, SedikYayo, and Kahssay Molla (2019) Prevalence of Malnutrition and Associated Factors among Under-Five Children in Pastoral Communities of Afar Regional State, Northeast Ethiopia: A Community-Based Cross-Sectional Study; Journal of Nutrition and Metabolism

[13]. Gebre, A., Surender Reddy, P., Mulugeta, A., Sedik, Y., &Kahssay, M. (2019). Prevalence of Malnutrition and Associated Factors among Under-Five Children in Pastoral Communities of Afar Regional State, Northeast Ethiopia: A Community-Based Cross-Sectional Study. Journal of Nutrition and Metabolism, 2019.

[14]. Gebreayohanes, M., & Dessie, A. (2022). Prevalence of stunting and its associated factors among children 6–59 months of age in pastoralist community, Northeast Ethiopia: A community-based cross-sectional study. PLoS ONE, 17(2). https://doi.org/10.1371/JOURNAL.PONE.0256722

[15]. Hossain, M. B., & Khan, M. H. R. (2018). Role of parental education in reduction of prevalence of childhood undernutrition in Bangladesh. Public health nutrition, 21(10), 1845-1854.

[16]. Kenya Demographic and Health Survey (2014)

[17]. Ketema, B., Bosha, T., &Feleke, F. W. (2022). Effect of maternal employment on child nutritional status in Bale Robe Town, Ethiopia: a comparative cross-sectional analysis. Journal of Nutritional Science, 11.

[18]. Khattak, U. K., Iqbal, S. P., &Ghazanfar, H. (2017). The role of parents' literacy in malnutrition of children under the age of five years in a semi-urban community of Pakistan: a case-control study. Cureus, 9(6).

[19]. KNBS.(2015). Kenya Demographic and Health Survey 2014.

[20]. KNBS. (2015). Kenya Demographic and Health Survey 2014.

[21]. KNBS.(2019). 2019 Kenya Population and Housing Census.

[22]. KNBS. (2019). 2019 Kenya Population and Housing Census. https://www.knbs.or.ke/?wpdmpro=2019-kenya-population-and-housing-census-volume-iii-distribution-of-population-by-age-sex-and-administrative-units

[23]. Laksono, A. D., Ibad, M., Mursita, A., Kusrini, I., &Wulandari, R. D. (2019).Characteristics of mother as predictors of stunting in toddler.Pakistan J.Nutr, 18(12), 1101-1106.

[24]. Ma'alinAbdibari, BirhanuDereje, Melaku Samuel, Tolossa Daniel Mohammed Yusuf &GebremichealKiros (2016) Magnitude and Factors Associated with Malnutrition in Children 6–59 Months of Age in ShinilleWoreda, Ethiopian Somali Regional State: A Cross -Sectional Study; BMC Nutrition

[25]. MoH (2022) Integrated Smart Survey West Pokot County, Kenya Report Compiled by West Pokot Multi-Stakeholders Committee with Technical guidance from UNICEF, Action Against Hunger, IRC, AMREF Health Africa

[26]. MOH, UNICEF, & AAH. (2022). West Pokot County Integrated SMART Survey Report.

[27]. Murarkar, S., Gothankar, J., Doke, P., Pore, P., Lalwani, S., Dhumale, G., Quraishi, S., Patil, R.,Waghachavare, V., Dhobale, R., Rasote, K., Palkar, S., &Malshe, N. (2020). Prevalence and determinants of undernutrition among under-five children residing in urban slums and rural area, Maharashtra, India: a community-based cross-sectional study. BMC Public Health, 20(1), 1–9. https://doi.org/10.1186/S12889-020-09642-0/TABLES/4

[28]. Musa, M. K., Muhammad, F., Lawal, K. M., Chowdhury, A. B. M. A., &Hossain, A.(2017). Risk factors of severe acute malnutrition among under-five children: a hospital-based study in Bangladesh. J Med Sci Health, 3, 13-21

[29]. Mwamba, M. S., Gerrior, S., & Taylor, R. (2022). Relationship Between Single Motherhood Status and Stunting Among Children Under 5 in Kgatleng, Botswana. Journal of Social, Behavioral, and Health Sciences, 16(1), 40-47.

[30]. Nankinga, O., Kwagala, B., &Walakira, E. J. (2019).Maternal employment and child nutritional status in Uganda.PloS one, 14(12), e0226720

[31]. Nguyen, P.H., Sanghvi, T., Tran, L.M., Afsana, K., Mahmud, Z., Aktar, B., Haque, R.andMenon, P., (2017). The nutrition and health risks faced by pregnant adolescents: insights from a cross-sectional study in Bangladesh. PloS one, 12(6), p.e0178878.

[32]. Nigatu, G., AssefaWoreta, S., Akalu, T. Y., &Yenit, M. K. (2018). Prevalence and associated factors of underweight among children 6-59 months of age in Takusa district, Northwest Ethiopia. International Journal for Equity in Health, 17(1), 1–8.

[33]. Okidi, L., Ongeng, D., Muliro, P. S., &Matofari, J. W. (2022). Disparity in prevalence and predictors of undernutrition in children under five among agricultural, pastoral, and agropastoral ecological zones of Karamoja sub-region, Uganda: a cross sectional study. BMC Pediatrics, 22(1), 1–16. https://doi.org/10.1186/S12887-022-03363-6/TABLES/6

[34]. Shrivastava, S. R. B. L., Shrivastava, P. S., &Ramasamy, J. (2014).Assessment of nutritional status in the community and clinical settings.Journal of Medical Sciences (Taiwan), 34(5), 211–213. https://doi.org/10.4103/1011-4564.143648

[35]. Tadesse, A. W., Tadesse, E., Berhane, Y., &Ekström, E. C. (2017). Comparison of mid-upper arm circumference and weight-for-height to diagnose severe acute malnutrition: A study in Southern Ethiopia. Nutrients, 9(3).https://doi.org/10.3390/nu9030267

[36]. Tette, E., Sifah, E. K., Nartey, E. T., Nuro-Ameyaw, P., Tete-Donkor, P., &Biritwum, R. B. (2016). Maternal profiles and social determinants of malnutrition and the MDGs: What have we learnt?.BMC public health, 16(1), 1-11.

[37]. Umme K Khattak,Saima P. Iqbal&HaiderGhazanfar (2017). The Role of Parents' Literacy in Malnutrition of Children Under the Age of Five Years in a Semi-Urban Community of Pakistan: A Case-Control Study Journal of PMC

[38]. Vollmer, S., Bommer, C., Krishna, A., Harttgen, K., & Subramanian, S. V. (2017). The association of parental education with childhood undernutrition in low- and middle-income countries: comparing the role of paternal and maternal education. International journal of epidemiology, 46(1), 312-323

[39]. Wamani, H., Åstrøm, A. N., Peterson, S., Tumwine, J. K., & Tylleskär, T. (2007). Boys are more stunted than girls in sub-Saharan Africa: a meta-analysis of 16 demographic and health surveys. BMC Pediatrics, 7.https://doi.org/10.1186/1471-2431-7-17

[40]. Wemakor, A., Garti, H., Azongo, T., Garti, H., &Atosona, A. (2018). Young maternal age is a risk factor for child undernutrition in Tamale Metropolis, Ghana. BMC research notes, 11(1), 1-5.

[41]. West Pokot Community Health Services Act 2020, (2020).

[42]. WHO(2019).Malnutrition(online)https://www.who.int/news-room/factsheets/detail/malnutrition Retrieved on 21/02/2022

[43]. WHO, UNICEF and WB (2020) Levels and trends in child malnutrition: Key Findings of Joint Child Malnutrition Estimates.

[44]. WHO, UNICEF, & World Bank. (2020). Levels and trends in child malnutrition: Key findings of the 2020 edition | UNICEF. https://www.unicef.org/reports/joint-child-malnutritionestimates-levels-and-trends-child-malnutrition-2020

[45]. WHO.(2019). Recommendations for data collection, analysis and reporting on anthropometric indicators in children under 5 years old.https://apps.who.int/iris/handle/10665/324791

[46]. WHO.(2020). WHO Anthro Survey Analyser and other tools (1.0.3).https://www.who.int/toolkits/child-growth-standards/software