

## CHILDHOOD UNDER-NUTRITION AND MATERNAL DETERMINANTS: FINDINGS FROM MATISI PERI-URBAN, TRANS-NZOIA COUNTY

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**Abstract:** *Background: Under-nutrition is a serious public health problem facing the under -fives worldwide and especially in developing countries and the causes are multi factorial. Almost 90% of malnourished children are from developing countries. About 60% of all deaths, occurring among children aged less than five years in developing countries, could be attributed to under-nutrition. Mothers' level of education may influence the food choice, child care and feeding practices and the income levels which may impact on the child's food intake and lead either to good or poor nutritional status.*

*Aims: To assess the prevalence of under-nutrition in the under-five children and the associated maternal characteristics.*

*Methods: A cross-sectional survey design was used. Mother – preschooler pairs (n= 208) were recruited. The population was peri- urban based and in a slum setting. Children's anthropometric measurements (body weight, height, and MUAC) were taken. Interviewer administered questionnaire were used. Data was analyzed using SPSS version 17.0. Chi square test of association and logistic regression was used to examine the effects of maternal factors on the prevalence of under-nutrition. Epi- Info version 3.4.3 analyzed anthropometric data to get z scores (SD) indices of HAZ, WHZ and WAZ.*

*Results: Under-nutrition by stunting, underweight and wasting was (24%), (21.6%) and (5.3%) respectively. Parity was associated with stunting among the under-fives ( $p=0.019$  OR 2.28, 95% CI 1.15-4.55).*

*Conclusion: Maternal parity, household headship, marital status and maternal education level are significant factors associated with under-nutrition.*

**Keywords:** *Maternal factors; Peri-urban; Under-fives; Under-nutrition*

### Introduction

UNICEF (1998) estimated that 226 million children are stunted, 67 million are wasted, and 183 million are underweight globally. Matisi location is characterized by people mainly of low socio-economic status which forces them to live in the peri-urban slum that lacks most basic necessities, Trans Nzoia District Development Plan (2001-2007). Malnutrition is a powerful indicator to sudden changes in children's health, nutritional status, level of socioeconomic development of a country and household food insecurity situation. There is a growing realization that under-nutrition is not only a problem of food supply but also a function of more complex social and behavioral determinants affecting child feeding and rearing practices (Tara *et al.*, 1988).

Increasing opportunities for women to earn or control income enhances household food security and diet diversity and this is likely to improve the children's nutritional status and

reduce the prevalence of under-nutrition. Key findings from Oniang'o, (1997) showed that women who

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earn even small steady incomes are likely to spend their incomes on increasing the family's food intake and nurturing activities hence improving the children's health.

A study in one of the Nairobi's slums indicated that maternal factors such as birth spacing, parity, maternal education level and mother's marital status showed an association with the child nutritional status indicators (USAID, 2000; Thuita *et al.*, 2005). Turyashemerwa *et al.*, (2009) and Kikafunda *et al.*, (2006) found out that children of mothers without any formal education, unemployed and single had high levels of under-nutrition. Key findings from Bhutta *et al.*, (2008) showed that mothers who lacked nutrition education were likely to have inadequate child feeding practices. A study on mother's nutritional knowledge and the nutritional status of infants in Kibera, Kenya showed that inability of the mother to recognize presence of signs of under-nutrition had a significant association with the underweight in children (Waihenya *et al.*, 1996). Household headship may determine if a child is undernourished or not mainly due to who earns an income in a household. In a study by Chandime *et al* (2006) in Malawi, male headed households were likely to have children with fewer cases of under-nutrition compared to female headed households.

In peri-urban areas, many mothers have to engage in out- of home activities to earn money for the household upkeep. Waihenya (1996) found out that in most cases the children may not be provided with adequate food when the mother is away and this may predispose the child to under-nutrition. Children who were undernourished (stunted) had less time devoted to them for breastfeeding, food preparation and feeding as mothers were busy looking for food (Kamau *et al.*, 2002).

Previous studies show that under-nutrition in young children affects linear growth, brain growth and intelligence quotient, and these are synergistically associated with child morbidity, disability and mortality (Pelletier, 1993; Benson, 2004; Reyes *et al.*, 2004; Friedman, 2005). Under-nutrition may affect the long-term physical growth and development of children, and may lead to high levels of chronic illness and disability in adult life. In addition, high rates of under-nutrition jeopardize future economic growth by reducing the intellectual and physical potential of the entire population (Mariara *et al.*, 2006).

## Methods

**Study design:** A cross-sectional study design was used. A mother -child pair (208) was used to give information.

**Data collection:** Children's anthropometric measurements which included body weight, height, and MUAC were taken. Interviewer administered questionnaire was used to gather socio- demographic data.

**Sampling procedures:** Simple random sampling was used where the list of all households with 24-59 months old children (250) was entered in a computer package which generated random numbers of 208 households. In cases where there was more than one child in a household aged 24-59 months, only one child was chosen from that household randomly before proceeding to the next household. Children with physical malformations that was likely to interfere with anthropometric measurements, children whose parents refused to consent and children whose ages could not be ascertained, children under the age of five years but with chronic illnesses were excluded from the study.

**Ethical consideration:** The study was approved by Institutional Research and Ethics Committee [IREC] of Moi Teaching and Referral Hospital and also written permission was sought from the area chief.

**Data analysis:** Data was analyzed using SPSS version 17.0. Chi square test of association and logistic regression was used to examine the effects of various maternal characteristics on the prevalence of under-nutrition. Epi- Info version 3.4.3 was used to analyze anthropometric data which generated z scores (SD) indices of HAZ, WHZ and WAZ.

## Results

The results show that the mean age, weight and height was  $38 \pm 10.7$ ,  $13.7 \pm 2.4$  and  $91 \pm 9.2$  months, kg and cm respectively. Under-nutrition by stunting, underweight and wasting was (24%), (21.6%) and (5.3%) respectively.

Three quarters 157 (75.5%) of the households were male headed with 51 (24.5%) being female headed. Majority 170 (81.7%) of the mothers were married while 26 (12.5%) were single and only 12 (5.8%) were divorced or widowed. Over half 117 (56.3%) of the mothers had 1-3 births, 76 (36.5%) had 4-6 births and only 15 (7.2%) had more than 7 births. Almost all 196 (94.2%) of the households had between 1-8 members with only 12 (5.8%) having over 9 members.

Half 105 (50.5%) of mothers were housewives with 63 (30%) being small scale businesswomen and the rest involved in farming 15 (7.2%) as shown in Table 1. A small percentage was involved in brewing illicit brews like 'Chang'aa' and 'Busaa' (local brews made up of fermented wheat/ sorghum/ millet/ maize flours).

**Table 1: Demographic and socio-economic factors of the sample**

Characteristic	Category	Number	(%)
Mother's age(n=208)	< 20	36	(17.3)
	21-30	130	(62.5)
	31-40	35	(16.8)
	$\geq 41$	7	(3.4)
Marital status(n=208)	Single	26	(12.5)
	Married	170	(81.7)
	Divorced	8	(3.8)
	Widowed	4	(1.9)
Level of education of mother(n=208)	No formal education	43	(20.7)
	Primary education	131	(63)
	Secondary education	32	(15.4)
	Tertiary education	2	(1)
Occupation of mother(n=208)	Farming	15	(7.2)
	Housewife	105	(50.5)
	Business	63	(30.2)
	Employment	25	(12)
	Others	17	(8.2)

The study found an association between marital status and stunting and wasting but not in the underweight as shown in Table 2.

Household headship was associated with stunting ( $< 0.05$ ) but not with wasting and underweight as shown in Table 2.

Mothers' educational level was associated with wasting as shown in Table 2.

Maternal main occupation was not associated with under-nutrition. No association was found between the caregiver of the children and under-nutrition

**Table 2: Maternal characteristics by the prevalence of under-nutrition**

	Stunting		Wasting		Underweight	
	Yes	No	Yes	No	Yes	No
	n=50(%)	n=158(%)	n=11(%)	n=197(%)	n= 45 (%)	n=163(%)
Household Headship						
Male headed(n=157)	31(62)	126(79.7)	9(81.8)	148(75.1)	29(64.4)	128(78.5)
Female headed(n=51)	19(38)	32(20.3)	2(18.2)	49(24.9)	16(35.6)	35(68.6)
P value	0.011		0.616		0.052	
Marital status						
Single(n=26)	12(24)	14(8.9)	0(0)	26(13.2)	9(20)	17(10.4)
Married(n=170)	35(70)	135(85.4)	9(81.8)	161(81.7)	32(71.1)	138(84.7)
Divorced/widowed(n=12)	3(6)	9(5.7)	2(18.2)	10(5.1)	4(8.9)	8(4.9)
P value	0.044		0.049		0.204	
Parity						
1-3(n=117)	22(44)	95(60.1)	9(81.8)	108(54.8)	21(46.7)	96(58.9)
> 3(n=91)	28(56)	63(39.9)	2(18.2)	89(45.2)	24(53.3)	67(41.1)
P value	0.018		0.261		0.029	
Maternal Educational level						

None(n=43)	9(18)	34(21.5)	3(27.3)	40(20.3)	9(20)	34(20.9)
Primary (n= 131)	32(64)	99(62.7)	6(54.5)	125(63.5)	32(71.1)	99(60.7)
Secondary(n=32)	8(16)	24(15.2)	2(18.2)	30(15.2)	8(17.8)	24(14.7)
Tertiary (n= 2)	1(2)	1(0.6)	0(0)	2(1.0)	1(2.2)	1(0.6)
<b>P value</b>	<b>0.444</b>		<b>0.050</b>		<b>0.444</b>	

Parity was associated with stunting and mothers who had a parity of more than three children were two times more likely to have children that are stunted compared to those with a parity of less than three ( $p=0.019$  OR 2.28, 95% CI 1.15-4.55) when controlling for household headship and marital status as shown in Table 3.

**Table 3: Multivariate analysis for stunting**

Variables	Stunting	
	OR (95% CI)	P-value
<b>Maternal factors</b>		
Household headship	0.677 (0.232-1.97)	<b>0.47</b>
Marital status	2.27 (0.686-7.52)	<b>0.179</b>
Parity	2.28 (1.15-4.55)	<b>0.019</b>

## Discussion

The findings of this study found an association between the marital status of the mother and stunting and wasting. The children of single mothers had high levels 12 (46.2%) stunting compared to those of married mothers 35 (20.6%). This is consistent with a study on preschoolers in a low-income suburb in Uganda by Kikafunda *et al.*, (2006).

There was an association between parity and underweight and stunting which is consistent with a study in Nairobi slums (Thuita *et al.*, 2005, Bhutta *et al.* 2008). Children of mothers whose parity was > three had higher rates of underweight 24 (26.4%) compared to those of mothers whose parity was < three 21 (17.9%) probably because mothers who have a high parity were likely to have large households and so this may strain the meager resources that they earned.

This survey found an association between the level of mother's education and the prevalence of under-nutrition which agrees with a study by Mittal *et al.*, (2007) found out that mothers who were illiterate were more likely to have children that were stunted. Similarly, no association was found in the mothers' occupation and the child caregiver and prevalence of under-nutrition probably because most of the mothers were house wives and business women and so their occupations may have not interfered with

the child care responsibilities and therefore under-nutrition. A study by Mittal *et al.*, (2007) showed that children whose mothers were employed had higher levels of stunting than those of whose mothers were house wives probably because housewives had a lot of time for caring for their children.

The feminization of poverty indicates that female-headed households (FHH) constitute a vulnerable socio-economic group generally considered as impoverished compared to maleheaded households (MHH). This study revealed an association between household headship and stunting in children. Children who came from FHH had higher 19 (37.3%) stunting rates compared to MHH and this is consistent with a study by (Darna *et al.*, 1999; Chandime *et al.*, 2006). FHH were less economically stable as found earlier that mothers had low education levels and most of them were housewives and so may lack resources to support their families.

### Conclusion

The study reveals that parity, household headship, maternal educational level and marital status are significantly associated with under-nutrition in the under fives

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### Recommendations

The Government and NGOs should assist the residents especially the mothers to begin IGA's to get empowered.

Health education should be taught through the chief *Barazas* and church workshops to mothers by the Ministry of Health, Public Health and Sanitation and guest speakers.

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