
Selected Maternal Characteristics and the Prevalence of Under-Nutrition among Under-Fives in Matisi Peri-Urban Location, Trans- Nzoia County, Kenya

Magaju P. K.

University of Eldoret

Department of Hotel and Hospitality Management,

P.O. Box 1125-30100, Eldoret, Kenya

tymagaju@gmail.com, tymagaju@yahoo.com

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.

Key words: 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 socio-economic 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 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). Turyashemererwa *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 ± 10.7 , 13.7 ± 2.4 and 91 ± 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)
	≥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 n=50(%)	No n=158(%)	Yes n=11(%)	No n=197(%)	Yes n= 45 (%)	No 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)
P value	0.444		0.050		0.444	

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
Maternal factors		
Household headship	0.677 (0.232-1.97)	0.47
Marital status	2.27 (0.686-7.52)	0.179
Parity	2.28 (1.15-4.55)	0.019

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 pre-schoolers 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 male-headed 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

Acknowledgement

I wish to express my sincere gratitude to the late Prof. G. M. Mbagaya for her tireless

assistance and direction in the development and final completion of this study. Special thanks go to the College of Health sciences Moi University, lecturers and the Department of Epidemiology and Nutrition for allowing the use of the equipment and facilities and to the Institutional Research and Ethics Committee (IREC) Moi University for approval to conduct this study.

Recommendations

The Government and NGO's should assist the residents especially the mother's 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.

References

- Benson, T. (2004). "Africa's Food and Nutrition Security situation. Where are we and how did we get there?" 2020 Discussion paper No.37. International Food Policy Research Institute.
- Bhutta Z.A., Ahmed T., Black R.E., Cousens S., Dewy K., Giugliani E., Haider B.A., Kirkwood B., Morris S.S., Sachdev H.P. and Shekar M. "Maternal and child under nutrition study group. What works? Interventions for maternal and child under nutrition and child survival." *Lancet Journal*. February (2008); **371 (9610)**: 417-40.
- Chandime, C.C. and Obomba-Jaswa, S. "Household headship and nutritional status of toddlers: An examination of Malawian Data." *African Population Studies Union for African Populations Studies*. (2006). ISS.No.0850-5780. Volume. **21 (2)**:45-73.
- Darna, P.L., Lisa, S.K., Spur, G.B. and Julo, G.C. "Household headship and nutritional status: Female-headed versus Male headed households." *American Journal of Human Biology*. (1999). Issue No. **1042-0533** Willey-Liss, Inc.
- Friedman, J.F., Kwena, A.M., Minel, L.B., Kariuki, S.K., Terlouw, D.J., Phillips-Howard, P.A., Hawley, W.A., Nahlen, B.L., Ya Pingsh.i. and Terkuile, F.O. "Malaria and Nutritional Status Among Preschool Children: Results from cross-sectional Survey in Western Kenya." *The American Society of Tropical Medicine and Hygiene*. (2005). **73(4)**, pp 698-704.
- Kamau, F., Omwega. and A.M., Muita, J.W. "Child care practices and nutritional status of children aged 0-2 years in Thika, Kenya." *East Africa Medical Journal*. October (2002). **79 (10)**:524-9.
- Kikafunda, J.K. and Tumwine, J.K. "Diet and socio-economic factors and their association with the nutritional status of pre-school children in a low income suburb of Kampala city, Uganda." *East Africa Medical Journal*. October (2006); **83 (10)**:565-74.
- Mariara, J.K., Ndenge, G. K., and Kirii, D.M. "Determinants of children's nutritional status in Kenya." *Evidence from Demographic and Health Surveys. Centre for the Study of African Economics (CSAE)*. (2006).
- Mittal, A., Singh, J. and Ahluwalia, S.K. "Effect of maternal factors on the nutritional status of 1-5 year old children in urban slum population." *Indian Journal of Community Medicine*. (2007). Volume. **32 (4)** 10-12. ISSN No. 0970-0218.
- Oniang'o, R.K. "The role of Africa's agriculture in poverty alleviation, food security and industrial development." *African crop Science conference proceedings, volume 3, pp 1303-1311, Quick Colour print, Uganda*. (1997).
- Pelletier, D.L., Frongillo, E.J., Schroeder, D.G. and Habicht, J.P. "The effects of malnutrition on child mortality in developing countries." *Bulletin World Health Organisation*. (1993). **73**: 443-448
- Reyes, H., Cuevas, R.P., Sandoval, A., Castillo, R., Santos, J.I., Douboa, S.V. and Gutierrez,

- G. "The Family as a determinant of stunting in children living in conditions of extreme poverty: A case –control study." *BMC Public Health*. (2004). **4**:57.
- Tara, G. Poonal, P. and Bakshi, M. "Selected socio-economic, environmental, Maternal, and child factors associated with the nutritional status of infants and toddlers" (1988).
- Thuita, F.M., Mwadime, R.K. and Wang'ombe, J.K. "Child nutritional status and maternal factors in an urban slum in Nairobi. Kenya." *East African Medical Journal*. April (2005); **82 (4)**: 209-15.
- Trans Nzoia District Development Plan. (2001-2007) Office of the Vice- President and Ministry of Planning and National development. Nairobi. Government Printers.
- Turyashemenerwa, F.M., Kikafunda, J.K. and Agaba, E. "Prevalence of early childhood malnutrition and influencing factors in peri-urban areas of Kabarole District, Western Uganda." *African Journal of Food and Agriculture Nutrition and Development (AJFAND)*. (2009). Volume **9** No.4
- UNICEF. *The State of the World's Children*. New York: UNICEF. (1998).
- USAID. "Famine Early Warning System Network Uganda Monthly Report." *Geneva: UN Agencies*. (2000).
- Waihenya, E.W. "Maternal nutritional knowledge and nutritional status of children in a Nairobi slum." *East African Medical Journal* (1996). **73**:419-423.