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CONTENTS PAGE

UNDERNUTRITION OF ORPHANS AND VULNERABLE CHILDREN: A COMPARISON OF CASH TRANSFER BENEFICIARIES AND NON BENEFICIARIES IN KOROGOCHO SLUMS, NAIROBI

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Abstract

Objective: To assess the prevalence and associated factors for undernutrition among the beneficiaries of Kenya Cash Transfer Program compared to non-beneficiaries in Korogocho, Nairobi. Optimal nutrition reduces the prevalence of undernutrition and contributes to improved child survival and development.

Methods: A comparative descriptive cross-sectional study design in which a total of 336 children were sampled from the two groups each consisting 168 children. A questionnaire was administered to caregivers. A Food Frequency Questionnaire and a 24 Hour Recall sought information on foods consumed. Anthropometric measurements were taken based on standard procedures. Wasting, underweight and stunting were determined based on a z-score of ≥-2 or <-2 SD. A chi-square test was used to test significance associations of wasting, underweight and stunting with other variables.

Results: A majority (89.3%) and (73.8%) of the principal caregivers were females among the beneficiaries and non-beneficiaries respectively. Among the beneficiaries, prevalence of wasting was 6%, underweight 6% and stunting 32.7%. Among non-beneficiaries, undernutrition was higher with wasting 9.5%, underweight 17.9% and stunting 37.5%. There was a significant difference (x^2=11.351, df=1, p=0.001) for underweight among the beneficiaries and non-beneficiaries. Nutrient inadequacies were high in vitamin A, folate and zinc in both beneficiaries and non-beneficiaries. In beneficiaries, undernutrition was significantly (p<0.05) associated with number of children aged 6-59 months in the household, cash transfer used on food, carbohydrate intake, protein intake and frequency of breastfeeding. Among non-beneficiaries, undernutrition was significantly (p<0.05) associated with number of household members, number of children 6-59 months in the household and income spent on food.

Conclusions: There was improved nutritional status among the beneficiaries compared to non-beneficiaries. However, there is need of training beneficiaries on the best use of the cash transfers and educating them on consumption of adequate food to improve nutrient intake and eventually their nutritional status.

Key words: Undernutrition, Orphans, Vulnerable, Beneficiaries, Non-beneficiaries

Introduction

Optimal nutrition is an important health concern worldwide; it reduces the prevalence of undernutrition and contributes to improved child survival and development. Factors that contribute to undernutrition are many and varied. The primary determinants of undernutrition as conceptualized by several authors relate to unsatisfactory food intake, severe and repeated infections, or a combination of the two [(1)]. Infancy and early childhood is a period of rapid growth. Energy intake must be adequate to cater for growth, basal metabolic rate, physical activity and adequate weight gain of the child. Sufficient energy also spares nutrients like protein from being used for energy.

Optimal nutrition should be regarded as an integral part of programs that seek to improve child survival and development. In this respect, the Government of Kenya developed a cash transfer program to strengthen capacities of households/communities to take care of Orphans and Vulnerable Children (OVC) in responding to the situation of HIV and AIDS in Kenya and hence enhance their survival [(2)]. The main objective of the program is to provide a social protection system through regular cash transfers of Kenya Shillings (KES) 1500 per month to families living with OVC in order to improve provision of basic services including health and nutrition services. Evaluations of a range of cash transfer initiatives in Africa and Latin America have consistently shown that recipients of cash transfers prioritize feeding their families over other expenditures. Most cash transfer programs in Africa enable recipients to meet basic food needs and perhaps contribute towards other household expenditure [(3)]. However, nutrition status of children is increasingly deteriorating with orphan and vulnerable children experiencing very poor nutrition (inadequate in quantity and poor quality) and high level of micronutrient deficiencies from very early age [(4)]. The situation of orphan and vulnerable children could be significantly improved if governments had baseline data on which to base expansion of social services to the entire population.

In Kenya, few rigorous studies have been carried out since the inception of the Kenya Cash Transfer Program in 2004. As the Kenya government provides cash transfers to OVC, its impact on nutrition status of beneficiaries remains unknown. It is therefore necessary to establish the benefits derived from Kenya Cash Transfer Program with regard to nutrition since food is a basic need. Thus, the study focused on prevalence and associated factors for undernutrition among beneficiaries of Kenya Cash Transfer Program compared to non-beneficiaries. The study had the following specific objectives: to determine prevalence of stunting, wasting and underweight, to assess adequacy of nutrient intake and to determine factors associated with undernutrition in children aged 6-59 months among the beneficiaries and non-beneficiaries. This study was conducted during the month of June 2010 in Korogocho slums, Nairobi.

Methods

A comparative descriptive cross-sectional study was carried out. The target population consisted of orphans and vulnerable children aged six (6) to fifty-nine (59) months both the beneficiaries and non-beneficiaries for a period of one month.

Subjects included children aged 6-59 months of age in households which had been classified by Local OVC Committee (LOC) as orphan and vulnerable households in Korogocho. These comprised both children in the

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beneficiary and non beneficiary households of the Kenya Cash Transfer Program. Children below six (6) months of age were excluded based on the assumption that they were breastfed adequately and therefore less likely to be undernourished. Children with HIV/AIDS were excluded based on records because of the fact that these children were extremely likely to be severely ill and undernourished as a result of their HIV infection and would therefore provide biased information. Children who were visitors and found to have stayed for less than three months were excluded from the study since deficiency symptoms would not be overt or would reflect nutrient inadequacies or adequacies from other places.

A sample size of 168 for each group totaling to 336 was calculated using formula for comparing two proportions. The calculation was based on the prevalence of stunting of 30% and a standard error of 0.05.

The study utilized a guide from Local OVC Committee (LOC), with whom the study community was familiar, who assisted the assessment team in identifying households. The first household was randomly selected. Afterwards, every third household with orphan and vulnerable children under the age of five years was visited. In case of more than one child under the stipulated age in a household, the child included in the study was randomly selected.

A semi-structured interviewer administered questionnaire was administered to the principal caregiver to elicit information on demographic and socio-economic characteristics of the households. A Food Frequency Questionnaire and 24 hour recall sought information on foods or meals consumed by the index child. The Food Frequency assisted in obtaining qualitative descriptive information about usual food consumption pattern and this enabled estimates of food intake. A Twenty Four Hour Recall method provided information on exact food intake during the previous 24 hour period or preceding day. The age of the child was obtained from the immunization card which the caregiver presented on assessment. Weights of eligible children were measured with the subjects wearing light clothing without shoes using Salter spring balance. The scale measured up to increments of 100g as per World Health Organization (WHO) guidelines on recommended measurement protocols. Heights for all subjects were measured by a height board with a moveable head board of 100 cm with child's shoes removed. Height for infants aged 6-12 months and children below 24 months who could not stand were measured while lying flat and for children 24 - 59 months when standing. Anthropometric measurements were measured twice and the average value was taken.

Moi University (MU) Nutrient calculator with modification from Diet Calc Version 1.4.3 based on World Food Programme was used to establish nutrient levels for selected nutrients. The probability approach was employed to determine adequacy of nutrient intake compared to Estimated Average Requirements (EAR) (5). Anthropometric measurements of children were analyzed by Z-score values using WHO Anthro (2005) and compared them with the World Health Organization standard reference. The cut-off point for undernutrition was equal to below –2 SD units below the mean of the reference population based on WHO recommendations (6). The percentage of all children with indicators at low levels (<–2 Z-scores) were determined. Data was analyzed using the Statistical Package for Social Sciences (SPSS) version 18.0. A chi-square test at 95% Confidence Interval (CI) was used to test significance associations of the Z-scores of weight-for-height/length (wasting), weight-for-age (underweight) and height-for-age (stunting) as the dependent variables with other variables as the independent variables. These were: age of the principal caregiver, level of education, household type, number of household members and children aged 6-59 months within the household, source of food, cash transfer and amount of income spent on food; child's age at the start of complementary feeding, frequency of breastfeeding; carbohydrate, protein, zinc, vitamin A and folate intakes.

The study was approved by the Institutional Research and Ethics Committee of Moi University, the Director of Children Services Ministry of Gender Children and Social Development, the District Children Officer and Local OVC Committee. Each participant was informed about the study and signed a consent form. Identification/code numbers were assigned to each subject for anonymity.

Results

Table 1 presents a summary of the key demographic and socioeconomic characteristics of both the beneficiary and non-beneficiary households of the Kenya Cash Transfer program sampled. A majority (89.3%) and (73.8%) of the principal caregivers were females in beneficiary and non-beneficiary households respectively. Over a half (58.3%) of principal caregivers were aged 40 years and above in the beneficiary households. In non-beneficiary households, nearly a half (49.4%) of principal caregivers were less than 30 years of age. Among the principal care givers in the beneficiary households, over a third (36.9%) were widowed while in non-beneficiary households, over a half (57.7%) were married. A greater proportion of the principal care givers were Christians with 85.1% and 93.5% in beneficiary and non-beneficiary households respectively. Over two-thirds (67.9%) and (78%) attained primary education as highest education level in beneficiary and non-beneficiary households respectively. On average, there were 7 and 5 members in the beneficiary and non-beneficiary households respectively. A greater proportion (62.5%) and (44.6%) had between 6 and 10 members within beneficiary and non-beneficiary households respectively. Many households were headed by women with 83.3% and 61.3% in the beneficiary and non-beneficiary households respectively. Over a third (39.3%) in the beneficiary households and a half (50%) in the non-beneficiary households were mothers to the index child. The average monthly income was KES 5,243 with almost two-thirds (63.7%) earning between KES 2,500 and KES 5,000 of which an average KES 1,103 of cash transfer was spent on food in beneficiary households. In non-beneficiary households, the average monthly income was KES 4,121

with nearly a half (48.2%) earning between KES 2,500 and KES 5,000.

Table 1: Household characteristics

Characteristic	Beneficiary (n=168) No (%)	Non-beneficiary (n=168) ll No (%)	Total (%)	P-value
Sex of caregiver				
Male	18 (10.7)	44 (26.2)	62 (18.5)	0.000
Female	150 (89.3)	124 (73.8)	274 (81.5)	
Age of caregiver				
< 30 years	28 (16.7)	83 (49.4)	111 (33)	0.000
30-39 years	42 (25)	55 (32.7)	97 (28.9)	
≥ 40 years	98 (58.3)	30 (17.9)	128 (38.1)	
Marital status of caregiver				
Single	22 (13.1)	34 (20.2)	56 (16.7)	0.000
Married	36 (21.4)	97 (57.7)	133 (39.6)	
Widowed	62 (36.9)	18 (10.7)	80 (23.8)	
Separated/divorced	48 (28.6)	19 (11.3)	67 (19.9)	
Religion of caregiver				
Christian	143 (85.1)	157 (93.5)	300 (89.3)	0.014
Muslim	25 (14.9)	11 (6.5)	36 (10.7)	
Education level of caregiver				
No education	27 (16.1)	5 (3)	32(9.5)	0.000
Primary	114 (67.9)	131 (78)	245 (72.9)	
Secondary & above	27 (16.1)	32 (19)	59 (17.6)	
No. of household members				
1-5	46 (27.4)	66 (39.3)	112 (33.3)	0.004
6-10	105 (62.5)	75 (44.6)	180 (53.6)	
11 & above	17 (10.1)	27 (16.1)	44 (13.1)	
Household type				
Male headed	28 (16.7)	65 (38.7)	93 (27.7)	0.000
Female headed	140 (83.3)	103 (61.3)	243 (72.3)	
Relationship to Index child				
Father	21 (12.5)	64 (38.1)	85 (25.3)	0.000
Mother	66 (39.3)	84 (50)	150 (44.6)	
Other	81(48.2)	20 (11.9)	101 (30.1)	
Monthly income				
<KES 2,500	6 (3.6)	4 3 (25.6)	49 (14.6)	0.000
2,500-5,000	107 (63.7)	81 (48.2)	188 (56)	
>KES 5,000	55 (32.7)	44 (26.2)	99 (29.5)	

Nearly all the socio-demographic indicators were significantly ($p<0.005$) different among the beneficiary and non-beneficiary households. This may have contributed to the differences in the nutritional indicators (dependent variables) of wasting, underweight and stunting.

Age distribution of the studied children showed a higher percentage of 53.9% were between the ages 12 and 35 months followed by 33.6% of ages 36-59 and finally 12.5% of ages 6-11 months overall. Similar trend was observed in respective categories with those children of age 12-35months having a higher percentage of 48.8% and 58.9% being beneficiaries and non-beneficiaries respectively. Those aged 36-59 months were second with 36.9% and 30.4% while those aged 6-11 months had a low percentage of 14.3% and 10.7% beneficiaries and non-beneficiaries respectively.

The three indicators of the nutritional status of children namely: wasting (weight-for-height/length), underweight (weight-for-age) and stunting (height-for-age) were calculated using new growth standards published by World Health Organization.

Findings of nutritional status as measured by wasting indicates that overall 6% (95% CI: 5.70, 6.30) with mean z-score -2.81 of children were wasted in the beneficiaries and a higher percentage of 9.5% (95% CI: 9.15, 9.85) with mean z-score -3.37 in the non-beneficiaries were wasted. Analysis of the indicator by age group shows that wasting was highest (20.8%) in children aged 6-11 months and lowest (1.6%) in children aged 36-59 months among beneficiaries. In non-beneficiaries, children aged 36-59 months had the highest proportion (15.7%) and those 6-11 months had the lowest proportion (5.6%) of wasted children.

Prevalence of underweight was 6% (95% CI: 5.00, 7.00) with mean z-score -2.58 among beneficiaries and 17.9% (95% CI: 16.97, 18.83) with mean z-score -3.16 among non-beneficiaries. The proportion of underweight children was highest 16.7% for age group 6-11 and 20.2% for age group 12-35 while it was lowest 3.2% and 11.8% in both the age group 36-59 among the beneficiaries and non-beneficiaries respectively.

The nutritional status of children studied as measured by stunting shows that overall 32.7% (95% CI: 31.58, 33.82) with mean z-score -2.91 and 37.5% (95% CI: 36.12, 38.88) with mean z-score -3.59 were stunted among beneficiaries and non-beneficiaries respectively. Analysis of the indicator by age group indicates that stunting was highest (35.4%) in children aged 12-35 months and lowest (20.8%) in children aged 6-11 months among the beneficiaries. Similarly, stunting was highest (43.4%) in children aged 12-35 months and lowest (27.8%) in children aged 6-11 months in non-beneficiaries.

Analysis of differences in the three anthropometric indicators showed no statistically significant differences when comparing beneficiaries with non-beneficiaries for wasting x^2=1.501, df=1, p=0.221, OR 1.66 (95% CI: 0.69, 4.03) and for stunting x^2=0.836, df=1, p=0.361, OR 1.23 (95% CI: 0.77, 1.98). However, there was a significant difference for underweight, x^2=11.351, df=1, p=0.001, OR 3.43 (95% CI: 1.54, 7.82) among the beneficiaries and non-beneficiaries (Table 2).

Table 2: Comparison of nutritional status among beneficiaries and non-beneficiaries

Indicator	Beneficiary Number (%)	Non-beneficiary Number (%)	x^2 value	P-value	OR (95% CI)
Weight-for-height/length					
<-2 z-score 10 (6)	16 (9.5)	1.501	0.221		1.66 (0.69 - 4.03)
>=-2 z-score	158 (94)	152 (90.5)			
Weight-for-age					
<-2 z-score 10 (6)	30 (17.9)	11.351	0.001		3.43 (1.54 - 7.82)
>=-2 z-score	158 (94)	139 (82.7)			
Height-for-age					
<-2 z-score 55 (32.7)	63 (37.5)	0.836	0.361		1.23 (0.77 - 1.98)
>=-2 z-score	113 (67.3)	105 (62.5)			

The probability approach was used to estimate the prevalence of inadequate intakes based on Estimated Average Requirement (EAR). However, this approach is not applicable to interpretation of energy intakes and do not account for those children less than 12 months. Therefore, in analyzing prevalence of several key macronutrients and micronutrients inadequacies, the age groups considered were 12-35 months and 36-59months. Table 3 indicates that among children aged 12-35 months, inadequate nutrient intake were high in micronutrients with folate, zinc and vitamin A having 90.4%, 71.1% and

42.6% in beneficiaries as well as 96.8%, 82.5% and 41.2% among non-beneficiaries respectively. For macronutrients, carbohydrate and protein were likely to be 3.2% and 2.1% inadequate respectively among beneficiaries. Inadequate carbohydrate and protein were higher with 12.9% and 6.4% respectively among non-beneficiaries.

Table 3: Adequacy of nutrient intake in children aged 12-35 months

Nutrient	Beneficiary (n=84) EAR	Mean (SD)	%PINI	Non-beneficiary (n=98) Mean (SD)	%PINI
Energy (Kcals)	1608(694.4)	1130.5(429.1)			
Carbohydrate (g)	100	313.4(171.2)	3.2	135.4 (132.4)	12.9
Protein (g)	11	51.5(29.6)	2.1	43.1(9.4)	6.4
Vitamin A (μg)	210	264.4(241.7)	42.6	246.4(17.9)	41.2
Folate (μg)	120	41.9(51.4)	90.4	35.7(13.6)	96.8
Zinc (mg)	2.5	1.5(1.1)	71.1	1.2(0.3)	82.5
Iron (mg)	3	18.8(9)	0.8	13.9(3.8)	8.2

NOTE: EAR is Estimated Average Requirement, %PINI is % Prevalence of Inadequate Nutrient Intake.

Table 4 shows high levels of inadequate nutrient intake in micronutrients for children aged 36-59 months. Folate, zinc and vitamin A were likely to be 87.8%, 84.5% and 39.5% inadequate among the beneficiaries while in non-beneficiaries they were likely to be 98%, 89.4% and 57% respectively. In macronutrients, intake of carbohydrate and protein was at 3.1% and 3.7% respectively as opposed to inadequate intakes of 8.5% and 8.8% among the beneficiaries and non-beneficiaries respectively. Analysis of associations between nutrient intake with wasting, underweight and stunting found that intake of carbohydrates and proteins were significantly, Fisher's x^2=8.726, df=1, p=0.016, and Fisher's x^2=15.869, df=1, p=0.002, associated with wasting among the beneficiaries respectively. The other nutrients were found not to be related with the three indicators of nutrition status.

Table 4: Adequacy of nutrient intake in children aged 36-59 months

Nutrient	Beneficiary (n=61) EAR	Mean (SD)	%PINI	Non-beneficiary (n=50) Mean (SD)	%PINI
Energy (Kcals)	1367.	9(851.8)	1013.6(438.7)		
Carbohydrate (g)	100	255.4(201.6)	3.1	121.9 (115.8)	8.5
Protein (g)	15	46.5(44.5)	3.7	37.4(15.6)	8.8
Vitamin A (μg)	275	256.4(223.9)	39.5	208.3(86.1)	57
Folate (μg)	160	20.9(28.6)	87.8	32.1(12.7)	98
Zinc (mg)	4	1(1.1)	84.5	1(0.4)	89.4
Iron (mg)	4.1	15.1(11.7)	4	12.2(4.6)	10.5

NOTE: EAR is Estimated Average Requirement, %PINI is % Prevalence of Inadequate Nutrient Intake.

Findings on breastfeeding and complementary feeding practices revealed that 26.8% and 34.5% of beneficiaries and non-beneficiaries respectively were breastfed. Although early introduction of food is discouraged, data obtained indicates that 56% and 54.8% of children studied were given complementary foods early between birth and 6 months among beneficiaries and non-beneficiaries respectively. Figure 1 provides information on the types of foods that were given first to children studied. The most common complementary food given to children was porridge at 51.2% among beneficiaries and 57.7% among non-beneficiaries.

The study findings showed a significant association, Fisher's x^2=8.003, df=1, p=0.019, between the frequency of breastfeeding and wasting among the beneficiaries.

Findings from a chi-square test analysis on key variables that influence the levels of wasting, underweight and stunting based on Z-scores in children aged 6-59 months among the beneficiaries and non-beneficiaries are indicated in Tables 5 and 6 respectively.

Using a Chi-square test, a significant (Fishers x^2=7.280, df=1, p=0.012 and x^2=8.838, df=2, p=0.012) relationship was found between number of children aged 6-59 months who live, sleep and eat from the same pot in the household and amount of cash transfer spent on food respectively with underweight among the beneficiaries. Among the non-beneficiaries, number of all household members and number of children aged 6-59 months who live, sleep and eat from the same pot in the household were significantly (x^2=7.126, df=2, p=0.028 and x^2=7.442, df=1, p=0.006) associated with stunting and underweight respectively. Further, amount of income spent on food was significantly associated with all the three indicators of nutrition status, that is, it was statistically significant (x^2=6.803, df=2, p=0.033, x^2=31.545, df=2, p=0.000 and x^2=14.849, df=2, p=0.001) in determining wasting, underweight and stunting respectively. However, other socio-demographic factors such as source of food, household type, age and education level of the caregiver were found not to be related with wasting, underweight and stunting among the beneficiaries and non-beneficiaries.

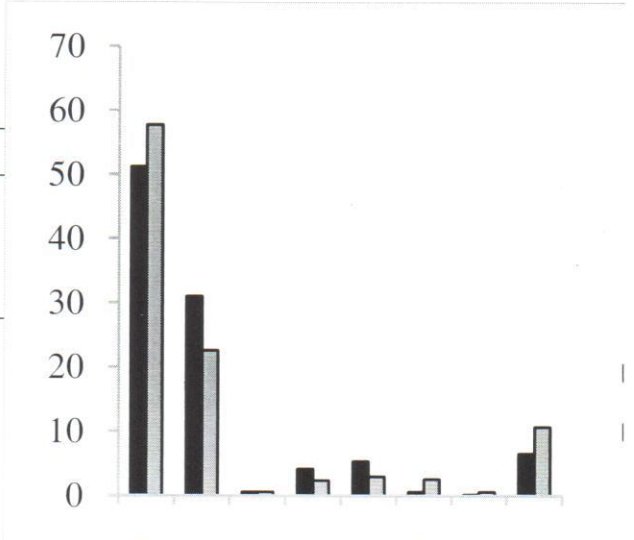

Figure 1: Complementary foods given to index child

Table 5: Variables related to undernutrition in beneficiaries (n=168)

	Wasting		Underweight		Stunting	
	< -2 Z-score	>= -2 Z-score	< -2 Z-score	>= -2 Z-score	< -2 Z-score	>= -2 Z-score Variable
	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)
Age of caregiver						
<30 years	1 (10)	27 (17.1)	1 (10)	27 (17.1)	7 (12.7)	21 (18.6)
30-39 years	1 (10)	45 (25.9)	3 (30)	39 (24.7)	19 (34.5)	23 (20.4)
≥40 years	8 (80)	90 (57)	6 (60)	92 (58.2)	29 (52.7)	69 (61.1)
	x^2=2.096, 2df, p=0.351	x^2=0.395, 2df, p=0.821		x^2=4.182, 2df, p=0.124		
Education level						
Never	3 (30)	24 (15.2)	4 (40)	23 (14.6)	11 (20)	16 (14.2)
Primary	5 (50)	109 (69)	5 (50)	109 (69)	32 (58.2)	82 (72.6)
Secondary	2 (20)	25 (15.8)	1 (10)	26 (16.5)	12 (21.8)	15 (13.3)
	x^2=1.885, 2df, p=0.390	x^2=4.532, 2df, p=0.104		x^2=3.594, 2df, p=0.166		
Household head						
Male	1 (10)	27 (17.1)	0 (0)	28 (17.7)	12 (21.8)	16 (14.2)
Female	9 (90)	131 (82.9)	10 (100)	130 (82.3)	43 (78.2)	97 (85.8)
	Fishers x^2=0.340, 1df, p=1.000	Fishers x^2=2.127, 1df, p=0.216		x^2=1.562, 1df, p=0.211		
Household members						
1-5	3 (30)	43 (27.2)	3 (30)	43 (27.2)	11 (20)	35 (31)
6-10	7 (70)	98 (62)	7 (70)	98 (62)	41 (74.5)	64 (56.6)
≥11	0 (0)	17 (10.8)	0 (0)	17 (10.8)	3 (5.5)	14 (12.4)
	x^2=1.198, 2df, p=0.549	x^2=1.198, 2df, p=0.549		x^2=5.283, 2df, p=0.071		
Children 6-59 months						
1	6 (60)	109 (69)	3 (30)	112 (70.9)	34 (61.8)	81 (71.7)
>1	4 (40)	49 (31)	7 (70)	46 (29.1)	21 (38.2)	32 (28.3)
	Fishers x^2=0.352, 1df, p=0.553	Fishers x^2=7.280, 1df, p=0.012		x^2=1.667, 1df, p=0.197		
Food source						
Purchase	10 (100)	157 (99.4)	10 (100)	157 (99.4)	55 (100)	112 (99.1)
Donation	0 (0)	1 (0.6)	0 (0)	1 (0.6)	0 (0)	1 (0.9)
	Fishers x^2=0.064, 1df, p=1.000	Fishers x^2=0.064, 1df, p=1.000		Fishers x^2=0.490, 1df, p=1.000		
Cash transfer						
<500	2 (20)	23 (14.6)	4 (40)	21 (13.3)	9 (16.4)	16 (14.2)
501-1000	2 (20)	61 (38.6)	0 (0)	63 (39.9)	19 (34.5)	44 (38.9)
1001-1500	6 (60)	74 (46.8)	6 (60)	74 (46.8)	27 (49.1)	53 (46.9)
	x^2=1.398, 2df, p=0.497	x^2=8.838, 2df, p=0.012		x^2=0.348, 2df, p=0.840		

Table 6: Variables related to undernutrition in non-beneficiaries (n=168)

	Wasting		Underweight		Stunting	
	< -2 Z-score	>= -2 Z-score	< -2 Z-score	>= -2 Z-score	< -2 Z-score	>= -2 Z-score
Variable	No (%)	No (%)	No (%)	No (%)	No (%)	No (%)
Age of caregiver						
<30 years	6 (37.5)	77 (50.7)	11 (36.5)	72 (52.2)	27 (42.9)	56 (53.3)
30-39 years	8 (50)	47 (30.9)	14 (46.7)	41 (29.7)	24 (38.1)	31 (29.5)
≥40 years	2 (12.5	28 (18.4)	5 (16.7)	25 (18.1)	12 (19)	18 (17.1)
	x^2=2.401, 2df, p=0.301	x^2=3.393, 2df, p=0.183		x^2=1.838, 2df, p=0.399		
Education level						
Never	2 (12.5)	3 (2)	1 (3.3)	4 (2.9)	2 (3.2)	3 (2.9)
Primary	11 (68.8)	120 (78.9)	25 (83.3)	106 (76.8)	48 (76.2)	83 (79)
Secondary	3 (18.8)	29 (19.1)	4 (13.3)	28 (20.3)	13 (20.6)	19 (18.1)
	x^2=5.583, 2df, p=0.061	x^2=0.776, 2df, p=0.678		x^2=0.188, 2df, p=0.910		
Household head						
Male	5 (31.3)	60 (39.5)	11 (36.7)	54 (39.1)	25 (39.7)	40 (38.1)
Female	11 (68.8)	92 (60.5)	19 (63.3)	84 (60.9)	38 (60.3)	65 (61.9)
	x^2=0.413, 1df, p=0.521	x^2=0.063, 1df, p=0.802		x^2=0.042, 1df, p=0.838		
household members						
1-5	4 (25)	62 (40.8)	12 (40)	54 (39.1)	21 (33.3)	45 (42.9)
6-10	9 (56.3)	66 (43.4)	15 (50)	60 (43.5)	36 (57.1)	39 (37.1)
≥11	3 (18.8)	24 (15.8)	3 (10)	24 (17.4)	6 (9.5)	21 (20)
	x^2=1.531, 2df, p=0.465	x^2=1.077, 2df, p=0.584		x^2=7.126, 2df, p=0.028		
Children 6-59 months						
1	7 (43.8)	102 (67.1)	13 (43.3)	96 (69.6)	36 (57.1)	73 (69.5)
>1	9 (56.3)	50 (32.9)	17 (56.7)	42 (30.4)	27 (42.9)	32 (30.5)
	x^2=3.465, 1df, p=0.063	x^2=7.442, 1df, p=0.006		x^2=2.649, 1df, p=0.104		
Food source						
Own	1 (6.3)	3 (2.0)	2 (6.7)	2 (1.4)	1 (1.6)	3 (2.9)
Purchase	14 (87.5)	146 (96.1)	27 (90)	133 (96.4)	61 (96.8)	99 (94.3)
Donation	1 (6.3)	3 (2)	1 (3.3)	3 (2.2)	1 (1.6)	3 (1.8)
	x^2=2.335, 2df, p=0.311	x^2=3.062, 2df, p=0.216		x^2=0.560, 2df, p=0.756		
Income on food						
<1500	11 (68.8)	54 (35.5)	25 (83.3)	40 (29)	36 (57.1)	29 (27.6)
1500-5000	4 (25)	84 (55.3)	3 (10)	85 (61.6)	22 (34.9)	66 (62.9)
>5000	1 (6.3)	14 (9.2)	2 (6.8)	13 (9.4)	5 (7.9)	10 (9.5)
x^2=6.803, 2df, p=0.033	x^2=31.545, 2df, p=0.000	x^2=14.849, 2df, p=0.001				

Discussion

There was a lower prevalence of wasting (6%), underweight (6%) and stunting (32.7%) in beneficiaries as compared to non-beneficiaries with higher values of 9.5%, 17.9% and 37.5% respectively. There was a significant difference for underweight, x^2=11.351, df=1, p=0.001, OR 3.43 (95% CI: 1.54, 7.82) among the beneficiaries and non-beneficiaries. These levels observed among the beneficiaries are below the current wasting, underweight and stunting rates nationally of 7%, 16% and 35% respectively (7). The reduced levels among the beneficiaries may be attributed to the benefits derived from receiving the cash transfers as evidenced in other studies. A review of the impact of cash transfer programs on child nutritional status showed decline in stunting among the beneficiaries of 35.2% in Mexico, 36.6% in Nicaragua, 4.8% in Brazil and 23.6% in Ecuador as opposed to 45.1%, 41.9%, 6.8% and 25.1% respectively in non-beneficiaries. The Bono income in Ecuador contributed to household expenditure per capita doubling it which resulted to increased height- and weight-for-age by 0.64 and 0.44 *z*-scores respectively. Similar trend was observed in Colombia with approximate increase of 0.2 z-scores as well as in Kwazulu-Natal Child Support South Africa with 3-4cm improvement on height among the beneficiaries. In the Kalomo District Social Cash Transfer Scheme, the percentage of underweight children aged 0-5 years decreased from 41% to 33% [8]. This shows that cash transfer programs impacted significantly on nutritional outcome of the beneficiaries.

The study findings indicated increased food consumption leading to low inadequate nutrient intake of macronutrients especially for carbohydrate and protein. A similar trend was observed in other studies. In Colombia, the PFA was effective at increasing total food consumption in urban areas by 9% and particularly improved quality of diet, with a preference for protein foods (milk, meat and eggs) and cereals. In Mexico, beneficiaries of PROGRESA obtained approximately 7% more calories. Report of Kalomo District Social Cash Transfer Scheme from Zambia indicated that beneficiaries were significantly less likely to have "poor" consumption and significantly more likely to have "good" consumption as compared to non-beneficiaries where children (6-59 months) consumed at least two meals in the previous 24 hours as compared to the same demographic groups among non-beneficiaries in Zambia. In Mchinji Scheme of Malawi, program households were reported to have increased dietary diversity [9]. The increase in household consumption was driven by higher expenditure on fruits, vegetables and animal products improving quality of nutrition. However, the findings indicated high levels of micronutrient deficiencies. These increased levels may have been contributed by low consumption of rich sources for micronutrients which was a problem among many orphan and vulnerable children in Korogocho.

Findings show that amount of cash transfer spent on food and number of children aged 6-59 months who live, sleep and eat from the same pot in the household were factors found to be significantly ($p<0.05$) associated with underweight among the beneficiaries. Among the non-beneficiaries, number of all household members and number of children aged 6-59 months who live, sleep and eat from the same pot in the household were significantly ($p<0.05$) associated with stunting and underweight respectively. Further, amount of income spent on food was statistically significant ($p<0.05$) in determining wasting, underweight and stunting.

Income determines affordability that is availability of money to acquire food. The main source of income for the beneficiaries was the cash transfers they received. The recipients spend it according to their own priorities even if it is provided for particular objectives. This study revealed that an average amount of KES 1103 of cash transfer was spent on food monthly. This increased the purchasing power hence contributing to increased food consumption. These positive results are in consistent with findings from other studies which have indicated a decline in undernutrition levels among the beneficiaries of PROGRESA in Mexico, RPS in Nicaragua, PFA in Colombia, BF in Brazil, Bono Solidario in Ecuador, Kalomo District social cash Transfer scheme in Zambia and Kwazulu-Natal child support in South Africa [8].

Evaluations in a number of different contexts have shown that more amount from cash transfers are used for food (10). Findings from the Kalomo District Social Cash Transfer Scheme in Zambia indicated that 63% of the cash transfers was spent on goods, of which, 66% was for food which improved nutritional outcomes. The monitoring reports showed that there was a reduction from 23% to 12% in the percentage of households having only one meal a day, and a reduction from 54% to 34% in the number of beneficiaries reporting hunger pangs after a meal indicating an increase in the quantity of food consumed.

Among non-beneficiaries, household income influenced the nutritional status of household members and that of children aged 6-59 months within the households. The amount of income spent on food was associated with all the three indicators of nutrition status that is, wasting, underweight and stunting. This was in consistent with other studies. In Uganda, a study showed that household income contributed to better child nutrition and consequently to better child health [11]). Household size has an effect on the quantity and quality of food available in the households. The findings of this study are in consistent with those found in other studies. In Rakai District south western Uganda, a big family size was one of the major factors that contributed to undernutrition problem [12].

Childhood undernutrition remains a common health problem due to inappropriate breastfeeding and complementary feeding practices. Breast-feeding is an important determinant of child's nutritional status that eventually influence growth and development of child especially for food insecure communities. In this study, mothers/caregivers introduced complementary foods early between birth and six months among the beneficiaries and non-beneficiaries. Giving complementary foods before 6 months replace nutrients from breast milk. The study results indicated a significant ($p<0.05$) relationship between frequency of breast feeding and nutrient intake

(for carbohydrate and protein) with undernutrition. These findings agree with the 2008-09 Kenya Demographic Health Survey report which indicated that 24% of newborns less than two months of age were given complementary foods or liquids. Optimal feeding for sustained child health and growth is imperative since inappropriate feeding practices contribute to undernutrition and growth faltering in children under five [13].

Although the amount of cash transfer given is still low to meet the daily basic food needs, it was found to have an impact on nutrition status of beneficiaries compared to non-beneficiaries. There was a lower prevalence of wasting, underweight and stunting among the beneficiaries of the Kenya Cash Transfer Program as compared to non-beneficiaries. Despite the prevalence of undernutrition among beneficiaries being low compared to non-beneficiaries, it is still a high prevalence based on World Health Organization on the use and interpretation of anthropometry. Therefore, increasing coverage to include many other households that are still vulnerable as well as increasing the amount of cash transfers will add up to household income which will improve the purchasing power for goods and services including food. Further, there is need of training beneficiaries on the best use of the cash transfers and educating them on consumption of adequate food to improve nutrient intake and eventually their nutritional status. However, there is need for further studies to be conducted in other areas under the program especially with regard to micronutrient deficiencies since they have been found to be high irrespective of whether one is a beneficiary or not in this study.

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