Synergistic relationship between child malnutrition and morbidity among the urban poor

Essendi H, Madise, N.J., Cleland J, Fotso Jean C, Mutua M

Abstract

Background

While appropriate infant and young child feeding are important for the growth, development as well as to the survival of the child, malnutrition remains the main underlying factor for up to half of all deaths of children under five years of age in developing countries. Furthermore, long-term consequences of poor nutrition in the early formative years include cognitive under-developed and low-weight babies among women. On the other hand, acute respiratory infections and diarrhea have been identified as high risk factors for the survival of under-five children. In Kenya, one in every nine children dies before the age of five mainly of acute respiratory tract infections, diarrhea, fever, malnutrition and malaria whose main cause is poverty. This paper investigates how malnutrition affects the occurrence of morbidity episodes, and conversely, how morbidity from common illnesses impacts on child's nutritional status.

Data and Methods

The data used in this paper are from the ongoing Maternal and Child Health study being conducted by the Africa Population and Health Research Center (APHRC) in two slums in Nairobi, Viwandani and Korogocho. The data are collected through conducting both household interviews and measuring of babies' heights and weights. The unit of analysis is children born in the two slums from September 2006 and a total of 1,000 children under study from three cohorts will be included in the analyses. This paper will conduct both descriptive and multivariate analysis of nutritional status and morbidity variables with focus on the common childhood

illnesses such as diarrhea, fever, cough and acute respiratory infections. Linear transition modeling approach will be used to check how morbidity status in the previous round of data collection is associated with nutritional status in the current round, where nutritional status in the previous round and morbidity status in the current round will be used as explanatory variables. Vice versa, nutritional status in the previous round will be modeled with morbidity status in the current round, where morbidity status in the previous round and nutritional status in the current will be used as explanatory variables. In the analyses, usual control variables (child's age, sex, birth order, maternal age, and socio-economic status) will be included. The World Health Organization reference standards will be used to calculate the z-scores.

Preliminary results

Sample description

Table 1. Sample size

	Survey 1 (02-05/07)	Survey 2 (07-09/07)	Survey 3 (11/07; 03-05/08)	Survey 4 (06-08/08+)	Survey 5 (09-12/08)
Cohort 1	Initial (632)	Update 1 (489)	**Update2 (327)**	233	
Cohort 2		Initial (460)	Update1 (346)	**Update2 (258)**	
Cohort 3			Initial (932)	Update1 (694)	**Update2 (Number)**
Cohort 4				Initial (972)	
Total	632	949	1,605	2,157	

Table 1 shows the number of children that were surveyed during the four rounds of data collection (Survey1, Survey2, Survey3 and Survey4). Preliminary results presented in this paper however only comprise figures used in analysis at the time of drafting the abstract (632 at Initial, 473 at Update1 and 258 at Update2). More data (in bold) will be included in the analysis once it is ready.

Table2: Univariate analysis for key sample characteristics (outcome variables)

Outcome variables		Initial			Update1		Update2
Sample size	N	632	473	258	473	258	258
1. Malnutrition							
	HAZ (mean)	0.058	0.034	0.15	-0.85	-0.76	-2.146
	% Stunted	3.80	4.23	3.10	14.59	12.40	52.71
	WAZ (mean)	-0.055	-0.071	0.07	-0.64	-0.58	-1.318
	% underweight	4.91	5.71	4.26	11.63	9.69	29.46
	WHZ (mean)	-0.390	-0.386	-0.34	0.04	0.01	-0.031
	% wasted	11.23	12.26	12.02	3.38	3.88	6.20
2. Morbidity status							
	Over all	51.11	52.43	50.00	13.53	5.04	54.65
	Diarrhea	17.09	17.76	17.83	4.98	2.35	27.17
	Fever	19.94	19.87	18.60	8.87	2.75	24.41
	Cough	16.46	15.64	14.73	5.41	2.75	32.28

Table3: Univariate analysis for sample characteristics (independent variables)

Control variables			Initial		Update1		Update2
Child's age	N	632	473	258	473	258	258
	< 6 months	94.62	94.50	93.41	10.99	12.79	0
	6 – 12 months	5.38	5.50	6.59	89.01	87.21	0
	12 + months	0	0	0	0	0	100
Mother education level							
	No education				21.99		25.10
	Primary				57.93		54.83
	Secondary +				20.08		20.08
Sex							
	Male	49.71	51.16	53.88	51.16	53.88	53.88
	Female	50.29	48.84	46.12	48.84	46.12	46.12
Site							
	Korogocho		62.79	60.85	62.79	60.85	60.85
	Viwandani		37.21	39.15	37.21	39.15	39.15

Table 2 gives the mean z-scores for weight for age, weight for height and height for age in addition to the proportion of children who are malnourished.

The Table 3 gives some characteristics of the samples where about 63% of the children were from the Korogocho slum while 51% of the children in the first analysis (children in both initial and update1) were male. While 78% of the mothers interviewed responded to having attended school, only about 20% of them had secondary and higher education. Majority of children were below the age of six months during the first visit 95%, during the second visit the majority were between 6 and 12 months old (90%). By the start of the third visit all the children under study were above 1 year old.