Urban hotspots of vulnerability and resilience: An analysis of food security and kinship in a Nairobi slum

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INTRODUCTION AND BACKGROUND

The image of hunger and food deprivation – particularly among children – in Africa has evolved from being a rural challenge to include food insecurity amongst low-income urban households across the continent. Rapid urbanization and population growth has increased the presence of urban slums. Home to both long-term residents and new migrants, these "urban hotspots" are characterized by high population density, high unemployment, and inadequate public services including sanitation, education, transportation and healthcare. These communities are also marked by high levels of food insecurity. The driving factors behind urban food insecurity are related to precarious employment (Mutisya et al. 2016) and high food prices (Ahmed et al. 2007). In Kenya, the 2015/16 Integrated Household Budget Survey (KIHBS) reported that urban poor households spend 47% of their budget on food (Kenya National Bureau of Statistics, 2015) and more recent study using 2012 and 2013 data on Nairobi urban poor, found that slum residents spent 52% of their income and 42% of their expenditures on food (Amendah et al. 2014). Driven by lack of access to production, urban residents are almost entirely dependent on buying food, which is difficult when economic opportunities/employment are so fragile (Emina, et al., 2011). However, kin may serve as a buffer to mitigate such insecurity through direct transfers of food (Kimani-Murage et al. 2014) or financial transfers (Clark et al. 2017). No studies we are aware of has examined whether access to kin and types of kin support protect against urban food insecurity.

In this paper, we use Watts and Bohle's (1993) "space of vulnerability" theory to examine the relationship between kinship support and household food insecurity in a slum community in Nairobi, Kenya. We draw on a unique dataset of 462 low-income single mothers and their kin in Korogocho, a slum community in Nairobi to address the following questions: Does access to kin lower the risk of experiencing food insecurity? Does the type of support offered by kin affect the risk of experiencing food insecurity? Does the content and frequency of

transfers matter for buffering against food insecurity? We conceptualize the slum environment as a hot spot of both acute and chronic environmental change. Our analysis of food insecurity, and kinship reflect both the vulnerability and resilience of the residents of Korogocho. In slum contexts, where kinship support and migration based linkages are essential for survival, access to kin, type of support from kin, quantity and frequency of support can be seen as components of the entitlement resource bundle in a context of limited power and extreme economic precarity.

The importance of this work can be appreciated in several ways. First, hunger is a "massive violation of the most basic human rights; hunger is a sort of silent- and sometimes quite noisy - violence imposed on the powerless" (Watts and Bohle 1993: 119). In sub-Saharan Africa (SSA), the number of people experiencing food insecurity is estimated at 239 million, and likely to increase in the near future if food prices continue to rise (Sasson, 2012). In Kenya alone, nearly 2.6 million people are facing food insecurity in 2018 (USAID 2018). Second, urban livelihoods in Africa have become the focus of much academic and policy interest given the precarity of urban life and the increasing evidence that the "urban advantage" is overstated. Third, within the marginalized demographic of the urban poor is an even more vulnerable one – single mothers. We know that a large number of children in Africa do not live with their father (Posel and Devey 2006) and that most are raised by mothers. Moreover, we also know that children of single mothers are more likely to die before the age of five (Clark and Hamplova 2013) and that children of never married mothers in Kenya have significantly higher probabilities of undernutrition (Gage 1997). Additionally, women are often the first to stop eating, compromising their own health and putting them at a greater risk for maternal mortality (Aguirre 2000). This analysis offers a unique opportunity to provide a more nuanced picture of urban poverty and coping mechanisms in a hotspot of vulnerability.

DATA and METHODS

The data for this analysis were collected using the Kinship Support Tree (KST) instrument, which was designed to gather data on the kinship structure and support network of single mothers with small children, including both co-resident and non-resident kin (Madhavan et al. 2017). The KST project was nested within the Nairobi Urban Health and Demographic Surveillance System (NUHDSS), an ongoing longitudinal data collection system started in 2002 and administered by the African Population and Health Research Center (APHRC). The KST

sample consists of 462 single mothers, defined as not married or cohabitating, with at least one child under the age of 7 living in Korogocho at the time of the study. The first wave was administered in June 2015 and re-administered six months later to 412 mothers from the original sample (90% retention rate). Information was collected from the mother on the child's biological father, maternal and paternal grandparents, aunts, uncles and all siblings (full, step and half siblings). Detailed data on each kin included survival status, location, demographic attributes and quantity and type of support – financial, child care or emotional - provided to mother and child. Finally, data were also collected on mother's household characteristics including food insecurity.

Dependent Variable: Our key outcome variable, *food insecurity status,* is based on responses to the question "how frequently in the last four weeks had anyone in her household not eaten two proper meals a day?" The responses were categorized as: 1) never; 2) one or two times; 3) once a week and 4) more than once a week. For the analysis, we collapse the four categories into a dichotomous variable with 0 representing low food insecurity (0-2 meals skipped in 4 weeks), and 1 representing high food insecurity (anything above 2 meals skipped in 4 weeks). Of those 787 women in the pooled analytical sample, 441 had low food insecurity status and 346 had high food insecurity status. At Wave 1 and Wave 2, 52 % and 33% of households, respectively, were categorized as high food insecure.

Explanatory Variables: The key independent variables fall under two categories: access to kin and quality of kin support. Access is gauged in two ways: 1) the *number of potential kin* which is the total number of kin who are known to be alive and over the age of 12 and therefore, in a position to provide support and type; and 2) s the *number of functional kin* which refers to the total number of potential kin who provide either financial, in-kind or child care support. Quality of transfers is reflected by type of support, amount of financial support and frequency of support. We focus on two types of support: financial and child care. Financial support is a critical aspect of the resource bundle for low income residents who must purchase most if not all their food. Child care support is important because it can free up time for the mother to work and perform other household activities. More indirectly, child care support may reflect particularly close relationships that could benefit mothers in times of crises such as food insecurity. Using these two forms of support, we developed a four category variable for type of support: 1) woman

received no financial or child care support, only received financial support, only received child care support, received both types of support. The amount of money received draws on response to the question, "What is the approximate value of these monetary and/or in kind contributions". Four options were provided:, less than 500 KSh, 500 to 999 KSH, 1,000 to 1,999 KSh or more than 2,000 KSh. In terms of purchasing power, the average cost of a pound of rice in a Nairobi market is roughly 80KSh and a pound of potato, tomato or onions as low as 45 KSh. In order to arrive at a total figure for the amount received from all kin, the midpoints of each response was added together for each mother. Due to the low value of the KSh, and the high cost of food, we then divided the amount by 1000. Each unit of the variable, amount of money received, represents about 10 USD. The *frequency of support* reflects number of financial kin who provide support regularly. This is dichotomized as either none or one or more kin. We contend that women who receive support regularly will face lower risk of experiencing food insecurity because of the ability to plan finances ahead of time.

Analytic Sample and Methods

After removing women with missing data, the pooled sample from both waves drops from N of 874 to N of 787 for the access models. Due to conditionalities placed on asking subsequent questions the sample size further decreases for the quality models. The amount of money received and percent of financial kin who contribute regularly were only asked were only asked of people who reported having at least one financial kin. This resulted in a sample size of 575 women. Furthermore, some of the women who reported having at least one financial kin reported *don't know* when asked the amount of money received. These responses were considered missing, resulting in a final sample size of 492.

Using pooled data from both waves, we use a series of logistic regression models to examine the relationship between access to kin and odds of experiencing high food insecurity and quality of transfers from kin and the odds of experiencing high food insecurity. The access model includes number of potential kin, and number of function kin. The quality model will included type of kin, amount of money received, and consistency for support. Control variables include household income, mother's education level, mother's employment status, mother's age, the household wealth status, number of children in the household and mother's ethnicity. We include size of potential kin in the quality models as an additional control. We tested for

interaction effects with ethnicity and access and quality but found no significance. Therefore, they were dropped from the final models. To address the nested structure of the pooled data we use the complex sampling function for logistic regression in SPSS. This corrects for multiple instances of responses from mothers who answered the survey in both waves, which could result in inflated standard errors.

PRELIMINARY FINDINGS

Table 1 presents the mean and standard deviation of each of our key independent variable stratified by food insecurity status. Of the total sample, 376 are classified as having a high food insecurity status and 498 are classified as low food insecurity.

Table 1. Means and Standard Deviations of Key Variables

	High Food Insecurity		Low Food Insecurity	
Key Variables	Mean/%	Std. Dev.	Mean/%	Std. Dev.
Access to Kin				
Number of Potential Kin	8.38	4.08	7.50***	3.32
Number of Functional Kin	1.86	1.57	1.42***	1.37
Quality of Transfers of Support from Kin				
No Financial or Child Care Kin	12%		23%***	
Financial Kin	10%		12%***	
Child Care Kin	16%		23%***	
Both Types of Kin	61%		42%***	
Amount of Money Received+	4.26	2.79	3.41**	2.36
Financial Kin who Contribute Regularly				
0	31%		39%*	
1 or more	69%		61%*	
N	376		498	

Notes: significance is reported for ttest of means and chi-square for categorical variables.
+Amount of Money Received: each unit represents 1000 KSh, or roughly 10 USD.
***p < .001, **p <. 01, * p < .05

There are significant differences in both access and quality of support for those who are categorized as high and low food insecure. The mean number of potential and functional kin is higher for low food insecure women. Additionally, with respect to quality, we see that 61% of low food insecure women had both types of functional kin versus only 42% high food insecure women. We also find significant differences in the amount of money received and frequency of support favoring low food insecure women. Notably, we do not find any significance difference for household income, mother's education, or mother's employment status between low and high

food insecure women. This suggests that in a highly precarious environment, such as a slum, there are factors beyond education and income that need to be further evaluated.

Table 2 presents the results from the logistic regression models examining the relationship between the access variables and the odds of experiencing high food insecurity. Model 1 includes only number of potential kin while model 2 adds number of functional kin.

Table 2. Access to Kin and High Food Insecurity Status

	Model 1			Model 2		
	Odd Ratio		(SE)	Odd Ratio		(SE)
Number of Potential Kin	.938	**	(.02)	.949	*	(.02)
Number of Functional Kin		-		.879	*	(.05)
Household Income						
< 5000 KSh,	Ref			Ref		
5,000-9,999 KSh	1.592	**	(.17)	1.574	**	(.17)
10,000 + KSh	1.408		(.46)	1.407		(.45)
Mother Employed	.608	*	(.21)	.581	*	(.22)
Mother has at least secondary education	1.281		(.25)	1.298		(.25)
Mothers Age						
<25	Ref			Ref		
25-29	1.390		(.21)	1.314		(.21)
30-34	1.900	**	(.22)	1.850	**	(.22)
35+	2.352	***	(.23)	2.228	**	(.23)
HH Wealth Score						
1st Quintile	Ref			Ref		
2nd Quintile	.762		(.23)	.786		(.23)
3rd Quintile	.446	**	(.25)	.461	**	(.25)
4th Quintile	.340	***	(.25)	.359	***	(.25)
5th Quintile	.090	***	(.31)	.093	***	(.31)
Number of Children in HH	1.136		(.13)	1.114		(.13)
Mother is Kikuyu	1.253		(.16)	1.249		(.16)
N	788			788		
Nagelkerke R2	.197			.204		

Model 1 shows that each additional potential kin reduces the odds of experiencing high food insecurity status by 6 percent. Model 2 shows that net of the effect of potential kin, each additional functional kin reduces the odds of experiencing high food insecurity by 12 percent. The fact that we see these results net of household income and wealth suggests that access to potential and functional kin adds to one's resource bundle which, in turn, helps buffer against entitlement failure. The lack of a significant effect of ethnicity suggests that being Kikuyu offers

no special empowerment within this community. If we treat employment as a proxy for access to opportunities, we see that there is a marginal benefit of being employed. Taken together, these results demonstrate how each of the three legs of the space of vulnerability operates in a slum context.

NEXT STEPS

In order to fully understand the role that kinship support is playing in the buffering of food insecurity, we need to further explore the quality of kinship support. To do this, we plan to run additional logistic regression models for three quality measures and refine the current models. The three measures will be type of kinship support received by the women, amount of money received, and the consistency of support. To take full advantage of having two waves of longitudinal data, we also plan to explore the change in food insecurity status and kin support between waves.

References

Ahmed, A.U., R. V. Hill, L.C. Smith, D.M. Wiesmann & T. Frankeneger. (2007). The world's most deprived: charactristics and causes of extreme poverty and hunger. *Intl Food Policy Res Inst.*

Aguirre, P. (2000) 'Socioanthropological Aspects of Obesity in Poverty', in *Obesity and Poverty: A New Public Health Challenge*, pp. 11–22. Washington, DC: Pan American Health Organization.

Amendah, D.D., Mutua, M.K., Kyobutungi, C., Buliva, E. and Bellows, B., (2013). Reproductive health voucher program and facility based delivery in informal settlements in Nairobi: a longitudinal analysis. *PLoS One 8*(11): e80582.

Clark, S., S. Madhavan, D. Beguy, C. Kabiru and C. Cotton. 2017. Who helps single mothers in Nairobi?: The role of kin support. *Journal of Marriage and Family* 79: 1186-1204.

Clark, S. and Hamplová, D., (2013). Single motherhood and child mortality in sub-Saharan Africa: A life course perspective. *Demography 50*(5): 1521-1549

Emina, J., Beguy, D., Zulu, E.M., Ezeh, A.C., Muindi, K., Elung'ata, P., Otsola, J.K. and Yé, Y., (2011). Monitoring of health and demographic outcomes in poor urban settlements: evidence from the Nairobi Urban Health and Demographic Surveillance System. *Journal of Urban Health*, *88*(2): 200-218.

Gage, A.J., (1997). Familial and socioeconomic influences on children's well-being: an examination of preschool children in Kenya. *Social Science & Medicine*, *45*(12): 1811-1828.

Kenya National Bureau of Statistics (KNBS). (2015). Kenya Integrated Household Budget Survey 2015-2016. KEN-KNBS-KIHBS-2015-2016-v01. Ministry of devolution and national planning. http://statistics.knbs.or.ke/nada/index.php/catalog/8/sampling.

Kimani-Murage, E. W., L. Schofield, F. Wekesah, S. Mohamed, B. Mberu, R. Ettarh, T. Egondi, C. Kyobutungi, and A. Ezeh. (2014). Vulnerability to food insecurity in urban slums: experiences from Nairobi, Kenya. *Journal of Urban Health* 91(6): 1098-1113.

Madhavan, S. S. Clark, D. Beguy, C. Kabiru and M. Gross. (2017). Moving Beyond the Household: Innovations in Data Collection on Kinship. *Population Studies* 71: 117-132.

Mutisya, M., M. Ngware, C. Kabiru and N. Kandala. (2016). The effect of education on household food security in two informal urban settlements in Kenya: a longitudinal analysis. *Food Security* 8:743–756.

Posel, D. and Devey, R. (2006). The Demographics of Fatherhood in South Africa: An analysis of survey data, 1993-2002. In L. Richter and R. Morrell (Eds.), Baba:Men and fatherhood in South Africa (pp. 38-52). Cape Town: HSRC Press.

Sasson, Albert. (2012). Food Security for Africa: an urgent global challenge. *Agriculture & Food Security.* 1:2.

Watts, Michael J., and Hans G. Bohle. (1993). Hunger, famine and the space of vulnerability. *GeoJournal* 30(2): 117-125.

USAID. 2018. Food Assistance Fact Sheet - Kenya. *U.S. Agency for International Development.* August 15, 2018. https://www.usaid.gov/kenya/food-assistance.