

## Food Insecure Household Coping Strategies: The Case of a Low Income Neighborhood in South Africa

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### Abstract

Food security can be defined as a state in which all people in a household have at all times have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life. In the last decade household food insecurity in rural and urban areas has been associated with several negative health and nutrition outcomes. The questions which arise are thus: How do food insecure households in urban areas cope with food insecurity? To what extent do they limit food intake as a coping strategy? A quantitative research method was deployed and a stratified random sample of 300 was used to collect data in Bophelong, a low income neighborhood in South Africa. The Coping Strategies Index (CSI) and Household Food Insecurity Access Scale (HFIAS) were used to measure the food security status of the households. The CSI Raw Score and HFIAS Score was then calculated and the correlation with different coping strategies determined. The study found that households did use coping strategies in order to mitigate shortages of food. Additionally, it revealed that as CSI scores/HFIAS scores increased, the reliance on consumption coping strategies by households increased. This indicates a high level of food insecurity. Spearman's correlation indicates that food limiting strategies correlated significantly with the cumulative CSI scores and HFIAS scores of households. The study concluded that urbanization and the resultant effects of unemployment, poverty, and ultimately, food insecurity, remain a challenge to policymakers. There may be an urgent need for the development of a more comprehensive food security strategy, focusing on urban as well as rural areas in South Africa.

**Keywords:** Food Security, coping Strategies, urban food insecure, food insecurity

### 1. Introduction

Food security is defined by the United States Agency for International Development (USAID, 1992) as a state in which all people in a household have both physical and economic access to sufficient food to meet dietary needs for a productive and healthy life. Food security, in this context, comprises the availability of and access to food, as well as the utilization of food. South Africa can be considered as food secure at the national level, but recent studies indicate that there is food insecurity at the household level (Manyamba, Hendriks, Chilonda and Musaba, 2012; Kirkland, Kemp, Hunter, and Twine, 2011). In the 1990s researchers indicated that poverty and food insecurity will probably shift to urban areas (UNICEF, 1994; De Haan, 1997; Moser, 1996). In this regard, South Africa was not an exception as a significant number of households in low income urban areas in South Africa are food insecure (Oldewage-Theron, Dicks, and Napier, 2006). Although it is well-documented that there was progress in eradicating food insecurity in South Africa (Sampson et al, 2004; Booysen, 2004), households in low income urban areas in South Africa are still food insecure. The Income and Expenditure Survey of 1995 (STATS SA, 1995) found an urban food poverty rate of 27 percent and a rural poverty rate of 54 percent amongst households in South Africa. In 2008 the South African Social Attitude Survey found 20.5 percent urban food insecurity and 33.1 percent rural food insecurity (HSRC, 2008).

The poor living in urban areas may become increasingly food insecure as a result of demographic and economic challenges associated with urbanization (Ravallion, 2002). Access to food and expenditure on food may depend on whether households in urban areas have enough income to purchase food (Behrman & Deolher, 1988; Hoyos & Meveden, 2009). In this regard, researchers indicated that food availability may not be the only condition for food insecurity, especially if households lack financial or productive resources to acquire food (Migotto, Gero and Kathleen, 2006; Adato & Basset, 2012; Miller, Tsoka and Reichert, 2011; Manyamba *et al*, 2012). The implication of this is that food insecurity in urban areas may require a different approach to eradicate urban food insecurity.

The questions that arise against this background are thus: How do food insecure households survive in urban areas? What strategies do households use to mitigate food shortages? To what extent do they limit food intake as a coping strategy in urban low income areas? Therefore, the objectives in this study were, firstly, to determine the extent of food insecurity in a low income neighborhood, and, secondly, to analyze the different coping strategies as reported by households. The research aims to expand the general understanding of food insecurity at the household level in urban

settings.

## 2. Literature Review

The concept "food security", together with the understanding of poverty, has evolved since the World Food Conference in 1974, and the debate surrounding food insecurity has shifted to the household level (Maxwell, 1996). The measurement of food insecurity presents many challenges. Assessment methodologies differ from qualitative to quantitative methods (Migotto *et al*, 2006) and several studies have provided insight into the experience of households with regard to food insecurity. This includes feelings of anxiety over food shortages, perceptions that food is of insufficient quantity, perceptions that food is of insufficient quality, reported reductions of food intake by households, reported consequences of reduced food intake by households, and negative feelings surrounding the socially unacceptable means to obtain food (Radimer, Olson, and Campbell, 1990; Radimer, Olson, Greene, Cambell and Habicht, 1992).

To measure food insecurity, Migotto *et al*, (2006) identifies five general types of methodologies namely, measuring undernourishment, measuring food intake, measuring nutritional status, measuring food access in terms of income, and measuring vulnerability. In this regard, the Funded Food and Nutritional Technical Assistance (FANTA) project established by the United States Agency for International Development (USAID), has developed the Household Food Insecurity Access Scale (HFIAS), which has been validated cross-culturally (Deitchler, Baalard, Swindale and Coates, 2010). In this study it is the intention to use the HFIAS as part of the analyses to identify food insecure households and to determine the correlation coefficient with coping strategies used by households.

Coping Strategies (CS) are defined by Snell and Staring (2001) as all strategically selected acts that individuals and households in a poor socio-economic position use to restrict their expenses or earn extra income to enable them to pay for basic necessities and not fall too far behind society's level of welfare. Strategically selected coping acts can be divided into "coping strategies" (mechanisms to deal with a short-term insufficiency of food) and "adaptive strategies" (long term changes in the way which households and individuals acquire sufficient food or income) (Davies, 1993). Davies (1993) distinguishes further between "income soothing" and "consumption soothing" strategies. Income soothing strategies attempt to reduce food insecurity through income diversification, and consumption soothing strategies attempt to limit consumption of members of a household. Coping strategies used as a measure/indicator of household food security were previously used by other researchers (Christaensen and Boisvert, 2000; Maxwell, Ahiadeke, Levin, Armar-Klamesu, Zakariah, and Lamptey, 1999). A number of household level strategies for dealing with insufficient food were identified by other researchers, which include: short term dietary changes; reducing or rationing consumption; altering household consumption; altering intra-household distribution of food; increased use of credit; increased reliance on wild food; alteration of crop and livestock production patterns; and sales of assets (Corbett, 1988; Frankenber, 1992; Davies, 1993).

This study is based on the coping strategies proposed by Maxwell and Caldwell (2008). A similar study done by Mjonono, Ngidi and Hendriks (2009) indicated that households did indeed employ coping strategies to mitigate food shortages in rural areas in South Africa. Maxwell and Caldwell (2008) distinguish between immediate and short term alteration of consumption patterns and longer term alterations of income earnings or food production patterns. Research indicated that short term consumption strategies may be an accurate indicator of acute food insecurity and can also be seen as predictive of how households perceive the future in terms of food insecurity of the household (Christaensen and Boisvert, 2000; Coates, Frongillo, Rogers, Webb, Wilde and Houser, 2006; Maxwell *et al*, 1999).

## 3. Research Methodology

### 3.1 Background of the Study Area

Data for this study were collected in Bophelong, a low income neighborhood in the Vaal area of Southern Gauteng, a province in South Africa. The total number of residents living in Bophelong is estimated at 37 779, with an estimated number of households of 12 352 (STATS SA, 2011). The unemployment rate in the Vaal area increased from 33.0 percent in 1991 to 50.4 percent in 2000, and 48.4 percent in 2010, indicating that almost half of the economically active population (those willing and able to work) of the Vaal were unemployed in 2010. In 2010, 39.3 percent of all households in the Vaal were living below their respective poverty lines (96 351 households) with an average shortfall of R615 per household per month (Slabbert and Grobler, 2011).

A study done by Slabbert and Sekhampu (2009) indicated that 66.3 percent of the residents of Bophelong are poor. Bophelong were chosen for this study because of the high unemployment and poverty rate in the area.

### 3.2 Methodology

#### 3.2.1 Sample and Data collection

A quantitative research method was used and a random sample of 300 households was interviewed using the face-to-face method, during September 2013. All fieldworkers were trained and were able to explain the questions to respondents in their home languages. The questionnaire was developed to gather information on socio-economic status of households, food security and coping strategies used. The statistical package, SPSS Version 21 was used to do the statistical analyses.

#### 3.2.2 Measuring Instruments

The validated Household Food Insecurity Access Scale (HFIAS) and validated Coping Strategy Index (CSI) were used as instruments. The Household Food Insecurity Access Scale (HFIAS) was used to determine food security status of households. The HFIAS, a nine-item food insecurity scale developed by the USAID FANTA project measures anxiety about food supply, followed by questions about food quality, questions on food quantity, and, lastly, questions on going to sleep hungry or going all day and night without eating (Deitchler *et al*, 2010). The HFIAS score is then calculated as a continuous measure of the degree of food insecurity (access) in the household in the past four weeks (30 days). The score adds up to a maximum score of 27 for a household if food insecure and a minimum of 0 when the household is food secure.

The Coping Strategy Index (CSI) proposed by Maxwell and Caldwell (2008), adapted for South African urban areas, was used to identify the coping strategies used by households in the low income neighborhood. The CSI calculation includes four distinct steps, namely: identify the different coping strategy behaviors, determine the frequency of strategies used, determine the severity and weighting of strategies used and, finally, scoring/combining of frequencies and severity. The frequency is measured ranging from "never" (0) to "every day" (7), and the severity from "most severe" (4) to "least severe" (1). The CSI raw scores, the more food insecure the household is. Spearman's correlation coefficients were used to calculate the correlation between HFIAS Score/ CSI Score and coping strategies used by the different households. In other words, which coping strategies are used when the HFIAS Score or CSI Score increases for an individual household?

## 4. Results and Discussion

The objective of this study was to determine the food insecurity status of households in a low income urban neighborhood and to identify the coping strategies used to mitigate food shortages. An overview of descriptive statistics of the sample is given in Table 1. The minimum household size in the sample is 1 and the maximum household size is 17, with a mean household size of 4.35 members per household. The minimum age of the head of a household is 18 and the maximum age of a head of a household 99, with a mean age of the head of the household of 49.20 years. The minimum years of education of the head of the household are 2 years and the maximum number of years of schooling is 17, with a mean number of years of schooling of the head of the household is 10.20 years. The minimum income of a household in the sample is R 100.00 and the maximum income R 16 000.00 per household, with a mean income per household of R 3 210.07. The mean HFIAS Score is 12.17 and the maximum score 27. The minimum CSI Score is 0, and the maximum CSI Score of a household is 118 with a mean of 26.26.

**Table 1:** Descriptive statistics of Sample (N=300)

Variable	N	Minimum	Maximum	Mean	Standard Deviation
HH Size	300	1	17	4.35	2.05
Age Head	300	18	99	49.20	13.21
Education Head	300	2	17	10.20	4.99
Total Income	300	100	16000	3210.07	3033.81
HFIAS Score	300	0	27	12.17	6.85
CSI Score	300	0	118	23.53	26.26

The HFIAS Scale was used to identify the food insecure households. The categories of food insecurity of households are shown in Table 2. It is shown in table 2 that 56.67 percent of the households in the sample are severely food insecure.

**Table 2:** Food security status of grant recipient households

Food Insecurity Category	Total	
	Number	%
<b>Food secure</b>	27	9.00
<b>Mild food insecure</b>	28	9.33
<b>Moderately food insecure</b>	75	25.00
<b>Severe food insecure</b>	170	56.67
<b>Total</b>	300	100.00

The survival strategies used by households in the sample is shown in Table 3, and visually depicted in Figure 1. Households in the sample mostly sourced their food from purchases. Only 15.2 percent of the households indicated that they maintain a food garden. The coping strategy indicated by most of the households in the sample is to rely on less expensive commodities, followed by buying only necessities, sticking to budget (dietary change strategies), limit portions, and to skip meals at mealtime (rationing strategies). This is in line with the findings of Oldewage-Theron et al, (2006), in an urban area.

A total of 166 households or 54.6 percent of households in the sample indicated that they rely on less expensive food more than once a week. A total of 56 households (19.0 percent) indicated that they skip meals more than once a week, while 4.4 percent of households skip meals more than three times a week. A total of 30.9 percent of the households in the sample (91 households) limited portions size of meals more than once a week. A total of 40 households or 13.6 percent of households in the sample restricted consumption of adults in order for small children to eat at least once a week.

Only 18 households or 6.1 percent of the households in the sample sent households members to beg for food, etc. A total number of 85 households or 28.8 percent of households borrowed food or rely on help from family or friends. In terms of food rationing strategies (consumption soothing), 126 households in the sample (37.7 percent) limited portion size at meal times and 90 households (28.8 percent) skip meals.

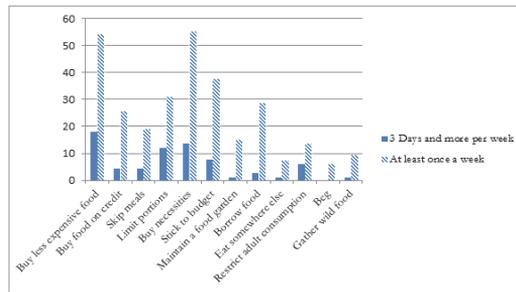
**Table 3:** Survival strategies used by households in Bophelong

		Have you adopted any of the following means for survival				
		Daily	3-6 days / week	1-2 days / week	Not more than once/ week	Never happened
1	Rely on less expensive commodities.	32(10.8)	21(7.1)	108(36.6)	20(6.8)	114(38.6)
2	Purchased food on credit	1(0.3)	12(4.1)	63(21.4)	14(4.7)	205(69.5)
3	Skip meals	2(0.7)	11(3.7)	43(14.6)	29(9.8)	210(71.2)
4	Limited portion size at meal times	13(4.4)	22(7.5)	56(19.0)	20(6.8)	184(62.4)
5	Buy necessities	20(6.8)	20(6.8)	123(41.7)	12(4.1)	120(40.7)
6	Stick to budget	7(2.4)	16(5.4)	88(29.8)	21(7.1)	163(55.3)
7	Maintain a food garden	2(0.7)	1(0.3)	42(14.2)	12(4.1)	238(80.7)
8	Borrowed food, or rely on help from a friend or relative	1(0.3)	7(2.4)	77(26.1)	9(3.1)	201(68.1)
9	Sent household members to eat elsewhere	0(0)	3(1.0)	19(6.4)	8(2.7)	265(89.8)
10	Restricted consumption of adults in order for small children to eat	7(2.4)	11(3.7)	22(7.5)	12(4.1)	243(82.4)
11	Sent households members to beg	0(0)	0(0)	18(6.1)	6(2.0)	271(91.9)
12	Gathered wild vegetables	1(0.3)	2(0.7)	25(8.5)	7(2.4)	260(88.1)

Percentages in brackets

Figure 1 shows the survival strategies used by households in the sample at least once a week and three times and more per week.

**Figure 1:** Survival strategies used by households 3 days and more per week or at least once a week (%)



When comparing the mean of the different coping strategies reported by households, the highest mean of 1.9153 days is indicated for relying on less expensive food, followed by 1.6881 for buying necessities, and 1.1051 for sticking to budget. The lowest mean was recorded for members sent to beg (0.1424), sending members to eat elsewhere (0.2068), and maintaining a food garden (0.3898).

The CSI raw score, HFIAS Score and Income level correlations with coping strategies used by households are shown in Table 4.

The results in the study indicated that as the CSI and HFIAS scores increase, households relied more on consumption coping strategies (Rationing Strategies and Dietary Change Strategies). This is in line with a similar study on rural food insecurity by Mjonono (2009) on coping strategies in South Africa.

Weaker correlations were found in the case of the HFIAS Score, which may be attributed to the fact that the HFIAS relies more on perceptions with regard to household food insecurity. Spearman's correlation showed that food insecurity coping strategies were correlated significantly with CSI raw score, as well as HFIAS Scores. The study indicated that as CSI Scores/HFIAS Scores of households increase, households in this urban area rely on consumption soothing strategies (rationing and dietary change) such as relying on less expensive food, skipping meals, limiting portions sizes at meal times, and restricted consumption by adults in order to provide more food for smaller children.

**Table 4:** Coping strategy index (CSI) / HFIAS Score correlations with survival strategies used by households

Correlations with survival strategies						
		Mean	Std Deviation	Correlation with CSI Score	Correlation with Income	Correlation with HFIAS Score
1	Rely on less expensive commodities.	1.9153	2.23065	0.784**	-0.273**	0.330**
2	Purchased food on credit	0.7017	1.26404	0.515**	-0.211**	0.323**
3	Skip meals	0.6203	1.23921	0.617**	-0.232**	0.326**
4	Limited portion size at meal times	1.1288	1.89441	0.818**	-0.292**	0.383**
5	Buy necessities	1.6881	1.97201	0.731**	-0.104	0.228**
6	Stick to budget	1.1051	1.60329	0.566**	-0.024	0.091
7	Maintain a food garden	0.3898	0.93708	0.120'	0.078	-0.071
8	Borrowed food, or rely on help from a friend or relative	0.6949	1.16430	0.447**	-0.141'	0.352**
9	Sent household members to eat elsewhere	0.2068	0.70563	0.337**	-0.076	0.200**
10	Restricted consumption of adults in order for small children to eat	0.5424	1.46527	0.746**	-0.224**	0.286**
11	Sent households members to beg	0.1424	0.49494	0.120	-0.023	0.119'
12	Gathered wild vegetables	0.2508	0.79846	0.456**	-0.082	0.130'

P=sig (2 tailed) results

\* Sig. at p<0.05 ( 5 % level of significance)

\*\* Sig. at p<0.01 ( 1 % level of significance)

Strong positive correlations (1 % level of significance) between CSI and rely on less expensive food (r=0.784, p<0.001), buying only necessities (r=0.731, p<0.001), limit portions at meal times (r=0.818, p<0.001), restricted consumption by adults (r=0.746, p<0.001), skipping meals (r=0.617, p<0.001), sticking to budget (r=0.566, p<0.001) and purchasing food on credit (r=0.515, p<0.001) as coping strategies were found. A weak positive correlation (5 % level of significance) were

found for maintaining a food garden ( $r=0.120$ ,  $p<0.005$ ) while no significant correlation were found for sending family members to beg.

A positive correlation (1 % level of significance) between HFIAS Score and relying on less expensive food ( $r=0.330$ ,  $p<0.001$ ), purchasing food on credit ( $r=0.323$ ,  $p<0.001$ ), skipping meals ( $r=0.326$ ,  $p<0.001$ ) and limiting portions at meal times ( $r=0.383$ ,  $p<0.001$ ) as coping strategies were found. Non-statistically significant correlations were found with maintaining a food garden and sticking to budget.

A weak negative correlation (significant at 99 percent level) between the level of income of households and the following coping strategies: buying less expensive food ( $r=-0.211$ ,  $p<0.001$ ), purchasing food on credit ( $r=-0.211$ ,  $p<0.001$ ), skipping meals ( $r=-0.232$ ,  $p<0.001$ ), limiting portions ( $r=-0.292$ ,  $p<0.001$ ) and restricting consumption by adults ( $r=-0.224$ ,  $p<0.001$ ) exist. This is an indication that as income of households increase they rely less on these coping strategies.

The positive correlations between consumption soothing strategies and CSI Scores and HFIAS Scores are an indication that food insecure households in urban areas restrict consumption with negative health consequences in urban areas. This underlies the argument that food insecure households in urban areas, to a large extent, depends on sufficient income, specifically in urban areas.

## 5. Conclusion

This study investigated the food security status of households in a low income urban neighborhood. The Coping Strategy Index (CSI) and Household Food Insecurity Access Scale (HFIAS) score were used to determine the status of households. Spearman's correlation coefficients were used to determine which coping strategies were used by food insecure households. The results showed that food insecurity in this urban low income neighborhood is at a scale that needs more attention in terms of analyses. As Maxwell (1998) argues "many governments in sub-Saharan Africa persist in thinking about urban food insecurity in terms of aggregate food supply to the cities, rather than the ability of poor households in urban areas to purchase food".

The results showed that households in urban areas opt for rationing of food and dietary changes. This is a very critical issue as it is associated with negative health consequences. Owing to the lack of available land in urban settings, urban food insecurity may pose a bigger challenge to policy maker's than rural food insecurity. The solution to this may be a comprehensive food insecurity strategy framework by government with a focus on urban areas.

The results reported by this study can be seen as a contribution to the growing body of knowledge on urban food insecurity. It is suggested that policymakers consider developing a comprehensive policy framework focusing on urban food insecurity.

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