

A COMPARATIVE ANALYSIS OF COPING STRATEGIES USED BY FOOD SECURE AND FOOD INSECURE HOUSEHOLDS

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—Abstract —

Food security has become a priority in many developing countries and is considered a fundamental human right. Food security can be defined as “when all people, at all times, have physical, social, and economic access to sufficient, safe and nutritious food which meet their dietary needs and food preferences for an active and healthy life”. The recent focus on food insecurity shifted to access, vulnerability and sustainability of food in an urban context. In this context, the use of coping strategies to overcome food insecurity can be seen as a measure of food insecurity and the associated vulnerability towards food insecurity. The question that arises is: To what extent does the coping strategies used by food secure households differ from the coping strategies used by food insecure households? A quantitative research method was employed whereby a stratified random sample of 600 households was taken from two low-income areas in South Africa. The Household Food Insecurity Access Scale (HFIAS) was used to determine the food security status of households and the Coping Strategies Index (CSI) was used to determine the coping strategies used by the food secure and food insecure households. Different statistical techniques were used to compare the food secure and food insecure households with regard to coping strategies used. The study found that the use of coping strategies increases as households move from food secure to severely food insecure. The study indicated that there should be policies that deal with the vulnerability of certain groups.

Key Words: Coping Strategies, Food Insecurity, Development Economics, Vulnerability, Poverty

JEL Classification: D13,D14,I15,I31,I32,O18,Q18

1. INTRODUCTION

Globally, food security has become a priority in many countries, and can be seen as a fundamental human right. In this regard, in 1976, the United Nations identified food security as a fundamental human right. As early as 1991 the United Nations (1991) outlined food insecurity as a situation where food is not available or where food cannot be accessed in terms of quality, quantity, safety or in acceptable ways. In 1996 the Food and Agricultural Organisation (FAO, 1996) explained food insecurity as a “complex sustainable issue” that is linked to health and nutrition outcomes. In this context, the World Food Summit (FAO, 1996) defined the concept of food insecurity along the lines of access to sufficient, safe and nutritious food. In 2000, the United Nations included food security as one of the Millennium Development Goals (UN, 2000). As part of this debate, from a development perspective, it is important to understand the factors associated with food insecurity. From a resilience perspective, Maxwell (1996) indicated that household food insecurity can be characterized by numerous behavioural responses. In recent studies, such as Ahamad et al. (2010), Shariff, (2008), and Quaye (2008), several “coping strategies” were found to be associated with food insecurity.

In this regard, Khatri-Chhetri and Maharjan (2006) postulated that a better understanding of food insecurity and the associated vulnerable groups are needed to solve the problem of food insecurity at the household level. In this context, this paper aims to analyse the “coping strategies” used by food secure and food insecure households. Mishra (2007), in a study, indicated that in many instances households make changes to food consumption behaviour in order to prevent a situation of food insecurity. Several other studies, such as Mabuza, (2016), Gupta et al. (2015), and Akerele et al, (2013), argue that, in most cases, households use coping strategies to “combat” food insecurity. The aim of this paper is to compare the coping strategies used by food secure households and food insecure households. The following questions can be asked: Is there a difference between the coping strategies used by food secure households compared to food insecure households? What coping strategies are used by food secure households, to enable them to stay food secure?

The paper is outlined as follows: Section 2 analyses the literature with regard to food insecurity and coping strategies used by food secure and food insecure households. Section 3 outlines the background to the study area, sample and

methodology used to determine food insecurity and coping strategies used. Section 4 gives an interpretation to the data, while Section 5 draws a conclusion.

2. LITERATURE REVIEW

The literature review in this section can be divided into the central themes of food insecurity and coping strategies used by households. In 1996, the World Food Summit defined food security as a situation “when all people, at all times have physical and economic access to sufficient, safe, and nutritious foods to meet their dietary needs and preferences for an active and healthy life”. Ford (2009) divides food insecurity into three distinct components, namely, food access, food availability, and food quality. In this context, Ford (2009) describes food access as the affordability, allocation and preference of food, while food availability includes production, distribution and exchange of food, and food quality means food of nutritional value. In this context, households may consume lower quality food to ensure enough food during the month. Akerele et al. (2013), in a study, found that food insecurity decreases with higher household income and higher levels of education, while food insecurity increases with larger household sizes and number of dependents.

According to Hendriks et al. (2006), South Africa is food secure at the national level but food insecure, in many instances, at the household level. Several studies (Mjonono et al., 2009; Machete, 2004; Hindson et al., 2003) highlight the challenges of poor communities in South Africa with regards to food insecurity.

When households are confronted with adverse events or shocks, like a lack of food availability or affordability, etc., households respond to food shortages with certain “coping strategies” (Devereux, 2001). Snel and Staring (2001) term this as “strategically selected acts that individuals and households in a poor socioeconomic position use to restrict their expenses or earn some extra income to enable them to pay for the basic necessities and not fall too far below their society’s level of welfare. Maxwell et al. (2003) argue that coping strategies used may differ from household to household, and within households. In this context, Mjonono et al. (2009), indicates that the coping strategies used will vary between different poverty levels. In this regard, this study analyses the coping strategies used by the food secure group in a community versus the food insecure group in the community.

According to Davies (1993), coping strategies in the context of food security can be divided between “income soothing” and “consumption soothing” strategies.

Income soothing strategies indicates, for example, income diversification or receiving food from other resources, while consumption soothing strategies implies, for example, modifying food consumption by reducing food intake or reducing the number of household members eating in the household (Davies, 1993; Corbett, 1988). Several studies, such as Akerele et al. (2013), Orewa and Iyangbe (2010), refer to the use of coping strategies like skipping meals and eating less expensive foods, as strategies that will not alleviate food insecurity but “secure” the continued existence of people in compromised living conditions. In a study by Gupta et al. (2015), 63.7 % of food insecure households in the urban areas of Delhi, India relied on less preferred and less expensive foods to cope with food insecurity. In the same study, 30.9 % of food insecure households took limited portion sizes at mealtimes. Several other studies, like Mabuza et al. (2016), Norhasmah et al. (2010), Kempson et al. (2003), and Dore et al. (2003), show that the most preferred coping strategies of food insecure households are to rely on less expensive foods. Gupta et al. (2015), in a similar study, found that strategies compromising quality and quantity of food are first observed as a household falls into food insecurity. Gupta et al. (2015) indicated that “coping strategies used by households can be seen as an expression of negotiated decisions to minimize the impact of food insecurity in the household”. Farzana et al. (2017), found a significant association between the different types of coping strategies used and the level of household food insecurity. In this study, it was found that severely food insecure households are more inclined to a wider selection of coping strategies to cope with food insecurity, than mildly or moderately food insecure households. Mabuza et al (2016) indicated that households do not act in an arbitrary way when it comes to food insecurity, they in most cases, develop strategies to minimize the risk to immediate food insecurity.

3. BACKGROUND TO STUDY, SAMPLE AND METHODOLOGY

3.1 Background of study area and sample

This study was conducted in in two low income townships in the Emfuleni Municipal area, Southern Gauteng, South Africa. The study area consists of six low income areas namely, Sebokeng, Evaton, Bophelong, Boipatong, Sharpeville, and Tshepiso. Bophelong and Sharpeville were randomly selected from these areas. A total of 600 household heads were interviewed in May 2015 by trained fieldworkers. The respondents were interviewed in their own language and interviewed on the food security situation in the household and coping strategies used. After cleaning the data, 580 questionnaires were included in the analyses.

Bophelong consists of a population of 37 779, with 12 352 households, and Sharpeville consists of a population of 41 031, with 8 152 household (Stats SA, 2011).

3.2 Measuring food insecurity

The measurement of food insecurity can be divided into five different groups, namely, the measurement of undernourishment, the measurement of food intake, the measurement of nutritional status, measurement of income or total consumption, and the measurement of vulnerability (Migotto et al., 2006). This study focused on the food consumption concept and vulnerability concept. This includes the Household Food Insecurity Access Scale (HFIAS) as proposed by Deitler et al. (2010). The HFIAS is a nine-question scale measuring anxiety, quality of food intake, and quantity of food intake. The HFIAS measures food security status of a household on a continuum from 0 to 27, where 0 means completely food secure. The scale classifies households into four categories namely, food secure, mildly food insecure, moderately food insecure and severely food insecure.

3.3 Measuring coping strategies

The measurement of coping strategies in this study is based on the classification of coping strategies suggested by Maxwell and Caldwell (2008). In this context Maxwell, et al (1999) indicated that it is possible to obtain valuable information on food insecurity in a community by looking at the coping strategies used in the community. In this regard, Davies (1993) refers to the use of non-erosive strategies, erosive strategies and distress strategies. Non-erosive strategies refer to strategies like reducing the frequency of meals, and the consumption of less preferred food. Erosive strategies is the sale of productive assets that may reduce the ability to earn income, and distress strategies is for example to beg, or send members of the households to eat elsewhere. In this study the erosive strategies for example selling of live stock was excluded, because the study focused on an urban area. In the Coping Strategy Measurement suggested by Maxwell and Caldwell (2008) a Coping Strategy Index (CSI) can be calculated, taking into account the number of days a specific strategy is employed by a household as well as the severity of such a strategy. The study, however, used the adapted classification used by Mjonono et al. (2009), but makes use of the CSI suggested by Maxwell and Caldwell (2008). This classification can be divided into four

categories namely, dietary change strategies, increased food availability, decreased number of people and rationing strategies.

4. RESULTS

4.1 Descriptive statistics of sample

This study is based on 580 households to determine the food security status of households and the associated coping strategies used by these households to cope with food insecurity. Based on the HFIAS, 227 households or 39.14 % of the households in the sample were food secure, while 64 households or 11.03 % of the households were mildly food insecure, and 86 households or 14.83 % of households were moderately food insecure. A total of 203 households, or 35.0 % of the households in the sample, were severely food insecure. The descriptive statistics of the sample are shown in Table 1. When the household size of the different categories of food insecurity is analysed, it shows that the mean household size of the food secure households are 3.92, compared to 4.32 in the mild food insecure group, 4.37 in the moderately food insecure group, and 4.30 in the severely food insecure group. The mean household size thus increases as food insecurity increase. The mean age of heads of households in the food secure category are 47.3, compared to 48.08 in the mild food insecure group, 53.5 in the moderately food insecure group and 50.77 in the severely food insecure group. The age of the head of the household thus increases marginally as food insecurity increase. When the years of schooling of the head of household is considered it shows that, as food insecurity increases, the number of years schooling of the head of the household decreases. In this regard, the mean years schooling of the head of the household of the food secure group is 11.14 years compared to 7.73 years of the severely food insecure group. The fact that higher levels of schooling are associated with food security is no surprise since this may be indicating the level of income which is associated with those that are more educated. When income of the household is considered it shows that as the mean income decrease food insecurity increase. Table 1 shows the mean HFIAS score of the food secure group as 0.127 compared to 3.27 of the mild food insecure group, 8.08 for the moderately food insecure group, and 14.73 for the severely food insecure group.

When the minimum income level of the different food insecurity groups are compared with the food secure group, it shows that the minimum income level of the food secure group are R 2000 with a standard deviation of R 6169.70, compared to a minimum income of the mildly food insecure group of R 1600.00

with a standard deviation of R 3440.60. In the moderately food insecure group, the minimum income level is R 1390.00 with a standard deviation of R 2568.30. The minimum income level of the severely food insecure decreased to a mere R 320.00 with a standard deviation of R 2072.50. It is thus evident that as income decreases the level of food insecurity increase. When the CSI is considered, it shows a mean score of 11.04 for the food secure group compared to a mean score of 20.39 for the mild food insecure group, 22.59 for the moderate food insecure group and 26.78 for the severely food insecure group.

Table 1: Descriptive statistics of the sample

Variable	Category	N	Min.	Max.	Mean	Std Dev.
Household Size	Secure	227	1.0	9.0	3.92	1.51
	Mild Insecure	64	1.0	10.0	4.32	1.53
	Moderate	86	1.0	11.0	4.37	1.56
	Severely	203	1.0	10.0	4.30	1.87
Age of Head	Secure	227	22.0	83.0	47.34	12.54
	Mild Insecure	64	27.0	82.0	48.08	12.76
	Moderate	86	30.0	80.0	53.05	14.19
	Severely	203	24.0	82.0	50.77	14.91
Years Schooling	Secure	227	0.0	15.0	11.14	3.19
	Mild Insecure	64	2.0	14.00	10.13	2.64
	Moderate	86	0.0	13.00	8.80	3.33
	Severely	203	0.0	13.00	7.73	3.60
HFIAS Score	Secure	227	0	6	0.127	0.49
	Mild Insecure	64	1	6	3.27	1.25
	Moderate	86	2	15	8.08	2.72
	Severely	203	5	27	14.73	4.12
Income of Household	Secure	227	2000.0	35000.0	12109.4	6169.7
	Mild Insecure	64	1600.0	19000.0	6919.2	3440.6
	Moderate	86	1390	15000.0	4768.1	2568.3
	Severely	203	320.0	14720.0	3037.9	2072.5

CSI Score	Secure	227	0.0	50.0	11.04	8.57
	Mild Insecure	64	7.0	68.0	20.39	10.43
	Moderate	86	10.0	69.0	22.59	8.47
	Severely	203	10.0	73.0.	26.78	11.04

In the next section the coping strategies of these different categories of food insecure households are analysed.

The coping strategies used across households are, to a greater extent, an indication of the level of food insecurity that household experience. Table 2 shows the coping strategies used by the food secure, mildly food insecure, moderately food insecure and the severely food insecure households. In Table 2, it is evident that households that are food secure still employ coping strategies. This may be seen as a sign that households in some cases employ a coping strategy in anticipation of future possible food insecure vulnerability. In this instance, it is possible to find a household with a HFIAS score of 6 (maximum for group-see table 1) employing coping strategies. In this regard, 153 households in the food secure category buy only necessities. A total number of 168 households in the food secure category skip meals. This may be an indication of some households who skip meals to enable the household to ensure enough food is available during the month. A total of 149 households in the sample buy food on credit to ensure food security. With the high cost of credit in informal settlements this may put these households at risk towards food insecurity. Only 49 households in the food secure category maintain a food garden compared to 94 households in the severe food category.

Table 2: Coping Strategies used by food secure and food insecure households

	Food Secure	Mildly Food Insecure	Moderately Food Insecure	Severely Food Insecure	Chi-Square
Buy necessities	153	57	77	184	0.000
Rely on less expensive food	38	28	41	140	0.000
Stick to the budget	52	20	47	149	0.000
Limit portions at meal times	69	24	61	168	0.000
Skip meals	168	55	79	190	0.000
Purchase food on credit	149	52	68	170	0.000
Maintain a food garden	43	18	33	94	0.000
Borrow food from friends	24	12	32	106	0.000
Restrict consumption of adults in order for children to eat	5	7	12	59	0.000
Gather wild vegetables	10	5	16	70	0.000
Sent household members to eat elsewhere	8	5	11	34	0.000
Sent household members to beg	41	18	32	66	0.002

The results in Table 2 show that the more food insecure household become, the more coping strategies they use to cope with food insecurity. Table 2 shows that the food secure households uses mostly income or food saving strategies, while the severely food insecure use all strategies available. The Chi-Square test for all strategies shows that there is a significant difference between the different food insecurity levels in terms of what strategy they use to cope with food insecurity.

Table 3 shows the coping strategy used as a percentage of the number of households in the food insecure category. The results show that 67.0 % of the food secure households use the coping strategy “buy necessities”, while 74.01 % of the households in the food secure category skip meals from time to time. This may be an indication that most of the households in this category are on the margin to become food insecure, or they skip meals to ensure food for all days in the month. The skipping of meals is a popular strategy in the sample, as shown in the results, where the 85.94% of the mildly food insecure, 91.86% of the moderate

food insecure and 93.60% of the severely food insecure also skip meals as a strategy. As households fall deeper into food insecurity they are forced to buy only necessities. In this regard, 89.06 % of mild food insecure households, 89.53 % of moderately food insecure households and 90.64% of severely food insecure households opt to buy only necessities. This would be an obvious strategy given the fact that the household is already severely insecure.

Table 3: Coping strategies used by households as percentage of households in category

	Food Secure	Mildly Food Insecure	Moderately Food Insecure	Severely Food Insecure	Chi-Square
Buy necessities	67.40%	89.06%	89.53%	90.64%	0.000
Rely on less expensive food	16.74%	43.75%	47.67%	68.97%	0.000
Stick to the budget	22.91%	31.25%	54.65%	73.40%	0.000
Limit portions at meal times	30.40%	37.50%	70.93%	82.76%	0.000
Skip meals	74.01%	85.94%	91.86%	93.60%	0.000
Purchase food on credit	65.64%	81.25%	79.07%	83.74%	0.000
Maintain a food garden	18.94%	28.13%	38.37%	46.31%	0.000
Borrow food from friends	10.57%	18.75%	37.21%	52.22%	0.000
Restrict consumption of adults in order for children to eat	2.20%	10.94%	13.95%	29.06%	0.000
Gather wild vegetables	4.41%	7.81%	18.60%	34.48%	0.000
Sent household members to eat elsewhere	3.52%	7.81%	12.79%	16.75%	0.000
Sent household members to beg	18.06%	28.13%	37.21%	32.51%	0.002

The food insecure households use almost all coping strategies, however, the strategy of maintaining a food garden is not highly used. The main reason why only a few households maintain a garden would be the unavailability of land in townships. Thus, in proposing intervention, making pieces of land available, or discovering modern ways of gardening that do not require big pieces of land would be ideal. For example, planting vegetables in old tyres or instead of having

flowers in the pots, one would plant vegetables in the flower pots as a way of supplementing food in the household.

Table 4 shows the number of coping strategies used by the food insecurity categories. As expected, the food secure household use fewer coping strategies compared to the severely food insecure household. In this regard, only 33 households in the food secure category use no coping strategy at all, 11 households in the food secure category use only one coping strategy, while 44 households uses up to 3 coping strategies. Amongst the severely food insecure group, all households use one or more coping strategies. In the severe food insecure category only one household uses one or two coping strategies. The majority of the households in the severely food insecure category use multiple strategies and 16 households reported to have been using all 12 coping strategies. It is evident that the higher the level of food insecurity the more coping strategies are used by households to cope with food insecurity.

Table 4: Number of coping strategies used by households

		Level of Food Insecurity			
		Food Secure	Mild Food Insecure	Moderate Food Insecure	Severely Food Insecure
Number of Coping Strategies Used	0	33	0	0	0
	1	11	1	0	1
	2	24	4	1	1
	3	44	8	7	14
	4	41	13	12	10
	5	37	15	19	27
	6	17	8	17	39
	7	6	3	9	24
	8	1	5	9	22
	9	1	0	2	19
	10	1	0	3	9
	11	1	0	1	10
	12	0	2	2	16

Table 5 shows the average number of days a specific strategy is used by households in a specific food security group. The strategy to “buy only necessities” is used by the food secure group on average 2.78 days a week, compared to the mild food insecure group who use this strategy for 4.94 days on average per week. The moderately food insecure group use the strategy to “buy necessities” for 5.40 days on average per week, while the severely food insecure group use this strategy for 4.98 days on average per week. The strategy to “buy food on credit” is, in terms of ranking, the most employed strategy of the food insecure group. The food insecure group “skips meals” 3.06 days on average per week. In terms of ranking, the severely food insecure group rely most on “skipping meals” as a strategy with 5.24 days on average per week, followed by “buying necessities” with 4.98 days on average per week, and “buying on credit” for 4.49 days on average per week.

Table 5: Average number of days per week a specific coping strategy is employed by households in different food insecurity groups

	Food Secure		Mild Food Insecure		Moderately Food Insecure		Severely Food Insecure	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Buy necessities	2.78	2.96	4.94	2.81	5.40	2.60	4.98	2.85
Rely on less expensive food	0.27	0.88	0.67	1.02	0.69	1.00	1.38	1.68
Stick to the budget	0.29	0.68	0.55	1.14	1.04	1.62	1.50	1.70
Limit portions at meal times	0.79	1.81	0.72	1.44	1.65	2.10	2.65	2.53
Skip meals	3.06	2.88	4.77	2.77	5.16	2.55	5.24	2.57
Purchase food on credit	3.27	3.09	4.34	3.00	4.38	2.96	4.49	2.90
Maintain a food garden	0.64	1.78	1.29	2.51	1.19	2.20	2.02	2.76
Borrow food from friends	0.14	0.49	0.36	1.12	0.54	1.04	1.10	1.70
Restrict consumption of adults in order for	0.048	0.39	0.38	1.40	0.19	0.64	0.70	1.58

children to eat									
Gather wild vegetables	0.079	0.50	0.34	1.40	0.29	0.86	0.80	1.54	
Sent household members to eat elsewhere	0.05	0.39	0.27	1.26	0.29	0.98	0.53	1.52	
Sent household members to beg	0.30	0.96	0.62	1.46	0.88	1.79	0.96	1.87	

5. CONCLUSION

This paper reveals a number of issues associated with household food insecurity. Based on the descriptive statistics, it is clear that age of the head of the household, household size, and level of education of the head of the household have some association with the food security status of the household. The households with more members are faced with a greater chance of being food insecure. Similarly, older heads of household are likely to be food insecure and those with low levels of education are found to be more likely to be food insecure. Income is associated with the level of household food insecurity, where lower income is associated with higher levels of food insecurity.

The analysis of the coping strategies shows that the higher levels of food insecurity are associated with using more coping strategies. Although it is shown in the analysis that food secure households use some strategies, they are mostly food saving and income saving, which are essentially a planning strategy as opposed to a food shortage strategy. Of the strategies being used across the households, maintaining a food garden is not common and this has been interpreted to be a result of lack of land. The recommendation made is therefore that households should utilise other measures of increasing their gardening options, including land saving measures, like planting vegetables in pots instead of flowers. The results, however, show that poverty remains the main cause of food insecurity especially low income association with food insecurity. Therefore, dealing with food security would be one way of addressing the bigger problem of poverty. A limitation to the study is the fact that the link between coping strategies and food insecurity could not be established. A follow-up study using regression analysis is suggested for further studies.

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