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How severe hunger is amongst rural households of the Eastern Cape Province of South Africa

S. Ndhleve[1*], L. Musemwa[2] and L. Zhou[2]

[*1]Risk & Vulnerability Assessment Centre, Walter Sisulu University. Nelson Mandela Drive Campus, Private Bag X 1. Mthatha, 5100.
[2]Risk & Vulnerability Assessment Centre, University of Fort Hare, P. Bag X1314, Alice 5700, RSA
*Corresponding author: lmusemwa@ufh.ac.za Tel: +27 71 052 7070

Abstract
The paper describes household perceptions of food accessibility status, average number of meals a household had in one day and the average number of meals shortages in one month in the Eastern Cape Province of South Africa. A random sampling technique was used to interview 159 households. Analysis of data utilized simple descriptive statistics and multivariate analysis to describe household food security. About 80% of the interviewed households perceived themselves as food insecure and the rest as food secure. The respondents eat 3.04±0.06 meals per day and experience an average of 2±0.32 meal shortages per month. Most household perceive lack of capital as the main cause of food insecurity. Improving household income through promotion of income generating projects and increasing employment opportunities complemented with wage increment could help household in meeting their food requirements. Government should however continue fostering its agenda of improving agriculture in rural communities though it does not contribute much to household food security directly.
Keywords: Agriculture, food security, malnutrition, poverty, food shortages

1. Introduction

Reducing hunger and food insecurity is one of the goals of the Millennium Development Goals (MDGs) by 2015. In South Africa, food security remains high on the country's development agenda. However, South Africa has been spared and in most cases treated as a food secure country (Jacobs, 2009 and du Toit, 2011). Conversely, this is only so when considering national data as many are of the notion that there is enough food in South Africa for everyone to have the nourishment necessary for a healthy and productive life. Jacobs (2009) and du Toit (2011) among others directly refutes this perception. The HSRC (2004) reported that about 14 per cent of the population is estimated to be vulnerable to food insecurity, and 25 per cent of children under the age of six are reckoned to have had their development stunted by malnutrition. In 2009, Statistics South Africa's General Household Survey reported that an estimated 20% of South African households have inadequate or severe inadequate food access (du Toit, 2011). John-Langamba (2012) recently reported high level of inadequate access to food across South Africa. Contradictions between positive macro-trends and the challenging realities at both household and community level should be continuously explored. Madzwamuse (2010) posits that in a country that has a dual economy, it is very easy for '2nd economy' related issues to be overshadowed and forgotten.

Hunger is not commonly discussed in South Africa or sometimes treated as synonymous to food insecurity. Attempts to measure the level of food security and hunger systematically have posed major challenges to advocates and policy analysts alike (Jacobs, 2009). Hunger has been once defined in medical sense by equating it with the physical manifestations of malnutrition (Cohen et al.,1999). Cohen et al. (1999) and Watson and Anderson (2010) further argued that hunger is not identical to malnutrition and posits that it is more likely to be a condition preceding the medical or psychological aspects of malnutrition. It is defined as the inability to obtain an adequate amount of food, even if the shortage is not prolonged enough to cause health problems (Cohen et al., 1999).

One element in establishing food and nutrition security is to ensure that households, communities and nations do not go hungry (Fanzo, 2012).To establish the prevalence of hunger in rural South Africa, data was collected from one rural community in Eastern Cape on households' experiences and perceptions on food shortages, number of meals consumed per day and various socio-economic characteristics. Eastern Cape is one of the poorest provinces in South Africa. This study starts by examining households' perception of their food security status and attempt to validate whether households' perceptions accurately reveal households food accessibility status. Following on this, the paper then turns to the analysis of variables that describe the prevalence of hunger like the average number of meals consumed per day and number of meals shortages a household experience in one month. The analysis in this paper leads to an overall conclusion that hunger and food insecurity manifests themselves in different form

across the investigated communities and relevant policy recommendations were highlighted.

2. Material and methods

2.1 Study Area

This study was carried out in Ngqushwa Local Municipality of the Eastern Cape Province of South Africa. Ngqushwa is a wonderful tourist attraction that prides itself in its rich history and heritage. It is bounded on the East by the Fish River and on the South by the Indian Ocean and has 118 villages under its jurisdiction and a population of 84 234 made up of 20 757 households. Majority of the people in this municipality are engaged in subsistence farming, low income jobs, contract jobs and petty trading. The municipality has a climate which varies with the elevation from cool humid sub-topical at the coast to hot and sub-arid inland. The climate is characterized by variable moderate to low rainfall ranging between an annual average of 700mm at the coast and 400mm in the inland with about 60% of rainfall occurring in summer and peaks being in October and February. The natural vegetation has been vastly transformed by grazing practices. Even though certain parts of the vegetation have been degraded and show evidence of severe veld mismanagement, especially with the presence of "alien plants", a greater portion of the region is in an environmentally superior state and the region is favorable for livestock production. Major crops grown include maize (monoculture) and various vegetables. Both livestock husbandry and fisheries are hound in this municipality. The area presents an appropriate representation of the Eastern Cape. It possesses both semi-rural community and the rural community and this matches the status of the Eastern Cape Province.

2.2 Data collection and analysis

Data was collected from 159 randomly drawn households through structured questionnaire gathering information on socio-economic characteristics and household's food accessibility. Food accessibility was assessed by households' perception of food security status, the number of meals a household have in one day and the average number of meals shortages experienced by the households in one month. Determinants of food shortages and factors affecting the number of meals consumed per day were also captured in the survey tool.

For data analysis, both descriptive statistics and regression were used. Descriptive statistics such as frequency, means and standard deviation were used to analyse important variables like households socio-economic status, number of meals consumed per day and the number of food shortages experienced in a month. Multivariate analysis was used to analyze the determinants of food shortages and number of meals consumed per day.

2.2.1 Model specification

The model adopted in this study was used to identify those variables that best explain the chances of experiencing food shortages and number of meals consumed by a household in one day. In order to examine the relative importance of each independent variable, by controlling all the confounding factors, multivariate analysis in the form of multiple regressions was used. The multiple regression analysis is commonly used for the purpose of predicting values of one or more response variables from one or more predictor variables. The dependent variables for the study were number of food shortages in one month, variable ranging from 0 (no food shortages) to four and average number of meals consumed per day, a variable ranging from 1 to 4 meals per day.

Depending on the two dependent variables, the general formula of the multiple regression models is given by:

$$Y_i = B_0 + B_1 X_{1i} + B_2 X_{2i} + - - - - BKX_{ik} + e$$

Where B stands for the coefficients, K denotes the number of predictor variables (factors explaining the dependent variables) and i denote the i^{th} number of the sample population.

Multivariate or univariate analysis estimate the marginal effects of household characteristics on whether households experience less meals per day or experience food shortages in a month. For the two dependent variables, the first can be interpreted as showing the estimated effect of the corresponding independent variable on the probability of eating less than three meals per day and the second showing the probability of experiencing food shortages in one month.

3. Results and Discussions

3.1 Household Characteristics and Perceived food security

Thirty percent of the sample population is above 70 years of age and only 15% per cent is 40 years or younger. The

remaining 55% of the sampled household heads were more than 40 years old but less than 70 years. A community rich with diverse population age groups has assets in historical knowledge and a base of information about the past and wisdom for the future. This is an important input in addressing food insecurity (Emery, Fey and Flora, 2004). Educations attainment are relatively high with only 3 per cent being uneducated. There is an even distribution on grounds of sex ratio of the community; approximately 50 per cent of the interviewed households were headed by females. Over 80 per cent of the respondents has completed secondary school or attained a tertiary education, with only 8 per cent with incomplete primary level or less. The level of education is well above the figures reported from the General Household Survey Series for 2012 (Statistics South Africa, 2012). Household socio-economic status has important implications on food choices, consumption pattern and food budgeting (Cohen et al., 1999 and Schnepf, 2012).

According to Cohen et al., (1999), some aspects of hunger are psychological. Out of a total of 159 households, 82% perceive themselves as food insecure while only 18% perceive themselves as food secure. Household's own perception of hunger and food insecurity is an important measure of food accessibility and is seemingly used by many in literature (Damisa et al, 2011; Lokosang et al., 2011). This level of food insecurity is higher than the national levels of 70% reported by Frayne et al. (2009). These results confirm the notion that household food security analyses always give a higher proportion of the food insecure households than figures at macro-level (Jacobs, 2009). A comparison of households that perceive themselves as food secure and those perceiving themselves as food insecure showed that households perceiving themselves as food insecure constitute highest percentage of unemployed, low educational attainment, low average income, old heads of households and bigger average household size. Population demographics play an important role in household food production and consumption (Schnepf, 2012).

There are marked disparities across household socio-economic characteristics on grounds of perceived food security status (Table 1). Some significant differences were noticed between those households that perceive themselves as food secure and those that perceive themselves as food insecure with regard to household characteristics.

Table 1: Baseline Characters of Households and ANOVA Test of difference between the food secure and food insecure, Hamburger, South Africa.

Variables of Interest	All Respondents	Food insecure N=130 (82%)	Food secure N=29 (18%)	P value
Gender				0.004*
Males	80 (50.3%)	18 (11.3%)	62 (39%)	
Females	79 (49.6%)	11(6.9%)	68 (42.8%)	
Age	58	56	59	0.238
Household size	5 (2.68)	4.9 (2.61)	5.41 (2.75)	0.000*
Employment status				0.214
Employed	42 (26.4%)	9 (5.7%)	33 (20.8%)	
Unemployed	116 (72.9)	20 (12.6%)	96 (60.4%)	
Highest level of education				0.000*
Uneducated	5 (3.1%)	2 (1.3%)	3 (1.9%)	
Primary	8 (5.0%)	0	8 (5%)	
Secondary	115 (72.3%)	19 (12%)	96 (60.4%)	
Tertiary	31 (19.5%)	8 (5%)	23 (14.5%)	

Household income	R2 725.72	R2 314.00	R3 137.43	0.000*

Source: Computed from own data. *Significant at the 10% level of significance.
All the percentages are relative to total respondents.

It is extremely unlikely that the there is no association between household food security status and household socio-economic characteristics (Lokosang et al., 2011). From Significant differences were noted on gender of household hold head, household size, level of education and household income between the food secure and food insecure households. The situation of food insecurity in South Africa is therefore not hidden as it is apparent from the obvious signs like household socio-economic status.

3.2 State of food access and perceived reasons for not having enough food

The majority of the household in the study area depend on food purchases rather than own production. Only 30 % of the interviewed households produce most of their food. This result substantiates the finding by many that South Africans are net buyers of food (Baiphethi and Jacobs, 2009, du Toit, 2011 and Abrahams, 2012). The majority of households in the study area consumed more than three meals a day and more than 90% reported that they experienced at least two days of food shortages in one month. The mean number of meals per day was 3.04±0.6 per day and range from 1 to 4 meals per day as shown Table 2. Despite a reasonable number of meals consumed per day, a higher prevalence of food shortages was reported per month. On average, households experience 2±0.32 days of food shortages per months. The number of days households experiences food shortages in a month range from 1 to 4. At least 98 percent of households face extreme food shortages with limited ability to cope. The prevalence of food shortage was reportedly high a week before month end. Among households experiencing food shortages, more than 89% experienced food shortage a week before month end. In South Africa, those who cannot increase the household food budget the only option is to eat less or buy less nutritional food (Abrahams, 2012).

Table 2: Meal shortages and number of meals/day among households in Hamburger

Indicator	All household
Number of meals per day	3.04±0.6
Households eating ≤ 1 meal per day	1.3% (n=2)
Households eating 2 meals per day	11.9% (n=19)
Households eating ≥3meals a day	67.5% (n=108)
Number of food shortages in one month	2±0.32
Households without meals shortages	1.9% (n=3)
Households that experience≤ 2 days of food shortages	93.8% (n=150
Households that experience≥ 3 days of food shortages	4.4% (n=7)

A surprising outcome emerged as 4.3% of the respondents perceive themselves as food secure but also experienced food shortages in that same month. One reason for inconsistent findings may be because of unconscious adaptation to food shortage or security of the available coping mechanisms to mitigate significantly the worst effects of their food shortages (Wlokas, 2008). However, one assumption consistent with the patterns seen in the data and particularly common in South Africa is that households that experience episodes of food shortages have strong preferences for food. They tend to consume large quantities of food when they have the resources, thus using up their food budget resources too quickly and thereby place themselves at risk of having an episode of hunger when their resources run out.

3.3 Perceived reasons for food shortages

To understand better why households have less than three meals per day or have experienced meals shortages, respondents reporting that they did not always have enough food in the household were asked to rank their perceived reasons for less than three meals per day.

Table 3. Perceived reasons for eating less meals or food shortages in one month

Reasons for eating less meals	*Mean rank
Not having enough money	1.8
Income is not enough to finance food throughout the month	2.8
Unwillingness to prepare food	3.1
Difficulty in getting to the store	5.2
High food prices	2.5
Inability to produce their own food	4.3

*The lower the mean rank the more important the variable is.

Household analysis of the risk factors of food shortage in Table 3 confirms that not having enough money to buy food is the most important reason for food shortage in the study area. These findings complement results obtained from a study conducted in KwaZulu-Natal by Abrahams (2012). The KwaZulu-Natal study noted that households do not receive sufficient income to meet food needs at satisfactory level. The majority of households in South Africa are net buyers of food and therefore availability of money directly impact on their ability to access sufficient food. The main determinants of access to sufficient food for the investigated sample were therefore access to be sufficient money and food prices as they are the main determinants of food access for communities that do not produce their own food. The result also show that although unwillingness to prepare food, difficulty in getting to the store, high food prices in local store and inability to produce own food did not rank high relative to lack of money, the fact that they were mentioned suggests that they may need to be taken into account when formulating policies and strategies addressing food shortages in rural South Africa. Abrahams (2012) exposes that food remains unaffordable for most households due to low wages and households' income and this is worsened by household expenditure on municipal services, transport, education, accounts and health.

3.4 Factors influencing households' level of hunger

There was a variation between the number of meals consumed per day and the average number of food shortages experienced in one month, but not necessarily in a manner that corresponds to expectations. The study found out that the factors that influence the number of meals consumed per day might not necessarily influence the number of meal shortages in one month. For instance, only three variables were found to significantly influence the incidence of food shortages in one month; however results on number of meals consumed per day found out that accessing food from the environment is the only factor that significantly influences the number of meals consumed per day. Table 4 below shows the results of the factors influencing the incidence of food shortages in a month.

Table 4. Logistic regression models of the associations between number of food shortages and households variables

Variable of Interest	Estimate (95% CI)	Sig.
Age	-.040 (-0.1 to 0.03	0.297
Total household income	-3.12 (0.0 to 0.0)	0.823
Number of Meals per day	0.54 (-0.8 to 1.9)	0.426
Household size	-.021 (-0.4 to 0.3)	0.916
Married	-6.31 (-11.7 to -0.8)	0.024*
Divorced	-7.43 (-13.2 to -1.6)	0.112
Widowed	-6.39 (-11.8 to -0.9)	0.122
Employment status	0.78 (-1.5 to 3.1)	0.504

Purchasing food	25.94 (22.7 to 29.2)	0.000*
Own produce	22.12 (22.1 to 22.1)	.
Accessing food from the environment	-.138 (-2.8 to 2.5)	0.919
Social grant	-1.88 (-6.4 to 2.7)	0.417
Professional job	-1.49 (-5.7 to 2.8)	0.491
Own business	-1.02 (-4.1 to 2.04)	0.515
Contact jobs	25.22 (-1.5 to 1.5)	0.997
Farming	0.91 (-3.3 to 5.1)	0.672
Growing crops	0.46 (-1.5 to 2.4)	0.646
Uneducated	6.88 (1.7 to 12.0)	.009*
Primary	3.62 (-1.3 to 8.6)	0.152
Secondary	1.64 (-1.2 to 4.4)	0.249
Gender of Head of household	1.85 (-0.9 to 4.7)	0.197

Source: Computed from own data. *Significant at the 5% level of significance.

Following ordinal logistic regression controlling for all the other parameters, the main effects of household characteristics on the prevalence of food shortages through the month were due to marital status, having purchasing as the main source of food and being uneducated. Households headed by individuals who are out of marriage were more likely to face food shortages. The existence of two people providing for the family possibly implies a dual income received by the household. Single income families are more prone to food shortage than dual income families. The existence of a father and mother in a family contribute to raising household income and food production (Wlokas, 2008).The marriage institution plays an important role in improving the welfare of the family among Africans. Traditionally, marriage is a symbol of family stability.

The two sources of food namely own production and purchasing food from the market were explored as predictors of food shortages in the model and purchasing food from the market was found to be significantly related to the number of food shortages experienced in a month. A study by Perret et al., (2000) indicated that farmers in the Eastern Cape Province are only able to grow 30% of crops that they would require annually. This implies that households would have to purchase food from the market to augment shortages. Statistical insignificance for own production of food can be attributed to its low contribution to household consumption.

Being uneducated emerged as the most important determinant of food shortages in one month. Households headed by uneducated members were likely to experience a higher number of food shortages in a month. Poor meal planning, food shopping and food budgeting are responsible for most of the reported food shortages (Cohen et al., 1999). A study held in United States by Cohen et al., (1999) showed that households lack most of these skills and tend to have poor food consumption patterns whereby large quantities of food are only consumed either after harvesting or receiving stipend leaving no food for the other period.

4. Conclusion

The majority of households in Ngqushwa Local Municipality are food insecure. Households are surviving with fewer than three meals per day and some experiences on average two to three days per month without food. In the study area, the majority of the households are net buyers of food. Only very few household supplement food purchases with own food production through activities which may include livestock keeping and vegetable production. Most household perceive lack of capital as the main cause of food insecurity. Improving household

income through promotion of income generating projects as well as increasing employment opportunities as well as wages could help household in meeting their food requirements in a socially acceptable manner. Improving efficiency in the food value chain and also removing barriers to food imports could also result in reduction in food prices hence improving household food purchasing power. On the other hand, government should continue fostering its agenda of improving agriculture in these rural communities. Therefore, an integrated approach that improves the overall purchasing power of the households, knowledge on producing food both for consumption and generating income ensures alternative sources of food or income will probably be more effective in improving food sufficiency across rural communities.

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