The determinants of food security status among indigent rural households in the Isikelo community of the Mbizana local municipality, South Africa

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Abstract

The Eastern Cape is the second largest province in South Africa, with high levels of poverty, and hence its rural areas, in particular, are considered to be highly food insecure. There is little known about the factors which determine the households' food security status in small rural towns such as Mbizana, a local Eastern Cape municipality mainly comprising of indigent households, for no such studies have been conducted in this area. The main objective of the study was to examine the determinants of food security status of the households in the Isikelo community of the Mbizana local municipality. The systematic random sampling was used and 330 data points were successfully achieved. In addition, the data collection occurred for three months, from December 2016 to February 2017. The study utilised a binary logit model and found that 09 of the 15 commonly used predictors, that were included in the regression, were statistically significant. These variables included household size, social grants, gender, marital status, total monthly income, farm income, remittances, improved seed, and subsistence farming. Moreover, 62% of the sampled households were food insecure, whereas 38% of them were found to be food secure. Based on the findings of the study, we recommended that the government should introduce programs that promote farm cooperatives, as well as subsistence farming to enhance food security of the rural indigent households.

Introduction

Food security is defined as the situation which occurs when each household member or an individual has physical and economic access to adequate food with the required amount of nutrients (Gibson, 2012). It is said to depend on four pillars which include; food availability, access, utilisation, and stability. One of the greatest challenges across the world is how to

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ensure that millions of households who are severely affected by poverty have access to food of the best quality (Adekunle, 2013). The problem of under-nutrition and food insecurity were typically observed in developing countries (Mbwana *et al.,* 2016).

Over the past 50 years, the African continent, particularly the Sub-Saharan region were severely food insecure (Sasson, 2012). High food prices, coupled with worldwide economic crises led to a sharp increase in the number of undernourished people between 2006 and 2009. This was expected to decrease in 2010, since the global economy recovered, but it persisted to be excessively high. Asia and Pacific, Sub-Saharan region, Latin America and the Caribbean, Near East and North America, the number of undernourished people were 578 000 000, 239 000 000, 58 000 000, and 37 000 000, respectively (FAO, 2010).

To this end, South Africa is one of the countries under the Sub-Saharan region and has enough food to feed its citizens nationally, while the poor and marginalised households who live in rural areas are severely food insecure (Masuku *et al.,* 2017). The Eastern Cape is the second largest province in the country, but it is characterised as poverty-stricken with high levels of unemployment and income inequality (Chitaga-Mabugu *et al.,* 2014).

The people residing in the Alfred Nzo district experienced a high level of starvation, specifically the black Africans as it accounted 78.47% in 2016, compared to 4.4% of White people living in poverty in the same area (ADMSERO, 2017). Moreover, there is little known about the factors that influence the food security status in small towns such as Mbizana, a local municipality which is located in the Alfred Nzo district of the Eastern Cape Province. This municipality is dominated by poor households whose livelihoods are derived from agricultural activities and hence considered as severely food insecure.

Methodology

Description of the study area

The Mbizana local municipality is situated in Alfred Nzo district in the Eastern Cape Province. It is located on road R61, which connects the KwaZulu-Natal South Coast boundary to the national road N2, leading to uMtata. This municipality covers an area of approximately 2 806 km2 (ANDM IDP, 2014). The population of the said municipality is approximated at 281 905, with 48 447 households. The distribution by gender in the said local municipality revealed that the number of females was estimated at 153 573, whereas males were approximately 128 332 (Stats SA, 2011).
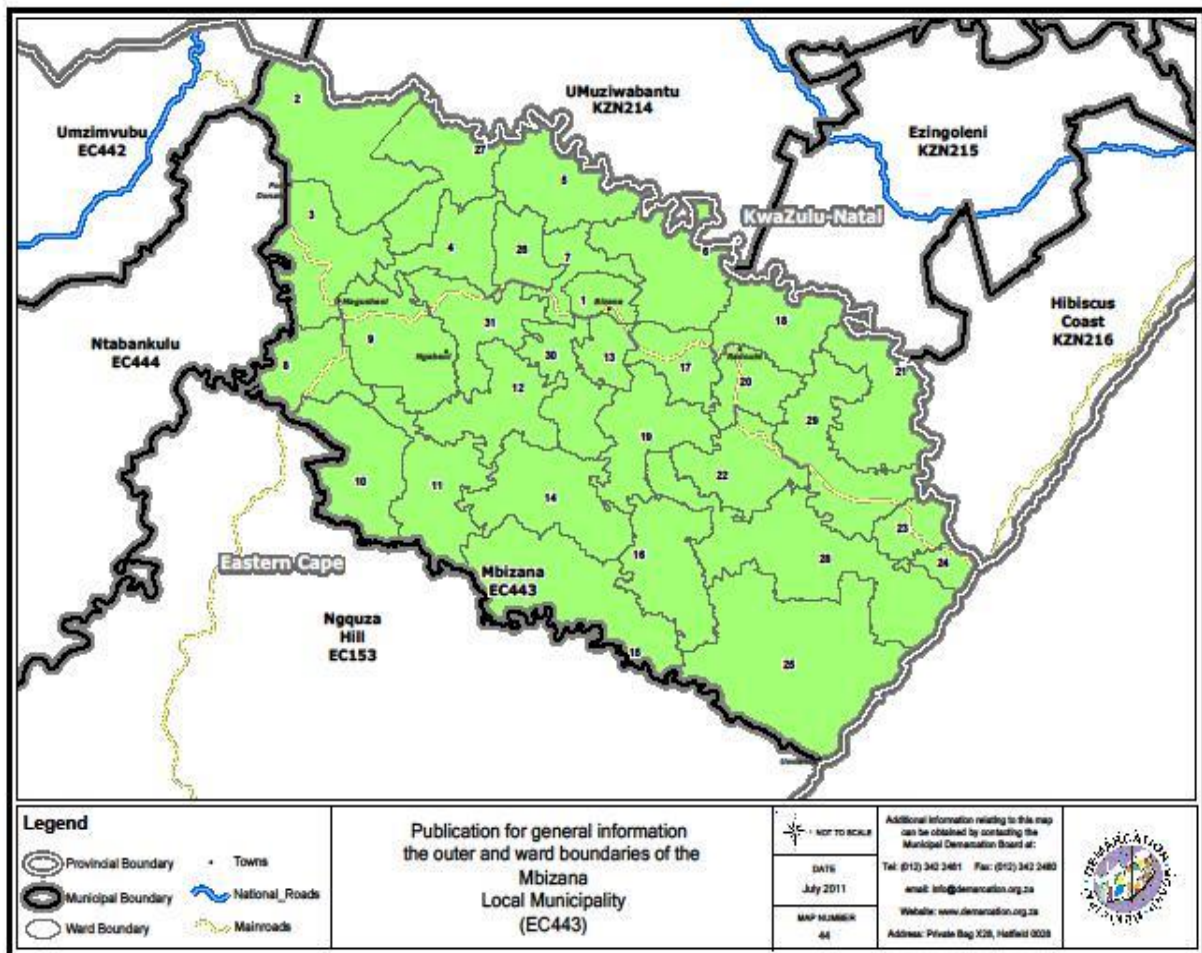
Figure 4.1: Map 1: Mbizana Locality map showing ward boundaries (Mbizana local municipality IDP 2014)

Data and procedures

The cross-sectional data set was employed to estimate the factors that influenced the food security status of the indigent households within the Isikelo community of the Mbizana local municipality. Moreover, the study used a systematic random sampling method and 330 data points were successfully obtained. These participants were selected through the use of well-structured and self-administered questionnaires. The logit model was utilised to assess the relationship between the response outcome and households' demographic characteristics.

Measurement of the dependent variable

The dependent variable was measured using the household food insecurity access scale developed by USAID in 2007, which serves as the standard tool used across the world to measure food security status either at household or individual level (Kennedy *et al.,* 2011). Household food insecurity access scale has nine (9) occurrence questions and its corresponding frequency of occurrence. For example, the participants were asked whether they experienced

any food shortages in the past four weeks. Any respondent who said it happened in their household to have food shortages over the above-mentioned timeframe, the interviewer continued to ask the frequency of occurrence. These households were classified as food insecure, while those who indicated that they did not experience food shortages in thirty days (30) were categorised as food secure (Coates *et al.,* 2007). Therefore, food-secure households were coded as 1; and 0 otherwise.

$$HFSi = \begin{cases} 1, \text{Food secure} \\ 0, \text{Food insecure} \end{cases}$$

Model specification

This study employed a binary response variable, meaning that the dependent variable has two categories. Food secure households were coded as 1, and 0 otherwise. The odds ratio represents the probability that an event will occur to the probability that an event is less likely to take place.

The odds ratio is expressed as follows:

$\frac{P(Y=1)}{1-P(Y=1)} = e^{Zi}$ …………………………………………………………………………...1

Introducing the natural logarithm on both sides of the above equation result to equation 2 as follows:

$Zi = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \ldots\ldots + \beta_n X_n + U_i$ ………………………………....2

Where β_0 represents the regressions' intercept, while $\beta_1, \beta_2, \beta_3, \beta_4, \ldots \beta_n$ signifies the vector of parameters to be estimated, whereas X symbolises the characteristics of the sample households and Ui denotes the error term.

Description of variables

The variables depicted in the table below were chosen on the bases that they were previously tested in various empirical studies and also justified by the economic theory.

Table 1: Independent variables

Code	Type	Description
Hhs	discrete	Number of household members
Hhhag	Continuous	Household head age in years

Hhinc	Discrete	Household total monthly income
Hhhg	Dummy	1, Male
		0, Female
Hhhms	Dummy	1, Married
		0, Never married, divorced or widowed
Hhhed	Dummy	1 Has formal education
		0, No formal education
Hhsg	Dummy	1 Has social grants
		0, No social grants
Hhrem	Dummy	1, Have remittances
		0, No remittances
Subs-farming (Own food production)	Dummy	1 Has own food production
		0 Otherwise
Finc	Dummy	1 Has farm income
		0 otherwise
Hhhemp	Dummy	1 Self-employed/employed by someone
		0 Otherwise
Lr	Dummy	1 Claimed cash for land
		0 Otherwise
Livest-ownship	Dummy	1 Livestock ownership
		0 Otherwise
Impr-seeds	Dummy	1 Used improved seeds
		0 Otherwise
Mcooper	Dummy	1 Membership in farming cooperative
		0 Otherwise
Pests & diseases	Dummy	1 Affected by pests and diseases
		0 Otherwise

Descriptive statistics

The findings of the study revealed that 54.55% were headed by males, whereas 45.45% were headed by females. This is an indication that both genders are well represented in the study. With reference to table 2 below, the majority of the households who participated in the study

were those with 65 years and above. Regarding the marital status, 56.36% indicated that they are married while 30.30%, 11.82% and 1.52% shown that they never married, widowed and divorced, respectively. The education status of the participants shows that most of the households in the Isikelo community have primary education which constituted 41.82%. This was followed by people who attained secondary education (38.48%). The last group consists of the households who passed the matric and some with tertiary certificates (12.12%), followed by those who never went to school (7.58%).

Table 2: descriptive statistics

Household characteristics	Frequency	Percentage
Gender of household head		
Males	180	54.55%
Females	150	45.45%
Age of the household head		
≤ 35	17	5.15%
36 – 40	41	12.42%
41 – 45	28	8.48%
46 – 50	75	22.73%
51 – 55	16	4.85%
56 – 60	34	10.30%
61 – 64	7	2.12%
65 ≥	112	33.94%
Marital status of household head		
Never married	100	30.30%
Married	186	56.36%
Divorced	05	1.52%
Widowed	39	11.82%
Household head employment status		
Employed	28	8.48%
Self-employed	38	11.52%
Part time	74	22.42%
Unemployed	76	23.03%
Not in labour force	114	34.55%
Education level of household head		
Never went to school	25	7.58%
Primary	138	41.82%
Secondary	127	38.48%
Matric and above	40	12.12%

Discussion of the findings

The household size is negatively associated with food security status and statistically significant (p<1%), which suggests that when the household size increases by 1 person, it decreases the likelihood of being food secure. The social grant coefficient is negative and significant (p<5%), this indicates that when an additional household member receives a social security grant, decreases the chances to be food secure. One of the reasons for this could be overdependence on government than creating other income-generating opportunities such as self-employment.

The gender is positively related to food security and statistically significant (p<10%), which shows that when the household is headed by a male it's more likely to be food secure compared to their counterparts. Marital status is significant (p<1%), and positively linked to food security status. Holding other factors constant, when the household is headed by a married person, it's more likely to be food secure compared to a single, divorced or widowed head. The total monthly income is positive and significant (p<1%), indicating that a unit increase in household income (i.e. R1), assuming that all other factors are constant, it increases the chances of being food secure.

The farm income coefficient is positive and statistically significant (p<5%), which implies that an increase in farm income increases the chances for the households to be food secured. Remittances are statistically significant (p<1%), and positively correlated with the food security status. Holding other things equal, a unit increase in remittances increases the possibility for the households to be food secured.

The improved seeds have a positive influence on household food security status and it is significant (p<5%). This indicates that when the improved seed is used, it increases the probability for the households to be food secured. Subsistence farming is statistically significant (p<5%), and negatively associated with food security status. This implies that when subsistence farming increases without supplementing it with other income sources may result in a decrease in the possibility of being food secured.

Table 3: The determinants of household food security status.

Food security (using HFIAS)	Coef.	Odds Ratios	Std. Err.	z	P>z
Hhs – household size	-0.972	0.379	0.078	-4.71	0.000*
Hhsg – social grants	-2.311	0.099	0.086	-2.65	0.008*
Hhhag – household head age	0.049	1.050	0.033	1.57	0.116
Hhhg – gender	0.936	2.551	1.311	1.82	0.068***
Hhhm – marital status	1.684	5.388	2.840	3.20	0.001*
Hhhed – education status	0.315	1.369	0.662	0.65	0.515
Hhinc – household income	0.003	1.003	0.001	5.80	0.000*
Farminc – farm income	3.792	44.433	74.919	2.24	0.025**
Lr – land restitution	-1.611	0.1997	0.294	-1.09	0.275
Rem – remittances	2.933	18.786	10.796	5.10	0.000*
Hhhemp – employment status	-0.608	0.544	0.361	-0.92	0.359
Livest – livestock ownership	1.014	2.756	1.948	1.43	0.152
Impr_seed – improved seeds	2.097	8.143	8.723	1.96	0.050**
Mcooper – cooperative membership	-0.078	0.925	0.794	-0.09	0.928
Sfarming – subsistence farming	-2.294	0.101	0.118	-1.97	0.049**
_cons	-5.421	0.004	0.007	-3.26	0.001

*, **, *** Significant at 1%, 5%, and 10%, respectively.

Conclusion and recommendations

The study aimed to establish the relationship between food security and the characteristics of the sampled households in the Isikelo community of Mbizana local municipality. The findings revealed that only 38% of the sampled households were found to be food secure, while the majority which constituted 62% were found to be food insecure. Additionally, nine (9) predictor variables that were included in the logit model were found to be statistically significant. These variables included household size, social grants, gender, marital status, total monthly income, farm income, remittances, improved seed, and subsistence farming. Based on the findings reported in the study, we recommended that the government should implement programs that will promote farm cooperatives to enhance food security in rural areas.

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