

The Role of Education, Income in Determining Standard of Living and Food Security amongst the Residents of Mhlontlo Local Municipality Eastern Cape, South Africa

Khanyiswa Halam¹, M. Dywili² and E. E. Nwokolo³

*University of Fort Hare, Department of Industrial Psychology, Private Bag X1314,
Alice, 5700 Eastern Cape, South Africa*

E-mail: ¹<halamkhanyiswa@yahoo.com>, ²<mdywili@ufh.ac.za>, ³<echetimber@gmail.com>

KEYWORDS Education. Income. Nutrition. Food Insecurity. Poverty. Household Level

ABSTRACT The paper investigated the role of education and income in determining household standard of living and food security amongst the individuals living in Mhlontlo Local Municipality in Eastern Cape Province of South Africa. The population comprised approximately N=7794 people and a sample of 101 participants were drawn from the population. The sample was drawn using the probability sampling method known as cluster sampling and data was collected using self-administered questionnaire. The results revealed that education and income are significantly and positively related to standard of living and food security. The findings of this study are helpful to the government in order to reduce the prevalence of food insecurity by providing appropriate policies and infrastructure as these can improve rural education, raise household incomes and improve rural economies.

INTRODUCTION

In the last two decades since the inception of democracy in South Africa the place of rural development, poverty alleviation and food security remains ambiguous and highly contested (Rogan and Reynolds 2017). In developing countries, particularly those in sub-Saharan Africa, food security has remained a challenge for a number of governments (FAO 2014). Several studies have been conducted based on the household food security and the impact it has on people's lives (Kabui 2012; FAO 2014 and DAFF 2013).

Food and Agriculture Organization (2012) indicate that the period of 2010 to 2102, 852 million people in developing countries were considered food insecure. Among these 852 million people, 234 million lived in Sub-Saharan African countries (De Weerd 2014). Although the objective of the first Millennium Development Goal targeted reducing hunger by half in 2015, the Food and Agriculture Organization report indicate that the progress towards this goal moved slowly and subsequently declined after 2009 (FAO 2012).

Zakari et al. (2014) argue that sustaining food security at national level as well as household level remains the biggest problem in many de-

veloping countries. Often this is as a result of the lack of the directorate of food security programmes from a number of government organizations, which results in unproductive ventures and failures in terms of poverty alleviation (National Department of Agriculture 2002). In South Africa as indicated by De Cock et al. (2013), food security is assured at national level but the same cannot be said at household level particularly in the rural areas. Shisanya and Hendricks (2014) added that rural areas are most characterized by food insecurity, which is a violation of human right since every individual in South Africa has the right to food daily as enshrined in the country's constitution. Ihab et al. (2013) opined that inadequate food supply, food quantity and quality bottlenecks, insufficient income to purchase food, and skipping of meals by members of rural households are the several elements of food insecurity.

Nevertheless, Ryan (2013) posits that South Africa has experienced unstable food prices due to inflation, as rising costs of food could have debilitating effects on household food security and as a result plunged those who are not capable of coping with rising costs of food further into hunger and food insecurity (Gustafson 2013). On the other hand, Provincial level of food insecurity, Salepe et al. (2015) confirm that

Eastern Cape Province is characterized as one of the provinces which have high rates of food insecurity and poverty, low literacy rate, high rate of unemployment and poor standard of living. The Eastern Cape Socio-economic Consultative Council (2016) report highlighted that people from rural areas of Eastern Cape with no education are the main victims in the ongoing struggle against poverty and food insecurity. The report added that Eastern Cape with 42.8 percent had the highest percentage of poor households with children receiving child support grants compared to other provinces (EC-SCC 2016).

Sidh and Basu (2011) indicated that many household members in the rural areas of Eastern Cape depended on which includes seasonal and piece jobs that full of uncertainties and guarantee no financial security especially amongst the youths. Therefore, Musemwa et al. (2015) suggested that it is vital to comprehend that for every insecure food situation, alternatives of response programs are needed which do not always include social grants. Hence research is considered the most suitable response for a specific situation. It is against this background that the paper sought to investigate the role of education and income on household standard of living and food security.

Objectives

The aim of this paper is to investigate the role of income, level of education in determining standard of living and household food security amongst the residents of Mhlontlo local Municipality. Other objectives of this paper involves investigating the impact of education on food security, investigating the impact of household income on food security, and determining the impact of education on household standard of living as well as determining the impact of household income level on household standard of living.

Literature Review

The state of food insecurity report by the Food and Agriculture Organization described "food security as a situation that exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutri-

tious food that meets their dietary needs and food preferences for an active and healthy life" (FAO 2010). The Human Sciences Research Council (HRSC) (2013) categorized "food security into three dimensions; this includes food availability, food accessibility and food utilization." The Council indicated that a country must have sufficient quantities of food available on a consistent basis at both national and household level. Similarly, Aliber (2010) described food access as "the ability of a nation and its households to acquire sufficient food on a sustainable basis." Ludi (2009) added that food access is "the ability of a nation communities and households to purchase food in sufficient quantity and quality." Negin et al. (2009) pointed out "food utilization as another concept of food security that depends on how food is used, noting that although food availability and accessibility are necessary conditions for food utilization."

However, Food and Agriculture Organization (2005) describe education as one of the most powerful engines for alleviating hunger and poverty, but the impact that education has on food security is often exclusively conceived in economic terms. Sen (1999) added that individuals who have acquired higher level of education are more likely to secure jobs and increase their capacity to acquire resources efficiently. Thus education is critical to the ability of poor people to escape poverty and hunger.

Several studies, most of them outside sub-Saharan Africa have explored the mechanism through which education and food security affect each other (Das and Sahoo 2012; Amali 2012; USDA Economic Research Service 2014; Bashir and Schilizzi 2013; Reimers and Klasen 2013). Their findings are however, mixed with some showing a negative effect of education on food security (Amali 2012) while the majority found a positive association (Bashir et al 2012; De Muro and Burchi 2007; Faye et al. 2011; Birhane et al. 2014).

Put differently, FAO (2005) clarifies that "lack of education undermines productivity, employability and earning capacity, standard of living and this directly leads to poverty." Koffio-Tessio et al. (2005) argue that "in rural areas education plays a vital role in improving agricultural productivity thereby leading to food security." Musemwa et al. (2013) recommended that "educating households using even informal methods could help to promote food security. Laba-

darios et al. (2009) found that level of education is related to food access through its effect on employment.” Ndhleve et al. (2012) found that households with inadequate access to food were less educated and earned low incomes.

On the other hand, Ndobo (2013) described household income as the total monthly income of households from all sources, and it is regarded as the most critical determinant of household food security status. Hallberg (2009) argues that lack of income significantly influences food security by stifling adequate access and utilization of food sources. Labadarios et al. (2009) found that when incomes are low and food prices are high, employment will not help much in improving access to food. Jacob (2009) reiterated that low income households are more likely to suffer from food insecurity as compared to middle income and wealthier households. Similarly, Nord et al. (2010) found that households living with low incomes are more likely to be food insecure compared to those with higher incomes. Leete and Bania (2010) also reveal that income levels and negative income shocks have statistically significant effect on the probability of being food insecure.

In addition, the South African Audience Research Foundation (2014) described living standard as the ownership of goods, access to services and quality of residence and can be used to track the economic development of a nation. The Social Report (2016) indicated that economic standard of living concerns the material circumstances in which people live, the goods and services they are able to consume, and the economic resources to which they have access.

In view of the above literature, the paper aimed to explore the association between education, income level, living standard and food security. Therefore, specific hypotheses were formulated.

- H_{01} : There is no significant positive relationship between education and food security.
- H_{02} : There is no significant positive relationship between household income and food security.
- H_{03} : There is no significant positive relationship between education and living standard.
- H_{04} : There is no significant positive relationship between household income and living standard.

MATERIAL AND METHODS

This paper adopted a quantitative research approach. The study population comprised approximately (N-7794) individuals who are inhabitants of the different households in Mhthlontlo Local Municipality, in Easter Cape South Africa. The sample was drawn using the probability sampling method known as cluster sampling. This sampling method was employed to divide the population into mutually exclusive clusters according to identifiable groups through the use of a geographical map. In order to have a 95 percent confidence level, a sample of 373 households was calculated and a sample size of 101 individuals was subsequently drawn. The sample was obtained by selecting a random household on the aerial map within each identified cluster and then selecting every household until the entire sample was drawn. A structured questionnaire was used to gather relevant data from the respondents, and this questionnaire was developed from the combination of Household Hunger Scale, which is used to assign households along a scale of severity of food access from no hunger to severe household hunger (Ballard et al. 2011), and the Living Standard Measure, used in segmenting and identifying group of people with similar patterns (SAARF 2014). Before the structured questionnaire was used, it was distributed to experts for validity. In testing the instrument’s reliability, the paper used the internal consistency technique by employing Cronbach’s Coefficient Alpha test for testing the research tool.

Data Collection Procedure

The data was collected by trained field workers using a structured questionnaire as the satisfactory instrument to fulfill the research purpose, which permitted the collection of a large amount of data. The fieldworkers interviewed respondents and administered the questionnaire following a structured pattern to control response bias and increase the reliability of the data. The questionnaire administration and interviews were conducted in different households of Mhthlontlo Local Municipality.

Data Capturing and Analysis

All data was coded and captured to Microsoft Excel 2010. All the coded information was

further imported to the Statistical Package for the Social Sciences (SPSS) version 12.0. Both descriptive and inferential statistical analyses were used for this paper. Descriptive statistics were used on the demographic information. In testing the significance of relationships among the study variables, inferential statistics was used. The chi-square method tested the relationship between income, education, standard of living and food security.

RESULTS

In this section, the key findings of this paper such as the demographic information of the sample are presented. Subsequently the main findings and results relating to the hypothesis of this paper were also presented.

Demographic Information of the Sample

The demographic findings of this research comprise of language, age and gender.

The results in Table 1, illustrate that greater proportion of the respondents were Xhosa language speakers, which represents 88 percent of the respondents. This is followed by English speaking respondents with 6.9 percent and the respondents whom were neither Xhosa nor English speaking individuals, comprised 5 percent. The table also illustrates the age bracket of the respondents with the greater proportion of the respondents within the ages of 50 to 59 years of age representing 34.7 percent. This is followed by respondents whose age bracket ranged be-

Table 1: Biographical information in percentages

	<i>N</i>	<i>%</i>
<i>Language</i>		
Xhosa	89	88.0
English	7	6.9
Others	5	5.0
Total	101	100.0
<i>Age</i>		
18-29	14	13.9
30-39	25	24.8
40-49	27	26.7
50-59	35	34.7
Total	101	100.0
<i>Gender</i>		
Male	7	36.4
Female	64	63.4
Total	101	100.0

tween 40 to 49 years of age, with 26.7. The age bracket of the third group ranged between 30 to 39 years with 24.8 percent. The age bracket of the last group ranged between 18 to 29 years of age, representing 13.9 percent of the overall respondents. In addition, the table showed that there were more female than their male counterpart; with the female comprising 63.4 percent while their male counterpart comprising 36.4 percent. This is in tandem with the demographic profile of the Eastern Cape, where there are more women than men (StatsSA 2012).

Table 2: Income source

<i>Income source</i>	<i>N</i>	<i>%</i>
Wages	15	14.9
Grants	63	62.4
Pensions	5	5.0
Investments	5	5.0
Remittances	6	5.9
Others	7	6.9
Total	101	100

The results in Table 2 illustrate that a substantial percentage of the respondents representing 62.4 percent relied on grants from the government as their income source. The researcher thinks that this makes them vulnerable to food insecurity. This is followed by respondents who rely on wages as their source of income polling 14.9 percent. The table also shows that 5.0 percent of the respondents depend on pensions as well investments as their main source of income while 5.9 percent of the respondents rely on remittances as their major source of income. Meanwhile, 6.9 percent of the respondents depend on other sources of income aside from the ones highlighted here as their source of income.

Table 3: Household Income

<i>Household income</i>	<i>N</i>	<i>%</i>
R 0.00-5000.00	89	88.1
R5000.00-10000.00	5	5.0
R10000.00-15000.00	5	5.0
R16000.00-20000.00	2	2.0
Total	101	100

The result in Table 3 shows the household income of the individuals that participated in this research. The result illustrates that 88.1 percent of the respondents had between R1 to R5000

as their household income. The result further shows that 5 percent of the respondents had between R5000 to R10000 as their household income. While another 5 percent of the respondents had between R10000 to R15000 as their household income respectively. It was also discovered that a little as 2 percent of the respondents had R16000 to R20000 as their household incomes. From the descriptions on the table, it is clear that it will be very difficult for the greater proportion of the households in Mhlontlo Local Municipality to achieve food security due to shortage of income and their low earning capacity.

Table 4: Payment frequency

<i>Payment frequency</i>	<i>N</i>	<i>%</i>
Irregular	11	10.9
Daily	1	1.0
Weekly	4	4
Monthly	85	84.2
Total	101	100

The result in Table 4 depicts the payment frequency distribution of the overall respondents that participated in this survey. The result illustrates that larger proportion of the respondents, 84.2 percent receive their payment monthly. The result shows that 10.9 percent of the respondents receive their payment irregularly while 4 percent of the respondents receive their payment weekly. It was also discovered that a minute 1 percent of the respondents receive their payments daily.

Table 5: Employment status

<i>Employment status</i>	<i>N</i>	<i>%</i>
Full-time	11	10.9
Part-time	3	3.0
Self-employed	8	7.9
Piece work	8	7.9
Unemployed	71	70.3
Total	101	100

The result in Table 5 depicts the employment status of all the respondents that participated in this survey. The result shows that substantial proportion of the respondents 70.3 percent are unemployed, which puts the majority of the residents of Mhlontlo Local Municipality in a disadvantage position to achieve food security. The

result further shows that 10.9 percent of the respondents are engaged in full-time jobs while 3.0 percent were engaged in part-time jobs and 7.9 percent of the respondents were self-employed. It was also discovered that another 7.9 percent of the respondents sometimes engage in piece work. Their employment status further clarifies achieving food security remains an uphill task.

Table 6: Level of education

<i>Level of education</i>	<i>N</i>	<i>%</i>
Postgraduate	1	1.0
Degree/Diploma	9	8.9
Matric	21	20.8
Secondary	18	17.8
Primary	52	51.65
Total	101	100

The result in Table 6 depicts the educational qualification/ level of education of the overall respondents that took part in this survey. The result illustrates that greater percentage of the respondents 51.65 percent only had primary education. This explains the reason the majority of people living in Mhlontlo Local Municipality would be unable to find decent employment that would fetch them decent salary, which could enable them to purchase safe nutritious and dietary foods. The result further shows 17.8 percent of the respondents had secondary education while 20.8 percent had matric certificate. It was also discovered that 8.9 percent of the respondents had degree/ Diploma certificate while the meager 1 of the respondents had a post-graduate degree.

Results from the Tested Hypotheses

The result in Table 7 indicates final findings of the first hypothesis of this paper which stated that there is no significant positive relationship between level of education and food security.

The results in the Table 7 show that there is a significant positive relationship between level of education and food security. This simply means that the level of education of household heads is tantamount to achieving food security.

Results from the Tested Hypothesis Two

The results in Table 8 illustrate the main findings of the second hypothesis which states that

Table 7: Correlation test: Relationship between education and food security correlations

		<i>Education</i>	<i>Food security</i>
<i>Education</i>	Pearson Correlation	1	-.275**
	Sig. (2-tailed)		0.005
	N	101	101
<i>Food Security</i>	Pearson Correlation	-.275**	1
	Sig. (2-tailed)	0.005	
	N	101	101

** . Correlation is significant at the 0.01 level (2-tailed).

there is no significant positive relationship between income and food security.

The result in Table 8 shows that there is a significant positive relationship between income and food security. Therefore the null hypothesis is rejected in the favor of the alternative hypothesis. This implies that household income level provides access to household food security.

Results from Tested Hypothesis Three

The results in Table 9 illustrate the main findings of the third hypothesis which states that there is no significant relationship between level of education and standard of living.

The results in Table 9 indicates that there is a significant positive relationship between level of education and standard of living ($r= .524$; $p<.000$). Therefore, the null hypothesis was

rejected in favor of the alternative hypothesis. This simply implies that the level of education of household heads enhances household standard of living.

Results from Tested Hypothesis Four

The results in Table 10 illustrate the main findings of the fourth hypothesis which states that there is no significant positive relationship between income and standard of living.

The results in Table 10 shows that there is a significant positive relationship between income and living standards ($r= .462$; $p<.000$). Therefore, the null hypothesis was rejected in favor of the alternative hypothesis. This means that household income level increases the living standards of that household.

Table 8: Correlation test: Relationship between income and food security correlations

		<i>Income</i>	<i>Food security</i>
<i>Income</i>	Pearson Correlation	1	-.340**
	Sig. (2-tailed)		0.001
	N	101	101
<i>Food Security</i>	Pearson Correlation	-.340**	1
	Sig. (2-tailed)	0.001	
	N	101	101

** . Correlation is significant at the 0.01 level (2-tailed).

Table 9: Correlation test: Relationship between education and standard of living

		<i>Living standard</i>	<i>Education</i>
<i>Living Standard</i>	Pearson Correlation	1	0.524
	Sig. (2-tailed)		0
	N	101	101
<i>Education</i>	Pearson Correlation	.524**	1
	Sig. (2-tailed)	0	
	N	101	101

** . Correlation is significant at the 0.01 level (2-tailed).

Table 10: Correlation test: Relationship between income and standard of living correlations

<i>Correlations</i>		<i>Income</i>	<i>Living standard</i>
<i>Income</i>	Pearson Correlation	1	.462**
	Sig. (2-tailed)		0
	N	101	101
<i>Living Standard</i>	Pearson Correlation	.462**	1
	Sig. (2-tailed)	0	
	N	101	101

** . Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

Hypothesis One

The findings of the first hypothesis revealed that there is a significant positive relationship between level of education and food security. This simply means that the level of education of household heads is tantamount to achieving food security. This result is in line with the existing evidence which revealed that low educational achievement leads to malnutrition and malnutrition is associated with poor cognitive growth (Black et al. 2013). In the same vein, Nord et al. (2010) summarize that food insecurity increases when head of household is less educated compared to those with more education. The summation of this literature suggests that limited resources, like income are not the sole determinants of food insecurity. Alternatively limited education may also increase the likelihood of food insecurity.

Schiller (2008) added that higher level of education provides a broader scope of employment opportunities and possibilities of earning higher income to be able to afford safe, nutritious and dietary foods. Labadarios et al. (2009) found that the level of education is related to food access through its effect on employment. In relation to these findings, study by Musemwa et al. (2013) recommended that educating households using even informal methods could help to promote food security. In addition, Bashir and Schilizzi (2013) argue that in rural context that the effect of education is through proxies such as employment, household income and decision making. These proxies have effects on the access, availability and utilization dimensions of food security. Gebre (2012) opines that increased years of schooling are associated with better employment opportunities, working effi-

ciency, better decision making and increased disposable income to be food secure.

Hypothesis Two

The findings of the second hypothesis tested revealed that there is a significant positive relationship between income and food security. This simply means that having enough income promotes food security and enhances access to safe and nutritious foods. In line with this result, the researcher suggests that households with sufficient income source have the ability, capability and the purchasing power to afford safe and nutritious foods to live an active and healthy life. The result is in line with the study conducted by Rudolph et al. (2012) in the City of Johannesburg which revealed “that a strong relationship exists between employment, income and food security”. Nord et al. (2010) found that households living with low incomes are more likely to be food insecure compared to those with higher incomes. Leete and Bania (2010) add that income levels and negative income shocks have a statistically significant effect on the probability of being food insecure. Gunderson et al. (2011) also found that the probability of food insecurity declines with income availability. This decline is most significant among marginally food insecure households. In addition, the result is further supported by Bashir et al. (2012) study in Pakistan using logistic regression to determine whether income had an effect on household food security status. The study revealed that income was positively significant, which implies that there was a positive relationship between the food security status and monthly income. Crush et al. (2006) further argued that household individuals with full time employment, and rely on salaries and wages are more food secure when compared to those that are

unemployed but rely on government social grants as their main source of income.

Hypothesis Three

The result of the third hypothesis revealed that there is a significant relationship between level of education and standard of living. This means that level of education of the household heads enhances household living standard. In line with the findings, Verner (2006) pointed out low level of education among the root causes of poverty in rural households leading to hunger, low standard of living and food insecurity. This is said to constrain income level, since individuals with low level of education find it difficult to secure well-paid jobs, thus exposing them to poor standard of living. Lending credence to this, Bonal (2007) opined that education serves as an important means to fighting poverty and enhancing household standard of living. Okurut et al. (2002) added that the higher the educational level of the households heads the wealthier their standard of living. This could be as a result of the households having the purchasing power to increase their living standard and the same time achieving household food security.

Hypothesis Four

The findings of the fourth hypothesis revealed that there is a significant positive relationship between household income and standard of living. This means that household income level increases the living standards of rural households. This result is buttressed by Paul (2012) who argued that the availability of money through sustainable income has direct effect on households' enhanced living standard and access to sufficient, safe and nutritious food. Robusteque (2012) added that individual who possess lucrative employment generally have a higher standard of living. This he further stated that household individuals with high paying jobs are entitled to better income to sustain household food security.

CONCLUSION

The paper investigated the role of income, education in determining standard of living and

household food security in Mhlontlo Local Municipality Eastern Cape South Africa. Having tested the four hypotheses generated in this paper, using the Descriptive statistics and Chi-square test, the paper objectives of this research were achieved as solution to problems identified in this paper. The findings of this paper concludes that income influences household hunger, this shows that the more the income in a household, the more food to secure the household, the higher the affordability. The paper also revealed level that education has positive impact on household food insecurity. This explains that individuals with higher education are likely to secure lucrative jobs with enough income to buy more food and secure the family. Moreover, the paper revealed that income has impact on standard living, this implies that households with higher income have high standard of living while households with low income have low standard of living. Education influences household standard of living. This shows individuals with high level of education have high standard of living.

RECOMMENDATIONS

The paper recommends that local and rural economies, Municipalities, in collaboration with other relevant stakeholders in both private and public sectors can initiate and support income-generating ventures that will enable the members of rural communities of economically active age within Mhlontlo Municipality to advance and utilize their knowledge, skills and abilities in contributing to the local economic development. The paper recommends successful and sustainable policy implementation to improve food security at rural household level, because benefits and social grants may not be a sustainable household income since grants is nothing but a short-term solution to food insecurity. Therefore, alternative measures, such as government investment in rural education and in rural agriculture will help to enhance the living standards of rural households and ultimately improve their food security.

Furthermore, the paper recommends that government should implement the effective management of available resources through farming, and households get as much income as possible from its production, and consequently improve its economic access to food required by its members. The government should make education affordable for rural households.

LIMITATIONS

The respondents may have had valuable information to share, but the use of structured questionnaires limited their responses. Non-response by some of the respondents was another limitation encountered. Some of the household members were not at home when the field workers visited, and this resulted in delays in completing the research within record time.

ACKNOWLEDGEMENTS

The acknowledgement goes to all those that made this paper a success, especially the residents of Mhlontlo Local Municipality for their optimum co-operation throughout the data collection period. Ultimately, all glory goes to God almighty for the wisdom, strength, divine health he granted the researcher throughout this period.

REFERENCES

- Aliber M, Mini S 2010. Food security in South Africa: Key policy issues for the medium term, Food security in South Africa: Key policy issues for the medium term. *Development Southern Africa*, 23(1): 45–61.
- Amali IOO 2012. Schooling and human capital development in agro-based rural economy in southern Benue, Nigeria. *International Journal of Humanities and Social Science*, 2(10): 105–110.
- Ballard T, Coates J, Swindale A, Deitchler M 2011. *The Household Hunger Scale*. Washington: Food and Nutrition Technical Assistance Program.
- Bashir MK, Schilizzi S, Pandit R 2012. The Determinants of Rural Household Food Security for Landless Households in Punjab, Pakistan. From <<http://ageconsearch.umn.edu/bitstream/126035/2/WP120008.pdf>> (Retrieved on 20 October 2017).
- Bashir MK, Schilizzi, S. 2013. Determinants of rural household food security: a comparative analysis of African and Asian studies. *Journal of the Science of Food and Agriculture*, 93(6): 1251–1258.
- Birhane T, Shiferaw S, Hagos S, Mohindra K 2014. Urban food insecurity in the context of high food prices: a community based cross sectional study in Addis Ababa, Ethiopia. *BMC Public Health*, 14(1): 1–8.
- Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, de Onis M et al. 2013. Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, 382(9890): 427–451.
- Bonal X 2007. On global absences: Reflections on the failings in the education and poverty relationship in Latin America. *International Journal of Educational Development*, 27(1): 86–100.
- Crush J, Frayne B, Miriam Grant M 2006. Linking Migration, HIV/AIDS and Urban Food Security in Southern and Eastern Africa: The Regional Network on HIV/AIDS, Livelihoods and Food Security (RENEWAL). *International Food Policy Research Institute (IFPRI), Southern African Migration Project (SAMP)*, Cape Town South Africa.
- Das AB, Sahoo D 2012. Farmers' educational level and agriculture productivity: A study of tribal of KBK districts of Odisha. *International Journal of Education Economics and Development*, 3(4): 363–374.
- De Cock ND, Haese M, Vink N, Van Rooyen CJ, Staels L, Schonfeldt HC, D'Haese L 2013. Food security in rural areas of Limpopo Province, South Africa. *Food Security*, 5(2): 269–282.
- De Muro P, Burchi F 2007. *Education for Rural People: A Neglected Key to Food Security*. Department of Economics -University Roma Tre.
- Department of Agriculture, Forestry and Fisheries 2012. *Agro-Processing: The Status of the Agro-Processing Industry in South Africa*. Pretoria: Agro-Processing Support. From <<http://www.daff.gov.za/>> (Retrieved on 15 September 2017).
- De Weerd J, Beegl K, Friedman J, Gibson J 2014. The Challenge of Measuring Hunger. *Policy Research Working Paper No. WPS 6736*. Washington, DC: World Bank Group, 2014. From <<http://documents.worldbank.org/curated/en/2014/01/18741920/challenge-measuring-hunger>> (Retrieved on 15 February 2017).
- Eastern Cape Socio-economic Consultative Council 2016. Eastern Cape Development Indicators 2016. Port Elizabeth: ECSECC. From <<http://www.ecsecc.org/information-centre/?type=statistics-data>> (Retrieved on 26 August 2017).
- Faye O, Baschieri A, Falkingham J, Muindi K 2011. Hunger and food insecurity in Nairobi's slums: an assessment using IRT models. *Journal of Urban Health*, 88(Suppl. 2): S235–S254
- Food and Agriculture Organization 2005. *Mobilizing Resources to Halve World Hunger: Paper prepared for the 2005 World Food Summit*, Rome, 14–16 September 2005.
- Food and Agriculture Organization 2010. *The State of Food Insecurity in the World*. Addressing food insecurity in protracted crises. Rome: FAO.
- Food and Agriculture Organization (FAO) 2012. *The State of Food Insecurity in the World*. Economic Growth is Necessary But Not Sufficient to Accelerate Reduction of Hunger and Malnutrition. Rome: Food and Agricultural Organization of the United Nations. From <<http://www.fao.org/docrep/016/i3027e/i3027e.pdf>> (Retrieved on 10 March 2017).
- Food and Agriculture Organization (FAO) 2014. *The State of Food and Agriculture: Innovation in Family Farming*. Rome: Viale delle Terme. From <http://www.fao.org/economic/ess/ess-fs/ess-fadata/it/#.U4cSb3J_s1I> (Retrieved on 23 October 2017).
- Gebre GG 2012. Determinants of food insecurity among households in Addis Ababa City, Ethiopia. *Interdisciplinary Description of Complex Systems*, 10(2): 159–173.
- Gundersen C, Kreider B, Pepper J 2011. The economics of food insecurity in the United States. *Applied Economic Perspectives and Policy*, 33(3): 281–303.
- Gustafson DJ 2013. Rising food costs and global food security: Key issues and relevance for India. *Indian J Med. Res*, 138(3): 398–410.

- Hallberg B 2009. Using Community Gardens to Augment Food Security Efforts in Low-Income Communities. From <www.ipg.vt.edu/Papers/Hallberg%20Major%20Paper.pdf> (Retrieved on 15 March 2016).
- Human Science Research Council (HSRC) 2013. The South African National Health and Nutrition Examination Survey – SANHANES-1. Compiled by a Research Consortium comprised of HSRC and MRC and published by the HSRC Press. From <www.hsrc.ac.za> (Retrieved on 19 March 2014).
- Kabui IB 2012. *Household Food Insecurity and Coping Strategies among Small Scale Farmers in Tharaka Central Division, Kenya*. Master's Thesis, The School of Applied Human Sciences of Kenyatta University, Kenya. From <http://uzspace.uzulu.ac.za/bitstream/handle/10530/1545/> (Retrieved on 13 June 2017).
- Koffio-Tessio EM, Tossou YH, Homevor KA 2005. Impact of Education on Agricultural Productivity in Sub-Saharan Africa. Paper presented at "A Global Conference on Education Research in Developing Countries," Prague, Czech Republic, March 31-2 April, 2005.
- Ihab AN, Rohana AJ, Wan Manan WM, Wan Suriati WN, Zalilah MS, Rusli AM 2013. Nutritional outcomes related to household food security among mothers in rural Malaysia. *Journal of Health Popul Nutr*, 31(4): 480-489
- Jacobs P 2009. Identifying Targets for Food Security in South Africa. Unpublished Report, Center for Poverty Employment and Growth, Pretoria, Human Science Research Council. From <https://www.afdb.org/> (Retrieved on 2 October 2017).
- Labadarios D, Davids YD, Mchiza Z, Weir-Smith G 2009. The Assessment of Food Insecurity in South Africa. Unpublished paper, Center for Poverty, Employment and Growth, Human Science Research Council. From <https://www.afdb.org/> (Retrieved on 21 September 2017).
- Leete L, Bania N 2010. The effect of income shocks on food insufficiency. *Review of Economics of the Household*, 8(4): 505-526.
- Ludi E 2009. Climate Change, Water and Food Security, Background Note. Overseas Development Institute, London. From <http://www.scirp.org/> (Retrieved on 16 August 2017).
- Musemwa L, Zhou L, Ndhleve S, Aghdasi F 2013. Factors affecting household access to enough food in the Eastern Cape Province of South Africa. *Journal of Development and Agricultural Economics*, 4(3): 84-91.
- Musemwa L, Muchenje V, Mushunje A, Aghdasi F, Zhou L 2015. Household food insecurity in the poorest province of South Africa: Level, causes and coping strategies. *Springer Science+Business Media Dordrecht and International Society for Plant Pathology*. DOI 10.1007/s12571-015-0422-4
- Ndhleve S, Musemwa L, Zhou L 2012. Household food security in a coastal rural community of South Africa: Causes and coping strategies. *Journal of Agricultural Biotechnology and Sustainable Development*, 4(5): 68-74.
- Ndobo 2013. *Determining the Food Security Status of Households in a South African Township*. Masters Dissertation, Unpublished. Department of Economics, North-West University Vaal Triangle South Africa.
- Negin J, Rome R, Karuti S, Kanzo JC 2009. Integrating A Broader Notion of Food Security and Gender Improvement in to African Green Revolution. *Food Security*, 1: 351-360. From <https://doi.org/10.1007/s12571-009-0025-> (Retrieved on 16 October 2017).
- National Department of Agriculture 2002. The Integrated Food Security Strategy for South Africa. Pretoria. From <http://www.nda.agric.za/doiDev/sideMenu/foodSecurity/policies.pdf> (Retrieved on 16 October 2017).
- Nord M, Coleman-Jensen A, Andrews M, Carlson S 2010. Household Food Security in the United States in 2009. ERR-108, United States Department of Agriculture, Economic Research Report Number 108. From <https://www.ers.usda.gov/webdocs/publications/> (Retrieved on 16 October 2017).
- Okurut FN, Odwee JA, Adebua A 2002. Determinants of Regional Poverty in Uganda. *African Economic Research Consortium (AERC) Research Paper*, No. 122, Nairobi, Kenya AERC.
- Paul E 2012. Determinants of healthy eating among low-income Canadians: *Canadian Journal of Public Health*, 96: S37-S42.
- Reimers M, Klasen S 2013. Revisiting the role of education for agricultural productivity. *American Journal of Agricultural Economics*, 95(1): 131-152
- Robustequ M 2012. Rural welfare effects of food price changes under induced wage responses: Theory and evidence for Bangladesh. *Oxford Economic Papers*, 42(3): 574-585.
- Rogan M, Reynolds 2017. Food Poverty, Hunger and Household Production in Rural Eastern Cape Households. *REDI3x3 Working Paper* 29 February 2017
- Ryan C 2013. Identifying a Target for Food Security in South Africa. *Unpublished Report*, Centre for Poverty Employment and Growth, Human Sciences Research Council, Pretoria.
- Selape BM, Mtyingizane SS, Masuku MM 2015. Factors contributing to household food insecurity in Mhlontlo area, Eastern Cape, South Africa. *African Journal of Hospitality, Tourism and Leisure*, 4(1): 1-11.
- Schiller T 2008. Human Capital and Higher Education: How Does Our Region Fare? From <www.philadelphiafed.org/schiller-human-capital-and-higheredu> (Retrieved on 14 July 2016).
- Sen AK 1999. *Development as Freedom*. Oxford: Oxford University Press.
- Shisanya SO, Hendriks SL 2011. The contribution of community gardens to food security in the Maphephetheni uplands. *Development Southern African*, 28(4): 509-526.
- Sidh SN, Basu S 2011. Women's Contribution to Household Food and Economic Security: A Study in the Garhwal, Himalayas, India. *International Mountain Society (IMS)*, From <http://www.bioone.org/doi/abs/10.1659/MRD-JOURNAL-D-10-00010.1> (Retrieved on 16 April 2017)
- South African Audience Research Foundation 2014. *Living Standard Measure*. From <http://www.saarf.co.za/lsm/lsm.asp> (Retrieved on 21 September 2016)

- Statistics South Africa 2012. *Census 2011, Provinces at Glance*. Report Published by Statistics South Africa, Pretoria. From <tt://www.statssa.gov.za/ (Retrieved on 20 April 2016).
- The Social Report 2016. Economic Standard of Living. Published by the Ministry of Social Development New Zealand. From <http://socialreport.msd.govt.nz/economic-standard-of-living.html#microsite-> (Retrieved on 20 October 2017).
- USDA Economic Research Service 2014. Food Insecurity among Children Linked to Educational Attainment of Adult Household Members. From <http://www.ers.usda.gov/data-products/chart-gallery/detail.aspx?chartId=43195&ref=collection&embed=True#.U6QhOPmSzTo> (Retrieved on 30 September 2017).
- Verner D 2006. Rural Poor in Rich Rural Areas: Poverty in Argentina. World Bank policy research working paper No. 4096, Washington, D.C., December 2006 (Retrieved on 23 October 2017).
- Zakari S, Ying L, Song B 2014. Factors Influencing Food Security in West Africa: The Case of Southern Niger. *Sustainability* 6(3) 1191-1202. From <http://dx.doi.org/10.3390/su6031191> (Retrieved on 22 October 2017).

Paper received for publication on October 2016
Paper accepted for publication on December 2016