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Micro Correlates of Extreme Poverty in Nigeria

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Abstract

Poverty in Nigeria has become endemic that 87 million Nigerians are said to leave in extreme poverty. In 2017, Nigeria was declared to overturn India to become the country with the highest number of extremely poor people in the world. In each minute, six persons are projected to fall into extreme poverty. More worrisome is the projection that the number of extremely poor people in Nigeria will increase from 87 million in 2017 to 120 million in 2030. This is occurring despite different macroeconomic policies intended to curb the menace. Hence, this study explored the micro correlates of poverty with the aim of providing a paradigm shift in tackling poverty in the country. A national representative data from the 2013 NDHS and logistic regression were employed to explore the relationship between extreme poverty and some micro factors. Findings reveal that both men and women's education, women household decision making, number of household members, access to electricity, source of drinking water, sanitation were significant correlates of extreme poverty in Nigeria. The study therefore suggests that, for more impactful policy on poverty, attention should be given to micro issues at individuals and household levels.

Key words: Microdeterminants, Extreme poverty, NDHS, Nigeria.

1. Introduction

Globally, about 2 billion people were estimated to be generally poor in 2015 (Lowder, Bertini, & Croppenstedt, 2017). In 2018, Nigeria was estimated to have the highest number of extremely poor people (World Poverty Clock & Brooking Institution, 2018). Poverty in Nigeria has become endemic that 87 million Nigerians are said to leave in extreme poverty. More glooming for Nigeria's poverty picture is the projection that the number of people living in extreme poverty is likely to increase from 87 million in 2018 to 120 million in 2030 (World Poverty Clock & Brooking Institution, 2018). With the current poverty level in the country and the worsening projection in the future, development becomes a serious challenge in the country, particularly with the current target of zero poverty in the SDGs by 2030. Poverty is an antithesis of development; no country can achieve development with reasonable number of its population living in poverty. Hence, poverty reduction become pivotal to any development agenda at country and global level.

Different factors at micro and macro levels, such as individual behaviours and characteristics, social setting and government policies, could have influence on poverty as opined by the behavioural and structural theories of poverty (Blank, 2003; Rank, Yoon, & Hirschl, 2003). Most poverty reducing programmes give more

emphasis to macro activities such as setting up of institutions for skills acquisition and cash assistance (social security). However, these institutions and cash assistance may not bring a lasting solution to poverty if factors at micro level that relate to individual's decision, behaviors, perception and characteristics as well as the social setting in the society are not addressed. Various studies have explored the effect of these micro factors, such as level of education, access to electricity, improved source of water and sanitation, polygyny, number of household members, age and gender of household head; and found that they exert influence on poverty. (Brück, Danzer, Muravyev, & Weisshaar, 2010; Gounder & Xing, 2012; Nandi, Megiddo, Ashok, Verma, & Laxminarayan, 2017; Rao, 2013; Rolleston, 2011). Though poverty has been on the increase in Nigeria, attention has not been given to the effect of these factors in the country. In addition, in the previous studies that focused on poverty at the micro level, the effect of education was examined based on the education of the households' heads which are mostly males in a patriarchal society such as Nigeria. Females could also contribute to the wealth of the households if they are educated and have household decision making power. Woman's education and household decision making ability could afford her to engage in economic activities, labour force participation, and have control over her earnings. Hence, in addition to exploring the effect of the micro factors on poverty in Nigeria, this study examines the effect of women education and household decision making power on poverty.

2 Methods

The study used cross sectional data from the 2013 Nigeria Demographic and Health Survey (NDHS) data. Wealth Index (WI) was used as proxy for poverty. WI measures chronic poverty which comprehensively shows the true level of household's poverty (Kamuzora & Mkanta, 2000). The WI (dependent variable) was dichotomized into "1" (extremely poor) and "0" (not extremely poor). The values of dichotomous dependent variable in a regression are confined within probability values of zero and one. The appropriate models for such data is the nonlinear models and the most commonly used nonlinear models in this area are the logistic and probit models (Cameron & Trivedi, 2005; Greene, 2012). This study therefore used the logistic regression model to analyze the effect micro determinants on extreme poverty in Nigeria. The micro determinants were grouped into Demographic Factors (DF) (age of household head, gender of household head, ethnicity and region), Socioeconomic Factors (SF) (couple's education, number of household members, polygyny and women status) and Infrastructural Factors (IF) (access to electricity, source of drinking water and sanitation)

2.1 Empirical model for extreme poverty and micro determinants

Extreme poverty (EXPvert) is expressed as function of micro determinants as shown in equation 1: Equation 1 modelled the logistic function of the occurrence of poverty and the micro correlates.

$$logit[p(EXPvert_i = 1/X_i)] = \delta_0 + \beta_1(DF_i) + \beta_2(SF_i) + \beta_3(IF_i) + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where: X is the vector of covariates of extreme poverty, β_1, β_2 and β_3 are the coefficients of the demographic, socioeconomic and infrastructural factors, respectively, and ε_i is the disturbance term. $i = 1, 2 \ldots . n$ represents the number of micro determinants in each of the

categories. δ_0 measures the initial extreme poverty level observed had there no change in any of the micro determinants.

3 Results and Discussion

Table 1 presents the results of the multivariate logistic regression for the association between micro determinants and extreme poverty in Nigeria. To ensure consistent and reliable estimates of the multivariate models, the study performed collinearity test among the independent variables at all data levels, using the Pearson's (r) correlation test. Collinearity was detected at $r > 0.5$ between men and women's education, and among the three indexes of women status – decision on health, household major purchases, and visits to family and relatives. In order not to drop any of the correlated variables, three multivariate models were developed to separate these variables. All the three models included the variables that needed to be in the models as indicated by the significance ($p < 0.001$) of _hat in the linktest for all the models.

The micro determinants were grouped into demographic, socioeconomic and infrastructural factors. In the demographic factors, the results show that region, ethnicity and age of the household's head were significantly associated with extreme poverty. Being from the northern part of the country significantly increases extreme poverty by more than 100%, compared to being in the south; and households in the north were 6 times more likely to be extremely poor compared to the households in the south as indicated by the odds ratio. Similarly, Hausa/Fulani and Igbo tribes were found to significantly increase extreme poverty by 100% and 91%, respectively (model 1), compared to the reference tribe (others); while in contrast, the Yoruba tribe significantly reduces extreme poverty by about 200%. This difference could be attributed to the higher number of household members among the Hausa/Fulani and Igbo tribes compared the Yoruba tribe, and among households in the north compared to the south (National Bureau of Statistics [Nigeria], 2020). Higher number of household members could plunge a household into extreme poverty as per income and feeding share of each member decreases with increase in the number.

Table 1: **Multivariate Logistic Regression of the Association between Micro Determinants and Extreme Poverty in Nigeria**

Variables	Model 1		Model 2		Model 3	
Demographic Factors	**Coefficient**	**Adjusted Odds Ratio**	**Coefficient**	**Odds Ratio**	**Coefficient**	**Odds Ratio**
Region						
Southern part	Reference	Reference	Reference	Reference	Reference	Reference
Northern part	1.7730 (5.89)***	5.8883	1.6458 (5.16)***	5.1850	1.8455 (5.54)***	6.3314
Ethnicity						
Others	Reference	Reference	Reference	Reference	Reference	Reference
Hausa/Fulani	1.0433 (6.46)***	2.8385	1.0987 (6.48)***	3.0003	1.5123 (8.99)***	4.5374
Yoruba	-1.9937 (-3.15)***	0.1362	-1.8245 (-2.93)***	0.1613	-2.2516 (-3.73)***	0.1052
Igbo	0.9146 (2.62)***	2.4959	1.1223 (3.13)***	3.0718	0.7485 (2.09)**	2.1139
Gender of household's head	Reference	Reference	Reference	Reference	Reference	Reference
Male	-0.2459 (-1.34)	0.7820	-0.2122 (-1.23)	0.8088	-0.3654 (-2.26)	0.6940
Female						
Age of household's head	Reference	Reference	Reference	Reference	Reference	Reference
31 – 60 years	-0.1833 (-2.53)**	0.8325	-0.1675 (-2.23)**	0.8458	-0.1724 (-2.26)***	0.8417
≤ 30 years	0.0533 (0.45)	1.0548	0.1636 (1.44)	1.1777	0.1956 (1.75)*	1.2160
> 60 years						
Socioeconomic Factors						

Men's education						
No education	Reference	Reference				
Primary	-0.8741 (-8.17)***	0.4172				
Secondary	-1.6488 (-12.43)***	0.1923				
Higher	-2.5027 (-10.48)***	0.0819				
Women's education						
No education			Reference	Reference		
Primary			-1.0137 (-8.71)***	0.3629		
Secondary			-1.9955 (-12.46)***	0.1359		
Higher			-3.6513 (-4.66)***	0.0260		
Number of household's members	Reference	Reference	Reference	Reference	Reference	Reference
1 – 5	0.2644 (3.67)***	1.3026	0.2506 (3.40)***	1.2848	0.2283 (3.02)***	1.2565
6 – 10	0.2907 (2.49)**	1.3374	0.2557 (2.19)***	1.2914	0.2439 (2.08)**	1.2763
> 10						
Polygynous family						
No co-wives	Reference	Reference	Reference	Reference	Reference	Reference
Co-wives	-0.0886 (-1.18)	0.9152	-0.1077 (-1.42)	0.8979	0.0219 (0.29)	1.0222
Decision on own health	Reference	Reference				
Husband alone decides	-0.4817 (-4.94)***	0.6177				
Wife decides and participates	-0.2821 (-0.77)	0.7542				
Others decide						

Decision on household purchase			Reference	Reference		
Husband alone decides			-0.4912 (-4.86)***	0.6119		
Wife decides and participates			-0.2939 (-0.52)	0.7454		
Others decide						
Decision on visits to family					Reference	Reference
Husband alone decides					-0.4541 (-5.95)***	0.6350
Wife decides and participates					-0.1657 (-0.33)	0.8473
Others decide						
Infrastructural Factors						
Access to electricity						
Access	Reference	Reference	Reference	Reference	Reference	Reference
No access	2.3440 (17.63)***	10.4228	2.3804 (18.16)***	10.8094	2.5555 (19.04)***	12.8775
Source of drinking water	Reference	Reference	Reference	Reference	Reference	Reference
Improved source	0.8313 (7.69)***	2.2963	0.7950 (7.18)***	2.2144	0.8342 (7.15)***	2.3029
Unimproved source						

Sanitation						
Improved	Reference	Reference	Reference	Reference	Reference	Reference
Unimproved	0.9782 (7.16)***	2.6596	0.9743 (7.10)***	2.6492	1.0550 (7.16)***	2.8719
			Model Specification Error Test			
Linktest	**Coefficient**		**Coefficient**		**Coefficient**	
_hat	0.9135 (18.80)***		0.9137 (17.10)***		0.8937 (14.64)***	
_hatsq	-0.0555 (-3.12)***		-0.0530 (-2.74)***		-0.0641 (-3.10)***	

Note: *, **, and *** denote significance at 10%, 5%, and 1%, respectively. The values in parentheses represent the t-statistics.

In the socioeconomic factors, the results show that education of both men and women at all levels significantly reduces extreme poverty. Men's education at primary, secondary and tertiary level reduces extreme poverty by 87%, 165% and 250%, respectively, compared to no education; while women's education at similar levels reduces extreme poverty by 100%, 200% and 365%, respectively. The odds ratios indicate that households with educated men at primary, secondary and tertiary levels were 59%, 81% and 100% less likely to be extremely poor, respectively; and also, households with educated women at similar levels were 64%, 86% and 100% less likely to be extremely poor, respectively. This finding shows that the higher the level of education, the lower the probability of extreme poverty in the household, and that tertiary education of both men and women eliminates all the possibility of extreme poverty in the household. This finding is supported by previous studies on education and poverty (Gounder & Xing, 2012; Rolleston, 2011; Turčínková & Stávková, 2012). Education protects households against extreme poverty and poverty in general through higher earnings from better jobs. Other mechanisms through which education could uplift household out of extreme poverty are productivity, initiative, planning, and good health behavior (Bloom & Canning, 2000; Rolleston, 2011).

Number of household's members was found in this study to have significant positive effect on extreme poverty among households in Nigeria. Household's members of 6-10 and > 10 significantly increase extreme poverty by 26% and 29%, respectively, compared to 1-5 household's members. This finding is corroborated by findings of some of the previous studies (Brück et al., 2010; Meyer & Nishimwe-Niyimbanira, 2016; Orbeta Jr, 2005). However, Libois & Somville (2014) and Cao et al. (2016) revealed contrary findings from Nepal and Southwest China, where large family size was found not to have negative impact on household's income and to be associated with less poverty vulnerability, respectively. This is likely if members are not dependent, younger children, and contribute to the household's income. Similarly, large family size could be associated with less poverty in an agrarian society with available land for cultivation, which increases total productivity and income of the family (Kamuzora & Mkanta, 2000; Meyer & Nishimwe-Niyimbanira, 2016). But generally, increase in the number of household members without proportional increase in the household's earnings reduces the per head share of household's members in terms of consumption, educational training and healthcare. Polygamy is another socioeconomic factor in this study that could increase the number of household's members due the number of wives in the household that give births. However, it was surprisingly found in this study to reduce extreme poverty in model 1 & 2, though not significantly. Model 1 & 2 included men's and women's education variables, respectively, but when both education were excluded from model 3, polygamy interestingly became positively associated with extreme poverty, still not significantly. Implicit in this finding is that polygamy could only increase extreme poverty when couple or men and women members of the household were uneducated. If couple are educated, they earn more income and both make the family income higher, hence protecting the household from extreme poverty.

Women participation in household decision on health, major household purchases and visit to family and relatives were found to reduce extreme poverty in the household by 48%, 49% and 45%, respectively; similarly, the odds ratios show that households in which women were allowed to decide and participate in the three decision indexes were 39%, 39% and 36% less likely to be extremely poor, respectively, compared to households in which only the husbands decide on the decisions. This finding shows that position of women in the household in terms of decision making has great impact on household's poverty. Women are the custodian of the house, particularly in developing countries like Nigeria. Having decision powers in any of the decision categories, particularly if they are well-educated, play significant role in terms of good health facilities such as sanitation and timely healthcare services for household's members, prudent financial spending, and the freedom to work and earn to support the households. Financial resources in the hands of women was found to have significant effect in improving the health and nutrition of the households' members in Bangladesh, while on the other hand, no effect was found with the men (Pitt, Khandker, Chowdhury, & Millimet, 2003). Hence, women decision making powers can contribute in the earning and savings of the households.

In the association between infrastructural factors in the micro determinants and extreme poverty, all the variables were significantly associated with extreme poverty, except type of cooking fuel which was omitted by the statistical software (Stata) used in the estimation due to zero cell in the reference category (Non-solid fuel), which means none of the households in the reference category was extremely poor. This made the comparison impossible, and as a result omitted. The results in table 1 show that households with no access to electricity, unimproved source of drinking water and unimproved sanitation were 14 times, 4 times and 6 times significantly more likely to be extremely poor, compared to households with access to electricity, improved source of drinking water and improved sanitation, respectively. Previous empirical studies also identified positive impact of electricity on household's income and well-being (Ahmad, Mathai, & Parayil, 2014; Bridge, Adhikari, & Fontenla, 2016; Gibson & Olivia, 2010; Khandker, Barnes, & Samad, 2012, 2013; Rao, 2013). Similarly, unimproved source of drinking water and sanitation was identified by some previous studies to be associated with poor households' health such as diarrhea and consequent loss of huge households' income to treatment and ill-unproductive days (Cheng, Schuster-Wallace, Watt, Newbold, & Mente, 2012; Freeman et al., 2017; Nandi et al., 2017; Tate et al., 2009).

Lack of access to electricity could contribute to household's poverty in two possible ways – health and business activities. Ahmad et al. (2014) found access to electricity to significantly improve household's health by 10.6% in India. Access to electricity provide clean energy for cooking, heating, and lightening which help prevent household's members from respiratory diseases. It also help facilitates food refrigeration and boiling of water to prevent infectious diseases (Wang, 2003). These improve the health of households, increase productive days, and reduce loss of income to treatment. On business activities, it makes doing business easier, particularly for the small-scale businesses. It lessens the cost of business and facilitate small businesses at micro level, such as welding (fabrication), hairdressing salons for ladies, barbing

salons for men, computer and phones repairs, dry cleaning/laundry service, bakery, ice cream production, and even selling of cold water and beverages. All these could earn individuals at household's level some income that could empower them and reduce their poverty level. Similarly, improved source of drinking water and sanitation improve household's health, increase productive days and income, and reduce poverty (Bloom & Canning, 2000). Ill-health that may result from unhygienic water and sanitation could impoverish households if the health expenditure is catastrophic (Buigut, Ettarh, & Amendah, 2015). According to World Health Organization (2014), 72% of the health expenditure in Nigeria was out of pocket. High out of pocket in addition to loss of income to ill-days is enough to drive households into deeper poverty (McIntyre, Thiede, Dahlgren, & Whitehead, 2006). Therefore, for policy makers to tackle extreme poverty in Nigeria, necessary attention is required in the area of clean supply of water and improved sanitation facilities.

4 Conclusion

This study examines the effect of set of micro factors on poverty in Nigeria. Findings from the study show that men and women's education and women household decision making protect households from extreme poverty in Nigeria. Education of both men and women, and women status can contribute to household's wealth through earnings from employment, engaging in micro business, women freedom of mobility and resources control, and proper healthcare measures (Gounder & Xing, 2012; Pitt, Khandker, & Cartwright, 2006; Pitt et al., 2003; Rolleston, 2011; Sharaunga, Mudhara, & Bogale, 2015). On the contrary, higher fertility, no access to electricity, unimproved source of drinking water and sanitation prone households in Nigeria to extreme poverty. Higher fertility leads to higher household's members and increases household's financial burden, which in turns reduces household's per capita share (Brück et al., 2010; Kamuzora & Mkanta, 2000; Meyer & Nishimwe-Niyimbanira, 2016; Orbeta Jr, 2005). Lack of access to electricity cripple businesses and reduce household's wealth, while unimproved source of drinking water and sanitation reduce wealth and savings by causing ill-health and unproductivity (Cheng et al., 2012; Freeman et al., 2017; Nandi et al., 2017; Prüss-Ustün et al., 2014). Generally, the findings of this study agree with behavioral/decision theory of poverty, which postulates that poverty results from individuals' deficiencies resulting from inactivity, irrational choice, as well as inherent incompetence. Individuals choose certain life style and act inappropriately in a way that makes them susceptible to poverty (Blank, 2003; Bradshaw, 2007). To reduce poverty drastically, policy makers should therefore not only rely on macro policies but have a paradigm shift to the micro-determinants at the individual, households and community levels (Adekanmbi, Adedokun, Taylor-Phillips, Uthman, & Clarke, 2017; Filmer, Hammer, & Pritchett, 2000; Johnson & Mason, 2012; World Health Organization, 2013).

References

Adekanmbi, V. T., Adedokun, S. T., Taylor-Phillips, S., Uthman, O. A., & Clarke, A. (2017). Predictors of differences in health services utilization for children in Nigerian communities. *Preventive Medicine*, *96*, 67–72. https://doi.org/10.1016/j.ypmed.2016.12.035

Ahmad, S., Mathai, M. V., & Parayil, G. (2014). Household electricity access,

availability and human well-being: Evidence from India. *Energy Policy*, *69*, 308–315. https://doi.org/10.1016/j.enpol.2014.02.004

Blank, R. M. (2003). Selecting among anti-poverty policies: Can an Economist be both critical and caring? *Review of Social Economy*, *61*(4), 447–469. https://doi.org/10.1080/0034676032000160949

Bloom, D., & Canning, D. (2000). The health and wealth of nations. *Science*, *287*(5456), 1207–1209. https://doi.org/10.1126/science.287.5456.1207

Bradshaw, T. K. (2007). Theories of poverty and anti-poverty programs in community development. *Community Development*, *38*(1), 7–25. https://doi.org/10.1080/15575330709490182

Bridge, B. A., Adhikari, D., & Fontenla, M. (2016). Electricity, income, and quality of life. *Social Science Journal*, *53*(1), 33–39. https://doi.org/10.1016/j.soscij.2014.12.009

Brück, T., Danzer, A. M., Muravyev, A., & Weisshaar, N. (2010). Poverty during transition: Household survey evidence from Ukraine. *Journal of Comparative Economics*, *38*(2), 123–145. https://doi.org/10.1016/j.jce.2009.10.002

Buigut, S., Ettarh, R., & Amendah, D. D. (2015). Catastrophic health expenditure and its determinants in Kenya slum communities. *International Journal for Equity in Health*, *14*(46), 1–12. https://doi.org/10.1186/s12939-015-0168-9

Cameron, A. C., & Trivedi, P. K. (2005). *Microeconometrics: Methods and applications* (1st editio). New York: Columbia University Press. Retrieved from www.cambridge.org/9780521848053

Cao, M., Xu, D., Xie, F., Liu, E., & Liu, S. (2016). The influence factors analysis of households' poverty vulnerability in southwest ethnic areas of China based on the hierarchical linear model: A case study of Liangshan Yi autonomous prefecture. *Applied Geography*, *66*, 144–152. https://doi.org/10.1016/j.apgeog.2015.11.016

Cheng, J. J., Schuster-Wallace, C. J., Watt, S., Newbold, B. K., & Mente, A. (2012). An ecological quantification of the relationships between water, sanitation and infant, child, and maternal mortality. *Environmental Health*, *11*(1), 1–8. https://doi.org/10.1186/1476-069X-11-4

Filmer, D., Hammer, J. S., & Pritchett, L. H. (2000). Weak Links in the Chain: A Diagnosis of Health Policy in Poor Countries. *The World Bank Research Observer*, *15*(2), 199–224. https://doi.org/10.1093/wbro/15.2.199

Freeman, M. C., Garn, J. V., Sclar, G. D., Boisson, S., Medlicott, K., Alexander, K. T., … Clasen, T. F. (2017). The impact of sanitation on infectious disease and nutritional status: A systematic review and meta-analysis. *International Journal of Hygiene and Environmental Health*, *220*(6), 928–949. https://doi.org/10.1016/j.ijheh.2017.05.007

Gibson, J., & Olivia, S. (2010). The effect of infrastructure access and quality on non-farm enterprises in rural Indonesia. *World Development*, *38*(5), 717–726. https://doi.org/10.1016/j.worlddev.2009.11.010

Gounder, R., & Xing, Z. (2012). Impact of education and health on poverty

reduction: Monetary and non-monetary evidence from Fiji. *Economic Modelling*, *29*(3), 787–794. https://doi.org/10.1016/j.econmod.2012.01.018

Greene, W. W. H. . (2012). *Econometric analysis*. (S. Yagan, D. Battista, A. D'Ambrosio, & L. Dent, Eds.) (7th editio). New York: Pearson Education Limited. Retrieved from https://www.pearson.com/us/higher-education/program/Greene-Econometric-Analysis-7th-Edition/PGM305107.html

Johnson, C. K., & Mason, P. L. (2012). Theories of Poverty: Traditional Explanations and New Directions. In P. N. Jefferson (Ed.), *The Oxford Handbook of the Economics of Poverty* (pp. 1–42). Oxford, United Kingdom: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780195393781.013.0005

Kamuzora, C. L., & Mkanta, W. (2000). *Poverty and household/family size in Tanzania: multiple responses to population pressure?* (Research Report No. 4). Dar es Salaam. Retrieved from http://opendocs.ids.ac.uk/opendocs/handle/123456789/1794

Khandker, S. R., Barnes, D. F., & Samad, H. A. (2012). The welfare impacts of rural electrification in Bangladesh. *The Energy Journal*, *33*(1), 187–206. https://doi.org/10.2307/41323350

Khandker, S. R., Barnes, D. F., & Samad, H. A. (2013). Welfare impacts of rural electrification: A panel data analysis from Vietnam. *Economic Development and Cultural Change*, *61*(3), 659–692. https://doi.org/10.1086/669262

Kharas, H., Hamel, K., & Hofer, M. (2018). The start of a new poverty narrative. Retrieved September 23, 2018, from https://www.brookings.edu/blog/future-development/2018/06/19/the-start-of-a-new-poverty-narrative/

Libois, F., & Somville, V. (2014). *Fertility, household's size and poverty in Nepal* (CMI Working Paper No. No. 2014:4). Bergen, Norway.

Lowder, S. K., Bertini, R., & Croppenstedt, A. (2017). Poverty, social protection and agriculture: Levels and trends in data. *Global Food Security*, *15*, 94–107. https://doi.org/10.1016/j.gfs.2017.06.001

McIntyre, D., Thiede, M., Dahlgren, G., & Whitehead, M. (2006). What are the economic consequences for households of illness and of paying for health care in low- and middle-income country contexts? *Social Science and Medicine*, *62*(4), 858–865. https://doi.org/10.1016/j.socscimed.2005.07.001

Meyer, D. F., & Nishimwe-Niyimbanira, R. (2016). The impact of household size on poverty: An analysis of various low-income townships in the Northern Free State region, South Africa. *African Population Studies*, *30*(2), 2283–2295. https://doi.org/10.11564/30-2-811

Nandi, A., Megiddo, I., Ashok, A., Verma, A., & Laxminarayan, R. (2017). Reduced burden of childhood diarrheal diseases through increased access to water and sanitation in India: A modeling analysis. *Social Science and Medicine*, *180*, 181–192. https://doi.org/10.1016/j.socscimed.2016.08.049

National Bureau of Statistics [Nigeria]. (2020). *2019 Poverty and Inequality in Nigeria : Executive Summary*. Abuja, Nigeria.

Orbeta Jr, A. C. (2005). *Poverty, Vulnerability and Family Size: Evidence from the Philippines* (ADBI

Discussion Paper No. 29). Mandaluyong, Philippines. Retrieved from http://hdl.handle.net/11540/3617

Pitt, M. M., Khandker, S. R., & Cartwright, J. (2006). Empowering women with micro finance: Evidence from Bangladesh. *Economic Development and Cultural Change*, *54*(4), 791–831. https://doi.org/10.1086/503580

Pitt, M. M., Khandker, S. R., Chowdhury, O. H., & Millimet, D. L. (2003). Credit programs for the poor and the health status of children in rural Bangladesh. *International Economic Review*, *44*(1), 87–118. https://doi.org/10.1111/1468-2354.t01-1-00063

Prüss-Ustün, A., Bartram, J., Clasen, T., Colford, J. M., Cumming, O., Curtis, V., … Cairncross, S. (2014). Burden of disease from inadequate water, sanitation and hygiene in low- and middle-income settings: A retrospective analysis of data from 145 countries. *Tropical Medicine and International Health*, *19*(8), 894–905. https://doi.org/10.1111/tmi.12329

Rank, M. R., Yoon, H.-S., & Hirschl, T. A. (2003). American poverty as a structural failing: Evidence and Arguments. *Journal of Sociolgy and Social Welfare*, *30*(4), 3–30. Retrieved from https://scholarworks.wmich.edu/jssw/vol30/iss4/2/

Rao, N. D. (2013). Does (better) electricity supply increase household enterprise income in India? *Energy Policy*, *57*, 532–541. https://doi.org/10.1016/j.enpol.2013.02.025

Rolleston, C. (2011). Educational access and poverty reduction: The case of Ghana 1991-2006. *International Journal of Educational Development*, *31*(4), 338–349. https://doi.org/10.1016/j.ijedudev.2011.01.002

Sharaunga, S., Mudhara, M., & Bogale, A. (2015). The impact of women's empowerment in agriculture on household vulnerability to food insecurity in the KwaZulu-Natal province. *Forum for Development Studies*, *42*(2), 195–223. https://doi.org/10.1080/08039410.2014.997792

Tate, J. E., Chitambar, S., Esposito, D. H., Sarkar, R., Gladstone, B., Ramani, S., … Kang, G. (2009). Disease and economic burden of rotavirus diarrhoea in India. *Vaccine*, *27*(Suppl 5), 18–24. https://doi.org/10.1016/j.vaccine.2009.08.098

Turčínková, J., & Stávková, J. (2012). Does the attained level of education affect the income situation of households? *Procedia - Social and Behavioral Sciences*, *55*, 1036–1042. https://doi.org/10.1016/j.sbspro.2012.09.595

Wang, L. (2003). Determinants of child mortality in LDCs: Empirical findings from demographic and health surveys. *Health Policy*, *65*(3), 277–299. https://doi.org/10.1016/S0168-8510(03)00039-3

World Health Organization. (2013). *Health in All Policies*. *Report on perspectives and intersectoral actions in the African Region*. Brazzaville. Retrieved from https://www.afro.who.int/publications/health-all-policies-report-perspectives-and-intersectoral-actions-african-region

World Health Organization. (2014). Health System Financing Country Profile: Nigeria, 2014. Retrieved October 10, 2017, from http://apps.who.int/nha/database/Country_Profile/Index/en

World Poverty Clock & Brooking Institution. (2018). World Poverty

Clock and Brooking Instition 2018. Retrieved September 23, 2018, from http://worldpoverty.io/blog/index.php ?r=12