Poverty Determinants in South Sudan: The Case of Renk County

Adam E. Ahmed[1,2*] Somaia Roghim[3] and Ali Saleh[4]

[1]*National Nutrition Policy Chair, College of Applied Medical Sciences, King Saud University, Saudi Arabia.*
[2]*Department of Agricultural Economics, Faculty of Agriculture, Khartoum University, Sudan.*
[3]*Department of Agricultural Economics and Agribusiness, University of Bahri, Khartoum, Sudan.*
[4]*Department of Agricultural Economics, Faculty of Agriculture, Khartoum University, Sudan.*

Authors' contributions

This work was carried out in collaboration between all authors. Author SR carried out the data collection, analysis and processing of the preliminary findings. Author AEA designed the study, wrote the first draft of the manuscript and assist in conducting the statistical analysis. Author AS supervises the work from the early beginning assists in data analysis and interpretation of the results and writing of the first draft of the paper. All authors read and approved the final manuscript.

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ABSTRACT

This paper aimed to identify and analyzed the main determinants of poverty in South Sudan prior it secession from Sudan in 2011. Primary data were collected using structured household questionnaire. A sample of 200 households was interviewed in Renk County. Multiple Regression analysis was used for estimating poverty determinants. The results of the determinants analyses indicated that secondary education, widow household heads, female household heads, government and private sector employees, petty traders, Gango, dysentery infection, mixed source of water are the main poverty determinants in the urban area. While university education, married household heads, household size, female household heads, farmers, Gango, petty traders, total agricultural

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Corresponding author: E-mail: adamelhag2002@yahoo.com;

land, goats' ownership and numbers of chicken per households are the rural poverty determinants. As spending on education, health, drinking water and electricity are not only the responsibility of the households but also of the government. It could be concluded that most of poverty determinants could be resolved if the government shoulder its responsibility in providing education, health, drinking water, electricity services as well as providing sufficient salaries for the government employees' and creating, supporting and financing the income generating activities for the non-government employees for both urban and rural households in the State.

Keywords: South Sudan, poverty determinants, Renk County, poverty.

1. INTRODUCTION

This study was conducted in Southern Sudan prior its secession from Sudan in 2011. South Sudan which was used to be the Southern part of Sudan has become a new state in East Africa since 9th of July, 2011. The new state has an area of 620 thousand Kilometer and it is bordered with seven countries Ethiopia, Kenya, Uganda, Congo, Central Africa Republic and Sudan. South Sudan possess 150 Million acre of flat rich clay soil which are partially flooded during the rainy season.

Poverty in Southern Sudan has been brought about by neglect in the development process, exacerbated by increased population pressure over meager resources associated with poor investment opportunities. The resultant destruction of the ecology of the area was in part due to the biased development policies in favor of certain areas in Sudan and neglect of large areas of the South and other parts of the country. The civil war, which began in 1950 and re-ignited again in 1983, was associated with growing poverty, food insecurity and influxes of internally displaced peoples (IDPs) and refugees.

Coming out of the civil war that had ceased in 2005 and with the signing of the Comprehensive Peace Agreement (CPA) [1], urged for analyzing poverty determinants in the Southern and duly addressing their repercussions.

The study area "Former Southern Sudan" covers a total area of 648.051 thousand square kilometers, about one quarter of Sudan's total area. It lies between latitudes 3º5' N and 12ºN, and longitudes 23º.5' and 36' E. South Sudan is bordered by Ethiopia to the east, Kenya, Uganda, and the Democratic Republic of the Congo to the south, and the Central African Republic to the west. [2] and after its secession bordered by Sudan to the north. The population of southern Sudan is estimated at 8.26 million [3] - According to the Sudan Millennium Development Goals   (MDG) around 4.8 million were reported as internally displaced and refugees in neighboring countries. Southern Sudan officially consists of ten states which formerly composed the three historic Provinces of Bahr el Ghazal, Equatoria and Upper Nile [4].

According to Government of Sudan and United Nations Country Team [5] the majority of the people in south Sudan are engaged in subsistence farming, fishing, animal herding, seasonal labor in the mechanized and irrigated schemes and cutting fire-wood. After 2000, very few of were employed in the petroleum production in Melut oil field.

The Upper Nile State covers an area of around 77.773 thousand square kilometers(Wikipedia, 2009) with a total population estimated at 964.353 thousand (CBS and SSCCSE, 2008). The State has eight districts located between Kodok and Fashoda. The River White Nile flows through the State [6].

Renk County covering an area of 32 thousand square kilometers is located in the northern part of Upper Nile State. Administratively, the County is composed of five Payams, which are Renk town, Gelhak, Shomedi, Geigar and Wantow. A commissioner is the top authority of the County subordinate to the Wali (Governor) of the Upper Nile State (1).

The total population of Renk County is estimated at 137.75 thousand persons The county climate forms basically two distinct seasons, the wet or rainy season extends from May/June to October, and the dry season extends from November to May [1,7]. The amount of rainfall ranges between 450 and 550mm per annum as measured by Renk and Qoz Rom meteorological stations. The water sources in the study area are the White Nile River and few seasonal streams [8].

The land use in the Renk County consists of traditional rain-fed, mechanized rain-fed and irrigated farming systems. Forestry is also considered as an important source for livelihood in the area. The most important staple crops grown in the area are sorghum, and the cash

crops are sesame, groundnut, sun flower, okra and rosella (karkady).

According to the Administration Unit of the Animal Livestock of Renk County the main livestock in the area includes cattle, sheep and goats.

Urban and Rural Landless Gangos[1] have low income because they pursue seasonal wage work in the mechanized farming schemes. The owner of the farm gives them food in form of sorghum, onion and edible oil for cooking. Their income in the mechanized farming schemes depend largely on their health and stamina status. The healthy and well-built bodies will allow them to harvest more and hence earn more wages than the others. The Gangos also are employed in seasonal collection of gum Arabic in the different parts of the County. Similarly, their income generation from this laborious activity also depends on their health and physical built up, which will help much in getting higher crop yield during the season.

Other Gangos are engaged in producing Wooden-straw mats for fencing houses, or as a roof for cottages and rooms made up of mud and straw. Their involvement in this type of production is also seasonal extends over three months only during the whole year. These Gangos is either financed by merchant or self-dependent. Those who are supported by the merchants are at worse position than the others as the merchants tend to discount them in prices in exchange for lending arrangement. However, for the two types the income generated from this activity is also considered modest compared to their spending over basic needs.

The area under traditional farming cultivation ranges between 1-120 feddans found in the villages premises and is distributed by the village leader (Sheikh). This land is inherited and is used for production of sorghum, sesame, groundnut, okra and rosella. They are produced mainly for home consumption. On average traditional farmers grow land ranging between 5-20 feddans and few of them grow 30 feddans, while very few grow 60 feddans. About 80 percent of the small farmers store sorghum for home consumption and for seeds for next season. It has been reported that small farmers cannot access agriculture credit unless they pool their land into 500 feddans parcels; total credit given to small farmers approached SDG 1000 per 500 feddans. Supply of credit is always delayed especially in case of land preparation

which leads to late sowing and in case of weeding which results in low yield. Most of the small farmers who do not get formal loans are compelled to sell their livestock assets mainly goats. They also face competition in land preparation since large farmers are already using tractors services for a while and release them for the small farmers after the season has elapsed. The small farmers are forced to pay their dues immediately after harvest and hence they sell their crops at low unfair prices.

The total area under mechanized farming approaches 1.55 million feddans[2] offering employment opportunities for seasonal labor especially at peak periods of crop harvest. The irrigated pump schemes established along the White Nile and managed in Kosti since 1940s under Kosti –Renk Agricultural Schemes [9] then under the White Nile schemes in 1970 and financed by the Central Government to produce cotton. In 1992 these scheme were liberalized and became under the supervision of the State Irrigated Scheme Administration Unit of the Federal Ministry of Agriculture and Forestry [10].

Sorghum and millet constitute the main staple food crops in the Renk area. They are supplemented with other food crops such as groundnuts, and okra.

The households and particularly in the rural areas stated that there is a limited access to school education especially the secondary and university levels. The majority of the households are unable to pay the school fees and pocket money in addition to other essential related expenditures. Students used to attend school without eating for the whole school day. They may have a cup of tea until they return back in the afternoon. The WFP Organization funded the education by giving meals during the school day for those students who attend schools which are made up of bricks and cement with roof made of metal. In this way the organization attempts to encourage the Administration for Education in Renk County to build stable schools using proper construction materials.

Regarding the health situation there is only one hospital in the Upper Nile State located in Renk town (Payam). There are no proper health services but there are tents dispersed in few of the urban residential areas and many of the rural villages.

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[1]*Gangos are landless labour working for wages and have no permanent occupation.*
[2]*One feddan equals 0.42 hecatres.*

These tents are equipped with limited health facilities and served by unqualified staff that is not trained in nursing or related profession. What is worse is the absence of these modest services in most rural village particularly the remote ones during the rainy season.

In this respect, households complained about infection from a wide range of diseases for which they cannot afford to buy medicine or visit physicians such as dysentery, and bilharzias so they depended largely on traditional medicine.

The households in urban and rural areas stated that they suffer from Malaria disease particularly during the rainy season as a result of widespread of mosquitoes in the area. Most of the households are not able to buy mosquito nets to protect themselves against the insect biting. In 2007 the Consortium of United Nation (UN) and Non Governmental Organizations (NGOs) in Renk County indicted that Tear fund has distributed 1 to 2 mosquito nets to few households, which did not have a real effect. Dysentery, Bilharzias are widespread, and Trachoma diseases in particular is spread during the summer season affecting children given the poor hygienic situations of the residential houses swarmed by houseflies.

Urban households are unable to introduce tap water into their houses either because the services are not available or because of the high cost of introducing the water. Most of them buy water from the Government Distribution Center located in one town, mainly the Renk town.

This limited service to one town burdens those households who live in other towns and forced them to travel to Renk town to buy the water at a cost. The others prefer to go to the River White Nile bank and get their drinking water from there. This water is not clean and may be subjected to pollution and populated with insects causing diseases. Still, another source of water is provided by the hafirs and irrigation canals[3]. The households that rely on the hafirs (large pool of water) suffer in summer from high evaporation rate reducing water availability. The households are then forced to travel to residential areas near the river bank where they stay with their relatives or dwell in houses that belonged to them. These houses remain vacant for most of the year and are occupied by their owners during these hot seasons. They return back to their homelands during the rainy season to cultivate their land. Likewise, those households who depend on the irrigation canal for drinking water suffer from

shortage of water in summer. Most of them are not able to pay their share for operating the pumps engines to drive water into the canal. The Administrative Unit of Renk County together with the income-able households subsidized the poor households in intermittent supply of drinking water in the irrigation canal. This water in the canal may also be non-hygienic as it is subjected to pollution and other plants and animals debris thrown into the canal.

Most of the households in the urban and rural area use charcoal, fire wood, animal, and plant residues as a source of energy for cooking food, except gas which is used by very few urban households.

Based on the above description of the study area, Households livelihood, this research aims at identifying and analyzing urban and rural poverty determinants in Southern Sudan prior to its secession from Sudan, taking the Renk County as a case study.

2. METHODOLOGY

2.1 Data Collection

The study was conducted in County of the Upper Nile State of Southern Sudan. Both secondary and primary data were obtained for analysis. The secondary data were collected using official reports obtained from Bank of Sudan, Mechanized Farming Corporation, Southern Sudan census, districts administrative unit, hospital and UN agencies such as FAO and international NGO's such as the Norwegian Strommy Organization for Education.

The primary data were collected using household survey filling a structured questionnaire. The households were interviewed in details about incomes, consumptions and other basic needs (e.g. food stuff, health, education, etc.). These data have been employed to develop the poverty line and hence to classify households into 'poor' and 'non-poor'.

Simple random technique has been used since the respondents portrayed homogeneous characteristics. The households belong to interrelated tribes and exhibit similar socioeconomic attitudes and behavior.

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[3]*The irrigation canal belongs to idle irrigated pump schemes in the Renk County.*

The sample size amounted to 245 households' respondents representing 0.2 percent of the population of the Renk County. Only 200 respondents had full questionnaires divided into 75 for urban households and 125 for rural households. The considered households are considered representative to the county as it involves households from the major county's residential towns and villages. The Renk County is constituted of five Payams (residential towns) and large number of villages, each termed as Buma (residential village). The vast area of the county and the security situation made total population coverage almost impossible. Our sample selects 15 households from each of the five Payams and 10-12 households from each of the 12 Bumas to equivalently cover the four geographical locations in the county totaling to the 75 and 125 respondents from the Payams and Bumas, respectively.

2.2 Regression Model for Poverty Determinants

Poverty profiles are useful for summarizing information on levels and characteristics of the poor in the society. Important as they are, poverty profiles are limited in providing clues to underling determinants of poverty. In recent years empirical poverty assessment attempted to go beyond poverty profile preparation of estimation and engaged in multivariate analysis of poverty. The regression analysis in this study has the same purpose.

In this study, spending on food and non-food items has been used as a dependant variable instead of income. This is because information and data on income are difficult to obtain especially in developing countries, and particularly among low income groups who don't have sustained sources of income or can't recall correctly the amount of income [11].

Moreover, large share of income is not monetized in low income societies, and majority of households consume their own home garden and backyard livestock raising production, or even trade them for other basic goods. Therefore, information on income obtained via field surveys may give low quality data which urges for the use of consumption spending as a better indicator for poverty measurement and for detecting causality relationships than income.

Regression is a useful technique for summarizing data and is widely used to test hypotheses and to quantify the influence of independent variables

on a dependent variable (12). The regression equation used in this study could be written as:

$$Log\left(\frac{Y_i}{Z}\right) = \alpha + \beta_1 X_1 + \beta_2 X_2 + ... + \beta_{30} X_{30} ------(1)$$

Where

Y_i is per capita expenditure/day in SDG, based on the model specification used in this study the dependent variable is composed of log per capita consumption spending per day divided by the poverty line, which can be used as a proxy to represent the poverty dependant variable. Therefore, it may be assumed that the dependent variable can be used to investigate the determinants of poverty for each of the urban and rural households in the Renk County contingent on the inverse relationship between spending and poverty status.

Z is poverty line which has been calculated using the cost of the basic need method – [12,13].

X1 to X30 are the explanatory variables including: education (illiterate, pre-secondary, secondary and university); household head marital status (married and widow); household size; female household headed; primary occupations (farmers, government employees, private sector employees, petty traders, and Gango); secondary occupations (farmers, government employees, private sector employees, petty traders, and Gango); amenities (Typhoid, Bilharzias, Dysentery, water sources-public net, water sources- mixed) and credit. These explanatory variables represent the most important education, health, income sources, credit as well as household social characteristics variables in the study area. This justify why these variables were selected to represent the explanatory variables in the study area.

3. RESULTS AND DISCUSSION

Table 1 shows the results of the regression analyses, which encompassed selected explanatory variables related to community, household and individual characteristics of the studied households. The reported R square reached 79 percent with an overall significance result. Eleven variables including the constant have been significant with the expected sign except for one variable, the secondary education. For the rural households the reported R square reached 61.2 percent with an overall significance for the whole model. Twelve variables including

the constant have been significant with the expected signs.

3.1 Education

Though many studies indicated the importance of education in reducing poverty situation in the urban and rural areas, the findings of the regression analyses in Renk County gave an ambiguous result. In Kenya, Geda et al. stated that educational attainment of household-heads, especially of high school and university education is found to be influential in poverty alleviation. They asserted that while inability to access education leads to more poverty in rural areas, primary education is crucial for pulling them out of extreme poverty [14]. Datt and Jolliffe commented that primary schooling may lead to increasing the per-capita consumption of households in Egypt [15]. Dudek exclaimed that attainment of higher levels of education by headed households lead to lower probability of being poor [16].

The regression results showed a significant negative relationship between spending and secondary education for urban headed households, and a significant positive relationship with university education for rural headed households[4]. The depicted negative sign for the secondary level education may imply that educated headed household, who is also a member of the household, would add extra burden rather than being a supporting element in household spending. On the other hand, the result of the rural headed household seemed to be odd given the current employment situation and requirements which do not request university education level in a rural area such as that of Renk County.

3.2 Marital Status

For urban headed households, the regression analyses excluded the married variable and detected a positive and significant relationship between spending and widow headed households. For rural headed households, the analyses indicated the existence of negative and significant relationships between spending and each of the married and the widow variables. In the urban areas, widowed headed households may find better opportunities for employment and generation of income than those in rural areas. The high dependency ratio in the rural areas seemed to affect negatively both married and widowed headed households alike. It is well

known that polygamous is widespread among households in South Sudan in general and in Renk County as well. Opposite to the findings of Geda et al. who indicated worsening living standards of urban households due to polygamy than of rural households in Kenya [14]. The regression results revealed increased poverty situation of rural married households in Renk County.

3.3 Household Size

The widely held view that larger families tend to be poorer in developing countries has influenced research and policy. There is a considerable evidence of strong negative correlation between household size and consumption per person in the developing countries. The findings of the model for urban and rural households indicated a negative and significant relationship between household size and poverty status. The findings are in line with the findings of Lanjouw and Ravallion who concluded that people living in larger and generally younger household are typically poor [17].

Moreover, Datt and Jolliffe, , in their study on the determinants of poverty in Egypt concluded that there is an existence of significant negative effect of household size on living standards measured by household consumption per person in both urban and rural areas of Egypt [15]. Kotikula et al. findings revealed a negative link between poverty and the household size in Bangladesh, which could be attributed to higher dependency ratio of household members "who unambiguously do not contribute to household income [18]".

3.4 Female Headed Households

Mclanhan and others and Lord documented that women were more likely to live in poverty than men [19,20]. Fulltime employment and annual income women were consistently far worse off than men on a number of economic measures related to poverty status such as hourly wage [19,21-24]. Barros and other indicated that women headed households in Brazil tended to earn less on average than men, and hence a household lacking male-earned income simply has a much higher probability of being poor [25].

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[4]*The implications of the given result reveals absence of variability among the values of the illiterate and primary school graduates in the urban and rural areas and hence their effects were not picked up by the regression analyses.*

Table 1. Determinants of household spending level of urban and rural households, Renk County- Southern Sudan

Variable	Urban	Rural
Dependant variable(Log Per capita expenditure/day)/Poverty line		
Constant	-0.967***(0.293)	2.036***(0.315)
Education		
Illiterate		
Pre-secondary	0.019(0.061)	0.082(0.053)
Secondary	-0.172**(0.084)	-
University	-0.089(0.192)	0.418*(2.47)
Household head marital status		
Married	-	-1.671***(0.279)
Widow	0.319***(0.094)	-1.355***(0.265)
Household Size	-0.108*(0.060)	-0.242***(0.042)
Female Household Headed	-0.127* (0.077)	-0.437***(0.111)
Primary Occupations		
Farmers		-0.176**(0.085)
Government employees	0.974***(0.216)	
Private Sector employees	0.734***(0.237)	
Petty traders	0.884***(0.218)	
Gango	0.795***(0.252)	- 0.237** (0.084)
Fishermen		-
Secondary occupations		
Farmers	-0.188(0.121)	
Government employees		-0.017(0.071)
Private Sector employees		0.164(0.127)
Petty traders		0.216***(0.079)
Gango	-0.004(0.083)	
Fishermen	-0.008(0.17)	
Assets ownership		
Total agricultural area	0.000(0.001)	0.001***(0.000)
Donkeys	- 0.019(0.085)	-0.90(0.08)
Goats	0.016(0.065)	0.084*(0.05)
Chicken number	- 0.004(0.005)	0.008**(0.003)
Amenities		
Typhoid	0.054(0.060)	-0.06(0.050)
Bilharzias	-0.050(0.096)	-0.008(0.01)
Dysentery	-0.097*(0.053)	-0.01(0.048)
Water Sources : public net	0.026(0.050)	-
Water source Mixed (public net and natural resources)	0.399*** (0.066)	
Credit	-0.096(0.073)	
R^2	79	61.2
F-value	8.18***	8.7***

In the same venue, Ray also implied that female headed households always faced higher poverty rates than male headed households [26]. These females headed households were particularly vulnerable to adverse effects of poverty; their children welfare was classified as belonging to backward classes. Also Datt and Jolliffe found the same conclusion in Egypt [15].

The model results for the urban and rural households supported similar findings. There has been a negative and significant relationship between spending and household headed female. This result confirmed the worse position of females headed households relative to male headed household. Women in urban and rural areas are engaged in selling tea, vegetables, firewood, homemade ghee, cleaning straw-brooms and beverages at low prices. They also work as junior staff and laborers in government offices at low salaries and wages rates.

3.3 Occupation

Kotikula and others found a significant difference between the type of occupation of the urban and the rural households in Bangladesh [18]. They stated that within the rural areas, the household headed daily wage workers were found to be at a worse position compared to the households headed self employed farmers. However, in the urban areas, only the non-agricultural self-employed household head had the positive and significant effect on household consumption.

The results of the regression model indicated that the primary occupations of the household heads are positively and statistically significant in the urban, while negatively and statistically significant in the rural areas (excluding fishing as a strong collinear to farming). The primary occupation in the urban area implies key role played by these jobs in increasing household spending opposite to the situation in the rural area. Farming and Gango results in rural area depict reduction in spending of households and hence increased poverty incidence, perhaps due to crop failure, unreliable employment opportunities and low product prices leading to low wages for seasonal Gango labor.

Petty trading in the rural area was the only secondary occupation that had significant and positive relationship with spending of households, while the rest of secondary occupations in both areas were not significant. For rural households, it appears that petty trading is the main secondary occupation that could supplement the income obtained from farming. In general, the findings of the regression analyses confirms significant effects for urban and rural households, contrary to the findings of Datt and Jolliffi in Egypt, who reported that employment had a significant effect on the welfare of the rural households but not for urban households [15].

3.6 Assets Ownership

The household assets are important determinants of its living standards. Owned land and the value livestock for example have had significant and positive effects on per capita consumption of households in rural areas but not in urban areas [15].

For rural households, the ownership of agricultural land plays a key role in pulling a household out of poverty [27]. Similar results have been obtained in the case of Renk County. The regression results of the rural area gave a positive and significant relationship between per capita spending and total agricultural land holdings in the rural area but not in the urban area. This implies that those households who had access to larger lands for crop and livestock production may be in a better welfare position than those who do not have land or those who have small size landholdings.

The assets available to households in form of goats, poultry and donkeys had been important in case of rural areas than in urban areas. The model results were significant in case of these variables with respect to the rural households while they were not picked up by the urban households' model.

The positive sign in case of goats and poultry may imply reduction of poverty as they increase spending consumption. On the contrary, the negative sign in case of the donkeys may reflect the extra burden incurred in feeding those animals, and therefore households benefit out of their services in transportation and loading of their farm products and other items.

3.7 Infection and Drinking Water

Disease infections are expected to be pervasive among households in poor societies since they lack adequate quality public and private sector health services. Spence and others examined the historical link between tuberculosis and poverty in Liverpool and concluded that tuberculosis remains strongly associated with poverty [28]. Krishna and others confirmed that ill health tend to perpetuate poverty [29].

Despite the reported infection of people in both urban and rural areas the regression results depicted only the existence of a significant negative relationship between infection with Dysentery and spending level in the urban areas. This may imply that infection with such diseases had influenced labour health, activity and hence reducing his productivity and income. This reduction in income would transpire in low spending level.

As with spending on health in both urban and rural areas, the regression model was run to test for multicolinearity and depicted the existence of a positive and significant relationship between the cost of health treatment and households spending in both areas. The positive relationship reflects the effect of disease infection and the level of spending on meeting the cost of medicine, travel expenses from rural villages to

nearest health centers and hospital. The multicolinearity test was not successful in detecting any significant relationship between prevalence of any of the reported diseases and the level of spending among rural households. It seemed there has been no variability in infection with diseases as reported by the rural households.

The spending of urban and rural households on health care has been relatively high compared to other non-food items. It represents about 36 percent of non-food spending for both urban and rural. The poor, who are the most price-sensitive users of health services, frequently face a higher price at the point of use because they are less likely to have insurance coverage, whether private or public [30]. This tendency is sometimes offset by fee-waiver schemes, although in practice these often have the effect of exempting the near-poor rather than the poor [31].

The community factors including the geographical and environmental aspects have been found to exert a felt effect on disease infection and complications. The rural areas with poor infrastructure in form of impassable roads especially during rainy seasons makes it completely difficult for sick households to access health facilities in the nearest towns or centers. Accessibility, i.e. the ease with which people can reach facilities, is also important. Travel time is significant in this connection: it depends on the distance people have to travel, the transport system, road infrastructure, and geographical factors. Distance is the most frequently encountered variable in empirical studies of utilization and often has a significant impact on it [32-36].

The poor sanitary situation in impoverished urban and rural areas is also responsible for increased infection with diseases. The water sources, particularly from stagnant pools, are crucial in compounding the effect of non-hygienic surrounding leading to multiplication of insects such as houseflies and mosquitoes with associated diseases [37]. Carrying out a simple regression analyses between sources of water and type of disease infection depicted the existence of a positive and significant relationship between mix type of drinking water and infection with kidney diseases in the urban area. Another regression running indicated a negative significant relationship between the same source of water and infection with Dysentery. For rural area, since all households use natural resources for drinking water, no variability is available and hence no significant result was detected. One may conclude that the poor type of water services may have an influence in causing diseases in the urban area.

3.8 Access to Credit

Shaw indicated the link between micro-finance credit and initial incomes of small producers clients engaged in micro-enterprise earnings in southeastern Sri Lanka [38]. Poorer clients faced geographic, financial and socio-cultural barriers to entry to the most promising micro-enterprise occupations, leading them to select low-value activities with poor growth prospects. Microfinance activities loaming large in North Sudan has not yet fully crystallized in the South. In the South, the Agricultural Bank of Sudan is normally involved in supplying seasonal credit to large farmers the only ones who can afford collaterals, and it ignores small farmers who do not qualify for such conditions.

In this study, the access to agricultural credit has not been significant in the multiple regression analyses, but significantly detected with negative sign coefficients contrary to expectations for both urban and rural households when tested for multicolinearity.

The negative sign explanation may be referred to the use of most of the credit received by both households. They spent the credit on consumables rather than for productive purposes as they claim that the amount of received credit is not adequate to meet their operational cost and is given out on wrong timeliness. Hence, they have no way out except spending the credit on daily basic needs, and social events such as wedding and social ceremonies. The repayments of debts, which include the principal and the cost of credit impinges on the households spending by the end of the season. That is why credit has a negative influence on household spending.

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[5]*Urban household with no secondary occupation (β= 0.118 *, SE= 0.070); Male headed HH-urban (β= - 0.137 * , SE=0.079); Credit in Urban (β= -0.357 ****, SE 0.084); Credit in Rural (β = -0.147 *, SE 0.087) and Mixed water (β = -0.251*, SE:0.132) Married in urban : b= -0.182* (SE= 0.095); Health treatment cost: in rural : b = 0.001 ** (SE: 0.000); Health treatment cost: in urban : b = 0.001 * (SE: 0.000), Mixed water : b = 0.152 * (SE: 0.083); The relationship between mixed sources of drinking water and kidney infection proved to be positive and significant, on one side and significant but negative on the other side with Dysentery. (Kidney: β = 0.152*, SE: 0.083; and β = -0.251*, SE: 0.132).*

The importance of accessing credit to households to alleviate poverty is encouraged by the current ongoing efforts of supplying micro-credit (micro-finance) to small producers in Sudan. Microfinance in line to Shaw (2004) supports poverty relief programs through supplying loans for productive and consumption interventions.

For multicolinearity problem, a number of variables which are expected to show causal relationship with spending level and hence poverty were either excluded by the model or appeared insignificant in the model. These variables were tested separately for multicolinearity to explore their significance with spending as in the footnote.

4. CONCLUSION AND RECOMMENDATION

The main findings of the analysis of the poverty determinants can summarized in the following: (1) The results of the determinants analyses indicated that secondary education, widow household heads, female household heads, government and private sector employees, petty traders, Gango, dysentery infection, mixed source of water are the main poverty determinants in the urban area. (2) On the other hand, rural poverty determinants are: university education, married household heads, household size, female household heads, farmers, Gango, petty traders, total agricultural land, goats' ownership and numbers of chicken per households.

As spending on education, health, drinking water, and electricity services are not only the responsibility of the households but also of the government. It could be concluded that most of poverty determinants could be resolved if the government shoulder its responsibility in providing basic needs of the people of Renk County such as education, health, drinking water, electricity services as well as providing sufficient salaries for the government employees' and creating, supporting and financing the income generating activities for the non-government employees for both urban and rural households in the State. Moreover, International NGOs, UN agencies as well as other NGOs could be involved assisting the government of the South Sudan in providing the basic need services.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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