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Abstract: This study assessed the health status and welfare of rural households in Ondo East and Ondo West Local Government Areas of Ondo State. The data were obtained through the use of structured questionnaires that were administered to farmers in two randomly selected Local Government Areas (LGAs) of the study area. Simple descriptive and regression methods were used to analyze the data. The common self reported types of sickness were tuberculosis (17.3%), whitlow (17.3%), guinea worm (5.5%), malaria (40.0%), pneumonia (2.7%), cholera (2.7%), diabetes (2.7%) and hookworm (1.8%). The study also revealed that, cost of treatment, cost of hired land and days of incapacitation have negative relationship with per capita income, while the imputed cost of family labour, cost of other inputs (such as fertilizer and seeds), family size and land area have positive relationship. The study recommended the need to raise national awareness of the incidence of diseases and their implication through information, health care facilities, encouraging government rural partnership, micro entrepreneurship and institution and industrial development.

[A.S Oyekale and T.S.Otuwehinmi. **Effect of Ill-Health on Rural Households' Welfare in Ondo State, Nigeria.** *Life Sci J* 2012;9(4):2452-2456] (ISSN:1097-8135). <http://www.lifesciencesite.com>. 362

Keywords: ill-health, welfare, Ondo state, Nigeria

Introduction

Poverty refers to a situation where an individual or a group of individuals fails to attain a minimum level of welfare that is generally considered essential by the standard of a society (Aluko, 1975, Ajakaiye and Adeyeye, 2001). In many developing countries, poverty is concentrated among people with certain characteristics like low education, poor condition of health, unstable employment/unemployment, low status job, low and unstable income, poor housing condition, large families, absence of savings, constant struggle for survival and absence of material possession/investment (Sen, 1992). Past research efforts have closely addressed many of these key policy aspects, but in some African countries, just very little is known about the linkage between households' economic status and health status of the people. However, widespread poverty and emergence of many infectious diseases in Africa presuppose that research into the linkage between households' welfare and ill-health will be of tremendous assistance to policy makers in their efforts to improve people's standard of living.

Several approaches have been used to conceptualize households' welfare like the households' income, basic needs (which go beyond income to focus on deprivation of requirements for meeting basic human needs) and human capacity (which places some emphasis on the ability of people to enjoy long/healthy lives, to be literate and to participate freely in social/development activities in

their society). Also, economic analyses of health issues and well-being have focused on health status and health expenditures as inputs or means for achieving economic growth through its productivity effects (Lawson, 2004). This perspective presupposes that a healthy population is an indispensable engine for economic growth and development.

The classical economists' view of the relationship between health and economic development states that wealth leads to health with improving health as an output of the growth process. Therefore, considering the interconnected nature of health and welfare, incapacitation through sickness is likely to have an impact on the capacity of households to escape poverty (Wagstaff, 2002). Similarly, ill-health has other implications such as damaging traditional social support networks and increasing health care costs, all of which make breaking out of the cycle of poverty more difficult (Lawson, 2004). Kyegombe (2003) identified five main dimensions through which aspects of health/ill-health interact with other components of poverty. These are income poverty nutrition and health which makes the poor not to be on good nutrition; shelter and health which implies that the poor cannot afford good shelter; work environment and health implying that the poor cannot afford to work in good environment; income poverty and health care cost showing that the poor cannot afford to give himself good health treatment and ill health and erosive livelihood strategies implying that ill health can lead

to depletion of human assets by withdrawal of children from schools.

World Health Organization (WHO) noted that the 1.2 billion people in the world that were living in absolute poverty are those with high vulnerability to infectious diseases such as malaria, tuberculosis (TB) and HIV/AIDS (Tolhurst and Theobald, 2003). Essentially, the Millennium Development Goals (MDGs) relating to poverty reduction and health improvement are closely linked. This is because many aspects of poverty have a negative impact on health and on access to effective health services (DfID, 2003). Specifically it had also been submitted that while the economic burdens of infectious diseases like HIV/AIDS, malaria and TB are enormous, malaria alone slows the growth rate of African economy by 1.3 percent.

WHO and the United Nations (UN) have also reported that despite a tremendous growth in World's economic activities due to the penetration of transnational corporations and computerization, the world's poor have not so much benefited (Kent, 1998). It had been argued that the horrific disease burden of the poorest countries is a fundamental barrier to economic improvements of the world's poorest people. Consequently, although health is a valid end in itself, the main reason for seeking to improve the health of poor people is as an investment to facilitate household welfare. Therefore, World Health Organization (WHO) advocates a broad response to poverty and health that includes focus on specific diseases, efforts to promote pro-poor health systems and measures that address broader determinants of health initiatives, which promotes cross-sectoral actions in education and social protection, among others.

The objective of this study is to analyze the effect of inability to attend to normal activities due to ill-health on the welfare level of rural households in Nigeria. The research hypothesis (null) states that there is no significant relationship between the number of days farmers could not work due to ill-health and households' per capita income. In the remaining parts of the paper, materials and methods of analysis, results and discussions and conclusions are presented in that order.

Materials and Methods

The study area

The study was carried out in Ondo State, which was created on February 3, 1976. It has a total land area of 13,595.00sq/km with an estimated population of 3,460,877 people in 2006 (NBS, 2009). Ondo State lies between Longitude 4° 30' and 6° East of the Greenwich meridian 5° 45' and 8° 15' North of Equator. This means that the State lies entirely in the tropics. It is bounded in the North by Ekiti/Kogi

states, in the East by Edo state; in the West by Oyo and Ogun States; and in the South by the Atlantic Ocean. Ondo State has 18 local government areas. The climate is tropical with two distinct seasons; the rainy season and the dry season. The temperature throughout the year ranges from 21°C to 31°C while humidity is relatively high. The annual rainfall varies from 2,000 mm in the southern parts to 1,150 mm in the northern parts.

Sampling Methods

The research employed multi-stage random sampling technique. At the first stage, Ondo zone was randomly selected from the Agricultural Development Project (ADP) zones in the State. At the second stage, we randomly selected 2 Local Government Areas (LGAs) from Ondo zone. The 2 LGAs were Ondo East and Ondo West. The third stage involved division of the LGAs into their political wards. It was found that Ondo West has 12 wards and Ondo East has 10. In absence of household listing, we proceeded to select a total of 5 households from each of the wards. Therefore 60 households were sampled from Ondo West while 50 were interviewed from Ondo East.

Multiple Regression Analysis

Following Morduch and Sicular (2002), households' welfare can be assessed using the human capital theory, with the index of welfare being the per capita income. In this study, some functional specifications of equation 1 were estimated in order to determine the one that best fits the data. The implicit form of the estimated model is presented as:

$$Y_i = f(X_1, X_2, X_3, X_4, X_5, X_6, e_i) \quad 1$$

Where Y_i is the per capita income, X_1 is cost of treatment (₦), X_2 is cost of family labour (₦), X_3 is cost of hired labour (₦), X_4 is cost of other inputs (₦),

X_5 is number of days of incapacitation, X_6 is land area and e_i is the error term.

Results and Discussions

Rural households' socio-economic characteristics

Table 1 shows that about 75% of the respondents were male. Out of the respondents, 94.5% were married, 4.5% were divorced and 0.9% was single. Also, while only 1.8% of the respondents were between 21 and 28 years of age, those between 41 and 50 years constituted 44.5%. The minimum age was 30 years, while the maximum was 78 years. Average age was 49.51 years with coefficient of variation of 481.09 percent. The data also revealed that 6.4% of the farmers had no formal education, 57.3% had primary education, 30% had secondary education while only 6.3% had tertiary education. This implies that there is generally low level of education among the farmers.

Table 1: Frequency distribution of some socio-economic characteristics

Socio-economic characteristics	Frequency	Percent
<i>Age (Year)</i>		
21 – 30	2	1.8
31 – 40	20	18.2
41 – 50	49	44.5
51 – 60	23	20.9
61 – 70	13	11.8
≥ 70	3	2.7
<i>Sex</i>		
Male	82	74.5
Female	28	25.5
<i>Marital status</i>		
Single	1	0.9
Married	104	94.5
Divorced	5	4.5
<i>Educational status</i>		
No education	7	6.4
Nursery	1	0.9
Primary	62	56.4
Secondary	33	30.0
Tertiary	7	6.3
<i>Primary Occupation</i>		
Farming	101	91.8
Professional	9	8.2
<i>Cooperative membership</i>		
Cooperative membership	42	38.2
Non membership	68	61.8
<i>Household size</i>		
1 – 3	4	3.6
4 – 5	34	30.9
6 – 7	32	29.1
8 – 9	19	17.3
≥ 10	21	19.1

Also, 91.8% of the respondents interviewed had farming as their primary occupation, while 8.2% had other professions like tailoring, carpentry, brick-laying as their primary occupation but were also into farming as a secondary occupation. Many of the respondents (61.8%) did not belong to any cooperative society. The reason adduced for this included lack of full information about activities of cooperative societies and their non-willingness to take any unnecessary risk. Only 3.6% of the respondents had household size below 4 members. Average household size is 8.62 with standard deviation of 6.53. It implies that majority of the respondent raise large family size. This is because farmers often raise a team of family labour required to assist on their farms.

Health problems reported by the farmers

Table 2 shows the type of illness that farmers considered to be most prominent in their households. It showed that majority had malaria (40%). This is due to the dirty environment which serves as breeding space for mosquitoes. Also about 17.3% indicated tuberculosis as a common illness while another 17.3% had whitlow. These two sicknesses are as a result of the nature of their job [farming]. About 12.7% had cholera which is as a result of drinking unclean water and eating unclean food. Tuberculosis results when the farmers inhale dust in the course of performing their farming activities. Whitlow also results from infected hand injuries

Table 2: Most common types of sickness among rural households in Ondo State

Types of Sickness	Frequency	Percent
Tuberculosis	19	17.3
Whitlow	19	17.3
Guinea worm	6	5.5
Malaria	40	40.0
Pneumonia	3	2.7
Cholera	14	12.7
Diabetes	3	2.7
Hookworm	2	1.8
Total	110	100

Factors explaining households' welfare (per capita income)

Table 3 shows the coefficients of the estimated parameters in the regression equations. What we first did was to select the best functional form using the criteria of significance of the estimated parameters and coefficients of determination. At 5% level of significance, only days of incapacitation is significant in the linear functional form. Under the semi logarithm model, only the cost of family labour is significant at 5% level of significance. Under the double logarithm, five of the six variables are significant. Precisely, cost of family labour, cost of hired labour, cost of other inputs, days of incapacitation and land area are significant at least at 5% level of significance. With the exponential functional form, only two variables; cost of family labour and cost of hired labour are significant at 5% level of significance. Comparing the adjusted R square values of the four functions, the double logarithm has the highest value of 69.63% while the linear function has 58%, semi logarithm has 62% and the exponential has 13%. Considering the above statistics, we can rightly say that the double logarithm produced the best fit for the data and should be used for results interpretations.

Although statistically insignificant at 5 percent level of significance, the estimated parameters for the cost of treatment variable has negative coefficient. This implies that the cost incurred for treatment during sickness reduces the farmers' per capita income. This is because such income would have been invested for further production, instead of using it to settle hospital bills or for drugs during illness. The parameter of the cost of hired labour variable is statistically significant at 1 percent level and negatively signed. This implies that as the cost of hired labour increases, the per capita income of the farm households significantly reduces. This is due to the fact that the farmers, during illness will not want the work at the farm to stop and so will hire labourers to work for them. Cost incurred on these expenses significantly reduces the per capita income.

Family labour is positively signed and statistical significantly influence per capita income. This implies that as more members of the family participate in working on the family farm, the per capita income of the household will significantly increase. Cost of other inputs also has a positive coefficient and this implies that an increase in the use

of other inputs like fertilizers, chemical, seeds etc will lead to an increase in yield and this will lead to increase in households' per capita income. It can also be observed from the table that parameter for the days of incapacitation variable is negatively signed and it is statistically significant at 1 percent level. This implies that the research hypothesis has to be rejected. Therefore, as the number of days that farmers could not attend to normal farm activities increases, the per capita income significantly decreases. This can be explained from the viewpoint of scarcity of hired labour and timeliness of agricultural activities. When the farmer is not able to attend to normal farm activities, several forms of wastages reduce farm and non-farm incomes. Also, the parameter estimated for the land area variable is positively signed and statistically significant. This implies that as the land area increases, the per capita income of the farm household increases. This is a reflection of the relatively fertile status of the agricultural land in the study area. This may not be the case in a situation where the larger portion of the farm lands had been degraded.

Table 3: Determinants of per capita income

Function	Constant	Cost of treatment	Cost of family labour	Cost of hired labour	Cost of other inputs	Days of incapacitation	Land area	Adjusted R square
Linear	57677.27 (65300.08)	13.11481 (8.003329)***	25.45517 (22.10378)	19.13440 (13.13734)	-0.326139 (1.654710)***	1181.604 (559.8646)**	3043.351 (9723.547)	0.5585
Semi-logarithm	-39040.88 (269711.3)	14720.08 (29441.57)	8718.557 (4354.174)**	2435.217 (8295.520)	10723.50 (15304.13)	-1924.787 (969.8000)***	-15881.50 (42582.25)	0.6054
Double logarithm	5.031564 (1.195906)	-0.033309 (0.125034)	0.104280 (0.036576)*	-0.078763 (0.036098)**	0.558938 (0.077011)*	-0.042956 (0.012292)*	0.253095 (0.084871)*	0.6966
Exponential	10.35528 (0.355318)	5.50E -05 (4.36E -05)	0.000255 (0.000121)**	0.000164 (7.25E -05)**	1.06E -05 (9.07E -06)	0.004555 (0.003213)	0.077163 (0.052910)	0.2691

Standard errors are in the brackets, * = 1% level of significance, ** = 5% level of significance and *** = 10% level of significance

Conclusion and recommendation

This study revealed the health status of households in rural areas of Ondo state. The different types of diseases that are prevalent in the area were also identified and the nature of treatment adopted by the people was assessed. The number of days of incapacitation due to illness was also observed in the course of the study. The welfare of the households in the study area was assessed. Having established the important linkage between health status of rural farmers and their welfare status, some recommendation can be derived from the results. In a bid to combat health risk of rural households, national awareness of incidence of diseases and the impact on their income should be raised in rural areas through information dissemination, informal education and effective communication. This may be an important

factor given the low level of education of the respondents. Government should also ensure prompt and adequate provision of health facilities that is affordable to the rural dwellers. The health centre available in most of the rural areas is too far from them that they sometimes prefer to adopt self medication or native treatment. Most of the times, drugs are not available in the primary health centre and those that are available are not affordable. Access to inputs like chemicals, seeds and fertilizers should be enhanced because this is important for increasing farmers' income and their welfare. These inputs should be made available through subsidy channeled through the farmers' cooperative societies.

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8/22/2012