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Health Infrastructure Inequality and Rural-Urban Utilization of Orthodox and Traditional Medicines in Farming Households: A Case Study of Ekiti State, Nigeria

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1. Introduction

1.1 Background

Poverty is a pervasive problem in Africa and especially in Nigeria (World Bank, 2008). About 50.3% of the population of Sub-saharan Africa is reported to be living below the International Poverty Line of US$1.25 (UN, 2008). In Nigeria, about 55% of the population is living below the poverty line (World Bank, 2008). There is a geographical and sectoral dimension to the poverty situation in Nigeria. Poverty in Nigeria is more intense in the rural areas than the urban areas (Aigbokhan, 2000; Aigbokhan, 2008). Majority of Nigerians living in the rural areas are engaged either directly or indirectly in agriculture (NBS, 2006) and these are the people who are mostly trapped in poverty.

To develop appropriate policies to address poverty, there is a need for proper measurement of poverty. The use of money metric measures in indicating the level of poverty is gradually yielding place to other indicators of welfare which include deprivations in health, educational attainment, enjoyment of citizenship rights, social participation, life expectancy at birth and; maternal and child mortalities, among others (Okunmadewa, 1999; Srinivasan, 2001; Anderson, 2010). Among these indicators, health status and access to health facilities are keys to lifting people out of poverty or preventing them from falling into it (Republic of Sierra Leone, 2008). This is probably the reason while these health-related indicators are weighted heavily in the computation of the Human Development Index which is used for ranking countries in respect of welfare status (Herero *et al.* 2010).

Inadequate access to health services is one of the components of rural poverty which is prevalent in Nigeria (NBS, 2006). Inadequate access to health services determines, to a large extent, the decision of rural households to either patronize orthodox medicine (OM) or traditional medicine (TM) (Mafimisebi & Oguntade, 2010).

1.2 Justification for and focus of the study

Inadequate access to health services is a major issue confronting the poor in Nigeria. The Nigeria Core welfare Indicator study (NBS, 2006) revealed that 55.1% of Nigerians have access to OM health facilities while 7.5% consulted traditional healers in the four weeks preceding the survey. Obviously, Nigerians use both OM and TM for the maintenance of

their health. In deciding which of these to use, access, in terms of availability and affordability, plays a significant role (Mafimisebi & Oguntade, 2010). Public policy affects both availability and affordability of OM services whereas for TM, availability and affordability are affected by the location of the prospective users (Mafimisebi & Oguntade, 2010). To this extent, the distribution of OM facilities requires public policy attention to ensure equitable access in terms of availability and affordability such that the decision to use either OM or TM will depend on users' preference. Given that affordability is a more critical factor in the rural and agriculture dependent areas because of higher level of poverty, public policy attention needs to be focused on access to OM services in the rural areas (Mafimisebi & Oguntade, 2010).

This study assesses the distribution of OM health infrastructure in Ekiti State, Nigeria, focusing on the rural-urban dichotomy that is prevalent in the establishment of OM health infrastructure in most states of Nigeria (NBS, 2007). It further looks at the use of OM and TM among farming households with special emphasis on the rural-urban dichotomy.

1.3 Approach to the study

This study was carried out in Ekiti State, Nigeria. It is one of the six states in South-west Nigeria and it has 16 Local Government Areas (LGAs). It is located between longitude 4^{o} 45′ to 5^{o} 45′ East of the Greenwich Meridian and latitudes 7^{o} 15′ – 8^{o} 5′ North of the Equator. Based on 2006 census, the state has a total population of 2,384,212 (National Bureau of Statistics (NBS), 2010). Ekiti State is largely agrarian (NBS, 2006) and hence it is typical of most states in Nigeria. The state was selected for this study because it is one of the states in the catchment area of the Federal University of Technology, Akure, the institutional base of the authors of this paper.

In this study, secondary data were used to assess the distribution of OM infrastructure. These data, which comprise the names and addresses, Local Government Area (LGA), ownership status and legal status of all orthodox health institutions in Ekiti State, were collected from the State Ministry of Health. The data were compared with similar data that were accessed from the NBS (NBS, 2007). In addition, the population figures by LGAs were also accessed from NBS (NBS, 2010) while the land areas of the LGAs were collected from the State Surveyor-General's office. For the assessment of rural-urban utilization of OM and TM, primary data were collected from farming households in two LGAs of Ekiti State, one of which is urban and the other rural. Two sets of primary data were collected; first, through the use of structured and pre-tested questionnaire administered on household heads and second, through focus group discussions (FGD) guided with a checklist of desired information. For the administration of the structured questionnaire, the multi-stage sampling method was used in selecting the respondents. In the first stage, Ado, an urban LGA , and Irepodun/Ifelodun, a rural LGA, were purposively selected. In the second stage, three communities in each LGA were randomly selected from the list of farming communities while in the third stage; twenty (20) households were systematically selected from the list of farming households in each community. This yielded a total of sixty (60) households each in the urban and rural LGAs. For the FGD, 206 other farmers participated. These FGD participants were not privileged to provide responses to the questionnaire and were not necessarily household heads.

The secondary data were analyzed through the use of Gini Coefficient and Index of Dissimilarity (ID) with a view to assessing the level of inequality in the distribution of health infrastructure in Ekiti State. To further assess the source of the inequality, both the number

of persons and the land area per OM infrastructure, were analyzed focusing on the rural-urban dichotomy.

Gini Coefficient measures the degree of concentration (inequality) of a variable in a distribution of its elements. It compares the Lorenz Curve of a ranked empirical distribution with the line of perfect equality. The Gini Coefficient ranges from 0, where there is no concentration (perfect equality), to 1 where there is total concentration (perfect inequality). The ID is the summation of vertical deviations between the Lorenz Curve and the line of perfect equality. The closer the ID is to 1, the more dissimilar the distribution is to the line of perfect equality

The extent of inequality in the distribution of the health infrastructure was explored with the Gini Coefficient and the ID. The Gini Coefficient is calculated as:

$$G = 1 - \sum_{i=0}^{N} (\sigma Y_{i-1} + \sigma Y_i)(\sigma X_{i-1} - \sigma X_i)$$

Where

σX is cumulative proportions of the populations or land areas of the LGAs;

σY is the number of OM infrastructure in the LGAs; and

N is the number of LGAs.

The Index of Dissimilarity is calculated as:

$$ID = 0.5 \sum_{i=1}^{N} \left| X_i - Y_i \right|$$

Where,

X is the cumulative proportion of the populations or land areas of the LGAs,

Y is the cumulative proportion of the number of OM infrastructure in the LGAs; and,

N is the number of LGAs (Castillo-Salgado et.al., 2001; Dixon et.al., 1987; Rodrigue et.al., 2010).

For the primary data, qualitative description was used in presenting the result of the FGD. Descriptive statistics, which include frequencies and percentage, were used to describe the primary data on socio-economic and demographic characteristics of the respondents. The logistic regression was adopted in analyzing the influence of postulated independent variables on the probability of use of TM separately in the urban and in the rural locations. In using the logistic regression, we developed a dichotomous variable indicating whether the household uses TM more often than OM. This dichotomous variable is in this study called household's use of TM (HUTM). HUTM is 1 if a household uses TM more often and zero otherwise. The predictor variables are a set of socio-economic and demographic status indicators.

The estimating equation of the binary logit model is specified as follows:

$$Logit(p) = \ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \cdots + \beta_7 x_7$$

p = probability that the household uses TM

x_1 = Age of household head (in years)

x_2 = Household size

x_3 = Sex of household head

x_4 = Household head's number of years of formal education

x_5 = Income from farm and non-farm sources (₦ per annum)

x_6 = Number of elderly people above 60 years in the household

x_7 = Religion (Christianity or Islam)

The equation is estimated by the maximum likelihood method because the procedure does not require the assumptions of normality or homoscedasticity of errors in predictor variable. The model was fitted separately for rural and urban households.

2. Health infrastructure inequality

2.1 Conceptual Issues on Health Infrastructure Inequality

According to WHO (1986), health is a state of complete physical, social and mental well-being, and not merely the absence of disease or infirmity. Health is considered a means to an end which can be expressed in functional terms as a resource which permits people to live an individually, socially and economically productive life. Health is also considered as a fundamental human right (WHO, 1986).

Health infrastructure (HI) has been seen from a number of perspectives. WHO (1998: 14) viewed HI as "those human and material resources, organizational and administrative structures, policies, regulations and incentives which facilitate an organized health promotion response to *public health* issues and challenges". Public Health Infrastructure (PHI), as defined by the Centers for Disease Control and Prevention (CDC) (2001), is the "underlying foundation that supports the planning, delivery and evaluation of all public health activities and practices". The three components of PHI identified by the CDC (2001) are workforce capacity and competency; information and data systems; and organizational capacity.

Turnock (2004) describes PHI as, "the systems, competencies, relationships and resources that enable performance of public health's core functions and essential services in every community." The conceptual framework for a public health system created by Handler *et al*. (2001) include structural capacity which is made up of information, organizational, physical, human and fiscal resources. In this paper, the focus is on the physical infrastructure component of HI. In Nigeria, physical infrastructure clearly indicates the presence of a HI. Most of the other components of HI are established around it.

According to WHO (1996), equity means fairness. Equity in health means that people's needs guide the distribution of opportunities for well-being. The WHO global strategy for achieving Health for All is fundamentally directed towards achieving greater equity in health between and within populations, and between countries. This implies that all people have an equal opportunity to develop and maintain their health, through fair and just access to resources for health. HI must therefore be equitably distributed in other to facilitate fair and just access to resources for health. HI is one of the socio-economic infrastructure that are considered critical for development in Nigeria. Others include education, water, electricity and transportation. The Nigeria Core Welfare Indicator study (NBS, 2006), measured Health access in terms of persons living in households with an OM health facility less than 30 minutes away. This clearly indicates the policy emphasis placed on the availability of physical HI in Nigeria.

The literature around health inequality is extensive. This literature touches on different aspects of health; HI distribution, status, access, outcomes, etc. HI distribution has been assessed from the perspective of inequality with the emphasis being on health inequality. Health inequalities

can be defined as differences in health status or in the distribution of health determinants between different population groups (WHO, 2009). They are the result of 'a complex system operating at global, national and local levels which shapes the way society, at national and local level, organizes its affairs and embodies different forms of social position and hierarchy. The place people occupy on the social hierarchy affects their level of exposure to health-damaging factors, their vulnerability to ill health and the consequences of ill health (Marmot, 2009: 14). Health inequality refers to differences or variations in health-related quality of life and length of life profiles of different population groups in a nation (WHO, 2009).

The causes of urban health inequalities are associated primarily with socio-economic status, income, poverty, deprivation levels, unemployment, incapacity, worklessness, skills and educational level, housing conditions and social mobility as well as life chances (O'Brien *et.al*. 2010).

Inequality in health is not the same as inequity in health. Inequalities in health status between individuals and populations are inevitable consequences of genetic differences, of different social and economic conditions, or a result of personal lifestyles. Inequities occur as a consequence of differences in opportunity which result, for example in unequal access to health services, nutritious food, adequate housing and so on. In such cases, inequalities in health status arise as a consequence of inequities in opportunities in life (WHO, 1998). It should however be noted that public policy-induced inequality in HI and other socio-economic conditions will contribute to inequities in opportunities. According to Whitehead (1992), health inequities are 'differences in health which are not only unnecessary and avoidable but, in addition, are considered unfair and unjust'. This means that not all inequalities can be described as inequities. Whereas equality means sameness (equality of distributions), equity is *fairness* of distributions

Health status affects economic growth and sustainable development. There is evidence that investing in health brings substantial benefits to the economy (Anyanwu & Erhijakpor, 2007). According to WHO (2001), increasing life expectancy at birth by 10% will increase the economic growth rate by 0.35% a year. On the other hand, ill health is a heavy financial burden. About 50% of the growth differential between rich and poor countries is due to ill-health and life expectancy.

Harttgen & Misselhorn (2006) found that access to health infrastructure is important for child mortality which is one of the health outcomes covered by the MDGs. On the other hand, socio-economic factors, especially poverty, are often found to be strong determinants of health outcomes (Nolte & Mckee, 2004; Young, 2001; Leger, 2001). In most developing countries, health attainment indicators for the poor tend to be worse than the national average (Tandon, 2007). Also, the extent to which such health inequalities exist varies significantly across countries. Empirical evidence suggests that health inequalities have been persistent over time and, in many cases, have been growing (ADB, 2006). The rich can ignore government finance and health facilities; and access private sector health facilities on their own while the poor are more dependent on the public sector OM infrastructure and governments often do not have enough resources to expend on pro-poor health programmes and interventions (Tandon, 2007). Sachs (2004) has hence been calling for a scaling up of government health programmes in order to attain health-related MDGs.

2.2 Health Infrastructure Inequality and Health Policy in Nigeria

The MDGs had three out of eight goals directed at promoting health. These are reduction in child mortality, improvement in maternal health and combating HIV/AIDs, malaria and other diseases (UNDP, 2003). The first goal, which is the eradication of extreme poverty and

hunger, is also indirectly related to health given the effect of poverty and hunger on the health status of individuals. This is an indication that the health sector requires significant public policy attention and commitment of resources. The governments of most states in South-west Nigeria, including Ekiti State, have laid emphasis over the years on free medical treatment, at least, for the vulnerable segment of the population (Ekiti State Planning Commission, 2004)) thus implying an alignment of public policy with the MGDs.

The National Health Accounts revealed that the bulk of health spending by Nigerians is on curative care, which utilizes 74% of the total healthcare. Preventive care is a distant second; this consumes only 1% of total healthcare in 2002. In some African countries, including Nigeria, government expenditure on health may have increased over the years but, it is still below the statutory recommendation (WHO 2001). WHO estimates that a minimum government expenditure of USD34 per person per year will be required to provide an essential package of public health interventions in order to achieve health related MDGs (WHO 2001). Nigeria is just striving to meet this target (NPC, 2004).

Nigeria's health policy which has identified primary healthcare as its fulcrum, defined a three tiered referral system for the management of patients. A network of primary healthcare centres in proximity to where people live, offering care of relatively low technology, is the first level of care from which patients gain entry into the healthcare system. Seriously ill patients beyond the management competence of primary healthcare workers are referred to secondary level general hospitals from where referrals are made to tertiary health facilities. The division of labour between the three complementary and easily recognizable levels seemed a rational, equitable and cost-effective way of dealing with the healthcare problems of the rural poor (Musa & Ejembi, 2004).

Health service management is decentralized at the three tier levels. In addition, some states have Health Management Board (HMB), which is responsible for direct service delivery while the Ministry of Health focuses on policy formulation, standard setting and; monitoring and evaluation. The private sector provides 65.7% of healthcare delivery in Nigeria. Efforts are on for increased public-private participation in healthcare delivery but there is yet to be a framework for collaboration (WHO, 2011). The underlying principles and values for the National Health Policy include: the principle of social justice and equity and the ideals of freedom and opportunity; health and access to quality and affordable healthcare is a human right; equity in healthcare and in health for all Nigerians is a goal to be pursued; and primary healthcare shall remain the basic philosophy and strategy for national health development (Federal Republic of Nigeria, 2004)

3. Results and discussion

3.1 OM health infrastructure inequality in Ekiti State

The Federal Republic of Nigeria placed health in the concurrent legislative list and thus all three tiers of government share the responsibility for the health sector. Ekiti State Government has the responsibility for Secondary Healthcare Services and the newly established University of Ado-Ekiti Teaching Hospital in Ado-Ekiti while the Local Governments have the responsibility of Primary Health Centres and the Health Posts in their wards.

The State Ministry of Health plans and develops health programmes. It also supervises the implementation procedures in line with the National Health Policy Guidelines. The Ministry, through the Hospital Management Board (HMB), provides Secondary Healthcare Services through seventeen (17) General and Three (3) Specialist Hospitals.

An overview of the available health infrastructure in Ekiti State is provided in Table 1. The table shows that there were 458 health facilities in the state. A total of 315 or 68.78% belongs to the public sector while private sector accounted for 31. 22%.

Healthcare Facilities	Number of Health Facilities	Percentage
Primary Healthcare	293	63.97
Secondary Healthcare	20	4.37
Tertiary Healthcare	2	0.44
Private Healthcare	143	31.22
Total	**458**	**100**

Source: Computed based on data obtained from Planning, Research and Statistics Department, Ekiti State Ministry of Health, Ado-Ekiti

Table 1. Distribution of Healthcare Facilities in Ekiti State (January 2011)

The distribution of the healthcare facilities by types across the LGAs is presented in Table 2. The table shows that Ado, an urban LGA, had the highest number of facilities with 75 while Irepodun/Ifelodun, a rural LGA, had 30.

LGA	Number of Primary Healthcare Facilities	Number of Secondary Healthcare Facilities	Number of Tertiary Healthcare Facilities	Number of Private Healthcare Facilities	Total
Ado	32	0	1	42	75
Efon	12	1	0	10	23
Ekiti East	14	1	0	11	26
Ekiti S/West	21	1	0	4	26
Ekiti West	25	2	0	3	30
Emure	12	1	0	15	28
Gboyin	17	2	0	6	25
Ido Osi	17	1	1	8	27
Ijero	29	1	0	5	35
Ikere	17	1	0	9	27
Ikole	22	2	0	4	28
Ilejemeje	10	1	0	2	13
Irepodun/ Ifelodun	18	1	0	11	30
Ise/Orun	14	1	0	4	19
Moba	15	1	0	4	20
Oye	18	3	0	5	26
Total	**293**	**20**	**2**	**143**	**458**

Source: Computed based on data obtained from Planning, Research and Statistics Department, Ekiti State Ministry of Health, Ado-Ekiti

Table 2. Distribution of Healthcare Facilities in Ekiti State by Types

Table 3 presents the results of the assessment of the distribution of health infrastructure in Ekiti State using the Index of Dissimilarity and Gini Coefficient. This is with a view to

assessing the extent of inequality in the distribution across the LGAs. The distribution was assessed with respect to populations and the land areas of the LGAs with a view to determining if there was inequality in the distribution of the facilities. For the two indices used, the closer they are to 1, the more inequality exists in the distribution of the health facilities. The table indicates there was some inequality in the distribution of the health facilities whether considered from the point of view of the population or the land area since the values of the indices are all different from zero. The table reveals that all the indices for private hospitals were higher than the corresponding indices for public hospitals. This implies that inequality in the distribution of the private health facilities was higher than that of public facilities. The table also reveals that all the indices considered from the point of view of land areas were higher than the corresponding indices considered from the point of view of populations of the LGAs. This implies that inequality is higher when the distribution is assessed on the basis of land area than on the basis of population. Finally, the indices for both public and private hospitals combined were lower than the corresponding indices for private health facilities. This shows the moderating effect of the distribution of the public health facilities on inequality in the distribution of private health facilities.

Ownership Status	Population		Land Area	
	Dissimilarity Index	Gini Coefficient	Dissimilarity Index	Gini Coefficient
Public Hospitals Only	0.036	0.026	0.143	0.042
Private Hospitals Only	0.208	0.343	0.254	0.474
Both Public and Private Hospitals	0.064	0.017	0.164	0.099

Source: Authors' computation

Table 3. Concentration Indices for Health Facilities in Ekiti State

Table 4 presents information on the land area and healthcare facilities in Ado and Irepodun/Ifelodun LGAs and Ekiti State as a whole (All LGAs). Table 5 contains the estimated land area and number of persons per healthcare facility in Ado and Irepodun/Ifelodun LGAs and Ekiti State as a whole. The total land area of the state is 5,888.1 square kilometers out of which the land areas for Ado and Irepodun/Ifelodun LGAs are 297.9 square kilometers and 361.8 square kilometers, respectively. Ekiti State has a population of 2,384,212 while the populations of Ado and Irepodun/Ifelodun LGAs were 308,621 and 129,149, respectively. There were 458 healthcare facilities in Ekiti State out which 75 and 30 were in Ado and Irepodun/Ifelodun LGAs, respectively.

LGA	Land Area (Square Km)	Population	Private Healthcare Facilities	Public Healthcare Facilities	Public and Private Healthcare Facilities
Ado	297.9	308,621	42	33	75
Irepodun/ Ifelodun	361.8	129,149	11	19	30
All	5,888.1	2,384,212	143	315	458

Sources: Land Area- Surveyor-General's Office, Ekiti State, Population – National Bureau of Statistics, Abuja, Healthcare Facilities, Ekiti State Ministry of Health

Table 4. Land Area, Population and Healthcare Facilities in Ekiti State

Table 5 shows that the land area per private, public and; public and private (combined) healthcare facilities were larger for Irepodun/Ifelodun LGA compared to Ado LGA. This implies that, on the average, residents of Irepodun/Ifelodun LGA had to cover longer distances to access a healthcare facility than the residents of Ado LGA. There were more persons per private healthcare facility in Irepodun/Ifelodun LGA compared to Ado LGA in spite of the higher population of Ado LGA. This is because of the tendency of the private healthcare facility operators to concentrate their facilities in urban centres, where incomes are higher and the residents can afford to pay for services in line with the findings of Oguntade & Yusuf (2007).

There were more persons per public healthcare facility in Ado LGA compared to Irepodun/Ifelodun LGA in spite of the fact that government had established 33 healthcare facilities in Ado LGA compared to 19 healthcare facilities in Irepodun/Ifelodun LGA. This is because the population is much higher in Ado LGA than in Irepodun/Ifelodun LGA. When the number of both public and private healthcare facilities is taken into consideration, there were 4,305 persons per healthcare facility in Irepodun/Ifelodun LGA compared to 4,115 in Ado LGA. It thus appears that public healthcare facilities have moderated the effects of the concentration of private healthcare facilities in Ado LGA.

	Land Area per Private Hospital (Square Km)	Land Area per Public Hospital (Square Km)	Land Area per Public and Private Hospital (Square Km)	Persons per Private Hospital	Persons per Public Hospital	Persons per Public and Private Hospital
Ado LGA	7.09	9.03	3.97	7,348	9,352	4,115
Irepodun/ Ifelodun LGA	32.89	19.04	12.06	11,741	6,797	4,305
All LGAs	41.18	18.69	12.86	16,673	7,569	5,206

Source: Authors' computation

Table 5. Land Area and Persons per Healthcare Facility in Ekiti State

3.2 Implications of health infrastructure inequality in Ekiti State for access to OM services

Analysis of the distribution of healthcare facilities in Ekiti State revealed the presence of inequality. A further analysis of the distribution focusing at Ado, the most urbanized LGA, and Irepodun/Ifelodun LGA, a rural and largely agricultural LGA, gave an indication of the implication of the inequality in the distribution. While there was not much difference in the number of persons per healthcare facility in the urban and rural LGA studied, the land area per healthcare facility was three times larger in the rural LGA than in the urban LGA. This implies that residents of the rural LGA have to travel longer distances to access a healthcare facility compared with the residents of the urban LGA. The rural LGAs in Nigeria generally have poorer road networks and fewer commercial transportation facilities (Mafimisebi, 2010). Thus the residents of the rural LGAs are disadvantaged in terms of access to OM services. This may discourage the use of OM services in the rural LGAs and encourage the use of TM which is easily available and relatively cheaper (Mafimisebi & Oguntade, 2010).

The findings of this study corroborate the results of the Core Welfare Indicator Survey (NBS, 2006). The indicators of health access for Ekiti State obtained from the Core Welfare Indicator Survey (NBS, 2006) are presented in Table 6. The table shows that access to health facility in the State was 68.9%. Access to health facility in the urban areas was 72.8%, while in the rural areas, it was 64.6%. Access to prenatal care in Ekiti State was 99.9%. Delivery by health professionals was 92.1% while fully vaccinated children was 86.4%. In the urban areas, the percentage for fully vaccinated was 88.6, while the percentage for the rural areas was 84.3. The need for medical services was defined for those who were sick or injured in the four weeks preceding the survey. About 6.1% of households in the state indicated need for medical services. In the urban areas the percentage was 6.0, while in the rural areas it was 6.1. About 8.0% of households in Ekiti State used medical services within the four weeks preceding the survey. Lower number of households (7.5%) used medical services in the urban areas than in the rural areas (8.6%) within the four weeks preceding the survey. It appears there were more health challenges in the rural areas of the state. The results of this survey clearly indicate that access to health facility was higher in the urban areas than in the rural areas. However, the need for and the use of medical services were higher in the rural areas than in the urban areas.

Indicator	Urban (%)	Rural (%)	Whole State (%)
Access to health facility	72.8	64.6	68.9
Prenatal care	N.A.	N.A.	99.9
Delivery by health professional	N.A.	N.A.	92.1
Need medical services	6.0	6.1	6.1
Use medical services	7.5	8.6	8.0
Fully vaccinated children	88.6	84.3	86.4

N.A. – Not Available
Source: NBS (2006)

Table 6. Health Access Indicators for Ekiti State

4. Assessment of rural-urban utilization of TM and OM

This section discusses the results of the primary data analyzed on the use of TM and OM by farming households in Ekiti State. The focus of this section is the assessment of rural-urban utilization of TM and OM as against the assessment of access to OM facilities in the previous section.

4.1 Socio-economic characteristics of households

Table 4 presents the test of significance of difference of means of rural and urban socio-economic and demographic variables. The mean age of the farmers in Ado LGA was 51 years, while that of farmers in Irepodun/Ifelodun LGA was 59 years. Thus, farmers in Irepodun/Ifelodun LGA were older than those in Ado LGA. For both locations, however, it can be seen that most of the people engaging in farming activities were above 50 years old. Therefore, it could be concluded that farmers are aging in the study area and the need for sound health to remain productive will increasingly become important in the nearest future. Also, there is a need for young and more agile people, with interest in farming, to be encouraged to take over from these aging farmers.

The average household size in Ado LGA was 5.9, while that of Irepodun/Ifelodun LGA was 6.7 and there was no significant difference between these two values. The average farm size per household in Ado LGA was 1.49 hectares, while in Irepodun/Ifelodun LGA, it was 2.26 hectares. There was significant difference between the two average farm sizes at the 5% level. This may be as a result of the fact that land is more expensive per unit area in Ado LGA; a phenomenon which started about 15 years ago when Ado-Ekiti became the capital of Ekiti State. The influence of rapid urbanization of Ado-Ekiti has probably also spread to other towns in the LGA causing rising land prices. The phenomenon of rural urban migration has also contributed significantly to the rising population in Ado LGA leading to a relatively higher population density compared to other LGAs. Thus, farms are larger in Irepodun/Ifelodun LGA in spite of greater access by farmers in Ado LGA to extension services; due to the proximity of the Agricultural Development Programme Unit of the State Ministry of Agriculture with its headquarters in Ado-Ekiti.

Primary data analysis also revealed that average years of respondents' farming experience in Ado and Irepodun/Ifelodun LGAs were 28 years and 35 years, respectively. There was a significant difference in these mean values at the 1% level. This shows that farmers in Irepodun/Ifelodun LGA were more experienced in farming activities than their Ado LGA counterparts. This might be as a result of the fact that farmers in Irepodun/Ifelodun are exposed earlier in life to farming and allied activities being the major economic activities in most rural areas in Nigeria (NBS, 2006). In Ado LGA however, there are more opportunities to be engaged in the non-farm sector. This is because Ado LGA is host to the state capital.

Table 7 shows that the average years of formal education was 8.6 in Irepodun/Ifelodun and 11.3 in Ado LGA and there was a significant difference in these mean values at the 5% level. Thus, the tendency exists for a higher influence of the western education on Ado farmers compared with Irepodun/Ifelodun farmers.

4.2 Income from farming activities

The mean income from farming activities per household per annum was ₦76,748.56 for Irepodun/Ifelodun LGA and ₦124,822.94 for Ado LGA. There was statistically significant difference between the average incomes at the 1% level (Table 7). This is understandable because the rural areas are usually at a disadvantage compared with the urban areas in market prices (World Bank, 1993; Mafimisebi, 2010). Most rural dwellers are into farming as their main economic activity. The rural areas lack storage facilities and most farm products become perishable within few days of harvesting (Lancaster & Coursey, 1984). Thus, there is a glut of agricultural products in the rural markets where farmers witness low patronage and have to dispose of their products at lower prices. They can only sell at better and more remunerative prices obtainable in the urban markets if they own or can afford payment for transport facilities to convey their products to the urban centres. This easier, cheaper and timely access to urban markets in Ado and surrounding towns by farmers in Ado LGA may have been responsible for the significant difference in farm incomes between the two sets of farmers.

4.3 Expenditure on TM and OM by urban and rural farming households

The empirical results in Table 7 show that the average amounts of money expended per annum on OM for treatment of common ailments by farmers in urban and rural areas were ₦10,160 ($67.7) and ₦4,530 ($30.2), respectively. The corresponding amounts of

money spent on TM were ₦2,118 ($14.1) and ₦730 ($4.9) per annum, respectively. There were significant difference in the expenditures on TM in Ado and Irepodun/Ifelodun LGAs at 5% level. The expenditures on OM in the two LGAs were also significantly different at 1% level. This means urban farmers spend more on both TM and OM than rural farmers.

The results show that expenditures on TM and OM in the urban LGA were higher than the corresponding expenditures in the rural LGA. This might be due to the higher level of income in the urban LGA. It also worth noting that expenditures on TM is expected to be lower than those on OM because TM resources are locally available compared with OM resources which are mostly imported. This might therefore account for the lower expenditures on TM in both LGAs. Similarly, TM resources are cheaper or almost free in the rural LGA (Mafimisebi & Oguntade, 2010) thus making TM expenditure in the rural LGA lower than in the urban LGA. The implication of this is that TM is more affordable and hence more accessible in the rural LGA (Mafimisebi & Oguntade, 2010).

The responses on the preferences of households in the use of OM and TM revealed that about 91.7% of the household heads in the rural LGA and 60.8% of the household heads in the urban LGA preferred the use of TM for common ailments that are not life-threatening and therefore would not require surgical interventions. For life-threatening ailments, 88.3% and 41.7.0% of the farming households in the rural and urban LGAs, respectively, preferred combining OM with treatment from TM.

Variables	Mean Value		Z-value	P-value
	Irepodun/ Ifelodun LGA (Rural)	Ado LGA (Urban)		
Age (yrs)	59	51	22.86	0.0342*
Household size	6.7	5.9	4.24	0.6643
Farm size hectares	2.26	1.49	16.112	0.0402*
Years of farming experience	35	28	12.108	0.0019**
Years of formal education	8.3	11.6	11.747	0.0474*
Household size (₦)	76,748.56	124,822.94	27.449	0.016**
Expenditure on OM	4,530	10,160	27.986	0.0023**
Expenditure on TM	730	2,118	11.625	0.0441*

*Significant at 5%, ** significant at 1%
Source: Data analysis

Table 7. Test of Significance of Difference of Mean Values of Rural and Urban of Socio-economic and Demographic Variables

Results from the FGDs showed that 100% and 50.0% of farmers groups in the rural LGA and urban LGA, respectively, indicated preference for TM when and if an ailment is capable of been treated by both methods. Also, 83.3% of farmer's groups in the rural LGA reported preferring to complement OM with TM in both cases of simple and complicated medical conditions. These findings tend to show that the rural dwellers have developed some preference for TM. This higher level of preference for TM in the rural LGA is in consonance with the findings of the Nigeria Core Welfare Indicator Study which revealed that 9.1% of

the households the rural areas consulted traditional healer compared with 4.6% in the urban areas (NBS, 2006).

4.4 Factors determining use of TM

The estimates of the binary logistic regression for both rural and urban farmers are shown on Table 8. Generally, the binary logit model showed a commendably good fit to the data for both sets of farmers. The value of the Chi-square test was significant at 1% for rural and urban farmers. This indicates a rejection of the hypothesis that the model lacks explanatory power. The model correctly predicted 88.5% and 74.4% of the observations for rural and urban farmers, respectively. From Table 8, it could be seen that household size, education and income (significant at 1%) and the number of elderly people in a household (significant at 5%) had the greatest influence on use of TM by rural farmers. For farmers in the urban areas, age and education (significant at 5%) and household size (significant at 1%) exerted the greatest impact on use of TM.

Variable	Rural Households		Urban Households	
	Estimated Coefficient	**Marginal Effects**	**Estimated Coefficient**	**Marginal Effects**
Constant	-3.2992	----------	-4.0066	---------
Age of household head	0.3266	0.0254	1.4287*	0.0052
Size of household	1.2368**	0.0047	0.8896**	0.0122
Sex of household head	0.1084	0.0288	0.1175	0.0147
Education	-1.7347**	0.0193	-1.6264*	0.0246
Household income	-1.5489**	0.0176	0.0775	0.0064
Number of elderly people	0.9266*	0.0137	0.0636	0.0045
Religion of household head	0.0594	0.0094	0.0396	0.0066
Observation number		60		60
LR statistic (χ^2)		118.245**		136.844**
Degree of freedom		7.000		7.000
Log likelihood		-244.616		-219.927
McFadden R^2		0.522		0.473
% Predicted right		88.514%		74.447%

Note: The marginal effects are calculated at the mean of the predictor variables
*Significant at 5% level and ** significant at 1% level

Table 8. Logistic Model of Determinants of Use of TM

Additional insights can be obtained using the marginal effects calculated as the partial derivatives of the non-linear probability function, evaluated at each variable's sample mean. For instance, for the rural farmers, a unit increase in years of formal education and income, after the mean values, reduced the probability of use of TM by 0.0193 and 0.0176, respectively. This could be due to the fact that educated people have greater tendencies to accept western influence and regard TM as unhygienic, demonic, occultic and sinful

(Fasola, 2006, Chavunduka, 2009; Mafimisebi & Oguntade, 2010). In the same vein, higher incomes may tend to give a household access to the more expensive OM which is regarded as faster in action and status enhancing. On the contrary, an increase in household size and the number of elderly people in the household beyond the mean value will increase the probability of use of TM by 0.0047 and 0.0137, respectively. This is understandable because if household size increases in a scenario of constant or slowly rising income, per capital expenditure reduces making the household to prefer the cheaper TM to OM in the case of a health problem. In the same way, with increase in the number of elderly people that are usually repositories of TM knowledge, there is a higher probability of use of TM.

Surprisingly, age of household head that was statistically insignificant in the model for rural farmers was significant at 5% in the model for urban farmers. For urban farmers, a unit increase in the age of household head and household size will lead to 0.0054 and 0.0122 increases in the probability of using TM. This may be a result of the fact that higher age confers higher and better information on and knowledge of TM in Africa where such knowledge is most willingly shared among the elderly. On the other hand, a unit increase in income will translate to a 0.0064 fall in the probability of using TM.

5. Conclusions

Inadequate access to health services is one of the components of rural poverty which is prevalent in Nigeria. Inadequate access to health services determines, to a large extent, the decision of rural households to either patronize OM or TM. This study assessed the distribution of OM infrastructure in Ekiti State Nigeria, focusing attention on the rural-urban dichotomy. It further looked at the extent of patronage of TM and OM among farming households with special emphasis on the rural-urban dichotomy.

Result of the analyses indicates that inequality exists in the distribution of OM infrastructure in Ekiti State. There was a distinct rural-urban dichotomy in the provision of OM infrastructure in the state. This was caused largely by the concentration of private investment in OM infrastructure in the urban LGAs because of their profit motive. This emphasizes the need for the public sector to continue to moderate the distribution of OM infrastructure through its investment. In doing this, attention should be paid not only to the population of the LGAs but also to their land areas. In addition, the existence of private OM infrastructure in the respective LGAs should be considered in citing new public OM infrastructure.

The results from primary data analysis with respect to the urban LGA seem to establish an indirect nexus between poverty and utilization of TM. The fact that the use of TM increases with household size and age of household heads; two independent variables that are positively correlated with poverty in several studies, is an indication that as poverty increases in Nigeria, urban households have the tendency to revert to the use of TM. Similarly, for rural households, the use of TM increases with household size and the number of elderly people in the household. These two variables are also positively correlated with poverty, implying that increases in poverty among rural households will lead to increases in the use of TM. This is a justification for a welfare oriented health policy in Nigeria.

Given the tendency for the use of TM in Nigeria, steps that will improve the practice of TM, ensure sustainable use of TM resources and re-orientate farming households on how to

properly and safely use TM, should be given important considerations in Nigeria's national health policy. Overall, the findings of the study clearly indicate the need for government in Nigeria to continue to play active role in the provision of health services in a sector that is increasingly being dominated by private entrepreneurs who are driven by the profit motive. In the current circumstances, farming households that are unable to access OM either because of the cost or distance to such facilities are being compelled to patronize TM; which is at the moment largely unregulated.

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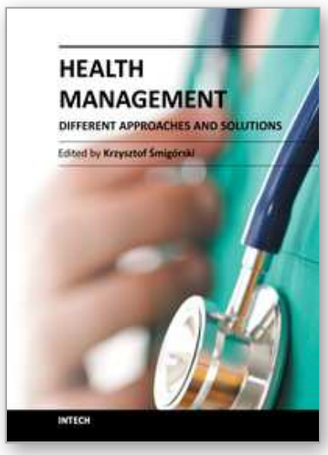

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The development in our understanding of health management ensures unprecedented possibilities in terms of explaining the causes of diseases and effective treatment. However, increased capabilities create new issues. Both, researchers and clinicians, as well as managers of healthcare units face new challenges: increasing validity and reliability of clinical trials, effectively distributing medical products, managing hospitals and clinics flexibly, and managing treatment processes efficiently. The aim of this book is to present issues relating to health management in a way that would be satisfying for academicians and practitioners. It is designed to be a forum for the experts in the thematic area to exchange viewpoints, and to present health management's state-of-art as a scientific and professional domain.

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