



The choice of health care facilities in rural areas of Nigeria: Analyzing the impact of distance and socio-economic factors

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Abstract

This paper examined the impact of physical distance as a determinant of the type of health care facilities patronized in rural areas of Nigeria. It also examined the contribution of socio-economic and mobility factors in determining the type of health facilities utilized. Data used were collected from 220 respondents selected through stratified sampling techniques from 11 rural settlements of Badagry LGA, Lagos State through the use of questionnaires. The study revealed that General Hospital located in Badagry town is the dominant health facility used by 56.36% of the respondents. It also revealed that a weak positive correlation (0.379) exists between distance and the choice of health facilities. Findings from the result of principal component analysis further showed that 62.09% of the reasons for the choice of health facilities patronized is explained by five factors: (monthly income, 20.20% ; sex, 12.88%; travel time, 10.34% ; household size, 9.83% and transport cost, 8.84%). The paper concluded by advocating the need for government to upgrade some of the rural based primary health facilities to general hospital and to encourage private sector to established quality hospital in rural areas of the study area.

Keywords: Distance, Determinants, Choice, Health Facilities, Rural Areas

Introduction

Public health is directly linked to human well-being and overall social and economic development. Therefore, the main goal of public health service delivery is to provide equitable utilization and access to health care services (Waldorf, et. al, 2007). However, health facilities and services in developing countries like Nigeria have been noted to be inadequate in meeting the needs of their population especially in the rural landscape (Aloba,1986, Oyekale and Eluwa,2009). The rural population in many developing countries are located at considerable distance from the health facilities the patronized. The implication of this is poor access to health services, which often resulted in delay treatment and use of traditional health care services (Okafor, 1990 and Bour, 2002).

An important factor in obtaining quality health care services is good accessibility. Access to healthcare services includes many factors like geographic, economic, cultural and political. Among these, geographic access (generally measured in terms of distance, traveling time and cost) is the most significant factor in the choice and utilization of health facilities.

Accessibility to health care facilities is a multidimensional concept and can be defined as the ability of a population to obtain health services (Lou and Wang 2003) or the ease with which health care centers can be reached using a transport service. Accessibility to health care facilities varies across space because neither health care centers nor residents are uniformly distributed. Variations in access to health care services are pronounced in many rural areas of developing countries and as been identified as a limiting factor to the attainment of rural development programmes (Okafor, 1990 and Muller et al.,1998).

Studies on utilization of health facilities in rural communities in Nigeria focused on the impact of geographic distance on the utilization of health care facilities while little attempt has been made to examine the impact of distance in the determination of the type of health facilities utilized. This disparity, served as the basis for further examination of the subject matter. Another reason for the study is the gap created by the near absence of studies on the relationship between socio-economic and mobility characteristics of rural households and their choice of health facilities.. This study therefore, examines the impact of distance on the choice of health facilities by rural population and also attempts to examine the impact of socio-economic and mobility characteristics of rural dwellers on the choice of health care services in rural area of Badagry Local Government Area of Lagos State, Nigeria.

Literature Review

In developing countries, several studies have confirmed the impact of distance on utilization of health services especially in the rural communities. (Oppong and Hodgson 1994; Bour, 2002). Muller et al., (1998) noted that most people would not travel more than 5km to receive basic preventive and curative care. The distance from health care facilities has a great bearing on attendance. The World Bank (1993) observed that distance to health facilities limits people's willingness and ability to seek health care particularly when transport is limited". Howe (1983), cited evidence from Usaka in Zambia that for distance of less than 5 kilometres, 50 per cent of patients attend hospital, while the figure falls to two per cent for distance between 33 and 40km.

The situation is similar in Nigeria as indicated by several studies. For instance, Okafor (1984) in a study of accessibility to General Hospitals in rural areas of Bendel State (now Edo and Delta states) found that distance was a discouraging factor in the utilisation of health facilities. In a similar study conducted in 1990 on spatial dimensions of accessibility to general hospital in rural areas of Nigeria, Okafor observed that residents from longer distances from a health institution utilized health services less. Adetunji (2003) reported that over 60% of health facilities users in Ayedaade local government area of Osun State Nigeria, patronised health facilities within 1km distance of their residence, and 24% attend health facilities located at a distance of 4km and above.

Health Care Institutions in Nigeria

The Nigerian healthcare system is divided into the primary, secondary and tertiary levels of care, which are under the three tiers of government though with some overlapping of responsibilities (FMOH, 2001). The lowest is the primary healthcare level and service delivery through Primary Health Centres (PHC). The PHCs is the responsibility of the local government levels. However, the Federal Ministry of Health through the National PHC Development Agency develops policies, PHC physical structures and supervises the operations of PHC centres (Onwujekwea, and Uzochukwu, 2005). Primary Health Centres are unarguably the first points of call for the sick and injured persons especially in the rural areas. They undertake mild healthcare cases like treatment for malaria, fever, cold, nutrition disorder, among others. They also handle infant, maternal and pregnancy matters. Other health issues in their care are family planning and immunization (Badru, 2003).

The state governments provide the secondary level of healthcare. Secondary health centres are involved with not only prevention but also all treatments and management of minimal cases. However, the more

complicated cases are referred to the tertiary or specialist hospital. Examples of secondary health centres are comprehensive health centres and general hospitals. The comprehensive health centres are often owned by private individuals(s) or a group of individuals, while general hospitals are owned and funded by state government. General hospitals have provisions for accident and emergency unit and diagnosis unit among other services and occupies a crucial place in the country's attempt to reach the rural population with an inexpensive and relatively high standard of medical care (Badru, 2003; Okafor, 1990). They also provide some primary health care services.

The Federal government is responsible for tertiary care through highly specialized services in Teaching Hospitals and Federal Medical Centres. However, some state governments also provide tertiary care through state-owned teaching hospitals. Tertiary health institutions handle complex health problems/cases either as referrals from general hospitals or on direct admission. They have facilities for accident and emergency cases, and are equipped with diagnostic unit, wards units, treatment unit and out patient consultation unit. Teaching hospitals also conduct researches and provide outcomes to the government as a way of influencing health policies.

As a point of importance, the primary type of health institutions are associated with rural and semi-urban environments or mixed population, while general hospitals are located in the state capitals and a few other big towns. Tertiary health institutions are controlled and funded by the Federal Government and by some states that have and run state universities.

Other health care providers include private, mission and various private and public employee-owned health facilities. They provide a mixture of services ranging from primary to tertiary care. The Federal Ministry of Health provides the overall policy environment that the health-care system operates (Onwujekwea and Uzochukwu, 2005).

Study Area

The study area is the Badagry Local Government Area (LGA) of Lagos State. The study area lies between latitudes 6° 22' and 6° 30'N and stretches between longitudes 2° 42' and 3° 06'E. It is bounded in the North by Ogun State, in the East by Ojo LGA, in the West by the Republic of Benin and in the south by the Atlantic Ocean (Fig 1). The study area has a total population of 241,093 in 2006 (NPC, 2007).

Badagry and its surrounding rural areas enjoys an equatorial type of climate which is characterized by high temperatures and high relative humidity throughout the year. Rainfall per annum is between 1000mm and 2000mm. The rain mostly occurs from the month of April to October every year. There is a brief dry season from November to March.

Government owned health facilities in the study area consist of one General Hospital located in Badagry town and ten Primary Health Centers (PHCs). The primary health centres are located at Ajara, Marina, Ilado, Ajido, Mowo, Apa, Igbogbele, Pota and Seme (Fig. 1). The location of PHCs in the study area is biased towards settlements located very close to all-weather roads. None of the PHCs is located in any of the over 200 rural settlements located few kilometers away from all-weather roads (Fig.1).

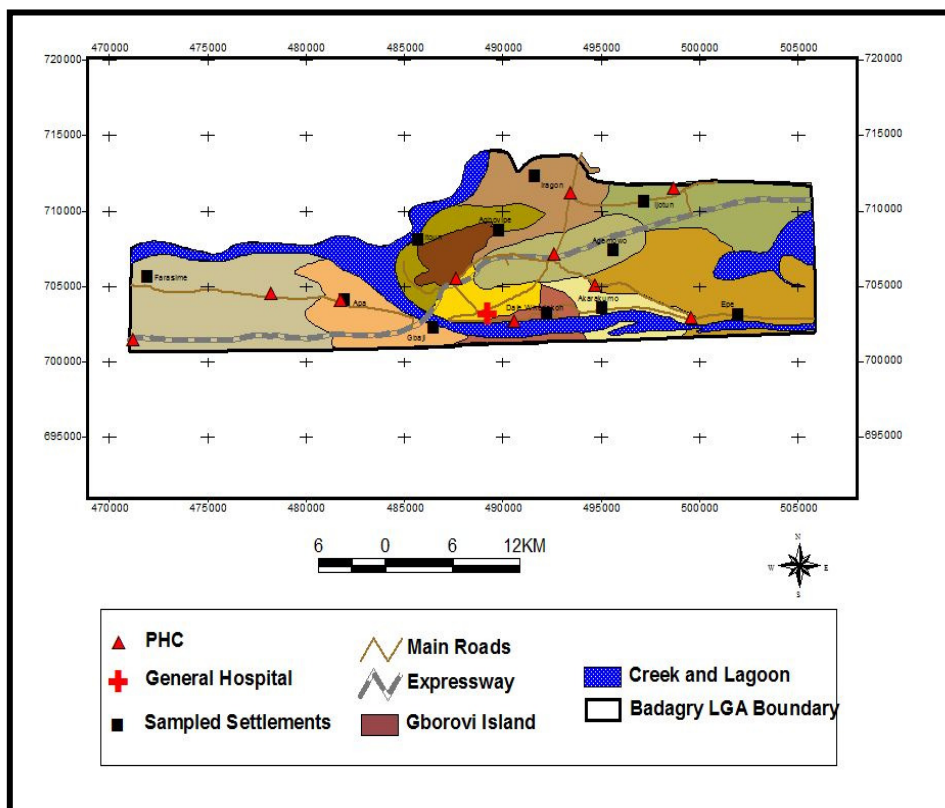


Fig 1: Map of the Study Area showing the Distribution of Health Facilities

Methodology

The research methodology involved the identification of the villages to be surveyed. In order to do this, the 11 wards in Local government Area were identified (see Fig. 1). The villages in each ward were listed and numbered. A random sampling procedure was then adopted to select 5%

sample of the villages from each ward. In all, 11 villages were selected for survey (table 1).

Primary data for the study were obtained from the administration of questionnaires. A list of all households in each of the sampled village was prepared through household listing. A sample size 10% of the total households per sample village was selected for the survey. The listed households were then divided by 10% to obtain a selection interval (K).

The interval (K) was used to select the households to be interviewed from the compiled list of households. The first household sampled was selected through ballot procedure. The value of the 'K' was added to the number of the first household selected to determine the next household to be selected. The last step was repeated until the number of required households per sampled settlement was obtained. In all, a total of 220 questionnaires were collected and analyzed for this study.

Data were analyzed descriptively and quantitatively using correlation and Principal Component Analysis. Socio-economic and demographic characteristics of the respondents was performed through the use of descriptive statistics.

Table 1: Sample Size for Settlements

SN	Wards	Name of Sampled Settlements
1	E1	Dale Whedakoh
2	E2	Gbaji
3	E3	Agemowo
4	F1	Apa
5	F2	Farasime
6	G1	Epe
7	G2	Akarakumo
8	H1	Ijotun
9	H2	Iragon
10	J1	Agboviye
11	J2	Itohun

Source : Author's Field Work 2007

Results and Discussion

Table 2 presents the socio-economic characteristics of sampled respondents. There are more female respondents (77.27%) than male (22.73%). About 60% of the respondents are below the age of 30 and 38.18% of them are in the age group (31 to 50years). The household size

range from 2 to as high as 20 persons per household. About 61.82% respondents have between 2 to 5 persons constituting their household size and 30.91% have between 6 and 10 persons per household. Close to 38% of them have no formal education, while 32.78% of the respondents have primary education (Fig.2). High proportion (68.64%) earned less than N5,000 per month (Fig.3), an indication that majority of the respondent are living below poverty level. Table 2 also reveals that farming activity accounted for less than 8% of respondents' occupation, while 66.36% of the respondents are engaged in self employment. This may be attributed to the roles played by trans-border trade and other related economic activities in the live of the inhabitants of sampled settlements, some of which are located near Nigeria/Republic of Benin border.

Table 3 shows that about 56.4% of the respondents patronized the only public Hospital located in Badagry for medical treatment. This is expected for many reasons: it is a state government owned hospital; it is accessible by most of the settlements through road transportation; it is equipped with qualified doctors, nurses and equipment that are lacking in other types of public health facilities located in rural areas of the study area. Dispensary and maternity attract 16.8%, clinics are used by 13.8% and 13.2% of the respondents patronized alternative medical services.

Table 2: Socio-Economic Characteristics of the Respondents

Data		Frequency	Percent
1	Sex		
	Male	50	22.73
	Female	170	77.27
	Total	220	100
2	Age Group	Frequency	Percent
	Below 30 yrs	127	57.73
	31 to 50 yrs	84	38.18
	Above 50	9	4.09
	Total	220	100
3	Household Size	Frequency	Percent
	0 to 5	136	61.82
	6 to 10	68	30.91
	11 & above	16	7.27
	Total	220	100
4	Occupation	Frequency	Percent
	Public Sector	3	1.36
	Private Sector	3	1.36
	Farming	16	7.27
	Self Employed	146	66.36
	Unemployed	22	10
	Student	30	13.64
	Total	220	100

(Source: Authors' Fieldwork, 2007)

Table 3. Choice of Health Facility

Health Facility	Frequency	Percent
Dispensary and Maternity	37.00	16.82
Clinic	30.00	13.64
Hospital	124.00	56.36
Alternative Medicine	29.00	13.18
Total	220	100

(Source: Authors' Fieldwork, 2007)

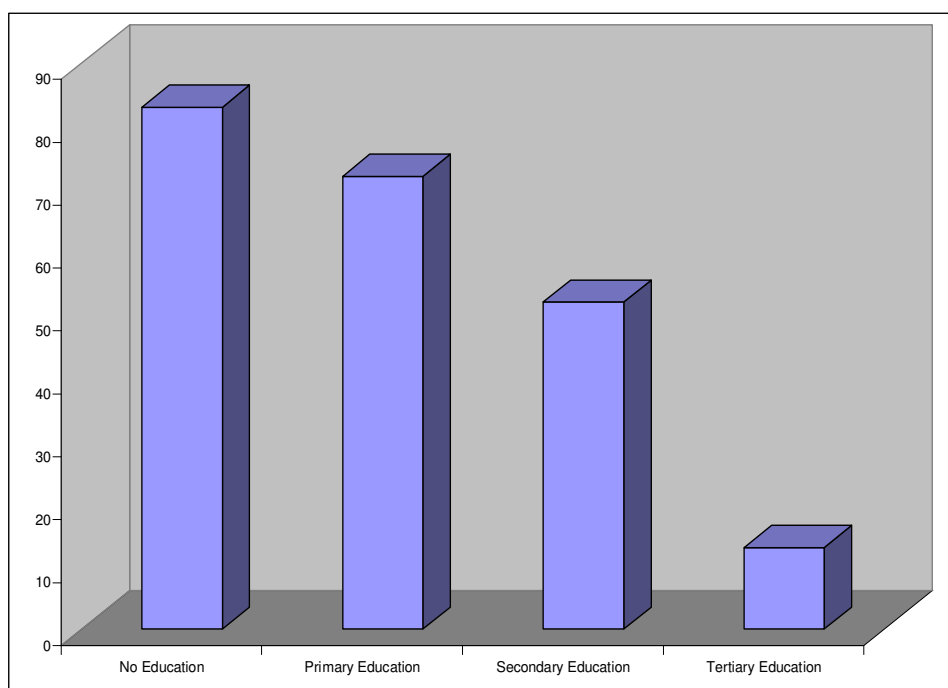


Fig 2: Educational Qualifications of Respondents

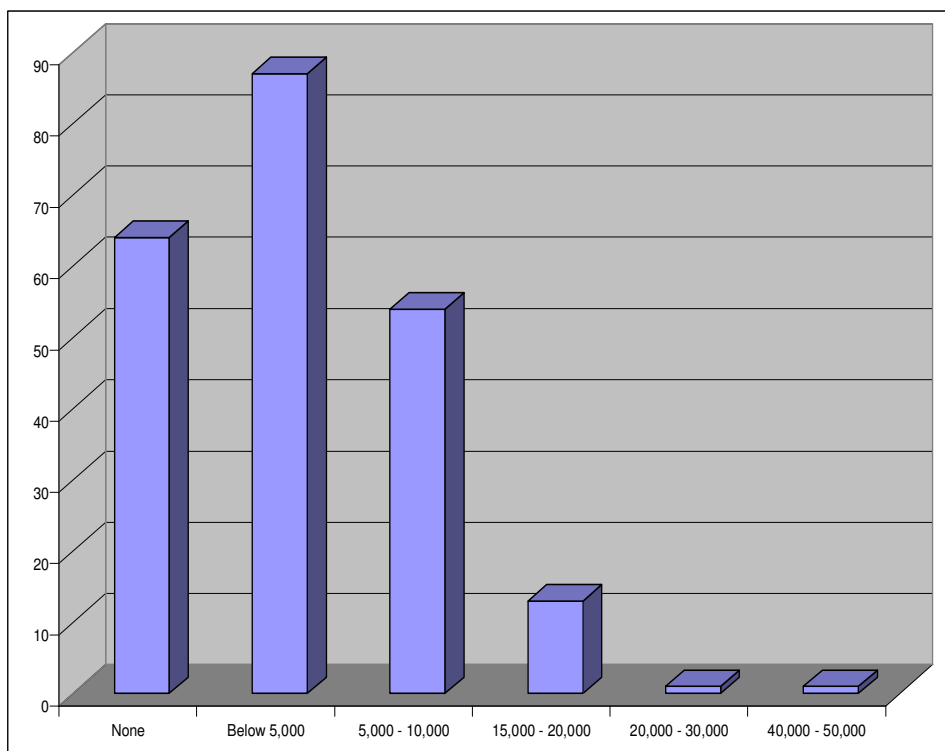


Fig 3: Monthly Income Distribution

The result of correlation analysis (table 4) revealed that a weak but positive correlation (0.379) exists between distance and health facility utilised. This means that distance to health facilities can not sufficiently accounts for the choice and utilization of health facilities in the study area. To confirm the strength of distance as a determinant of the choice of health care facilities and to verify the contributions of other factors in the choice of health facility, Principal component analysis was employed. Principal component analysis is a technique of Factor analysis. It is a multivariate statistical methods used to analyze a wide range of data sets so as to identify the dominant factors and pattern of inter correlation” (Ipingbemi, 2006). The purpose of the technique is to pick out from a large number of known factors and relationship those factors that have the greatest significance.

Thus, the considered socio-economic variables influencing the choice of health facility include sex, marital status, household size, age, educational level, occupation and income of respondents. Other variables relating to mobility characteristics of the respondents included in the analysis are distance, mode of transport, travel time and transport cost to health facility. In addition, visit frequency to health facility, quality of road to health facility and quality of service at the facility were also included in the analysis.

The results of principal component analysis showed that five of the fourteen variables (table 6) have eigenvalue above 1 and account for 62.09% of the reasons for the choice of hospital as preferred health facility (table 5). The variable that ranks high on first factor, accounting for 20.20% of the choice of health facility with a rotated component score of 0.833, is monthly income of the respondents (tables 5 and 6). Sex of respondents top the list of second factor with a score of 0.826 and accounts for 12.88% of the reasons for the choice of hospital as preferred health facility by rural dwellers.

The third determinant (factor) of choice of health facility is travel time. It accounts for about 10.34% of the choice of health facility with a component score of 0.714. Table 6 further reveals that the third factor has distance to health facility as a second component with a score of 0.699, a value closer to that of travel time (0.714). The fact that distance closely interrelates with travel time and travel cost and as indicated by positive correlation (0.620) between distance to health facility and travel time (Table 4) reduced the effect of distance on the choice of health facilities in the area (see Bour, 2002).

Household size with a score of 0.666 is responsible for 9.83% of variance, ranks high as the fourth factor. While, transport cost to health facility accounted for the fifth factor with rotated component score of 0.432 and responsible for 8.84% of the variance.

Findings from the study have shown that distance is not a sufficient factor in explaining the choice of health facilities in rural areas of Nigeria as emphasized by several studies. It is apparent from the analysis that socio-economic variables (income, sex and household size) which collectively accounted for 42.91% of the variation in choice of health facilities in the study area are major determinants of hospital as preferred health facility.

Distance to the only public hospital located in Badagry town constitutes little or no barrier to majority (68.64%) of the poor rural population who earned =N=5,000k and below. Given the free health policy in operation in the state; the inadequacy of qualified medical personnel that characterized the PHCs in the study area ; and the high cost of medical services in privately owned health facilities, the choice of the general hospital in Badagry town by the respondents is justifiable.

The relevance of mobility factors (distance, transport cost and time) in determining choice of health facility is confirmed by small range observed in the rotated component scores of the variables. For instance the range between travel time with a score of 0.714 and distance to hospital (0.699) is 0.015

Conclusion, Planning Implications and Recommendation

The paper examines the role played by distance, mobility and socio-economic factors on the choice of type of health care facilities in rural area of Badagry Local Government area of Lagos State, Nigeria. The findings revealed that the choice of hospitals by 56.36% of the sampled population as preferred and most utilized health facility in the study area is strongly determined by the combination of socio-economic and mobility factors.

The following recommendations are proposed in connection with the findings of this study: Policy should be formulated and implemented to improve the earning capacity of rural population especially the women so as to improve their socio-economic status. Improved socio-economic status of women has been proven to increase their involvement in policy and decision making process especially those relating to their well being (Olatubara 2003; Asiyanbola, 2006); making public transportation services in rural not only available but affordable, accessible, reliable, safe and also gender friendly will facilitate effective utilization of the only public general hospital in the study area; there is the need to upgrade some of the primary health centers to general hospital status and to provide enabling environment for medical personnel to work in rural based health facilities as resident personnel; government at the local government levels should encourage the establishment of quality private hospitals in rural areas.

Table 4: Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1.000														
2	-0.053	1.000													
3	0.246	0.431	1.000												
4	-0.022	0.058	0.030	1.000											
5	-0.331	-0.315	-0.445	-0.139	1.000										
6	0.007	-0.393	-0.600	-0.033	0.227	1.000									
7	-0.063	0.255	0.451	0.039	-0.038	-0.583	1.000								
8	-0.147	0.116	0.086	-0.059	0.020	-0.150	0.152	1.000							
9	0.060	-0.175	-0.056	-0.108	0.044	0.114	-0.140	-0.119	1.000						
10	-0.067	0.019	0.073	-0.026	-0.050	-0.088	0.085	0.620	-0.141	1.000					
11	0.010	0.053	-0.016	0.098	-0.169	0.006	-0.038	0.231	-0.100	0.373	1.000				
12	-0.149	0.192	0.072	-0.039	0.016	-0.167	0.154	0.764	-0.225	0.469	0.207	1.000			
13	-0.144	0.013	-0.081	-0.022	0.167	-0.081	0.122	0.590	-0.199	0.284	0.214	0.649	1.000		
14	-0.087	0.110	0.065	-0.105	0.042	-0.166	0.181	0.792	-0.209	0.525	0.229	0.832	0.696	1.000	
15	-0.239	-0.063	-0.173	-0.159	0.132	0.160	-0.010	0.379	-0.077	0.251	0.089	0.425	0.326	0.426	1.000

Key Correlated Variables

- | | |
|---------------------|---------------------------------------|
| 1 Sex | 9 Transport Mode to Health Facility |
| 2 Age Group | 10 Travel Time to Health Facility |
| 3 Marital Status | 11 Transport cost to Health Facility |
| 4 Household Size | 12 Visit Frequency to Health Facility |
| 5 Educational level | 13 Quality of Road to Health Facility |
| 6 Occupation | 14 Quality Service at Health Facility |
| 7 Monthly Income | 15 Type of Health Facility |

Table 5: Total Variance Explained^a

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.828	20.200	20.200	2.828	20.200	20.200	2.365	16.895	16.895
2	1.804	12.884	33.084	1.804	12.884	33.084	1.816	12.973	29.868
3	1.447	10.339	43.423	1.447	10.339	43.423	1.582	11.299	41.167
4	1.377	9.833	53.256	1.377	9.833	53.256	1.466	10.471	51.638
5	1.238	8.843	62.099	1.238	8.843	62.099	1.465	10.461	62.099
6	0.969	6.923	69.022						
7	0.873	6.236	75.258						
8	0.764	5.456	80.714						
9	0.701	5.010	85.723						
10	0.575	4.108	89.832						
11	0.460	3.287	93.119						
12	0.415	2.965	96.084						
13	0.351	2.506	98.590						
14	0.197	1.410	100.000						

Extraction Method: Principal Component Analysis.

a. Only cases for which Health Facility = Hospital are used in the analysis phase.

(Source: Authors' Fieldwork, 2007)

Table 6 : Rotated Component Matrix^{a,b}

Variables	Component				
	1	2	3	4	5
Sex	-0.071	0.826	-0.122	-0.167	0.149
Marital Status	0.707	0.530	0.166	-0.019	-0.151
Educational level	-0.205	-0.784	-0.169	-0.127	0.208
Occupation	-0.849	-0.035	-0.037	-0.032	0.100
Monthly Income	0.833	-0.063	-0.034	-0.002	0.078
Household Size	0.134	-0.055	-0.072	0.666	-0.019
Distance to Hospital	0.120	-0.163	0.690	-0.169	0.067
Transport to Hospital	-0.234	-0.036	0.302	-0.444	-0.020
Age Group	0.487	0.096	0.045	0.262	-0.486
Travel Time to Health Facility	-0.012	0.098	0.714	0.168	0.350
Transport cost to Hospital	-0.131	0.296	0.160	0.554	0.432
Visit Frequency to Hospital	0.014	0.050	-0.083	0.018	-0.813
Quality of Road to Hospital	0.000	-0.273	-0.599	-0.028	0.303
Quality Service at Hospital	0.248	0.138	-0.178	-0.589	0.236

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

b. Only cases for which Health Facility = Hospital are used in the analysis phase.

(Source: Authors' Fieldwork, 2007)

References

- Adetunji, M. A. (2003): "Geographical Analysis of Rural transport and Accessibility in Ayedaade Local Government Area of Osun State." *An Unpublished M.Sc Thesis. Department of Geography, Obafemi Awolowo University, Ile-ife, Nigeria.*
- Aloba, O (1986). "Rural Transportation" in Toyin Falola and Olarewaju S.A (eds) "Transport systems in Nigeria," *Syracuse NYS Syracuse Maxwell school of citizenship and Public Affairs*
- Asiyanbola R. A. (2006). "Residential Location decision making and gender in Nigeria" *Geoforum* 37 pp. 1059-1065
- Badaru F.A. (2003). 'Sociology of Health and Illness Relations' in Olurode, Lai and Soyombo Omololu (eds.) *Sociology for Beginners*. John West Publishers Ikeja: pp. 336-355.
- Bour, D. (2002): "Distance as a Predominant Factor in the Utilization of Health Services in Kumasi Metropolis, Ghana." *Geojournal*. 56(2):145-157
- Erinosho O.A. (2005). *Sociology for Medical, Nursing and allied Professions in Nigeria*, Bulwark Consult, Abuja and Ijebu-Ode
- Federal Ministry of Health (FMOH) (2001). *Health policy of Nigeria*. Abuja, Nigeria: Federal Ministry of Health
- Howe, J. (1983): "Conceptual Framework for Defining and Evaluating Improvements to Local Level Rural Transport in Developing countries." *International Labour Office, World Employment Programmes, CTP, General: ILO.*
- Ipingbemi, O. (2006). *Spatio-temporal analysis of road traffic accidents in Southwestern Nigeria between 1985 and 2005*. Unpublished Ph.D. Thesis. Department of Geography, OAU, Ile-Ife, Nigeria.
- Joseph, A. E. and Philips, D.R. (1984): "Accessibility and Utilisation: Geographical Perspectives on Health Care Delivery." *London. Harper and Row.*

- Muller, I., Smith, T., Mellors. S., Rale, L. and Genton B. (1998): "The effect of Distance from Home on Attendance at a Small Rural Health Centre in Papua, New Guinea." *International Journal of Epidemiology* .Vol.27.(5) pp 878-884.
- Okafor, F. C. (1984): Accessibility to General Hospitals in Rural Bendel State, Nigeria. *Social Science and medicine* 18 (8):661-666
- Okafor, F.C. (1990): The Spatial Dimensions of accessibility to general hospitals in rural Nigeria. *Socio-Economic Planning Sciences* 24(4):295-306
- Olatubara C. O. (2003) "The participation of women in residential location decision-making in Ibadan," *Nigeria" Journal of the NITP*, Vol. XVI, No. 1, pp.19-33
- Onwujekwea, O, and Uzochukwu, B. (2005). Socio-economic and geographic differentials in costs and payment strategies for primary healthcare services in Southeast Nigeria. *Health Policy* 71. 383–397
- Oppong, J. R. and Hodgson, M.J. (1994): "Spatial Accessibility to Health Care in Suhum District, Ghana." *The Professional Geographer* 46(2):199-209.
- Oyekale, A.S. and Eluwa, C.G. (2009). Utilization of health care and health insurance among rural households in Irewole Local Government, Osun state, Nigeria. *International Journal of Tropical Medicine* 4(2):70-75.
- Waldolf, B., Chen, S. and Unal, E. (2007): "Spatial Accessibility of Health Care in Indiana." *Working Paper 07-07. Department of Agricultural Economics, Purdue University*.
- World Bank (2008) : "Safe, Clean, and Affordable...Transport for Development. " *The World Bank Group's Transport Business Strategy 2008-2012*
- World Development Report (1993): "Investing in Health." *Washington D.C: World Bank*.