

Accessibility of Antenatal Healthcare Facilities to Women in Rural Areas of AkwaIbom State, Nigeria

***KemfonAniedi Essien¹, EnoEyak James² & Mercy Ita Effiong¹**

¹ *Department of Geography, University of Uyo, Nigeria*

² *Department of Urban & Regional Planning, University of Uyo, Nigeria*

Abstract: Against the backdrop of low utilization of antenatal healthcare services and high incidence of maternal mortality in rural Nigeria, this study assessed the accessibility of antenatal healthcare facilities to rural women in AkwaIbom State, Nigeria. 550 pregnant women were selected from across 55 health centres in the study area. 550 set of well structured questionnaires were used to track the mobility and accessibility profile of the women as well as the accessibility status of the health centres. Percentages and Tables were employed for data presentation while the Z-score statistics was utilized to compute the index/levels of accessibility of the health centres. Findings indicated poor accessibility to more than 40 percent of the healthcare facilities as long travel time/distance, longer waiting time at health centres and high travel cost constituted major barriers to antenatal healthcare facilities accessibility in the study area. The location of health centres within catchment areas of potential users (based on minimal travel distance) as well as the use of mobile ante-natal care services can help improve accessibility to antenatal healthcare facilities in the area.

Keywords: Accessibility; AkwaIbom State, Ante natal, Healthcare Facilities, Rural Areas, Pregnant Women, Nigeria.

Date of Submission: 06-07-2019

Date of acceptance: 22-07-2019

I. INTRODUCTION

Accessibility to health care facilities is by far among the key issues surrounding Healthcare delivery in third world countries, including Nigeria. It is believed that the dual problems of limited healthcare facilities and low personal mobility are the main drivers of poor accessibility to health care in Nigeria (Essien, 2015). For the purpose of clarity, accessibility as in this context refers to the ease with which potential health care seekers get to the points where health care services are delivered. These points are the health care facilities. Accessibility is enhanced with minimal travel distance, travel time and travel cost to a designated health care facility. It is therefore pertinent to say that equity in service facility provision indexes accessibility. According to Essien (2018), the nature of distribution of health care facilities are critical to the success of any services system. In other words, healthcare service utilization is anchored on the accessibility of the service facility to the end users. Essentially, as Essien (2016) asserted, equitable distribution of health care facilities is vital for improving access to essential health services such as ante-natal health care services.

Antenatal health care has been acknowledged as a critical component of maternal health in Nigeria. According to the National Demographic and Health Survey (NDHS, 2015), Nigeria accounts for 10 percent of all maternal deaths globally and records only about 64 percent utilization rates of antenatal healthcare services with an average of two antenatal visits. This situation rises concern n government efforts at providing antenatal care services and also reducing material mortality burden in Nigeria especially in rural areas.

The rural/urban differentials in antenatal care services utilization in Nigeria is quite significant. For instance, in 2015 according to National Demographic and Health Survey, 67.3 percent of urban women received two or more tetanus toxoid injection during their last pregnancy as against 35.7 percent of rural women. In terms of place of delivery, 59.4 percent of urban women delivered in a health facility but only 24.7 percent of rural women did so. More so, percentage of women delivered by a skilled provider was 65.4 for urban and 27.7 for rural. In fact, these observations corroborate the global assumption that “rural residence” is a strong risk factor for poor health indicators. Most authors believe that the underlying factor regarding high maternal mortality in rural Nigeria is poor accessibility to Antenatal health care facilities (Nwoye, 2010; Olufunke, and Akintujoje, 2012; Ojongand Eni, 2011; Essien, Etuk and Effiong, 2019).

In AkwaIbom State, where the present study is based, knowledge on the accessibility of antenatal healthcare facilities to women in rural areas is still very sketchy. However, there is a general consensus among stakeholders in the health sector that such knowledge is crucial for health care facilities planning and for

effective targeting of underserved rural communities. To this end, this study was designed to achieve the following objectives:

- i. Assess the mobility profile of women in the study area.
- ii. Assess the accessibility of health facilities to pregnant women in the study area.
- iii. Determine the accessibility levels of antenatal health facilities in the study area.

II. LITERATURE REVIEW

Access to and of quality health care services is a very important factor in the use of antenatal health care services. Magadi, Agwanda and Obare, (2007), reported that access to quality reproductive health services is crucial for improved child survival and increased contraceptive use and consequently fertility decline in the developing countries

Wojuade and Fadere (2014) examined the accessibility of health facilities in Ibadan, Nigeria. The systematic random sampling technique was used to choose 791 respondents for the study. Cumulative opportunity measure was employed to compute the total number of health facilities in the study area. Finding revealed that 69.9% of the residents patronised hospitals where general and specialized services are rendered. Also, more than 30% travelled 5km or less and others about 70% more than 5km for their medical needs. Findings also showed that majority of the residents travelled 2 hours per trip and pay up to ₦356 to health facilities – indicating a relatively low accessibility to health facilities.

Similarly, studies by Ojong and Eni (2011) examined the distribution and utilization of health facilities in Calabar, Nigeria. Data for the study were derived from hospital records and structure questionnaire. The simple random sampling was used to select 420 respondents from twelve hospitals/wards. The Pearson Product Moment Correlation Analysis was applied to analyse data. Findings showed high and positive relationship between access of health facilities (distance) and utilization ($r_{xy}=0.63$; $p<0.05$). The multiple regressions of the effects of distance, income, education and occupation on utilization of health care services yielded a co-efficient of multiple determinations (r^2) of 0.602 indicating that Healthcare utilization is sensitive to accessibility and socio-economic factors of users.

In a study conducted in Pakistan, access to maternal and newborn health care differs greatly between different socio-economic groups. Poverty, ethnic, cultural and religious factors all have an impact on women's status and their ability to access healthcare (Majrooh et al, 2013). One of the factors associated with the under-utilization of antenatal health care services in Indonesia was physical distance from health facilities (Titaley, Dibley and Oberts, 2010). About 10% of pregnant women living in urban squatter settlements in Karachi reported long distances from facilities as reasons for not receiving antenatal health care and 7% complained of the non-availability of transport (Titaley, Dibley and Oberts, 2010).

In another study conducted in South Africa, 57.2% of women lived within walking distance of the health facility and their travelling time ranged between 10 and 60 minutes. Of those who needed to use public transport, the fare was minimal (Nisar and Hite, 2010). Also, in India, rural women in Nepal were interviewed to ascertain the access, demand and utilization of health services. Information was obtained from primary and secondary sources using questionnaires, focus group discussion and interviews with key informants at the household, community and central levels. It was found that:

- i. Most women would only seek care on their own accord if services were free.
- ii. Some women were unable to access care due to distance to health facilities and lack of a means of transportation.
- iii. Respondents reported that lack of time due to their heavy work burden restricted them from seeking health care.
- iv. Caste (for low caste women) discrimination by community members and providers restricted certain women from accessing health care services.
- v. The absence of female health service providers inhibited women from visiting the health service facilities.
- vi. Women over 35 years of age were in a better position to access health care because they were more empowered to voice their needs and had more control over family resources.
- vii. Increased education of women and their husband were positively correlated with increased utilization of all health services.

Studies in Uganda and elsewhere in sub-saharan Africa have identified physical or geographical access to health as a major barrier affecting health care seeking behaviours of patients generally and women's reproductive health care seeking specifically (Kasolo and Ampairewe, 2000; MOH, 2004; GMOH, 1999). In developing countries including Uganda, several factors which impede accessibility. These factors include cost of services; distance to health services; lack of available transportation; high transportation costs; poor road conditions. Other factors are uneven distribution of health care facilities and lack of independence by women to make decision on matters that directly affect their health (Tawiah, 2011; Magadi, Zulu and Brocherhoff, 2003;

Anarfi and Ahideke, 2006). All these factors increase travel time and the difficulty in accessing health service facilities. In rural Uganda, physical accessibility and acceptability remains a significant challenge to health care service delivery.

Benefo (2006) in a study of rural Ghanaian women posited that economic ability to access health is a major factor affecting health care of women in particular. For instance, in Ghana, the majority of women have limited control over family property and household financial resources and limited access to credit from financial institutions. In (Tawiah, 2011; Atuyambe et al, 2005; Kasolo and Ampairwe, 2000; Obemeryer, 1993; and Pearson and Shoo, 2005), it is noted that women's financial dependence on their husbands affect their decision making because health care options must be supported by husbands. Women lack the power to spend money on health care without their husband's permission. Collated findings exist elsewhere in Pakistan (Babar and Hatcher, 2004), India (Bhatia and Cleland, 2005), Philippines (Becker et al, 1993), Ethiopia (Mekonnen, 2003) Nigeria (Awusi, Anyanwu and Okeleke, 2009) where women lack the power to spend money on health care without their husband permission.

Asimwe, (2010) found out that in Western Uganda, the ability of a woman to afford antenatal health care (ANC) services has a significant association to the number of ANC visits she is likely to make. This resonates with studies elsewhere about women having to take transport to antenatal health care facility. High fees for necessary but costly laboratory fees, drugs and consultation fees in case of private centers not serviced by government hospitals are drawbacks to the utilization of maternal services as highlighted by Atuyambe et al (2005). Although in their study, there is no significant relationship between affordability and utilization of antenatal health care, these associations indicate the unwillingness by mothers to pay for antenatal health care services.

III. THEORETICAL FRAMEWORK

i. The Distance –Decay Model

The notion that a potential consumer would normally travel to the nearest centre within whose range he lives is based upon the consumer's rational and economic decisions. Such a behaviour is based on the consumer's full knowledge of the costs and alternatives involved. Distance is a critical factor dictating the utilization of services offered at centres, hence the greater the distances from the centres, the lower the volume of patronage. This in effect explains that spatial interaction, (utilization of antenatal services) varies inversely with distance. The phenomenon is known as the distance-decay model. The model describes the effect of distance on cultural or spatial interaction. Once the distance is outside of the two locales activity space, their interactions begin to decrease (Matous and Mojo, 2013).

ii. Theories of Public Facilities Location

Public facilities, unlike the private, profit, maximizing of goods and services, must be located in such a way as to maximise their utilization. Daskin and Dean (2004) has contended that the provision of public services especially in newer residential areas is often backed by the belief among planners that the functions should take place in centres. Within the Nigerian Basic Health Service System, the idea of target populations for each level of health care facility presupposes that such facilities will be used by a majority of the local population. Researchers in the field of public facilities location have however continued to utilize models from the traditional location theories. These models emphasize cheapness and proximity and rely heavily on the application of gravity models and linear programming including optimal location models (Beutel, 2001). The objective function often takes the form of minimizing aggregate consumer transport costs or maximizing the amount of demand created by the system of facilities.

iii. Concept of Range of Goods and Threshold of population

The concept of range of goods explains the maximum distance consumers are prepared to travel to acquire goods. At some point the cost or inconvenience will outweigh the need for the good. The concept describes the maximum and minimum distances from the venture (health center). Prospective consumers are willing to travel to utilize services offered by the health facility. The threshold is the minimum population needed to bring about the selling of a particular good and service. In this case it is the minimum population that the health center can service.

IV. HEALTHCARE FACILITIES IN AKWAIBOM STATE

AkwaIbom State is one of the 36 states in Nigeria. It is located at the South-East corner of Nigeria between latitudes 4⁰3¹ and 5⁰32¹ North and Longitudes 7⁰25¹ and 8⁰30¹ East. The state is administratively divided into 31 Local Government Area (LGAs) with Uyo as the state capital (see figure I).

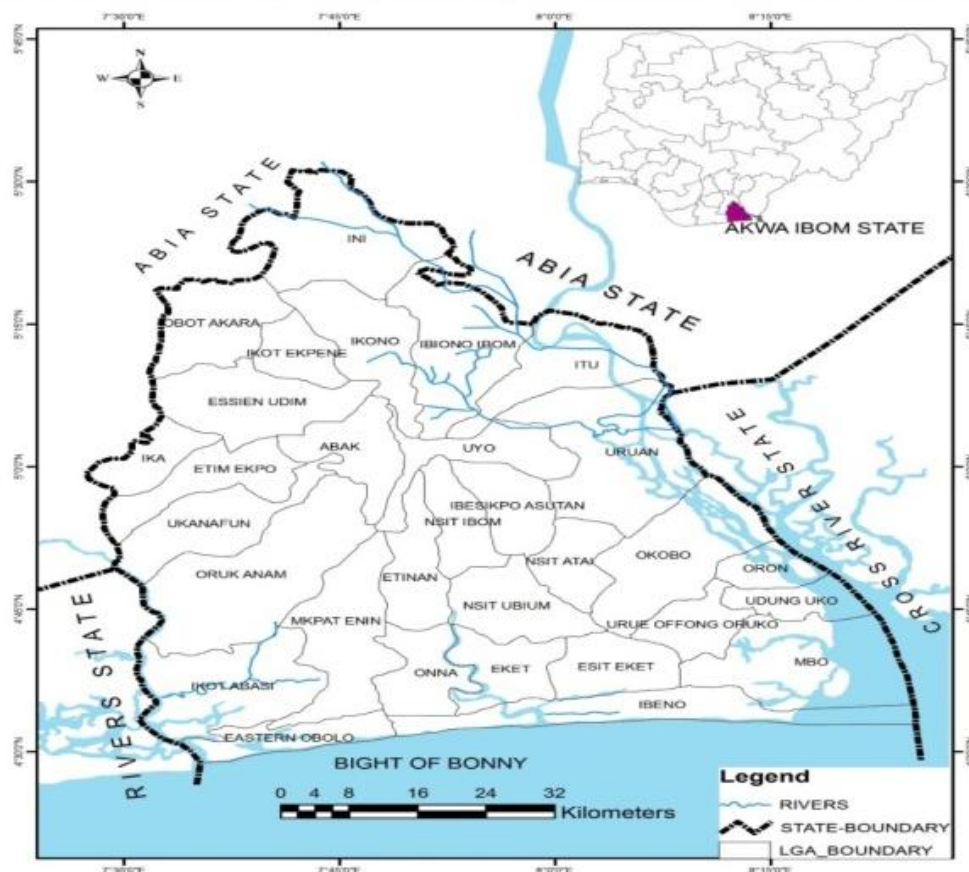


Figure I: The Study Area

Demographically, AkwaIbom State is one of the most densely populated states in Nigeria. According to NPC (2006) AkwaIbom State has a population of 5631,948 (as projected to 2018 on an annual growth rate of 3%) and a landmass of 8412km². Therefore, the population density of the state is 669 persons per sqkm. AkwaIbom State has a high fertility rate of 8.1% and a low contraceptive rate of less than 20% (NHDS, 2015). In AkwaIbom State, every woman of child bearing age is likely to give birth to about six children in her life time (Etukudo, 2015). The above facts and figure puts the state on the edge of a population crisis as more than 70% of her population lives in rural areas and competing on limited land resource for survival.

Regarding health care services, AkwaIbom operates a 3-tier level of health care delivery. These are the primary, secondary and tertiary. Of these three, the Primary Health Care (PHC) is the most spatially spread since it involves the majority grassroot population (Inyang, 2010). Primary health care services are provided at Health Centres, Primary Health Centers, Comprehensive Health Centres, Health Posts and Clinics; Secondary Health Care Services are provided in General and Cottage Hospitals while the Teaching Hospital provides tertiary healthcare services. Within this hierarchical arrangement, higher-order centres are expected to receive referrals from the lower-order centres. On specific health indicators for the state as at 1999, Inyang (2010) reported that the crude death rate was 12 per 1000 population and infant mortality rate was 67 per 1000 live births. Mortality rate for under 5 years was 30 per 1000 population; maternal mortality rate was 800 per 100,000 births and the level of maternal malnutrition was 7%. Life expectancy at birth was 54 years and HIV prevalence rate stood at 8% while access to safe water was 23%.

As at December 2014, AkwaIbom State had four hundred and Three Primary Health facilities, which are spread across the thirty-one Local Government Areas. In the case of the secondary health facilities, AkwaIbom State had forty secondary health facilities which include general hospitals and cottage hospitals. Two tertiary health facilities are also located in the study area. These are the University of Uyo Teaching Hospital and the 21st Millennium Specialist Hospital. The State also boasts of a number of private secondary health facilities which are one hundred and fourteen in number (AKMOH, 2014).

V. MATERIALS AND METHODS

The study was designed as a cross sectional survey conducted by the authors in 2018 in AkwaIbom State. The study population is bifurcated. First are the Primary Health Centres (PHCs) represented by the communities where they are located (in Nigeria, antenatal health care services are delivered at the primary health centres for rural women). Second are the pregnant women who utilize the health facilities for ante-natal care. Out of a population of 305 Primary Health Centres available in the State, the study used a sample of 55 Health Centres/Communities (representing 18%) randomly selected and spread across the 31 Local Government Areas of the state (see Figure 2). A sample of 550 pregnant women (10 selected from each Health Centre) was used for the study.

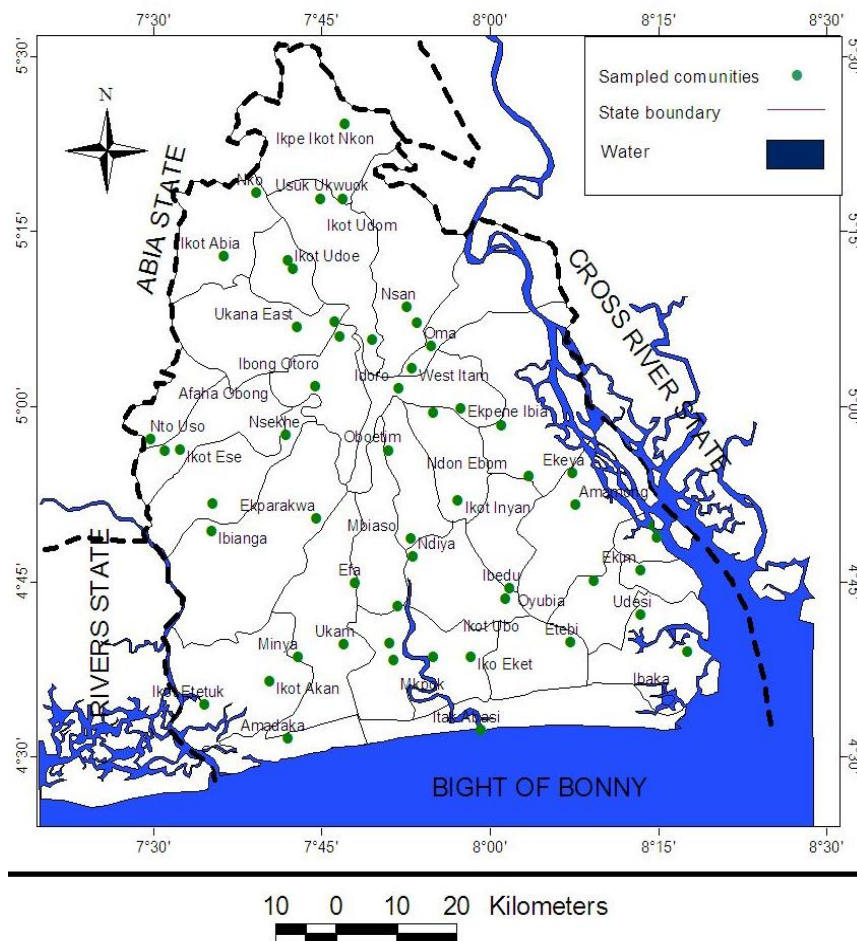


Figure 2: Sampled Antenatal Health Care Facilities/Communities

Data collection was carried out using structured questionnaire and personal interview. Respondents (pregnant women) were contacted and administered questionnaire during their antenatal visits at the health centres. The questionnaire was so designed to elicit information on the respondent’s mobility profile as well as their accessibility to the ante-natal healthcare facilities in their domain. Table I displays the variables employed to measure both mobility and accessibility to health care facilities.

Table 1: Mobility/Accessibility Measures

S/N	Variable	Unit of Measurement	Weighted Score (1-3)
Accessibility Measures			
i.	Travel Distance to Health Facility	Km	>10km – (1), 5-10km – (2), >5km – (3)
ii.	Travel Time to Health Facility	Hr	>1hr – (1), 1-2 hr (2), <1hr – (3)
iii.	Travel Cost to Health Facility	Naira	>N800 – (1), N500 – N800(2), <N500 – (3)
iv.	Waiting Time at Health Facility	Hr	>1hr (1), 30mins – 1hr (2), <30mins – (3)
Mobility Measures			
i.	Vehicle ownership	Owned/not owned	Not Applicable

ii.	Travel route	Type	Not Applicable
iii.	Travel mode	Type	Not Applicable
iv.	Access to paved road within 1 km radius	Access/No Access	Not Applicable

Source: Authors

The measures of accessibility to health care facilities namely: travel distance, travel time, travel cost and waiting time at health centre were assigned weighted scores on a 3-point likertscale such that 3 being the highest score indicated an enhanced accessibility. The frequencies of response alongside the weighted scores were used to compute the level for accessibility of each health centre based on z-score statistics.

The Z-score is a statistical technique used for data standardization. Z-score was applied to eliminate disparity in units of measurement by transforming the variables to a uniform unit which were aggregated to yield a single score that was used to classify the health centres based on their level of accessibility to prospective users. The Z-score statistics ranges from -4 to +4 such that a positive score indicates a higher value of the phenomenon or variable under investigation. The Z- score formular is given as:

Where:

$$Z = \frac{X - \bar{X}}{S} \left(\frac{KZ}{J \sum 1} \right)$$

Z = the score
 \bar{X} = means of variable
 X = variable
 S = sample standard deviation
 1 = case subscript
 J = variable subscript
 K = number of variables
 Σ = summation

VI. RESULTS AND DISCUSSION

Mobility Profile of the Pregnant Women

The personal mobility of rural people can either enhanced or limits their accessibility to health facilities in their region. In this study four factors were used to assess the personal mobility of the pregnant women. These factors include: vehicle ownership, dominant mode of travel, travel routes and access to paved road. Data in Table 2 displays themobility profile of the respondents.

Table 2: Mobility Profile of Respondents(n=550)

S/N	Mobility Factor	No. of Respondents	Percentage of Total
1.	Vehicle Ownership Status		
	Owned any form of Vehicle	125	22.7
	Not Owned any form of Vehicle	425	77.3
	Total	550	100
2.	Dominant Mode of Travel		
	Trekking	300	54.5
	Bicycle	100	18.2
	Motorcycle	143	26.0
	Taxi	7	1.3
	Total	550	100
3.	Dominant Travel Route		
	Foot path	160	29.1
	Track	80	14.5
	Unpaved road	302	54.9
	Paved road	8	1.5
	Total	550	100
4.	Access to paved road within 1km Radius		
	Access	35	6.4
	No Access	515	93.6
	Total	550	100

Source: Author's Survey, 2018.

Earlier in this paper, we established the fact that personal mobility is critical to accessibility to health facilities especially in a highly dispersed rural settlement ubiquitous in Nigeria. As data in Table 2 indicated, 77.3% of the pregnant women did not own any form of vehicle, just as the dominant mode of travel for 54.5% of them was trekking. This implies that both journeys to market, health centre and even farm trips are likely to be tedious and burdensome and often characterised by long travel time due to poor personal mobility.

Data in Table 2 also revealed that majority of the women (54.9%) travel on roads that are not paved just as 29.1% and 14.5% travel on foot path and track respectively. The absence of paved roads and poor road linkage also limits rural mobility and undermines opportunity for accessing basic social needs such as health care. Specifically, as evidence in Table 2 indicated only 6.4% of the women had access to paved road within 1km radius of their community. According to Essien (2010), accessibility to health care facilities and other social infrastructure in rural Nigeria can be enhanced if effort is made to improve rural mobility through massive upgrade of footpaths and tracks as well as empowering rural households to own vehicles. Vehicular presence and taxi services are limited in rural Nigeria owing to poor road linkages- a situation which leaves rural people at the mercy of motor cyclist with exorbitant transport fare. Evidently, only 1.3% of the respondents travel by taxi for their antenatal health care uptake (Table 2).

Accessibility of Antenatal Health Care Facilities to Pregnant Women in the Study Area

It is necessary to reiterate here that the antenatal healthcare facilities referred to in this study are the Primary Health Centres (PHCs) distributed across the study area. In Nigeria, antenatal healthcare services are provided at PHCs for rural women. This study uses four components of accessibility to assess the accessibility of the healthcare facilities to pregnant women in the area. The accessibility components include: travel distance to health centre, travel time, travel cost and waiting time at health centre. Table 3 displays the accessibility profile of the sampled pregnant women.

Table 3: Accessibility Profile of Respondents (n = 55)

S/N	Accessibility Measure	No. of Respondents	Percentage of Total
1.	Travel Distance to Health Centre		
	< 5km	95	17.3
	5km – 10km	280	50.9
	>10km	175	31.8
	Total	550	100
2.	Travel Time to Health Centre		
	< 1 hour	350	63.6
	1 – 2 hours	150	27.3
	>2 hours	50	9.1
	Total	550	100
3.	Travel cost to Health Centre		
	< ₦500	322	58.5
	₦500- ₦800	160	29.1
	>₦800	68	12.4
	Total	550	100
4.	Waiting Time at Health Centre		
	< 30 minutes	350	63.6
	30 Minutes – 1 hour	150	27.3
	>1 hour	50	9.1
	Total	550	100

Source: Authors Survey, 2018.

Information on the distance travelled by the pregnant women to health centre is summarized in Table 3. Accordingly, 17.3% of the women travelled less than 5km; 50.9% travelled between 5-10km to health centre while 31.5% travel more than 10km to health centre. Unarguably, distance remains the overriding factor in accessing health care services especially in Rural Nigeria where households depend on trekking due to poor road network, limited transport services and low vehicle ownership (Essien, 2010). The proportion of pregnant women (31.5%) who travel over 10km to reach health centre in the study area raises serious concern. The long travel distance to health centre perhaps accounts for the significantly low utilization of ante-natal care services in rural AkwaIbom State as documented by Essien(2016) and Essien, Etuk and Effiong (2019).

There is need for equitable re-distribution of health care facilities based on minimal distance from the intended threshold population or catchment area (Inyang, 2010). The findings of this study corroborates previous studies which revealed that the proportion of rural households within 10 kilometres of a health facility

is by far lower when compared to their urban counterparts (Magdi, et al, 2003).The travel time to health centre also indicate some alarming statistics.

Specifically, as data in Table 3 indicated, 63.6% of the women spent less than an hour to health centre; 27.3% spent between 1 and 2 hours while 9.1% spent more than 2 hours to reach their nearest health centre.

According to Holden (2000), travel time of more than 30minutes to health centre is by far unacceptable. For the study area, it is obvious that the proportion of those who travel longer hours to health centre are trekkers who live in remote areas and are isolated from roads and transport services (Essien, 2010). The travel cost incurred by the pregnant women to the health centre is also revealing. Data inTable 3 shows that 29.1% of the women spent between N500 and N800 as fare to health centre while 68 of the pregnant women representing 12.4% spent more than N800 to health centre. The high travel cost to health centre places enormous financial burden to rural households who are already impoverished due to dwindling rural economy in Nigeria.

Regarding waiting time at the health centre, data in Table 3 revealed that 27.3% of the respondents spent between 30 minutes to 1 hour waiting for antenatal services at the health centre; while another 9.1% reported waiting for more than an hour before being attended to by health workers. According to Obembe, et al (2014), the long waiting time at health centres in rural Nigeria are attributed to two factors. One is the limited number of health workers available at the health facilities and the second is the poor service quality rendered at the health facilities. Long waiting time at health facilities characterized health care delivery in most Nigerian health facilities and consequently poses serious barrier to healthcare accessibility for the rural women. In as much as Nigeria is one of the countries with acute shortage of health workers, the immediate problem has to do with the lopsided distribution of available health workers between the urban and rural areas (Obembe, et al., 2014).

Accessibility Levels of Health Facilities in the Study Area

In this section, attempt has been made to classify the sampled health facilities based on their levels of accessibility to users (Pregnant women).To achieve this purpose, an index of accessibility was constructed for each health centre based on the Z – scores on the four measures of accessibility used in the study namely: travel distance, travel time, travel cost and waiting time. The frequency responses of the users of each health facilities alongside the weighted scores were transformed to Z-score and the aggregate Z-scores was used to classify the health facilities such that a higher score depicts an enhanced accessibility of the health facilities in question. Table 4 displays the result of the analysis.

Table 4: Accessibility status of Sampled Antenatal Healthcare Facilities in the Study Area

(Z-score)	S/N	Location of Health Centre	Overall				Aggregate of Z-Scores	Level of Accessibility based on Aggregate Z-Score
			Travel distance To Health Centre	Travel time	Travel cost	Waiting time		
	1	Nko	* -0.13	* -0.44	* -0.65	* -0.17	-1.39	Low
	2	IkotAbia	0.32	* -1.03	* -0.65	* -0.54	-1.9	Low
	3	Nsan	* -0.59	0.71	* -0.06	* -1.28	-1.22	Low
	4	MbakItam 3	1.25	* -1.03	* -0.06	* -1.28	-1.12	Low
	5	Oma	* -0.59	* -0.13	0.52	* -1.28	-1.48	Low
	6	West Itam	2.63	0.13	0.52	2.78	6.06	High
	7	Mbiabong	1.25	0.13	1.12	0.93	3.43	Moderate
	8	Idoro	1.05	* -1.03	* -0.65	1.28	0.65	Low
	9	Ndiya	0.78	* -0.44	* -1.84	* -0.91	-2.41	Low
	10	IkotUbo	* -1.05	0.13	0.52	* -0.17	-0.57	Low
	11	IbongOtoro	0.32	1.87	3.09	1.28	6.56	High
	12	AfahaObong	* -1.05	1.03	1.12	0.93	2.03	Low
	13	Iko-Eket	* -1.51	0.44	2.78	0.67	2.38	Low
	14	IkotEbok	0.32	0.71	0.93	1.41	3.37	Moderate
	15	Ibaka	* -1.05	1.25	1.29	0.19	1.68	Low
	16	Udesi	0.32	3.09	0.48	2.89	6.78	High
	17	Oyubia	* -0.59	1.12	1.84	0.19	2.56	Moderate
	18	Amamong	0.32	0.52	1.71	0.67	3.22	Moderate
	19	Ekeya	* -1.51	1.12	1.71	0.82	2.14	Low
	20	Ekim	* -0.13	1.25	0.93	1.30	3.35	Moderate
	21	Esuk Oro	* -0.13	2.63	1.87	1.41	5.78	High

Accessibility of Antenatal Healthcare Facilities to Women in Rural Areas of AkwaIbom State, Nigeria

22	IduaAssang	* -0.59	1.76	1.25	0.19	2.61	Moderate
23	IkotEse	* -0.59	0.78	0.52	0.82	1.53	Low
24	Akai Uro	* -0.13	0.93	0.44	1.67	2.91	Moderate
25	ItakAbasi	* -0.13	1.12	0.78	1.03	2.8	Moderate
26	Etebi	* -1.05	* -1.03	1.12	* -0.54	-1.5	Low
27	IkotIyan	0.78	* -0.44	* -0.65	* -0.17	-0.48	Low
28	Nung Oku	1.25	1.76	1.12	2.78	6.91	High
29	Ibedu	3.09	1.87	* -0.06	0.19	5.09	High
30	IkotUdoe	0.78	-1.03	* -1.12	* -0.54	1.91	Low
31	AbiakpoIkotEssien	0.32	1.29	1.12	0.56	3.29	Moderate
32	IkotUdoOssiom	1.25	1.87	* -0.65	0.19	2.66	Moderate
33	Nsekhe	1.71	2.46	0.52	0.93	5.62	High
34	Efa	0.78	0.13	* -1.25	2.78	2.44	Low
35	IkotObioInyang	0.78	0.71	* -0.06	1.28	2.71	Moderate
36	IbiangaAsakp	* -0.59	1.87	2.30	2.89	6.47	High
37	Ekparakwa	* -0.13	1.29	1.25	0.56	2.97	Moderate
38	EkpenIbia	* -1.51	2.11	0.52	0.19	1.31	Low
39	NdonEbom	1.71	0.36	1.12	1.67	4.86	High
40	IkpeAnnang	0.78	0.48	1.84	0.01	3.11	Moderate
41	Ukana East	3.09	1.29	1.25	1.67	7.3	High
42	NtoUzor	1.51	0.36	0.65	1.28	3.8	Moderate
43	Amadaka	0.13	1.87	* -1.12	1.31	2.19	Low
44	IkpeIkotNkon	0.78	2.11	2.30	1.52	6.71	High
45	UsukUkwok	0.32	1.29	1.84	1.71	5.16	High
46	NungUdoeItak	1.25	2.46	* -0.65	0.56	3.62	Moderate
47	IkotUdom	1.71	0.13	1.25	2.78	5.87	High
48	EdemIdimIssiet	0.32	0.01	1.71	0.19	2.23	Low
49	Mkpok	0.78	1.87	1.12	0.12	3.89	Moderate
50	IkotEtetuk	* -1.51	* -0.44	1.21	0.19	-0.55	Low
51	IkotAkan	* -0.59	0.13	* -0.65	2.89	1.78	Low
52	Ukam	1.71	0.19	0.52	1.28	3.7	Moderate
53	Minya	0.32	2.46	1.12	1.28	5.18	High
54	Oboetim	1.71	1.87	1.71	0.54	5.83	High
55	Mbiaso	* -0.13	0.13	1.25	0.56	1.81	Low

* - Health Centres with Negative Z-Scores on specific accessibility factor

Source: Authors' Analysis, 2018

As data in Table 4 indicates the values of Z-score ranged between -1 and +4. the interpretation of the scores is as follows: scores that tends towards -1 indicate undesirable condition as far as that variable or accessibility factor is concern; while scores that tends towards 4 indicate a perfect, and an acceptable situation. Based on the above, 22 health centres were identified with the lowest scores on 'travel distance'; infact, all the 22 health centres had negative Z-scores. This implies that these health facilities are located very far away from their prospective users. Health centres are supposed to serve both their immediate communities and their adjoining communities, therefore, the centrality of their location is of utmost importance to enhance accessibility to its catchment area. But in Nigeria, theoretical concepts and principles of healthcare facilities planning are more often sacrificed on thealter of political considerations. Table 5 highlights the health centres that are distantly located from her prospective users. For travel time; 10 health facilities recorded negative scores indicating the difficulty in which prospective users of the facility undergo in terms of longer time spent to commute to the health centre. This of course might be attributed to poor travel route and poor road condition linking the health facilities with their prospective users.

Essien (2010) had earlier documented that facilities located off-road poses serious accessibility problem to its end users. Furthermore, as data in Table 4 revealed, 16 Health facilities had negative Z-scores on "travel cost". This implies that those health facilities attracted higher travel cost to its end users. The high travel cost to these health facilities are functions its poor linkage with the paved roads and lack of transport services to the facilities.

Consequently, users had to pay higher fares to reach the facilities, regarding "waiting time", 10 health facilities were identified with negative/lowest Z-scores. This means that these health facilities are noted for keeping patients waiting for longer time before attending to them. Earlier, in the discussion, we had noted that longer waiting times are associated with health facilities with shortage in health workers and poor service

delivery culture of the workers. In Table 5, the lowly performed health facilities on the four criteria used has been displayed and recommended for intervention in order to enhance their accessibility to users.

Table 5: Summary Performance of the Health Facilities on the Measures of Accessibility

Accessibility Measure	No. of Health Centre with Negative Z-Scores	Health Centres with Negative Z-scores
Travel Distance	22	Nko, Nsan, Oma, ikotUbo, AfahaObong, Iko-Eket, Ibaka, Oyubia, Ekeya, Ekim, Esuk Oro, IduaAssang, IkotEse, Akai Uro, ItakAbasi, Etebi, Ekparakwa, Ibianga, Asakap, EkpeneAbia, IkotEtetuk, IkotAkan, Mbiaso.
Travel Time	10	Nko, IkotAbia, MbakItam, Oma, Idoro, Ndiya, Etebi, ikotAyan, IkotUdoe, IkotEtetuk.
Travel Cost	16	Nko, IkotAbia, Nsan, MbakItam 3, Idoro, Ndiya, IkotIyan, Ibedu, IkotUdoe, IkotUdoOssiom, Efa, IkotObioInyang, Amadaka, NungUdoeItak, IkotAkan.
Waiting Time	10	Nko, IkotAbia, Nsan, MbakItam 3, Oma, Ndiya, IkotUbo, Etebi, IkotIyan, IkotUdoe.

Source: Culled from Table 4.

Table 5 also displays the overall level of accessibility of the health facilities. This was achieved by aggregating the Z-scores for the four measure of accessibility. The size of the aggregate score is used to interpret the relative accessibility of the health faculties. The simple principle is that higher aggregate scores represent an enhanced accessibility level of the facilities. However, for the purpose of classification and mapping, a researchers' made classification scheme was adopted as follows: aggregate scores less than 2.50 – low accessibility level; aggregate scores between 2.50-4.50 represented moderate accessibility level while aggregate scores greater than 4.50 depicted a relatively high accessibility level.

Based on the above, 23 health facilities representing 42% of total were groups as lowly accessible health facilities; 31% were classified as moderately accessible health facilities while 27% were grouped as highly accessible health facilities. The summary of the accessibility classes are presented in Table 6 and Figure 3.

Table 6: Summary of Accessibility Levels of Health Facilities in the Study Area

Accessibility Levels	No. of Locality	Percentage
<2.50 (low)	23	42
2.50 – 4.50 (Moderate)	17	31
>4,50 (High)	15	27
Total	55	100

Source: Author's Analysis, 2018.

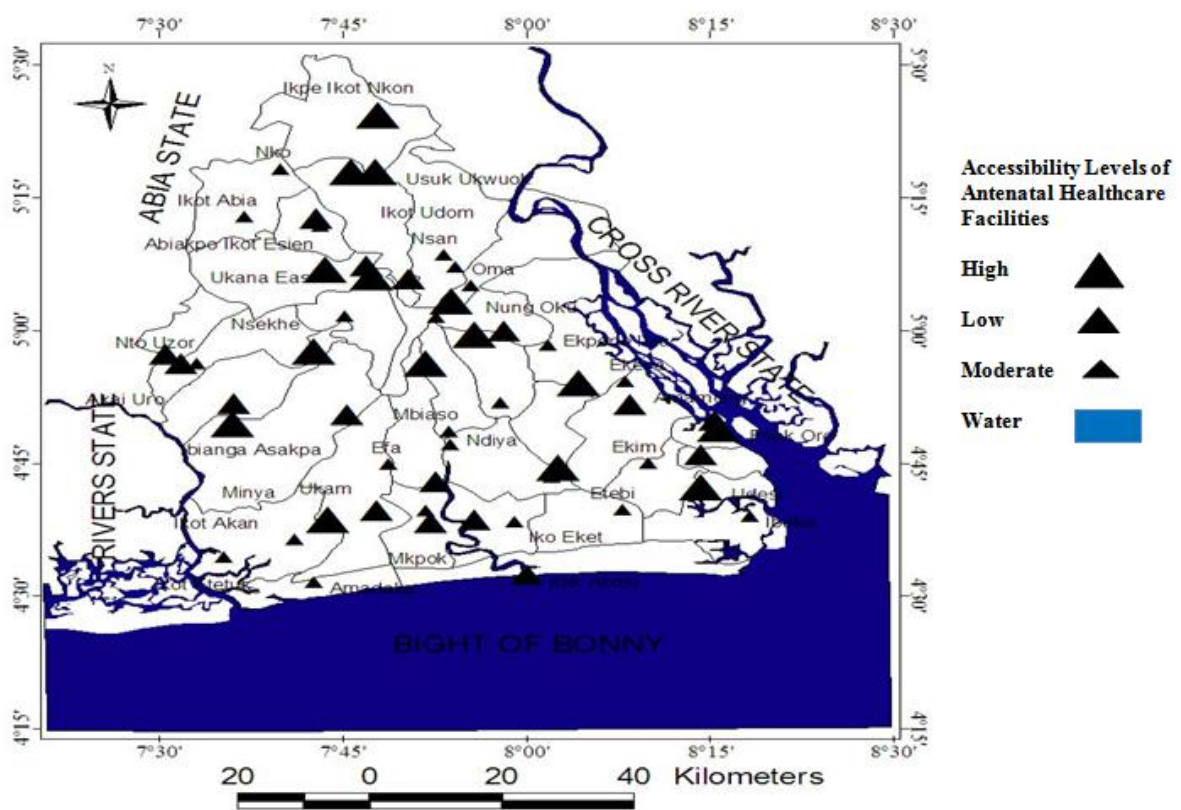


Figure 3: Accessibility of Antenatal Health Care Facilities in the Study Area

The planning implications of these findings are critical and enormous. Health care facilities planning in Nigeria has hitherto been relegated as a mere academic exercise. The recommendations and principles enunciated in different research publications had hardly been considered by policy makers in Nigeria. Facilities allocation in Nigeria has always followed the “carry go” political slogan and fails to address core issues of equity, affordability and accessibility to end users. The findings and recommendations of this study calls for a strong political will to address the accessibility problem of the rural.

VII. CONCLUSION AND RECOMMENDATIONS

This study has richly demonstrated the accessibility status of antenatal health care facilities to rural women. The paper has also x-rayed both the mobility and accessibility profile of the pregnant women in the study area. It is clear from the findings of this study that the study area and Nigeria ranks low on nearly all indices of primary health care facilities performance particularly on accessibility of facilities to pregnant women. Though effort has been made to multiply and revive Primary Healthcare across the country, policy gaps remain in achieving equitable distribution and provision of Primary Health Care for the people of rural AkwaIbom State and Nigeria. In view of the importance of accessibility to Primary Health Care for improved health outcome for pregnant women, the following recommendations are put forward:

- i. Accessibility to antenatal health care services can be improved by expanding the service network beyond health centres. There is need to adopt mobile antenatal health facilities and the services extended to cover home service, community and even workplace.
- ii. One way of ensuring minimal distance between health facilities and the prospective users is by establishing the limits of a catchment area of a health facility based on distance patient have to travel to obtain health care service.
- iii. Poor road network, poor linkages, off road location of health facilities are among the factors that increase the burden of travel time and travel cost to health facilities. The current proposal by the Federal Republic of Nigeria to open up and upgrade feeder roads in rural Nigeria in order to evacuate agricultural products for processing if followed up with action can ameliorate travel burden of rural people and improve their access to health facilities.

- iv. The mobility profile of the pregnant women represents the general mobility problem in rural Nigeria. To improve access to health facilities, the mobility of rural households need to be enhanced by distribution of bicycle, motorcycles and tricycles as part of constituency projects of the political class.

REFERENCES

- [1]. Akwalbom State Ministry of Health (AKMOH) (2014), List of Health Facilities as at December, 2014.
- [2]. Anarfi, J. K. and Ahideke C. (2006).Improving the Health of Children among the Urban Poor in the City of Accra, Ghana, *African Population and Health Research Center, ISSER*.
- [3]. Asiiimwe, K. J. (2010). Utilization of antenatal services among adolescents in Western Uganda: *International Journal of Gynaecology and Obstetrics*, 90,(4):110-132.
- [4]. Atuyamber, L., Mirembe, F., Johansson, A., Kirumira, E. K. and Faxelid, E. (2005). Experiences of Pregnant adolescent –voices from Wakiso District, Uganda: *African Health Sciences*, 5(4):304-309.
- [5]. Awusi, V. O. (2009). Determinants of Antenatal Care Services Utilization in Emevor Village, in Nigeria. *Benin Journal of Postgraduate Medicine II*.
- [6]. Babar, T. S. and Hatcher, J. (2004). Health seeking behaviour and health service utilization in Pakistan: challenging the policy makers, *Journal of Public Health*, 27, (1) 49-54.
- [7]. Becker, S., Peters, D. H., Gray, R. H., Gultiano, C. and Black, R. E. (2008). The Determinants of Use of Maternal and Child Health Services in Metro Cebu, the Philippines, *Health Transition Review*, 3, (1), 7-89.
- [8]. Benefo, K. D. (2006). The Community-level effects of women’s education on reproductive behaviour in rural Ghana, Demographic Research, Max. Planck Institute for Demographic Research, Rostock Germany, 14(20) 485-508.
- [9]. Beutel, J. (2001). The Location of Public Facilities in a System of Central Places. An Activity Analysis Approach. *Paper of the Regional Science Association*. 58(3)19-34
- [10]. Bhatia, J. c. and Cleland, J. (2005). Determinants of Maternal Care in a Region of South India, *Health Transition Review*, (5) 127-142.
- [11]. Daskin, M. S. and Dean, L. K. (2004).Location of Health Care Facilities. *International Series in Operations Research and Management Science*. 70: 43-76
- [12]. Essien, A. U. (2010). Rural Mobility and Agricultural Productivity in Ini Local Government Area, Akwalbom State. Unpublished M.Sc. Dissertation in the Department of Geography, University of Uyo, Uyo.
- [13]. Essien, A.U., Etuk, U. R. and James, E.(2015). Roads and Rural Transformation: Lessons from Akwalbom State, Nigeria. *Journal of Environmental Analysis* 8:16-25.
- [14]. Essien, K, A. (2016).Availability and Utilization of Antenatal Healthcare Services in Rural Areas of Akwalbom State, Nigeria. Unpublished Ph.D Thesis in the Department of Geography. University of Uyo, Nigeria.
- [15]. Essien, K. A. (2018). Spatial Distribution of Primary Health Centres in Akwalbom State, Nigeria. In: Udofia and Ituen (eds), *Geography and National Development* Uyo: Ediovine Ventures Ltd.
- [16]. Essien, K. A., Etok, U. S and Effiong, M. I. (2018). Knowledge, Notions and Practice of Family Planning among Rural Women in Akwalbom State, Nigeria. *International Journal of Social Sciences*, 12(2): 66-81.
- [17]. Essien, K., Etuk, P. and Effiong, M. (2019). Utilization of Antenatal Healthcare Services among Rural Women in Akwalbom State, Nigeria. *Nigeria Journal of Agriculture, Food and Environment* 15(1):7-19.
- [18]. Ghana Ministry of Health (GMOH) (1999) Medium Term Health Strategy towards Vision 2020, Accra Ghana.
- [19]. Inyang, I. B. (2010). Healthcare Services in Akwalbom State. *A Geographical Perspective*. Usoro, E. and Akpan, P (eds). Enugu: Immaculate Publishers. 272-280.
- [20]. Kasolo, J. and Ampairewe, C. (2000). Knowledge, Attitude and Practices of Women and men towards Safe Motherhood in a Rural Setting. *Social Science Medicine*, 38:(9):1209-22.
- [21]. Magadi, M, Zulu, E and Brocherhof, M. (2003). The inequality of maternal health care in urban sub-saharan Africa in the 1990s. *Population Studies* 57:153-176.
- [22]. Magadi, M. A., Agwanda A. O. and Obare F. O. (2007). A comparative analysis of the use of maternal health services between teenagers and older mothers in sub-saharan Africa: evidence from demographic and health survey s (DHS). *Social Science Medicine* 64: 1311-1325.
- [23]. Majrooh, M., Hasnain, S., Shah, F., Memon, Z. and Siddiqui, A. (2013). Accessibility of Antenatal Services at Primary Health Care Facilities in Punjab, Pakistan. *PLOS ONE* 4(6): e101224.
- [24]. Matous, P. and Mojo, D. (2013) Working Group on Distance Decay. *Journal of Transport Geography* 20:(4) 689-72.

- [25]. Mekonnen, Y. (2003). Patterns of Maternity Care Service Utilization in Southern Ethiopia.Evidence from a Community and Family Survey.*Ethiopia Journal Of Health and Development*.17(1):27-33.
- [26]. Ministry of Health (MOH), (2004).A Strategy to improve Reproductive Health in Uganda, 2005-2010.MOH.July.
- [27]. Nisar, N., and Hite, E. (2010). Factors affecting utilization of antenatal care among reproductive age group women (15-49 years) in an Urban Squatter Settlement of Karachi. *Journal of Pacl Medical. Association* 53(2):47-53.
- [28]. Nwoye, J. (2010). Utilization of Antenatal Care Services among Women of Child Bearing Age in Onitsha North Local Government Area of Anambra State.*African Journal of Reproductive Health* 9(1) 76-102.
- [29]. Obembe, T., Osungbade, K., Olumide, E. Ibrahim, C. and Fawole, O. (2014).Staffing Situation of Primary Health Care Facilities in Federal Capital Territory, Nigeria: Implication for Attraction and Retention Policies. *American Journal of Social and Management Sciences*, 5(2):84-90.
- [30]. Obemeryer, C. M. (1993) Culture, Maternal Care and Women's Status. A Comparison of Morocco and Tunisia, *Studies in Family Planning* Vol. 24, No. 6 pp. 363.
- [31]. Ojong, O. and Eni, D. (2011).Distribution and Utilization of Health Facilities in Calabar, Nigeria.*Annals of Humanities and Development Studies* 2(1).
- [32]. Olufunke, M. and Akintujoye, I. (2012).Perception and Utilization of Traditional Birth Attendants by Pregnant Women Attending Primary Health Care Clinics in a Rural Local Government Area in Ogun State. *International Journal of Women's Health* 4:25-34.
- [33]. Tawiah, E. O. (2011). Maternal health care in five sub-Saharan African Countries, Regional Institute for Population Studies-University of Ghana, Legon; *African Population Studies* 25: 1.
- [34]. Titaley, C., Dibley, M. and Oberts, C. (2010). Factors associated with underutilization of antenatal care services in Indonesia; results of Indonesia demographic and health survey 2002/2003 and 2007. *BMC Public Health* 2010: 10:485.
- [35]. Wojuade, C. and Fadere, S. (2014). Accessibility of Health Facilities to Residents in Ibadan, Nigeria.*Research in Humanities and Social Sciences*,4(6): 9-14.

KemfonAniedi Essien. " Accessibility of Antenatal Healthcare Facilities to Women in Rural Areas of AkwaIbom State, Nigeria." IOSR Journal of Humanities and Social Science (IOSR-JHSS).vol. 24 no. 07, 2019, pp. 32-44.