

**Access and Utilization of Modern Health Care  
Facilities in the Petroleum-producing Region of  
Nigeria: The Case of Bayelsa State**

**By**

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**June 1999**

**Research Paper No. 162**

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## **ABSTRACT**

Public policy on health care provision in Nigeria over the years addresses the distribution and spatial equity question mainly at the gross or at best regional level betraying its rather narrow conceptualization of the issue of distribution. This paper uses both cartographic and geographic information techniques to examine the spatial pattern of health care delivery facilities in one part of the oil producing region of Nigeria which in recent years has been characterized by violence as a result of perceived deprivation in the provision of social services by the people. The location of tertiary, secondary and primary health care services in the eight local government areas of Bayelsa state is presented against the background of the pattern of population and settlement location. The study also examined the utilization pattern of the available services by a sample of households in three of the local government areas. The findings show that the available health care facilities in the state are concentrated in the northern part of the state where the population density is lower largely because it is the upland part of the state. Conversely the central and southern part of the state where population and settlement density are higher, there are limited health care facilities located in them. The inaccessibility of the available health care facilities has obviously affected the utilization of modern health care services by a vast proportion of the people in the state who still depend on traditional medical care and self medication. The paper concludes by recommending a policy of deliberate dispersal of health care services to the central and southern parts of the state where there are no facilities at present. It was also suggested that the community members should be trained to provide the needed staff in the primary health centers located in the smaller settlements.

## **INTRODUCTION**

The need for health care varies in space and so the organization of provision necessarily has a spatial component. Neither population totals nor population characteristics such as age, sex, income, occupation, fertility *et cetera* are uniform in space. In a like manner, the physical environment varies in characteristics from place to place and this invariably has implications for the pattern of demand for health care facilities. The spatial dimension is also important in utilization behavior since accessibility is a major determinant of the use of health care facilities (Onokerhoraye, 1997).

In Nigeria explicit consideration has not been given to the need for equity in the planning and distribution of health care facilities over the years. This has led to the emergence of many regions within the country where both public and private health care facilities are sparsely provided. Often regions with difficult terrain and physical environment are neglected. One major region in Nigeria which has generated much interest internally and internationally is the petroleum-producing region of the country otherwise known as the Niger Delta.

Located in the central part of southern Nigeria, the Niger Delta is Africa's largest delta covering some 70,000 square kilometers. About one third of the region is made up of wetlands, and it contains the third largest mangrove forest in the world. It is also home to Nigeria's oil industry. The country is the largest producer of petroleum oil in Africa and among the world's top 10 and almost all of its production comes from the Niger Delta(Fig.1).

Considerable changes are occurring in the ecological environment and in the socio-economic setting of the Niger Delta as a result of both natural and anthropogenic transformations that include: upstream dam construction, coastal zone modification, urbanization, forest clearance, agriculture, fishing, industrial development, population pressure and, quite significantly, exploitation of natural mineral resources, especially petroleum. The eight million people, consisting of several ethnic groups and communities who live in the region, bear the brunt of the social and environmental impact of coastal erosion, flooding, sea level rise, fishing and forest resources losses, oil and non-oil pollution, industrial effluent discharge, emissions, gas flaring, domestic waste disposal, water contamination and over-exploitation of environmental resources.

Concern has been growing over the region, both nationally and internationally, as a result of environmental degradation and conflict over resource exploitation, compensation for use, and rights. In spite of the resource endowment of the Delta, and its immense potential for economic growth and sustainable development, the region is in a static state, and its resource base is severely threatened. Lack of development, stagnation in agricultural productivity, negligible opportunities in urban areas, rapid population growth and tenuous property rights have impacted the resources of the region. With increasing pollution from various oil and non-oil sources, water-related diseases which are quite common, are also exacting enormous social and economic toll in the Niger Delta (World Bank, 1995).

The Niger Delta thus is under increasing pressure from rapidly deteriorating ecological and economic conditions, social dislocation and tension in communities which are not being addressed by current policies and behavior patterns. A recent study of the region by the World Bank (1995) has warned that:

*"An urgent need exists to implement mechanism to protect the life and health of the region's inhabitants and its ecological systems from further deterioration".*

From all accounts, and especially from the level of public outcry and the degree of disaffection among the inhabitants of the oil producing areas, there is indeed a need to reconcile industry and community interest in the Niger Delta, and to ensure that development is managed so that it is both sustainable and contributory to individual and community stability.

It has, however, also become evident that there are inadequate data and information to formulate and implement appropriate policies and programs to manage these

challenges. As the World Bank observed in 1995 in its own remark on the Niger Delta, additional analytical research, particularly spatially-based information, and continuing stakeholder participation, are essential to reaching consensus on issues to be addressed. Following protests and violence in the region in recent years the government now show concern for the welfare of the people in the region. There is plan to give the special commission known as the *Oil Mineral Producing Area Development Commission (OMPADEC)* more funds for the development activities in the area. The Shell Company has also budgeted funds for the development of the region during the next decade.

One of the major problems identified by the people in these areas is the lack of access to health care facilities. At the 1995 stakeholders meeting of the Niger Delta region the participants drew attention to the inability of oil companies to alleviate poverty and the possibility of enhancement of disease as being two critical areas of concern of the people. The people hold the view that because oil operations involve the release of hydrocarbons and other noxious materials into the atmosphere, gas combustion with the generation of intense heat and flares and the disposal of industrial wastes, may affect the fertility of the inhabitants in such a manner that fecundity may fall and the birth of abnormal babies may increase. Also cases of cancers, especially those of the skin may rise and respiratory diseases especially chronic restrictive lung conditions may increase. Anxiety was also expressed regarding the related effect of the oil company operations on nutrition, arising from devastation of arable land, and a degeneration of marine and aquatic life from periodic oil pollution of dry land, swamps, rivers and streams.

Human health is therefore identified by the communities themselves as a major issue which must be addressed to improve their quality of life. However, in order to do this, an overview of available information on the current health profile of the people of the region is important.

It is in this context that this paper focuses on the examination of the distribution, accessibility and utilization of modern health care facilities in Bayelsa State, one of the nine States in Nigeria where petroleum is produced. The present study is therefore policy-oriented as it is designed to provide necessary data for future health planning and provision in a part of the region that is Bayelsa state (Fig.2). Specifically the objectives of the study are as follows.

- Review the main socio-economic and environmental characteristics of the petroleum-producing region of Nigeria.
- Provide geographic information on population and settlement distribution in Bayelsa state.
- Provide geographic information on the location of modern health facilities in Bayelsa state.
- Analyze the relationship between population distribution and health care facilities location.
- Examine the effects of the present patterns of health care distribution on the utilization behavior of the people living in various communities within the region
- Examine the policy implications of the findings for future health care provision and utilization in the region.

## CONCEPTUAL FRAMEWORK

Although health care facilities have considerable impact on the population of any given area because of the almost universal demand for the services they provide, there is as yet no definite theory for the location and distribution of health facilities as in the case with other public facilities. Existing location theories are primarily concerned with agricultural, industrial, commercial and residential activities. There is therefore no clear theoretical basis for planning and evaluating the spatial efficiency of public facilities. The literature is however replete with a wide range of concepts and principles which can provide the framework for the analysis and planning of health facilities in a developing country such as Nigeria. One of these is the central place theory which was articulated by Walter Christaller (1966) to show the relationship between the presence of a service and the population needed to support it, the size of the hinterland within which such a population was contained and the size and the central place itself. In an elegant and rigorous statement Christaller demonstrated how, under specified conditions nested hierarchy of central places would result and these would be distributed in a hexagonal pattern of service areas.

The main thesis of central place theory is that the spatial pattern of central places displays remarkable regularities. In the ideal case, if there is:

- (1) a uniform plane of constant population density and purchasing power;
- (2) a linear variation of transport cost with distance; and
- (3) an equal movement ease in all directions, then central places will spring up at evenly spaced points to serve tributary market areas with goods and services.

The spatial expression of this arrangement is one of regularly spaced settlements or central places with hexagonal market areas. When central places are considered in terms of their mutual relationship, their organization follows a hierarchical pattern. At one extreme are the lowest order central places which provide low range goods and services for very small catchment areas. At the other extreme are the highest order central places, (towns and cities) which supply goods and services of their respective orders, as well as those supplied at lower-order centers. High-order central places have extensive catchment areas.

Within a theoretically ideal landscape, a hierarchy of tiered size-orders of centers will therefore emerge and their trade areas in a regular way. That is to say that the trade areas of smaller centers lie within those of large centers.

The area for which a central place is center is variously described as the complementary region, catchment area, market area or sphere of influence. Distance is important in determining complementary regions, especially **economic distance** measured in terms of travel time or transport cost. Economic distance determines the range of goods and services. In central place theory the range of a good or service is the maximum distance over which a seller will offer a good or service or from which a purchaser will travel for it. The former interpretation relates to the provision of ambulatory services while the latter relates to the utilization of point-located services. There is a functional relationship between the size of a central place, the order of the goods or services it offers and the size of its complementary region. (Onokerhoraye, 1976a 1976b).

The concepts of the **threshold population** and of the **range of a good** which are implied in the central place theory are relevant to the analysis and planning of health care facilities in Nigeria. The **threshold population** for a particular grade of health center is the minimum population that justifies the allocation of scarce financial and personnel resources to the establishment and sustenance of that grade of health facility. Below that level, there are too few patients to allow the health and family planning center to operate with acceptable efficiency. On the other hand, the **range** of a particular category of health facility is the maximum distance which the users will be prepared to travel. This distance will vary with the category of health facility and the mode of travel available to the users.

In line with the postulates of the central place theory, health care delivery facilities in Nigeria which are of three grades (tertiary, secondary and primary) can be conceived as constituting a hierarchical system with the tertiary facilities at the top, the secondary facilities in the middle and the primary facilities below. This hierarchical system is reflected in space by the geographical arrangements of service outlets in which a particular area tend to have numerous primary health facilities, much fewer secondary facilities and very few tertiary facilities if at all. The logic is quite simple. If a particular health planning facility has a very small catchment area, then the area in which it is located shall need many such facilities to cover a given area with services. Conversely, if a facility has an extensive catchment area, there would be need for very few (and probably only one) of such facilities to cover the area in question with services. The frequency of need as well as the type of services rendered therefore determine the spatial pattern of the different types of health care facilities(Fig.4).

The discussion in preceding paragraphs show that for efficiency to be attained in the provision of health care facilities in any locality the **threshold population** must exist within the **range** of that category of health care service. The capability of any geographical area to satisfy the threshold requirements for the provision of a particular category of health care facility will depend on the pattern of population density. There is generally a marked difference between urban and rural areas in Nigeria in terms of satisfying the threshold population requirements. Urban centers are known areas of high population concentration. Consequently it is easier for the threshold populations requirements for the three tiers of health care facilities to be attained in most urban centers. The problem, however, is in the rural areas where settlements are quite small in terms of population size and transport facilities are poorly developed or non-existent.

In most rural areas in Nigeria it is difficult and in most cases impossible to attain the minimum threshold population to provide secondary health care facilities. In such areas it is basically unrealistic to plan the provision of a tertiary health care facility which will achieve the required efficiency in terms of the utilization of scarce resources. The market on the day when it is their turn to hold the market. In this case the traders and sellers move from one market place to another so that they can sustain their continued stay in business by attracting customers periodically. If every settlement attempts to hold its market daily, the threshold population which will ensure a daily availability of customers to sustain the

tracers to make sales will not be attained and so the markets will die a natural death of non-survival (Onokerhoraye, 1970).

The periodic market system as enunciated above can provide the basis for the establishment of mobile clinics in sparsely populated rural areas of Nigeria and indeed other parts of Africa (Fig.4). It is obvious that unless efforts are made to make health care services available to people in sparsely populated areas through a well organized and coordinated mobile clinics the hope of their being accessible to modern health care facilities will take a long time to realize. If the people are aware of the specific days and points where mobile clinics will be stationed, there is no doubt that they will organize themselves to visit such clinics. Apart from taking care of people in sparsely populated rural areas, mobile clinics can also serve mobile farmers and herdsmen in many localities in the country. Obviously such mobile clinics will be linked to specific primary health centers and thereby also linked to secondary and tertiary health centers through the referral system. It is only within such a framework that the much desired spatial equity in the provision of health care facilities can be assured in a less developed country such as Nigeria. It is within the framework provided by the **central place theory** and the concept of **periodic markets** that this study will examine the situation in Bayelsa state.

## **DATA AND METHODOLOGY**

In the study area as in other parts of Nigeria, up-to-date published data on the location of health care facilities are not available. Generally such data by the time they are published are over ten years old or more. Similarly, data on utilization patterns are not often collected by statistical organizations in Nigeria. Consequently in order to achieve the objectives of this study, an attempt was made to collect new data through data mapping and questionnaire surveys of households located at various distances from the available facilities. These were supplemented by pre-survey data collection methods such as inventory of facilities available in health and family planning institutions, participant observations and focus group discussions with the people in the study area. The main elements of the data collected methodology are outlined below.

### **Identification and Mapping of Health Care Facilities**

The first step in the identification of health care centers is to define a health care facility. In this study, a health care facility is defined as all units owned by public and private authorities as well as voluntary organizations and which provides health care services including hospitals, health and maternity centers.

On the basis of the above definition of a health care center, the first stage of the field survey was the identification of all settlements in Bayelsa state with any type of health care outlet as defined above. The identification of these centers was carried out in two ways. In the first place information was collected from available records in government files and from other agencies to identify all the settlements

with health care outlets in the state. Secondly, visits were made to all other settlements with over 5,000 people to seek for information on the availability or otherwise of health care outlets. The purpose of this second approach is to ensure that no settlements with some form of health care outlets are excluded. The combination of the two approaches led to the identification of all settlements (villages, towns, cities) in Bayelsa state where health care outlets of any type are available. The second stage in the identification of health care centers in Bayelsa state entailed the location of all the identified centers (settlements) on the map of the state. This involved the use of the large scale map of the state coupled with data mapping on the field to locate any identified settlement which is not on the existing maps.

### **Participant - Observation and Focus Group surveys**

We recognized the fact that the determination of the quality and acceptance of health care services available in each identified center in the study area will depend partly on the perception of the users or would-be users. It is therefore important that in-depth knowledge about the attitudes of the people towards modern health care services is obtained. As a result, the participant observation and the focus group strategy were adopted in our attempt to interact directly and informally with selected groups of people in the study area.

In view of the sensitive issues involved in this study, it was felt that the first approach to data collection should be through the **participant-observer** method. One simply cannot walk into a person's house in a rural community and minutes after arriving start asking questions about whether or not he or she uses modern health care facilities. Trust and confidence have to be gained from people before such delicate issues can even be raised. Participant - observation is an anthropological research method that requires special understanding and skill. In recruiting people to carry out the work in the various local government areas of Bayelsa state, the following factors were considered: University qualification in the social sciences, research experience and communication skills in the two major local languages spoken in Bayelsa state particularly Ijaw. Maturity was also considered as it was assumed that the people might be reluctant to discuss sensitive issues with young people. Ten participant - observers were recruited, one for each of the 8 Local Government Areas and the remaining two were to assist in the overall supervision of the field research. The participant - observers were recruited from the local government areas where the surveys were carried out so that they do not have to work in an unfamiliar environment. During the two week training of the participant - observers, they were introduced to participant - observation as a method and were given the opportunity to practice open - ended conversational interviews both in the classroom and in the field. The instrument of the participant - observers interaction with the people was an interview guide that was drawn up and translated to the major local languages



The participant observers worked and interacted with the people of the local government areas to which they were sent for about three months during which they familiarized themselves with the people while also collecting situation data from health establishments. The support of local leaders, traditional rulers, chairmen and counselor of local government authorities and other government officials were sought during the process. After three months of participant observation in the study area, a working rapport was established with the various communities and this prepared the way for the focus group discussion sessions and later the administration of the household questionnaire.

The participant-observers became the focus group discussion moderators and facilitators since they were already well known in the communities. There were three types of focus group sessions held in selected communities in the various local government areas. These are as follows:-

- (a) **Focus Group Sessions with Women:** Separate focus groups sessions were held with the women living within selected communities. This was due to the fact that women in Nigeria are always afraid to discuss their knowledge, use and experiences with contraception in the presence of their husbands or other men. Each focus group session had 8 to 12 participants. Also, a female member of the research team and/or a recruited female research assistant/facilitator moderated the discussions during the sessions. The discussions were guided by the discussion guide earlier used by the participant - observers.
- (b) **Focus Groups Sessions with Men in the Communities:** In each selected community a focus group session was also held with the men living within it. Generally about 8 to 12 members were selected. The aim of the focus group session with the men in the rural communities was to discuss their use and non-use of modern health care facilities as well as their views on future adoption, as well as their attitude towards modern health care facilities.
- (c) **Focus Group Session with Community Leaders:** A separate focus group session was also held with leaders of the communities such as the traditional chief and other officials of community organizations in existence. The issues discussed were similar in all the focus groups, but in addition the role which the leaders and those of the various local associations have played or can play in the promotion of modern health care utilization in their communities were sought.
- (iv) **Surveys of Utilization Patterns**

In order to determine the relationship between the location of health care centers of various categories and their utilization by people living in different distances from them, a utilization survey was carried out. This form of survey is important because utilization patterns vary from one locality to another in Nigeria depending on the socio-economic, demographic, cultural and environmental conditions which planners of future health care delivery facilities must recognize. The primary source of data on the relationship between the utilization of health care facilities located in centers of certain categories and the distance of households from these centers was the household questionnaire survey. The questionnaire was administered to female and male members of randomly selected households. In each settlement every ten house was selected for interview and in each house on household was interviewed. The questionnaire is designed to elicit information from them on their attitudes to health care and family planning as well as the distances they travel to receive health care services. The questionnaire focused on the background of the households; their relative location in terms of distance from existing centers where facilities are provided, family planning attitudes and utilization in relation to their distance from the existing centers and their views on the improvement of existing facilities especially in terms of geographical coverage.

Data on utilization patterns in relation to type or size of centers providing health care services and the users residential distances were obtained from a sample of women and men living in settlements located at various distances from the existing health care facilities .

(i) **Sampling Frame for Household Questionnaire Survey**

The sampling frame for the household questionnaire survey was provided in the first instance by the map of all the service centers of various sizes/types/categories as identified in an earlier analysis. Five centers of each type-size/category identified were randomly selected from each local government area in the state to ensure that health care centers of various sizes are selected from all parts of Bayelsa state. Around each center of specific type or rank six concentric circles of about five kilometers apart were drawn. Thus around each selected center the following distance ranges were used.

1. Zone A 0 - 5 km
2. Zone B 6 - 10 km
3. Zone C 11 - 15 km
4. Zone D 16 - 20 km
5. Zone E over 20 km

(ii) **Sample Selection for Household Questionnaire Survey**

From each of the five concentric zones around the - selected settlements of various functional types two settlements were randomly selected using random tables for the administration of the questionnaires. In each settlement random tables were used to select between 10 and 25 households depending on its population size. The sampling frame for the random selection of households is the recent census listing of households which was obtained from the census office in Bayelsa state.

## **Data Analysis**

The data collected were analyzed using qualitative, cartographic and geographic Information system. The data from focus and participant observation surveys were analyzed using largely qualitative method. The first step of the analysis was the transcription and documentation of all the recorded discussions held in the communities. This was followed by a more systematic presentation of the findings in which the views, opinions and consensus reached was codified and analyzed. Secondly, cartographic techniques were used to show the distribution of key elements and variables in the study including population, settlements, different categories of health establishments, spatial patterns of utilization and localities which are at the time of the study are not physically accessible to modern health care services. Finally, the overall visual presentation of the findings and relationships among the key variables in the geographic space of the study areas was analyzed using geographic information system (**GIS**). The overlaying of all the key spatial variables which the **GIS** made possible allowed the study to view these relationships simultaneously in the geographic space of Bayelsa State.

## **THE MAIN FEATURES OF THE PETROLEUM PRODUCING AREAS**

In order to appreciate the development problems and the general deprivation that characterize the petroleum-producing region of Nigeria, it is necessary to outline its main environmental and human characteristics. The major drainage systems of the Niger Delta include those of; a) the Niger River, b) the Ase River, c) the Ethiope River, d) the Warri River, e) the Orashi River, f) the Sombreiro River, and g) the Imo River. The Niger River system comprises two major distributaries, Rivers Nun and Forcados and a myriad of smaller and shallower distributaries. These distributaries end up in the creeks and estuaries characteristic of the tidal flood plain and coastal front of the delta. The other river systems drain the coastal plains to the west and east of the Niger Delta and merge into the network of distributaries, creeks and estuaries that make up the delta.

The Niger Delta lies mainly in the wet equatorial climatic region. Because of its nearness to the equator, cloud cover is very high and, indeed, certain parts of the delta are under permanent cloud cover throughout the year. Therefore, sunshine hours are low and the air

is damp for most of the year because of the very high relative humidity of the air. Temperatures are moderated by the cloud cover and by the generally damp air. Still, mean annual temperatures are as high as 24-32°C. Rain falls every month of the year with a short dry spell in the months of January to March in some parts. But, in the interior locations at the apex of the delta, the dry season may be up to six months long between October and March. Mean annual rainfall varies from about 4500 mm in Bonny to about 2500-3000mm in the Warri to Port Harcourt axis, and 2000 mm in the hinterland.

The four major relief regions are:

- *the riverine floodplain* extending from the Niger-Anambra confluence to about the Nembe - Port Harcourt axis which may be subdivided into (a) upper riverine deltaic plain from the Niger-Anambra confluence to the Bomadi-Yenagoa axis, a comparatively well-drained narrow floodplain, and (b) lower riverine deltaic plain which is a poorly drained transitional zone between the riverine floodplain and the mangrove swamps to the south.
- *the tidal floodplains* lying behind the beach sand ridges fronting the Gulf of Guinea and which extend for 38-43 km along the Benue and Sombreiro river estuaries respectively.
- *the beach/barrier ridge islands* along the coast made up of a continuous beach line along the coast with white beach sands, and barrier islands and sand ridges rising some 4 m above the sea, and
- *the higher fringing plains*, generally well-drained, and lying at the foot of the sandstone hills and ridges may be subdivided into a) Warri Plain to the northwest covering the upper Ase and Ethiope river basins, and b) Sombreiro Plain between the Orashi and Sombreiro rivers to the northeast.

In spite of the difficult poorly-drained environment, very few parts of the Niger delta have been spared from human interference. Hence, there are very few areas of pristine natural vegetation left in the Niger Delta. The vegetation over much of the riverine floodplains and the Sombreiro-Warri plains is made up of a mosaic of arable farmlands, tree crop plantations and patches of natural vegetation. The arable crops include cassava, yams, maize and cocoyam, pine apple, pepper, tomatoes, rice and leafy vegetables. The tree and fruit crops include the oil palm, rubber, cocoa, plantain, pawpaw, mango, guava, and citrus.

The remaining natural vegetation in the Niger delta may be classified into five types/zones:

- *moist lowland rain forests* occupying the upper riverine floodplains and the Sombreiro-Warri plains,
- *freshwater swamp forests* found in the lower riverine floodplains and along the river valleys,
- *mangrove zone* comprising (a) mangrove forests in the upper tidal zone, and (b) mangrove swamps in the lower tidal zone and along distributaries and estuaries, saltmarsh and tidal mudflats along the shorelines and certain estuaries, and coastal forests and thickets on the barrier sand ridges.

As can be deduced from the discussion above, the Niger delta area is well-endowed with both renewable and non-renewable natural resources. The major *non-renewable resources* include the fossil fuels, crude oil and natural gas, and constructional materials such as gravel, sand, clay and earth. Sand is obtained both on land and from river beds.

The major *renewable* natural resources include water resources, a wide variety of economically important timber species, polewood, fuelwood; edible vegetables, fruits, nuts and seeds; medicinal plants, palm wine and other palm products; fibers; and tannin. There are bamboos and grasses which are useful for making a wide variety of products especially in local cottage industries. The forests also harbor a wide variety of wildlife including mammals, reptiles, birds, insects and invertebrates quite a number of which are endemic. There is a rich aquatic life in the Niger Delta yielding abundant resources of shell and fin fish and crustacea.

Inadequate transport system has been a major constraint on social and economic development in the Niger Delta region. Even today, in spite of the remarkable developments brought about by the oil wealth, accessibility is still very poor. Only the areas within the upper riverine floodplain unit have had a marked improvement in their road transport network; whereas areas within the lower riverine floodplain, the tidal flats and below are still largely inaccessible.

In the heartland of the delta, water transportation, especially by means of the local dugout canoes, is predominant. The waterways of the delta have long been famous as major trade routes in southern Nigeria. During the pre-colonial period the inland waterways of the Niger Delta, known then as the "oil rivers", controlled the trade in palm oil with the European traders although their importance in international trade has declined, today, the inland waterways are more important to the local economy since the road network is limited to the upland area. They are the dominant channels of communication and interaction between the different indigenous peoples of the delta region.

The major human activities in the Niger delta may be considered under three main headings: primary, secondary and tertiary activities. The major traditional primary activities include fishing, lumbering, and farming. In modern times, quarrying, river sand mining, and oil exploration have become major production activities in the region. The major secondary activities include manufacturing, oil refining and various traditional industrial activities (weaving, carving, dyeing, smiting, etc.) found in the informal sector of the economy. Most of the modern industries are concentrated in Port Harcourt, Warri, and Ughelli. Tertiary activities include commerce, administration, banking and finance, information, transportation and local traditional marketing through the traditional rural periodic markets and the urban markets. The major industrial centers are also the major commercial centers.

Outside the major urban centers of Port Harcourt, Warri, Ughelli and a few other places, the level of infrastructural development and of the provision of social amenities is very poor.

Indeed, paradoxically, many parts of the Niger Delta do not have access to safe, potable

drinking water and electricity. This is an area with abundant surface and groundwater reserves and much gas and crude oil deposits..

Water-related diseases are the most critical health problem in the Niger Delta and the health issue most closely linked with environmental degradation. Although few water-quality studies exist, the data available on water-related diseases, water supply, and waste-management practices illustrate that water contamination and associated diseases are a problem throughout the Niger Delta region. Water-related diseases represent at least 80 per cent of all reported illnesses in the region. Poor sanitation and lack of clean water are primarily reasons why feces transmitted diseases are common in the region. While water is ubiquitous in the region potable water is difficult to find, especially during the dry season and leads to disease outbreaks. In addition, 30 per cent of the region is located in brackish or saltwater ecosystems as noted earlier. During the wet season, the high water table and flooding degrade water quality by increasing feces and waste contact and creating pools of stagnant water.

Malaria is by far the most common cause of morbidity at the various health establishments in the region. This is followed by diarrhoeal diseases such as dysentery, typhoid, and cholera. The people of the Niger delta still suffer from other debilitating diseases such as malaria, and yellow fever. Malnutrition is a major problem, especially among children where about 10-12 per cent of them are severely malnourished, 18-23 per cent moderately so, and 30-40 per cent mildly malnourished. These data are supported by a perceived lack of correct breast feeding methods and household food insecurity.

## **POPULATION DISTRIBUTION AND THE LOCATION OF HEALTH CENTRES IN BAYELSA STATE.**

Population growth in Bayelsa state, as in other parts of Nigeria, is influenced by two historical factors; declining mortality and stable high fertility level. The main cause of rapid population growth in Bayelsa state since the beginning of the 20<sup>th</sup> century is the abrupt decline in mortality, particularly infant mortality which occurred after the Second World War. This decline has been influenced by factors such as improved standards of hygiene, rising standards of living, and the emergence of peace and political order which reduced inter-community wars. In addition to mortality decline, high fertility has remained consistent in the area as in other parts of Nigeria. The universality of marriage and early marriage have been important factors in high fertility in the area. Apart from natural population increase, Bayelsa state also experiences a relatively high level of immigration as a result of oil development. Until recently migration in the state followed the common developing country pattern of young people leaving their rural villages to seek work in larger urban centres. However, limited prospects in urban areas have convinced many of them to remain in their villages. Thus the state has an average population growth rate of about 3 per cent which is higher than the national average of about 2.5 per cent.

Bayelsa state had an estimated population of 2,105,135 people in 1998 and these are distributed among the eight local governments in the state as indicated in Table 1. It indicates that about 50 per cent of the population in the state are concentrated in two local government areas that is Southern Ijaw and Nembe. Three other local government areas

accounted for about 37 per cent of the population while the balance of about 13 per cent was accounted for by the remaining local government areas, that is, Ogbia, Yenagoa and Kolokuma Pokuma. Population density is highest in Brass and Nembe local government areas with overall density of 433.51 and 499.61 per square kilometer respectively. They are followed by Sagbama local government area with a density of 301.07 per square kilometer. The remaining local government areas have densities of less than 200 persons per square kilometer. As reflected in Fig.6, the local government areas with the highest density are in the southeastern part of the state while the central area has moderate population density. The Southwest has the least population density in the state. The location and distribution of settlements of various sizes has considerable impact on the overall distribution of social services such as health care facilities.

Bayelsa state is largely rural with scattered settlements mainly in small villages whose population range from 20 to 1,000 people most of whom are farmers and fishermen/women. An examination of the settlement size distribution in the state shows that there are about 1,125 settlements of various sizes in the state but only about 38 per cent that is 422 have populations of over 1,000 people. The 422 settlements accounted for about 1.4 million of the 2.1 million people in the state in 1998. This indicates that about 67 per cent of the population in the state live in settlements of 1,000 and above. On the other hand the remaining 33 per cent live in settlements of less than 1,000 people. Further examination of the settlement size of the state shows that only 28 settlements have population of 10,000 people and above while 61 settlements have population of between 5,000 and 10,000. Fig.7 indicates the location of the settlements with 1,000 people and above and it indicates a wide distribution of these settlements with a greater concentration in the southeast where as pointed out earlier population density is highest. The specific location of settlements within each local government area as indicated in Fig.7 shows that the generally low relief and poor ground drainage in most parts of the state have meant that settlement locations have been determined by the existence of suitable dry sites on the islands and low mounds that rise above the generally poorly-drained depressions and the valley bottom lands. Thus settlements occupy isolated dry sites within the swamps. Large settlements are found in the northern parts of the state where drainage conditions and accessibility are better. The biggest settlements are located at the end of the navigable limits.

It is within the framework of the present pattern of settlement and population distribution that the 1998 data on health care provision and distribution is examined in Bayelsa state. The major component in the health care delivery system of Nigeria comprise the tertiary and secondary health establishments otherwise known as specialist and general hospitals respectively. These hospitals provide the vast proportion of the "modern" or orthodox health care services because people don't generally visit lower cadre health centers where facilities are limited. Lower cadre health establishments known as primary health centers don't have the required facilities and personnel to carry out minimum health care services. In most cases they may not function for weeks or months because of lack of personnel or facilities to

provide services. This reinforces the importance of specialist and general hospitals in the health care system of any part of Nigeria. There were six functioning tertiary and secondary establishments in Bayelsa state in 1998. These establishments which comprise one tertiary health center and five secondary centers are located in four of the eight local government areas. As indicated in Fig.8 they are located in the eastern part of the state while the western part has no single hospital located in it. The map shows that South Ijaw local government area which has the highest population in the state has no hospital. Similarly Brass local government area which has the highest population density has no secondary health center. On the other hand, Yenagoa local government area that has only about 6 per cent of the population in the state has three hospitals. It is the major settlement and capital of the state. It is accessible to land and water transport. The distribution pattern clearly shows that the western and southern parts of the state that have over 60 per cent of the population are far from the existing hospital facilities. Primary health centers in Bayelsa state as in other parts of Nigeria include clinics, health centres, dispensaries and maternity centers. Generally they are expected to serve as the first point of call whenever people fall ill especially in the rural communities where there are no hospitals. However, people resort to the private drug sellers who have shops in the areas. The facilities in the primary health centers are largely managed by nurses, midwives and community health workers. The distribution and accessibility of these health services is therefore important in the rural communities. Fig.9 shows the location of the 29 functioning primary health establishments in the state in 1998. It again shows the concentration of most of them in the northeastern part of the state while the south with a greater population density has fewer primary health centres. Yenagoa local government area again has a disproportionate concentration of the primary health centers relative to its population size especially since the local government area also has most of the hospitals.

The main health care facilities in Bayelsa state are not only poor compared with other parts of Nigeria but there is also inequity in their distribution within the state. There were 39 medical practitioners in the state in 1998 which gives a ratio of one medical practitioner per 53,977 persons. This ratio is by far higher than the national average of one medical practitioner per 12,492 for the same period. This is a reflection of the degree of neglect in the region compared with other parts of the country. Further examination of the distribution of medical practitioners in Bayelsa state indicates that they are concentrated in four local government areas that is Yenagoa, Nembe, Ogbia, and Sagbama. The data further shows that 25 of the 39 medical practitioners in the state are located in Yenagoa local government area. In other words over 64 per cent of the medical practitioners are located in one out of the eight local governments. The distribution of hospital beds also show similar disparity between the state and other parts of Nigeria as well as within the state. The hospital bed population ratio in Nigeria is one per 1,700 people in 1998 compared with the figure for Bayelsa state which is one per 6,500 people. The distribution of the hospital beds within the state shows that 196 of the 323 hospital beds are in Yenagoa local government area while the remaining 127 are distributed among the three other local governments that have hospitals. The



situation with respect to nurses and midwives is essentially the same in terms of inequity in their distribution. The population per nurse /midwife in Nigeria in 1998 is 2,125. The ratio in Bayelsa state is one to 8,418. Again over 70 per cent of the 328 nurses and midwives are concentrated in the four favored local government areas of Yenagoa, Sagbama, Nembe and Ogbia.

One major factor that has contributed to the prevailing pattern of the location and distribution of health care facilities in Bayelsa state is the geographical and environmental characteristics of the state. Local government areas that are in the northeastern part of the state have been able to attract attention in the provision of health care facilities because they are closer to the mainland area thereby making them more accessible than the more riverine local government areas. The few motorable roads in the state are located in this part of the state. Bayelsa state has an intricate network of rivers, streams and creeks. The result is that road transport is virtually non-existent in the southern part of the state where incidentally population density is highest. The difficult terrain and poor road network pose tremendous impediments to mobility in the area.

It could be argued that water transport system should, therefore be developed to serve the transport needs of the area. The problem with this is that by its very nature of being slow and in the peculiar Nigerian case, expensive it can hardly form the basis of speedy and regular contact among the numerous communities within the state and between them and other parts of the country. This has been a major hindrance to the equitable provision of social services including health establishments in the area. Closely related to the transportation problems of the state which affects the equitable distribution of health establishments is the settlement pattern. The dominance of small communities that cannot sustain primary social services within a minimum travel distance of 10 kilometers has been a major factor influencing the inequitable distribution of health establishments. The issue is that the communities are so small to economically sustain even a primary health establishment on their own. There is therefore need for many of such communities which are close to one another to utilize any health establishment in their locality. This is again affected by the slow transport system in the area as discussed earlier.

Another related factor is that attracting health personnel to these isolated communities has always been a problem as medical staff particularly medical practitioners and nurses are not always willing to work in these areas. In many cases medical personnel posted to health establishments in these areas have resigned from their employment to avoid working in the area. Finally there has been reports of poor utilization of facilities which discourages staff posted to these areas from remaining in the communities doing nothing. The combination of these factors appear to encourage the perpetration of the existing inequity in the distribution of health facilities in the area. The circle must have to be broken to make health care accessible to the people of the region by a deliberate policy of dispersal of health establishments.

## UTILIZATION PATTERNS OF MODERN HEALTH FACILITIES

The focus of our discussion so far has been on the distribution of health care services among the eight local government areas in Bayelsa state. It has been observed that certain localities within the state are not quite accessible to modern health care facilities. The data used in the analysis are derived from the household survey carried out in the 1997 as pointed out earlier in this paper. A total of 4,000 respondents were involved in the questionnaire survey which covered all the eight local government areas in the state. The size of the sample in each local government area reflected the overall population size. The survey explored the awareness of the respondents of the various types of modern types of health services in their locality, the state and beyond. The findings as indicated in Table 2 show that only 15 per cent of them indicated any knowledge of tertiary health care establishment in the state and beyond. This can largely be explained by the fact that until 1996 there was no tertiary health establishment in the the state . Thus the concept of a tertiary health care establishment is knew to most of the people in the area. This is confirmed by the fact that most of the respondents that indicated knowledge of the existence of tertiary health establishments are in Yenagoa, Ogbia, Sagbama and Kolokuma - Opokuma local government areas to the north of the state where most of the health establishments including the only tertiary health center in the state is located. As far as knowledge of secondary health care facilities is concerned, the findings of the survey indicates that an overwhelming proportion of the respondents are aware of the existence and even the location of the general hospitals in the state and in the adjoining states It was found that over 85 per cent of the respondents in all the local government areas have knowledge of health care facilities provided by general hospitals. As expected there is a slight variation in the proportion of the respondents with knowledge of secondary health care facilities among the local government areas. The proportion is higher in local governments with secondary facilities than those which don't have any located in them. The survey shows a wider knowledge of primary health centers among the people in all the local government areas because they are more widely distributed than the tertiary and the secondary health establishments. In all the local government areas in the state over 96 per cent of the respondents indicated knowledge of the existence of primary health It is against the background of the level of the peoples awareness of the existence of the various types of modern health care facilities in the area that the examination of their utilization pattern is carried out in this section.

The findings of the survey as indicated in Table3 shows that only 5 per cent of the respondents have ever visited a tertiary health establishment for medical attention while the proportion for secondary health establishments is 2 per cent. The percentages for primary health establishments is 58 per cent. The spatial pattern of the utilization of the various categories of health establishments by the respondents again show marked differences between local governments where tertiary and secondary health establishments are accessible and those where such facilities are not accessible. Thus local government areas in the northwest part of the state have a higher proportion of their respondents indicating the use of tertiary and secondary health care facilities compared with those which don't

have such facilities accessible to them.

However, the findings show that within the individual local government areas, respondents in settlements where primary health establishments are located indicated their use of these facilities compared with those in communities where there are no such establishments. There is no doubt that many of factors influence the utilization pattern of modern health care facilities in Bayelsa state including the level of formal education, level of income, cost of the services, facilities available in the health establishments, availability of alternative medical attention in the locality, perception of the attention received in the modern health establishments and the distance to the centers in terms of travel cost and time of reaching the health center. However, one of the most important determinant of the use of the modern health establishments is their accessibility to the people. The knowledge of the existence which eventually influences the use of the modern health facilities is largely dependent on the accessibility of the facilities. It is against this background that an attempt is made to examine the spatial structure of the utilization pattern of modern health establishments by respondents in three local government areas in the state. The local government areas selected are Yenagoa which represents an area where a large proportion of the respondents are relatively accessible to all categories of modern health care facilities; Brass and Southern Ijaw local government areas which represent localities with poor modern health facilities despite the relatively high density of population in them.

With respect to the utilization of tertiary and secondary health centers, The findings as reflected in Fig.10. shows that respondents in communities located near the hospitals indicated that they visit the hospitals in which case communities located far away from the existing hospitals don't generally visit or use the facilities in the hospitals. Thus in Ijaw South local government area where there is no hospital, respondents in communities in the northern part of the local government which are nearer to the hospitals located in Yenagoa local government area indicated their use of hospital facilities. On the other hand, respondents in communities in the south of the local government area which are far from hospitals don't use hospital facilities. The situation in Brass local government area is essentially similar to that of Ijaw South local government area. Fig.10 indicates that respondents in communities in the north and northeast of the local government area which are nearer to hospitals in neighboring local government areas indicated their use of hospital facilities compared with those in the central and southern part of the local government area. In Yenagoa local government area, which has the concentration of hospitals, the respondents in all the communities indicated their use of hospital facilities within and outside the local government area including other parts of Nigeria. The pattern of utilization of hospital facilities by the sample population is a clear indication that physical accessibility is a major determinant of the use of hospital facilities. In other words if modern health facilities are made accessible to the people there is possibility that they will be used by them. The findings indicate that some respondents traveled long distances of up to 60 kilometers to visit hospitals and these entail in some cases two days journey. The situation with regard to the use of primary health centers as reflected in Fig.11 is significantly different from that of secondary health facilities discussed above. It shows the limited coverage of the primary health centres. Most of the respondents who visited the centers

went to the nearest ones to their communities. Generally most of the visits were within the range of five to ten kilometers. This is largely explained by the fact that the people believe that these centers carry out limited functions. The focus discussion shows that people prefer self medication or visits to traditional healers than travel long distances of over 30 kilometers in some cases to visit primary health centers. Ideally therefore community members are not interested in travelling outside their communities for primary health care.

Fig.12 uses GIS to summarize the overall patterns of association among the various health availability and utilization indicators presented earlier in this section in relation to the population distribution pattern within Bayelsa State. It reinforces the point already made above with respect to concentration of the facilities in the upland parts of the state, that is the northern section. It shows that both hospitals and primary health centers are focused in the northern part of the state relative to the population pattern which has a greater concentration in the south. The GIS map has brought clearly the discrepancy between the population distribution and the location of health facilities.

## **THE PEOPLE'S ATTITUDE TOWARD MODERN HEALTH FACILITIES**

The discussion so far in this paper shows that a significant proportion of the people have knowledge of the existence of modern health care facilities as reflected in their identification of secondary and lower cadre primary health establishments. The facilities for modern health care services are largely concentrated in the upland localities in the state and this tends to make them inaccessible to most of the inhabitants in the southern parts of the state where population is higher. This has affected the level of awareness accorded to them by most rural dwellers as reflected during the focus group discussions. Ideally anyone who requires medical treatment should first visit a health center from where he could be referred to high level health care institutions but the findings of the focus group discussions show that this is not the case. Rather, as the focus group discussion shows, it is a small proportion of the people who are sick that follow this ideal pattern reflecting comparatively less attention being paid to modern medical care in terms of the overall treatment of diseases in the area largely because of their non-availability. The focus group discussions in various communities in the state also show that self-administered traditional remedies are used widely to cure various illnesses. Generally the users collect them directly from plants and other herbs which they believe will cure their illness or those of their families. In a few cases the traditional remedies are provided by relatives, friends, neighbors, or directly from traditional practitioners. The list of ailments handled by traditional remedies directly by those afflicted as the discussion shows include; stomach-ache, pile, malaria, cold, period pain, high blood pressure, high temperature, toothache, pneumonia, sore throat, gonorrhoea, vomiting, headache and convulsions.

The list of ailments treated largely by self-administered traditional remedies is a reflection of the extent of the people of Bayelsa state's knowledge of medicinal plants. This is a reflection of the well known fact that long before modern medicine was introduced into the

state the people had been treating themselves with herbal remedies. This knowledge is still extensive although there are indications that it is diminishing and weakening amongst the younger generations.

Apart from self-medication with traditional herbs, visits and consultations with traditional medical practitioners was found to be widely used by those who took part in the focus group discussions in different parts of the state. The people are quite knowledgeable about the presence of traditional medical practitioners in their localities. Discussions and observations carried out during the field survey show that both men and women, illiterate and educated patronize traditional medical practitioners. According to the conclusions which emanated from the focus group discussions what distinguishes the traditional medical practitioners from others in the various communities is not only their apparent ability to diagnose illness and to prescribe remedies but also their perceived powers to prevent misfortune through protective medicines. The people themselves are able to distinguish between the traditional medical practitioner who uses herbs to treat his/her patients and the witch doctor. The former is regarded as acceptable to the vast majority because they base their diagnosis on examination of the patient and on the reported symptoms. The treatment given was primarily herbal although some used a mixture of traditional and modern remedies in treating their patients. In some cases people consulted a diviner. These traditional practitioners use a combination of techniques to determine the cause of their patient's complaint: bone-throwing, questioning, examination and knowledge of the patient's circumstances. Their treatment could be herbal, but quite often diviners prescribe special 'magical' protection of persons, livestock and/or property against sorcery, evil spirits or bad luck. Quite often a 'feast for the ancestors' is recommended to placate any discontented ancestor who may be the source of ill. Although some of the people in the area use hospitals and primary health centers such as dispensaries and maternity clinics, as discussed earlier, the people were critical of the services received from these modern health institutions. With respect to dispensaries and health centers, the people agree that service is quicker. With fewer people to deal with, lines are generally shorter and people are given attention earlier. They also claim that the cost is cheaper for treatment than hospitals. The most common complaint concerning primary health centers is that they are not easily accessible because they are located in settlements where there are no fast means of public transport. In such circumstances it is easier to travel to the distant hospitals that are located in areas that are accessible by fast means of public transport.

Perhaps the most serious complaint common to clinics and hospitals concerns the way in which staff treat patients. Almost without exception, people who used hospitals and clinics complained that they were treated 'rudely' or 'roughly' by the staff. Nurses were described as being impatient and unsympathetic by all but a few of those interviewed.

The most common complaint about hospitals is that of queues. Many people claim that at times the queues are so long that one can spend the whole day waiting without being seen by a doctor or nurse. This creates particular problems for those who have traveled far and

who depend on catching public transport home. Once they miss it they are forced to spend the night in the locality in which the hospital is located. People who are ill find waiting in a queue particularly tiring and they complain bitterly about the queue systems that exist in the hospitals. The system forces a person to queue three times; first one queues for 'registration'; then one queues to see a nurse or doctor and finally one queues at the dispensary to get medication.

The problem of long queues is aggravated by poor service. People complain about standing in line for hours only to be told that the medication the doctor has prescribed is not available. Others queue to see a doctor only to be told he or she is not available. With doctors being in short supply, the majority of those using clinics and hospitals are attended to by nurses. The hospitals' system of screening patients, so that only serious cases are dealt with by doctors, is unpopular. People feel entitled to the best services available and are easily upset if they are sent home after being seen only by a nurse.

Once in the consulting room, patients complain that they are not examined physically (by palpation or with a stethoscope). They describe how nurses and doctors ask them what is wrong and then quickly write something in their card before dismissing them without examination or explanation. Although modern medicine also uses physical examination, the commonly used method of depending on a patient's case history (given orally by the patient) for prescribing a treatment, goes against the grain of traditional medical practice. Instead of the practitioner telling the patient the nature and cause of his/her ailment, the patient is the one who is expected to do all the talking. A traditional practitioner will extract information from a patient but only through a long process of questioning (during divination) which is often supplemented by knowledge of the patient's situation. The end result of this process is that the traditional practitioner will announce to the patient the nature and cause of his or her ailment. This is what is lacking in clinics and hospitals. Patients are often treated (paternalistically) as being incapable of understanding what is happening to them, so no attempt to explain the nature or cause of their disease is made. This problem appears to apply to both doctors and nurses.

When it comes to treatment, clinic and hospital users complain about a number of things. Firstly, some are upset because they cannot read what is written in their cards. This is not because they are illiterate but because the handwriting is often barely legible and, most of all, because remarks are usually written in an abbreviated form, using English words. Secondly, patients are varied. But treatment seem similar and inadequate. One is that patients are simply (and automatically) given pain-killers and vitamins regardless of their complaint. A more commonly expressed problem is that small quantities of medicine are given. There is little understanding of strength and dosage of modern medicines. Some patients describe how they took the medicine prescribed to them until they 'felt better' and then threw away the remainder as they were sure that it had done its job (not understanding the importance of completing the course). Others threw away the medicines prescribed because they didn't like their smell. However, generally speaking, the attitude appears to be the more medicine the better. Moreover, people desire a variety of medicines.

Blame for a health center's failure to cure patients is often placed on its medication. A traditional practitioner who does not cure his patients is said to have 'weak medicine'. The same applies to clinics and hospitals. All hospitals mentioned were, at times, accused of having weak medicines. Many people believe that, because there are so many people visiting the hospital, it is diluting its medicines. This belief is reinforced by the fact that the dispensary often seems to run out of certain medicines. As mentioned, people queue for hours only to be told that the medicine prescribed is not available. It is not surprising that many conclude that the hospital dilutes its medicines to make them stretch.

## **CONCLUSION AND RECOMMENDATIONS**

The problems of health care provision and distribution in the petroleum-producing region of Nigeria have been illustrated by the case of Bayelsa state. It is well known that Nigeria is characterized by inadequate health care facilities. However, the petroleum-producing communities have the poorest health care services in the country largely because of inadequate attention given to the area in terms of the allocation of resources despite the fact that the region produces most of the wealth of the country. The findings from the Bayelsa case study also show that there is a concentration of the few available facilities in the northern part of the state where population concentration is lowest. On the other hand in the southern part of the state where population density is higher, there are no adequate modern health facilities. It was noted that the tertiary and secondary health centers provide the main modern health care services in the state. Their absence in the most densely populated part of the state is therefore an indication that the vast proportion of the people are denied modern health care facilities. The provision and distribution of primary health centers was also found to be largely inequitable especially since the geographical coverage of these centers are quite limited. At the same time the services provided in these primary health centers are quite limited due mainly to the lack of facilities and shortage of personnel. Thus the hierarchical principle expected in the distribution of health facilities in which the number of secondary health centers will depend on a tertiary center and a number of primary health centers will depend on a secondary center is not in existence in most parts of the state.

The inaccessibility of the vast majority of the population in Bayelsa state to modern health care services has contributed to the prevailing attitude of the people towards modern health care services. A focus group discussion with the inhabitants in the area show that a number of factors such as the nature of illness, the socio-economic status of the household, the location of the household in relation to the available health care facilities, the attitude of the people towards specific health care facilities, and the facilities available in each type of health care delivery point were found to influence the choice of health care by the people of the state. It was observed that many people in the study area go to traditional health practitioners when their first action at self-medication fails to produce satisfactory results. This was found to be due to a number of factors associated with modern health

centers including their inaccessibility, high cost of treatment, attitude of the health personnel and delay in receiving attention whenever they visit modern health care centers.

One fundamental outcome of the inaccessibility of modern health care facilities to the vast majority of the people in Bayelsa state is the low utilization of modern health care services. The role which primary health centers are expected to play in terms of health education of the people has not been possible because of their poor staffing and lack of facilities. The challenge of improving the contribution of primary health care centers to modern health care system in Bayelsa state in the next decade relates to the need to train and retain more community staff to carry out the basic functions carried out by nurses, midwives and health educators. In view of the reluctance of professionally trained health personnel to work in the remote villages in the area and considering the reluctance of the youth to migrate to urban areas where jobs are no longer available, there is a pool of local personnel that can be easily trained for this purpose. A program of personnel and facility improvement in the primary health care centers in the state should be combined with a policy of deliberate dispersal of primary health centers in various parts of the state especially in the southern local government areas where population density is high and yet there are limited primary health establishments. Closely related to the policy of dispersal of primary health centers is that of the establishment of mobile clinics in localities where the population is so dispersed that it will be difficult for the threshold population which is justifiable for a primary health center to be provided to be attained. The main function of such clinics is to carry out activities similar to those carried out by primary health establishments.

Despite the case being made for the provision of adequate primary health centers in the state, there is no doubt that, considering the attitude of the people as reflected in the focus group discussions, secondary health establishments will continue to play a major role in the health care system of the state in the coming decades. As far as the people of the area is concerned there is still the belief that modern health care means the availability of hospitals. Yet the findings of the study show that the vast proportion of the population of the state has no access to secondary health facilities. Fig.13 indicates areas within the state that must receive priority attention in the provision of secondary and primary health establishments in the coming years. In order to ensure equity in the secondary health care provision, a policy of locating additional secondary facilities in areas of need must be articulated and implemented.

The success of a deliberate policy of dispersal of primary and secondary health establishments as articulated above must be closely related to programs of rural development and settlement upgrading in the southern part of the state. Development planning in Nigeria has over the years focused attention on urban areas at the expense of rural communities. Consequently, the emphasis in the study area must be on the overall improvement in the life of the people in the rural communities. If secondary and to some extent primary health services are to be attracted and made functional in the rural communities in the area, the availability of essential infrastructure services such as roads, water transport etc. is important. This requires the participation of the people, the local



government authorities, the oil companies, the private sector, non-governmental organizations, and the federal and the state government agencies particularly those responsible for the development of the petroleum-producing areas.

## ACKNOWLEDGEMENTS

This paper was prepared while I was a visiting scholar to the Department of Population and International Health, Harvard School of Public Health. I thank the Director of the Takemi Program, Dr Michael Reich for the opportunity he gave me at short notice to be a fellow of the program as well as the funding provided for my stay. Dr. Reich also supervised the project and offered considerable inspiration during the period of its production. He introduced me to the use of GIS in this study which turned out to be valuable as the GIS document produced will assist in the future study of the geographical patterns of development in Bayelsa State. Finally, I must thank Catherine Haskell and her assistant, Nadie Trotman for solving my problems particularly the use of computer facilities which I knew little about at the time I came to the program.

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**Table 1**

**Population Pattern and Distribution in Bayelsa State**

Local Government Area	Area KM2	Estimated Population 1998	Percentage of Total Population	Population Density per Square km
Southern Ijaw	2,880	549,246	26.09	190.72
Sagbama	864	260,125	12.36	301.07
Ekeremor	1,728	217,241	10.31	125.72
Brass	688	298,259	14.17	433.51
Nembe	1,000	499,612	23.73	499.61
Ogbia	576	92,217	4.38	160.09
Yenagoa	635	125,694	5.97	197.94
Kolokuma	332	62,741	2.98	188.97
<b>Bayelsa State</b>	<b>8,703</b>	<b>2,105,135</b>	<b>100.00</b>	<b>241.88</b>

**Source: Federal Office of Statistics, Lagos**

**Table 2**

**Awareness of respondents of Bayelsa State of Various Types of Health Care**

**Facilities****(Percentages)**

Local Government Area	Specialist Hospital	General Hospital	Primary Health center	Traditional Healing Center
Surthern Ijaw	5.5	75.9	89.5	98.6
Sagbama	15.5	80.1	92.7	98.2
Ekeremor	10.8	84.8	94.2	95.8
Brass	11.5	89.8	96.4	98.5
Nembe	21.3	92.4	98.3	97.6
Ogbia	24.8	93.6	98.5	97.8
Yenagoa	45.8	97.5	98.8	100.0
Kolokuma	24.8	93.6	98.5	98.8
Bayelsa State	18.5	87.8	96.4	97.6

**Source: Author's Field Survey, 1998**