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Spatial Distribution of Primary Health Care Centres in Ovia North-East Local Government area of Edo State –Nigeria.

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Abstract

This paper examines the distribution of primary health care centres in Ovia North-East local government area of Edo state. In other to achieve this objective, the survey type of research design was adopted. Data required for the study were obtained from primary and secondary sources. The field observation method was used for the primary data collection. Data collected were analyzed using the Nearest Neighbour ratio. The study revealed that there were 43 primary health care centres in the area as at the time of the study, and their distribution pattern was clustered. Based on the findings, the need for government to equitably locate more of such primary health care centres in the area was recommended to properly integrate the people into the nation's health care system for the benefit of all stakeholders.

Keywords: Spatial, Distribution, Primary Health Care Centres, Ovia North- East LGA

Introduction

Primary healthcare (PHC) is defined as "essential health care that is based on scientifically sound and socially acceptable methods and technology in other to make health care services accessible to individuals and families in a community through the full participation of community members and at a cost that the community and the country can afford to maintain at every stage of their development in the spirit of self-reliance and self-determination"(World Health Organization: WHO, 1978). According to Barbara (2011), the PHC approach to health care service delivery has a special focus on health equity. The model was universally adopted by professionals and institutions, governments and civil society organizations, researchers and grassroots organizations at the joint international conference on Primary Health Care sponsored by the WHO and UNICEF held in Alma Ata, Kazakhstan in 1978 in other to collectively address the observed political, social and economic aspects of health care inequalities among people in different countries in the world, and since then, it has become a core concept of the World Health Organization's goal of Health for all, most especially as it often described as the first level contact that brings health care as close as possible to where people live and work (WHO,1978; White, 2015),).

In Nigeria, according to Lambo (1989), the actual implementation of PHC began in 52 local government areas of the country when Professor Olikoye Ransome-Kuti was appointed the Minister of Health of the Federal Republic of Nigeria in 1985 and the period was observed to have witnessed tremendous improvement in the people’s level of access to health care including increase in disease prevention and control. To strengthen the PHC programme implementation throughout the country the National Primary Health Care Development Agency: NPHCDA was established in 1992 to ensure effective, efficient, quality, accessible and affordable health

services delivery to a wider proportion of the population. The functions encompass the provision of preventive, promotive, curative, and supportive and rehabilitation services by professionals from different disciplines (WHO, 1978; Fatusi, 2015).

Consequently, it is expected that PHC services should be made available and accessible to all the citizens' of the Federal Republic of Nigeria irrespective of geographical location. This is also entrenched in the 1999 Constitution and the Federal Government Health Sector Reform of 2004-2007 (FMOH, 2004). According to the National Primary Health Care Development Agency (2004) Minimum Standard for the three primary health care categories: Health posts are expected to be located in such a manner to serve a village or neighbourhood of about 500 people, Primary health clinics are expected to cater for a group of villages or neighbourhood with a population of 2,000 to 5,000 people and Primary health centres are expected to be located in each political ward of the 774 local governments areas, with each having at least 10 wards and by this arrangement, over 7,740 of these are expected across the country.

However, it has been observed with dismay that it is not all the areas in the country that have this essential facility: while some have others do not have, this means that PHC facilities in rural communities are not equitably distributed. This is apparently why Okafor (1988) wrote that the question of who gets what, and where, in terms of public facilities distribution has not been fully exploited in Nigeria. This observed disparity shows that inequality exists in their distribution as they do between individuals (Anderson and Promfret, 2004; Kanbur and Venables 2005), and this is not without serious implications on the health care needs of the rural dwellers most especially the poor since the effectiveness of any PHC centre is directly linked to the people's access to its services (Abosede and Sholeye, 2014).

Nevertheless, there seems to be insufficient information on the spatial distribution of PHC centres in Ovia North-East local government area of Edo State. It is against this background that, this study examined the spatial distribution of primary healthcare facilities/ services in Ovia North-East local government area of Edo state, and this is the trust of the study and the gap in knowledge that the study sought to fill.

Aim and Objectives of the Study

The study aims to examine the spatial distribution of primary health care facilities in the study area. To achieve this aim the objectives of the study are to:

1. Take an inventory of the primary health care centres in the area and,
2. Examine the distribution of primary health care centres in the study area.

Study Area

Ovia North- East Local Government Area is one of the eighteen local government areas of Edo State created in 1991 with its administrative headquarter in Okada. The local government area lies approximately within Latitude 6^0, 00'04" and 6^o 50.05' N, of the Equator and longitude 5^0 20', 00.04' and 5^o 50'.004" E of the Greenwich Meridian. It has an area size of 2,301km^2 with an average elevation of 40 meters' above sea level (Citipdeia, 2012). The projected population of the area for 2018 is 220,885 at 3.2% growth rate (NPC, 2019). For administrative purpose, the council area is divided into thirteen (13) political wards namely: Okada- East, Okada- West, Khohuo, Isuiwa, Oluku, Oduna, Oghede, Iguoshodin, Utoka, Uhen, Adolor, Ofun-mwengbe and Uhiere. The people in the area are of the different ethnic category but the majority of them are Bini (Edo) speaking, while others include Yoruba, Igbo, Hausa, Esan, Calabar, Isoko, Kwale, Ogoja, Urhobo and Ijaw. The local government area shares boundaries with Ondo State in the

North, Uhumwode, Egor, Oredo and Ikpoba-Okha Local Government Areas in the East, Ovia South-West Local Government Area in the West, and Delta State in the South.

Theoretical Framework

The theoretical framework adopted for this study is the central place theory. The German geographer Walter Christaller in 1933 in his study of central places in South Germany founded a framework for the size and spacing of central places based on six assumptions. Although, the theory was initially propounded to explain the location of private facilities but over the years the two concepts: range and threshold population in the theory have been widely used in research to theoretically explain the relationship between the availability of a public facility/service such as the primary health care centres and the population needed to support it. The logic of the theory is that, if a particular health care centre has a very large catchment area, then the area in which it is located shall need many of such facilities. On the other hand, if a healthcare facility has a small catchment area, there would only be very few (probably only one) of such facilities to cover the area in question with its services. Thus, the primary health care centres are expected to be located in a centralized location or within the reach of all the settlements that it is expected to serve. Many scholars including Onokerhoraye (1978; 1999), Gbakeji (2014), Hafeez Sedenu, Muibi, Alaga, Ajileye, Ogbole, Kappo, Popoola, and Oloko-Oba (2016) have used the central place theory to explain the spatial distribution of PHC centres and reported that the central place theory concerns among other things, the location and spacing of service centres. Following this view, central place theory is considered appropriate for this study.

LITERATURE REVIEW

Distribution of Primary Health Care Centres

Many studies have been carried out on the spatial distribution of PHC centres in the country and elsewhere in the world. For instance, Adewoyin, Ogunyemi, Muibi, Fasote, Halilu, and Alaga (2016) carried out a study on the spatial pattern and accessibility of primary health care centres in Ife East Local government area of Osun State. The result showed that the distribution pattern of the Primary Health Centres in the area was clustered and thus, not equitably distributed. Fadahunsi, Kufoniyi, and Babatimehin, (2017) examined the health care facilities distribution pattern and developed a model for determining the optimum location of healthcare facilities in Osun State, Nigeria. Primary and secondary data were used in the study. The study found out that there were 919 healthcare facilities in four categories in the State namely, primary (603, 65.6%), private (262, 28.5%), secondary (51, 5.6%) and tertiary (3, 0.3%). The distribution of primary and private healthcare facilities was found to be clustered; while secondary and tertiary health care facilities depicted a random pattern of distribution. The study concluded that there were inequalities in the spatial distribution of healthcare facilities in the study area. Similarly, Lekan (2010) examined the distribution pattern of healthcare facilities in the thirty local government areas of Osun State, Nigeria. The study found gaps in access to healthcare facilities between local government areas in the state, though the observed gap could not easily be attributed to rural-urban dichotomy. It was concluded that there was an urgent need for the government to provide more healthcare facilities in the state by emphasizing their equitable distribution to enhance access and regional development.

Hafeez Sedenu et al (2016) explored the potential use of Geospatial Techniques for analyzing public healthcare facilities accessibility and distribution pattern in Ile- Ife metropolis. Primary and secondary data were acquired. The Nearest Neighbour Ratio shows a random distribution pattern for the healthcare facility. From the results, it shows that the study area was concentrated around the centre of the town while other areas were inadequately served. Okafor (1977) cited in Fadahunsi (2016) analyzed the spatial distribution and efficiency of hospital facilities in the old Bendel (now Edo and Delta) State and found out that there were discrepancies between the population distribution and hospital facilities. Similarly, Asikhia and Erimona (2013) examined the geospatial variation in the distribution of primary health care centres in Benin City and found a dispersed pattern of distribution. Olajuyin et al (1997) cited in Fadahunsi et al (2017) investigated the effect of location on the utilization of healthcare facilities in Irewole Local Government Area of Osun State, Nigeria and found that the healthcare facilities were unevenly distributed in the area. Abdulraheem, Olapipo and Amodu (2012) reported in their study that in terms of health care facilities distribution in the country the rural population was seriously underserved when compared to their urban counterparts.

Previous studies such as Ayoade (1982) and Atser and Akpan (2009) have observed that past National Development Plans in the country have identified this problem of poor distribution of PHC and many regional studies have reported same (Ujoh and Kwaghsende,2014). On this view, Onokerhoraye (1999) reported that over the years in the country overt attention has not been paid to equity in the planning and distribution of health care facilities hence, primary health care facilities are sparsely distributed thereby making the distance between one primary health care centre and another far apart. Brooks (2008) study on the availability of primary healthcare services to older people living in rural areas found out that in Cambodia older people travel over

an average distance of 5 kilometres to reach the nearest available health centre. In India, 69% of rural respondents reported travelling over a distance of 20 kilometres or more to access this public facility. In another study carried out in Tshwane Region of South Africa, Nteta, Mokgatle-Nthabu and Oguntibeju (2010) found out that the use of a rural healthcare facility decreased with increase in distance: 45.3% (within 5km), 39.2% (less than 10 km), and 15% (more than 10 km). Similarly, Grzybowski, Stoll and Kornelsen (2011) investigated the impact of distance on healthcare use among rural residents in Canada and found out that among the rural women who had to travel to access maternity services had increased the rate of adverse health outcomes. This observed inequality in PHC centres distribution in many rural communities results in long-distance travel and delays in seeking healthcare, and poor health outcomes (Fan and Habibov, 2009), as well as the increased use of local knowledge/ traditional medicine and private practitioners for their primary care (Brooks, 2008). Nevertheless, the implementation of PHC has been found to significantly reduce the number of maternal, child and infant deaths (Bailey, Keyes, Parker, Abdullah, Kebede and Freedman, 2011). Therefore, the provision of health care closer to the people is crucial if we must achieve the three health-related MDGs (reducing child mortality, improving maternal health and fighting HIV / AIDS, malaria and other disease conditions) (UNDP, 2005).

Research Methods

The study adopted a survey type of research design. Data required for the study were obtained from primary and secondary sources. The locations of primary health care centres in the study area were identified through the field survey method and thereafter, the Global Positioning System (GPS) – GARMIN e Rex 30 was used to collect their geographic coordinates. The secondary data were obtained from both published and unpublished works

including textbooks, journal articles, project works and the Edo State administrative map where the map of the study area was extracted and used for the study. Data collected was analyzed using the Nearest Neighbour ratio from which inferences were made.

Results and Discussion

The result of the study shows that there were forty-three (43) primary health care centres in the area as at the time of the study. To examine the distribution pattern of primary health care centres in the study area, out of the forty-three (43) primary health care centres identified thirty-four (34) was selected and captioned as point data and used for the study as shown in Table 1.

Table 1: Location of Primary Health Care Centre's in Ovia-North East Local Government Area

S/N	Location/ Settlements	Geographic coordinates	
1	Iguiye	N06^0.56416$''$	E005^0.50108$''$
2	Okada	N06^0.73118$''$	E005^0.38725$''$
3	Iguomo	N06^0.74769$''$	E005^0.42249$''$
4	Utese	N06^0.78777$''$	E005^0.50587$''$
5	Egbeta	N06^0.78442$''$	E005^0.51666$''$
6	Uhen	N06^0.76708$''$	E005^0.514I2$''$
7	Olumoye	N06^0.70354$''$	E005^0.54995$''$
8	Ogua	N06^0.52501$''$	E005^0.53943''
9	Iguadolor	N06^0.42853$''$	E005^0.55418$''$
10	Uhere	N06^0.72940$''$	E005^0.78711$''$
11	Owan	N06^0.75772$''$	E005^0.77029$''$
12	Oluku	N06^0.45100''	E005^0.59369''
13	Ovbiogie	N06^0.47663''	E005^0.58747''
14	Ekiadolor	N06^0.48572''	E005^0.58204''
15	Okokhuo	N06^0.58355''	E005^0.60386''
16	Iguohoro	N06^0.65480''	E005^0.57570''
17	Ugbogiobo	N06^0.53216''	E005^0.64326''
18	Utekon	N06^0.45067''	E005^0.63152''
19	Odiguetwe	N06^0.66929''	E005^0.76681''
20	Odighi	N06^0.64359''	E005^0.76666''
21	Aihuobabekun	N06^0.53844''	E005^0.67588''
22	Evboneka	N06^0.51091''	E005^0.62183''
23	Ekosodin	N06^0.24763''	E005^0.37680''
24	Utoka	N06^0.22468''	E005^0.31784''
25	Ite	N06^0.21213''	E005^0.28226''
26	Oghede	N06^0.17646''	E005^0.32707''
27	Ugbeineh	N06^0.13386''	E005^0.28093''
28	Eghudu	N06^0.14584''	E005^0.23705''

29	Oduna	N06^0.12958''	E005^0.26311''
30	Iboro	N06^0.13092''	E005^0.22420''
31	Ughoton	N06^0.09994''	E005^0.21859''
32	Gelegele	N06^0.09286''	E005^0.20705''
33	Iguosodin	N06^0.38646''	E005^0.43532''
34	Iguogie	N06^0.12468''	E005^0.24420''

Source: Field Survey, 2019

To determine the distribution pattern of PHC centres as shown in Table 1 the Nearest Neigbhour index was digitally computed. The analysis revealed that the area coverage of Ovia North-East local government area was 2277,607656 square kilometers or 2277607655.517834m and the average nearest neighbour results were found to be as follows: Observed mean Distance was 3864.193828m; Expected mean distance was 4295.332513m and theNearest Neighbour ratio was 0.899626.

From the above Nearest Neighbour Ratio of 0.899626, it was concluded that the distribution pattern of the primary health care centres in Ovia North-East Local Government Area of Edo State was clustered and therefore, not equitably distributed. This finding is also depicted in figure 1 below:

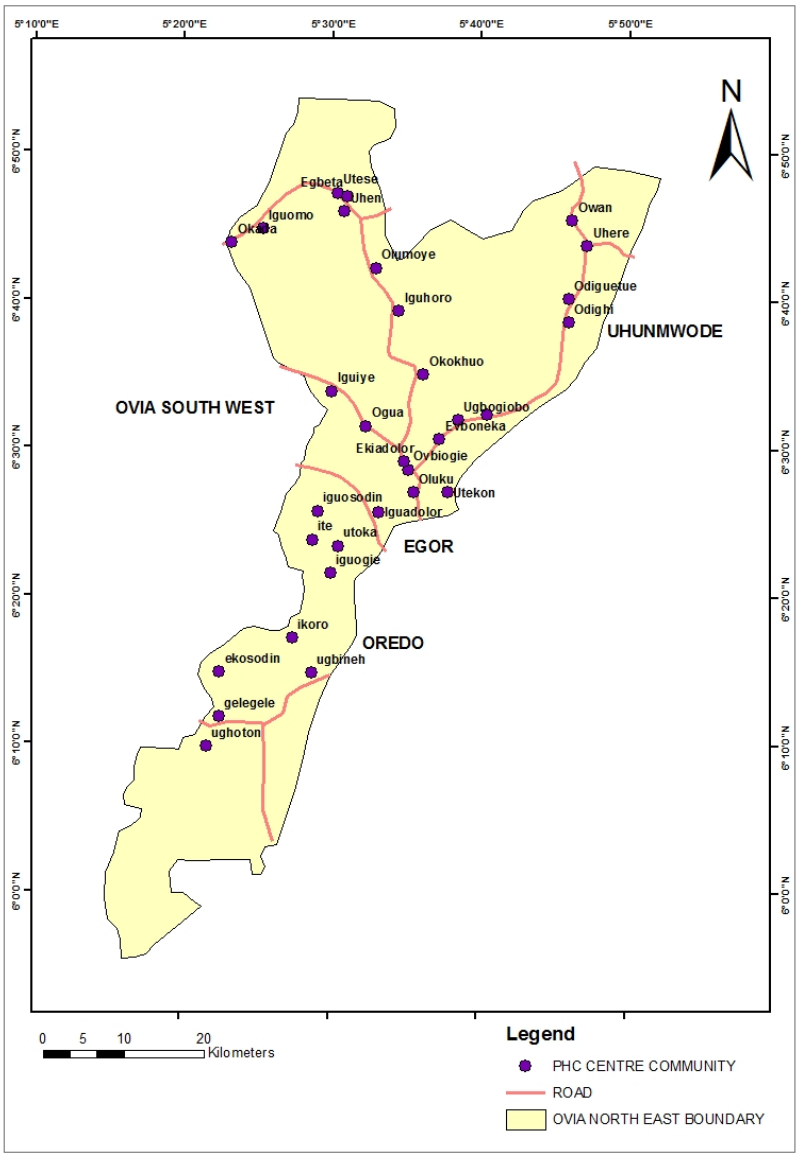

Figure 1: Distribution Pattern of Primary Health Care Centres in Ovia North-East Local Government Area

Discussion of Results

The results from the analysis of data collected in this course of this study show that the forty-three (43) primary health care centres found in the area as at the time of this study depicted a clustered pattern of distribution and some political wards in the area had more of the facility

than others. For instance, Uhiere ward had (6), Uhen (5), Oduna (6) and Okada- East (4) than the rest political wards that had 3, 2 and 1 respectively. This means that inequality exists in the distribution of PHC centres in the study area. This findings is in agreement with the findings of previous scholars such as Adewoyin, et al (2016), Fadahunsi et al (2017), Okafor (1977), Ujoh and Kwaghsende (2014), Abdulraheem, Olapipo and Amodu (2012), Onokerhoraye (1999), Hafeez Sedenu et al (2016), Ayoade (1982) and Atser and Akpan (2009) who in their respective studies found that inequality exist in primary health care facilities' distribution in Nigeria.

Conclusion and Recommendations

The necessity for an equitable distribution of primary health care centres in rural communities in the country in the phase of the increasing rate of premature death from preventable diseases cannot be underscored. It is in this context that, this study examined the spatial distribution of primary health care centres in Ovia North-East local government area of Edo State. The analysis of data collected revealed that the distribution of primary health care centres in the area was clustered and thus, not equitably distributed. It was also revealed that some political ward had more of the facility than others as at the time of the study. Based on the finding the need for equitable distribution of more primary health care centres in the area was recommended to better serve the rural dwellers for the benefit of all.

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