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MEASURING THE INEQUALITY OF PUBLIC HEALTH FACILITY PROVSION IN BIDA TOWN, NIGER STATE

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Abstract

The capacity of an urban center to efficiently and effectively deliver its services is related to the availability, adequacy and efficiency of operation of its urban public infrastructure. Public health facilities are therefore the fundamental necessities of any community (Urban or Rural), because the health of people has a direct correlation with the productive capacity and labour efficiency. Urban facilities include all the supportive service required to maintain the urban system. They may be conceived of as medium or objects by which various urban services are delivered. The effective provision and efficient functioning vis-à-vis the population is an indication of general level of equality of life and entire environment; that's the provision of facility has to be in consonance with the population or demand of such facility. This paper therefore, assesses the adequacy of public health facilities in Bida town using Gini coefficient. Attempt was made also to identify the existing health facilities in the study area; their types, location and distribution. The Gini Coefficient (G) is one of the most commonly used indicators for measuring distribution. It is traditionally applied to the measurement of income inequality, but has also been applied to measure land inequality. The value of G ranges from 0-100, signifying that, the higher the G-value the greater the degree of inequality. The result reveals that distribution of public health facilities in Bida town are not guided by population distribution in the wards. The inequality level was assessed using Lorenz Curve; it is observed that about 50% of the public health facilities in Bida town are enjoyed by about 9% of the inhabitant. This implies that some areas in Bida are deficient in basic health facilities and quite a number of the inhabitants have no adequate access to these facilities. The field survey analysis however, reveals that the degree of inequality of public health facilities in Bida town minimal/ low (Gini coefficient (G) = 42.8).The assessment of the adequacy of health facilities provision and level of patronages were also measured based on the field survey result using structured questionnaires. Total of 140 questionnaires were administered using systematic random sampling techniques. In this case, houses in the selected ward were chosen randomly to represent the entire houses in the area. 10 questionnaires each were assigned to 14 specified wards covering the entire Bida town. Therefore, the study analysis is based on the 140 surveys questionnaires processed representing 100.0% response rate. The result shows that public health facilities services delivery in Bida town is adequate 86 (61.4%) and the level of patronage is determined by their cost of service (47%), nearness to homes (17%), and existing equipment (15%). It therefore, recommends that the government and other stakeholders or sponsoring agencies must ensure that all health institutions provide high quality services.

Key Words: Gini coefficient, Health Facility provision, Inequality.

INTRODUCTION

Good health is basic to human welfare and fundamental objective of social and economic development. Therefore, knowing how fundamental health is to a particular citizen and how to access it becomes the next question that should cross the mind of an average citizen.

The capacity of an urban center to efficiently and effectively deliver its services is related to the availability, adequacy and efficiency of operation of its urban public infrastructure. Public health facilities are therefore the fundamental necessities of any community (Urban or Rural), because the health of people has a direct correlation with their labour productivity. Also, it provides an enabling environment for the people to live and engage in various complex activities in

search of better life quality. "The perception, promotion, protection and delivery of health care service must be de-mystified and diversified and made all embracing if the total spectrum of human well-being is to be captured(Mabogunje,1991).

The National health care delivery system has spelt out the function of each health facility and this should be analyzed and assessed in terms of appropriate spatial organization, which facilitates its operational efficiency.

Urban facilities include all the supportive service required to maintain the urban system. It may be conceived of as a medium by which various urban service are delivery is effective and efficient vis-à-vis the population as an indication of general level of equality of life and entire environment; that is the provision of facility has to be in consonance with the population or demand of such facility.

The need for planning in the national provision of facilities is a necessity in our urban centre because; the social, political cultural and economic viability of a nation is usually made evident in its urban centre. By their nature, they are generative of economic and social development (Olajuyi et al., 1997).

The role of urban centre as an area of high innovative diffusion, political and economic transformation is the core factors that bring about and enhance national development cannot be over–emphasized. Therefore the provision and equitable distribution of public health facilities in urban centres has to assume prominence as well as constitute a challenge in any nation particular in a developing country like Nigeria.

Ayeni and Rustron (1986) stated that, for effective location of facilities, there must be equity in distribution. Thus they noted that efficiency and equity are very important concept not fully understood by planners and analysts but which cannot be divorced in public facilities provision. This was further emphasized that theoretical works that emphasized issues of efficiency in isolation from equity have not done justice to such works (Norill and System, 1977).

Onokerhoraye (1982) mentioned that; this interpretation of equity becomes acceptable when it is borne in mind that the pattern of distribution of settlement is important both in the evaluation of equity as the assessment of ways in which distribution meet required threshold for facility provision.

In respect to the above point, Onokerhoraye and Okafor (1986) derived some principles to ensure equitable allocation and location of facilities for the general welfare of the society. Firstly, they mentioned that, in location of any facilities, efforts should be made to minimize travel cost of the consumers if the cost required for a consumer to travel and avail him of a service is too much he will rather prefer to stay put and continue with the usual life.

Another point is maximization of demand where by the service and facilities located in an urban area are fully utilized. They also emphasized on equity in distribution, to ensure that no group of person is favored in the location of these service and facilities. They stressed that it is the duty of planner to ensure that consumers, longest journey to any facility is reduced to the bearest minimum. Lastly, is the case of the less privileged who are less mobile, but whose demand for such facilities needed to be satisfied.

Ayeni and Rustron (Opt.cit) also observed that, location theory ties and optimality interchangeable and described an efficient system as one where profits are on the increase in a perfectly competitive system. This means that any shift from optimum location reduces system profit and efficiency. In the perspective of public facility where profit are not sought on efficient location here would be one in which some is met at minimum total cost of operation travel.

This paper therefore, focuses on the adequacy of public health facilities in Bida town, their location, distribution and the associated problems.

AIM AND OBJECTIVES

This paper is aimed at assesses the adequacy of public health facilities in Bida town, with a view of proffering planning solution for effective public health service delivery in the State.

JUSTIFICATION OF THE STUDY

The need for assessment of adequacy of public health facilities to develop the urban area cannot be over emphasized. However, in Nigeria, the equitable distribution of facilities is always a problem, as evident by lopsided location of facilities in our town. The consequence of this is long distance by users to avail themselves of the health while on the other hand others facilities located in isolation are left underutilized.

This paper therefore, assess the adequacy of this health facilities provision in Bida town and its environs then involve effective recommendation toward improving the health facilities provision in the area

Urban facilities include all the supportive service required to maintain the urban system they may be conceived of as medium or objects by which various urban service are delivered the effective provision and efficient functioning vis-à-vis the population is an indication of general level of equality of life and entire environment; that is the provision of facility has to be in consonance with the population or demand of such facility.

The role of urban center as on area for high innovative diffusion, political and economic transformation that are all factors that bring about and enhance national development cannot be over – emphasized. Therefore the provision and equitable distribution of public health facilities in urban centers has to assume prominence as well as constitute a challenge in any nation particular only a developing counter like Nigeria.

METHODOLOGY

Sample Frame and Techniques

The assessment of the adequacy of health facilities provision and level of patronages were measured based on a field survey conducted using structured questionnaires. Total of 140 questionnaires were administered using systematic random sampling techniques. In this case, houses in the selected ward were chosen randomly to represent the entire houses in the area. 10 questionnaires each were assigned to 14 specified wards covering the entire Bida town. Therefore, the study analysis is based on the 140 surveys questionnaires processed representing 100.0% response rate.

The Gini Coefficient

The Gini Coefficient is one of the most commonly used indices for measuring distribution. It is traditionally applied to the measurement of income inequality, but has also been applied to the measurement of land inequality. As yet, it has not been applied to measure public health facilities $\sum(Y\text{-}YA)$

The Gini Coefficient can be displayed graphically as a plot of the distribution of the size fractions of ordered individuals.

This is in a perfectly equal society the Lorenz curve would plot as a straight line. This is termed the line of equality. In most cases, however, the Lorenz curve plots below this line of equality, showing the inequality in the distribution of income,

For computing the location quotient (L.Q) for a public health facility in a particular wards/neighborhood, the following formula was used.

$$L.\ Q = (n/p)$$

$_1(N_1/P)$

Where,

If the value of the quotient for a particular facility in a settlement exceeds 1, indicated that the facility in the neighbourhood exceeds the fair share of health facilities provision based on population standard.

provision inequality. The Gini Coefficient is calculated from un-ordered size data as the "relative mean difference", i.e., the Mean difference between every possible pair of individuals, divided by the Mean size and is defined as follows (Litchfield 1999):

Gini coefficient (**G**) = ½

land or, now, public health facilities provision within Bida.

Location Quotient

This quotient does not require extensive data collection and processing. It is a device for comparing settlement percentage share of a particular facility with its population. The location quotient of different neighborhoods in Bida with respect to a particular facility will provide knowledge about the level of concentration of that facility in those settlements

n = number of facility in a given neighbourhood.

p = population of the concerned neighbourhood,

N_1 = number of facility i in a Bida town

P = total population of Bida

An indication of deficiency is given by a value less than 1 while a value of 1 or close to 1 indicates self-sufficiency.

THE STUDY AREA

Bida lies on between latitude 9° 04'N and 9° 06'N and longitude 5° 59'E and 6°01'E on the Nupe sand stone formation which consists of plains with iron stone capped hills or Mesas. The scenery is fairly uniform since lithology and rock structure are not greatly variable. Bida town is also bounded by Pichi in the west, Baddegi in the east, Gbazhi in the North and Doko in the south (Fig.1). The town is in the north east direction of the Federal Capital Territory Abuja which is about 89 kilometers from Bida. Bida has the total population of 188,181 people (Nigeria National Population Commission 2006 census).

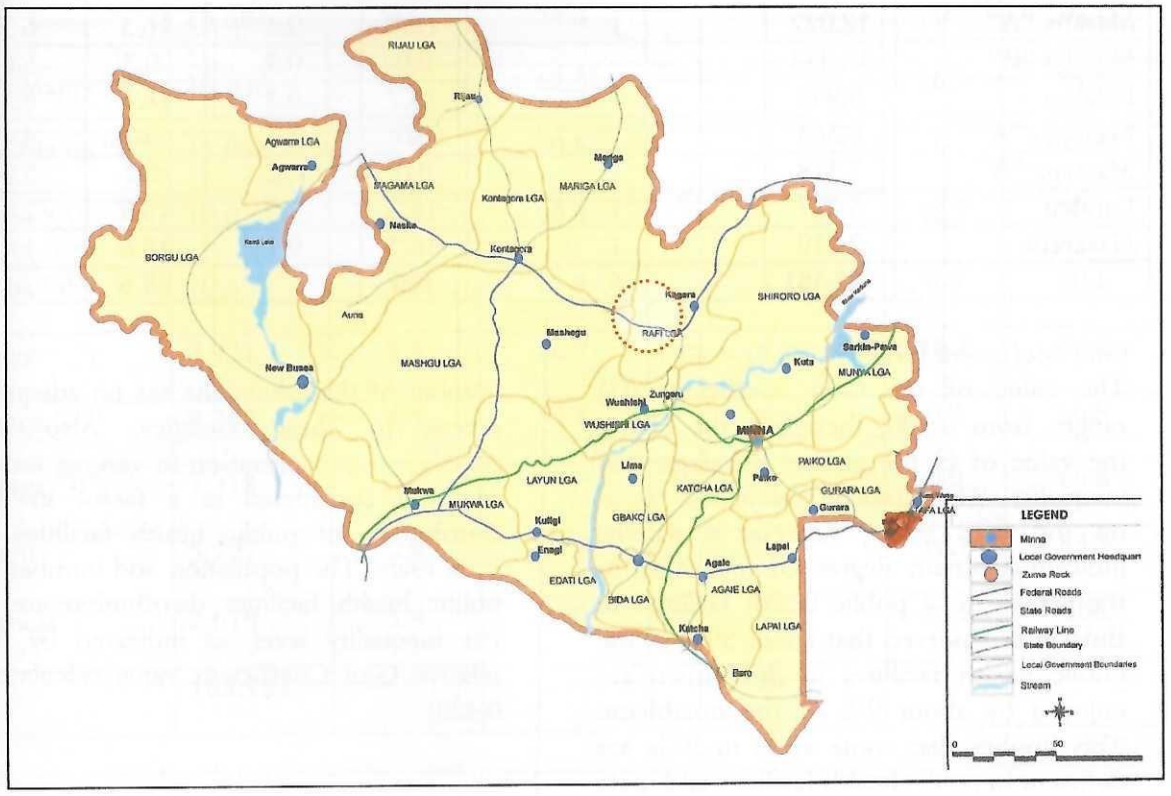


Fig.1: Map of Niger State Showing Location of Bida

DATA ANALYSIS AND RESULT INTERPRETATION

Analysis of Distribution of Health Facility (Gini coefficient)

In assessing the inequality in the level of public health facilities in Bida town, Gini co-efficient was adopted to measure the data collected. However, the analyses have revealed that there is a low degree of inequality in the existing health facilities provision in Bida town (table 1).

Table 1: Distribution of Health Facilities

Ward	Pop (X)	No of Public Health Facility (Y)	(Y) %	Expected	Y-YA	Pop %
Kiari	27,181	-	0.0	0.9	-0.9	14.4
Wadata	21,954	-	0.0	0.7	-0.7	11.2
Baniyen	20,909	-	0.0	0.7	-0.7	11.2
Dokodza	18,818	1	16.7	0.6	16.1	9.7
Bariki	15,681	-	0.0	0.5	-0.5	8.3
Umaru Majigi "A"	14,636	1	16.7	0.5	16.2	7.8
Umaru Majigi "B"	13,068	-	0.0	0.4	-0.6	6.9
Masaba "A"	12,022	1	16.7	0.4	16.3	6.3
Masaba "B"	10,454	-	0.0	0.3	-0.3	5.6
Ndajiya	9,931	1	16.7	0.3	16.4	5.3
Messaga "A"	8,363	-	0.0	0.3	-0.3	4.4
Massaga "B"	7,318	-	0.0	0.2	-0.2	3.9
Landzu	5,227	1	16.7	0.2	16.5	2.8
Nasarafu	2,619	1	16.7	0.1	16.6	1.4
	188,181	**6**	**100**		**85.6**	

Gini coefficient (**G**) = ½ (85.6) = 42.8

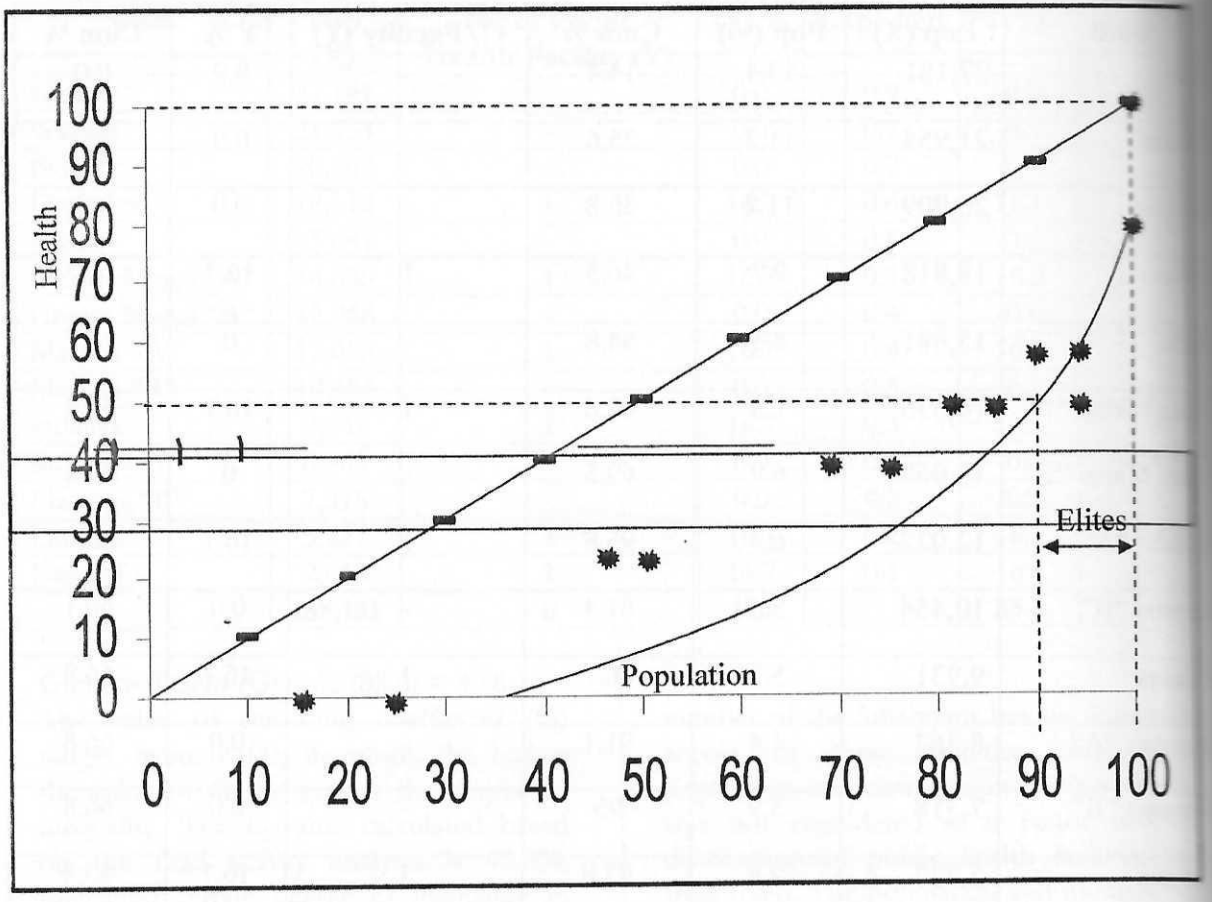
The value of the Gini coefficient (G) ranges from 0-100, therefore, the higher the value of G the greater the degree of inequality. The G-value calculated based on the field survey analysis is 42.8%; indicating certain degree of inequality in the provision of public health facilities in Bida. It is observed that about 50% of the public health facilities in Bida town are enjoyed by about 9% of the inhabitant. This implies that some areas in Bida are deficient in public health facilities and quite number of the inhabitant has no adequate access to these facilities. Also the population concentration in various wards was not considered as a factor in the distribution of public health facilities in Bida town. The population and number of public health facilities distribution are in fair inequality level, as indicated by the relative Gini Coefficient value calculated(0.428).

Assessment of Inequality in Distributional Health Facility (Lorenz Curve)

Assessing the extent population control in facility service delivery, the Lorenz curve was adopted to determine the health facilities provision in Bida town (Table 2). The result has shown that about 50% of the public health facilities in Bida town are enjoined by about 9% of the inhabitant. (Fig.2).

Table 2: Extent population control facilities

Ward	Pop (X)	Pop (%)	Cum %	H/Facility (Y)	Y %	Cum %
Kuri	27,181	14.4	14.4	-	0.0	0.0
Wadata	21,954	11.2	25.6	-	0.0	0.0
Buniyen	20,909	11.2	36.8	-	0.0	0.0
Dokodza	18,818	9.7	46.5	1	16.7	16.7
Buriki	15,681	8.3	54.8	-	0	16.7
Umar Majigi "A"	14,636	7.8	62.6	1	16.7	33.4
Umar Majigi "B"	13,068	6.9	69.5	-	0	33.4
Masaba "A"	12,022	6.3	95.8	1	16.7	50.1
Masaba "B"	10,454	5.6	81.4	-	0.0	50.1
Ndajiya	9,931	5.3	86.7	1	16.7	66.8
Massaga "A"	8,363	4.4	91.1	-	0.0	66.8
Massaga "B"	7,318	3.9	95	-	0.0	66.8
Landzu	5,227	2.8	97.8	1	16.7	83.5
Nasarafu	2,619	1.4	100	1	16.9	100
	188,181			**6**		



As shown in table 3, Nasarafu which is the ward with the lowest population, has the highest concentration of public health facility location. The result revealed that Nassarafu (12.0), Landzu (6.0), Ndajiya (3.1), Massaba "A" (2.6), Umaru Majigi (2.1) and Dokoza (1.7), by implication had more than their fair share of health facilities distributed in Bida town.

Table 3: Concentration Assessment of the Distributed Health Facility

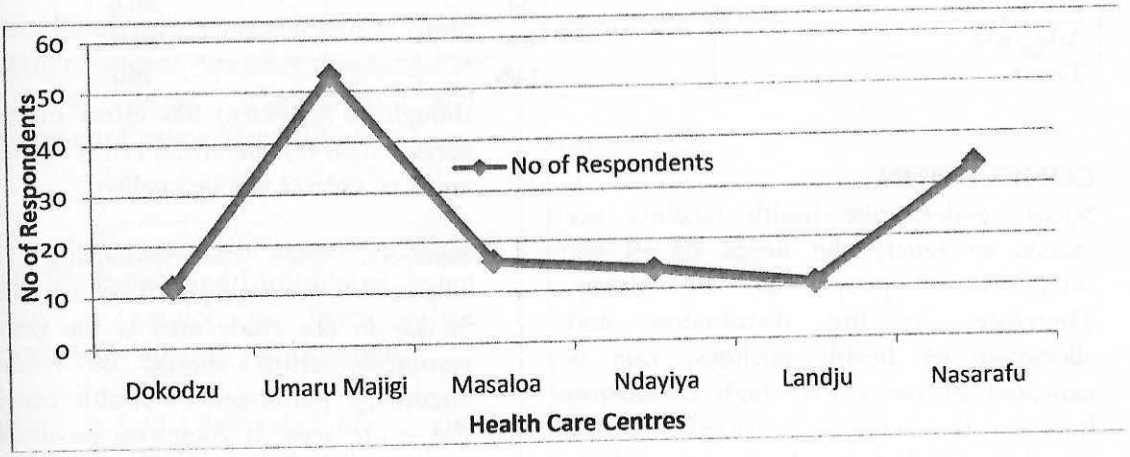
Ward	Population	No of health facilities	Locational quotient (LQ)
Kiari	27.181	-	0.0
Wadata	21.954	-	0.0
Bauiyen	20.909	-	0.0
Dokodza	18.818	1	1.7
Bariki	15.681	-	0.0
Umar Majigi "A"	14.636	1	2.1
Umar Majigi "B"	13.068	-	0.0
Masaba "A"	12.022	1	2.6
Masaba "B"	10.454	-	0.0
Ndajiya	9.931	1	3.1
Massaga "A"	8.363	-	0.0
Massaga "B"	7.318	-	0.0
Landzu	5227	1	6.0
Nasarafu	2.619	1	12.0
	188.181	**6**	

Note: An LQ value of less than 1 means a condition of having less that a fair share of an activity, a value of 1 indicates a condition of having just a fair share and value greater than 1 refers to a condition of having more than a fair share.

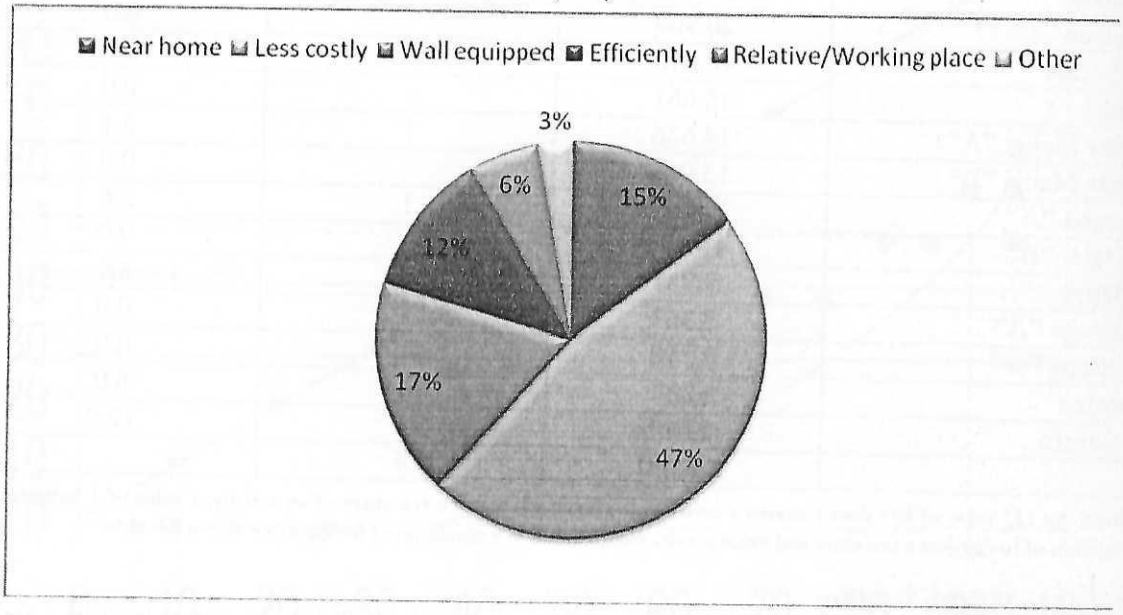
Existing Health Facility

In assessing the extent to which the existing public health facilities are patronized, the field data analysis result have shown that the public health centre at Umaru Majigi "A" ward with 37.9% respondents has the highest level of patronage, followed by Nasarafu ward health centre with 24.3% level of patronage, while 11.4% of the respondents attended Masaba health centre. Only 10.0% and 7.8% of the respondents attended Ndajiya and Landzu ward public health centres respectively (Fig.3).

Figure 3: Level of Patronage of Public Health Centres



However, from the field survey, various reasons (fig.4) were given by the respondents on the level of patronage of the existing health facilities in Bida. The analysis result have shown that majority of the people patronized the existing health centres in Bida because of their nearness to their home (17%), (47%) patronized because it less costly, (12.%) attended because is well equipped, (15%) attended because efficiency of the health personals, (6%) attended because it serves as working place of their relatives, while (3 %) are others.



QUALITY OF PUBLIC HEALTH FACILITIES IN BIDA TOWN

In assessing the quality of public health facilities service in Bida town, 54 (38.6%) respondent claimed that the public health services delivery is inadequate while 86 (61.4%) said is adequate.

Table 3: How adequacy of health facilities

Quality	No of respondent	Percentage (%)
Inadequate	54	38.6
Adequate	86	61.4
Total	**140**	**100**

CONCLUSION

Social services like health facilities are indeed to satisfy the needs of all the categories of people in the society. Therefore, in the distribution and allocation of health facilities, one is expected to see a very high correlation between the services provided and the population in that area. In the case of Bida town however, these facilities are not equitably distributed. This inequality though to an extent has effect on health service delivery therefore; effort should be made to correct this inequality.

Similarly, since the underlying factor responsible for high patronage of a health facility in the study area is the personal resources, effort should be made to encourage patronage of health center in the study area. It therefore recommends that the government and other stakeholders or sponsoring agencies must

ensure that all health institutions provide high quality services. This will stop patients from moving from one part of the city to another for treatment. This suggestion does not mean the government should building hospitals of the same status. Instead, those available must ensure that high quality services are maintained so that patients will be attracted. By so doing, every patient will be expected to patronize health facility nearest to him.

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