Rural Healthcare Service Provision and Implication in Rural Development of Imo State, Nigeria

Onwujiariri, C.M.[1], Nwachi, C.C.[2] and Nkwocha, E.E.[2]

[1]*Federal College of Land Resources Technology, Owerri, Imo State.*
[2]*Federal University of Technology, Owerri, Imo State.*

Abstract: The provision of adequate healthcare to citizens has become a major concern in Nigeria. However, information on the nature of such provision especially in the rural areas, has remained scanty. This study was carried out to determine the nature of rural healthcare provision and its implication in the rural development of Imo State. The study was carried out in 11 out of 22 Rural Local Government Areas (LGAs) in which 44 communities were drawn from a total of 117 rural communities in the sampled LGAs with a sample size of 627. Questionnaire survey method is the main instrument of data collection using stratified and simple random techniques. Data extracted from the questionnaire were collated and tabulated into percentage ratios and analysed using Gini Index. Chi Square and Students' t-test tools were used to test the two basic hypotheses. Results show that healthcare facilities and the services rendered are not equitably distributed in the study area. Most of the facilities are in a state of disrepair, characterized by dilapidated buildings, poor equipment and are poorly staffed (medical doctors). Services rendered in them are below par, as there are persistent lack of essential drugs, high cost of treatment and long waiting time for medical consultations. Despite these deficiencies, the study established high correlation between health service provision and rural development in the area, especially in the reduction of death rate, infant and maternal mortality.

Keywords: care, facilities, health, Imo State, rural, service provision, Nigeria.

Introduction

Nigeria's colonial and neo-colonial historical experiences culminated in the rural-urban inequality in the distribution of socio-economic facilities (Nkasiobi, 2010; Onimode, 1988). The majority of rural areas is characterized by poor access roads, absence of electricity, lack of decent housing, poorly equipped educational facilities, poor access to water and sanitation and dearth of basic health facilities (Banerjee and Morella, 2011; Omotoso, 2010).

Paradoxically, 52 percent of Nigerians still reside in the rural areas subjected to high incidence of morbidity and mortality due to the prevalence of a broad range of, sometimes preventable and curable diseases. There is high recrudescence of these diseases due to inadequate health care (World Bank, 2013).

The goal of the National Health Policy (1987) is to provide a comprehensive health care system based on primary health care that is promotive, protective, restorative and rehabilitative to all citizens, within available resources so that individuals and communities are assured of productivity, social well-being and enjoyment of living (Abdulraheem, *et al.,* 2012). The essence of health care to the local government is to make the management of primary health care services more effective, affordable and closer to the grassroots (Mafimisebi and Ogutande, 2011, Sanni, 2010). A healthy labour force will make meaningful contribution to economic growth and development of the nation.

This study aims to determine the nature of health care service provision and its implication in the rural development of Imo State. The central questions in this study are as follows: what are the sources of treatment for rural population in Imo State? Are health care facilities provided and well distributed in the rural areas of the state? What is the level of availability of health care workers in these facilities? Are the services rendered by these workers adequate and affordable by the target population? Answers to these questions and more will help to elucidate the nature of health care services provision and their contribution to the development of rural communities in the state. Two hypotheses will be tested in this study, namely ;

i. Healthcare service provision is not equitably distributed among rural communities in the study area
ii. There is no significant association between health care provision and the level of development in the area.

Materials and Methods

i. Study Area

Imo State lies within Latitude $4^04'N$, $7^015'N$ and Longitude $6^050'E$, $7^025'E$. It is bounded in the North by Anambra State, in the East by Abia State, in the West by Delta State and in the South by Rivers and Bayelsa States with a total landmass of $5100k^2$ (see Fig. 1). It consists of 27 Local Government Areas (LGAs) and is divided into three senatorial zones, namely Okigwe, Owerri and Orlu zones. Owerri is the state capital and the state has 306 autonomous communities. Imo State is characterized by old geological formations (Cretaceous, Palcocene, Eocene, and Pleislocene) with low-lying topography that isundulating in many segments with rivers that rise from these formations (Otamiri, Nworie, Njaba, Obana, Oramiriukwa and Imo).
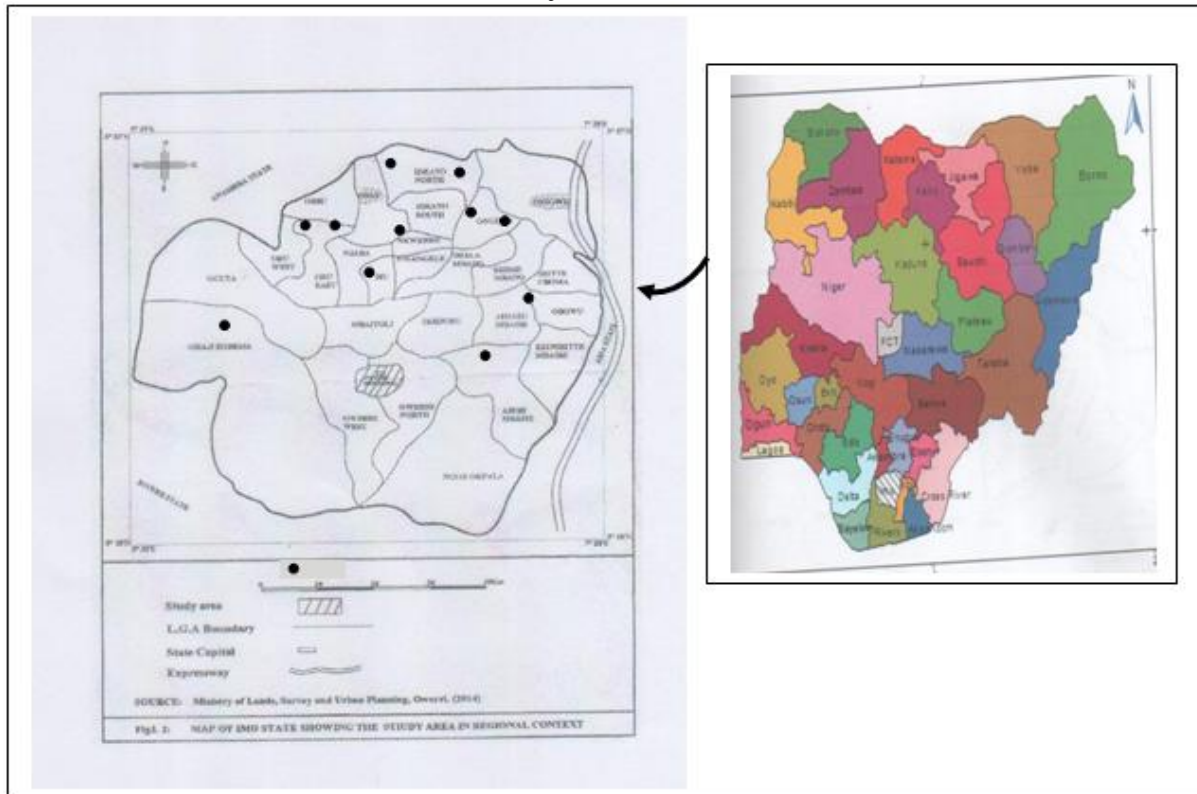

Fig. 1: Map of the study area

The state has two main seasons – rainy and dry seasons. Annual rainfall is over 2250mm with mean temperature above 26.7^0 Celsius (Udo, 1978). Relative humidity is between 80 and 90 percent in the rainy season (April to October) and about 65 percent in the dry season (November to March). There is evidence of rising temperature in the state due to global warming (Ume, 2006). The estimated population of the state based on the 2006 population census is 4.6 million (NPC, 2006), with a population density varying from 230 to 1400 people per kilometer, that is predominantly Igbo speaking. Imo State is rich in natural resources including crude oil, natural gas and other mineral deposits. Major economic activities include trading, fishing, sand excavation and farming found mostly in the rural areas.

ii. Data Collection

• Research Design

The study is an analytical field survey. The design involved categorization of LGAs in each of the three zones, selection of rural LGAs, selection of rural communities from each zone, determination of the target population and sample size, design of questionnaire for data collection and field observation of health facilities to augment information from questionnaire and literature.

• Selection of LGAs and Rural Communities

The Local Government Areas were listed in alphabetical order according to the three senatorial zones, after which urbanized and semi-urbanised LGAs were deleted from the list as these areas are highly developed in terms of health facilities. At the end, 11 LGAs were selected from the list of twenty-two rural LGAs by

choosing those that fall under odd numbers. Selection process therefore involved stratified sampling and simple random sampling techniques.

The simple random sampling technique was equally used to select the rural communities studied; as their names were written on pieces of papers rolled into balls, put and reshuffled in a black polythene bag, and four communities are, by lucky deep strategy, drawn from each of the sampled LGA. This procedure was used to draw a total of 44 communities from 117 in the sampled LGAs. The use of 4 communities per LGA stems from the fact that one of the sampled LGAs (Onuimo) has only four communities, hence the number, to maintain the principle of equality and equity among them.

The population of the 11 sampled LGAs based on the 1991 projected census figures are: Okigwe zone (243,785), Owerri zone, (235, 035) and Orlu zone (446,313), making a total of 925 133 of the target population. Yahmane (1967) cited by Isreal (1992, 2009) and Ojile (2012) provided the model for deriving the sample size of 627; with Okigwe zone having 166, Owerri zone 159 and Orlu zone 302.

The names of the selected LGAs include Ehime Mbano (Ehm), Isiala Mbano (Isi), Onuimo (Onu), Ideato South (Ide), Njaba (Nja), Nwangele (Nwa), Ohaji/Egbema (Ohe), Oru East (Oru), Aboh Mbaise (Abo), Ezinihitte Mbaise (Ezi) and Mbaitoli (Mba).

- **Questionnaire Distribution and Observation**

A total of 660 households were selected from the 44 sampled communities and served with copies of the questionnaire through systematic random sampling technique which was deliberately in excess of the sample size of 627. The rationale for administering extra copies of the questionnaire was to ensure that non-response errors were accommodated. Copies of the administered questionnaire were filled and returned by respondents within a period of three days. In addition to the questionnaire, oral and group discussions were conducted in English and Igbo languages within a period of six weeks. Field enumeration of health facilities and observation of level of development were also conducted within this period with the help of four trained assistants.

- **Data Presentation and Analysis**

Simple descriptive methods and univariate summary statistics (means, percentages, frequency distribution) were used to present data. Tables enabled the arrangement, tabulation and presentation of data in columns and rows which permitted ready and meaningful analysis and interpretation.

The Gini Coefficient (Gini Index) was used to measure the degree of inequality in the distribution of health facilities in the area. The index can be computed mathematically using the formula:

$$G = 1 - \sum_{i=0}^{N} [\sigma Y_{i-1} + \sigma Y_i (\sigma X_{i-1} + \sigma Y_i)]$$

Where

G = Gini Index
σX and σY = cumulative percentages of X_s and Y_s variables (in fractions)
N = Number of elements observed
$\sum$ = summation symbol

A Gini Index of I represents perfect inequality as the Lorenz curve close up with X-axis indicating that the variable tends to be concentrated in one location. A low Gini Index is indicative of a more even spread of the facilities while a high index indicates a more unequal distribution (Lui 2007; Wessa, 2012). Also, Students' t-test was used to test whether there is significant difference in the variability of the spread of these facilities, Chi-square test was used to test the hypothesis that there is no significant association between level of development and the condition of health facilities in the area.

Data on level of development in rural communities of Imo State was obtained from a recent comprehensive study carried out by Imo State Ministry of Budget and Planning, (2015).

iii. Results
- **Occupation of the respondents**

Respondents are predominantly civil servants, which formed 63.3% of the total subjects as shown in Table I.

Table 1: Occupation of people in the sampled communities in Imo State

Occupation	FREQUENCY											Tot	%
	Okigwe zone			Orlu zone					Owerri zone				
	Ehm	Isi	Onu	Ide	Nja	Nwa	Ohe	Oru	Abo	Ezi	Mba	Tot	%
Trader	4	10	9	8	0	5	3	9	5	0	8	61	9.7
Farmer	2	3	5	4	0	4	20	5	8	0	8	59	9.4
Artisan	1	2	4	3	0	3	4	5	5	0	0	27	4.3
Civil Servant/ Public Servant	18	36	40	23	27	64	30	43	42	18	37	378	60.3
Politician	1	7	5	2	0	0	1	3	3	0	0	22	3.5
Contractor/ Businessman	2	6	5	9	1	2	1	4	8	0	30	68	10.9
Others	0	0	1	0	0	4	3	0	1	2	1	12	1.9
Total	**28**	**64**	**69**	**49**	**28**	**82**	**62**	**69**	**72**	**20**	**84**	**627**	**100**

Source: Authors' Fieldwork

This is at variance with the norm as one would have expected farmers and traders to be predominant. However, this may be explained by the fact that teachers and local government staff form the bulk of the subjects who were able to complete the questionnaire with ease. Traders formed 9.7%; the three making up to 30% of the total. The low percentage of artisans (4.3%) can be seen as a preoccupying development as this group of workers prefers to practice their tradein urban areas where it is more profitable making it more difficult for the rural population to access their services.

- **Sources of Treatment in the Sampled Communities**
  Respondents were asked to indicate their sources of medical treatment and
responses are presented in Table 2 below:

Table 2: Source of medical treatment in communities in the sampled Local Government Area

Source for medication	FREQUENCY											Tota	%
	Okigwe zone			Orlu zone					Owerri zone				
	Ehm	Isi	Onu	Ide	Nja	Nwa	Ohe	Oru	Abo	Ezi	Mba	Tota	%
Pharmacy/ Chemist/ Drug store	7	17	19 (27.5)	24	1	7	11	8	16 (21.3)	7	13	130	21.3
Health center	7 (24.12)	14	16	6	5	24 (30)	18	19 (26.4)	19	3	18 (30)	149	24.5
Hospitals	13 (44.8)	21	34 (49.3)	16	23	48 (60)	32	43 (59.7)	37 (49.3)	13	23 (38.3)	303	49.8
Maternity home	1	0	0	0	1	0	6	0	1	0	3	12	1.9
Herbalist/ Traditional Clinic	1	2	0	3	0	1	1	2	2	0	3	15	2.5
Total	**29**	**54**	**69**	**49**	**30**	**80**	**68**	**72**	**75**	**23**	**60**	**609**	**100**

Source: Authors' Fieldwork

A total of 130 out of 609 subjects, representing 21.3% of the total receive treatment from Pharmacy/chemists; 24.5% receive at health centres; 49.8% seek treatment from hospitals. Those that patronize herbalists/traditional healing homes collectively account for 4.4% of the respondents. Nwangele L.G.A. recorded the highest number of respondents who seek treatment from hospitals (60%), followed by Oru-East (59.7%), while Ideato-South recorded the highest frequency of those who seek treatment at pharmacy/chemists with 48.9%. Majority of respondents therefore seek treatment from orthodox centres and hospitals in the area.

- **Number of Hospitals in the Sampled Communities**
    The distribution pattern of hospitals in the study area is shown in Table 3 below:

Table 3:   Number of hospitals in each community in the sampled LGAs

No. of Hospitals	FREQUENCY												
	Okigwe zone			Orlu zone					Owerri zone				
	Ehm	Isi	Onu	Ide	Nja	Nwa	Ohe	Oru	Abo	Ezi	Mba	Tot	%
None	12 (42.9)	38 (56.7)	24 (34.8)	11	8	47 (57.3)	15	19	30 (40.5)	4	26 (44.1)	234	38.2
1	16 (57.1)	24 (35.8)	41 (59.4)	25 (53.2)	16 (53.3)	25 (30.5)	28 (44.4)	37 (52.9)	9	12 (52.2)	23 (40.0)	256	41.8
2	0	5	4	4	4	6	13	4	23 (31.1)	3	0	66	10.8
3	0	0	0	2	0	0	2	2	5	2	1	14	2.3
4	0	0	0	5	1	0	2	5	6	0	3	22	3.6
5 and above	0	0	0	0	1	4	3	3	1	2	6	20	3.3
Total	28	67	69	47	30	82	63	70	74	23	59	612	100

Source: Authors' Fieldwork

A total of 234 or 38.2% of the respondents indicated that hospitals do not exist in their communities, 256 subjects representing 41.8% claimed to have one hospital in their communities; 10.8% indicated two hospitals while 9.2% of them have three hospitals and above. The highest frequency for those who indicated one hospital is recorded in 8 out of 11 sampled LGAs; while the highest frequency for those who have none is recorded in the remaining three LGAs (Isiala Mbano, 56.7%; Nwangele 57.3%, and Aboh Mbaise 40.5%). This data is suggestive of the inequitable distribution of hospital facilities in rural communities of Imo State.

- **Number of Primary Health Centres and Maternity Homes**
    Concerning primary health centres (PHCs), a total of 14.5% of respondents indicated that no such centres exist in their communities, 63.3% claimed to have only one of such centres while 11.5% have two or more PHCs. This last group is few and insignificant. Analysis of data from each LGA shows that 92.5% of respondents in Isiala-Mbano indicated one PHC in their area, the same as those in Nwangele (72.2%). This same trend was observed in the distribution of maternity homes in the area. The highest frequency for one maternity home was recorded in 7 LGAs, namely Isiala-Mbano (62.7%), Onuimo (53.5%), Njaba (51.4%), Nwangele (40%) and Oru-East (39.4%), Aboh-Mbaise (56.9%) and Mbaitoli (57.1%). Ideato South LGA shows the highest frequency of two maternity homes (55.4%) while Ezinihitte is the LGA that presents the highest frequency of those with no maternity.

- **Availability of medical workers in the Health care facilities**
    To measure the accessibility of doctors and nurses in these facilities, respondents were asked to indicate the number of staff present in their facilities.

Table 4: Number of doctors in hospitals within communities in the sampled LGAs

No. of Doctors	FREQUENCY												
	Okigwe zone			Orlu zone					Owerri zone				
	Ehm	Isi	Onu	Ide	Nja	Nwa	Ohe	Oru	Abo	Ezi	Mba	Tot	%
1	13	19	32 (51.6)	9 (23.7)	12 (46.2)	24 (42.1)	17 (35.4)	21 (36.8)	17 (33.3)	10 (50)	19 (44.2)	193	41.1
2	5	14	23 (37.1)	19 (50)	9	7	8	6	12	3	18 (41.9)	124	26.4
3	1	7	1	3	0	8	10	17	7	3	1	58	12.3
4	1	1	1	5	2	2	2	3	6	2	0	25	5.3

5 and above	1	6	5	2	3	16 (28.0)	11	10	9	2	5	70	14.9
Total	**28**	**47**	**62**	**38**	**26**	**57**	**48**	**57**	**51**	**20**	**43**	**470**	**100**

Source: Authors' Fieldwork

Table 4 reveals that 193 subjects representing 41.1% of all respondents indicated that they have only one medical doctor in the hospital existing in their area; 26.4% indicated two doctors; 14.9% have more than five doctors while only 5.3% declared four doctors. Comparatively, the highest frequency of one medical doctor per hospital is recorded in nine out of the eleven sampled LGAs, except Ideato South, Onuimo and Mbaitoli that have the highest frequency of respondents indicating two doctors per hospital in the communities.Data obtained on this subject indicates that there is equal access to medical consultation in the study area since each sampled community has at least one medical doctor present in their hospital.

However, nurses are more available to patients in these rural health facilities; as 54.9% of respondents indicated to have five or more nurses in their hospitals; while 17.5% indicated four nurses and 13.3% three nurses. The highest frequency for more than five nurses was recorded in 10 out of the 11 LGAs sampled, except Ideato-South that indicated four nurses per hospital (47.6%). These results show that there is even spread of at least five nurses per health care facility in the sampled communities.

- **Conditions of Service in the Health Facilities**
Despite the availability of medical doctors and nurses, 58.9% of respondents seek medical treatment in these facilities once in six months or more; 10.2% frequent there once in a month, while 3.2% visit the facility once in a week. Only 27.7% go for consultations whenever they fall sick.

Reasons given by those who visit these facilities once in a while include lack of essential drugs (16%), doctors not always present (44.4%), insufficient beds for patients (7.5%), use of outdated equipment (5.1%), dilapidated buildings (4.6%), high cost of treatment (6.3%), high waiting time for medical treatment (65.2%).

For example, 55.9% of the respondents spent between an average of 4 to 5 hours before seeing a doctor in a hospital. Those that spend more than 6 hours accounts for 6.7% of the respondents; but only 29.5% of respondents see a doctor in less than two hours as shown in Table 5.

Also, 62.4% of respondents indicated that they pay more than two thousand and five hundred naira (N2,500) in the hospital and PHC in their area. Those that pay less than two thousand naira (N2,000) per month account for only 37.6% of the respondents. Affordability of medicare is the most significant factor affecting patronage of a particular health facility and by implication, the general health care service provision in the rural areas of Imo State. This result agrees with those obtained by Omotoso (2010), Adeagbo (1998) and Aregbeyen (1992) on healthcare service provision in Nigeria.

Table 5: Time spent for medical consultation in hospitals in the study

	FREQUENCY												
	Okigwe zone			**Orlu zone**					**Owerri zone**				
Time	**Ehm**	**Isi**	**Onu**	**Ide**	**Nja**	**Nwa**	**Ohe**	**Oru**	**Abo**	**Ezi**	**Mba**	**Tot**	**%**
Less than 1 hour	9 (40.9)	9 (16.4)	18	5	13 (44.8)	22	16	24 (36.4)	25 (36.8)	12 (52.2)	7	160	29.5
1-2 hrs	7 (31.8)	10 (18.2)	17	22 (59.5)	9	28 (40.6)	25 (41.7)	16	20 (29.4)	6	12 (24.5)	172	31.7
3-4 hrs	1	27 (49.1)	23 (35.9)	9 (24.3)	7	12	6	19	12	3	12	131	24.2
5-6 hrs	1	5	3	0	0	2	2	3	7	1	12	36	6.7
6 hrs and above	4	4	3	1	0	5	11	4	4	1	6	43	7.9
Total	**22**	**55**	**64**	**37**	**29**	**69**	**60**	**66**	**68**	**23**	**49**	**542**	**100**

Source: Authors' Fieldwork

Data also revealed that 62.7% of the total respondents travel between 4 to 9 kilometers to obtain their treatment from these health facilities, 26.9% travel less than 3 kilometers while 4.9% travel more than 9 kilometers to obtain these services. Accessibility is a function of the nature of the routes, mode of movement and financial power of the patient. On the mode of transport to medical facilities, the variables employed include public transport, private vehicles, motorcycles and by foot. Results show that those who use public transport

(taxi, bus) constituted 42.2% of the total subjects, 18.7% used private vehicles, 25.3% used motorcycles and 13.8% by foot. This result shows that these facilities are accessible by diverse means of transport. The more accessible the medical facilities are to users the more the patronage, an observation that corroborates the findings of Omotoso (2009) in his study in rural areas of Ekiti State.

The implication of the various reasons given by respondents is the serious deprivation of local population to primary health care, which compel them to seek alternative healthcare methods such as sub-standard medical services from chemists, use of herbs, spiritual healings and quacks. For example, 65.3% of respondents resort to the use of herbs when they cannot afford to pay bills in these health facilities.

- **Assessment of Health Facilities in the rural areas**

Respondent were also asked to comment on the standard of the health facilities. Data obtained show that 44.2 % of them gave an **average score,**31.2% reported that these facilities are in **poor condition**;16.0% of them indicated **very poor condition**, 7.4% indicated **very good** while only 1.2% indicated **excellent condition**. The highest frequency for the **average score**is recorded in 9 out of 11 sampled LGAs except Aboh Mbaise (43.2%) and Mbaitoli (43.6%) that indicated poor condition as their assessment of the facilities in their area.

- **Contribution of Healthcare Service Provision to the Development of Rural Communities in Imo State**

What then are the contributions of healthcare service provisionto the development of these rural communities? Respondents indicate that the greatest contributions include quick access to medicare, an opinion express by 30.4% of them; while 24.7% maintained that they helped to reduce death rate in their area. Creation of job opportunities for the people is indicated by 6.6% of the subjects, while 11.2% responded that they helped to reduce maternal mortality.

From the data, it is safe to say that the principal role of healthcare service provision to rural development in Imo State is quick access to medicare, which resulted in the decrease in death rate, infant and maternal mortality which are among the Sustainable Development Goals (SDGs) of the federal government. These results are similar to those obtained by Efe (2013) in Delta State and Oyekale (2017).

Result of the t-test which shows whether there is significant difference in the variability of the spread of rural healthcare facilities in the area gave 1.260 at 0.05 significance, 9df. Based on this result, the null hypothesis that no significant difference exist in the distribution of these facilities among the studied communities is accepted. In the same vein, the Gini Index of 0.3802 also supports this very observation that health facilities have a good geographical spread but are not equitably distributed.

The inference is that even though inequality exist in the number of these facilities, the degree of inequality is not significant suggesting a close to even spread in the area. These observations corroborate the findings of Ujoh and Kwaghsende (2014) and those of Atser and Akpan (2009) in rural Benue and Akwa Ibom States respectively. Also the problem of long waiting time for medical consultations, absence of doctors and high cost of treatment as earlier observed were also reported by other related studies across the country (Ogundele and Olafimihan, 2009; World Bank, 2013; Abdulrahim, Olapipo and Amodu, 2012).

Results of Chi-Square test at 0.05 and 16df, the respective critical values of 26.296, 32.000 and 39.252 indicate that the null hypothesis is rejected, an indication that there exist a significant association between the condition of healthcare service provision and the level of development in the area. This strong association has not been well capitalized and exploited by public authorities who have not gone beyond rhetorics (Sengupta, 2013) in the mobilization of rural population for their development. The need to have healthcare delivery programmes designed to mobilize the rural population in Nigeria has become imperative (Nnabuihe *et al.*, 2015).

Conclusion

This study has tried to examine rural health service provision and implication in rural development in Imo State Nigeria. The study was carried out in rural areas of the state. Both field data and statistical analyses show that healthcare facilities and services provided are not equitably distributed in the State. Most of the healthcare facilities are in a state of disrepair, characterized by dilapidated buildings, poor equipment, poor staffing (medical doctors) and lack of essential drugs.The observed poor services especially in the supply of essential drugs and equipment are predicated on poor funding, endemic corruption among staff of the supervising authorities, lack of commitment by the LGAs and paucity of medical records and audits.

However, the study established that a significant relationship exists between healthcare service provision and rural development in the state. The existing healthcare facilities have contributed in reducing death rate, infant and maternal mortality which are among the Sustainable Development Goals of the federal

government. It is strongly recommended that government and stakeholders should ensure that healthcare service provision are equitably distributed in the rural areas. Routine maintenance of these facilities, supply of essential drugs and basic equipment as well as the recruitment of more doctors should be the major and immediate concerns for sustainability of services rendered. Unfortunately, the study sampled 11 out of the 22 rural LGAs in Imo State, it is finally recommended that further studies should be extended to the 11 uncovered LGAs in the state as well as in other rural areas of other states in order to have a more comprehensive view of rural health service provision in Nigeria.

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Appendix I: Case Processing Summary

CROSSTABS
/TABLES = LEVEL_OF_ DEVELOPMENT BY CONDITIONEDF_HEALTH_FACILITIES
/FORMAT= NOTABLES
/STATISTIC=CHISQ CC PHI LAMBDA UC ETA CORR GAMMA D BTAU CTAU
KAPPA RISK
MCNEMAR
/COUNT ROUND CELL
/BARCHART

Crosstabs
[Data Set] C:\Program Files\SPSS Evaluation\CROSS TAB.sav

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
LEVEL_OF_ DEVELOPMENT CONDITION_OF HEALTH FACILITIES	611	100.0%	0	.0%	611	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	837.350[a]	16	.000
Likelihood Ratio	661.014	16	.000
Linear-by-Linear Association	334.589	1	.000
McNemar-Bowker Test	380.000	5	.000
N of Valid Cases	611		

[a]. 8 cells (32.0%) have expected count less than 5. The minimum expected count is .51

Sources: SPSS Processed output of cross tabulation

Appendix 2: Directional measures from cross tabulation

DIRECTIONAL MEASURES

		Value	Asymp. Std. Error[3]	Approx. T[5]	Approx. Sig.
Nominal by Lambda	Symmetric				
Nominal	LEVEL OF DEVELOPMENT Dependent	.280	.031	7.850	.000
	CONDITION OF HEALTH_HEALTH	.173	.025	6.366	.000
	Dependent	.349	.044	6.622	.000
Goodman and Kruskal	LEVEL OF DEVELOPMENT				
Dependent		.405	0.13		.000[c]
	CONDITION OF HEALTH_FACILITIES Dependent	.335	015		.000[c]
Uncertainty Coefficient	Symmetric	.452	.016	18.782	.000[d]
	LEVEL OF DEVELOPMENT Dependent				
CONDITION OF HEALTH_HEALTH		.488	.018	18.782	.000[d]
Dependent		.422	.018	18.782	.000[d]
Ordinal by Ordinal Somers'd	Symmetric	.682	.017	23.752	.000
	LEVEL OF DEVELOPMENT Dependent	.616	.023	23.752	.000
	CONDITION OF HEALTH_HEALTH Dependent	.764	.018	23.752	.000
Nominal by Interval Eta	LEVEL OF DEVELOPMENT Dependent	.847			
	CONDITION OF HEALTH_HEALTH Dependent	.754			

a. Not assuming the null hypothesis
b. Using the asymptotic standard error assuming the null hypothesis
c. Based on chi-square approximation
d. Likelihood ratio chi-square probability

Source: SPSS Processed output from field data