

Population Growth & Health Facilities In Nigeria (A Case Study Of Ondo State)

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ABSTRACT: Initially, HEALTH SERVICES in Nigeria were usually provided by traditional doctors followed by physicians brought by Portuguese traders to care for the health of members of their staff. Achievement of the goal of health is a basic problem being encountered in most parts of the country. Hence, the research on population growth and health facilities in Ondo State was carried out with the intension of finding out how the population growth affects the available health facilities in the state. The achievement was made possible by using various statistical tools such as series Analysis, F – ratio test. It was deduced that the available health facilities are not sufficient enough compare to the standard given by the world health organization (WHO) from where measurement is based. However, more action should be expedited, since the subject plays a primary role in the development and standard of the country.

Keywords: Population Growth, Health Facilities and Population Projections

INTRODUCTION

The achievement of the goal of health is the basic problem facing the third world countries; reason being that every country in the world plays much emphasis on the status of health of its citizens. The provision of modern medical care for the Nigerian population was as a result of the effort initiated by the missionaries who put in place hospitals by the 1850s. In the 19th century, government institutions began with a unified system of system of health services which expanded very slowly until 1952 when the system was first decentralized, the limited economy did not permit rapid expansion until mid 1970s when the economy was greatly improved by the marketing of Nigerian petroleum, permitting rapid development of health manpower and establishments. The health care delivery system in developed countries is highly sophisticated while that of developing countries is comparatively in its rudimentary form. In spite of the effort made by the state government to ensure a more equitable distribution of health resources, obvious disparities are still evident. The deterioration in government facilities has resulted in a mass departure of health professionals due to low remunerations and poor working conditions. Similarly, a marked growth in the private sector is being experienced and a decline in government attempts to strengthen primary health care.

The U.N, Okonjo and Djukanovic have shown the youthful structure of the population of the developing countries, based on severe strain on their economies in the provision of health facilities and social needs, Nigeria in general and Ondo state in particular are not excepted from these eventualities. Nigeria has one of the highest mortality rates in sub – Saharan African; with a population of 140,003,542 (Nigeria Census, 2006) which is the highest in Africa but with inadequate health care delivery system.

POPULATION GROWTH IN ONDO STATE:

Ondo state of Nigeria mostly comprises of the Yoruba race, although there is a peaceful coexistence of other Nigerians and foreign nationals in the state. The states consist of 18 local governments. According to the detailed analyses of the 2006 census, available data showed that the total population of the state is 3,441,024 persons out of which the population of **MALE** is 1,761,263 and **FEMALE** is 1,679,761 persons respectively. The structure and distribution of population in Ondo – state have been affected by high incidence of migration of Ondo people to other parts of the country. Ondo indigenes are found in various services and especially in education and civil services. Population growth in Ondo state, as in other parts of the country is influenced by some industrial factors that declining mortality rate and high fertility rate. The main cause of rapid population growth in Ondo state is as a result of the issue of early marriage which has contributed positively to the high fertility in the area. Thus, the state has an available population growth rate of 2.457812103 percent which can be approximated to 3.0percent out of the population of 3,441,024 people according to 2006 census, the available data indicates that about 60 percent population in the state are concentrated in eight local government areas which are: Akoko - North West, Akoko - South West, Owo, Akure - South, Ondo - West, Odigbo, Okitipupa and Ilaje. Eight other local government areas accounted for 35 percent which are: Akoko -North East, Ose, Akure - North, Ifedore, Ile – Oluji/Oke – Igbo, Idanre, Irele and Ese – Odo while the balance of about 5 percent accounted for the remaining two local government areas which are: Akoko South East and Ondo East. The major components in the health care delivery system of Nigeria comprise the tertiary and secondary health establishments otherwise known as specialist and general hospitals respectively. The hospital provides the vast proportion of

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the "Modern" health care services. The primary health centers are located at various 18 local government areas of the state. They are not well funded and so many useful facilities are lacking, it is therefore important that government should take a cognizance approach over this note.

POPULATION PROJECTION IN ONDO STATE

Considering the Time Series Analysis of 2006 census figure as the base data and projecting the population of Ondo state for a period of fifteen years with five years interval. It was deduced that the projected population of Ondo state would grow from 3,441,024 in 2006 to 3,836,123 in 2011 and also from 4,626,323 in 2015 to 5,811,623 by the year 2020. It is expected that the rapid growth should draw the attention of government planners and policy maker on need to control the fertility and immigration rate. Otherwise, the state would run into difficulty in meeting up with the demand of the population during the projected period. Data were generated, based on the aggregate of the information collected from the case studies:

- (i) Ondo state specialist hospitals
- (ii) Federal medical center Owo.

Ondo state specialist hospitals are located in the following towns: Akure, Ondo, Ikare and Okitipupa.

RESEARCH METHODOLOGY.

INTERPRETATION

- ❖ In respect to the required equation in Table 1, the estimation trend for Doctors in Table 4 is at gradually increasing rate. This shows that government is expected to improve on the numbers of medical personnel in line with the increase in population.
- ❖ Also, considering the required equation in Table 2, the estimated trend for Nurses/midwives in Table 4 is at increasing rate gradually. There is need for government to improve on the medical manpower.
- ❖ Finally, considering the required equation in Table 3, the estimated trend for hospital beds in table 4 is at decreasing rate. This shows that government must ensure in keeping a regular supply of hospital beds.

PURPOSE OF THE STUDY

ESTIMATION OF THE RATIO OF VARIANCES IN POPULATION OF DOCTORS AND NURSES / MIDWIVES IN ONDO STATE.

Our interest is to test the claim that the standard deviation of the population of doctors is different from the standard deviation of the population of nurses/midwives.

δ_1 = Standard deviation of Doctor's population.

δ_2 = Standard deviation of nurses/midwife's population.

Hypothesis Formulation

$$H_0: \delta_x = \delta_y \text{ Versus } H_1: \delta_x \neq \delta_y$$

Test Statistic

$$F = \frac{S_x^2}{S_y^2} \sim F\text{-Distribution}$$

With $n_1 - 1$, $n_2 - 2$ degree of fraction

Testing at $\alpha = 0.05$ level of significance

With $n_1 - 1 = 8 - 1 = 7$ degree of freedom and $n_2 - 1 = 8 - 1 = 7$ degree of freedom are

$$S_x^2 = \frac{n_1}{n_1 - 1} S_x^2 = \frac{1}{7} (64351.9) = 73545.03$$

$$S_y^2 = \frac{n_1}{n_1 - 1} S_y^2 = \frac{1}{7} (17526.3) = 20030.06$$

Let x_1 and y_1 represent the distribution of the population of the Doctors and Nurses/Midwives at various years respectively.

Recall that

$$S_x^2 = \frac{\sum x_i^2 - n_1 (\bar{x})^2}{n_1 - 1} \quad S_y^2 = \frac{\sum x_i^2 - n_1 (\bar{y})^2}{n_2 - 1}$$

$$F = \frac{73545.03}{20030.06}$$

HEALTH SERVICES IN ONDO-STATE

Health care delivery in Ondo state in particular, and Nigeria at large: The actualization that the care of communities' families and individual has been a complex procedure that requires a variety of skills and cooperation that led to the development of the concept for delivery of health services. Mutual co-operation among the medical personnel that provide the care, the population that receives the care and the government that provides the resources in order to achieve healthiness must be established. The Government, The Missions, Private Individuals, Communities, Industries and Traditional Practitioners provides health services in Ondo State in particular in and Nigeria at large. Statistically, it was deduced that the private and other institutions provide most of the health care while (government provides less). The implication is that less privileged and low income earners in the society would be deprived of essential care, which depends on the individual purchasing power. Hence go to recommendation the danger of allowing private sector to dominate the health care system should be noted. In the context of developing nations, the use of (ICT) can potentially improve delivery of health care, patient care and reduce cost of running hospital (Mbananger, etal, 2002). In 1996, the (UK) began to use electronic records and ICT in the National Health Science (NHS) and this had reformed the health sector (Hackney etal, 1996) The expectation is that Nigeria as a country, and Ondo state is particular expectation to follow-suite, in order to improve health care delivery. However, the idea is that the United Kingdom (UN), made of up England, Scotland, Wales and Northern Ireland, has a population of about 60 million-less than half

the population of Nigeria. In the 1980s, the hospitals in UK were at a level where paper –files, paper-cards, manual referral system and manual type writers for word processing were used. In UK hospitals, patients' records are now in digital format and this makes storage, retrieval and transfer at patient's date economically faster and easier. Nigeria is still lacking behind because of obstacle (e.g. such as high cost of ICT equipment, power failure, and inadequate telecommunication facilities) adoption of infusion of ICT. However, according to the Human & silver (2004), inadequate health care delivery might give birth to health risk, which means that Nigeria may be able to health care. In Ondo State, the state and local government share health care. The health care delivery in this to tears of government in Ondo State is still at a sub-standard paste. It has been observe that only drugs that are not costly, like paracetamol, flagil, phensic, e.t.c could be provided by the hospital management board. Those costly own expenses ones could be ordered by the patients at their own pharmacy outside. So also, the manpower and the way and manners the services is being rendered is not encouraging. The ministry of Health and the health management board are the two administrative organs of government that are saddled with the responsibility in health care delivery in the state. The ministry of health is responsible for health care delivery in both public and private sector and it ensured government standard of medical care through the inspectorate division that pays surprise visits to all the health institutions in the state while the health management board is responsible for the whole local government areas. The health care delivery is still not encouraging especially

in the rural areas due to inadequate human and materials resources and financial constraint.

Medical Manpower:- Baser on the available data provided from the case studies; Ondo state specialist hospitals and federal medical center Owo. The strength of medical manpower was showcased. The figure for health personnel in the private sector is unavailable for the study but in 2011, there are total of 1,010 government medical doctors and 1,260 nurses/midwives in the state. The number of personnel (i.e. medical doctors and nurses/midwives in the private sector might double the ones of government sector, judging from the dominance of health care delivery in the private sector. Table 4 shows the trend of the medical staff strength and hospital bed at various years. There is need for government to improve on health facilities and medical manpower. Analysis from the F – ratio test shows that the population standard deviation of the doctors and the nurses/midwives is at equal variation

Tradition Health Services:- This is known as indigenous health services that comprise medical knowledge system that developed over generations within various societies before the era of modern health services. People in rural areas in Ondo state are isolated and dispersed therefore public service including health service are not widely spread and also expensive to provide this make them resort to traditional leaders. The activities of traditionalist should not only be guided and checked by the government but also recognized since their influence will continue for some time to come.

N. B

F.M.C – Federal Medical Center

S.S.H – State Specialist Hospital

S/N	YEAR	MEDICAL PERSONNEL	TOTAL	NURSES/MIDWIVES	TOTAL	HOSPITAL BEDS	TOTAL
1	2004	F.M.C=260, S.S.H=107	367	F.M.C=124 S.S.H=831	955	F.M.C=159 S.S.H=777	936
2	2005	F.M.C=287 S.S.H=107	389	F.M.C=136 S.S.H=831	967	F.M.C=159 S.S.H=777	936
3	2006	F.M.C=356 S.S.H=103	459	F.M.C=174 S.S.H=806	980	F.M.C=159 S.S.H=720	879
4	2007	F.M.C=475 S.S.H=153	628	F.M.C=198 S.S.H=955	1,153	F.M.C=169 S.S.H=557	726
5	2008	F.M.C=576 S.S.H=141	717	F.M.C=237 S.S.H=872	1,109	F.M.C=176 S.S.H=584	760
6	2009	F.M.C=716 S.S.H=178	894	F.M.C=301 S.S.H=871	1,172	F.M.C=205 S.S.H=553	758
7	2010	F.M.C=743 S.S.H=183	926	F.M.C=297 S.S.H=995	1,292	F.M.C=224 S.S.H=581	805
8	2011	F.M.C=820 S.S.H=190	1,010	F.M.C=359 S.S.H=901	1,260	F.M.C=234 S.S.H=579	813

HEALTH FACILITIES IN ONDO STATE**Table 1: CURVE FITTING AND METHOD OF LEAST SQUARE APPLICATION TO TIME SERIES (MEDICAL DOCTORS)**

YEAR	X_i	Y_i	$X_i = x_i - \bar{x}$	$Y_i = y_i - \bar{y}$	X_i^2	$X_i y_i$
2004	0	367	-3.5	-306.75	12.25	1073.63
2005	1	389	-2.5	-284.75	6.25	711.88
2006	2	459	-1.5	-214.75	2.25	322.13
2007	3	628	-0.5	-45.75	0.25	22.88
2008	4	717	0.5	43.25	0.25	21.63
2009	5	894	1.5	220.25	2.25	330.38
2010	6	926	2.5	252.25	6.25	630.63
2011	7	1,010	3.5	336.25	12.25	1176.88
	$\Sigma x_i = 28$	$\Sigma y_i = 5390$			$\Sigma x_i^2 = 42$	$\Sigma x_i y_i = 4290.04$
	$\bar{x} = 3.5$	$\bar{y} = 673.75$				

$$Y = \frac{(\Sigma x Y_i)x}{\Sigma x_i^2} = \frac{(4290.04)x}{42} = 102.14x$$

$$Y - \bar{y} = 102.144 (x - \bar{x})$$

$$Y - \bar{y} = 102.144 (x - \bar{x})$$

$$Y - \bar{y} = 102.144x - 357.504$$

$$Y - 673.75 = 102.144x - 357.504$$

$$Y = 102.144x - 357.504 + 673.75$$

$$Y = 102.144x + 316.246$$

$Y = 316.246 + 102.144x_i$. The required equation for prediction.

Table 2: CURVE FITTING AND THE METHOD OF LEAST SQUARE APPLICATION TO TIME SERIES (NURSES & MIDWIVES)

YEAR	X_i	Y_i	$X_i = x_i - \bar{x}$	$Y_i = y_i - \bar{y}$	x_i^2	$x_i y_i$
2004	0	955	-3.5	-306.75	12.25	546
2005	1	967	-2.5	-284.75	6.25	360
2006	2	980	-1.5	-214.75	2.25	1965
2007	3	1153	-0.5	-45.75	0.25	-21
2008	4	1109	0.5	43.25	0.25	-1
2009	5	1172	1.5	220.25	2.25	91.5
2010	6	1292	2.5	252.25	6.25	452.5
2011	7	1260	3.5	336.25	12.25	521.5
	$\Sigma x_i = 28$	$\Sigma y_i = 8888$			$\Sigma x_i^2 = 42$	$\Sigma x_i y_i = 2146$
	$\bar{x} = 3.5$	$\bar{y} = 1111$				

$$Y = \frac{\sum (XY_i)_x}{\sum x_i^2} = \frac{(2146) x}{42} = 51.09524x$$

$$Y - \bar{y} = 51.09524(x - \bar{x})$$

$$Y - \bar{y} = 51.09524(x - 3.5)$$

$$Y - \bar{y} = 51.09524x - 178.83333$$

$$Y - 1111 = 51.09524x - 178.83333$$

$$Y = 51.09524x - 178.83333 + 1111$$

$$Y = 51.09524x + 932.16667$$

$$Y = 932.16667 + 51.09524x. \text{ This is the required equation for prediction.}$$

$$\bar{Y}x\bar{X} \quad \bar{y}Y \quad - \quad y \quad = \quad 51.09524 \quad (x \quad - \quad 3.5)$$

Table 3: CURVE FITTING AND THE METHOD OF LEAST SQUARE APPLICATION TO TIME SERIES (HOSPITAL BEDS)

YEAR	X_i	Y_i	$X_i = X - \bar{x}$	$Y_i = Y - \bar{y}$	X_i^2	$X_i Y_i$
2004	0	936	-3.5	109.4	12.25	-382.9
2005	1	936	-2.5	109.4	6.25	-273.5
2006	2	879	-1.5	52.4	2.25	-78.6
2007	3	726	-0.5	-100.6	0.25	50.3
2008	4	760	0.5	-66.6	0.25	-33.3
2009	5	758	1.5	-68.6	2.25	-102.9
2010	6	805	2.5	-21.6	6.25	-54.0
2011	7	813	3.5	-13.6	12.25	-47.6
	$\sum X_i = 28$	$\sum Y_i = 6613$			$\sum X_i^2 = 42$	$\sum X_i Y_i = -922.5$
	$\bar{x} = 3.5$	$\bar{y} = 826.63$				

$$\bar{Y}x\bar{X} \quad \bar{y}Y \quad - \quad y \quad = \quad 51.09524 \quad (x \quad - \quad 3.5)$$

$$Y = \frac{(\sum xy)_x}{\sum x_i^2} = \frac{(-922.5)x}{42} = -21.9643x$$

$$Y - \bar{y} = -21.9643(x - \bar{x})$$

$$Y - \bar{y} = -21.9643(x - 3.5)$$

$$Y - \bar{y} = -21.9643x + 76.87505$$

$$Y - 826.63 = -21.9643x + 76.87505$$

$$Y = -21.9643x + 76.87505 + 826.63$$

$$Y = -21.9643x + 903.5051$$

$$Y = 903.5051 - 21.9643x. \text{ This is the required equation for prediction.}$$

Table 4: Estimated Trend in Health Services

HEALTH SERVICES	ESTIMATED VALUE			
	2012	2015	2018	2020
DOCTORS	776	1,082	1,389	1,593
NURSES/MIDWIVES	1,162	1,315	1,469	1,571
HOSPITAL BEDS	805	739	673	628

SUMMARY AND CONCLUSION

Health care facilities and distribution problems in the South West part of Nigeria had been illustrated by the case of Ondo state. It is obvious that Nigeria is characterized by inadequate health care facilities. From analysis, it was noted that the numbers of medical personnel and hospital beds were not adequate, compare with the increase in population growth. The primary health centers locate at various 18 local governments are not well funded and so many useful facilities are lacking. Research also shows that 60% populations in the state are the concentrated in eight local governments while the remaining 40% population were sparsely dispersed. The population standard deviation of the doctors and nurses/midwives is at equal increase in variation.

RECOMMENDATION

The following measures should be adopted to check population growth since it has been observed that rapid growth is a hindrance towards government effort to provide good health services. To improve the health of mother and child, child spacing should be encouraged among parents. Early marriage should be discouraged through education. By educating the mothers that unwanted pregnancies are highly prohibited. Government should take a preventive measure over an inordinate industrial action by medical personnel. Government should build more hospitals and improve on the existing ones by making provision for adequate manpower and facilities.

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